



AC and DC Drives and Motors

Product Catalog



ENGINEERING YOUR SUCCESS.



WARNING - USER RESPONSIBILITY

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The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

OFFER OF SALE

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Table of Contents

Series		Power Range	Page
	Introduction to Parker Hannifin		4
	Service and support		8
	AC drives range overview		12
AC650G/V	AC650G, AC650V general purpose vector drive	0.3 to 150 HP	17
AC650S	AC650S compact drive for sensorless PMAC motors	0.25 to 7.5kW	21
AC650G/V/S	- Accessories and options AC650V, AC650G, AC650S	0.3 to 150 HP	24
AC690+	AC690+ Integrator series drive	1 to 1500 HP	29
	- Accessories and options AC690+		37
AC890	AC890 modular systems drive	1 to 1500 HP	43
AC890PX	AC890PX modular high power drive	150 to 600 HP	57
AC890/AC890PX	- Accessories and options AC890 and AC890PX	1 to 1500 HP	64
	- Dynamic braking options AC890 and AC890PX		73
DC590+	DC590+ Integrator Series 2 digital DC Drive	1 to 1200 HP	77
	- Accessories and options DC590+		91
DC506/7/8	DC506/7/8 1 phase analog DC Drive	0.25 to 2 HP	97
DC512	DC512C 1 phase analog DC Drive	1.5 to 10 HP	98
DC514	DC514C 1 phase analog regenerative DC Drive	1.5 to 10 HP	99
Packaged Drives	Pre-engineered configurable AC and DC drives	0.5 to 500 HP	102
Software	Programming software tools for all drives		104
TS8000	TS8000 Human machine interface (HMI) touchscreens		105
	- Communications options TS8000		109
Accessories	EMC filters	All	110
	Input and output reactors		111
Motors	Inverter and Vector Duty AC Motors	1 to 500 HP	113
	NX Series servo motors	0.2 to 7.5 kW	114

Parker Hannifin

The global leader in motion and control technologies and systems

Global Partnerships Global Support

Parker is committed to helping make our customers more productive and more profitable through our global offering of motion and control products and systems. In an increasingly competitive global economy, we seek to develop customer relationships as technology partnerships. Working closely with our customers, we can ensure the best selection of technologies to suit the needs of our customers' applications.



Electromechanical Technologies for High Dynamic Performance and Precision Motion

Parker electromechanical technologies form an important part of Parker's global motion and control offering. Electromechanical systems combine high performance speed and position control with the flexibility to adapt the systems to the rapidly changing needs of the industries we serve.



About Parker Hannifin Corporation

With annual sales exceeding \$13 billion in fiscal year 2012, Parker Hannifin is the world's leading diversified manufacturer of motion and control technologies and systems, providing precision-engineered solutions for a wide variety of mobile, industrial and aerospace markets. The company employs approximately 60,000 people in 48 countries around

the world. Parker has increased its annual dividends paid to shareholders for 56 consecutive years, among the top five longest-running dividend-increase records in the S&P 500 index. For more information, visit the company's web site at <http://www.parker.com>, or its investor information site at <http://www.phstock.com>



Electromechanical Automation

Global products with local manufacturing and support

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. Parker's engineering resources also extend to the development and manufacture of complete systems for continuous process and motion control applications.

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. This allows us to minimize transportation time and cost and to be able to respond more quickly to customer needs.

Worldwide Electromechanical Automation Locations

North America

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

Europe

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

Asia

Wuxi, China
Chennai, India

Drives Manufacturing

Parker drive products are manufactured globally to provide our customers with quality products at a competitive price point. In addition to factory-direct support, Parker provides sales assistance and local technical support through a group of dedicated sales teams and a network of authorized systems integrators, field service engineers, and technical distributors across the globe. For contact information, please refer to the Sales Offices listed on the back cover of this document or visit www.parker.com/ssdusa



Charlotte, NC



Littlehampton, UK



Wuxi, China

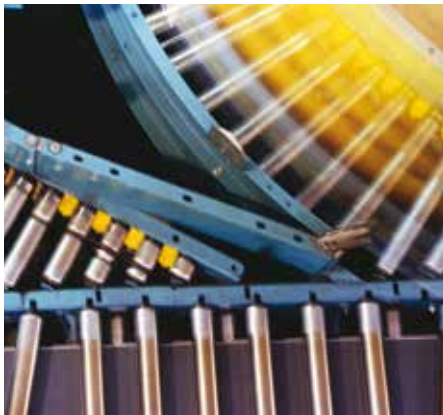


Chennai, India

Solutions to Improve Productivity, Increase Flexibility and Save Energy

Process Productivity and Reliability

Parker brings together the technology and experience required for continuous process applications across many industries. AC and DC variable speed drive products combined with application-specific function block-based configuration software ensure precise speed control and reliable performance. Parker combines more than 30 years of adjustable speed drive application experience with a global sales and support network to help you increase productivity and efficiency.



Converting machinery

	AC Drives	DC Drives	Direct Drive Motors	Servo Drives and Motors
Folding, gluing, stitching and collating	✓	✓		✓
Coating, laminating and foil stamping	✓	✓	✓	✓
Slitting, cutting and rewinding	✓	✓	✓	✓

Plastics processing machinery

	AC Drives	DC Drives	Direct Drive Motors	Servo Drives and Motors
Plastic extrusion	✓	✓	✓	
Injection moulding	✓		✓	✓
Thermal forming	✓		✓	✓

Wire and cable

	AC Drives	DC Drives	Direct Drive Motors	Servo Drives and Motors
Wire and cable manufacturing	✓	✓		✓
Winding/unwinding	✓	✓	✓	
Extrusion for wire and cable	✓	✓	✓	

Printing machinery

	AC Drives	DC Drives	Direct Drive Motors	Servo Drives and Motors
Web/sheetfed offset	✓		✓	✓
Flexographic printing	✓		✓	✓
Gravure printing	✓		✓	✓
Shaftless printing	✓		✓	✓

Other industries

	AC Drives	DC Drives	Direct Drive Motors	Servo Drives and Motors
Paper machinery	✓		✓	
Textiles	✓	✓	✓	✓
Steel production	✓	✓	✓	
Hoists, cranes, and lifts	✓	✓		
Automotive test rigs	✓	✓	✓	✓

Energy Efficiency and Clean Power

Parker has developed the technology to maximize the efficient use of energy in industrial, mobile and commercial environments.

Hybrid Vehicle Technology

Parker has adapted its electric drive technologies for use in hybrid and electric vehicles, including mass transit, utility trucks, passenger vehicles, and watercraft. Examples include inverters and motor drives, charging systems, export power, and electric motors and generators. For more information, visit <http://hev.parker.com>

Energy Savings for Pumps, Fans, and Compressors

Parker has the drive technology to help you realize significant energy savings in the operation of pumps, fans and compressors in both industrial and commercial applications, including:

- Commercial refrigeration
- Water and wastewater treatment
- Building automation
- Industrial processes
- Hydraulic systems



Power Generation and Conversion

Using proven inverter technology, Parker has developed numerous solutions for the conversion of energy for commercial use from a variety of sources, including wind, wave and energy storage devices. More at www.parker.com/gridtie

Motion Control Systems for Total Production Flexibility

Parker's electromechanical automation customers enjoy total production flexibility in their general and precision motion control applications. Complete packaged linear positioning systems, coupled to servo and stepper drives and control, enable our customers to develop a complete motion solution with one partner. Parker provides the products for a wide range of motion needs - power, speed, travel, force - with easy to use controls designed to work on multiple control and communication platforms. Additionally Parker's products can be easily customized to suit specific applications.



	Mechanical Actuators	Motors and Gearheads	Drives	Controls	HMI
Assembly machinery					
Pick and place	√	√	√	√	√
Lifting	√	√	√	√	
Transfer machinery	√	√	√	√	√
Automotive assembly					
Resistance welding	√	√	√	√	
Painting applications	√	√	√	√	√
Transfer machinery	√	√	√	√	√
Packaging machinery					
Primary, secondary, tertiary	√	√	√	√	√
Handling machinery	√	√	√	√	√
Food processing machinery					
Processing machinery	√	√	√	√	√
Packaging machinery	√	√	√	√	√
Handling machinery	√	√	√	√	√
Material handling systems					
Transfer systems	√	√	√	√	√
Pick and place systems	√	√	√	√	√
Metal forming machinery					
Presses	√	√	√	√	√
Tube bending	√	√	√	√	√
Handling machinery	√	√	√	√	√
Machine Tools					
Spindles		√	√		
Ancillary axes		√	√		
Semiconductor machinery					
Front end processes	√	√	√	√	√
Inspection machinery	√	√	√	√	√
Packaging machinery	√	√	√	√	√
Lithography	√	√	√	√	
Medical devices					
Device manufacture	√	√	√	√	√
Product packaging and dispensing	√	√	√	√	√
Scanning equipment	√	√	√		
Pumps and analyzers		√	√		
Entertainment					
Theatre and studio automation	√	√	√	√	
Simulation and amusement rides	√	√	√		
Ski Lifts and snow-making		√	√	√	√

Parker Drives Service and Support

Preventative maintenance

Improve plant reliability and minimize production losses with Parker.

With over 30 years experience of designing, manufacturing and supporting an extensive range of drives and motors, Parker is ideally placed to offer the best possible levels of support to the customers.

With a variety of service and maintenance contracts available to choose from, it is possible to create a custom service package that meets your production needs and ensures that costly downtime is kept to a minimum and plant efficiency is kept at its optimum.



Training

Helping our customers become self-sufficient

Professional product training guarantees that your engineers and technicians are fully conversant and confident with the equipment that controls your process. With a number of different classroom and web-based courses running throughout the year covering all aspects of our drives range and meeting the specific needs of designers, programmers and maintenance staff, Parker provides its customers with the necessary skills to enable them to support their own equipment without the need of external assistance. If it is not convenient to travel to our training facility in Charlotte NC, we will come to you. Ask about our custom on-site training programs.

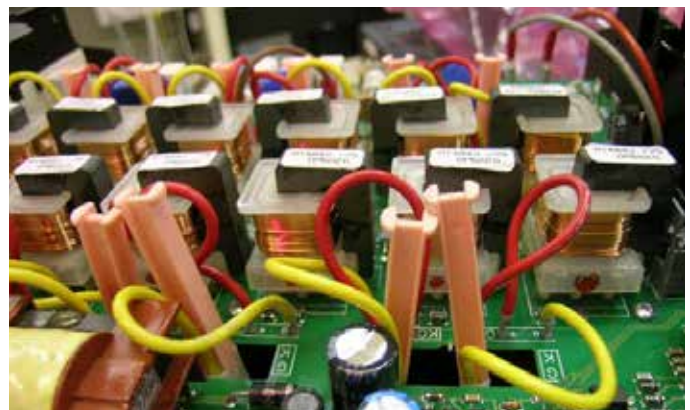
For a full list of currently available courses, please visit our website or ask your local territory manager.



Product Repairs

Any product returned to the dedicated repair facility at our Charlotte NC manufacturing facility undergoes a full visual inspection, professional repair and thorough test. In addition the equipment is updated to the latest relevant build standard and all parts replaced carry a warranty. For urgent situations, we offer an option for quick turnaround.

- **Repair using production parts**
- **Build standard update**
- **Standard or optional full diagnostic report**
- **Rapid turn around options**



Parker Drives Service and Support

Field Service and Commissioning

A dedicated team of Parker drives field service engineers strategically located across the country are available for on-site services.

- **System and drive commissioning and start-up**
- **Repair and replacement of components**
- **Preventative maintenance audits**
- **Software updates and upgrades**
- **Drive and PLC programming**

Call (704) 588-3246 to schedule Field Service



Technical Phone Support

You can count on excellent telephone support from our factory located team of product experts. We do not use an off-site call center, so you can be assured that any technical issues will be dealt with promptly and efficiently by experienced Parker product support engineers.

- **Installation and set-up assistance**
- **Troubleshooting**
- **Spare and replacement part recommendations**
- **System optimization**
- **After-hours support**

Call (704) 588-3246 or
email techsupport.us.ssd@parker.com
for Technical Support

On-line Resources

Delivering information whenever you need it, our website is a valuable source of additional information and provides access to a wide range of documentation at anytime

- **Technical documentation, datasheets**
- **Product hardware and software manuals**
- **Legacy product manual archive**
- **Application notes and case studies**
- **Communication option files**
- **Software downloads and updates**
- **CAD files and ePlan macros**

For more information visit us on-line at:

www.parker.com/ssdusa



Parker Drive Systems Capabilities

Engineered Solutions

Systems Build Capabilities

For customers preferring the convenience of more support in the design and implementation of their control systems, Parker and our network of integrators offer a complete in-house design and build service, enabling you to focus on your core competencies.

Based on the fundamental principles of application expertise, quality, reliability and safety, Parker's systems team are able to undertake all aspects of an electrical control system project, from pre-design specification to on-site installation and cabling services.

By allowing Parker or one of our qualified integrators to undertake the design, build, programming and commissioning of your motor control system, you can be

assured that every aspect of the design, from environmental considerations through component selection to mounting of products has been carefully considered and allowed for.

Fully documenting a complete control system can be a daunting task for many equipment manufacturers, again Parker are on hand to help by providing complete electrical schematic and single line drawings as well as installation, maintenance and operating instructions.

As an accredited systems builder, Parker is also able to undertake the certification process required to enable systems to be put into service in any number of industrial markets.



Total Project Support

From concept to installation and beyond, Parker and our integrator network have a full range of complimentary capabilities to provide as much or as little support to your own team's expertise as you need. With a team of highly qualified and experienced design, build and service engineers, we take the risk out of any capital project by ensuring that all stages of the project are managed and executed precisely to your requirements.

Holding certification to the latest quality standards (ISO 9001 - 2008) means that as a customer, you can be assured of reliable, repeatable quality of design, build and documentation.

Integrators

Parker is pleased to be backed by an extensive array of systems integrators with a plethora of controls experience. Each of our integrators has their own knowledge base in specific fields which allows us to provide support to a broad spectrum of markets. Our integrators offer a means for you to work with local engineering, service and support companies who pride themselves on catering to your facilities needs by improving system processes, eliminating downtime or simply helping you bring new products to market.



Together, we can take control of your applications. As well as your costs, design, quality, delivery, installation, after-sales support ...



Whether you're looking for a single drive in an enclosure for basic speed control, or a multi-bay automated drive system for complex control of a dockyard crane, high-speed printing machine or steel rolling mill, Parker Hannifin's SSD Drives Division has the expertise to deliver. Partnering with Parker SSD provides you with access to a host of additional services, all supplied to the same exacting standards as our AC, DC, systems and servo drive products. So relax and let Parker SSD take control of your panel-build, installation, commissioning and aftersales needs.

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



ENGINEERING YOUR SUCCESS.

Variable Speed AC Drives

Range Overview Fractional to 2000 HP

Global AC Drive Solutions to Improve Productivity and Save Energy

Parker assists its customers in improving productivity and reducing energy consumption with a comprehensive, range of AC drives and drive systems. Parker AC drive products are sold, supported and serviced worldwide, with solutions from simple speed control to complex coordinated process control. Parker AC drive products are easy to configure and commission, with simple but flexible function block-based configuration tools and connectivity with all major industrial fieldbus networks.

Energy Savings Using Variable Speed Drive Technology

The application of variable speed drives to traditional fixed speed applications, such as in pumps, fans and compressors, can yield up to 30% energy savings. In fact, many power utilities and government agencies provide financial incentives to invest in VSD technology. Parker's AC650G and AC650V General Purpose AC drives make these savings possible.

Improving Process Productivity and Reliability

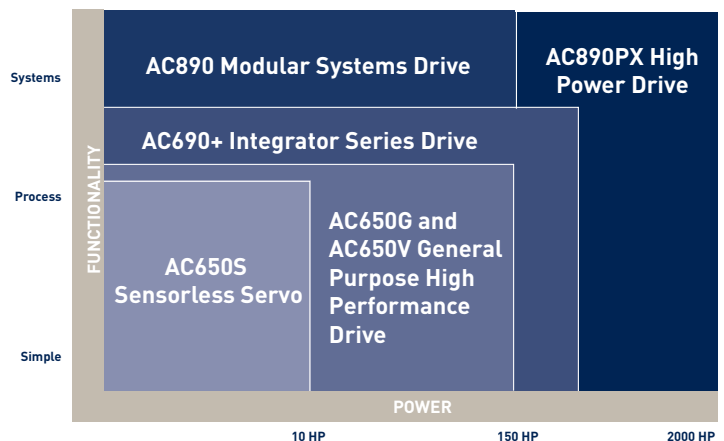
Parker AC drive products also have the functionality, designed and refined from decades of experience, to provide the precise, coordinated speed control, often among multiple motor axes, to ensure process line success.

Compact General Purpose AC Drives: AC650G/V Series

The AC650G and AC650V can run AC induction motors in simple volts/hertz control or sensorless flux vector control. This makes them ideally suited for applications up to 150 HP where improved speed regulation of variable loads and higher starting torques for high inertia systems is required.

- Conveyors
- Centrifugal pumps
- Industrial blowers and fans
- Mixers
- Machine spindles

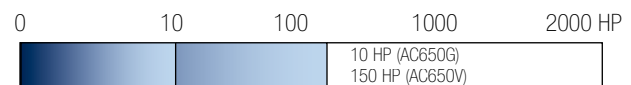
AC Drives Product Range Overview



With high speed communication, easy to use configuration tools and HMI control solutions, Parker AC drives can handle the most complex process control applications.

Clean Power for Additional Energy Savings

Parker's AC drive products are frequently to be found at the heart of clean power solutions through Active Front End and line regeneration technology, producing additional energy savings through power factor control.



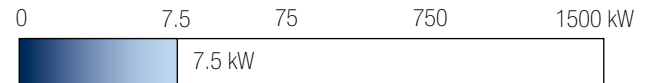
Variable Speed AC Drives

Range Overview Fractional to 2000 HP

Compact Drive for Sensorless Servo Control: AC650S Series

The AC650S series is designed to save energy in general purpose applications by replacing induction motors by more efficient permanent-magnet motors. Easy to commission and maintain, it controls the motor without a speed sensor. The AC650S is an effective solution where:

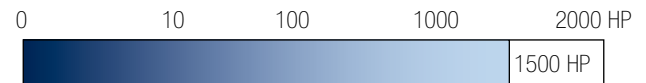
- Energy savings are required: pumps, fans, hydraulic systems, compressors
- Compactness is required: machine tools, packaging machinery, conveyors, winders/unwinders



High Performance Drives for Integrators: AC690+ Series

The AC690+ Integrator series provides high performance motor control for more complex or demanding applications up to 1500 HP. Available with multiple communications and control options for flexibility. Typical applications include:

- Multi-motor drive systems for process lines
- Distributed systems with communications
- High performance test equipment including 4-quadrant regenerative operation



Modular AC Systems Drives: AC890 Series

The AC890 Series is a range of modular AC drives, designed to minimize space and maximize performance in multiple axes applications. This AC890 Series can provide torque, speed and position control and can be configured to control permanent magnet servo motors in addition to induction motors. Available as stand-alone or common bus DC modules. Typical applications include:

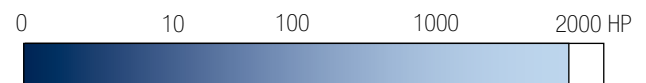
- Printing machinery
- Converting machinery: coating, cutting, laminating
- High performance multi-axis machinery including 4-quadrant regenerative operation



High Power AC/Servo Drives: AC890PX

The AC890PX is a high power modular systems drive designed for industrial and power conversion applications. Available as a standalone drive or as part of a high power drive system, the AC890PX features removable phase and control modules, which allow for simple servicing and flexible system design. Power output to 1800 HP. Typical applications include:

- Extruders
- Pumps and Fans
- Mixers, centrifuges
- Engine dynamometers
- Power conversion inverters





Together, we can drive your productivity up and your energy costs down.



It's widely acknowledged that fitting variable speed drives in pump & fan applications can lead to lower energy consumption, thereby reducing energy bills. Often overlooked are the improvements they deliver to plant performance and reliability. Bearing and belt life, filter blockages and plant uptime are all improved thanks to a reduction in mechanical stresses during start and stop cycles leading to improved productivity and lower maintenance costs. When you partner with the world's leading diversified manufacturer of motion and control technologies, expect to profit from our expertise and experience.

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



ENGINEERING YOUR SUCCESS.

General Purpose High Performance AC Drives

AC650G/V Series AC Drive

0.3 HP - 150 HP

Description

The AC650G and AC650V provide reliable, robust motor control from 0.3 HP through to 150 HP. With sensorless flux vector technology, the AC650G/V allows improved motor control at lower speeds, better speed regulation of variable loads and higher starting torques for high inertia systems. The variable torque configuration option above 7.5 HP makes the AC650V ideally suited to energy saving in pump and fan applications. Simple to install and wire, the AC650G and AC650V use the same configuration software as the rest of the AC drive products.

Features

- High torque sensorless vector control mode for advanced motor control
- Selectable constant torque or economical variable torque rating for centrifugal pump and fan applications, allowing optimum inverter sizing to suit the application
- Fully configurable with **DSE Lite** graphical software tool provided at no additional charge
- Additional user configurable I/O points offering increased control capabilities
- Additional PROFIBUS communications options for integration into PLC systems
- Wall and panel mounting options above 10 HP
- Extended power range to 150 HP makes the AC650V suited to a wide of uses
- Compact size allows high power density in panel and systems applications



www.parker.com/ssdusa/ac650g

www.parker.com/ssdusa/ac650v

Technical Specification

AC650G/V Series AC Drive



Power Supply	Single Phase Input Units 220-240 VAC +/- 10%, 50-60 Hz +/- 5% Three Phase Input Units 380-460 VAC +/- 10%, 50-60 Hz +/- 5%
Operating Temperature	CT: 0°C to 45°C (0-40°C w/top cover) VT: 0°C to 40°C (0-35°C w/top cover) Derate 2% per degree C to max of 50°C
Storage Temperature	-25°C to 55°C
Enclosure Rating	With top cover: UL (c-UL) Type 1/IP20 Without cover: UL (c-UL) Open Type/IP20
Altitude	Up to 1000m ASL (derate 1% per 100m to 2000m max)
Humidity	Max 85% at 40°C non-condensing
Atmosphere	Non flammable, non-corrosive, dust free
Climatic Conditions	Class 3k3 as defined by EN50178 (1998)
Vibration	Test Fc of EN60068-2-6 10Hz<=f<=57Hz sinusoidal 0.075mm amplitude 57Hz<=f<=150Hz sinusoidal 1g 10 sweep cycles per axis on each of three mutually perpendicular axis
Overload	Constant torque rating: 150% for 30 seconds Variable torque rating: 110% for 30 seconds
Output Frequency	0-120 Hz
Analog Inputs	2; Speed Control 0-10V, 0-10V or 4-20mA
Analog Outputs	1; User configurable output frequency/load 0-10V (10mA maximum loading)
Digital Inputs	5 ; User configurable Start/Stop/Direction/pre-set speeds (8)
Digital Inputs / Outputs	2 ; User configurable as inputs or outputs

Digital Relay Outputs	1; Relay output 4A @ 240V All digital outputs configurable for: At (not at) speed At (above) minimum speed Running (stopped) Healthy (tripped) Above (below) pre-set load
Motor Thermistor Input	Standard, supports positive temperature coefficient (PTC) "Type A" thermistor
Power Supply Outputs	24VDC (50mA) - Digital I/O Supply 10VDC (10mA) - Analog reference supply
Communications Options	RS485/RS232 - AC650G/V and AC650 Profibus - AC650G/V only

Standards

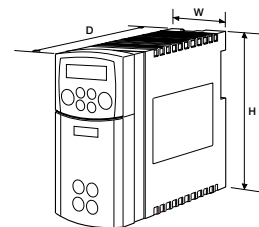
The AC650G/V Series AC drives meet the following standards when installed in accordance with the relevant product manual.

- CE Marked to EN50178 (Safety, Low Voltage Directive)
- CE Marked to EN61800-3 (EMC Directive)
- Units listed in this catalog are UL listed to US Standard UL508C and cUL Listed to Canadian Standard C22.2 #14



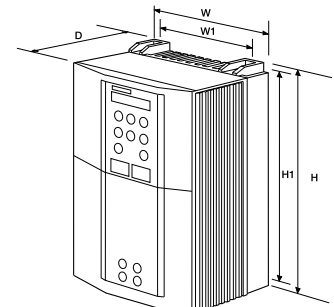
Dimensions (in/mm)

Frame	H	W	D	Weight (lb/kg)
1	5.6/143	2.9/73	5.6/142	2.0/0.85
2	7.9/201	2.9/73	6.8/173	3.0/1.4
3	10.2/260	3.8/96	7.9/200	6.0/2.7



Frame 1,2,3

Frame	Overall Dimensions			Mtg Hole Ctr		Weight (lb/kg)
	H	W	D	H1	W1	
C	13.7/348	7.9/201	8.1/208	13.2/335	5.9/150	20.5/9.3
D	17.8/453	9.9/252	9.6/245	17.3/440	5.9/150	38.4/17.4
E	26.3/669	10.1/257	12.2/312	24.8/630	5.9/150	71.1/32.5
F	28.9/720	10.1/257	13.7/349	27.6/700	5.9/150	90.4/41.0



Frame C, D, E, F



Electrical Characteristics

AC650G-AC650V Series AC Drive

220 – 240Vac (+/-10%) 50-60Hz (+5%) 1 phase supply/3 phase output

AC650G Part Number	AC650V Part Number	Constant Torque		Frame	Built-in Reactor	Built-in Brake Module
		Power (HP/kW)	Output Current (A)			
650G-21115010-001P00-B2	650V/00F3/230/RNN	0.3/.25	1.5	1	No	No
650G-21122010-001P00-B2	650V/00F5/230/RNN	0.5/.37	2.2	1	No	No
650G-21130010-001P00-B2	650V/00F7/230/RNN	0.75/.55	3.0	1	No	No
650G-21140010-001P00-B2	650V/0001/230/RNN	1/.75	4.0	1	No	No
650G-21170020-001P00-B2	650V/0002/230/RNN	2/1.5	7.0	2	No	No

220 – 240Vac (+/-10%) 50-60Hz (+5%) 3 phase supply/3 phase output

AC650G Part Number	AC650V Part Number	Constant Torque		Variable Torque		Frame	Built-in Reactor	Built-in Brake Module
		Power (HP/kW)	Output Current (A)	Power (HP/kW)	Output Current (A)			
650G-22196030-B01P00-B2	650V/0003/230/RBN	3/2.2	9.6	N/A	N/A	3	No	Yes
650G-23216430-B01P00-B2	650V/0005/230/RBN	5/4	16.4	N/A	N/A	3	No	Yes
-	650V/0007/230/1BN	7.5/5.5	22	10/7.5	28	C	DC	Yes
-	650V/0010/230/1BN	10/5.5	28	15/11	42	C	DC	Yes
-	650V/0015/230/1BN	15/11	42	20/15	54	D	DC	Yes *
-	650V/0020/230/1BN	20/15	54	25/18.5	68	D	DC	Yes *
-	650V/0025/230/1BN	25/18.5	68	25/18.5	68	D	DC	Yes *
-	650V/0030/230/1BN	30/22	80	40/30	104	E	DC	Yes *
-	650V/0040/230/CBN	40/30	104	50/37.5	130	F	AC	Yes *
-	650V/0050/230/CBN	50/37	130	60/45	154	F	AC	Yes *
-	650V/0060/230/CBN	60/45	154	75/55	192	F	AC	Yes *

380 – 460Vac (+/-10%) 50-60Hz (+5%) 3 phase supply/3 phase output

AC650G Part Number	AC650V Part Number	Constant Torque			Variable Torque			Frame	Built-in Reactor	Built-in Brake Module
		Power (HP/kW)	Output Current (A)		Power (HP/kW)	Output Current (A)				
			400V	460V		400V	460V			
650G-43115020-B01P00-B2	650V/00F5/460/RBN	0.5/.37	1.5	1.5	-	-	-	2	No	Yes
650G-43120020-B01P00-B2	650V/00F7/460/RBN	0.75/.55	2	2	-	-	-	2	No	Yes
650G-43125020-B01P00-B2	650V/0001/460/RBN	1/.75	2.5	2.5	-	-	-	2	No	Yes
650G-43145020-B01P00-B2	650V/0002/460/RBN	2/1.5	4.5	4.5	-	-	-	2	No	Yes
650G-43155020-B01P00-B2	650V/0003/460/RBN	3/2.2	5.5	5.5	-	-	-	2	No	Yes
650G-43190030-B01P00-B2	650V/0005/460/RBN	5/4	9	9	-	-	-	3	No	Yes
650G-43212030-B01P00-B2	650V/0007/460/RBN	7.5/5.5	11	11	-	-	-	3	No	Yes
650G-43216030-B01P00-B2	650V/0010/460/RBN	10/7.5	16	14	-	-	-	3	No	Yes
-	650V/0015/460/1BN	15/11	23	21	20/15	30	27	C	DC	Yes
-	650V/0020/460/1BN	20/15	30	27	25/18.5	37	34	C	DC	Yes
-	650V/0025/460/1BN	25/18.5	38	38	30/22	45	45	D	DC	Yes *
-	650V/0030/460/1BN	30/22	45	45	40/30	59	52	D	DC	Yes *
-	650V/0040/460/1BN	40/30	59	52	50/37	73	65	D	DC	Yes *
-	650V/0050/460/1BN	50/37	73	73	60/45	87	87	E	DC	Yes *
-	650V/0060/460/1BN	60/45	87	87	75/55	105	105	E	DC	Yes *
-	650V/0075/460/CBN	75/55	105	100	100/75	145	125	F	AC	Yes *
-	650V/00100/460/CBN	100/75	145	130	125/90	165	156	F	AC	Yes *
-	650V/00125/460/CBN	125/90	180	156	150/110	205	180	F	AC	Yes *
-	650V/00150/460/CBN	150/90	180	180	150/110	205	180	F	AC	Yes *

* To delete brake switch, change second to last character from "B" to "N" (Frames D, E, F).

To add RFI filter to AC650V, change last character from "N" to "F" (Frames 1, 2, 3 only). For AC650G, change 14th character.

Units with character "C" in third-to-last position are chassis drives.

Overload rating is 150% for 30 seconds for Constant Torque, or 110% for 30 seconds for Variable Torque.

Application Profile

Energy Savings - Fan applications

Parker AC650V Drives help British Airways achieve 95% energy reduction for air handling system



Summary

The environmental control systems managing the ambient temperature for each of British Airways' flight simulator cells contained fixed-speed motor-driven air handling units. The fan drive motors operated continuously at maximum speed, regardless of demand or simulator use, which accounted for a significant proportion of the energy consumed by each cell and also led to increased wear and tear on components such as belts, bearing and filters.

Parker's AC650V General Purpose High Performance AC drives were added to the air handling systems and connected to a new building management system, producing significant energy savings of 95% and reducing maintenance, including air filters and motor components. Results were immediate, with a payback period of under two years.

Benefits

- **95% reduction in energy consumption**
- **Efficient speed control of fan drive motors**
- **Less wear and tear of mechanical components**
- **Reduced maintenance and increased system availability**
- **Communication to BMS system allows instant changes to be implemented**
- **Simple interface allows for future modifications**

Parker Drives Solution



AC650V Drive

- Easy to configure, even for more complex applications
- Retrofittable in existing motor applications
- Industry compatible I/O and communications
- Broad power range to 150 HP

Engineered Solution

- Integration with external control system
- Available in IP54 'Packaged Drive' format
- Local technical support

Compact Drive for PMAC Sensorless Control

AC650S Series

0.25kW - 7.5kW

Description

The AC650S series is designed to save energy in general purpose applications by replacing traditional three phase induction motors with more efficient and physically smaller permanent magnet AC (PMAC) motors like the NX series.

Easy to commission and maintain, and with a similar look and feel

to the AC650G and AC650V, it provides simple speed and direction control of the motor without the need for a feedback device and the associated wiring.

The AC650S is available in three frame sizes, covering applications up to 1.5kW with 230V supply and up to 7.5kW with 460V three-phase supply.



Side-by-side mounting reduces cabinet space, increases power density on panels.

Energy savings achieved when using a permanent-magnet motor instead of an induction motor can amount to up to 12%, thanks to the higher efficiency of permanent magnet motors.

The AC650S comes with one **PID controller**. It can be set to control process parameters like pressure or flow rate.

A **cloning module** is available as an option for **easy maintenance**. It allows 10 drive configurations to be saved without a PC.

Sensorless motor control removes the need for a speed sensor, which improves the system reliability and reduces cost.

Easy commissioning thanks to built-in application macros for the most common applications and free setup wizard.

Option for **Built-in filter** for EMC compliance to EN61800-3.



Typical applications

Used in combination with AC650S drives, Parker NX and EX Series permanent magnet motors are available as alternatives to induction motors in the following applications:

- When **energy savings** are important: conveyers, fans, pumps, blowers, hydraulic systems, extruders...

- In **compact machines**, when compact drive solutions are required or where electrical enclosure space is limited: machine-tools, packaging machines, winders/unwinders, special-purpose machines ...

www.parker.com/ssdusa/ac650s

Compact Drive for PMAC Sensorless Control

AC650S Series

0.25kW - 7.5kW



Energy savings and compact size

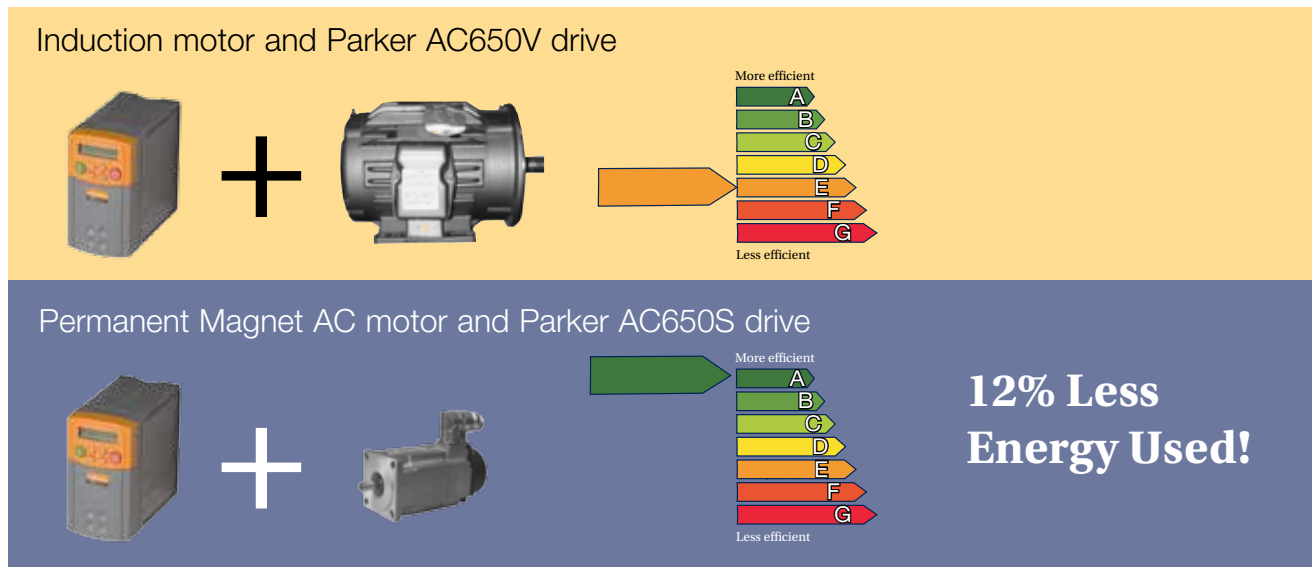
The AC650S Compact PMAC drive series features an advanced sensorless control algorithm for controlling permanent-magnet AC motors.

delivers impressive performance and high energy efficiency, which in turn leads to lower energy usage than with conventional induction motors.

machines when compared to standard induction motors of the same size. In some cases PMAC motors can be as much as 75% smaller than their induction motor equivalents.

When used with Parker's high efficiency permanent-magnet motors, the AC650S

The use of PMAC motors also enables machine builders to design smaller



Extremely compact solution for smaller machines

Parker PMAC motors have high power density, and are up to 75% smaller than the same power induction motors, which enables you to make ultra-compact machines. Furthermore, compared to induction motors, PMAC motors are available with a very economical brake option and have no need for force ventilation.



For a complete selection of Parker PMAC servo motors, please see page 114.

Minimal electrical enclosure space requirements

The AC650S is one of the smallest drives of its kind on the market today. Leading thermal design and management enables the AC650S to

be mounted side-by-side with other AC650 series drives in the electrical cabinet. This in turn reduces the size and cost of the enclosure and helps

to improve the overall envelope of the machine, making more compact designs possible.

Compact Drive for PMAC Sensorless Control

AC650S Series

0.25kW - 7.5kW



Technical Specification

Power Supply	Single Phase Input Units: 220-240 VAC +/- 10%, 50-60 Hz +/- 5% Three Phase Input Units: 380-460 VAC +/- 10%, 50-60 Hz +/- 5%
Operating Temperature	CT: 0°C to 45°C (0-40°C w/top cover) VT: 0°C to 40°C (0-35°C w/top cover) Derate 2% per degree C to max of 50°C
Storage Temperature	-25°C to 55°C
Protection	IP20
Altitude	Up to 1000m ASL (derate 1% per 100m to 2000m max)
Humidity	Max 85% at 40°C non-condensing
Atmosphere	Non flammable, non-corrosive, dust free
Climatic Conditions	Class 3k3 as defined by EN50178 (1998)
Vibration	Test Fc of EN60068-2-6 10Hz<=f<=57Hz sinusoidal 0.075mm amplitude 57Hz<=f<=150Hz sinusoidal 1g 10 sweep cycles per axis on each of three mutually perpendicular axis
Overload	150% for 30 seconds
Output Frequency	0-500 Hz
Analog Inputs	2; 0-10V, 0-10V/4-20mA
Analog Outputs	2; 0-10V, load <10mA
Digital Inputs	5 ; User configurable 15V to 24VDC
Digital Relay Output	1; Relay output 4A@240V
Motor Thermistor Input	Standard PTC "Type A" supported

User Selectable pre-programmed application macros

Basic speed control

voltage or current source speed demand with digital start/stop and direction.

Manual/Auto control

switch between a local or remote speed demand signal

Preset speeds

select up to 8 pre-programmed speeds selected by digital inputs.

Raise/Lower control

increase and decrease speed from raise / lower digital inputs.

PID control

control pressure, flow, temperature or other variable by monitoring transducer feedback

Programming port

RS232 - standard

Standards

The AC650S series of AC drives meets the following standards when installed in accordance with the relevant product manual:

- CE Marked to EN50178 (Safety, Low Voltage Directive)
- CE Marked to EN61800-3 (EMC Directive)
- Units listed in this catalog are UL listed to US Standard UL508C and cUL Listed to Canadian Standard C22.2 #14



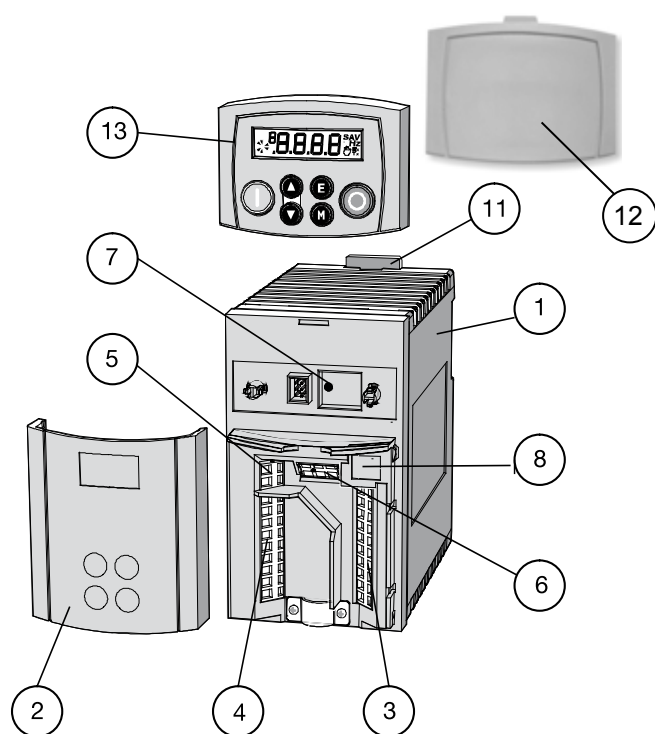
Electrical Characteristics

Part Number	Supply voltage	Power (KW/HP)	Output current (A)	Frame	Overload
650S-21140010-0*1P00-A1	230V 1ph	0.75/1.0	4	1	150% x 30 sec
650S-21170020-0*1P00-A1		1.5/2.0	7	2	
650S-43125020-B*1P00-A1	460V 3ph	0.75/1.0	2.5	2	
650S-43155020-B*1P00-A1		2.2/3.0	5.5	2	
650S-43190030-B*1P00-A1		4.0/5.0	9	3	
650S-43216030-B*1P00-A1		7.5/10	16	3	
The models listed below are available for special order only (minimum quantities apply) - Please consult your local sales office for details					
650S-21115010-0*1P00-A1	230V 1ph	0.25/0.3	1.5	1	150% x 30 sec
650S-21122010-0*1P00-A1		0.37/0.5	2.2	1	
650S-21130010-0*1P00-A1		0.55/0.75	3	1	
650S-21155020-0*1P00-A1		1.1/1.5	5.5	2	
650S-43115020-B*1P00-A1	460V 3ph	0.37/0.5	1.5	2	
650S-43120020-B*1P00-A1		0.55/0.75	2	2	
650S-43135020-B*1P00-A1		1.1/1.5	3.5	2	
650S-43145020-B*1P00-A1		1.5/2.0	4.5	2	
650S-43168030-B*1P00-A1		3.0/4.0	6.8	3	
650S-43212030-B*1P00-A1		5.5/7.5	12	3	

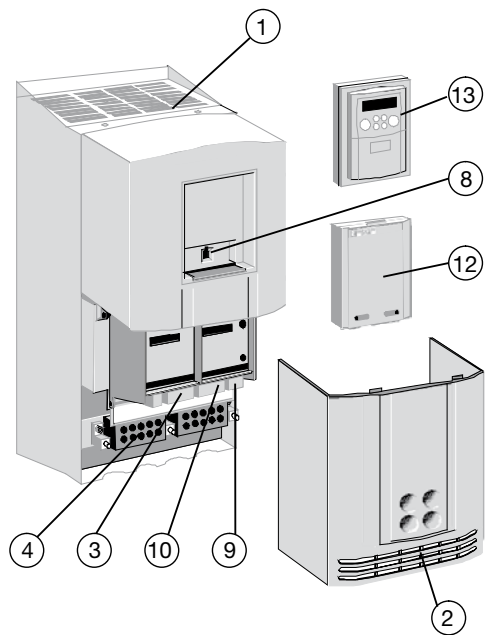
* = 0, drives with no EMC filter ; * = F, for drives with built-in EMC filter

Accessories and Options

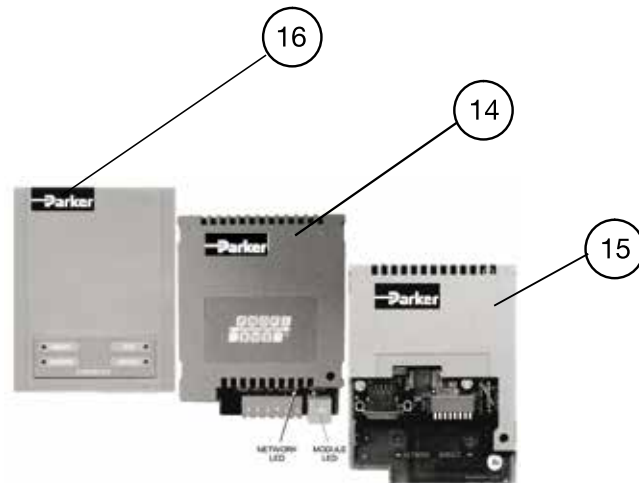
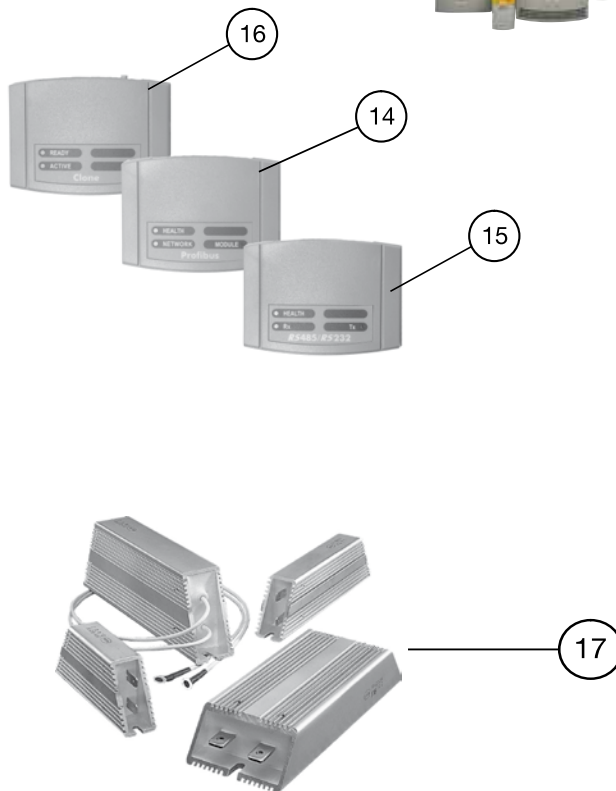
AC650G/AC650V/AC650S Series AC Drive



Frames 1 - 3, up to 10 HP



Frames C - F, up to 150 HP



Accessories and Options

AC650G/AC650V/AC650S Series AC Drive



Options /Features		Frame	Compatible Drive	Fitting	Part Number	Page
AC Drives						
1	Inverter housing	1 – F	All	Standard	Included in base drive part number	N/A
2	Terminal Cover (simplified wiring diagram)	1 – F	All	Standard		
3	Control wiring terminals	1 – F	All	Standard		
4	Power wiring terminals	1 – F	All	Standard		
5	Volt-free relay contact	1 – F	All	Standard		
6	Encode / Digital Inputs	1 – F	All	Standard		
7	Power On LED	1 – F	All	Standard		
8	RS232 P3 port for remote mounting of operator keypad	1 – F	All	Standard		
9	RS232 P3 port for programming	C – F	AC650V	Standard		
10	RS485 port	C – F	All	Standard		
11	DIN Rail mounting clip	1 – 3	All	Standard	BD467732U002 LA500326U001	27
12	Front cover (Blank)	1 – 3 C – F	All AC650V	Option Option		
Operator keypad						
13	TTL keypad (local mounting only)	1 – 3	All	Standard	6511/TTL/00	26
	RS232 keypad (remote mountable)	1 – 3	All	Option	6511/RS232/00	
		C – F	AC650V	Standard	6521/00/G	
Communication						
14	Profibus communications card (Not applicable to AC650)	1 – 3	All	Option	6513/PROF/00	27
		C – F	AC650V	Option	6523/PROF/00	
15	RS232/RS485 communication card (Modbus RTU, EI Bisync F1/3)	1 – 3	All	Option	6513/EI00/00	26
		C – F	AC650G/V	Option	See part numbers	
Other options						
16	Cloning module	All	All	Option	6514/00	26
17	Brake resistor	All	All	Option	See table	28
18	Conformal coating	C - F	All	Option	.../083	28
19	Vent Kit	E	AC650V	Option	LA466717U004	28
		F	AC650V	Option	LA466717U003	
20	EMC/RFI Filters	All	All	Option	See part numbers on Page 19 for frame 1-3, table on page 110 for C-F	19, 110

Options

AC650G/AC650V/AC650S Series AC Drive

Cloning Module

Description

The cloning module can be used with all drives in the AC650 family. It allows the user to store up to 10 separate drive configurations which can then be transferred between different drives. The configurations can be mapped between different drive sizes. This is an invaluable tool for commissioning or plant maintenance personnel allowing drives to be backed up and re-configured simply and easily.



Product Details

Part Number	Description	Suitable for
6514/00	Cloning Module	AC650G, V, S

RS485 Modbus Interface

Description

The RS485/RS232 communications interface provides serial data communication, allowing an AC650G/V or AC650S drive to connect to a Modbus RTU network as a slave station.

Product Details

Part Number	Description	Suitable for
6513/E100/00	RS485/RS232 Communications Interface	AC650G, V, S Frames 1, 2, 3



Features

- Protocols : ModBus RTU or EI-ASCII
- Compatible with AC650V/650S versions 4.x and above
- Connection by shielded twisted pair cable (RS485)
- Connection by shielded 3 core cable (RS232)
- Configuration of input function blocks
- Baud rate configurable by software
- Slave address configurable by software
- Direct access to all drive parameters

Operator Keypads

Description

A standard local keypad with LCD display, used for basic drive operation and parameter setting, is provided with every drive. Keypad is removeable, and may be remote mounted with the addition of mounting kit and cable.



6521/00/G
(Shown with mounting kit 6052/00/G)



6511/xxxx/00

Product Details

Part Number	Description	Suitable for
6511/TTL/00	TTL keypad (local mounting)	AC650 Frames 1 - 3
6511/RS232/00	RS232 keypad (remote mountable) Requires 3m cable CM057375U300	AC650G, V, S Frames 1 - 3
6521/00/G	RS232 keypad (remote mountable) Requires mounting kit 6052/00/G	AC650V Frames C - F

Options

AC650G/AC650V/AC650S Series AC Drive



Profibus-DP Interface

Description

The PROFIBUS option supports the PROFIBUS-DP PROFIBUS protocol, designed specifically for communication between a PLC system and remote I/O.

The Profibus interface enables the drive to connect to a Profibus-DP network as a slave station.

Features

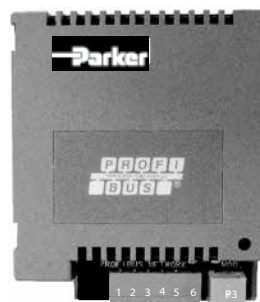
- Profibus-DP network
- Connection by shielded twisted pair
- Baud rate configurable by software up to 12M Baud
- LED indication of card and communication status
- Compatible with AC inverters AC650G/V version 4.9+

Product Details

Part Number	Description	Suitable for
6513/PROF/00	Profibus-DP communications interface	AC650G, V, S Frames 1, 2, 3
6523/PROF/00	Profibus-DP communications interface	AC650V Frames C, D, E & F



6513/PROF/00



6523/PROF/00

Keypad Blanking Cover

Description

The keypad blanking cover kit may be used when local keypad is not installed. Kit includes light pipes for LED's.

Product Details

Part Number	Description	Suitable for
BD467732U002	Blanking Cover	All Frames 1 - 3
LA500326U001		AC650V Frame C-F



BD467732U002

Options

AC650G/AC650V/AC650S Series AC Drive

Dynamic Braking

D/B Kit includes resistor, overload, protective cage, and enclosure top or panel mounting						
Part Number	Drive Voltage	Nominal Power - CT (HP)	Ohms	Amps	Watts	Dimensions (in) LxWxH
LA471358	230	3, 5	56	1.9	202	6.5 x 1.2 x 2.4
LA471406	230	7.5, 10	30	3.5	368	13.5x4x5
LA471386	230	15	15	5	375	13.5x4x5
LA471378	230	20, 25	10	8.7	757	13.5x7x5
LA471407	230	30	7	10.4	757	13.5x7x5
LA471379	230	40	6	13.7	1126	13.5x10x5
LA471380	230	50, 60	4	19.4	1505	13.5x13x5
LA471353	460	0.5, 0.75, 1, 1.5	500	0.35	60	4x1x2
LA471355	460	2, 3	200	0.71	100	6.5x1x2
LA471356	460	5	100	1	100	6.5x1x1.6
LA471357	460	7.5	100	1.42	200	6.5x1.2x2.4
LA471358	460	10	56	1.89	200	6.5x1.2x2.4
LA471359	460	15	56	2.99	500	13.2x1.2x2.4
LA471405	460	20	60	3.5	735	13.5x7x5
LA471361	460	25, 30	30	5	750	13.5x7x5
LA471350	460	40	22.5	7.1	1134	13.5x10x5
LA471364	460	50	18	7.9	1123	13.5x10x5
LA471365	460	60	15	8.7	1135	13.5x10x5
LA471367	460	75, 100	8	13.7	1502	13.5x13x5
LA471369	460	125, 150	6	19.4	2258	13.5x10x5

Conformal Coating

For environments that have dusty, humid or corrosive atmospheres, the AC650 family can optionally be supplied with conformally coated circuit boards that improve the drive's resistance to corrosion, thereby increasing reliability and service life. Environments that typically benefit from conformal coating include:

- Water and wastewater treatment plants
- Paper and pulp processing mills
- Steel mills
- Marine and offshore
- Outdoor cranes
- Wind & wave power generation
- Food and chemical processing plants

Part Number	Description	Suitable for
Add /083 to part #	Conformal coating	AC650V Frame C-F

Vent Kit

For two largest frame sizes, optional vent ducting kits are available. These kits provide a convenient means of venting hot exhaust air from the panel-mounted AC650V drive. The kit includes a duct, attached to the top of the drive and the roof of your enclosure, and an air exhaust hood for mounting on the top of the enclosure. Mounting hardware and gasket are provided in the kit. Installation will require a rectangular hole and six mounting bolt holes to be cut through the top of your enclosure.

Part Number	Description	Suitable for
LA466717U004	Vent Kit	AC650V Frame E
LA466717U003	Vent Kit	AC650V Frame F



Integrator Series AC Drives

AC690+ Series AC Drive

AC Drives 1 HP - 1500 HP



Description

The AC690+ Series is a single range of AC drives designed to meet the requirements of all variable speed applications from simple single motor speed control through to the most sophisticated integrated multi-drive systems.

The heart of the AC690+ is a highly advanced 32-bit microprocessor based motor control model. This provides an exceptional dynamic performance platform to which can be added a host of communications and control options, enabling you to tailor the drives to meet your exact requirements.

The AC690+ is available in 380-500V 3-phase 1 to 1500 HP and 220V-240V 1 to 60 HP, including single phase input for 1 to 3 HP.

Modes of Operation

The AC690+ can be user configured for different modes of operation:

Open-loop (volts/frequency) control

This mode is ideal for basic motor speed control, or multiple motors driven in parallel. The quick set-up menu and plain language display ensures the quickest and easiest, trouble free start up.

Sensorless vector control

High starting torque and tight speed regulation is provided by a sophisticated MRAS (Model Reference Adaptive System) motor control strategy. MRAS provides accurate speed simulation (without the need for any speed measuring transducer) by continually modelling the motor.

Closed-loop vector control

Full closed-loop flux vector performance can be achieved with the AC690+ by simply adding an encoder feedback 'technology box'. This provides 100% continuous full load standstill torque plus a highly dynamic speed loop (up to 45 Hz bandwidth); more than sufficient for the most demanding of applications.

Line Regenerative

Some applications require full four quadrant operation or extensive braking capabilities. The AC690+ series offers an energy efficient alternative to dynamic braking resistors in its Active Front End (AFE) unit. The AFE allows regenerative power to be returned to the grid safely and efficiently, and at unity power factor. The AC690+ AFE can also be used for situations that require ultra-low harmonics. An AFE package is offered, complete with LCL filter and other required components. See page 35 for details.

www.parker.com/ssdusa/ac690plus

Integrator Series AC Drive

AC690+ Series AC Drive

AC Drives 1 HP - 1500 HP

Features

Encoder feedback option with encoder technology box

The AC 690+ is converted from open-loop control to high performance closed-loop control by simply adding the plug-in encoder feedback technology box.

High performance systems expansion module

The optional add-on “systems” expansion module is available for more advanced applications and includes phase locking between drives and register control. It fits behind the main control board and provides the following functionality:

- 5 configurable digital Inputs/ outputs
- Converts existing 4 analog inputs to high resolution (12 bit plus sign)
- 2 encoder inputs
- 2 high speed register mark inputs

Integrated function blocks

- Winder Control
- Process PID
- Raise/Lower
- Spinning Load Start



Open standard fieldbus communications

The AC690+ has a host of communication technology box options allowing seamless multi-vendor integration into networked systems using the most common industrial fieldbus communications protocols :

- Profibus-DP
- Ethernet
- DeviceNet
- Modbus RTU
- CANbus

Mechanical protection options to suit all environments

A choice of mechanical protection options allows the drive to be mounted in a variety of different operating environments.

- **IP20** – for mounting inside an electrical enclosure.
- **IP40/NEMA 1** – The top cover, with cable gland plate enables the drive to be directly wall or machine mounted. (Sold as an accessory for frames B to E)
- **IP54** – Ideal for mounting in aggressive environments. Higher levels of protection are available as a special build option on request. A multitude of control options can be added to the drive using our Packaged Drive service.
- **Through-panel mounting** - This option allows the drive to be mounted with the major heat producing components and heatsink outside the enclosure, keeping the electronics clean and cool. (Frames C,D, and E)

Programming/Operator controls

The AC690+ HMI keypad comes standard with the drive, and provides access to all of the drive's functions in a logical and intuitive manner. The readout is backlit and displays all functions in plain language and engineering units. The HMI can be mounted on the drive itself, or alternatively it can be supplied loose, with a mounting kit, for mounting remotely on a panel door, for example.

Integrator Series AC Drive

AC690+ Integrator Series AC Drive

AC Drive 1 HP - 1500 HP

Vector control with / without encoder feedback

Power ratings 1 HP - 1500 HP

Pre-programmed application Macros

Programmable over communications

Programming identical to DC590+ DC drive

Variable torque ratings

Class B EMC filters



AC690+

Technical Specification

Power Supply	380-460V (±10%) 3-phase 1 to 1500 HP 380-500V (±10%) 3-phase 2.2 to 110kW 220-240V (±10%) 1-phase 1 to 3 HP 220-240V (±10%) 3-phase 1 to 60 HP
Operating Temperature	Constant torque - 0-45°C (40°C with IP40 cover) Derate 2% per degree C to 50°C max (Frame B-F) Derate 1% per degree C to 50°C max (Frame G-J) Derate 1.5% per degree C to 50°C max (Frame K)
Altitude	Maximum altitude: 1000m (Derate by 1% for every 100m above 1000m to 2000m maximum)
Overload	Constant torque: 150% for 60 seconds, 180% for 1 second Variable torque: 110% for 60 seconds
Output Frequency	Volts/Hertz mode: 0-590 Hz Sensorless Vector mode: 0-120 Hz Closed Loop Vector mode: 0-300 Hz
Switching Frequency	Frame B: 3,6 or 9kHz Frame C, D, E and F: 3 or 6kHz All with audibly silent switching frequency
Dynamic Braking	Each drive includes an internal dynamic brake switch as standard
Analog Inputs	4 Configurable, 10 bits (13 bits with optional system card). 0-10V, 0-±10V, 0-20mA, 4-20mA
Analog Outputs	3 Configurable, 10 bits. 0-10V, 0-±10V, 0-20mA, 4-20mA
Digital Inputs	7 Configurable, nominal 24VDC (30VDC max)
Digital Outputs	3 Configurable, relay contacts 3A/230 VAC
Reference Supplies	+10VDC, -10VDC, +24VDC
Motor Thermistor Input	Yes

Function Block Programming	Function block programming allows a tremendously flexible control structure to be created with ease. An almost infinite combination of user functions can be realized often alleviating the need for an external PLC. However, the drive is pre-configured so it can be used straight from the box as a standard AC drive without further adjustment.
Analog Functions	If So, summing, subtractor, multiplier, divider, if higher then lower then If, Counter, Timer
Boolean Functions	Not, And, Nand, Or, Nor, Xor, Trigger, Flip-Flop
Application Macros	Simple speed control, Forward/Reverse, Raise/Lower, Process PID, Preset speeds, Winder control.
6901 Operator Keypad	The 6901 keypad is designed for setting-up, configuring and operating the AC690+ drive. The intuitive menu navigation and parameter display is simple and easy to use. Main features: <ul style="list-style-type: none"> • Remote mounting capability on front of enclosure • Backlit display • Multilingual 2x16 alphanumeric display • Customizable display • Local Control: Speed setpoint, Start/Stop, Jog and Direction • Password protection • Quick set-up mode
Systems Expansion Module	The optional systems expansion module allows for advanced applications such as phase locking between drives and register control. Key features include: <ul style="list-style-type: none"> • 5 Additional user configurable Inputs / Outputs • 4 High resolution analog inputs (12 bits plus sign) • 2 Additional encoder inputs • 2 High speed register mark inputs • Encoder slave repeater

Integrator Series AC Drive

AC690+ Series AC Drive

K-Frame 600 HP - 1500 HP



Energy Savings

Fast return on investment in pump and fan applications

Improved power factor

Flux vector control with or without encoder and V/F control

Reduced harmonics through 12 or 18 pulse coupling

Improved HVAC control

Standards

The AC690+ series meets the following standards when installed in accordance with the relevant product manual.

CE Marked to EN50178 (Safety, Low Voltage Directive)

CE Marked to EN61800-3 (EMC Directive)

Units listed in this catalog are UL listed to US Standard UL508C and cUL Listed to Canadian Standard C22.2 #14



Specifications

6 pulse Model	Power Rating	Constant torque : 600 - 1500 HP Variable torque : 700 - 1600 HP
	Supply Voltage	380-460Vac ($\pm 10\%$) 3-phase
	Disconnect Switch	Standard
	Input Inductance	Standard for limiting harmonic current
	Output Choke	Standard
	Operator Panel	6901 operator keypad mounted on enclosure door
12 pulse Model (option)	Harmonics	Reduced harmonic current
	Power Rating	Constant torque : 600 - 1000 HP Variable torque : 700 - 1500 HP
	Supply Voltage	380-460Vac ($\pm 10\%$) 3-phase
	Disconnect Switch	Standard
	Input Transformer	(not included in the enclosure) optional 2 secondaries U/D
	Output Choke	Standard
18 pulse Model (option)	Harmonics	Total harmonic distortion (current) in accordance with limits of IEEE 519 (1992)
	Power Rating	Constant torque : 900 - 1500 HP Variable torque : 1000 - 1600 HP
	Supply Voltage	380-460Vac ($\pm 10\%$) 3-phase
	Disconnect Switch	Standard
	Input Transformer	(not included in the enclosure) optional 3 secondaries phase shifted by 20°
	Output Choke	Standard
	Operator Panel	6901 operator keypad mounted on enclosure door



Electrical Characteristics

AC690+ Integrator Series AC Drive

Power Supply 220-240V (±10%) 50/60 Hz

Part Number	Phases	Frame	Constant Torque		Variable Torque		Inductance	Braking Module
			Power (HP/kW)	Output Current (A)	Power (HP/kW)	Output Current (A)		
690+0001/230/CBN1	1	B	1/7.5	4.0	-	-	No	Yes
690+0003/230/CBN1	1	B	3/2.2	10.5	-	-	No	
690+0001/230/CBN	3	B	1/7.5	4.3	-	-	No	
690+0003/230/CBN	3	B	3/2.2	10.5	-	-	DC	
690+0005/230/CBN	3	B	5/4	16	-	-	DC	
690+0015/230/CBN	3	D	15/11	42	20/15	54	DC	
690+0030/230/CBN	3	E	30/22	80	40/30	104	DC	
690+0040/230/CBN	3	F	40/30	104	50/37	130	AC	
690+0050/230/CBN	3	F	50/37	130	60/45	154	AC	
690+0060/230/CBN	3	F	60/45	154	75/55	192	AC	

Power Supply 380-460V (±10%) 50/60 Hz 3-phase

Part Number	Phases	Frame	Constant Torque			Variable Torque			Inductance	Braking Module
			Power (HP/kW)	Output Current (A)		Power (HP/kW)	Output Current (A)			
				400V	460V		400V	460V		
690+0001/460/CBN	3	B	1/7.5	2.5	2.5	-	-	-	-	Yes
690+0002/460/CBN	3	B	2/1.5	4.5	4.5	-	-	-	-	
690+0003/460/CBN	3	B	3/2.2	5.5	5.5	-	-	-	-	
690+0005/460/CBN	3	B	5/4	9	9	-	-	-	-	
690+0010B/460/CBN	3	B	10/6	14	14	-	-	-	-	
690+0015/460/CBN	3	C	15/11	23	21	20/15	30	27	DC	
690+0020C/460/CBN	3	C	20/15	30	27	25/18.5	37	34	DC	
690+0030/460/CBN	3	D	30/22	45	45	40/30	59	52	DC	
690+0040D/460/CBN	3	D	40/30	59	52	50/37.5	73	65	DC	

Constant Torque ratings provide 150% overload for 60 seconds. Variable Torque ratings provide 110% overload for 60 seconds
To add System Expansion Module (page 44) change last character in part number from "N" to "S"

Electrical Characteristics

Power Supply 380-460V (±10%) 50/60 Hz 3-phase

AC690+ Integrator Series AC Drive

Part Number	Phases	Frame	Constant Torque			Variable Torque			Inductance	Braking Module
			Power (HP/kW)	Output Current (A)		Power (HP/kW)	Output Current (A)			
				400V	460V		400V	460V		
690+0050/460/CBN	3	E	50/37	73	73	60/45	87	87	AC	Yes
690+0060/460/CBN	3	E	60/45	87	87	75/55	105	100	AC	
690+0075/460/CBN	3	F	75/55	105	100	100/75	145	125	AC	
690+0100/460/CBN	3	F	100/75	145	130	125/90	165	156	AC	
690+0150/460/CBN	3	F	150/90	180	180	150/110	205	180	AC	
690+0200/460/CNN	3	G	200/132	250	250	250/150	302	302	External	No
690+0200/460/CBN	3	G	200/132	250	250	250/150	302	302	External	Yes
690+0300/460/CNN	3	G	300/180	361	361	350/220	420	420	External	No
690+0300/460/CBN	3	G	300/180	361	361	350/220	420	420	External	Yes
690+0350/460/CNN	3	H	350/220	420	420	400/250	480	480	External	No
690+0350/460/CBN	3	H	350/220	420	420	400/250	480	480	External	Yes
690+0450/460/CNN	3	H	450/280	520	520	500/315	590	590	External	No
690+0450/460/CBN	3	H	450/280	520	520	500/315	590	590	External	Yes
690+0500/460/CNN	3	J	500/315	590	590	550/355	650	650	External	No
690+0500/460/CBN	3	J	500/315	590	590	550/355	650	650	External	Yes
690+K0600/460/2G/N	3*	K	600	-	685	700	-	798	AC	No
690+K0600/460/2G/B	3*	K	600	-	685	700	-	798	AC	Yes
690+K0700/460/2H/N	3*	K	700	-	798	800	-	912	AC	No
690+K0700/460/2H/B	3*	K	700	-	798	800	-	912	AC	Yes
690+K0800/460/2H/N	3*	K	800	-	988	900	-	1120	AC	No
690+K0800/460/2H/B	3*	K	800	-	988	900	-	1120	AC	Yes
690+K0900/460/3G/N	3**	K	900	-	1028	1000	-	1197	AC	No
690+K0900/460/3G/B	3**	K	900	-	1028	1000	-	1197	AC	Yes
690+K1000/460/2J/N	3*	K	1000	-	1120	1100	-	1235	AC	No
690+K1000/460/2J/B	3*	K	1000	-	1120	1100	-	1235	AC	Yes
690+K1000/460/3H/N	3**	K	1000	-	1197	1200	-	1368	AC	No
690+K1000/460/3H/B	3**	K	1000	-	1197	1200	-	1368	AC	Yes
690+K1300/460/3H/N	3**	K	1300	-	1482	1500	-	1681	AC	No
690+K1300/460/3H/B	3**	K	1300	-	1482	1500	-	1681	AC	Yes
690+K1500/460/3J/N	3**	K	1500	-	1681	1600	-	1852	AC	No
690+K1500/460/3J/B	3**	K	1500	-	1681	1600	-	1852	AC	Yes

Constant Torque ratings provide 150% overload for 60 seconds. Variable Torque ratings provide 110% overload for 60 seconds

To add System Expansion Module (page 44) change last character in part number from "N" to "S"

*12-Pulse Input Optional

**18-Pulse Input Optional

For frame "K" drives, please specify whether constant torque or variable torque when ordering

4 Quadrant Power Module

AC690+ Integrator Series AC Drive

Active Front End Units 10 HP - 500 HP



AC690+



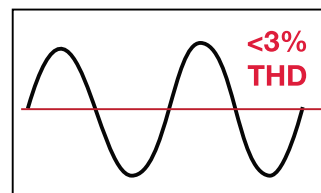
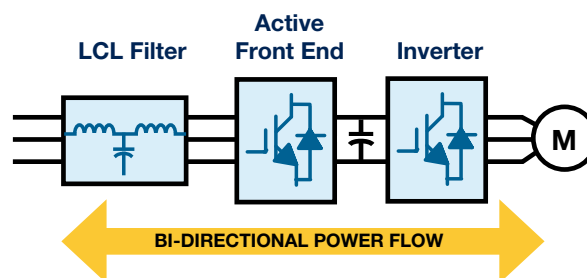
Illustration shows typical panel including AC690+ with AFE and additional system components.

Description

Many applications depend on the drive for braking torque as well as motoring torque. While dynamic braking with a resistor can be effective for lighter or lower duty cycle braking, some applications demand more braking performance than traditional D/B can provide. In addition, traditional dynamic braking using a resistor is wasteful of energy, as the potential energy in the load is dissipated as heat. By using an Active Front End (AFE) configuration, energy from the load is returned back to the power grid at unity power factor, providing extremely effective and controllable braking, as well as energy efficiency.

Applications that can benefit from line regeneration include hoists and lifts, centrifuges, continuous web processes, and dynamometer test stands. An AFE may also be used in applications that require ultra-low harmonics.

This cost effective AFE package includes pre-charge circuit and LCL filter.



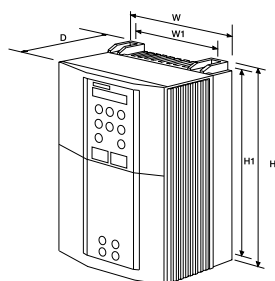
Part Number	Phases	Frame	Nominal Power (HP)	Dimensions (in)
AFE-13-LCL	3	B	13	22 x 18
AFE-26-LCL	3	C	26	28 x 22
AFE-45-LCL	3	D	45	33 x 27
AFE-85-LCL	3	E	85	46 x 34
AFE-125-LCL	3	F	125	46 x 34
AFE-167-LCL	3	F	167	46 x 34
AFE-350-LCL*	3	G	350	79 x 47 x 24
AFE-400-LCL*	3	H	400	79 x 47 x 24
AFE-500-LCL*	3	H	500	79 x 47 x 24

* Provided in NEMA 12 force ventilated cabinet with fans and filters

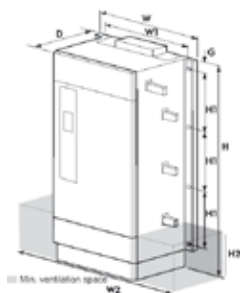
- Recovers wasted energy
- No braking resistor/No maintenance
- Ultra-low harmonics, meeting the requirements of IEEE 519
- High power factor ($\cos \phi \sim 1$)

Dimensions

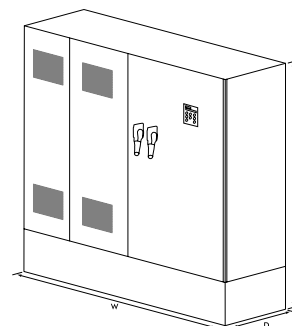
AC690+ Integrator Series AC Drive



Frame B,C,D,E,F



Frame G,H,J



Frame K

Dimensions

Model	Dimensions (in/mm)			Mounting Centers (in/mm)					Weight (lb/kg)
	H	W	D	W2	H2	H1	W1	G	
Frame B	9.17/233	6.95/177	7.13/181	-	-	8.78/223	5.12/130	-	9.5/4.3
Frame C	13.7/348	7.91/201	8.19/208	-	-	13.19/335	5.91/150	-	20.5/9.3
Frame D	17.8/453	9.92/252	9.65/245	-	-	17.32/440	5.91/150	-	40.6/18.4
Frame E	26.3/669	10.1/257	12.28/312	-	-	24.80/630	5.91/150	-	72.0/32.5
Frame F	28.3/720	10.1/257	13.74/349	-	-	27.56/700	5.91/150	-	90.4/41.0
Frame G	41/1042	17.9/455	18.31/465	26.57/675	8.86/225	11.81/300	16.54/420	0.63/16	202/100
Frame H	46.3/1177	22.5/570	18.31/465	31.69/805	14.17/360	11.81/300	21.10/536	0.63/16	276/125
Frame J	50.7/1288	26.6/1177	18.31/465	32.48/825	13.11/333	11.81/300	25.24/641	0.63/16	388/176
Frame K - 685A, 798A, 988A, and 1120A ratings	79/2000	128/3251	24/610	-	-	-	-	-	-
Frame K - 1028A, 1197A, 1482A, and 1681A ratings	79/2000	176/4470	24/610	-	-	-	-	-	-



Accessories and Options

AC690+ Integrator Series AC Drive



Option Description	Frame	Part Number	Page	
Operator Keypad				
AC690+ (removable)	B - K	6901/00/G	43	
Remote mounting kit	B - K	6052/00		
Keypad Blanking Cover	B - K	LA500326U001	44	
Communication Cards				
Ethernet Modbus/TCP and Ethernet IP	B	6053/ENET/00	40	
	C - K	6055/ENET/00		
DeviceNet	B	6053/DNET/00		
	C - K	6055/DNET/00		
RS485 / Modbus	B	6053/EI00/00		
	C - K	6055/EI00/00		
Profibus-DP	B	6053/PROF/00		
	C - K	6055/PROF/00		
CANopen DS402	B	6053/CAN/00		
	C - K	6055/CAN/00		
Apogee P1 (HVAC Series)	B	6053/APOG/00		
	C - K	6055/APOG/00		
Metasys N2 (HVAC Series)	B	6053/JMET/00		
	C - K	6055/JMET/00		
LINKnet	B	6053/LNET/00		
	C - K	6055/LNET/00		
Speed Feedback / Systems Module				
HTTL Encoder Card	B	LA467461	41	
	C - K	6054-00		
Systems Expansion Module	B - K	Specified in drive part number (S)	42	
Other Options and Accessories				
Dynamic Braking Resistors	All	See table	44	
Filters and Reactors	All	See table	112	
IP40 Cover for Wall Mounting	B	LA467452		
	C	LA465034U002		
	D	LA465048U002		
	E	LA465058U002		
DSE Lite Programming Software	All	DSE-Lite	106	
HMI Operator interace 3 to 15”	All	See TS8000 section	107	
Vent Kit	F	LA466717U003	44	

Communication Cards

AC690+ Integrator Series AC Drive

Description

The selection of available AC690+ communication “technology boxes” allow the flexibility to be connected to the most common industry standard fieldbuses.

Ethernet Communications Interface	
*Part Number: 6053/ENET/00 and 6055/ENET/00	
Supported Protocols	Modbus/TCP and Ethernet IP
Communication Speed	10/100M bits/s
Station Address	Selectable via switch or Internet Explorer
Suitable for	AC690+ version 4.7+

Devicenet Communications Interface	
*Part Number: 6053/DNET/00 and 6055/DNET/00	
Supported Protocols	DeviceNet Drive Profile Drive – Group 2 slave only
Station Address	DeviceNet Drive Profile Drive – Group 2 slave only
Suitable for Drives	AC690+

RS485/Modbus Communications Interface	
*Part Number: 6053/EI00/00 and 6055/EI00/00	
Supported Protocols	Modbus RTU, EI Bisynch ASCII
Cabling	RS485 2 or 4 wire
Communication Speed	300 to 115200 bits/s
Station Address	Selectable via Software
Suitable for	AC690+ version 4.7+

Profibus-DP Communications Interface	
*Part Number: 6053/PROF/00 and 6055/PROF/00	
Supported Protocols	Profibus-DP
Communication Speed	Automatically Detected
Station Address	Selectable via Software
Suitable for	AC690+ version 1.x+

CANopen Communications Interface	
*Part Number: 6053/CAN/00 and 6055/CAN/00	
Profile	DS402
Supported Messages	SDO, PDO, NMT, SYNC
Communication Speed	20K, 50K, 125K, 250K, 500K, 1M bits/s selectable
Station Address	Selectable via Switch
Suitable for	AC690+

* Refer to page 39 for details of drive frame compatibility



Features

- Communications cards can be factory installed into the drive, or purchased separately for installation on-site
- Dimensions H x W x D : 127mm x 76.2mm x 25.4mm
- LED indication of network and card status

Apogee P1 (HVAC Series only)	
*Part Number: 6053/APOG/00 and 6055/APOG/00	
Supported Protocols	Apogee P1
Suitable for	AC690+ HVAC Series

Metasys N2 (HVAC Series only)	
*Part Number: 6053/JMET/00 and 6055/JMET/00	
Supported Protocols	Johnson Controls N2
Suitable for	AC690+ HVAC Series version 4.6+

LINKnet Communications Interface	
*Part Number: 6053/LNET/00 and 6055/LNET/00	
Supported Protocols	Ethernet Modbus UDP/IP
Cabling	CAT-6 shielded
Communication Speed	100 Mbps
Suitable for	AC690+ version 5.X



LINKnet is an Ethernet based version of the SSD LINK system. It is a peer-to-peer network designed to integrate AC and DC drives with remote I/O at high speed, with or without a supervisory PLC, allowing precise and repeatable control for complex machines and process lines. LINKnet nodes communicate using Modbus TCP over Ethernet.

LINKnet components are plugin compatible with many older Parker drives as well. An existing LINK system using AC690+ and/or DC590+ units can potentially be updated to LINKnet without requiring the replacement of functional drives. The system will connect to any Ethernet enabled PLC and with remote I/O. LINK2 touchscreens can be replaced by the Parker TS8000.

LINKnet tech boxes are connected by commercially available CAT-6 Ethernet cable, and require no external source of power when installed on a DC590+ drive. Parker has qualified third party remote fieldbus I/O modules for use in LINKnet systems. This provides users with an assortment of standard modules to choose from. Digital, analog and specialty modules may be combined, up to 64 per node, and will be recognized and supported by Parker DSE software.

HTTL Encoder Feedback Card

AC690+ Integrator Series AC Drive



Description

The HTTL Encoder Feedback Card allows an incremental encoder to be connected to the AC690+ AC drive, allowing users to take full advantage of the integrated torque control and speed regulation functionality.

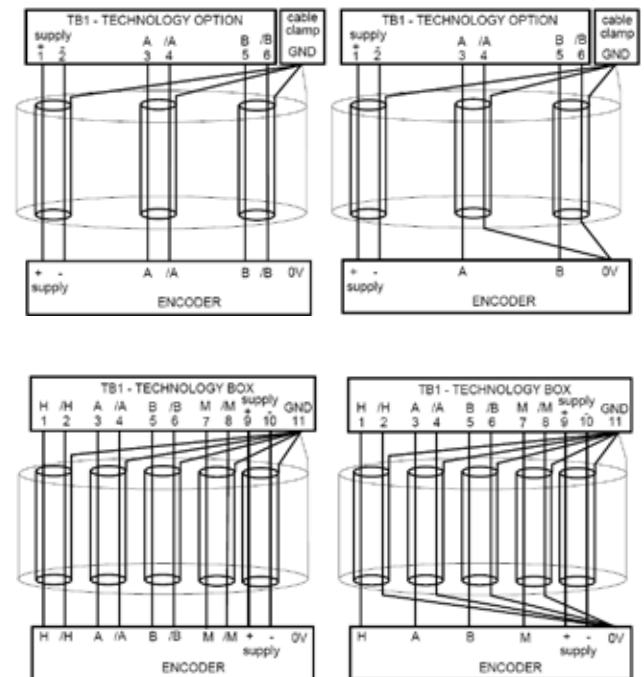
The HTTL Encoder Feedback card has the following features:

- 4 Optically isolated differential inputs A, B, M and H
- Adjustable isolated 10 - 20V encoder power output

Specifications

Maximum Input Frequency	250kHz
Receiver current consumption	≤10mA per channel
Input Format	2-channels in quadrature, clock / direction, or clock only
De-phasing	>1μs
Differential Input Voltage	10 - 30V Maximum
Encoder Power	Maximum Load: Card LA467461: 200mA or 2W Housing 6054-00: 250mA or 2.5W Voltage 10-20V software adjustable.

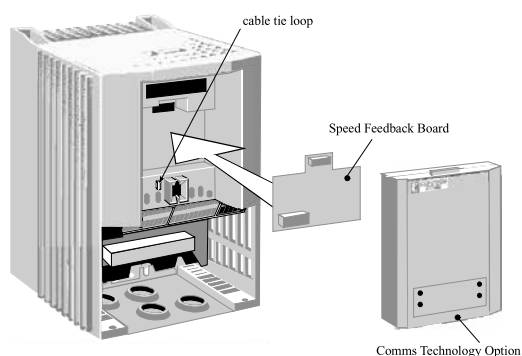
Installation and cabling



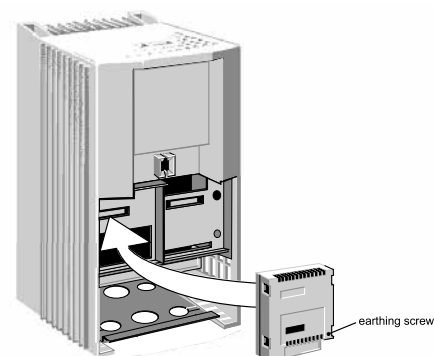
Part Numbers

Part Number	Compatible Drives
LA467461	AC690+ Frame B (690-xxxxxB...) drives
6054-00	AC690+ Frames C - K drives

AC690+ Frame B Drives



AC690+ Frames C-K Drives



System Expansion Module

AC690+ Integrator Series AC Drive

Description

With the System Expansion Module, the AC690+ can be used in more sophisticated applications, or where a small amount of automation is required to be used in conjunction with the drive.

The following features are available:

- Analog Inputs AIN1-4 are become high resolution (12 bit plus sign)
- 5 isolated I/O points, configurable as either inputs or outputs
- Variable isolated output power for encoders
- Master encoder inputs (Isolated HTTL): A, A/, B, B/, Z and Z/
- Slave encoder inputs (Isolated HTTL): A, A/, B, B/, Z and Z/
- Slave encoder output retransmission (Isolated HTTL): A, A/, B, B/, Z and Z/.

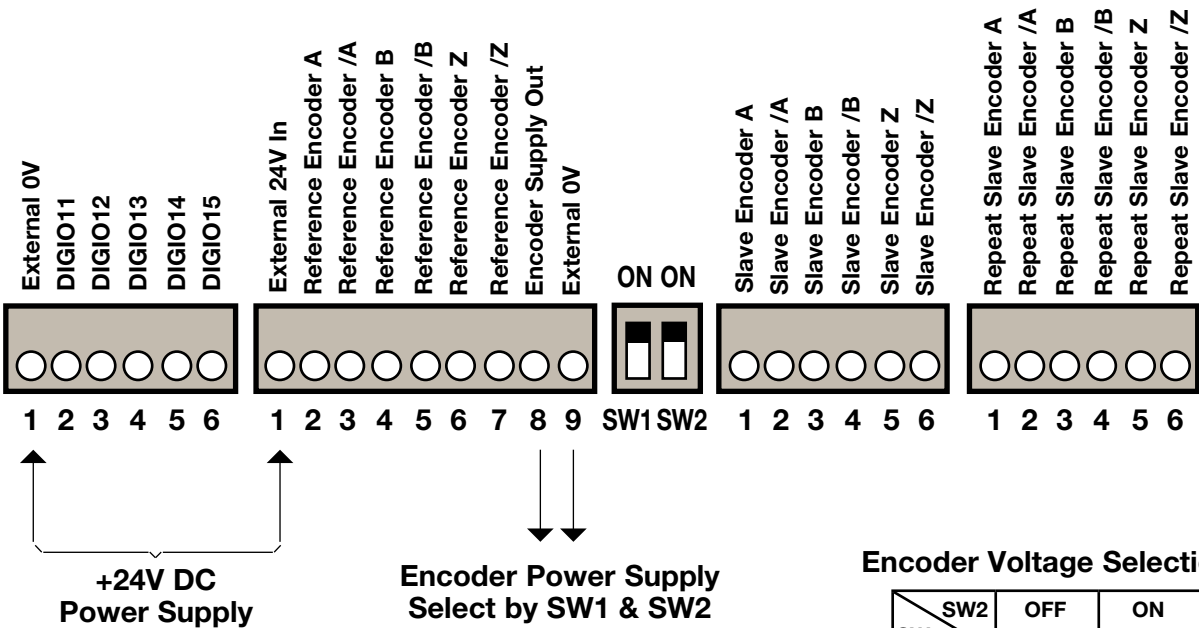


External Power Supply

An external 1 Amp 24VDC ($\pm 10\%$) supply must be connected to the card.

How to Order

Change last character of drive part number from “N” to “S”.



Operator Keypads

AC690+ Integrator Series AC Drive

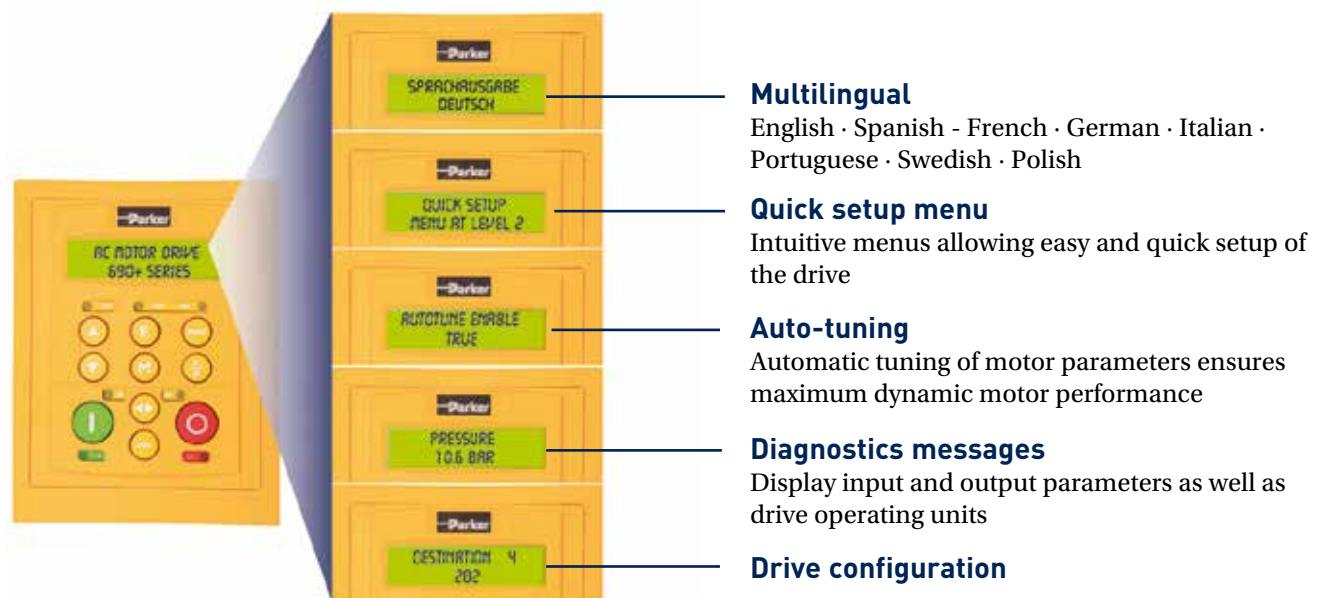
Standard operator keypad 6901/00/G

Provided standard with all AC690+ drives



Features

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



Through-panel Mounting Kit

Description

This option allows the heat sink of the drive to protrude through the back panel of an enclosure or cabinet, allowing the heat to be dissipated outside of the enclosure. This mounting configuration can generally permit the use of a smaller enclosure, or elimination of the need for air conditioning inside the enclosure. Please consult the installation manual for complete information regarding thermal management requirements for the drive or drives to be used.

Dynamic Braking Kit/Vent Kit

AC690+ Integrator Series AC Drive

D/B Kit includes resistor, overload, protective cage, and enclosure top or panel mounting							
Part Number	Voltage	Nominal Power - CT (HP)	Nominal Power - VT (HP)	Ohms	Amps	Watts	Dimensions (in) LxWxH
LA471358	208/230	1, 2, 3, 5	-	56	1.9	202	6.5 x 1.2 x 2.4
LA471406	208/230	7.5, 10	10, 15	30	3.5	368	13.5x4x5
LA471386	208/230	15	20	15	5	375	13.5x4x5
LA471378	208/230	20, 25	25	10	8.7	757	13.5x7x5
LA471407	208/230	30	40	7	10.4	757	13.5x7x5
LA471379	208/230	40	50	6	13.7	1126	13.5x10x5
LA471380	208/230	50, 60	60, 75	4	19.4	1505	13.5x13x5
LA471356	460	1, 2, 3	1, 2, 3	100	1	100	6.5 x 1 x 1.6
LA471404	460	5, 7.5, 10	5, 7.5, 10	100	1.9	361	13.5x4x5
LA471359	460	15	20	56	3	500	13.2x1.2x2.4
LA471405	460	20	25	60	3.5	735	13.5x7x5
LA471361	460	25, 30	30, 40	30	5	750	13.5x7x5
LA471350	460	40	50	22.5	7.1	1134	13.5x10x5
LA471364	460	50	60	18	7.9	1123	13.5x10x5
LA471365	460	60	75	15	8.7	1135	13.5x10x5
LA471367	460	75, 100	100, 125	8	13.7	1502	13.5x13x5
LA471369	460	125, 150	150	6	19.4	2258	13.5x10x5
LA471370	460	200	250	3	39	4563	20x18x10
LA471372	460	250, 300	300, 350	2.25	45	4556	20x18x10
LA471375	460	350, 400, 450	400, 450, 500	1.5	55	4538	20x18x10
LA471376	460	500	550	1.2	61	4465	20x18x10

*NEMA ICS 3-301.62 Dynamic braking stop option. Minimum 100% full load torque from base speed with 6x motor inertia, and 4 stops per hour.

Keypad Blanking Cover

Description

The keypad blanking cover kit may be used when local keypad is not installed. Kit includes light pipes for LED's.

Part Number	Description	Suitable for
LA500326U001	Blank Cover	AC690+ Frame B-J

Vent Kit

Description

For the two largest frame sizes, optional vent ducting kits is available. These kits provide a convenient means of venting hot exhaust air from the panel-mounted AC690+ drive. The kit includes a duct, attached to the top of the drive and the roof of your enclosure, and an air exhaust hood for mounting on the top of the enclosure. Mounting hardware and gasket are provided in the kit. Installation will require a rectangular hole and six mounting bolt holes to be cut through the top of your enclosure.

Part Number	Description	Suitable for
LA466717U004	Vent Kit	AC690+ Frame E
LA466717U003	Vent Kit	AC690+ Frame F



Modular Systems Drives

AC890 Systems Drive

1 HP - 1500HP

Description

The AC890 is a compact, modular systems-capable drive engineered to control speed and position of open-loop and closed-loop, single- or multi-motor AC induction or servo motor applications.

Features

The AC890 can be configured for 5 different modes of operation

Open-loop (volts/frequency) control

This mode is ideal for basic, single or multi-motor speed control.

Sensorless vector control

With its ultra high performance sensorless vector algorithm, the AC890 delivers a combination of both high torque and close speed regulation without the need for any speed measuring transducer.

Closed-loop vector control

Full closed-loop flux vector performance can be achieved with the AC890 by simply adding an encoder feedback 'technology box'. This provides 100% continuous full load standstill torque, plus a highly dynamic speed loop more than sufficient for the most demanding applications.

PMAC servo control

Allows the use of a PMAC motor like the TMW series, with feedback device.

Active front-end module for line regeneration

With this configuration, used in applications that require four quadrant or continuous braking operation, the regenerated energy is fed back into the grid with sinusoidal currents and unity power factor; a very low current harmonic content is achieved (THD less than 3%).

Compatible with a wide range of feedback options

The AC890 is compatible with any AC motor and virtually any speed/position feedback options. With this flexibility you may not even need to replace your existing AC motor to achieve high performance, saving you time and money.

- Incremental encoder
- EnDat 2.1 (SinCos) encoder
- Resolver



AC890 is compatible with multiple motor designs



AC Induction Motors



PMAC Brushless Motors



Torque Motors

International Standards

Complies with :

- EN61800-3 (EMC) Directive
- CE Marked to EN50178 (Low Voltage) Directive
- Units listed in this catalog are UL listed to US Standard UL508C and cUL Listed to Canadian Standard C22.2 #14, except where otherwise noted.

www.parker.com/ssdusa/ac890

Modular Systems Drives

AC890 Systems Drive

Features

Range of feedback options

- Incremental encoder
- EnDat® 2.1 (SinCos) encoder
- Resolver



Versatile communications

- Ethernet/IP
- Modbus/TCP
- CANopen
- Profibus-DP
- Profinet/IO
- EtherCAT
- RS485
- DeviceNet
- ControlNet
- FireWire IEEE 1394
- USB port

EtherNet/IP™
CONFIDENCE TESTED

PROFIBUS

ControlNet™
CONFIDENCE TESTED

DeviceNet®
CONFIDENCE TESTED

CANopen

PROFINET

Ultra-fast control loops

- Torque loop: 62.5µs
- Speed loop: 62.5µs
- Position loop: 62.5µs

Serves the most demanding applications

Taking advantage of leading edge control algorithms running on a fast 150 Mhz microprocessor, the AC890 drive can achieve very high bandwidth control loops. This allows you to use the drive for the most demanding industrial applications e.g. printing, registration, cut-to-length, position synchronization, rotary shear, converting and slitting.

Benefits

Integrated safety functionality

The integrated Safe Torque Off (STO) functionality offers protection against unexpected motor start-up, in accordance to EN13849-1 PLE, SIL 3 as standard.

Minimal delay between fieldbus setpoints and the control loops

Designed to integrate in existing automation systems, the AC890 features high performance ports linked directly to the fast control loops of the drive. Minimum delay exists between your digital setpoint sent through a fieldbus and the control loops.

Replacement of analog solutions

Your existing analog setpoint-based solutions can be replaced by a digital fieldbus-based solution with minimum bandwidth loss.

Flexible feedback options

The AC890 offers system designers complete flexibility in their choice of feedback technology to best suit the needs of their application.

Open standards for protection of investment

The AC890 has been specifically designed to integrate seamlessly into your automation network. To connect to your PLC or fieldbus network you can simply choose from the wide range of communication technology boxes.

Two performance levels to suit all applications :

Advanced Performance

Motion control with position control, Motion control function blocks: incremental move, absolute move, move home Section Control : line drive master ramp, winder blocks (speed and current winder), PID process, sequencer, more...

High Performance

All "Advanced Performance" features PLUS: Library of pre-engineered application specific LINK VM function blocks such as: Shaftless printing, cut-to-length, advanced winding, advanced traversing and others.

Modular Systems Drives

AC890 Systems Drive

Space saving compact footprint thanks to modular design concept

Stand Alone version (SD)



The Complete Drive

The AC890SD series Stand Alone version provides a complete AC input to AC motor output drive, with keypad and display included. Perfect solution for single motor applications where line regeneration is not required.

Characteristics of the AC890SD include:

- Power output up to 1500 HP
- 208-500 VAC input supply
- Compatibility with all feedback and networking options
- Built-in dynamic brake switch with provision to add external braking resistor
- 24VDC control board supply for programming without power
- Torque and speed signal outputs
- USB programming port
- Operator keypad/display for programming, status, and diagnostics

Reduced dimensions, compact footprint

The AC890 has been designed to be compact and require the minimum possible cabinet space. Boasting the latest innovations in semiconductor cooling, the AC890 is a class leader in terms of its size.

Common Bus System (CS+CD)



Common Bus System

The AC890 is also available in a common bus platform, where multiple motor output drives (CD) are easily connected to a common DC bus supply (CS).

Characteristics of the common bus drive (AC890CD) :

- Power output to 150 HP in 5 frame sizes
- Power Supply : 320 to 705 VDC
- Compatibility with all feedback and networking options
- 24VDC control board supply for programming without power
- Torque and speed analog outputs
- USB programming port

Characteristics of the common bus supply module (AC890CS):

- Power output 25 to 135 HP
- Power Supply : 208-500 VAC
- Built-in dynamic braking unit (external braking resistor required)
- Operator display
- Up to 162A output per module

Removable terminal block connections for easier installation and maintenance



Fast connection of the common DC busbars



The control terminals are plug-in style, simplifying connection to the drive during installation and allowing a fast swap-out for maintenance purposes.

The Common DC bus also helps to keep the overall size of the system to a minimum. Simply open the bus terminal cover, connect the bus bars and close.

Modular Systems Drives

AC890 Systems Drive



Technical Specification

Power Supply	890CS : 208 - 500 VAC +/- 10 % 890CD : 320/560 - 705 VDC 890SD : 380 - 500 VAC +/- 10 % Frames E/F/G/H/J/K : 380 - 460 VAC +/- 10 %
Operating Temperature	0°-45°C (32°-113° F) - Frame B-F 0°-40°C (32°-104° F) - Frame G and above (derate by 2% per degree C up to 50°C maximum)
Altitude	Up to 1000m ASL (derate 1% per 100m to 2000m max)
Protection	IP20 (Frames G/H/J: IP00)
Humidity	Maximum 85% Non-Condensing
Analog Inputs	4; 12 bit, Configurable 2 x 0-10V, +/-10V, 0-20mA, 4-20mA and 2 x 0-10V, +/-10V (High resolution 15 bit plus sign analog input available with addition of 8903/AI option)
Analog Outputs	2; 12 bit, Configurable 0-10V, +/- 10V
Digital Inputs	7 ; Configurable 24VDC
Digital Output	2; Configurable 24VDC
Digital Relay Output	1; Configurable
Communications Options	EtherNet/IP, Modbus/TCP, CANopen, PROFIBUS, PROFINET, DeviceNet, ControlNet, FireWire, EtherCAT, Peer to peer, RS485/Modbus
Axis Synchronisation	Internally via Firewire IEEE1394
Overload	Constant Torque Ratings: 150% for 60 sec Variable Torque Ratings: 110% for 60 sec Servo Mode: 200% for 4 sec
Output Frequency	0-590 Hz - Volts/Hertz Mode 0-350 Hz - Closed Loop Vector Mode 0-120 Hz - Sensorless Vector Mode
Switching Frequency	Size B-D - 3 kHz (4 kHz or 8 kHz in servo mode) Size E - 3 kHz or 6 kHz Size F - 3 kHz Size G-H - 2.5 kHz Size J - 2 kHz Some exceptions may apply - see manual
Atmosphere	Non flammable, non corrosive and dust free

Safe Torque Off - STO

The AC890 features Safe Torque Off functionality **as standard**, offering users protection against unexpected motor start-up in accordance with EN18849-1 PL-e or SIL3. STO connections are made to X11 terminals per installation manual.

To ensure a high degree of safety, two independent STO control channels are implemented in hardware. The circuit is designed such that a fault in one control channel will not affect the other channel's ability to prevent the drive from starting, i.e. the STO function of the is tolerant to any single fault. It may not be tolerant to an accumulation of faults. This is in keeping with its declared safety ratings.

STO always overrides any attempt to start the drive. If one or both STO control inputs is requesting the STO function, the drive will not start, even if for example, the drive's software malfunctions and tries to cause the motor to turn. The STO function is implemented in hardware; it overrides all software activities. The only software involvement is to report STO status to the user via an MMI, serial communications link or user terminal on the AC890 control board as defined by the drive configuration.

Note: STO is an electronic inhibit intended for use during normal operation of the machine. It is not intended for use during machine maintenance, repair, replacement or other similar activities. For these activities recognized electrical power isolation devices and lock-out procedures must be used.

Conformal Coating

For environments that have dusty, humid or corrosive atmospheres, the AC890 can optionally be supplied with conformally coated circuit boards that improve the drives resistance to corrosion, thereby increasing reliability and service life. Environments that would typically benefit from conformal coating could include:

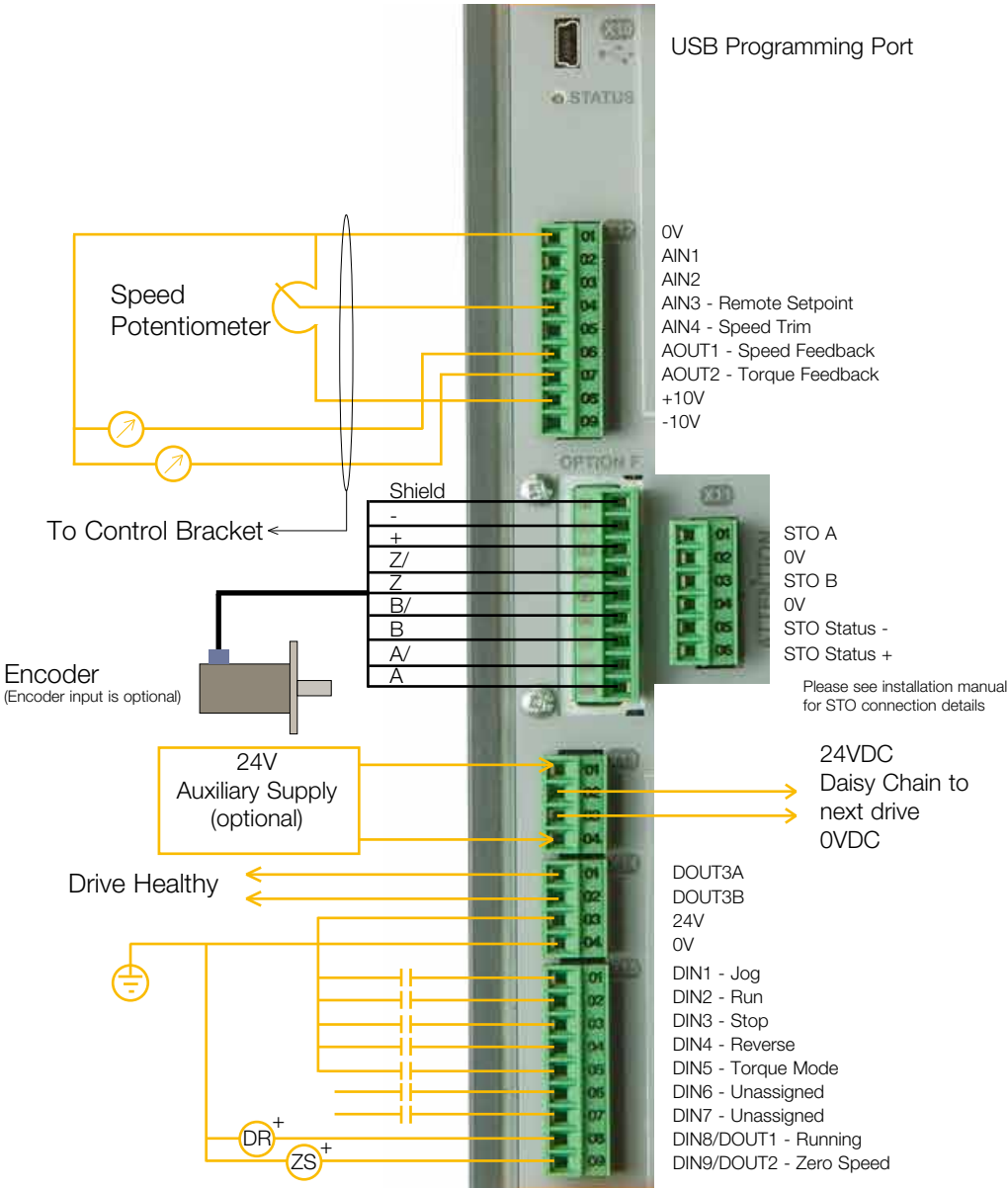
- Water and wastewater treatment plants
- Paper and pulp processing mills
- Steel mills
- Marine and offshore
- Outdoor cranes
- Wind, solar, and wave power generation (Grid tie configuration)
- Food and chemical processing plants

Modular Systems Drives

AC890 Systems Drive



Connection Diagram



This diagram shows examples of some basic user connections to the Control Module. It is not intended to be a substitute for the installation manual which is provided with each drive and available for download on the website.

Modular Systems Drives

AC890 Systems Drive

Active Front End



4 Quadrant active front-end power supply with regeneration to the grid

By specifying an AFE supply, AC890 common bus systems can be configured to feed energy back into the grid supply with sinusoidal currents and unity power factor; with very low levels of harmonic current distortion. Use the AFE with AC890CD modules for a complete system.

Required Parts (Provided with AFE package)

Pre-charge circuit

LCL Filter

FULLY BIDIRECTIONAL POWER FLOW

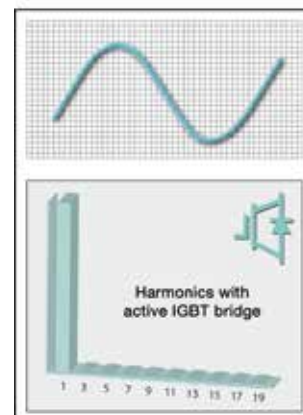
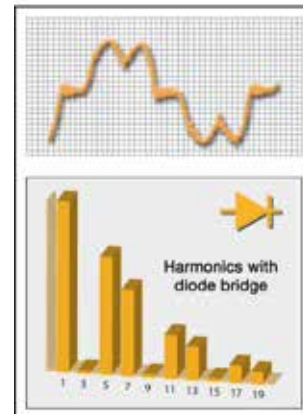
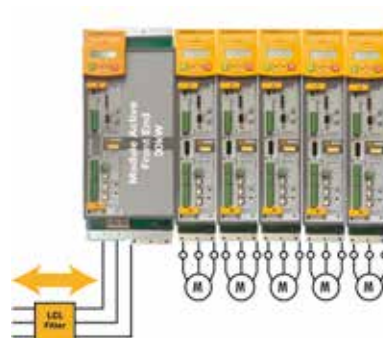
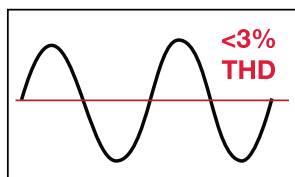
150% OVERLOAD FOR 60 SEC

SINUSOIDAL INPUT CURRENT

HARMONIC LEVELS MEET REQUIREMENTS OF IEEE 519

Note :

It is possible to use a larger separate active front-end module for higher power AC890 systems. In this case, several AC890's can be connected to the AFE using the AC890CA common bus adapter.



AFE Part Number	Sub-panel Part Number	Power (HP)	Current (A)	Notes
890CD/5/0016B/N/00/A/US	AFE-13-890	13	12	Sub-panel includes line synch module, pre-charge circuit, and LCL filter.
890CD/5/0030C/N/00/A/US	AFE-26-890	26	25	
890CD/5/0059D/N/00/A/US	AFE-45-890	45	45	
AFE-85-890	N/A	85	80	AFE includes AC890 drive configured as AFE, line synch module, pre-charge circuit, and LCL filter, provided on open panel
AFE-125-890		125	120	
AFE-167-890		167	160	
AFE-200-890		200	194	
AFE-300-890		300	284	AFE includes AC890 drive configured as AFE, line synch module, pre-charge circuit, and LCL filter, provided in enclosure.
AFE-350-890		350	325	
AFE-400-890		400	378	
AFE-500-890		500	468	

DC Power Supply Module

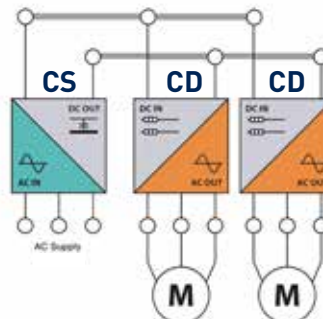
AC890CS Module

10 HP - 135 HP (40A - 200A)



Description

Used in common bus systems, the AC890CS (Common Supply) module is able to provide DC bus voltage to one or more AC890CD units. Inter-connecting busbar is available from Parker. This modularity provides significant space saving in the enclosure. For 12 pulse or 18 pulse input, multiple CS modules may be used. (See page 55 for details on alternate input power configurations.)



DC Power Supply

Use with AC890CD for a common bus system

208-500VAC Input

Built-in dynamic braking unit

DC bus power output terminals

Operator display for diagnostics

CS Module Includes:

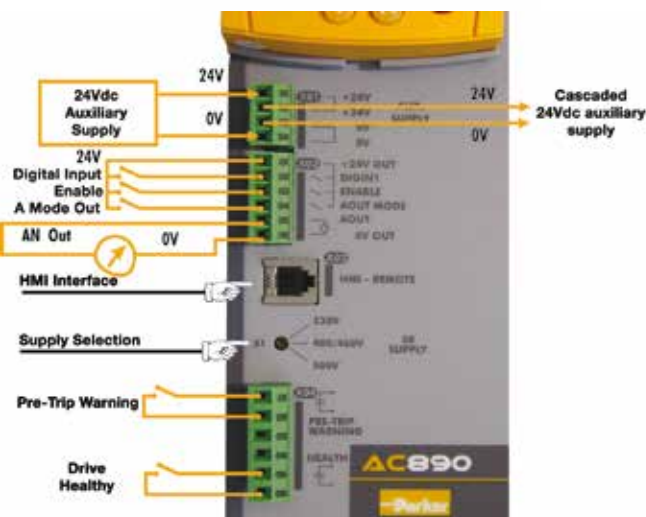
“Drive Healthy” contact

24VDC auxiliary supply (optional)

HMI Interface

Power supply selector

Configurable analog outputs



Electrical Characteristics - AC890CS Drives

Part Number	Frame	Input voltage (VAC)	Power (HP)	Power (kW)	AC input current (A)	DC output current (A)
890CS/5/0032B/B/00/N/EN	B	230	10	7.5	32	40
		400/460	25	15		
890CS/5/0054B/B/00/N/EN		230	20	15	54	65
		400/460	45	30		
890CS/5/0108D/B/00/N/EN	D	230	40	30	108	135
		400/460	90	60		
890CS/5/0162D/B/00/N/EN		230	60	45	162	200
		400/460	135	90		

kW power ratings correspond to 400 VAC input

Note: For increased power, additional units can be connected in parallel.

For further details, contact our technical support department

Modular AC Systems Drives

AC890CD Series Systems Drive

1 HP - 150 HP (1.5A - 180A)



Description

Used in common bus systems, the AC890CD (Common Drive) module accepts DC input from an AC890CS unit. Multiple CD units may be connected to a single CS. Inter-connecting busbar is available from Parker. This modularity provides significant space saving in the enclosure. Typical applications include printing, converting, or other continuous web processes.

DC Input

Power Supply 320, 650, 705VDC

Use with AC890CS for a common bus system

Operator display supplied as standard

Common options as AC890SD (See page 66)

Electrical Characteristics - AC890CD Drive

Part Number	Frame	CS Module Voltage	Constant Torque			Variable Torque			Servo		Features
			Power (HP/kW)	Output Current (A)		Power (HP/kW)	Output Current (A)		Output Current (A)		
				208 or 380	230 or 460		208 or 380	230 or 460	208 or 380	230 or 460	
890CD/2/0003B/N/00/A/US	B	208/230	0.75/.55	3	3	0.75/.55	3	3	2.2	2.2	Internal Fusing
890CD/2/0005B/N/00/A/US		208/230	1.5/1.1	5.5	5.5	1.5/1.1	5.5	5.5	4	4	Internal Fusing
890CD/2/0007B/N/00/A/US		208/230	2/1.5	7	7	2/1.5	7	7	6	6	Internal Fusing
890CD/2/0011B/N/00/A/US		208/230	3/2.2	11	11	3/2.2	11	11	8	8	Internal Fusing
890CD/2/0016B/N/00/A/US		208/230	5/4	16.5	16.5	5/4	16.5	16.5	12	12	Internal Fusing
890CD/2/0024C/N/00/A/US	C	208/230	7.5/5.5	24	24	7.5/5.5	24	24	24	24	Internal Fusing
890CD/2/0030C/N/00/A/US		208/230	10/7.5	30	30	10/7.5	30	30	30	30	Internal Fusing
890CD/5/0002B/N/00/A/US	B	380/500	1/.55	2	2	1/0.55	2	2	1.5	1.5	Internal Fusing
890CD/5/0003B/N/00/A/US		380/500	1.5/1.1	3.5	3.5	1.5/1.1	3.5	3.5	2.5	2.5	Internal Fusing
890CD/5/0004B/N/00/A/US		380/500	2/1.5	4.5	4.5	2/1.5	4.5	4.5	3.5	3.5	Internal Fusing
890CD/5/0006B/N/00/A/US		380/500	3/2.2	5	6	3/2.2	5	5	4	4	Internal Fusing
890CD/5/0010B/N/00/A/US		380/500	5/4	8	10	5/4	8	8	6	6	Internal Fusing
890CD/5/0012B/N/00/A/US		380/500	7.5/5.5	12	12	7.5/5.5	12	12	9	9	Internal Fusing
890CD/5/0016B/N/00/A/US	C	380/500	10/7.5	14	16	10/7.5	14	16	10	12	Internal Fusing
890CD/5/0024C/N/00/A/US		380/500	15/11	24	24	15/11	24	24	20	20	Internal Fusing
890CD/5/0030C/N/00/A/US		380/500	20/15	27	30	20/15	27	30	22	25	Internal Fusing
890CD/5/0039D/N/00/A/US	D	380/500	25/18.5	35	39	25/18.5	35	39	29	35	Internal Fusing
890CD/5/0045D/N/00/A/US		380/500	30/22	40	45	30/22	40	45	34	38	Internal Fusing
890CD/5/0059D/N/00/A/US		380/500	40/30	52	59	40/30	52	59	45	50	Internal Fusing
890CD/4/0073E/N/00/A/US	E	380/500	50/37	73	73	60/45	87	87	73	73	Requires DC Fusing
890CD/4/0087E/N/00/A/US		380/500	60/45	87	87	75/55	105	105	87	87	Requires DC Fusing
890CD/4/0105F/N/1F/A/US	F	500/380	75/55	100	105	100/75	125	145	74	78	Requires DC Fusing
890CD/4/0145F/N/1F/A/US		500/380	100/75	130	145	125/90	156	165	99	110	Requires DC Fusing
890CD/4/0156F/N/1F/A/US*		500/380	125/90	156	180	150/110	180	205	117	135	Requires DC Fusing
890CD/4/0180F/N/1F/A/US*		500/380	150/90	180	180	N/A	N/A		135	135	Requires DC Fusing

* 890CD/4/0156F/... and 890CD/4/0180F/... are not UL or cUL listed.

Notes: The AC890 can be provided as Advanced Performance (Per table above) or High Performance by changing "A" in part number to "H".

For higher powers, refer to AC890SD series supplied from a DC bus.
Servo current ratings assume 4kHz switching frequency.

Servo overload ratings: Frame B-D - 200% for 4 sec., Frame E-F - 150% for 60 sec.



Modular AC Systems Drives

AC890SD Series Systems Drive

0.75 HP - 1500 HP



Description

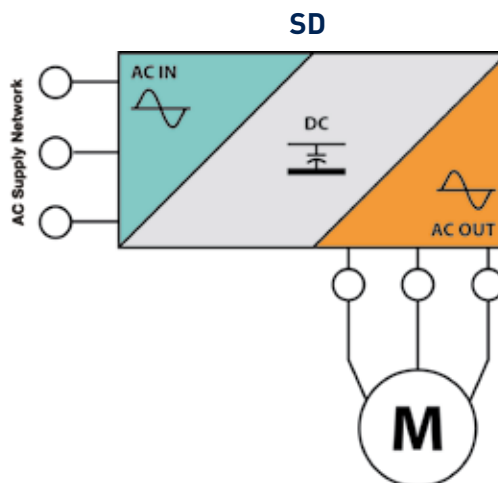
The AC890SD (Standalone) drives are independent modules with integrated three-phase AC supply inputs. With its wide range of sizes available, the AC890SD is suitable for every type of application from a small machine to a large industrial high power process line. For variable torque loads like fans, blowers, and most pumps, economical “VT” ratings are offered for Frame E and larger.

AC Input or DC common bus

Built-in dynamic braking module

Operator display provided as standard

Common options as AC890CD (See page 66)



Electrical Characteristics - AC890SD Drive - 230V

Part Number	Frame	Input Voltage (VAC)	Power CT or VT (HP/kW)	CT or VT Output Current (A)	Servo Output Current (A)
890SD/2/0003B/B/00/A/US	B	230	1/.55	3	2.2
890SD/2/0005B/B/00/A/US			1.5/1.1	5.5	4
890SD/2/0007B/B/00/A/US			2/1.5	7	6
890SD/2/0011B/B/00/A/US			3/2.2	11	8
890SD/2/0016B/B/00/A/US			5/4	16.5	12
890SD/2/0024C/B/00/A/US	C	230	7.5/5.5	24	24
890SD/2/0030C/B/00/A/US			10/7.5	30	30

Note : All SD units above include brake module.

Permitted overload : 150% for 60 sec in vector mode - 200% for 4 sec in servo mode.

Electrical Characteristics - AC890SD drive (contd.)

Part Number	Frame	Input voltage (VAC)	Constant Torque			Variable Torque			Servo	
			Power (HP/kW)	Output Current (A)		Power (HP/kW)	Output Current (A)		Output Current (A)	
				400V	460V		400V	460V	400V	460V
890SD/5/0002B/B/00/A/US	B	380-460	1/.55	2	2	1/.55	2	2	1.5	1.5
890SD/5/0003B/B/00/A/US			1.5/1.1	3.5	3.5	1.5/1.1	3.5	3.5	2.5	2.5
890SD/5/0004B/B/00/A/US			2/1.5	4.5	4.5	2/1.5	4.5	4.5	3.5	3.5
890SD/5/0006B/B/00/A/US			3/2.2	5	5	3/2.2	5	5	4	4
890SD/5/0010B/B/00/A/US			5/4	8	8	5/4	8	8	6	6
890SD/5/0012B/B/00/A/US			7.5/5.5	12	12	7.5/5.5	12	12	9	9
890SD/5/0016B/B/00/A/US			10/7.5	14	16	10/7.5	14	16	10	12
890SD/5/0024C/B/00/A/US	C	380-500	15/11	24	24	15/11	24	24	20	20
890SD/5/0030C/B/00/A/US			20/15	27	30	20/15	27	30	22	25
890SD/5/0039D/B/00/A/US	D	380-500	25/18.5	35	39	25/18.5	35	39	29	35
890SD/5/0045D/B/00/A/US			30/22	40	45	30/22	40	45	34	38
890SD/5/0059D/B/00/A/US			40/30	52	59	40/30	52	59	45	50
890SD/4/0073E/B/00/A/US	E	380-460	50/37	73	73	60/45	87	87	73	73
890SD/4/0087E/B/00/A/US			60/45	87	87	75/55	105	105	87	87
890SD/4/0105F/B/1F/A/US	F	380-460	75/55	100	105	100/75	125	145	74	78
890SD/4/0145F/B/1F/A/US			100/75	130	145	125/90	156	165	99	110
890SD/4/0180F/B/1F/A/US			150/110	180	180	150/90	180	205	135	135
890SD/4/0250G/N/1F/A/US	G	380-460	200/132	250	250	250/150	302	302	171	171
890SD/4/0250G/B/1F/A/US			200/132	250	250	250/150	302	302	171	171
890SD/4/0361G/N/1F/A/US			300/180	361	361	350/220	420	420	253	253
890SD/4/0361G/B/1F/A/US			300/180	361	361	350/220	420	420	253	253
890SD/4/0420H/N/1F/A/US	H	380-460	350/220	420	420	400/250	480	480	300	300
890SD/4/0420H/B/1F/A/US			350/220	420	420	400/250	480	480	300	300
890SD/4/0520H/N/1F/A/US			450/280	520	520	500/315	590	590	368	368
890SD/4/0520H/B/1F/A/US			450/280	520	520	500/315	590	590	368	368
890SD/4/0590J/N/1F/A/US	J	380-460	500/315	590	590	550/355	650	650	411	411
890SD/4/0590J/B/1F/A/US			500/315	590	590	550/355	650	650	411	411
890SD/4/0685K/ * /1F/A/US	K (2xG) *	380-460	600/355	685	685	700/400	798	798	N/A	
890SD/4/0798K/ * /1F/A/US	K (2xH) *		700/400	798	798	800/475	912	912	N/A	
890SD/4/0988K/ * /1F/A/US	K (2xH) *		800/500	988	988	900/600	1120	1120	N/A	
890SD/5/1028K/ * /1F/A/US	K (3xG) **		900/550	1028	1028	1000/630	1197	1197	N/A	
890SD/5/1120K/ * /1F/A/US	K (2xJ) *		1000/600	1120	1120	1100/650	1235	1235	N/A	
890SD/5/1197K/ * /1F/A/US	K (3xH) **		1000/630	1197	1197	1200/750	1368	1368	N/A	
890SD/5/1482K/ * /1F/A/US	K (3xH) **		1300/800	1482	1482	1500/900	1681	1681	N/A	
890SD/5/1681K/ * /1F/A/US	K (3xJ) **		1500/900	1681	1681	1600/1000	1852	1852	N/A	

Kilowatt ratings correspond to 400 VAC input.
Specify VT or CT when ordering K frame units.
*12-Pulse Input Optional
**18-Pulse Input Optional

Permitted overload : 150% for 60 sec in vector mode
Servo current ratings assume 4kHz switching frequency.
Servo overload ratings: Frame B-D - 200% for 4 sec., Frame E-F - 150% for 60 sec.

Modular AC Systems Drives

AC890 Alternative Input Power Configurations

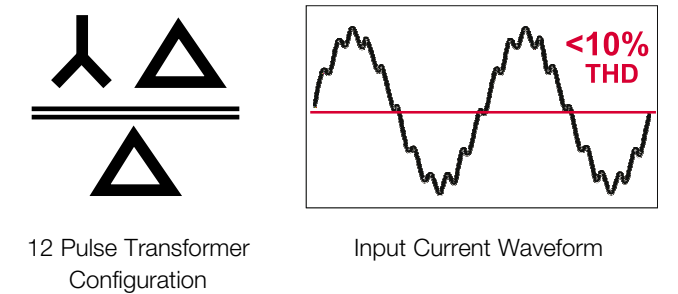
0.75 HP - 1500 HP

The modular design of the AC890 makes it easy to connect parallel input (CS) modules for multi-phase configurations. By using 12-pulse or 18-pulse configurations, harmful line harmonics can be greatly reduced. Or, for the ultimate in harmonic abatement, an Active Front End (AFE) may be selected. (See page 50 for details on AFE units.)

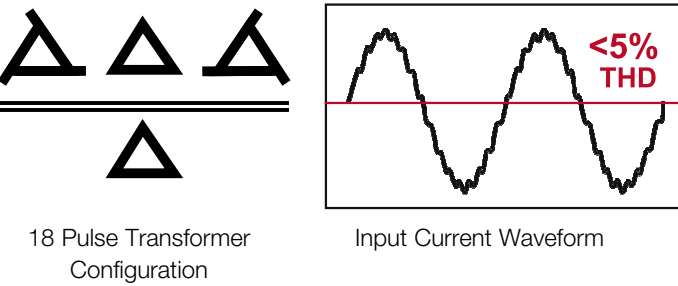
The typical AC drive has six rectifiers in a three phase bridge configuration, and is commonly referred to as a “6-pulse” configuration. A 12-pulse drive configuration contains two sets of six rectifiers, an 18-pulse configuration, three sets of six rectifiers and so on. If the AC power connected to each set of rectifiers is “phase shifted”, then some of the harmonics produced by one set of rectifiers will be opposite in polarity from the harmonics produced by the other set of rectifiers. The two (or three) wave forms effectively cancel each other out. To provide the phase shifted AC power, a special transformer with multiple secondary windings is specified.



AC890



12 pulse connection (option)	CS Modules Required	2
	Harmonics	Under 10% THD
	Input Transformer	User supplied - Delta primary, Wye and Delta secondaries, 30 degree phase shift.

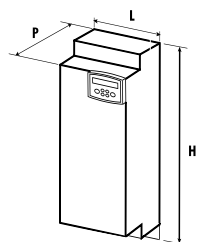


18 pulse connection (option)	CS Modules Required	3
	Harmonics	Under 5% THD
	Input Transformer	User supplied - Delta primary, three secondaries, 20 degree phase shift.

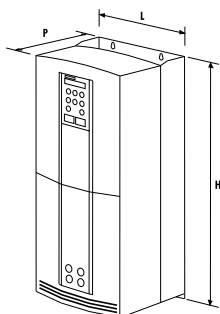
For installations that require ultra low harmonics, with THD under 3%, consider an Active Front End (AFE) as described on page 50.

Dimensions

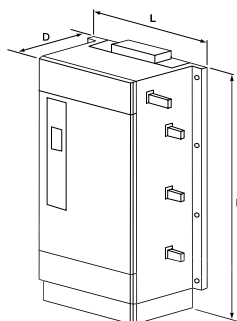
AC890 Series Systems Drives



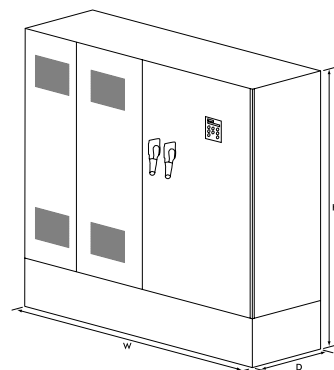
Frames B/C/D



Frames E/F



Frames G/H/J



Frame K

Dimensions and Weights

Model	H (in/mm)	W (in/mm)	D (in/mm)	Weight (lb/kg)		
				AC890CS	AC890CD	AC890SD
AC890 Frame B	17.0/433	2.85/72.4	10.16/258	7.7/3.5	11.0/5	13.2/6
AC890 Frame C		4.57/116		N/A	14.6/6.6	16.8/7.6
AC890 Frame D		6.30/160		19.2/8.7	26.7/12.1	28.9/13.1
AC890 Frame E	26.3/668	10.12/257	12.28/312	N/A	71.7/32.5	73.9/33.5
AC890 Frame F	28.35/720		13.98/355		90.4/41	92.6/42
AC890 Frame G	41.0/1042	17.95/456	18.31/465		N/A	238/108
AC890 Frame H	46.34/1177	22.52/572				304/138
AC890 Frame J	50.71/1288	26.57/675				388/176
Frame K - 685A, 798A, 988A, and 1120A ratings	79/2007	128/3251	24/610			
Frame K - 1028A, 1197A, 1482A, and 1681A ratings		176/4470				
AFE-13/26/45-890 (sub-panel)	22/559	18/457		N/A	N/A	N/A
AFE-85/125/167-890	46/1168	34/864		N/A	N/A	N/A
AFE-200/300/350/400/500-890	79/2007	47/1194	24/610	N/A	N/A	N/A

Application Profile

Process Optimization - Shaftless Printing

Shaftless printing machine control delivers improved performance and quality thanks to AC890



Summary

Parker AC890 Modular Systems Drives were selected when a large end-user print company wanted to upgrade their existing printing line. The integrated shaftless printing function blocks made it a simple task to replace the mechanically linked line shafts with individual AC890 drives capable of precise synchronization and print registration adjustment to each section

The inclusion of high performance brushless motors increased acceleration and deceleration rates allowing greater production throughput and the electronic control of the process simplified and reduced changeover times considerably.

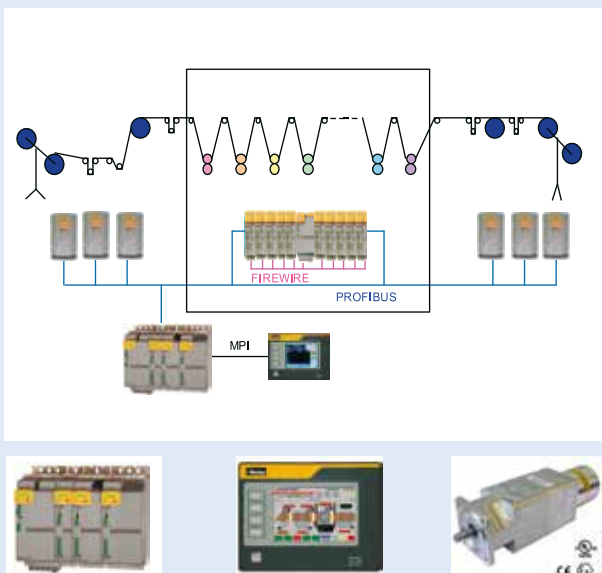
TS8000 HMI's completed the transformation with an integrated web-server and Ethernet connectivity, delivering real-time control and data capture and providing seamless integration to other manufacturing systems.

Benefits

- **Removal of mechanical line shafts reducing maintenance and complexity**
- **Improve acceleration and deceleration speeds**
- **Improved changeover speeds**
- **Reduced waste on changeover**
- **Integrated diagnostics and data handling**
- **Web server delivering real-time production and maintenance information**
- **Registration mark detection and synchronization INSIDE the drive**

AC890

Parker Drives Solution



AC890 Modular Systems Drive

- Compact footprint thanks to Common DC Bus configuration
- Common DC Bus allows regenerated power to be shared between machine sections
- AC890 capable of driving a wide range of AC motors with a variety of feedback devices

Total Solutions

- ATEX motors for explosive atmospheres
- Web enabled TS8000 HMI's between 3" and 15" to suit all visualization requirements

Application Profile

Process Optimization - Multi-Section Winder

Parker Drives improve process quality while saving energy in a multi-section winder



Summary

Parker AC890 Series Modular Systems Drives were the first choice of an industry-leading steel manufacturer when process quality improvements and energy savings were required in a complex, multi-section winding machine .

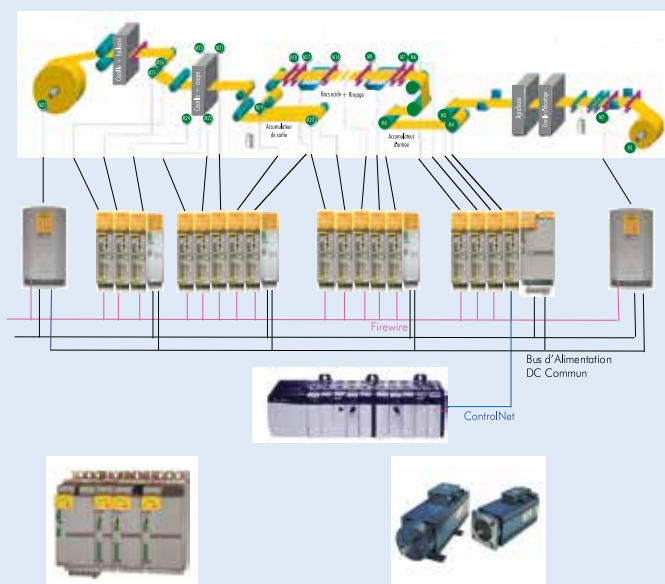
The AC890 Series solution utilized application -specific function blocks, which provide real-time data logging and trending and provide the user with the ability to optimize the process.

By utilizing a Common DC Bus power supply configuration, the system was able to efficiently manage energy across all motor-drive sets, as well as reduce overall cabinet space.

Benefits

- **Energy saving operation using Common DC Bus configuration**
- **Real-time trending and historical data logging for process application enhancement**
- **Reduced overall cabinet space**
- **High-speed drive communications offering optimum machine speeds**

Parker Drives Solution



AC890 Series Modular Systems Drive

- Integrated winding application function blocks
- Compact footprint with Common DC Bus
- Industry compatible communications

Asynchronous Motors

- Compact with high dynamic performance
- Available with or without cooling fan

Technical Support

- Site survey and project management
- Commissioning and start-up assistance

High Power Modular AC Drives

AC890PX Series

150 - 600 HP/110 - 400kW

Description

The AC890PX is a high power standalone modular enclosed drive designed for industrial applications. It is especially suited to retrofit applications where a complete standard enclosed drive system is required. It is particularly suited to the following applications:

- Energy-saving pump and fan applications
- Extruders
- Hoists and Cranes
- Mixers and Centrifuges
- Engine Dynamometers

Models Available:

400 VAC
460 VAC
575 VAC
690 VAC



Features

Suitable for use with all types of AC motor

The AC890PX can control all types of AC motor:

- Induction motors
- PMAC servo motors
- Torque Motors

Operation with or without feedback

The drive can be configured for the following operating modes:

- Volts/Hertz speed control
- Sensorless Vector speed control
- Full Flux Vector speed control
- PMAC Servo motor speed/position control

Compatible with a wide range of feedback options

Thanks to a range of optional feedback cards, the AC890PX works with all types of popular feedback systems:

- Incremental encoder
- Resolver
- SinCos (Endat 2.1) encoder
- Absolute encoder EnDat

Conforming to international standards

Suitable for supply voltages of 380VAC to 690VAC, the AC890PX can be connected to different supply networks around the world without any additional equipment. Meeting the requirements of key international standards, the AC890PX is supported around the world through the Parker Drives support network.



www.parker.com/ssdusa/ac890px



AC induction Motors



PMAC Brushless Motors



Torque Motors

High Power Modular AC Drive

AC890PX Series

150 - 600 HP/110 - 400kW

Features

Ultra-Compact Drive

The extremely compact footprint of the AC890PX is unmatched in the high power AC drives market. Within its small frame it integrates all of the standard equipment necessary for your installation: line reactor, disconnect switch, fuses and second environment line filter (compliant to EN 61800-3), and more. Configuration and start-up of the drive can be performed using the operator keypad in a matter of minutes or from your laptop using the DSELite configuration software.

- **STANDARD 3% Line Reactor**
- **STANDARD AC Disconnect**
- **STANDARD Line Fuses**
- **STANDARD Dynamic Braking**

Low-maintenance ensures maximum machine up-time and productivity

Thanks to a plug in design, the individual “PowerPak” phase modules of the AC890PX can be replaced in just minutes by any technician, even a non-specialist. These lightweight, ship anywhere modules help to reduce machine downtime and lost productivity in the event of a fault occurring. And each phase module has its own on-board diagnostics to make troubleshooting a snap.



PowerPak Phase Module – Front View



PowerPak Phase Module - Rear View

Total flexibility for easy factory integration

To facilitate maximum integration into the factory or existing buildings the AC890PX is available in a number of different variants :

- Top or bottom cable entry/exit to suit existing wiring arrangements
- 12 or 18 pulse configuration
- Active Front-End with negligible harmonic distortion
- Integrated contactors, fuses, chokes etc.

Note : Certain variants require an additional enclosure bay.

Outlet vent hood (reversible)

Dynamic braking resistor

Air plenum

Input & output terminals (top power entry version)

Keypad and USB programming port

Input disconnect

AC890 control module

Inverter output phase PowerPak module (x3)

Bus bars with keyed plug connectors

Capacitor Powerpak Module (300 kW and up)

AC to DC supply Powerpak module with Braking Switch

3% input line reactor

Input fusing

PowerPak modules are removable, with AC and DC power connections made by plugs on rear. No power wiring need be removed for access!

Top Cable entry/exit

Bottom Cable entry/exit



High Power Modular AC Drive

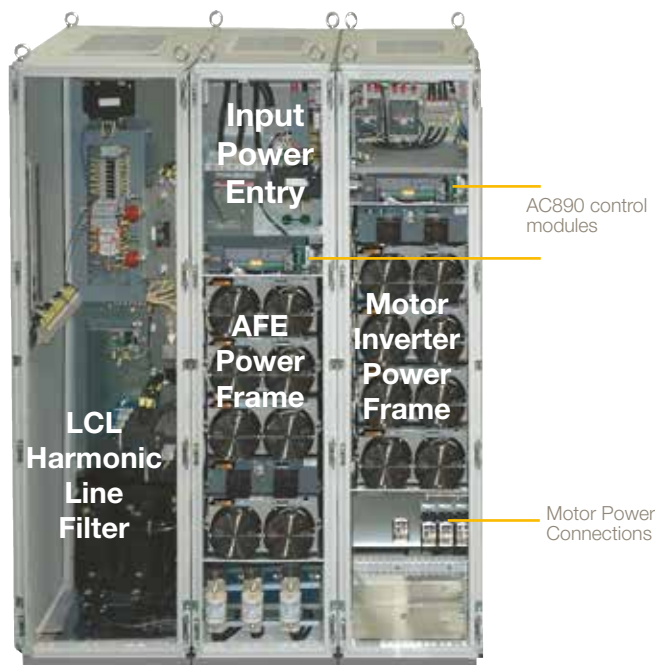
AC890PX Series

150 - 600 HP/110 - 400kW

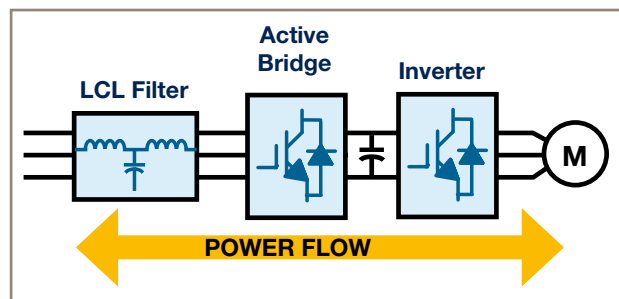
Alternative Input Power Configurations



Active Front-End (AFE) Version - Energy regeneration with low harmonic distortion

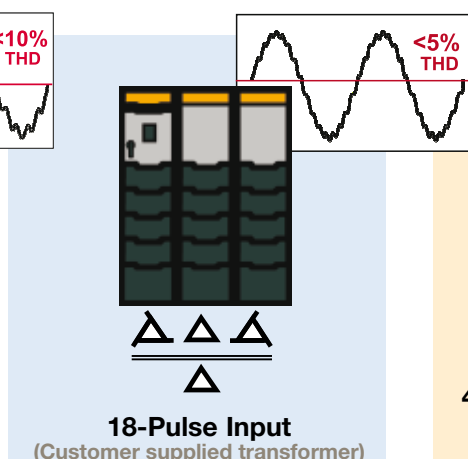
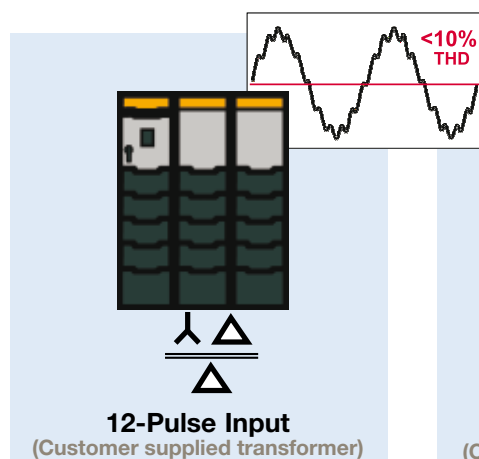


- Fully line regenerative drive
- Continuous duty at full torque - motoring or braking
- Negligible power line harmonics - meets IEEE519
- Unity power factor
- Compact 3 bay (1600 mm) enclosure
- Grid Tie models also available

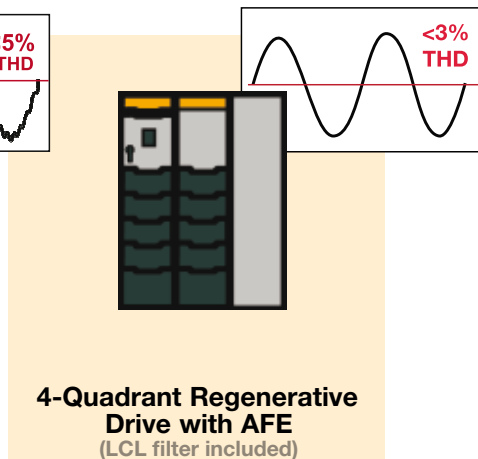


The modular design of the AC890PX makes it easy to configure parallel input modules and multi-phase configurations. By using 12-pulse or 18-pulse configurations, harmful line harmonics can be greatly reduced. Or, for the ultimate in harmonic abatement, an Active Front End (AFE) may be selected. The typical AC drive has six rectifiers in a three phase bridge configuration, and is commonly referred to as a "6-pulse" configuration. A 12-pulse drive contains two sets of six rectifiers, an 18-pulse drive, three sets of six rectifiers and so on. If the AC power connected to each set of rectifiers is "phase shifted", then some of the harmonics produced by one set of rectifiers will be opposite in polarity from the harmonics produced by the other set of rectifiers. The two (or three) wave forms effectively cancel each other out. To provide the phase shifted AC power, a transformer with multiple secondary windings is used.

Alternative Input Supplies



Active Front End (AFE)



High Power Modular AC Drive

AC890PX Series

150 - 600 HP/110 - 400kW



Technical Specification

Nominal Supply Voltage	VT (Standard duty)	CT (Heavy duty)
400 VAC 3ph +/-10%	132-400kW	110-315kW
460 VAC 3ph +/-10%	200-600HP	150-500HP
575 VAC 3ph +/-10%	200-500HP	150-400HP
690 VAC 3ph +/-10%	132-400kW	110-315kW
Overload Capacity		
Induction motor - standard duty (Variable Tq)	110% for 60 sec	
Induction motor - heavy duty (Constant Tq)	150% for 60 sec	
PMAC motor - heavy duty (Constant Tq)	150% for 60 sec	
Output Frequency	0 - 590 Hz in V/F mode 0 - 350 Hz in Closed loop vector mode 0 - 120 Hz in Sensorless vector mode	
Switching Frequency	2 kHz (standard) - Adjustable 4 kHz (derating required, consult factory). Suppression of audible frequencies	
Dynamic Braking	Dynamic braking module integrated as standard (limited service db resistor included). External braking resistor optional.	
Operating Temperature	0°C to 40°C, derate 1% per degree over 40°C to maximum of 50°C	
Altitude	Up to 1000m ASL (derate 1% per 100m to 4600m max)	
IP Rating	IP 21/UL (c-UL) Enclosed Type 1 as standard. Higher ratings are available - consult factory for quotation	
Dimensions	86.7" (2203mm) H x 19.9" (505mm) W x 25.6" (650mm) D (Height includes 8" (203mm) vent hood)	
Enclosure Rating (Radiated emissions)	EMC Enclosure Standard	Attenuation to RF in spectrum 30-1000MHz
	EN61800-3 Category C3	NONE
	EN61800-3 Category C2 Restricted Distribution EN61000-6-3	10db
	EN61800-3 Category C1 Unrestricted Distribution EN61000-6-4	20db
Safety rating	STO - Category 3 to ISO13849-1 PLe, SIL3	
Humidity	85% maximum humidity at 40°C, non-condensing	
Atmosphere	Non flammable, non corrosive, dust free	
Climate	Class 3k3, as defined by EN50178 (1998)	
Vibrations	Test Fc meeting EN60068-2-6. 10Hz<=f<=57Hz sinusoidal 0.075mm amplitude, 57Hz<=f<=150Hz sinusoidal 1g, 10 sweep cycles per axis on each of three mutually perpendicular axis	
Pollution Index	Degree II (non-conductive pollution, except for temporary condensation)	
Europe	Low Voltage Directive 73/23/EEC with amendment 93/68/EEC, Article 13 and Annex III, EN50178 (1998) Conforms to EN61800-3 (second environment)	
North America / Canada	Product conforms to UL specifications.	

Safe Torque Off - STO

The AC890PX features Safe Torque Off functionality as standard, offering users protection against unexpected motor start-up in accordance with EN18849-1 PL-e or SIL3. Two independent STO control channels are implemented in hardware. A fault in one control channel will not affect the other channel's ability to prevent the drive from starting, i.e. the STO function of the is tolerant to any single fault. It may not be tolerant to an accumulation of faults. This is in keeping with its declared safety ratings. If one or both STO control inputs is requesting the STO function, the drive will not start, even if for example, the drive's software malfunctions and tries to cause the motor to turn. The STO function is implemented in hardware; it overrides all software activities. The only software involvement is to report STO status to the user via an MMI, serial communications link or user terminal on the AC890 control board as defined by the drive configuration.

Note: STO is an electronic inhibit intended for use during normal operation of the machine. It is not intended for use during machine maintenance, repair, replacement or other similar activities. For these activities recognized electrical power isolation devices and lock-out procedures must be used.

High Power Modular AC Drive

AC890PXP Series

Solutions above 600 HP

Description

The flexible nature of the AC890PXP means that higher power ratings of up to 1800HP (1200kW) can be provided as well as the standard catalog ratings. These larger AC890PXP units use the same modular construction as the standard AC890PX, with replaceable phase modules, built into multiple bay cabinets.

Power ratings of over 1000HP (750kW) can be supplied with

Parker's 2-phase advanced cooling system, which uses a non-conductive liquid refrigerant. This enables Parker to offer high power inverters with one of the highest power densities available in the market, and its customers to benefit from smaller form factors and increased floor space.

The high power AC890PXP is also available as a DC input inverter, AC input converter, grid-tie

inverter and fully line regenerative four-quadrant drive. With this flexibility and line voltage ratings up to 690 VAC, the AC890PXP covers applications including industrial motor control, solar and wind power, and utility scale energy storage.

Please contact the factory to obtain pricing on an AC890PXP to meet your specifications.



High Power Modular AC Drive

AC890PX High Power Modular AC Drive

150 - 600 HP/110 - 400kW



Electrical Characteristics

Part Numbers	Induction motor ratings					PMAC motor ratings *	
	Constant Torque		Variable Torque			Constant Torque	Variable Torque
	Power	Output Current (A)	Power	Output Current (A)	Maximum current w/o overload	Output Current (A)	Output Current (A)
400 VAC nominal							
890PX/4/0215/B/00/A	110 kW	215 A	132 kW	260 A	265 A	155 A	190 A
890PX/4/0260/B/00/A	132 kW	260 A	160 kW	340 A	347 A	185 A	245 A
890PX/4/0300/B/00/A	160 kW	300 A	200 kW	390 A	398 A	210 A	285 A
890PX/4/0420/B/00/A	200 kW	420 A	250 kW	480 A	487 A	295 A	350 A
890PX/4/0480/B/00/A	250 kW	480 A	315 kW	600 A	609 A	340 A	435 A
890PX/4/0520/B/00/A	280 kW	520 A	355 kW	660 A	670 A	365 A	475 A
890PX/4/0580/B/00/A	315 kW	580 A	400 kW	720 A	731 A	410 A	520 A
460 VAC nominal							
890PX/4/0215/B/00/A	150 HP	200 A	200 HP	250 A	255 A	140 A	180 A
890PX/4/0260/B/00/A	200 HP	250 A	250 HP	320 A	326 A	175 A	230 A
890PX/4/0300/B/00/A	250 HP	300 A	300 HP	380 A	388 A	210 A	275 A
890PX/4/0420/B/00/A	300 HP	380 A	400 HP	480 A	487 A	270 A	350 A
890PX/4/0480/B/00/A	400 HP	460 A	500 HP	590 A	599 A	325 A	425 A
890PX/4/0580/B/00/A	500 HP	580 A	600 HP	700 A	711 A	410 A	505 A
575 VAC nominal							
890PX/6/0130/B/00/A	150 HP	160 A	200 HP	210 A	214 A	90 A	120 A
890PX/6/0160/B/00/A	200 HP	210 A	250 HP	250 A	255 A	115 A	145 A
890PX/6/0190/B/00/A	300 HP	260 A	300 HP	310 A	316 A	140 A	180 A
890PX/6/0280/B/00/A	150 HP	310 A	400 HP	420 A	426 A	170 A	240 A
890PX/6/0340/B/00/A	400 HP	410 A	500 HP	480 A	487 A	220 A	275 A
690 VAC nominal							
890PX/7/0130/B/00/A	110 kW	130 A	132 kW	160 A	163 A	60 A	85 A
890PX/7/0160/B/00/A	132 kW	160 A	160 kW	190 A	194 A	75 A	105 A
890PX/7/0190/B/00/A	160 kW	190 A	200 kW	240 A	245 A	85 A	130 A
890PX/7/0230/B/00/A	200 kW	230 A	250 kW	280 A	286 A	105 A	150 A
890PX/7/0280/B/00/A	250 kW	280 A	315 kW	340 A	347 A	125 A	185 A
890PX/7/0320/B/00/A	280 kW	320 A	355 kW	390 A	398 A	145 A	210 A
890PX/7/0340/B/00/A	315 kW	340 A	400 kW	430 A	436 A	155 A	235 A

PMAC motor ratings use 4 kHz switching frequency

Selection and Part Numbers

AC890PX High Power Modular AC Drive

150 - 600 HP/110 - 400kW



Part Number Key

Example ▶										890	PX	/	4	/	0580	/	B	/	00	/	A	/	US
Product Family	AC890PX Standard High Power Drive										890												
	AC890PX Conformal Coated PCB High Power Drive										891												
Product Type	Modular Standalone Drive										PX												
	Supply Voltage	kW	Output Current (A)		HP																		
Power / Current Ratings	380-460V AC nominal										4												
		110	215		150																		
		132	260		200										0215								
		160	300		250										0260								
		200	420		300										0300								
		250	480		400										0420								
		280	520		-										0520								
		315	580		500										0580								
	500-575V AC nominal										6												
	600-690V AC nominal										7												
		110	130		150										0130								
		132	160		200										0160								
		160	190		250										0190								
		200	230		-										0230								
		250	280		300										0280								
		280	320		-										0320								
		315	340		400										0340								
	Brake Switch	No brake switch																N					
Braking control including internal brake resistor (200kJ/2.4kW) and thermal OL protection provided																B							
Build Options	Top cable entry																				00		
	Bottom cable entry																				01		
	Top entry no line choke																				02		
	Bottom entry no line choke																				03		
Performance	Advanced performance																					A	
	High performance																					H	
Language	French																						FR
	German																						GR
	Italian																					IT	
	Polish																					PL	
	Portuguese																					PO	
	Spanish																					SP	
	Swedish																					SW	
	English (50Hz)																					UK	
	English (60Hz)																					US	

AC890

Accessories and Options

AC890/AC890PX Series

Table of Contents



Category	Page
Operator Interface	
While every AC890 and AC890PX series drive is shipped with a keypad/display, there are several options available such as a remote keypad kit and a full featured graphical display. In addition, the TS8000 series HMI is fully compatible with the AC890 and AC890PX series.	67
Accessories - Common Bus	
The AC890 series is a natural for common bus applications. Frames B-D can be mounted side by side, and include convenient accessible clamp terminals for bus connections, as well as bus adapters to connect additional rows of drives. For convenience, we offer quality bus bar stock and related accessories so that everything is guaranteed to fit.	67
Options Cards - Communication	
A wide variety of communications cards allow the AC890 and AC890PX series drives to interface with most current and legacy SCADA networks, using both open architecture and proprietary standards. Other cards allow multiple drives to communicate with each other, peer to peer. Field or factory installed.	68
Options Cards - Feedback	
Since the AC890 family is compatible with such a wide variety of motor types, a number of feedback option cards are offered. Choose from a number of encoder and resolver options to match the feedback device on your motor or process line. Field or factory installed.	70
Option Cards - I/O	
Even though the AC890 family comes standard with extensive I/O, certain applications have special requirements. For these, we offer option cards that will accept "master encoder" inputs, registration mark signals, and high resolution analog references. Field or factory installed.	71
Accessories - Mounting and Wiring	
The unique design of the AC890 frame B-D accommodates ductwork and forced air ventilation, and we offer the hardware required in the form of duct and fan kits. For ease of wiring, several pre-manufactured cables are offered.	74
Accessories - Dynamic Braking	
All AC890 drives include braking logic and transistor, but since not every application requires dynamic braking, the resistor assemblies are optional. Braking kits include overload	75
Accessories - Software Tools	
For drive configuration and programming	106
Accessories - Power Quality	
Preselected line/load reactors and EMC filters can be provided for the AC890 family.	112



Accessories

AC890/AC890PX Series



Operator Interface

Model	Description
6511/TTL/00	4 Digit LCD keypad*
6901/00/G	Alphanumeric multilingual keypad**
6911/01/00/G	Graphical operator station
6052/00	Remote mounting kit for 6901 with 3m cable
TS8000 series	Full featured HMI - purchased separately

*Standard equipment for frames B - D

** Standard equipment for frames E - K and All AC890PX



6511/TTL/00



6901/00/G



6911/01/00/G

Keypad Blanking Cover

The keypad blanking cover kit may be used when local keypad is not installed. Kit includes light pipes for LED's.



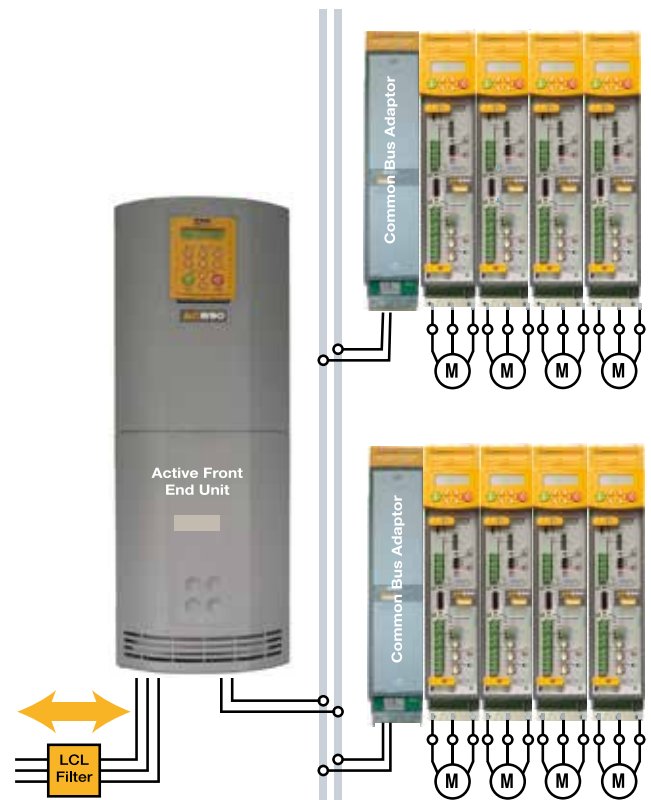
Part Number	Description	Suitable for
BD467732U002	Blank Cover	AC890 Frame B-D
LA500326U001		AC890 Frame E-J

Cables

Model	Description
8905/USBCL1/00	USB programming cable for AC890/AC890PX
8905/FWCBL200/00	FireWire cable 200 mm (B frame to B, C, D frame)
8905/FWCBL280/00	FireWire cable 280 mm (C, D frame to B, C, D frame)
8905/FWCBL1000/00	FireWire cable 1000 mm (Rack to rack)
8905/FWCBL4500/00	FireWire cable 4.5 m (Rack to rack to enclosure)
CM471585U001	Drive to LA471585 module cable, 1 meter
CM471585U002	Drive to LA471585 module cable, 2 meter
CM471585U003	Drive to LA471585 module cable, 3 meter
CM471592	Extended LA471585 to LA471585 cable, 2 m

Common Bus System

Model	Description
BH465850	1 meter DC Rail/Bus Bar, copper 140A
BC465938U200	Insulator for DC bus bars 200mm
BA469216	1 meter Grounding bus bar
890CA/5/0050B/N/00/N/EN	Common bus adapter, 50A, w/bus capacitors
890CA/5/0080B/N/00/N/EN	Common bus adapter, 80A, w/o bus capacitors



Example of a common bus system using multiple AC890 CD units with a single AC890 AFE. Bus bar connects 4 drives together with Common Bus Adapter, which connects additional rows of drives to main DC bus. The common bus adapter includes the necessary fuses.

Options

AC890/890PX Series

Communication Interfaces



Ethernet/IP (8903/IP/00)

Supported Protocols	Ethernet IP, Level 2 I/O Server CIP
Communication speed	10/100Mbps/s
Station Address	By DSE software via RTNX protocol
Connection support	4 class 1 (cyclic I/O data transfer), 16 class 3 (explicit messaging)
Interface	RJ45
Suitable for Drives	AC890/AC890PX version 3.2+

Modbus/TCP (8903/IM/00)

Communication speed	10/100Mbps/s
Station Address	By DSE software via RTNX protocol
Connection support	Up to 4 simultaneous connections
Interface	RJ45
Suitable for Drives	AC890/AC890PX version 3.2+

EtherCAT (8903/CT/00)

Supported Protocols	CANopen over EtherCAT (CoE)
Communication speed	100M bits/s
Features	DS301 compliant, EMCY support
Interface	RJ45 in/RJ45 out
Suitable for Drives	AC890/AC890PX version 3.7+

DeviceNet (8903/DN/00)

Supported Protocols	Supports the group 2 only slave subset of the DeviceNet protocol
Supported Messages	Polled I/O, Cyclic Outputs, Change of State (COS), Explicit Messaging
Communication Speed	125K, 250K et 500K bits/s
Station Address (MACID)	DIP switch or software setting of station address and network speed
Interface	5-position removeable terminal strip
Suitable for Drives	AC890/AC890PX version 1.9+

ControlNet (8903/CN/00)

Supported Messages	Polled I/O
Station Address	Selectable by DSE software or hardware switches
Data capacity	Up to 504 bytes of producer data and 504 bytes of consumer data
Interface	2 Co-axial RG-6 connectors (channel A, B), RJ45 network access port
Suitable for Drives	AC890/AC890PX version 1.4+

Profinet/IO (8903/PN/00)

Supported Protocols	Profinet I/O Real-time (RT) Protocol
Communication speed	100Mbps/s
Station Address (IP)	Software setting of IP address via DSE
Interface	RJ45
Suitable for Drives	AC890/AC890PX version 3.3+



**Plug-in Design
for easy field
installation of all
communications
options, or order
factory installation...
your choice!**

Options

AC890/890PX Series

Communication Interfaces



Peer to Peer (8903/SP/00)

Supported Protocols	Peer to peer data exchange with other AC890/AC890PX drives
Communications Speed	Up to 1Mbits/s selectable by DIP switch
Station Address	DIP switch
Interface	5-position removable terminal strip
Suitable for Drives	AC890/AC890PX version 3.3+

FireWire IEEE 1394 (8903/FA/00)

Communication Supported	Peer-to-Peer communication between drives via IEEE1394 standard
Communication Speed	Up to 400 MBaud
LA471480	Firewire Repeater Kit - includes 100 ft. CAT5 cable
Interface	3 IEEE1394a Firewire ports, removable terminal strip for 24V power input
Suitable for Drives	All AC890/AC890PX

RS485/Modbus (8903/RS/00)

Supported Protocols	Slave Modbus RTU
Communication Speed	1200 to 115200 bits/second
Interface	RS485 2 wire
Station Address	Selectable via software
Suitable for Drives	AC890/AC890PX version 3.7 +

CANopen (8903/CB/00)

Profile	DS402
Supported Messages	SDO, PDO, NMT, SYNC
Communication Speed	20K, 50K, 125K, 250K, 500K, 1Mbits/s selectable by software or DIP switch setting
Station Address	DIP switch or software setting of station address
Interface	5-position removable terminal strip
Suitable for Drives	AC890/AC890PX version 1.3+

Profibus-DP (8903/PB/00)

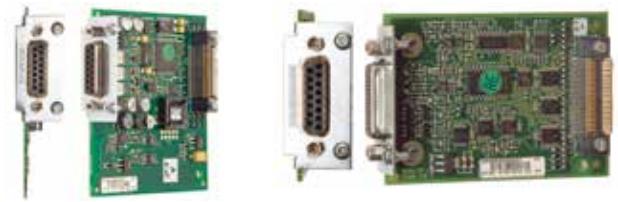
Supported Protocols	Profibus-DP ; Demand Data and Data Exchange
Communication Speed	Up to 12M bits/s selected by the master
Station Address	DIP switch or software setting of station address
Interface	9-pin D-sub connector
Suitable for Drives	AC890/AC890PX version 1.4+

Note: Part numbers above refer to option cards provided loose. To order an option card factory installed in a drive, change the last two digits from "00" to "FF".

Options

AC890/890PX Series

Feedback cards



8902/RE/00 - Resolver

The 8902/RE resolver speed feedback option allows the resolver to be connected directly to the drive to provide highly accurate speed feedback measurement. Contains a carrier output signal to power the resolver.

Part Number	Description
8902/RE/00/00	Optional Resolver feedback card
8902/RE/00/FF	Optional Resolver feedback factory-installed

Features

Maximum Speed	Up to 50,000 RPM (with 2 pole resolver)
Carrier Output Signal	7V rms, 8kHz
Maximum Carrier Supply	70mA rms
Maximum Input Voltage	±12V peak
Accuracy	< 5 minutes
Resolution	Equivalent to 16 bits in one revolution of resolver
Inputs	Differential inputs Zin ~2 kΩ
Maximum Input Voltage	12V peak

8902/M1/00 - Sin/Cos Encoder

The Sin/Cos Registration Option allow 1Volt peak-to-peak Sin/Cos encoders to be connected directly to the motor controller to provide highly accurate speed feedback measurement and registration. It may be used in conjunction with 8903/M1 for systems requiring two simultaneous encoder inputs. See page 72 for more information.

Part Number	Description
8902/M1/00/00	Optional encoder feedback card
8902/M1/00/FF	Optional encoder f/b card factory-installed

Features

Maximum Pulse Rate	250kHz
Receiver Impedance	120Ω
Input Format	2 differential 1V p-p signals in quadrature
Encoder Supply	250mA maximum load
Supply Voltage	5V/10V adjustable
Terminal Type	15 pin D-Sub connector
Maximum Cable Length	150m shielded cable
Serial Protocol	Endat 2.1

8902/EQ/00 - HTTL Encoder

The HTTL 8902/EQ speed feedback option allows incremental encoders to be connected directly to the drive to provide highly accurate speed feedback measurement. Supplies variable voltage isolated encoder power supply.

Part Number	Description
8902/EQ/00/00	Optional HTTL incremental encoder
8902/EQ/00/FF	Option HTTL encoder factory-installed

Features

Maximum pulse rate	250kHz (differential) 200kHz (single ended)
Receiver current	≤10mA per channel
Input Format	Two differential channels in quadrature (Clock/direction or clock only)
Input Voltage	±30V (differential), 0-30V (single-ended)
Input Voltage Differential	±30V maximum
Input Voltage Threshold	3V ± 1V (differential) 8V ± 1V (single-ended)
Encoder Power Supply	Maximum load 200mA or 2W Voltage adjustable 10V to 20V by firmware

Options

AC890/890PX Series

I/O Cards



8903/EP/00 - Encoder Input

The 8903/EP encoder input option allows an incremental encoder input as a reference, and provides a synthesized encoder output. The input features optically isolated differential inputs for channels A, B and Z. All inputs are compatible with RS422 and RS485 encoders, as well as encoders that provide output voltages as high as +/-30V. All decoding logic required to interface the encoder input to the drive is provided. Three non-isolated differential digital outputs are used for synthesizing an encoder output. Installed along with an 8902-EQ incremental encoder option, the board can be used to create an electronic line shaft between the reference and feedback encoders.

Part Number	Description
8903/EP/00/00	Optional Encoder Input card
8903/EP/00/FF	Optional Encoder Input factory-installed

8903/AI/00 - Hi-Res Analog Input

The 8903/AI card adds a high resolution analog input to the drive. In addition to all of the features and functionality of the 8903/EP encoder option board above, the 8903/AI includes a 15 bit plus sign +/-10V analog input. This makes the drive suitable for applications, where the drive follows a precision analog speed set point from a CNC and send back to the CNC the position of the controlled axis. It provides the fast response times required for accurate position control.

Part Number	Description
8903/AI/00/00	Optional High Resolution Analog Input and Encoder Input card
8903/AI/00/FF	Optional High Resolution Analog Input and Encoder Input factory-installed

Features

Encoder Input	8903/EP and 8903/AI
Maximum Pulse Rate	250kHz
Receiver Current	≤10mA per channel
Input Format	Two differential channels in quadrature, clock/dir or clock only
Input Voltage Range	±30V (differential) 0-30V (single-ended) or RS422/485
Input Voltage Threshold	< 2V (differential) 8V ± 1V (single-ended)
Synthesized Encoder Output	8903/EP and 8903/AI
Supply Voltage	30V
Operating Input Supply Voltage (VS)	5V to 24V Absolute Maximum
Maximum Output Frequency	250kHz on each output
Maximum Output Current	± 100mA per output
Output Voltage	Low logic level < 3V @ 100mA High logic level > VS – 4V @ 100mA
Overload and short circuit duration	Indefinite
Maximum cable length *	150 meters
Analog Input	8903/AI Only
Resolution	15 bits + sign
Input voltage range	+/- 10V
Input Format	Differential
Input Impedance	100k-ohm
Input low pass filter	3kHz

**Plug-in Design
for easy field
installation of all
feedback and I/O
options, or order
factory installation...
your choice!**



Options

AC890/890PX Series

Sin/Cos registration position

8903/M1/00, 8902/M1/00

Description

The 8903/M1/00 and 8902/M1/00 feedback cards allow operation without external registration position, thanks to the connection of the encoder to the drive. They provide highly accurate speed feedback measurement and registration. Nevertheless registration applications are best achieved when both cards are used.

- Registration achieved **in the drive** ("High Performance" AC890 model only)
- Interpolates each encoder line with 11-bit accuracy giving 4 million counts/rev. on a 2048 line encoder
- Optional 1V input from 'Z' index pulse for use with registration
- Supplies 5V or 10V to the encoder
- Decodes Heidenhain Endat 2.1 absolute position encoders
- 4 optically isolated auxiliary digital outputs that can be used either for general purpose inputs, or for inputs from registration mark sensor (8903/M1 only)
- 3 non-isolated auxiliary digital outputs that can be either for general purpose outputs or for synthesizing an encoder output (8903/M1 only)

Part Number	Description
8902/M1/00	Slave SinCos registration
8903/M1/00	Master SinCos registration
8902/M1/FF	Slave SinCos registration factory-installed
8903/M1/FF	Master SinCos registration factory-installed

Approved Encoders	1V p-p	Endat 2.1	Single Turn ABS	Multi-turn ABS
Heidenhain :				
EQN425	√	√		√
ECN413	√	√	√	
ERN480	√			
Stegmann :				
HG660 AKR (xxxx)S	√			
HG660 DKR (xxxx)S	√			
Hengstler :				
RIS58-H	√			



Specification

Encoder Inputs (8902/M1 and 8903/M1)

Maximum Pulse Rate	250kHz
Receiver Impedance	120Ω
Input Format	2 differential 1V p-p signals in quadrature
Encoder Supply	250mA maximum load
Supply Voltage	5V/10V adjustable
Terminal Type	15 pin D-Sub connector
Maximum Cable Length	150m screened cable
Serial Protocol	Endat 2.1

Auxiliary digital input (8903/M1 only)

Low Logic Level	0V to 5V relative to X63 pin 5
High Logic Level	15V to 26V relative to X63 pin 5
Absolute Max. Input Voltage	30V relative to X63 pin 5
Input Current	Low logic level < 1mA High logic level > 3mA, < 10mA Typical input at 24V : 7mA
Isolation withstand relative to drive chassis	30V
Input Safety Category	SELV
Terminal Type	6-way pluggable 3.5mm terminal block
Maximum Cable Length	150m screened cable is recommended for all lengths, but essential if over 30m in order to comply with EMC regulations

Auxiliary digital outputs (8903/M1 only)

Input Voltage (VS)	5V to 24V
Maximum Input Voltage	30V
Maximum Output Current	± 100mA per output
Output Voltage	Low logic level < 3V to 100mA High logic level > VS - 4V to 100mA
Overload and short circuit duration	Indefinite withstand
Max. Output Frequency	250kHz per output
Terminal Type	8-way pluggable 3.5mm terminal block
Maximum Cable Length	150m screened cable is recommended for all lengths, but essential if over 30m in order to comply with EMC regulations

Options

AC890/890PX Series

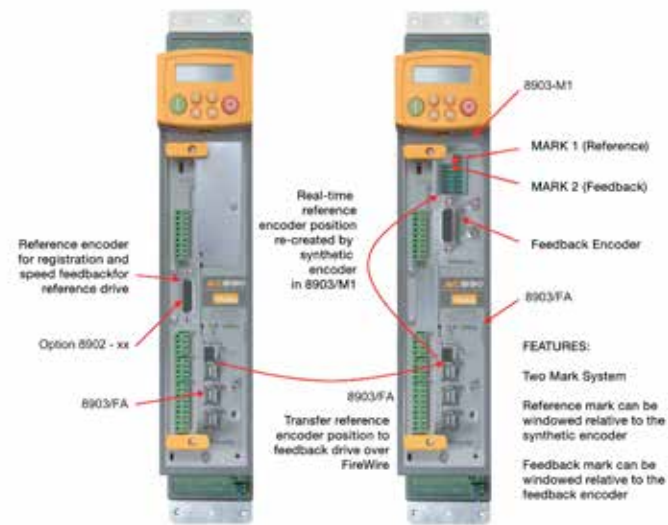
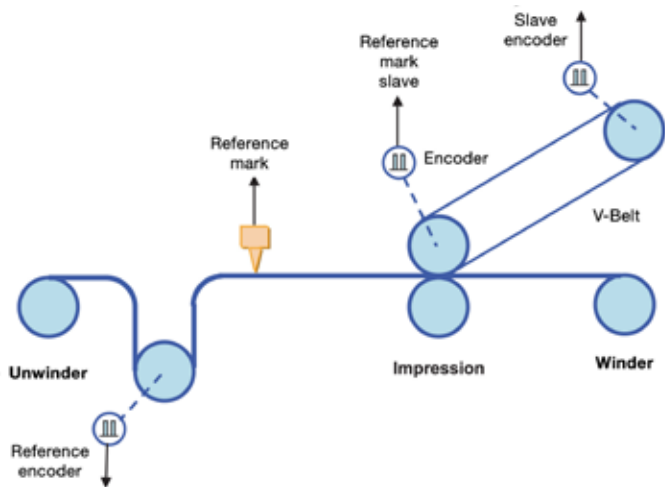
SinCos registration position



Possible Configurations

	8902/M1 installed in slot F 8903/M1 not installed	8902/M1 not installed 8903/M1 installed in slot A	8902/M1 installed in slot F 8903/M1 installed in slot A
Speed feedback Encoder	Via 8902/M1 card	Via 8903/M1 card	Via 8902/M1 card
Reference Encoder Signal		In this combination, a reference encoder position would normally be supplied by a FireWire option interface (8903/FA)	Supplied by 8903/M1 card
Registration	Available only using the encoder's 1V index pulse.	Auxiliary digital inputs and the encoder's index pulse (if supplied by the encoder) for registration event inputs	Auxiliary digital inputs and the encoder's index pulse (if supplied by the encoders) from both encoders are available for registration event inputs
Inputs/Outputs		The auxiliary digital inputs are also available for general purpose digital inputs. Auxiliary digital inputs are also for simulated pulse encoder output, or for general purpose digital output	The auxiliary digital inputs are also available for general purpose digital inputs. Auxiliary digital inputs are also for simulated pulse encoder output, or for general purpose digital output

Example of two-mark registration



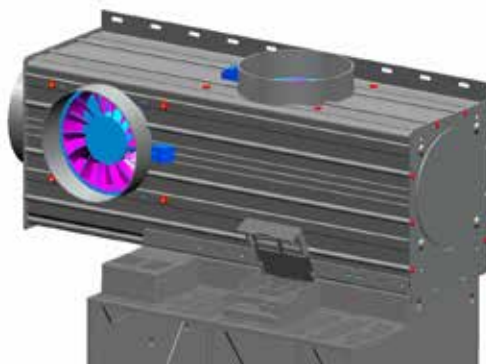
Accessories

AC890/AC890PX Series

Mounting and Wiring

Building your own system enclosure? Let Parker provide the necessary pre-engineered hardware to save you time and expense. Our installation kits and components come with guaranteed compatibility with the AC890 drives. All from a single source: Parker Drives.

Ventilation Components



AC890 air ducting components make easy work of cabinet building when force ventilation is to be used. The exhaust duct, supplied in 1 meter sections, is mounted to the top of the AC890 heatsinks and includes a 190 CFM fan. This arrangement provides a very effective means of cooling by drawing air directly through the drives' heat sinks and out of the air outlets which can be flex-ducted out of the cabinet. See part numbers in table to right.



LA471585 I/O Terminal Interface



The I/O Terminal Interface Module saves time and provides for a clean panel layout when used with the AC890 series drive. The module is mounted on DIN rail and connected to the X12, X13, X14, and X15 I/O connectors on the AC890. With this module, 15 I/O points are accessible through push-type terminals, eliminating the need for a screwdriver and any concerns about loose wiring. For multi-drive systems, the interface modules can be mounted side by side, and with the included keyed jumper, will share Coast Stop and Program Stop commands from the lead drive, as well as the 24VDC auxiliary supply. If modules are not to be mounted directly adjacent, there is an optional 2 meter bus jumper cable available.

Parker also offers pre-made cables in three lengths for easy connection to the AC890 drive. See part numbers in table below.

Part Number	Description
LA468430U003	Installation kit for 890CS/CA
LA468430U103	Installation kit for 890CD, Frames B-D
LA468430U203	Installation kit for 890SD, Frames B-D
8905/DUCTKIT/00	Ventilation duct kit, 1 meter exhaust duct, one 190 CFM fan kit. Frame B-D
8905/DUCTFAN/00	Ventilation duct fan, 190 CFM, with flange (additional or replacement fan for duct kit)
LA466717U004	Exhaust duct kit, Frame E
LA466717U003	Exhaust duct kit, Frame F
CI465892U008	Shield Grounding Clamp 8 mm (One included with drive)
CI465892U014	Shield Grounding Clamp 14 mm
CI465892U020	Shield Grounding Clamp 20 mm
CI468595U015	Dsub-15 pin to discrete terminal strip (in shell)
VM15	Breakout Module - Dsub 15 to DIN rail terminal strip
LA471585	I/O terminal interface module, DIN rail mount

Options

AC890/890PX Series

Dynamic Braking Kit

D/B Kit includes resistor, overload, protective cage, and enclosure top or panel mounting							
Part Number	Voltage	HP - CT	HP - VT	Ohms	Amps	Watts	Dimensions (in) LxWxH
AC890SD Models							
LA471355	230	1		200	0.71	100	6.5x1x1.6
LA471356		2		100	1	100	6.5x1x1.6
LA471358		3		56	1.89	200	6.5x1.2x2.4
LA471385		5, 7.5	10	25	3.9	380	13.5x4x5
LA471386		10	15	15	5	375	13.5x4x5
LA471353	460	1		500	0.35	60	4x1x1.6
LA471355		2		200	0.71	100	6.5x1x1.6
LA471355		3		200	0.71	100	6.5x1x1.6
LA471356		5		100	1	100	6.5x1x1.6
LA471357		7.5		100	1.42	200	6.5x1.2x2.4
LA471358		10		56	1.89	200	6.5x1.2x2.4
LA471359		15		56	2.99	500	13.2x1.2x2.4
LA471361		20		30	5	750	13.5x7x5
LA471362		30		25	5.5	756	13.5x7x5
LA471350		40		22.5	7.1	1134	13.5x10x5
LA471364		50	60	18	7.9	1123	13.5x10x5
LA471365		60	75	15	8.7	1135	13.5x10x5
LA471367		75	100	8	13.7	1502	13.5x13x5
LA471367		100	125	8	13.7	1502	13.5x13x5
LA471369		125	150	6	19.4	2258	13.5x10x5
LA471369		150		6	19.4	2258	13.5x10x5
LA471370		200	250	3	39	4563	20x18x10
LA471372		250	300	2.25	45	4556	20x18x10
LA471372		300	350	2.25	45	4556	20x18x10
LA471375		350	400	1.5	55	4538	20x18x10
LA471375		400	450	1.5	55	4538	20x18x10
LA471375		450	500	1.5	55	4538	20x18x10
LA471376		500	550	1.2	61	4465	20x18x10
AC890CS Module							
LA471377	230	10		20	4.3	370	13.5x4x5
LA471378		20		10	8.7	757	13.5x7x5
LA471379		40		6	13.7	1126	13.5x10x5
LA471380		60		4	19.4	1505	13.5x13x5
LA471349	460	25		40	4.3	740	13.5x7x5
LA471350		45		22.5	7.1	1134	13.5x10x5
LA471351		90		12	11	1505	13.5x13x5
LA471352		135		9	15.8	2247	13.5x10x7.5

*NEMA ICS 3-301.62 Dynamic braking stop option. Minimum 100% full load torque from base speed with 6x motor inertia, and 4 stops per hour.

Application Profile

Energy Savings - Pump applications

Pumping station retrofit reduces energy costs by replacing eddy current clutch

Summary

The wastewater treatment plant in Rock Hill, South Carolina turned to Parker Drives when it needed to reduce energy and replace an obsolete eddy current clutch system on three 200 HP waste water lift pumps. By connecting the motors directly to the pumps, engineers were able to remove the obsolete and troublesome clutch systems which had been controlling the flow of waste water.

AC890PX High Power Modular Systems Drives were installed in bottom entry configuration to provide stand-alone control of the pumps. The integrated line reactors also removed the need for expensive additional harmonic filters to be installed.

In addition to providing significant energy savings, the AC890PX installation has also reduced the overall maintenance costs of the system by reducing the mechanical stresses of the pumps during starting.



Benefits

- **Significant reduction in energy consumption**
- **Efficient speed control of pump drive motors**
- **Reduced wear and tear of mechanical components**
- **Reduced maintenance and increased system availability**
- **Integrated 3% line reactor removing the need for additional filtering**

Parker Drives Solution



AC890PX High Power Modular Drive

- High power ratings, can be configured for systems requiring 1MW and above
- Plug-in power modules for easy replacement
- Top or bottom cable entry provides flexibility in siting
- Available in 12 pulse, 18 pulse and AFE configurations
- Available in 400 VAC, 460 VAC, 575 VAC, and 690 VAC models

Worldwide Support

- Air-freightable plug-in power modules for improved availability and support
- Configurable to meet local requirements

Variable Speed DC Drives

Range Overview 1 HP - 1200 HP

www.parker.com/ssdusa/dc

Global DC Drive Solutions to Maximize Flexibility and Increase performance

With more than 30 years of worldwide application experience, Parker assists its customers in improving productivity and reducing energy consumption with a comprehensive, robust range of DC drives and drive systems. Parker DC drive products are sold, supported and serviced worldwide, with solutions from simple speed control to complex multi-motor coordinated process control. Parker DC drive products are easy to configure and commission, with simple but flexible function block-based configuration tools and connectivity with all major industrial fieldbus networks.

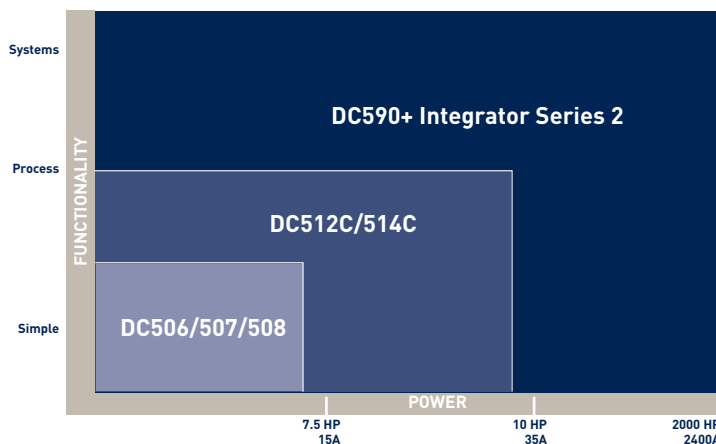
Digital DC Drives Maximize Flexibility and Functionality

Using the same 32-bit control architecture as our current range of AC drive products, Parker's range of digital DC drives provides the same high level of functionality - and with it flexibility and performance - as comparable AC drive systems, while simultaneously allowing the user to integrate both AC and DC drive systems in a single machine with the same interface and software.

Retrofit Existing Applications with the Latest Technology

By retrofitting existing DC motor applications with Parker digital DC drives, the user can avoid the cost of replacing an existing functioning, DC motor with a similar AC drive system, while still enjoying the benefits of a flexible control platform and high performance drive.

DC Drives Product Range Overview



DRV Package - "Ready to Install" DC Drives

Save design time, panel space and the time and cost of component sourcing and installation with Parker's unique DRV drive format. DRV drives include all peripheral power components typically required in a DC drive system, integrated in a self-contained package. This package contains the additional components within the footprint of the standard drive module and saves significant panel space while reducing complexity and improving the appearance.

DC590+ Integrator Series 2 Digital DC Drive

The DC590+ uses an advanced control platform to provide high levels of flexibility and performance for a wide range of applications. Designed for machine integrators, the DC590+ features function block programming, multiple communications and feedback options and support worldwide. Available as non-regenerative or full four quadrant regenerative. Available from 1-2400A maximum. Fieldbus options include Profibus-DP, CANopen, Modbus RTU, Ethernet and DeviceNet.

Typical applications include

- Converting machinery
- Hoists and cranes
- Plastics processing machinery
- Wire and cable manufacturing
- Automotive test stands

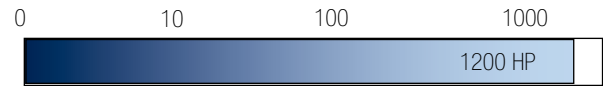


Variable Speed DC Drives

Range Overview 1 HP - 2000 HP

DC590+ DRV - “Ready to Install” Series 2

The DC590+ DRV Series version is a complete packaged drive solution, including AC line contactor, AC line fuses, DC fuse, control / field fuse and provisions for a motor blower starter. The DRV series reduces panel complexity while saving on panel space. Available to 1200 HP (1950A) maximum.



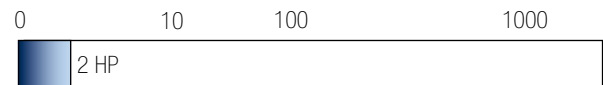
Analog DC Drives Range

Single Phase Analog Non-Isolated Converter: 506/507/508

Economical, compact torque and speed control of permanent magnet or shunt wound DC motors. Selectable between 110VAC or 230VAC single phase supply. Tachometer or armature voltage feedback, 3, 6, or 12A armature options.

Typical applications include:

- Conveyors, basic speed control
- Packaging machinery

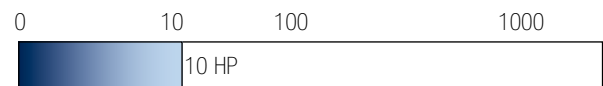


Single Phase Two Quadrant Analog Isolated Converter: 512C

The 512C provides effective torque and speed control of permanent magnet or wound field DC motors. Extremely linear speed and current loops in an isolated package, ideal for single or multiple motor applications up to 32A (10 HP).

Typical applications include:

- Centrifugal fans and pumps
- Extruders and mixers
- Small paper converting machines

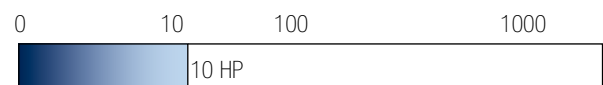


Single Phase Four Quadrant Analog Isolated Converter: 514C

The 514C offers full four quadrant regenerative control of permanent magnet or wound field DC motors. Ideal for applications requiring accurate or rapid deceleration of high inertia loads. Effective for single or multiple motor applications to 32A (10 HP).

Typical applications include:

- Machine tool spindles
- Wire drawing machines
- Winders/Reelers



DC Drives - DC590+ Integrator Series

1 HP – 1200 HP



Common programming, set-up and communications platform with AC690+ AC Integrator Series

Ratings up to 1200 HP (1950 Amps) and supply voltages to 690V, non-regenerative and regenerative models

Internal controlled field supply

Function block programming, including open and closed-loop winder control as standard

DRV style includes built-in contactor, fuses and provision for on-board control transformer and blower starter

Description

Building upon Parker's 40 years of DC drive experience, the DC590+ Integrator Series drive takes DC motor control to the next level. With 32-bit control architecture, the DC590+ 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

Programming

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
- Customized parameter values and legends
- On drive or remote mounting
- Local control of start/stop, speed and direction
- Quick set-up menu

Interface Options

The DC590+ has options to accept most common feedback devices. Armature voltage feedback is standard

For connectivity, a number of communications and I/O options allow the drive to take control of the application, or be integrated into a larger system. Custom functions and control can be easily created resulting in a highly flexible and versatile platform for DC motor control.

Function Blocks

Function Block Programming is a flexible control structure that allows an almost infinite combination of user functions to be realized 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 shipped with the function blocks pre-configured as a standard DC drive so you can operate it straight from the box without further adjustments. Alternatively, create your own control strategy with free DSElite software.

Standards

The DC590+ meets the following standards when installed in accordance with the relevant product manual

- CE marked to EN50178 (Safety, Low Voltage Directive)
- EN61800-3 (EMC Directive) with integral filters (External supply capacitors are required up to 110A for compliance.)
- UL/cUL listed up to 500HP



DC Drives - DC590+ Integrator Series

Features and Benefits

Easy to use operator controls

- Detailed diagnostics
- Multi-language display

Advanced autotuning

Standard open fieldbuses



Configurable input-output terminal blocks

- 5 analog inputs
- 3 analog outputs
- 9 digital inputs
- 3 digital outputs



Macro function blocks

- Open-loop winder control
- Winder control - loadcell/dancer
- Section control
- Maths functions
- Embedded controller functions

Worldwide product support

The DC590+ DC Drive is available with full application and service support worldwide. 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 DC590+ can be configured and commissioned within minutes, without turning the motor and without the need for high levels of engineering know how. The operator interface allows easy monitoring of machine operation and simplifies maintenance.

Easy integration into existing control networks

The DC590+ 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 DC590+ the flexibility needed for integration into any variable speed system. Combined with its embedded automation functions, its input-output configurations can in many instances eliminate the need for an external PLC.

Years of applications expertise at your service

The DC590+ macro function blocks are the result of years of experience gained by Parker 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.



DC Drives - DC590+ Integrator Series

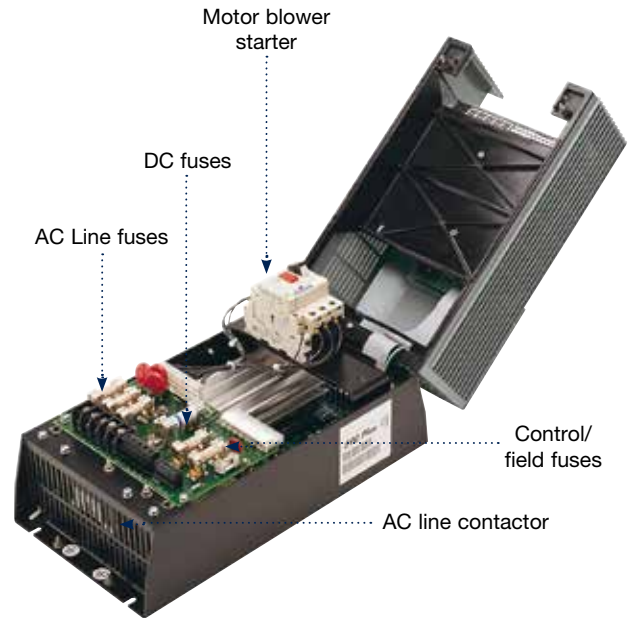
DRV Version -1A - 1950A

The DRV is a ready to install version of the DC590+ DC Drive.

The DC590+ is available in either module, or alternatively “DRV” format up to 1200 HP. The DRV includes all the peripheral power components associated with a DC drive system integrally fitted within the footprint of the drive. DRV options include the following integrally mounted within the drive:

- AC line or DC armature contactor
- AC line fuses
- DC fuse (On regenerative version)
- Control/field fuses
- Provision for optional motor blower starter
- Provision for optional auxiliary control transformer

All of these options can be supplied pre-wired within the drive.



Advantages

- Simplified panel design
- Reduced component mounting and wiring
- Reduced design time
- Reduction of purchasing costs of individual components
- Less complexity



Traditional DC drive section



DC590+ DRV equivalent illustrating panel space saving

DC590+

DC Drives - DC590+ Integrator Series

Technical Specifications

Specifications		
Power configuration	955+8Rxxx - 4 quadrant regenerative; 2 fully controlled 3 phase SCR bridges, DRV style	
	955+8Nxxx - 2 quadrant; 1 fully controlled 3 phase SCR bridge, DRV style	
	DC590+ - 4 quadrant regenerative; 2 fully controlled 3 phase thyristor bridges, chassis style	
	DC591+ - 2 quadrant; 1 fully controlled 3 phase thyristor bridge, chassis style	
Armature current rating (Amps DC)	Frame 1	15, 35A
	Frame 2	55, 70, 90, 110, 125, 165A
	Frame 3	206, 246A
	Frame 4	360, 425, 490, 700, 815A
	Frame 6	1200, 1600, 1950A
Overload	200% for 10 seconds	
	150% for 30 seconds	
	Higher ratings with reduced overload are available	
Supply voltage (VAC) 50/60Hz	120-220V (±10%) All sizes	
	220-500V (±10%) All sizes	
	500-600V (±10%) Frame 4, 6	
	600-690V (±10%) Frame 6	
Field current max	Frame 1	4A
	Frame 2, 3	10A
	Frame 4	30A
	Frame 6	60A
Field voltage max	Vfield = Vac x 0.9	
Operating Environment		
Operating temperature	Frame 1, 2	0-45°C (32-113°F)
	Frame 3 - 6	0-40°C (32-104°F)
	Derate by 1%/°C up to 55°C (131°F)	
Altitude	Up to 1640 ft (500m) above sea level	
	Derate by 1%/200m above 500m to 5000m max	



Standard 6901 MMI/Programming Keypad is provided with every DC590+ drive. It is easy to use, and may be remotely mounted.



Find out more...visit our DC Drives product page at
www.parker.com/ssdusa/dc590plus

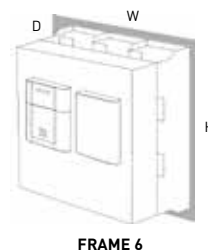
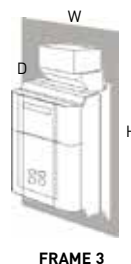
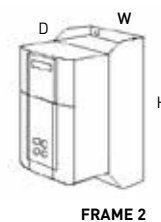
DC Drives - DC590+ Integrator Series

Technical Specifications

Protection	
	High Energy MOV's Heatsink Overtemperature Instantaneous Overcurrent SCR (thyristor) Trigger Failure Inverse Time Overcurrent Interline Snubber Network Field Failure Zero Speed Detection Speed Feedback Failure Stall Protection Motor Overtemperature
Inputs/Outputs	
Analog inputs	(5 Total - 12 bit plus sign) 1 - Speed demand setpoint (-10/0/+10V) 4 - Configurable
Analog outputs	(3 Total - 11 bit plus sign) 1 - Armature current output (-10/0/+10V or 0-10V) 2 - Configurable
Digital inputs	(9 Total - 24V, max 15mA) 1 - Program stop 1 - Coast stop 1 - External stop 1 - Start/Run 5 - Configurable
Thermistor Input	1 - Isolated
Digital outputs	(3 Total - 24V (max 30V) 100mA) 3 - Configurable
Reference Supplies	1 - +10V dc 1 - -10V dc 1 - +24V dc

Dimensions

Type	Frame	Dimensions (in/mm)		
		H	W	D
DRV	1	14.8/375	7.9/200	8.7/220
	2	21.5/546	7.9/200	11.5/292
	3	28.9/735	17.0/432	8.4/213
	4	54.0/1372	18.0/457	14.9/378
	6	38.0/966	56.0/1422	17.5/444
Chassis	3	19.1/485	11.8/300	9.2/234
	4	27.6/700	10.0/253	14.1/358
	6	28.1/715	27.0/686	17.3/440



Gray panels represent footprint of DRV units for frames 3, 4, and 6.

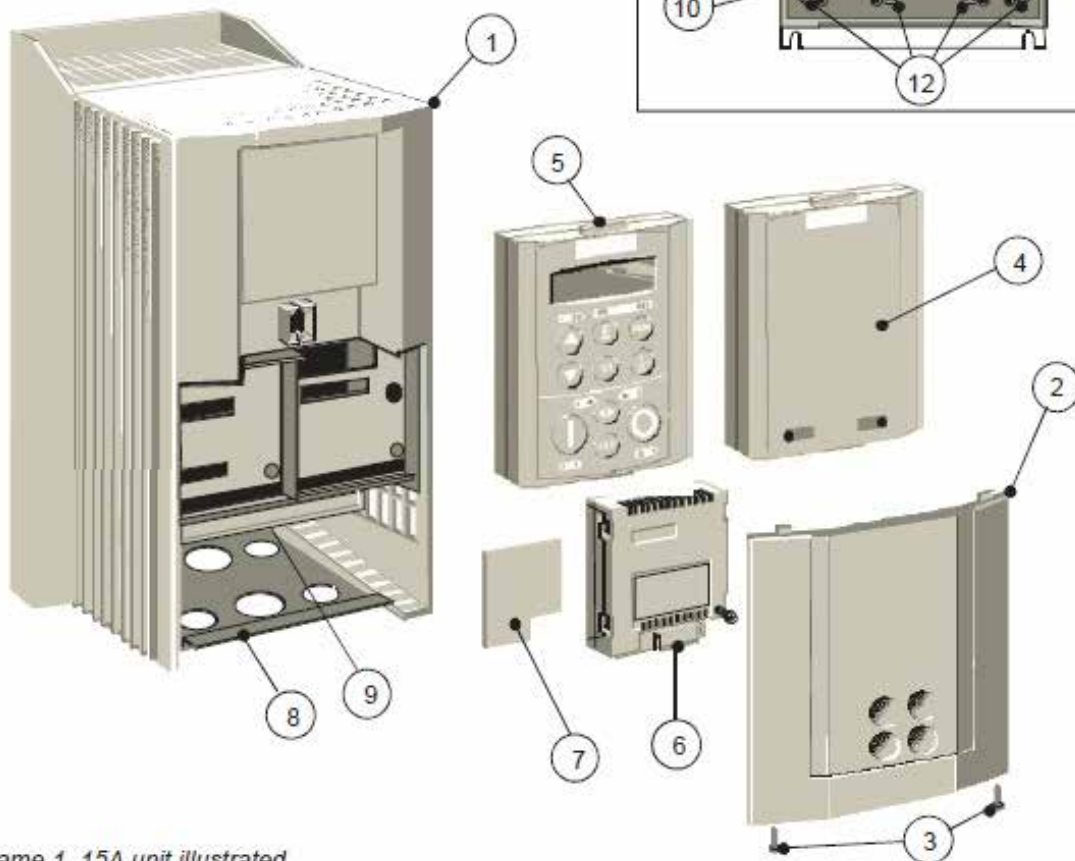
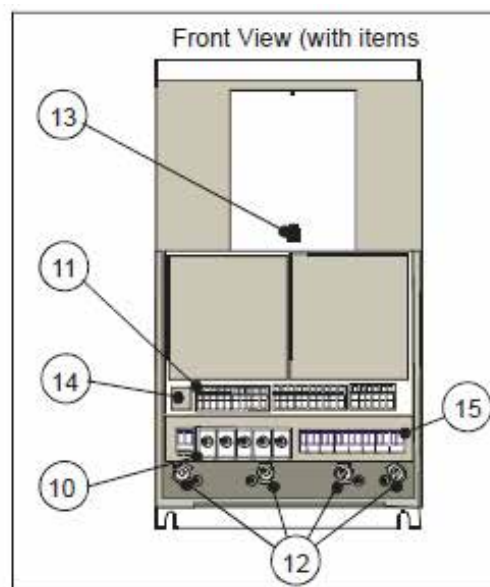
Frame 1-4 have integral cooling fan assemblies where required. Optional ducting kit for cubicle roof external ventilation available for frame 4.

Note: Dimension table includes only the 230/460 volt ratings. Drives for a wide range of input voltages are available. For product codes, current ratings, and dimensional data on 110-220 volt, 575 volt, and 690 volt units, please consult factory. Drives of higher power ratings can also be provided upon request.

DC Drives - DC590+ Integrator Series

Overview of Frames 1,2 and 3 (Chassis)

1	Main drive assembly
2	Terminal cover
3	Terminal cover retaining screws
4	Blank cover
5	6901 keypad
6	COMMS technology box (optional)
7	Speed feedback technology card (optional)
8	Gland plate
9	Power terminal shield
10	Power terminals
11	Control terminals
12	Grounding points
13	Keypad port
14	RS232 programming port
15	Auxiliary power, external contactor and isolated thermistor terminals



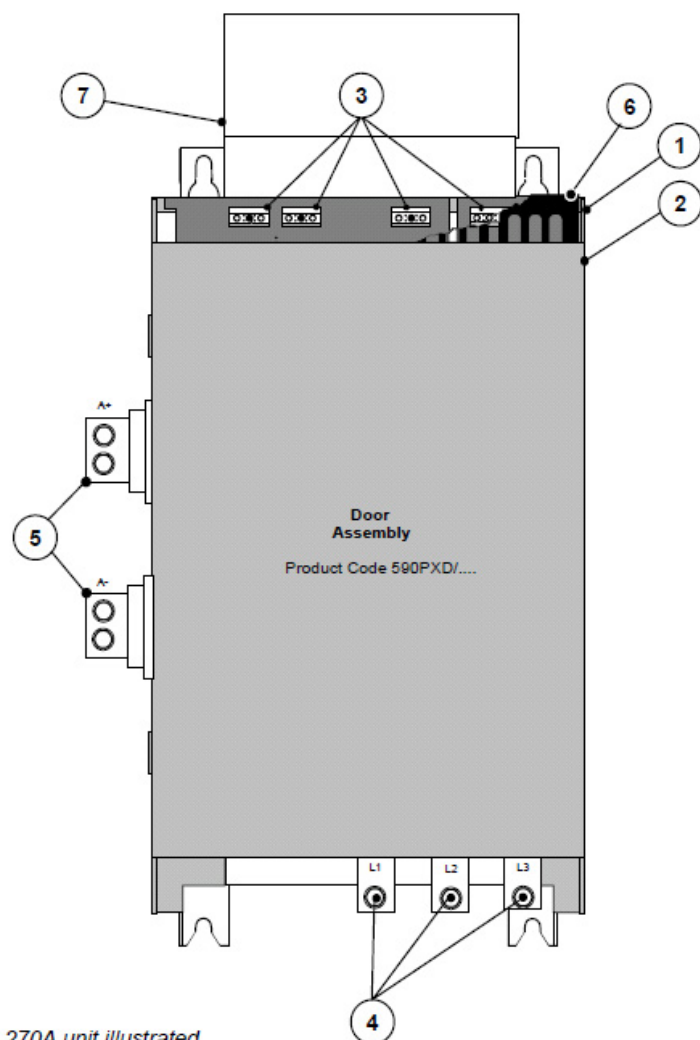
Frame 1, 15A unit illustrated

DC Drives - DC590+ Integrator Series

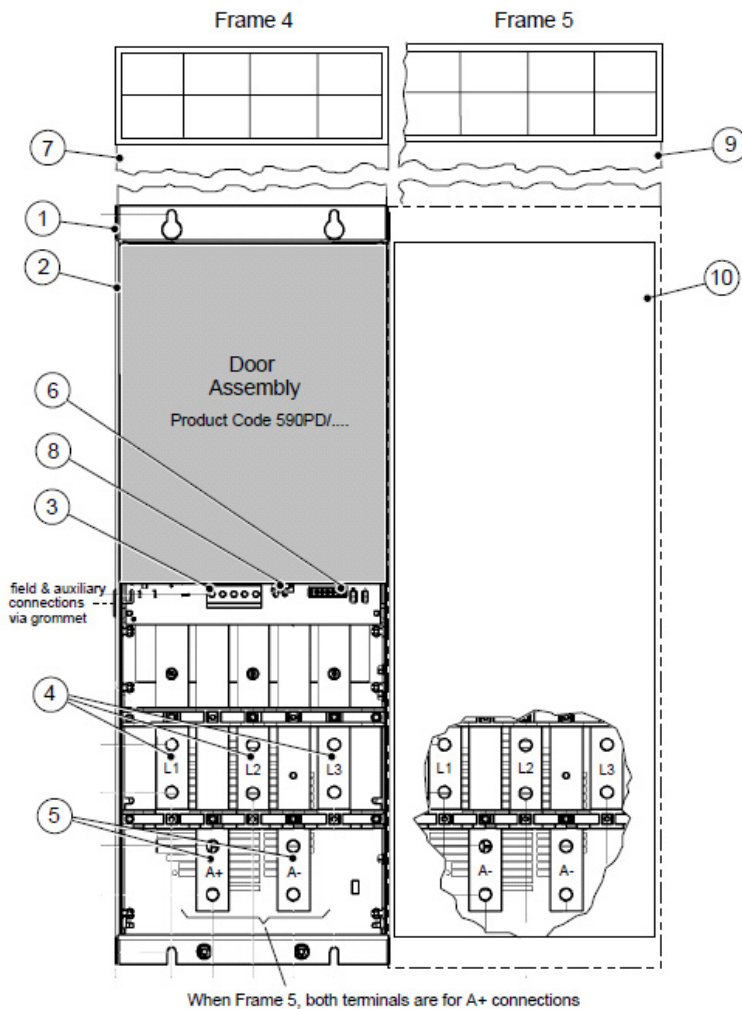
Overview of Frame 3/4 (Chassis)

1	Main drive assembly
2	Door assembly
3	Field wiring terminals
4	Busbars - main power input
5	Busbars - main power output
6	IP20 Top cover
7	IP20 Fan housing (where fitted)

1	Main drive assembly
2	Standard door assembly
3	Motor field terminals
4	Busbars - main power input
5	Busbars - main power output
6	Auxiliary supply, contactor and motor thermistor terminals
7	Frame 4 external vent (where fitted)
8	Contactor control select
9	Frame 5 External vent (where fitted)
10	Terminal cover (frame 5)



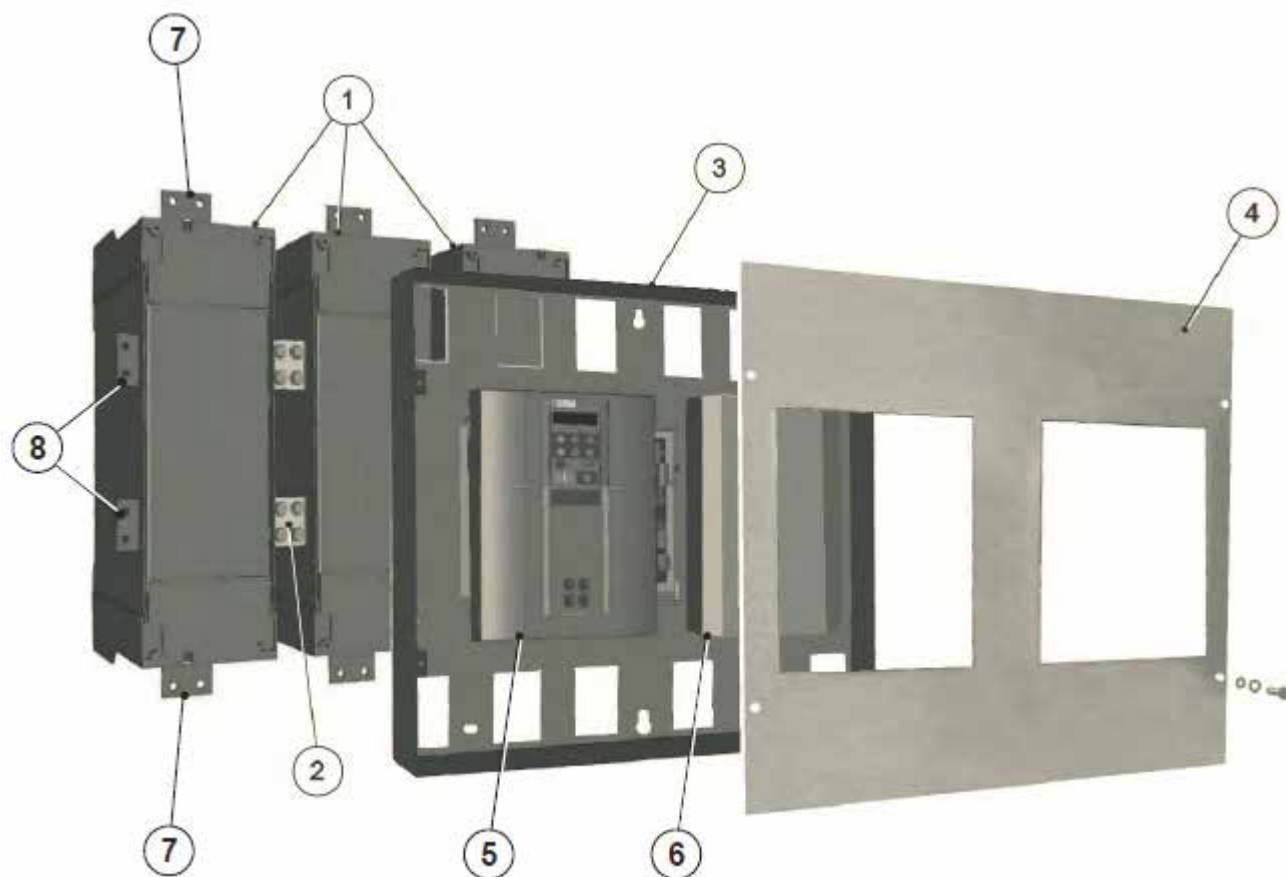
270A unit illustrated



DC Drives - DC590+ Integrator Series

Overview of Frame 6 (Chassis)

1	Phase assemblies - L1, L2, L3
2	Fishplate
3	Control panel assembly
4	Front cover
5	Standard door assembly
6	Field controller
7	Busbars - main power input
8	Busbars - main power output



DC Drives - DC590+ Integrator Series

Electrical Characteristics

	Part Number		HP Rating	Max Amps	Frame
Type	Non-Regenerative	Regenerative	(230V/460V)		
DRV	955+8N0007	955+8R0007	3/7.5	15	1
	955+8N0020	955+8R0020	10/20	35	1
	955+8N0030	955+8R0030	15/30	55	2
	955+8N0040	955+8R0040	20/40	70	2
	955+8N0050	955+8R0050	25/50	90	2
	955+8N0060	955+8R0060	30/60	110	2
	955+8N0075	955+8R0075	40/75	125	2
	955+8N0100	955+8R0100	50/100	165	2
	955+8N0125-A3	955+8R0125-A3	60/125	206	3
	955+8N0125	955+8R0125	60/125	206	3
	955+8N0150-A3	955+8R0150-A3	75/150	246	3
	955+8N0150	955+8R0150	75/150	246	3
	955+8N0200-A4	955+8R0200-A4	100/200	360	4
	955+8N0200-D4	955+8R0200-D4	100/200	360	4
	955+8N0250-A4	955+8R0250-A4	125/250	425	4
	955+8N0250-D4	955+8R0250-D4	125/250	425	4
	955+8N0300-A4	955+8R0300-A4	150/300	490	4
	955+8N0300-D4	955+8R0300-D4	150/300	490	4
	955+8N0400-A4	955+8R0400-A4	200/400	700	4
	955+8N0400-D4	955+8R0400-D4	200/400	700	4
	955+8N0500-A4	955+8R0500-A4	250/500	815	4
	955+8N0500-D4	955+8R0500-D4	250/500	815	4
	955+8N0700-D6	955+8R0700-D6	700	1200	6
	955+8N1000-D6	955+8R1000-D6	1000	1600	6
	955+8N1200-D6	955+8R1200-D6	1200	1950	6
Chassis	591+0243/500	590+0243/500	75/150	243	3
	591+0380/500	590+0380/500	100/200	380	4
	591+0500/500	590+0500/500	150/300	500	4
	591+0725/500	590+0725/500	200/400	725	4
	591+0830/500	590+0830/500	250/500	830	4
	591+1250/500	590+1250/500	750	1250	6
	591+1600/500	590+1600/500	1000	1600	6
	591+1950/500	590+1950/500	1200	1950	6

Type	Non-Regenerative	Regenerative	AC Line Voltage	HP	Max Amps	Frame
DRV	955+CN0500-A4	955+CR0500-A4	575	500	700	4
	955+CN0500-D4	955+CR0500-D4	575	500	700	4
	955+CN0600-A4	955+CR0600-A4	575	600	815	4
	955+CN0600-D4	955+CR0600-D4	575	600	815	4
	955+CN0900-D6	955+CR0900-D6	575	900	1200	6
	955+CN1200-D6	955+CR1200-D6	575	1200	1600	6
	955+CN1350-D6	955+CR1350-D6	575	1350	1850	6
Chassis	591+1250/690	590+1250/690	690	1100	1250	6
	591+1600/690	590+1600/690	690	1400	1600	6
	591+1950/690	590+1950/690	690	1600	1850	6

Accessories and Options

Operator Interface and Feedback

Standard operator keypad

Part Number	Description
6901/00/G	Standard Keypad



Multilingual

English · French · German · Italian · Portuguese · Swedish · Polish

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

Features

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

Remote Mounting Kit - Optional

The optional keypad mounting kit includes bezel and lead

Part Number	Description
6052/00/G	Remote mounting kit

Feedback Cards

The feedback cards allows the use of various popular feedback devices on the motor to provide accurate measurement of motor speed. Encoder cards also provides power supply.

Part Number	Description
AH387775U005	Encoder Card +5VDC
AH387775U012	Encoder Card +12VDC
AH387775U015	Encoder Card +15VDC
AH387775U024	Encoder Card +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 available
Power supply rating	2W maximum
Power supply load	1.4 x output power
Terminal size	16 AWG maximum
Tightening torque	0.4Nm

Feedback Devices

Part Number	Description
AH500935U001	Analog Tach Generator
AH386025U001	Plastic fiberoptic Microtach
AH386025U002	Glass fiberoptic Microtach



Accessories and Options

Communication Cards

The communication “Tech Boxes” allow the DC590+ to be connected to the most common industry standard fieldbuses.

Devicenet Communications Interface

Part Number: 6055/DNET/00

Supported Protocols	DeviceNet Drive Profile – Group 2 slave only
Station Address	DeviceNet Drive Profile – Group 2 slave only
Suitable for	DC590+ version 5.x+

RS485/Modbus Communications Interface

Part Number: 6055/EI00/00

Supported Protocols	Modbus RTU, EI Bisynch ASCII
Cabling	RS485 2 or 4 wire
Communication Speed	300 to 115200 bits/s
Station Address	Selectable via software
Suitable for	DC590+ version 5.17+

LINKnet Communications Interface

Part Number: 6055/LNET/00

Supported Protocols	Ethernet Modbus UDP/IP
Cabling	CAT-6 shielded
Communication Speed	100 Mbps
Suitable for	DC590+ firmware 8.10+

Features

- **Communication cards are provided separately for field installation**
- **Dimensions H x W D: 127mm x 76.2mm x 25.4mm**
- **LED indication of network and card status**

Ethernet Communications Interface

Part Number: 6055/ENET/00

Supported Protocols	Modbus/TCP and Ethernet IP
Communication Speed	10/100M bits/s
Station Address	Selectable via switch or Internet Explorer
Suitable for	DC590+ version 7.1+

Profibus-DP Communications Interface

Part Number: 6055/PROF/00

Supported Protocols	Profibus-DP
Communication Speed	Automatically detected
Station Address	Selectable via software
Suitable for	DC590+ version 5.x+



LINKnet is an Ethernet based version of the SSD LINK system. It is a peer-to-peer network designed to integrate AC and DC drives with remote I/O at high speed, with or without a supervisory PLC, allowing precise and repeatable control for complex machines and process lines. LINKnet nodes communicate using Modbus TCP over Ethernet.

LINKnet components are plugin compatible with many older Parker drives as well. An existing LINK system using AC690+ and/or DC590+ units can potentially be updated to LINKnet without requiring the replacement of functional drives. The system will connect to any Ethernet enabled PLC and with remote I/O. LINK2 touchscreens can be replaced by the Parker TS8000.

LINKnet tech boxes are connected by commercially available CAT-6 Ethernet cable, and require no external source of power when installed on a DC590+ drive. Parker has qualified third party remote fieldbus I/O modules for use in LINKnet systems. This provides users with an assortment of standard modules to choose from. Digital, analog and specialty modules may be combined, up to 64 per node, and will be recognized and supported by Parker DSE software.

Accessories and Options

Dynamic Braking and Contactors

Dynamic Braking Resistor Kits				
Drive HP	230 Volt		460 Volt	
	Part Number	Resistance (Ohms)	Part Number	Resistance (Ohms)
3	N/A	N/A	CZ353134	62
5	CZ353160	8.6	CZ353135	36
7.5	CZ353161	6.04	CZ353136	27
10	CZ353162	4.6	CZ353137	20
15	CZ353163	3	CZ353138	12
20	CZ353164	2	CZ353139	10
25	CZ353165	2	CZ353140	7
30	CZ353166	1.4	CZ353141	7
40	CZ353167	1	CZ353142	4.5
50	CZ353168	1	CZ353143	4.5
60	CZ353169	.742	CZ353144	4
75	CZ353170	.58	CZ353145	2.8
100	CZ353171	.452	CZ353146	2
125	CZ353172	.384	CZ353147	1.71
150	CZ353173	.325	CZ353148	1.28
200	CZ353174	.255	CZ353149	1.11
250	CZ353175	.196	CZ353150	.768
300	CZ353176	.176	CZ353151	.72
400	CZ353177	.137	CZ353152	.504
500	CZ353178	.1	CZ353153	.38
600	N/A	N/A	CZ353154	.38
700	N/A	N/A	CZ353155	.288
800	N/A	N/A	CZ353156	.23
900	N/A	N/A	CZ353157	.23
1000	N/A	N/A	CZ353158	.2

Armature Contactor Options			NOTES
Part Number	HP (230V)	HP (460V)	
3-pole DC loop contactor including D/B contact			
955+ADC30	1-7.5	1-15	For use with DC590+ frames 1 and 2, this option provides a 3 pole DC loop contactor with dynamic braking contact to isolate the motor armature from the drive. Dynamic braking requires a D/B Resistor Kit in addition.
955+ADC60	10-15	20-30	
955+ADC130	20-40	40-75	
955+ADC220	50	100	
D/B contact kit			
955+DBC35	1-10	1-20	All DC590+ DRV units (except 125 and 250 HP, which include a D/B contact on the DC contactor) require a separate dynamic braking contact kit if D/B is required. Through 100 HP, the kits use a 4-pole AC contactor pre-wired to the drive terminals. 300 HP and above, kits use a single pole DC contactor that requires 120 VAC control power to close. The D/B contact must be factory installed and requires a larger panel. D/B contact kits are designed to meet NEMA D/B requirements when used with D/B resistors above.
955+DBC70	15-20	30-40	
955+DBC110	25-30	50-60	
955+DBC162	40-50	75-100	
955+DBC2400*	150-700	300-1500	
955+DBC3000*	800-1000	1750-2000	

Accessories and Options

Filters, Control Transformer, BMS

EMC Filters

A range of pre-selected EMC (Electromagnetic Compatibility)/RFI (Radio Frequency Interference) Filters are available, suitable for all drives. These filters are a cost effective and easily implemented solution for the abatement of EMC in order to meet certain directives. Installation of the drive must be in accordance with the installation guidelines in the product manual.

Part Number	Rating	Type	Description
CO467844U015	15A	External	EMC Filter for DC590+ Drive
CO467844U040	35, 40A	External	EMC Filter for DC590+ Drive
CO467844U070	70A	External	EMC Filter for DC590+ Drive
CO467844U110	110A	External	EMC Filter for DC590+ Drive
CO467844U165	165A	External	EMC Filter for DC590+ Drive
CO467844U180	180A	External	EMC Filter for DC590+ Drive
CO467844U340	270A	External	EMC Filter for DC590+ Drive
CO467844U340 (2 req'd)	360A, 500A	External	EMC Filter for DC590+ Drive
CO467844U340 (3 req'd)	720A, 830A	External	EMC Filter for DC590+ Drive
LA048357	N/A	External	Line filter for DC590+ Drive, 460V
LA353827	N/A	External	Fuse kit for LA048357 line filter

Control Transformer

Operates with 208 through 500 VAC input. Mounts inside Frame 1 and 2 DRV. Not required on DRV over 100 HP/460V.

Control Transformer

Add -CX Suffix to Part Number

Factory installed only

For Frame 1 and 2 DRV

Blower Motor Starters

The blower motor starter option uses a manual motor circuit controller to provide motor overload and branch protection for a single or three phase AC blower motor. Blower motor starters are UL listed and CSA certified. They include Start/Stop-Reset switching with trip indication. One normally open auxiliary contact is included, wired to terminals.

Blower Motor Starters		
Blower Current Range	Frame 1 and 2 DRV	Frame 3 and higher DRV
0.16-0.25A	955+BMS025	955+BMS250
0.25-0.4A	955+BMS040	955+BMS40
0.4-0.63A	955+BMS063	955+BMS630
0.63-1.0A	955+BMS100	955+BMS11
1.0-1.6A	955+BMS160	955+BMS161
1.6-2.5A	955+BMS250	955+BMS251
2.5-4.0A	955+BMS400	955+BMS41
4.0-6.3A	955+BMS630	955+BMS631

Software Tools

Drive System Explorer (DSE)

DSE is the programming, monitoring and diagnostic software platform for the DC590+ drive. Thanks to the on-line help, users can achieve the optimum drive configuration without the need to navigate through complicated parameter menus. Advanced programming is carried out through a set of pre-engineered templates in order to create the required configuration. It is possible to monitor every parameter of the drive either as a digital value or as a function in the “chart recorder” during normal operation.

While the drive is in running mode the oscilloscope function allows “on-line” monitoring of selected parameters and the recording of trends. Using straightforward block programming, DSE allows the user to create, parameterize and configure user defined applications thanks to function blocks dedicated to speed control, inputs, outputs, ramps, winder functions, PID, diameter calculator, and more. Groups of function blocks can be combined into macros for more complex programs.

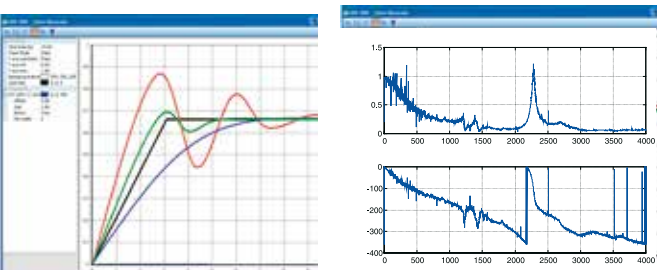
There are three levels of DSE software available.

- DSE Lite is provided as a free download, and is a fully functional package for drive programming, configuration, status monitoring, and diagnosis.
- DSE Development software adds the capability to create and edit projects using AC890 with Firewire communications.
- DSE Runtime allows the user to edit projects using AC890 with Firewire communications, but not create new ones.

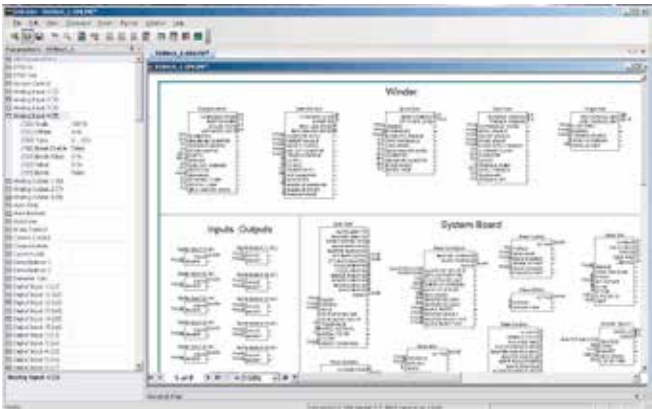
For users of DSD software who wish to migrate to the DSE platform, we offer upgrade packages for both development and runtime versions of that product.

System Requirements

- Windows Vista® or Windows® XP, Home or Professional Edition operating system
- 100Mb of free hard disk space
- Serial port for connecting to DC590+ drive.



Real-time data acquisition and oscilloscope functions



Function block configuration

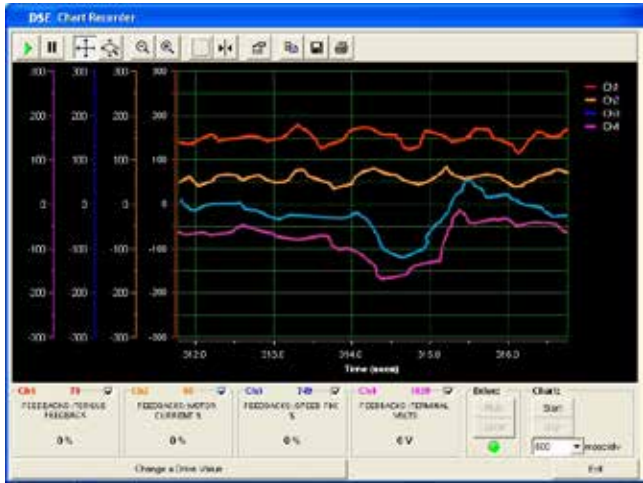


Chart recorder function

Part Number	Description
DSE-Lite	DSE Lite software (single axis) + USB cable*
8906-DSEDEV-00	DSE Development software + USB cable
8906-DSERUN-00	DSE Runtime/Maintenance + USB cable
8906-DSEDEVUPG-00	DSD Development to DSE Development Upgrade + USB cable
8906-DSERUNUPG-00	DSD Runtime to DSE Runtime Upgrade + USB cable

* DSE Lite may also be downloaded free of charge

Parker Engineered Solutions

Systems Build Capabilities

For customers preferring the convenience of more support in the design and implementation of their control systems, Parker and our network of integrators offer a complete in-house design and build service, enabling you to focus on your core competencies.

Based on the fundamental principles of application expertise, quality, reliability and safety, Parker's systems team is able to undertake all aspects of an electrical control system project, from pre-design specification to on-site commissioning, operator training, and preventative maintenance services.

By allowing Parker or one of our qualified integrators to undertake the design, build, programming and

commissioning of your motor control system, you can be assured that every aspect of the design, from environmental considerations through component selection to mounting of products has been carefully considered and allowed for.

Fully documenting a complete control system can be a daunting task for many equipment manufacturers, again Parker is on hand to help by providing complete electrical schematic and single line drawings as well as installation, maintenance and operating instructions.

As an accredited systems builder, Parker is also able to undertake the certification process required to enable systems to be put into service in any number of industrial markets.



Total Project Support

From concept to installation and beyond, Parker and our integrator network have a full range of complimentary capabilities to provide as much or as little support to your own team's expertise as you need. With a team of highly qualified and experienced design, build and service engineers, we take the risk out of any capital project by ensuring that all stages of the project are managed and executed precisely to your requirements.

Holding certification to the latest quality standards (ISO 9001 - 2008) means that as a customer, you can be assured of reliable, repeatable quality of design, build and documentation.

Integrators

Parker is backed by an extensive array of systems integrators with a plethora of controls experience. Each of our integrators has their own knowledge base in specific fields which allows us to provide support to a broad spectrum of markets. Our integrators offer a means for you to work with local engineering, service and support companies who pride themselves on catering to your facilities needs by improving system processes, eliminating downtime or simply helping you bring new products to market.



DC590+ External Stack Controller

DC598+, DC599+ Series

The unique, economical solution for retrofit applications

When upgrading machines equipped with older high power DC drives, the most cost-effective and quickest way is often to reuse the existing SCR power stack, which in most cases will be in perfect working order.

To preserve your investment, Parker has developed a DC598+/DC599+ power stack controller offer specially aimed at retrofit applications and based on the DC590+ controller.

Available in 2 versions, the DC599+ two quadrant non-regenerative and DC598+ four quadrant full-regenerative versions, can be used to drive the power stacks of existing DC drives manufactured by Parker or other manufacturers, delivering the benefits of the recent technological innovations of the DC590+ Series 2 drive.

The DC598+ and DC599+ offer the ability to upgrade your equipment quickly and easily and integrates with your existing control equipment or SCADA package.

The DC598+ and DC599+ retrofit solutions are recommended for currents above 800A.

Benefits

Reuse existing DC power stacks

**Connectivity over standard common fieldbuses
(Including Profibus, Ethernet, Devicenet, CANopen)**

Easy to use operator interface

Flexible common Integrator Series programming environment.

Suitable for currents up to 2700A



The DC598/9+ external stack controllers provide the following:

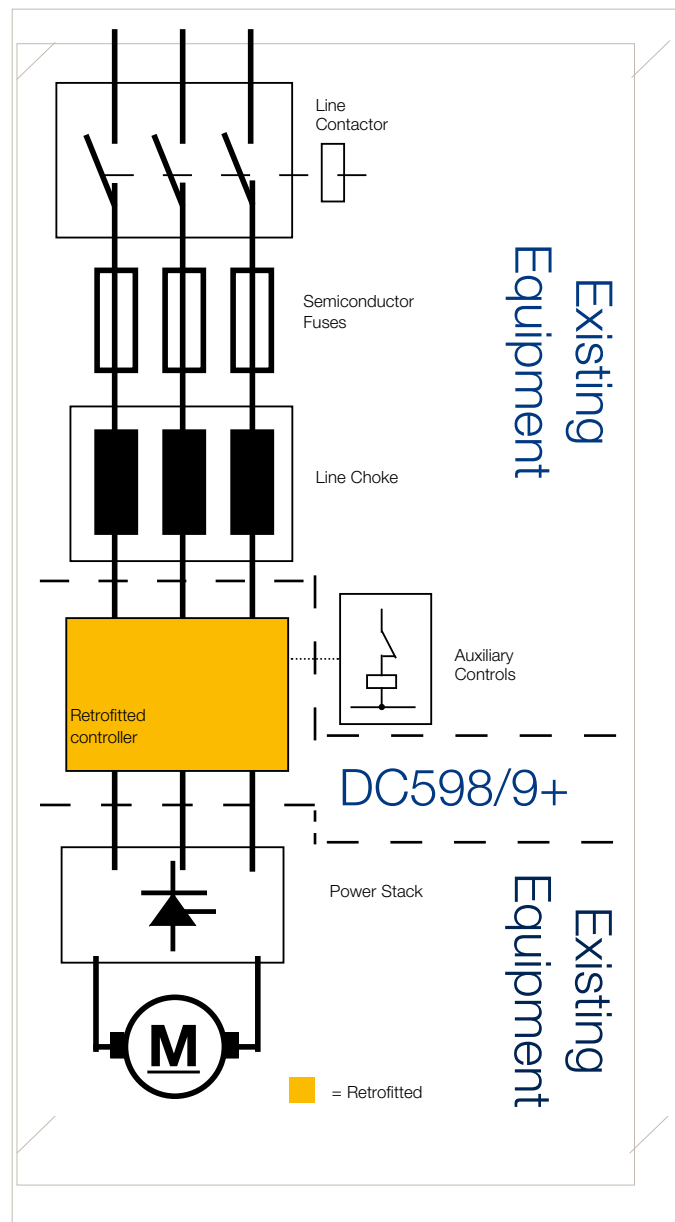
- Thyristor firing signals
- Thyristor firing pulse transformers
- AC current transformer feedback rectification and scaling
- Armature voltage feedback interface
- Coding and phase rotation interface
- Mains present monitoring
- Heatsink over-temperature input
- Field power modules and input/output terminals
- Field current monitoring and scaling
- All standard DC590+ I/O terminals

DC590+ External Stack Controller

DC598+, DC599+ Series

Technical Specifications

Supply Voltage	110-240Vac $\pm 10\%$ 3ph coding or 1ph power 220-500Vac $\pm 10\%$ 3ph coding or 1ph power 380-690Vac $\pm 10\%$ 3ph coding or 1ph power
Supply Frequency	50/60Hz $\pm 10\%$
Output Field Current	60A DC naturally cooled - 120A DC force cooled (1 x Field Current DC value) Amps 1ph. AC Nominal 3ph AC
Field Output Voltage	(0.9 x 1ph Supply Voltage) V DC
Total Losses	(3 x idc out) Watts.
Auxiliary Supply	110-240Vac $\pm 10\%$ 1ph - Naturally cooled 110-120Vac $\pm 10\%$ 1ph - Force cooled 115V fan 220-240Vac $\pm 10\%$ 1ph - Force cooled 230V fan
Auxiliary Supply Current	SMPS Quiescent Current = 500mA 115Vac or 250mA 230Vac ie 50VA. Fan current - 270mA @ 115Vac or 135mA @ 230Vac
Auxiliary Supply Fuse	3 Amps
Operating Temp.	0 to +45°C
Storage Temp.	-25 to +55°C
Shipping Temp.	-25 to +70°C
Enclosure Rating	IP20
Altitude Rating	Maximum Altitude 500m De-rate the output at 1% per 200 meters
Humidity	Maximum 85% relative humidity at 45% non- condensing
Atmosphere	Non flammable, non-corrosive and dust free
Climatic	Class 3k3 as defined by EN60721-3-3 (1995)



Standards

The DC598+ and DC599+ external stack controllers meet the requirements of EN50178 when mounted in an enclosure and also UL508C.

It is designed to meet Overvoltage category III and Pollution Degree 2

Application Profile

Ski Lift

Parker keeps skiers heading up the mountain at minimum cost to the operator



Summary

A ski resort with a DC drive-based lift system nearing the end of its usable life, needed to refit the lift with a new drive system to minimize downtime and maximize safety. A complete retrofit of the system, including all drive and motor sections, would be prohibitively expensive. Parker Drives, while fully capable of providing the new, AC drive-based system, offered a DC drive retrofit as an economical alternative without compromising safety or reliability.

The DC590+ series of digital DC drives includes the same function-block based programming tools as its AC drive counterparts, providing the same level of system control without the costly replacement of the DC motor system. The TS8000 series touchscreen interface provided the operator with simple, intuitive visual controls, allowing the user to monitor critical parameters crucial to safety.

Benefits

- **Economic replacement of old, obsolete drives with latest control technology**
- **Visual monitoring of critical parameters ensure highest safety and reliability**
- **Simple, intuitive touchscreen control with plain language display reduces operator setup and training time**
- **Redundant safeties monitor all critical parameters**

Parker Drives Solution



DC590+ Integrator Series DC Drive

- Easily interfaces with existing application through function-block programming
- Retrofittable to existing motor applications
- Industry compatible I/O and communications
- Available to 2700A
- Proven technology with large installed base

Technical Support

- On-site commissioning and startup assistance
- Professional training courses available

Application Profile

Machine Upgrade - Winder/Unwinder



DC Drive retrofit improves system performance without a complete rebuild

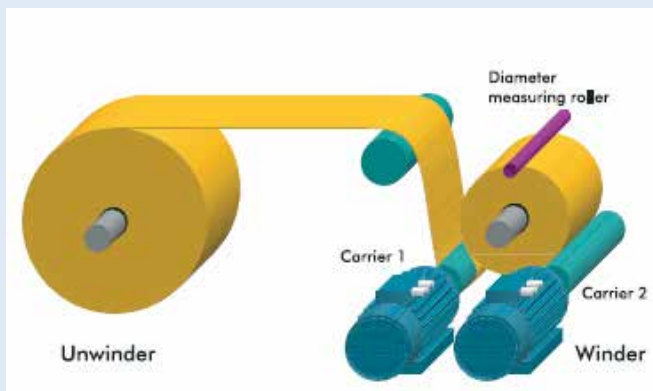
Summary

A cardboard manufacturer planned to modernize an existing two-roll surface winding system, where the front and rear winding drums were driven by DC motors. Although the existing drives were obsolete and maintenance prone, the motors in use were in good working order. The company decided that the most economical solution was to retrofit the DC drives and logic, rather than replace motors and drives with an AC system. Parker DC590+ drives provided the user with an up to date system featuring improved system reliability via fiber-optic speed feedback, system monitoring with a graphic HMI terminal, an interface with an off-the-shelf PLC solution, and a complete system solution, including on-site commissioning and startup.

Benefits

- **Cost effective approach, using existing motors with new digital DC drives**
- **Complete system solution required minimum on-site wiring and labor**
- **Fiber-optic speed coordination provided EMI immunity**
- **Improved monitoring and maintenance with complete visualization solution, web enabled to allow remote access**

Parker Drives Solution



DC590+ Integrator Series DC Drive

- Microtach speed feedback, fiber-optic coordination
- Function block programming

TS8000 Operator Interface

- Color touchscreen terminal for operating and monitoring the machine
- Web-based alarm and I/O status thanks to built-in web server

System Solution

- Complete system solution including climate controlled cabinet
- Programming, commissioning, and startup of new system

Analog DC Drives

506/507/508 Series

Up to 2 HP/12A



Description

The 506, 507 and 508 series drives break new ground in cost-effective DC motor control. Available in 3, 6 or 12A armature ratings, the feature packed minimum footprint design is ideal for speed or torque control of permanent magnet or shunt wound DC motors fed from single phase supplies.

Typical applications include:

- Fans and pumps
- Conveyors
- Packaging machinery

Low cost high featured design

IP20 protected covers

Compact footprint and DIN rail mounting

Selectable 110V or 230V supply

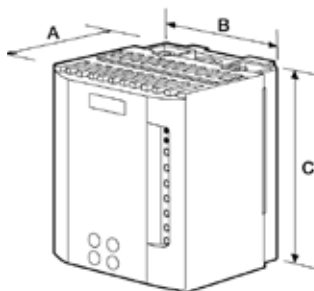
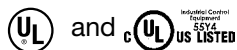
Selectable tach or armature voltage feedback

Standards

CE Marked

EN61800-3 (EMC) with external filter

EN50178 (safety, low voltage directive)



Technical Specification

Supply voltage	110-120V, or 220-240V $\pm 10\%$ single phase 50-60Hz $\pm 5\%$
Ambient conditions	0-45°C, Altitude 1000m
Installation/diagnostics	
Environment	IP20 Protection
Mounting	DIN rail
Control	Speed or torque
Output	2A DC field control
Detection	15 second stall detect
Protection	Electronic overcurrent protection
Signal	Drive healthy and zero speed
Inputs	Main and trim setpoint inputs
Ramps	Independent acceleration and deceleration ramps
Diagnostics	Via LED
Potentiometer Adjustments	
Speed	Maximum / minimum
Current limit	
Speed stability	
Time	Acceleration (1-15 seconds) Deceleration (1-15 seconds)
IR compensation	
Switch selectable	
Supply voltage	110/120V or 220/240V
Speed Feedback	Tach generator/armature voltage feedback
Calibration	Speed and Current

Characteristics

Part Number	Armature Current ADC	HP	Supply Voltage VAC	Armature Voltage VDC	Field Voltage VDC
506/03/240	3A	0.25	110-120	90	100
	3A	0.5	220-240	180	210
507/06/240	6A	0.5	110-120	90	100
	6A	1.0	220-240	180	210
508/12/240	12A	1.3	110-120	90	100
	12A	2.0	220-240	180	210

* HP Ratings are approximate and are for reference only. Always select drive based on the motor's full load armature current.

Dimensions (in/mm)

Type	A	B	C	Weight (lb/kg)
506	3.1/80	4.1/105	5.5/140	1.3/0.59
507	3.1/80	4.1/105	5.5/140	1.3/0.59
508	3.5/90	4.1/105	5.5/140	1.6/0.70

Note: Color of enclosure may vary from illustration



Analog DC Drives

512C Series

Up to 32 Amps



Description

Isolated control circuitry, a host of features, and extremely linear control loop make the 512C ideal for single motor or multi-drive applications. The 512C is suitable for controlling permanent magnet or field wound DC motors in speed or torque control, and can be used “open loop” with armature voltage feedback, or with DC tach feedback for enhanced regulation and speed range. Chassis mount, IP00 rating.

Typical applications include:

- Centrifugal fans and pumps
- Extruders and mixers
- Conveyors

Part Number	Armature Current	HP*		
		120V Supply	230V Supply	400V Supply
512C/040/000	4A	0.25	0.5	0.75
512C/080/000	8A	0.5	1.0	1.5
512C/160/000	16A	1.0	3.0	5.0
512C/320/000	32A	2.0	5.0	7.5

* HP Ratings are approximate and are for reference only. Always select drive based on the motor's full load armature current.

Technical Specifications

AC Supply Voltage Single Phase	110-115V, 220-240V or 380-415V $\pm 10\%$; 50-60Hz $\pm 5\%$
Ambient	0-40°C, Altitude max 1000m
Overload	150% for 60 seconds
Speed range	20:1 (arm v f/b), 100:1 (tach fb)
Voltage selection	Jumper selection of supply voltage
Control	Speed or torque
Diagnostic LED's	Power on, Stall, Overcurrent trip
Protection	Electronic overcurrent protection
Analog Inputs	Setpoint ramp 0-10V
	Auxiliary speed setpoint 0-10V
	Current limit 0-7.5V
	Tach gen input 0-350VDC
Analog Outputs (Buffered)	Speed 0-10V, 5mA
	Current 0-5V, 5mA
	Ramped setpoint 0-10V, 5mA
Reference supply	10VDC (5mA)
Digital Inputs (2)	Run, Stall override
Digital Outputs (2)	Drive Healthy, Zero Spd/Zero Setpt
Potentiometer Adjustments	
Speed (2)	Maximum/Minimum
Current limit	0-110%
Speed stability	
Ramp time (2)	Accel, Decel (1-40 seconds)
IR Compensation	
Zero speed offset	

Common Specifications: 512C and 514C

Voltage Ratings:

Supply Voltage	Armature Voltage	Field Voltage
110 VAC	90 VDC	3A @ 100 VDC
240 VAC	180 VDC	3A @ 210 VDC
415-480 VAC	320 VDC	3A @ 360 VDC

Standards:

CE Marked

EN61800-3 (EMC) with external filter

EN50178 (safety, low voltage directive)



Analog DC Drives

514C Series

Up to 32 Amps



Technical Specification

AC Supply Voltage Single Phase	110-480V $\pm 10\%$; 50-60Hz $\pm 5\%$
Ambient	0-40°C, Altitude max 1000m
Overload	150% for 60 seconds
Voltage selection	Jumper selection of supply voltage
Speed Control	20:1 (arm v f/b), 100:1 (tach fb)
Torque Control	2% accuracy, closed loop w/PI
Diagnostic LED's	Power on, Stall, Overcurrent, PLL lock, Current limit
Protection	Electronic overcurrent protection
Analog Inputs	Setpoint ramp 0-10V
	Pos/neg trim setpoint 0-10V
	Current limit 0-7.5V
	Current demand 0-10V
	Thermistor <200W OK, >1800W overtemp
Analog Outputs (Buffered)	Tach gen input +/-350VDC
	Setpoint ramp +/-10V, 5mA
	Total setpoint +/-10V, 5mA
	Speed +/- 10V, 5mA
	Current demand +/-10V, 5mA
Reference supply (2)	+10VDC, -10VDC (5mA)
Digital Inputs (3)	Run, Enable, Stall override
Digital Outputs (2)	Drive Healthy, Zero Spd/Zero Setpt
Potentiometer Adjustments	
Speed (3)	Maximum, Zero, Zero threshold
Current limit	0-110%
Speed loop (2)	Proportional, Integral
Ramp time (2)	Accel, Decel (1-40 seconds)
IR Compensation	
Current loop (2)	Proportional, Integral

Description

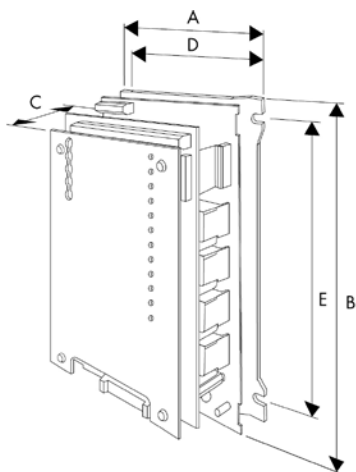
The regenerative 514C DC drive offers full four quadrant control of DC motors from single phase supplies. As such it is ideal for applications involving overhauling loads or where rapid and accurate deceleration is required. 514C can be used "open loop" with armature voltage feedback, or with DC tach feedback for enhanced regulation and speed range. Chassis mount, IP00 rating.

Typical applications include:

- Machine tool spindles
- Wire drawing machines
- Winders/Reelers

Part Number	Armature Current	HP*		
		120V Supply	230V Supply	400V Supply
514C/040/000	4A	0.25	0.5	0.75
514C/080/000	8A	0.5	1.0	1.5
514C/160/000	16A	1.0	3.0	5.0
514C/320/000	32A	2.0	5.0	7.5

* HP Ratings are approximate and are for reference only. Always select drive based on the motor's full load armature current.



Dimensions (in/mm):

Type	A	B	C	D	E	Wt (lb/kg)
512C/040, /080, /160, 514C/040, /080	6.3/160	9.4/240	3.5/90	5.8/148	8.3/210	3.5/1.6
512C/320, 514C/160, /320	6.3/160	9.4/240	5.1/130	5.8/148	8.3/210	6.6/3.0

Note: Color of front panel may vary from illustration

Packaged Drives

AC and DC Series

0.5 HP - 500 HP

Overview

For those applications that require more than a standard drive, Parker offers a unique line of configurable packaged drives designed for maximum flexibility and minimum lead time.

By choosing from a list of standard drives, pre-engineered options, and a selected group of enclosures, you can configure a packaged drive with the features you need, then receive a quick quote and part number to order. Most

packages ship in two weeks or less, built to your specifications!

Packaged drives can include any Parker drive, from the economical AC650/AC650V, to the AC690+ or DC590+ Integrator Series, to the AC890/AC890PX.

Any one of a wide variety of communications cards may be chosen to match your current network. Operator devices like basic pushbuttons, selector

switches, or indicator lights are available, as are power-handling components, including circuit breakers, line contactor, output reactor, or bypass arrangements.

To get started, visit our website, www.parker.com/ssdusa and click "Packaged Drives" in the products section. Download the quote request form or complete the form on page 102 of this catalog and follow the directions to receive a fast custom quote.



Packaged Drive Benefits

- **Fast Delivery**
- **Ready-to-install standalone drive**
- **I/O interface compatible with most existing building management systems**
- **Wide range of ratings available up to 500 HP**
- **Extensive range of control options pre-engineered for fast delivery**
- **Easy commissioning**
- **Meets all relevant UL and EMC standards**
- **Economical...specify only the features you want**
- **Rugged industrial enclosures offer superior protection**

Packaged Drives

AC and DC Series

0.5 HP - 500 HP

3 Simple Steps to a Packaged Drive

1. Select the base drive model and HP rating from the Packaged Drive Quote Request Form (See page 102)



2. Select the control options and operator devices from the list of available items to suit your application

3. Submit the completed form to your local sales office or distributor for price and availability



Packaged Drives **Express** Quote Request Form

Company Info:

Company Name: _____ Contact: _____
Address: _____
City: _____ Zip/Postal Code: _____ Country: _____
Phone: _____ Fax: _____ E-mail: _____

Plant Power:

☐ 230VAC ☐ 460VAC ☐ 575VAC (AC890PX only) ☐ 690VAC (AC890PX only)

Drive Series:

☐ AC650 ☐ AC650V ☐ AC690+ ☐ AC890 ☐ AC890PX ☐ DC590+ ☐ Regenerative
☐ Non-regenerative

Duty (AC drives only):

☐ Constant Torque/Heavy Duty ☐ Variable Torque/Standard Duty

Rating:

_____ HP _____ Full Load Amps (if known) For DC Drive: Field Volts _____ Amps _____

Feedback capability:

☐ Encoder _____ PPR ☐ Resolver (AC890 only) ☐ Endat (AC890 only)
☐ Tachometer (DC Drives only) _____ V/1000 RPM

Communications (subject to availability):

<input type="checkbox"/> RS232/RS485/Modbus RTU	<input type="checkbox"/> EtherNet/IP	<input type="checkbox"/> Modbus/TCP
<input type="checkbox"/> Profibus – DP	<input type="checkbox"/> ControlNet	<input type="checkbox"/> Modbus Plus
<input type="checkbox"/> Lonworks	<input type="checkbox"/> CanOpen	<input type="checkbox"/> DeviceNet
<input type="checkbox"/> FireWire IEEE1394A	<input type="checkbox"/> FireWire IEEE1394B	<input type="checkbox"/> Link

Options:

<input type="checkbox"/> Circuit breaker	<input type="checkbox"/> Input contactor	<input type="checkbox"/> Output contactor
<input type="checkbox"/> Output reactor (for motor leads >50m)	<input type="checkbox"/> Dynamic braking resistor	<input type="checkbox"/> HVAC Package (HVAC10)
<input type="checkbox"/> AC line reactor		<small>(Includes 3-contactor bypass, disconnect, overload, 115V transformer)</small>

Operator devices:

<input type="checkbox"/> 6901 keypad, door mounted	<input type="checkbox"/> E-Stop pushbutton	<input type="checkbox"/> Start p/b (illuminated)
<input type="checkbox"/> Stop pushbutton	<input type="checkbox"/> Reset p/b (illuminated)	<input type="checkbox"/> Jog Fwd pushbutton
<input type="checkbox"/> Jog Rev pushbutton	<input type="checkbox"/> Auto/Man selector switch	<input type="checkbox"/> Fwd/Rev selector switch
<input type="checkbox"/> Indicator light, Power On	<input type="checkbox"/> Indicator light, Healthy	<input type="checkbox"/> Indicator light, Run
<input type="checkbox"/> Speed pot, 10-turn	<input type="checkbox"/> Speed pot, 1-turn	

(Maximum of 6 operator devices OR keypad may be chosen)

Requested Lead Time: _____ Days

Additional Comments:

Return this form to your Parker SSD territory manager by fax or e-mail. You will receive verification that your configuration is valid, and a price and confirmation of lead time within 48 hours. OR, send to info.us.ssd@parker.com or fax (704) 588-4806

Application Profile

Hydraulic Power Unit

Parker VFD Saves on Energy Consumption and Reduces Audible Noise

Summary

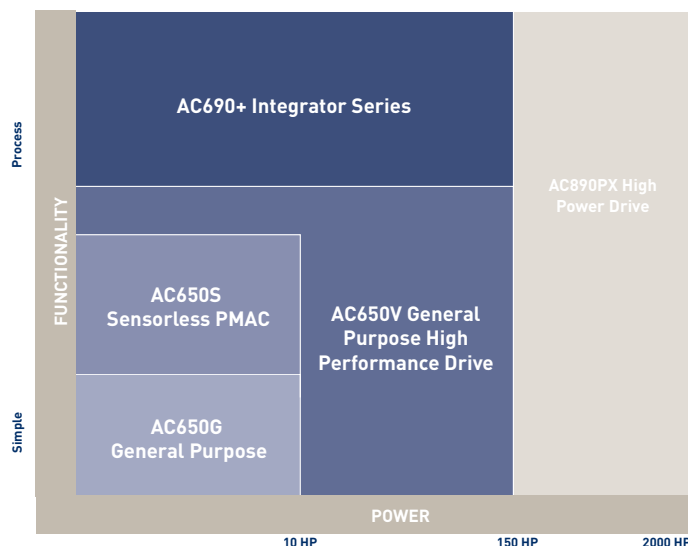
Hydraulic power units are an ideal application for Parker variable frequency drives, which can run in setpoint control mode. By receiving inputs representing flow rate or pressure, the drive can maintain just the right pump speed to accurately hold a setpoint. Higher efficiency gained by using the VFD results in less heat to be dissipated. Benefits of noise reduction and energy savings can be achieved on both variable speed pressure compensated and fixed displacement pumps.

Example of energy saving

Tests run on a hydraulic press system clearly show that substantial savings on energy are possible using the Parker variable speed drive to reduce motor speed during parts of the machine cycle with low flow demand. Plus, by over-speeding a pump at times of low pressure demand, a second pump could be eliminated. The result in this case was an average power need of just 34 HP (25kW) compared to 50 HP (38kW) using an unregulated pump, over the entire press cycle.



Parker Drives Solutions



Benefits of variable speed drives in hydraulic systems

Selection of system components	<ul style="list-style-type: none">Standard pumps can be used - fixed or variable displacementRuns three phase motor from single phase supply (limited HP range)
Smooth acceleration and braking	<ul style="list-style-type: none">Longer motor service life, with unlimited starts per hourLess strain on the hydraulics, oil, and other componentsNo power surges, no pressure surges (cavitation)Quick response to change in demand
Higher efficiency	<ul style="list-style-type: none">Savings on energy consumption, reduced peak power needLess oil heating/reduced need for cooling
Compact dimensions	<ul style="list-style-type: none">Smaller pumps and coolers neededSystem takes up less floor spaceReduced hydraulic oil volume
Reduced noise levels	<ul style="list-style-type: none">Less need for noise protectionImproved work environmentReduced motor shaft rotationsSmoothed resonant frequencies
Integrated concept	<ul style="list-style-type: none">Less external hardwareSimple customization, pre-engineered packages availableFieldbus options (Profibus, CAN, Ethernet, DeviceNet, etc.)
Frequency control	<ul style="list-style-type: none">Higher overall system efficiencyIncreased productivity through higher motor speedSimple process diagnostics

Software Tools

For All Drives with communications

Drive System Explorer Software

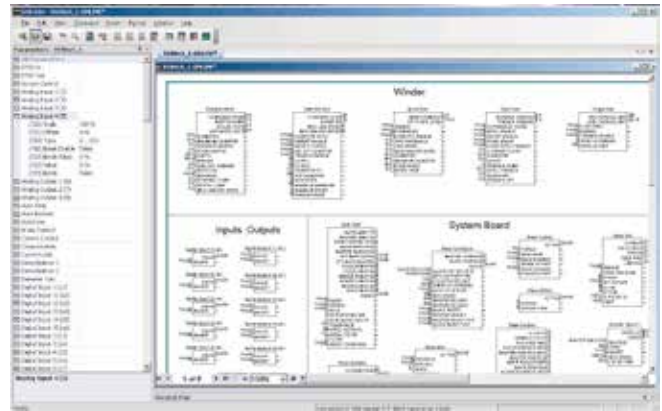
DSE is the programming, monitoring and diagnostic software platform for most drives. Thanks to the on-line help, users can achieve the optimum drive configuration without the need to navigate through complicated parameter menus. Advanced programming is carried out through a set of pre-engineered templates in order to create the required configuration. It is possible to monitor every parameter of the drive either as a digital value or as a function in the “chart recorder” during normal operation.

While the drive is in running mode the oscilloscope function allows “on-line” monitoring of selected parameters and the recording of trends. Using straightforward block programming, DSE allows the user to create, parameterize and configure user defined applications thanks to function blocks dedicated to speed control, inputs, outputs, ramps, winder functions, PID, diameter calculator, and more. Groups of function blocks can be combined into macros for more complex programs.

There are three levels of DSE software available.

- DSE Lite is provided as a free download, and is a fully functional package for drive programming, configuration, status monitoring, and diagnosis.
- DSE Development software adds the capability to create and edit projects using AC890 with Firewire communications.
- DSE Runtime allows the user to edit projects using AC890 with Firewire communications, but not create new ones.

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Function block configuration

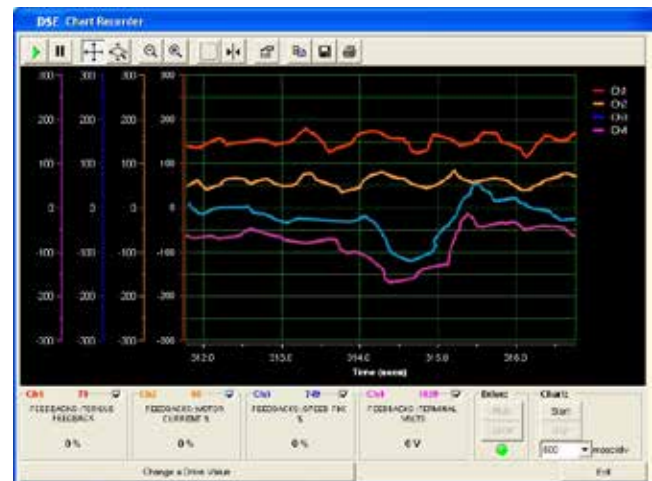
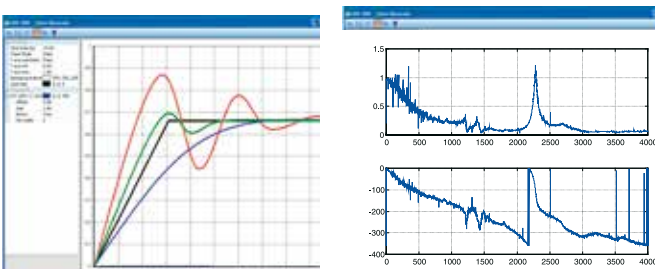


Chart recorder function

System Requirements

- Windows Vista® or Windows® XP, Home or Professional Edition operating system
- 100Mb of free hard disk space
- USB port for connecting to an AC890 or AC890PX drive
- Serial port for connecting to AC650V, AC690+, DC590+, or legacy drives.



Real-time data acquisition and oscilloscope functions



Part Number	Description
DSE-Lite	DSE Lite software (single axis) + USB cable*
8906-DSEDEV-00	DSE Development software + USB cable
8906-DSERUN-00	DSE Runtime/Maintenance + USB cable
8906-DSEDEVUPG-00	DSD Development to DSE Development Upgrade + USB cable
8906-DSERUNUPG-00	DSD Runtime to DSE Runtime Upgrade + USB cable

* DSE Lite may also be downloaded free of charge

HMI Touchscreen

TS8000 Series



Description

TS8000 is a high performance web-enabled HMI touchscreen range with powerful features that would normally only be found in PC-based displays.

The TS8000 is able to communicate with many different pieces of hardware through its 10/100Base-T Ethernet port.

Furthermore a USB programming port allows programs to be downloaded, or access to trending and data logging, while data can be collected and stored on a standard CompactFlash card, freeing up internal memory.

Unlike similar competitive units, programming software for the TS8000 is a free download!

Multi-lingual graphical interface

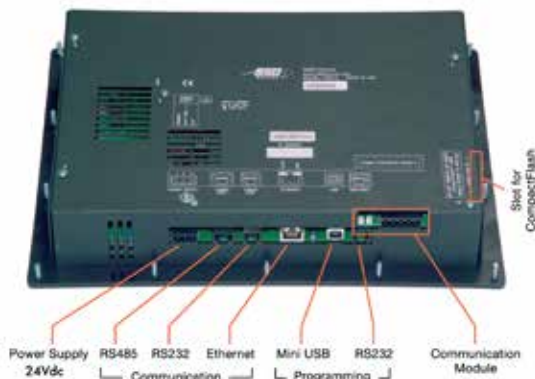
Built-in symbol library of common objects

Built-in web server/Virtual Panel

CompactFlash support

Integrated automatic multiple protocol conversion

Free DSI8000 or DSI3 programming software



Technical specifications

Power Supply	24Vdc $\pm 20\%$
Operating Temperature	0-50°C
Relative Humidity	80% non-condensing
Altitude	2000 m
Enclosure	IP66/Nema 4X
Keypads	<p>TS8003 :</p> <ul style="list-style-type: none"> . 8 user assignable keys . 5 navigation keys . 12 numeric keys . 7 dedicated keys <p>TS8006 : 5 programmable keys for on screen menus</p> <p>TS8008 : 7 programmable keys for on screen menus</p> <p>TS8010 : 8 programmable keys for on screen menus</p> <p>TS8015 : 10 programmable keys for on screen menus</p>
Memory	CompactFlash slot
Communication Ports	<p>Programming :</p> <ul style="list-style-type: none"> USB 1.1 - connector type B RS232 - via RJ12 <p>Communication :</p> <ul style="list-style-type: none"> . RS232 - via RJ12 . RS485 - via RJ45 . Ethernet 10/100 Base T - connector RJ45

HMI Specifications

Part Number	Screen	Colors	Pixels
TS8003/00/00	3.2"/FSTN	2	128 x 64
TS8006/00/00	5.7"/TFT	256 QVGA	320 x 240
TS8008/00/02	7.7"/TFT	256 VGA	640 x 480
TS8010/00/02	10.4"/TFT		
TS8015/00/00	15"/TFT	32,000 XGA	1024 x 768

TS8000

HMI Touchscreen

TS8000 Series



Application Example



HMI Touchscreen

TS8000 Series



HMI Features

Pre-Engineered Projects

- Library with over 4000 symbols
- Support for BMP, JPG, WMF graphic files
- Database functionality
- Graphical Trending
- Alarm Logs
- Machine Drawings

Multilingual Interface

Programming and Display in:

Italian	German
English	Spanish
French	Dutch
Thai	

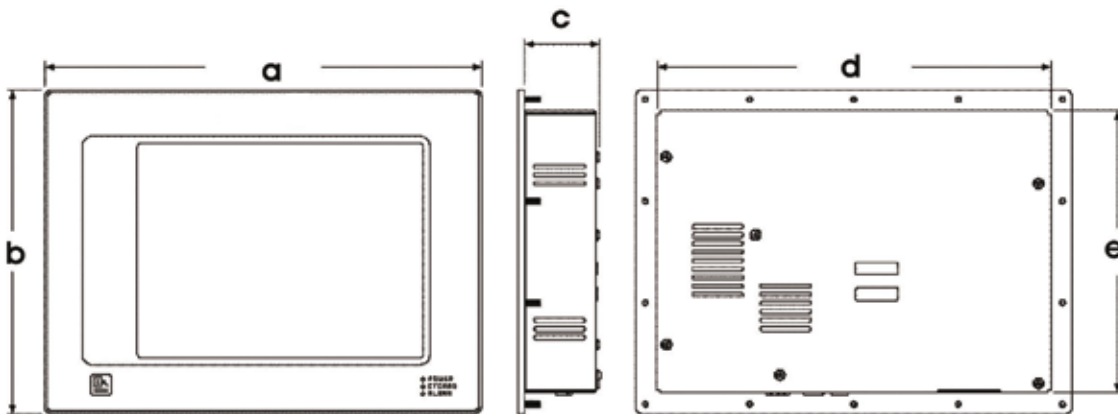
Unicode* Support for:

Japanese	Chinese (traditional)
Korean	Chinese (simplified)
Other languages available	

*Unicode support requires MS Windows language packs to be installed

Dimensions (in/mm) and Weights

Part Number	a	b	c	d	e	Weight (lb/kg)
TS8003/00/00	7.45/189.2	5.85/148.6	2.1/52	6.04/153.4	4.44/112.8	1.96/0.89
TS8006/00/00	8.83/224.3	7.08/179.8	2.3/58.4	7.42/188.5	5.67/144	3.0/1.36
TS8008/00/02	10.32/262	8.18/207.8	2.2/56	8.91/226.3	6.77/172	3.84/1.74
TS8010/00/02	12.83/325.8	9.5/241.3	2.2/56	11.55/293.3	8.27/210.1	5.53/2.51
TS8015/00/00	16.0/406.4	13.0/330.2	2.8/71.5	14.59/370.6	11.59/294.4	11.41/5.17



Options

Part Number	Description
8000/CB/00/00	CanOpen fieldbus option card (master)
8000/DN/00/00	DeviceNet option card
8000/PB/00/00	Profibus option card
8000/FA/00/00	FireWire fieldbus option card

International Standards

Complies with standards:

- EN61010-1
- EN61326
- EN55011 Class A

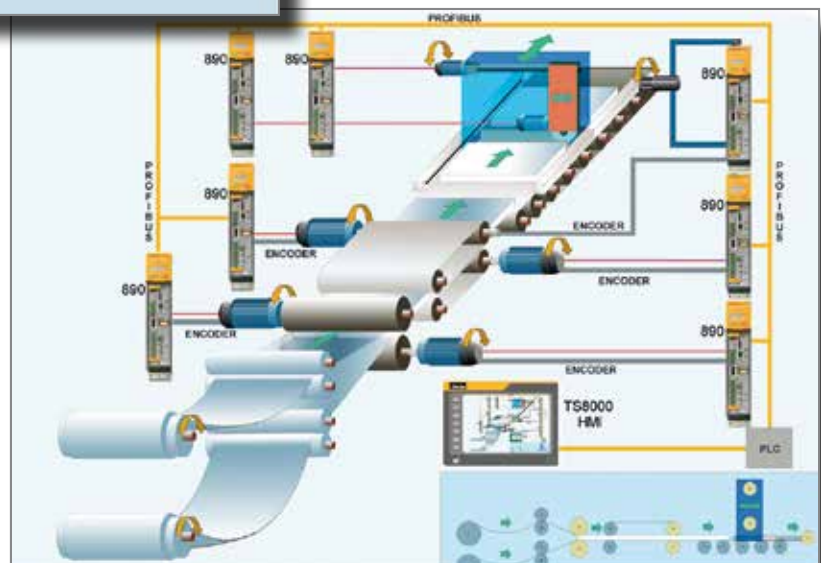
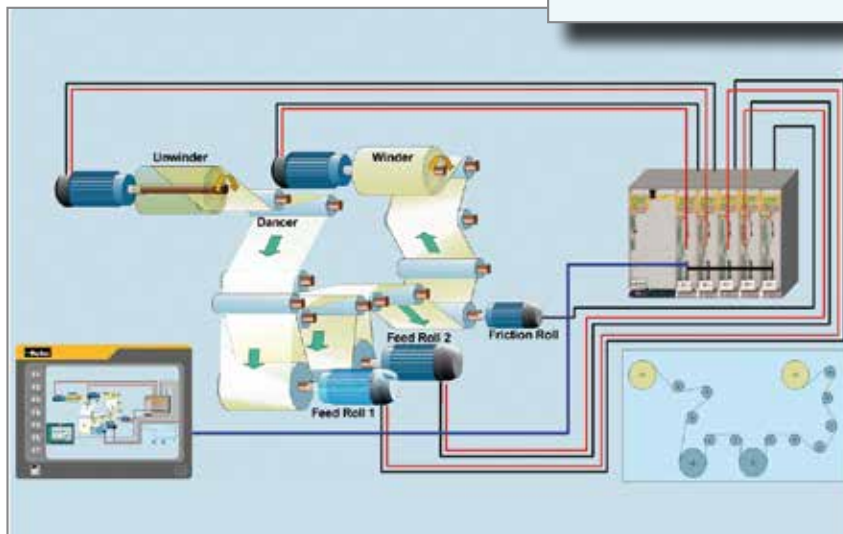
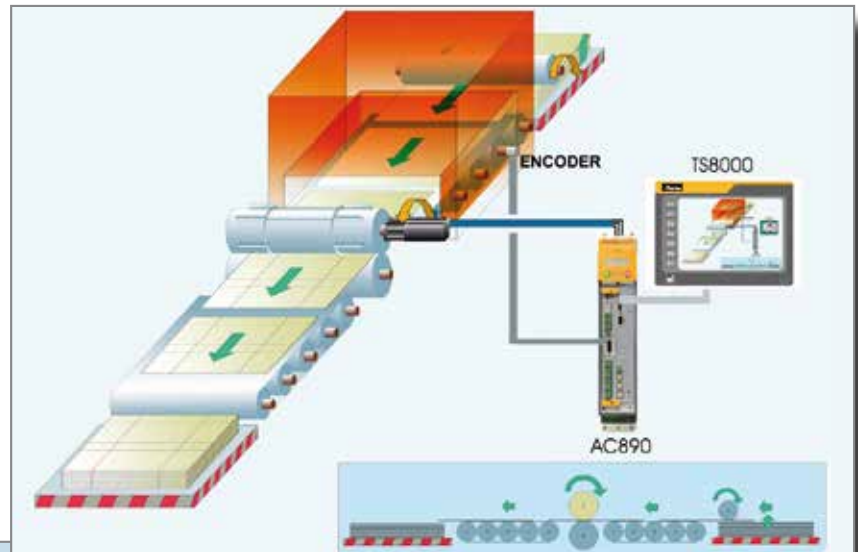
CE Marked

HMI Touchscreen

TS8000 Series



HMI Applications



Communication Cards

TS8000 Series



Description

The TS8000 communication cards allow connection and integration of the TS8000 into many popular fieldbus communication networks.

Features

Configuration	by means of DSI8000 configuration software
Power Supply	Connection by pluggable 3-pin terminals
Operating Temperature	0 to 50°C
Storage Temperature	-20 to 80°C
Humidity	80% max. relative humidity (non-condensing) from 0 to 50°C
Altitude	2000 meters Max.

CANopen Communications Interface

Order Code: 8000/CB/00/00

Supported Protocols	CANopen SDO Master
Communication Speed	Selectable by software up to 1 Mbits/s
Communication	With Drive System Explorer software using RTNX protocol
Suitable for drives	AC890 version 3.2+

DeviceNet Communications Interface

Order Code: 8000/DN/00/00

Supported Protocols	DeviceNet – Slave Group 2 only
Communication Speed	Selectable by software up to 500 kbits/s

Firewire Communications Interface

Order Code: 8000/FA/00/00

This card allows data exchange between the TS8000 and an AC890 fitted with an 8903/FA/00 Interface

Communication Ports	Port A : IEEE 1394A Port B : IEEE 1394B
Note : The TS8000 must use a Class 2 or SELV rated power supply	

Profibus-DP Communications Interface

Order Code: 8000/PB/00/00

Supported Protocols	EN50 170, 1
Communication Speed	Up to 12 Mbits/s

EMC Filters

for AC and DC Drives

Description

A range of pre-selected EMC (Electromagnetic Compatibility)/RFI (Radio Frequency Interference) Filters are available, suitable for all drives. These filters are a cost effective and easily implemented solution for the abatement of EMC in order to meet certain directives. Installation of the drive must be in accordance with the installation guidelines in the product manual.

Filters described as “footprint” type are designed to save panel space by mounting behind the drive. Filters described as “bookshelf” are designed for mounting compatibility and integration with the AC890 series frames B - D.



Drive mounted on a “footprint” filter

Ordering

Part Number	Rating	Type	Description
Add “F” in Part Number	Per drive rating	Internal	Filter for Frame 1-3 AC650/AC650V Drive
Add “F” in Part Number	Per drive rating	Internal	Filter for Frame B AC690+ Drive
CO467842U020	20A	Footprint	Filter for Frame B AC690+ Drive
CO467842U044	40A	Footprint	Filter for Frame C AC690+/AC650V
CO467842U084	84A	Footprint	Filter for Frame D AC690+/AC650V Drive
CO467842U105	105A	Footprint	Filter for Frame E AC690+/AC650V/AC890SD Drive
CO467842U215	215A	Footprint	Filter for Frame F AC690+/AC650V/AC890SD Drive
CO467843U340	340A	External	Filter for Frame G, H or J AC690+/AC890SD Drive
CO469330	54A	Bookshelf	Filter for Frame B AC890CS (Dimensions: See AC890 Frame C pg 56)
CO469331	162A	Bookshelf	Filter for Frame D AC890CS (Dimensions: See AC890 Frame D pg 56)
CO389115	Up to 3 HP	Footprint	EMC Filter for DC drives 506, 507, and 508, 1 phase, up to 460V
CO389113	5 HP	Footprint	EMC Filter for DC drives 512C, 514C, 1 phase, up to 460V
CO389114	7.5 HP	Footprint	EMC Filter for DC drives 512C, 514C, 1 phase, up to 460V
CO467844U015	15A	External	EMC Filter for DC590+ Drive
CO467844U040	35, 40A	External	EMC Filter for DC590+ Drive
CO467844U070	70A	External	EMC Filter for DC590+ Drive
CO467844U110	110A	External	EMC Filter for DC590+ Drive
CO467844U165	165A	External	EMC Filter for DC590+ Drive
CO467844U180	180A	External	EMC Filter for DC590+ Drive
CO467844U340	270A	External	EMC Filter for DC590+ Drive
CO467844U340 (2 req'd)	360A, 500A	External	EMC Filter for DC590+ Drive
CO467844U340 (3 req'd)	720A, 830A	External	EMC Filter for DC590+ Drive
LA048357	N/A	External	Line filter for DC590+ Drive, 460V
LA353827	N/A	External	Fuse kit for LA048357 line filter

Three phase reactors

for AC Drives

Description

Parker's range of reactors have been especially selected to match the requirements of the Parker AC drive range and can be used on either the input or output sides of the drive. They are used to add inductance to reduce the harmonic content of the supply current. A reactor installed in the drive output limits the capacitive current when motor cable runs in excess of 50m are used. It prevents overcurrent trips and temperature rise of the motor.

In addition to helping with compliance with IEEE 519 there are other benefits to using line/load reactors including:

- Increased drive system reliability
- Reduced harmonics / surge currents
- Reduced motor noise and temperature
- Improved true power factor

For DC drive line reactors, please consult factory.

Ordering

Part Number	Line Voltage	Current	Drive HP (CT)	Impedance
CO470653	230	4A	1	3mH
CO353011		8A	1.5 / 2	1.5mH
CO470638		12A	3	1.25mH
CO353012		18A	5	0.8mH
CO353013		25A	7.5	0.5mH
CO353014		35A	10	0.4mH
CO353015		45A	15	0.3mH
CO353016		55A	20	0.25mH
CO353017		80A	25 / 30	0.20mH
CO470654		100A	40	0.15mH
CO353018		130A	50	0.1mH
CO471264		160A	60	0.075mH
CO470650	460	2A	1	12mH
CO470651		4A	2	6.5mH
CO352782		8A	3	5mH
CO470652		8A	5	3mH
CO352783		12A	7.5	2.5mH
CO352785		18A	10	1.5mH
CO352786		25A	15	1.2mH
CO352901		35A	20 / 25	0.8mH
CO352902		45A	30	0.7mH
CO352903		55A	40	0.5mH
CO352904		80A	50 / 60	0.4mH
CO352905		100A	75	0.3mH
CO352906		130A	100	0.3mH
CO470057		160A	125	0.15mH
CO470045		200A	150	0.11mH
CO470046		250A	200	0.09mH
CO470047		320A	250	0.075mH
CO470048		400A	300	0.06mH
CO470049		500A	350 / 400	0.05mH
CO470050		600A	500	0.04mH



Acces.

AC Motors

Inverter and Vector Duty - Compatible with AC650/V, AC690+, AC890, AC890PX
1 - 500 HP

Description

Parker can provide Inverter Duty and Vector Duty motors that let you get the most out of your drive. With your choice of a wide variety of frame styles, every rating includes specific features demanded by high performance drive applications.

Cast iron frames with totally enclosed non-ventilated construction are available for harsh environments, while compact laminated frame designs with forced ventilation can fit into the tightest spaces while providing 1000:1 constant torque speed range and excellent dynamic performance.

Not all motors are created equal. Don't settle for a re-rated constant speed motor for variable speed applications. All Parker Inverter and Vector Duty motors are provided with insulation that is suitable for use with IGBT based PWM drives, and with 200% torque overload capability. Ask for a performance matched package every time.

RPM AC™ Product Features



The RPM AC™ series of AC motors was designed specifically for optimum inverter duty performance, and offers high performance over a wide speed range. The compact, square cross-section, laminated steel frame includes cast iron brackets with feet for maximum ruggedness and stability. The unique low inertia design allows fast acceleration and high dynamic response. And to assure long and reliable motor life, Corona-Free insulation is used on all RPM ACTM ratings.

- Unique square laminated steel frames (FL210 - L440)
- Most compact, lightest weight
- Cast iron feet and end brackets
- Wide constant HP range - 4:1 to 12:1 available
- Low inertia design for faster dynamic response
- Replace DC motors with minimal mechanical issues
- Corona free insulation system
- Force ventilated open and enclosed blower cooled frames

Available enclosures:

DPG-FV (Drip-Proof Guarded Force Ventilated) - IEC IP23/IC06. Motor cooling is provided by motor-mounted blower driven by an integrally mounted three-phase blower motor.

TEBC (Totally Enclosed Air-Over Blower-Cooled) - IEC IP44/IC416. In-line blower cooled motors incorporate unique integral air ducts in the frame, external to the windings. The integrally mounted, independently powered three phase blowers result in low noise levels over wide speed ranges.

TEFC (Totally Enclosed Fan-Cooled) - IEC IP44/IC411. Exterior surface cooled by external fan mounted on motor shaft.

Encoders: Motors above are available with an encoder suitable for use with Parker AC drives. On some ratings, the encoder is an option, while on others it is provided as standard equipment. The standard encoder is a 1024 PPR quadrature style with mating connector. Please inquire if you have any special encoder requirements.

V*S Master™ Product Features



For applications in tougher environments, we offer V*S Master™, featuring cast iron frame and end shields. Overload is no problem, with 200% capability for 60 seconds. Corona-Free insulation and an insulated CE bearing extend lifetime.

- Cast iron frames and end brackets
- Corona free insulation system
- 200% overload torque for 1 minute
- Three thermostats
- Constant HP to 1.5 times base speed
- Class F insulation
- Stainless steel nameplate
- Re-greaseable bearings
- TEFC ratings provide continuous full load torque from 0 to base speed
- CSA certified and UL recognized

DC Motors for use with Parker DC Drives can also be provided. Please discuss your requirement with your Drives territory manager, or with your local Parker distributor.

Parker Permanent Magnet Servo Motors

NX Series

Compatible with AC890



230 VAC power supply

RPM Max	Torque Nm (in-lb)	Motor Part Number	Compatible AC890CD	Compatible AC890SD
2300	2 (17.7)	NX310EAPR7000	890CD/2/0003B/N/00/A/US	890SD/2/0003B/B/00/A/US
4000	2 (17.7)	NX310EAKR7000	890CD/2/0005B/N/00/A/US	890SD/2/0005B/B/00/A/US
2300	4 (35.4)	NX420EAPR7000	890CD/2/0005B/N/00/A/US	890SD/2/0005B/B/00/A/US
4000	4 (35.4)	NX420EAJR7000	890CD/2/0007B/N/00/A/US	890SD/2/0007B/B/00/A/US
3200	5.5 (48.5)	NX430EAJR7000	890CD/2/0007B/N/00/A/US	890SD/2/0007B/B/00/A/US
4000	5.5 (48.5)	NX430EAFR7000	890CD/2/0011B/N/00/A/US	890SD/2/0011B/B/00/A/US
2200	8 (70.5)	NX620EARR7000	890CD/2/0011B/N/00/A/US	890SD/2/0011B/B/00/A/US
4000	8 (70.5)	NX620EAJR7000	890CD/2/0016B/N/00/A/US	890SD/2/0016B/B/00/A/US
2800	12 (106)	NX630EAKR7000	890CD/2/0016B/N/00/A/US	890SD/2/0016B/B/00/A/US
4000	12 (106)	NX630EAGR7000	890CD/2/0024C/N/00/A/US	890SD/2/0024C/B/00/A/US
3600	16 (142)	NX820EALR7000	890CD/2/0024C/N/00/A/US	890SD/2/0024C/B/00/A/US
2200	28 (248)	NX840EAJR7000	890CD/2/0024C/N/00/A/US	890SD/2/0024C/B/00/A/US
2600	41 (360)	NX860EADR6000*	890CD/2/0030C/N/00/A/US	890SD/2/0030C/B/00/A/US
2000	64 (566)	NX860VAGR9000*	C/F	C/F

* Terminal box power connections

Options

Part Number	Description			
...Rx3xx	Brake for NX3		2 Nm (17.7 in-lb)	
...Rx3xx	Brake for NX4		6 Nm (53 in-lb)	
...Rx3xx	Brake for NX6		12 Nm (106 in-lb)	
...Rx3xx	Brake for NX8		36 Nm (318 in-lb)	
...Rxxx1	Shaft with keyway		NX3	
...Rxxx1	Shaft with keyway		NX4	
...Rxxx1	Shaft with keyway		NX6	
...Rxxx1	Shaft with keyway		NX8	
...Rx01x	IP65 rating		NX2 - NX3 - NX4 - NX6 - NX8	
NX...EW...	EQN 1125 Multiturn ENDAT (512P)			
220056P0200	Fan Connector for fan cooled motors (NX860V)			

Parker NX motors with resolver are the ideal complement to AC890 drives in applications where servo performance is needed. Their main features are as follows :

- Rotatable socket plugs standard
- Connectors are not included with motor, but may be ordered
- IP64 enclosure standard

Parker Permanent Magnet Servo Motors

NX Series

Compatible with AC890



460 VAC power supply				
RPM Max	Torque Nm (in-lb)	Motor Part Number	Compatible AC890CD	Compatible AC890SD
4600	2 (17.7)	NX310EAPR7000	890CD/5/0003B/N/00/A/US	890SD/5/0003B/B/00/A/US
2300	4 (35.4)	NX420EAVR7000	890CD/5/0003B/N/00/A/US	890SD/5/0003B/B/00/A/US
4600	4 (35.4)	NX420EAPR7000	890CD/5/0004B/N/00/A/US	890SD/5/0004B/B/00/A/US
3450	5.5 (48.5)	NX430EAPR7000	890CD/5/0004B/N/00/A/US	890SD/5/0004B/B/00/A/US
4600	5.5 (48.5)	NX430EALR7000	890CD/5/0006B/N/00/A/US	890SD/5/0006B/B/00/A/US
2300	8 (70.5)	NX620EAVR7000	890CD/5/0004B/N/00/A/US	890SD/5/0004B/B/00/A/US
4490	8 (70.5)	NX620EARR7000	890CD/5/0010B/N/00/A/US	890SD/5/0010B/B/00/A/US
3110	12 (106)	NX630EARR7000	890CD/5/0010B/N/00/A/US	890SD/5/0010B/B/00/A/US
4600	12 (106)	NX630EANR7000	890CD/5/0012B/N/00/A/US	890SD/5/0012B/B/00/A/US
2100	16 (142)	NX820EAXR7000	890CD/5/0010B/N/00/A/US	890SD/5/0010B/B/00/A/US
4500	16 (142)	NX820EARR7000	890CD/5/0016B/N/00/A/US	890SD/5/0016B/B/00/A/US
2400	28 (248)	NX840EAQR7000	890CD/5/0016B/N/00/A/US	890SD/5/0016B/B/00/A/US
3500	28 (248)	NX840EAKR7000	890CD/5/0024C/N/00/A/US	890SD/5/0024C/B/00/A/US
2600	41 (360)	NX860EAJR7000	890CD/5/0024C/N/00/A/US	890SD/5/0024C/B/00/A/US
3000	64 (566)	NX860VAJR9000*	890CD/5/0039D/N/00/A/US	890SD/5/0039D/B/00/A/US
* Terminal box power connections				

Options

Part Number	Description			
...Rx3xx	Brake for NX3		2 Nm (17.7 in-lb)	
...Rx3xx	Brake for NX4		6 Nm (53 in-lb)	
...Rx3xx	Brake for NX6		12 Nm (106 in-lb)	
...Rx3xx	Brake for NX8		36 Nm (318 in-lb)	
...Rxxx1	Shaft with keyway		NX3	
...Rxxx1	Shaft with keyway		NX4	
...Rxxx1	Shaft with keyway		NX6	
...Rxxx1	Shaft with keyway		NX8	
...Rx01x	IP65 rating		NX2 - NX3 - NX4 - NX6 - NX8	
NX...EW...	EQN 1125 Multiturn ENDAT (512P)			
220056P0200	Fan Connector for fan cooled motors (NX860V)			

Parker NX motors with resolver are the ideal complement to AC890 drives in applications where servo performance is needed. Their main features are as follows :

- Rotatable socket plugs standard
- Connectors are not included with motor, but may be ordered
- IP64 enclosure standard

Parker Permanent Magnet Servo Motors

NX Series - No feedback device

Compatible with AC650S



230 VAC power supply							
At rated speed		@ 1500 rpm	@ 3000 rpm	Inertia	Amps	Motor Part Number	Suggested Drive Part Number
Nn (rpm)	Pn (kW)	P (kW)	P (kW)	(kg.m²x10⁻⁹)	(RMS)		
6000	0.21	0.07	0.13	2.1	4	NX205EYUR6001	650S-21140010-001P00-A1
5000	0.37	0.15	0.27	3.8	4	NX210EYPR6001	650S-21140010-001P00-A1
2000	0.38	0.29	—	7.9	4	NX310EYPR6001	650S-21140010-001P00-A1
3500	0.62	0.29	0.55	7.9	4	NX310EYKR6001	650S-21140010-001P00-A1
1900	0.72	0.58	—	29	4	NX420EYPR6001	650S-21140010-001P00-A1
3350	1.09	0.58	1.06	29	7	NX420EYKR6001	650S-21170020-001P00-A1
1750	0.95	0.83	—	42.6	4	NX430EYMR6001	650S-21140010-001P00-A1
2700	1.38	0.83	—	42.6	7	NX430EYJR6001	650S-21170020-001P00-A1
3500	1.67	0.83	1.5	42.6	7	NX430EYFR6001	650S-21170020-001P00-A1
1850	1.47	1.21	—	98	7	NX620EYRR6001	650S-21170020-001P00-A1
1650	1.82	1.8	—	147	7	NX630EYWR6001	650S-21170020-001P00-A1
850	1.38	—	—	320	7	NX820EYXR6001	650S-21170020-001P00-A1
460 VAC power supply							
At rated speed		@ 1800 rpm	@ 3600 rpm	Inertia	Amps	Motor Part Number	Suggested Drive Part Number
Nn (rpm)	Pn (kW)	P (kW)	P (kW)	(kg.m²x10⁻⁹)	(RMS)		
4200	0.75	0.35	0.66	7.9	2.5	NX310EYPR6001	650S-43125020-B01P00-A1
6000	1.01	0.35	0.66	7.9	2.5	NX310EYKR6001	650S-43125020-B01P00-A1
2000	0.77	0.70	1.27	29	2.5	NX420EYVR6001	650S-43125020-B01P00-A1
4000	1.37	0.70	1.27	29	5.5	NX420EYPR6001	650S-43155020-B01P00-A1
6000	1.90	0.70	1.27	29	5.5	NX420EYKR6001	650S-43155020-B01P00-A1
2500	1.37	1.00	—	42.6	2.5	NX430EYQR6001	650S-43125020-B01P00-A1
3600	1.78	1.00	1.80	42.6	5.5	NX430EYMR6001	650S-43155020-B01P00-A1
4000	1.92	1.00	1.80	42.6	5.5	NX430EYLR6001	650S-43155020-B01P00-A1
1700	1.39	-	-	98	2.5	NX620EYIR6001	650S-43125020-B01P00-A1
3800	2.68	1.45	2.60	98	5.5	NX620EYRR6001	650S-43155020-B01P00-A1
6000	2.77	1.45	2.60	98	9	NX620EYKR6001	650S-43190030-B01P00-A1
2700	2.76	2.16	—	147	5.5	NX630EYRR6001	650S-43155020-B01P00-A1
3400	3.24	2.16	3.38	147	9	NX630EYWR6001	650S-43190030-B01P00-A1
4600	3.66	2.16	3.38	147	9	NX630EYLR6001	650S-43190030-B01P00-A1
1800	2.83	2.83	—	320	5.5	NX820EYXR6001	650S-43155020-B01P00-A1
4000	5.62	2.83	5.20	320	16	NX820EYRR6001	650S-43216030-B01P00-A1
5900	7.20	2.83	5.20	320	16	NX820EYMR6001	650S-43216030-B01P00-A1
1900	4.85	4.68	—	620	9	NX840EYRR6001	650S-43190030-B01P00-A1
3400	7.35	4.68	7.67	620	16	NX840EYWR6001	650S-43216030-B01P00-A1
1600	5.53	—	—	920	16	NX860EYWR6000	650S-43216030-B01P00-A1

Parker NX motors are the ideal complement to AC650S drives in applications where space and energy savings are needed.

- Compact dimensions and robust design
- Large set of options and customization possibilities

- Also available: EX series motors for hazardous atmospheres
- High-speed variant up to 17000 RPM
- CE and UL variants

Parker Permanent Magnet Servo Motors

Cables - Polyurethane (UL)

Compatible with AC890



Feedback cables for 890 Drives & NX motors, RESOLVER Feedback

Part Number	Description
ST.0200.0001	FEEDBACK CONNECTOR SIR
KA.0001.6302	CABLE RESOLVER/HIPERFACE® (KIR-G-UL)
RK.6980.0020	CABLE RESOLVER 2M W/CONNECT 890-NX UL
RK.6980.0050	CABLE RESOLVER 5M W/CONNECT 890-NX UL
RK.6980.0100	CABLE RESOLVER 10M W/CONNECT 890-NX UL
RK.6980.0150	CABLE RESOLVER 15M W/CONNECT 890-NX UL
RK.6980.0250	CABLE RESOLVER 25M W/CONNECT 890-NX UL

Feedback cables for 890 Drives & NX motors, ENDAT Feedback

Part Number	Description
ST.0200.0001	FEEDBACK CONNECTOR SIR
266306-01 (TBD)	CABLE ENDAT (HEIDENHAIN)®
RK.9400.0020	CABLE ENDAT 2M W/CONNECT 890-NX UL
RK.9400.0050	CABLE ENDAT 5M W/CONNECT 890-NX UL
RK.9400.0100	CABLE ENDAT 10M W/CONNECT 890-NX UL
RK.9400.0150	CABLE ENDAT 15M W/CONNECT 890-NX UL
RK.9400.0250	CABLE ENDAT 25M W/CONNECT 890-NX UL

Power cables for 890 Drives & NX motors, size 3, 4, 6

Part Number	Description
ST.0100.3001	POWER CONNECTOR SMB GM2nRn BG0/3-C
KA.0003.6305	CABLE POWER (KMBTBG0/2-O-K-ULCSA)
MK.6980.0020	CABLE POWER 2M W/CONNECT 890-NX3/6 UL
MK.6980.0050	CABLE POWER 5M W/CONNECT 890-NX3/6 UL
MK.6980.0100	CABLE POWER 10M W/CONNECT 890-NX3/6 UL
MK.6980.0150	CABLE POWER 15M W/CONNECT 890-NX3/6 UL
MK.6980.0250	CABLE POWER 25M W/CONNECT 890-NX3/6 UL

Power cables for 890 Drives & NX motors, size 8

Part Number	Description
ST.0100.3001	POWER CONNECTOR SMB GM2nRn BG0/3-C
KA.0003.6306	CABLE POWER (KMBTBG3-O-K-ULCSA)
MK.6990.0020	CABLE POWER 2M W/CONNECT 890-NX8 UL
MK.6990.0050	CABLE POWER 5M W/CONNECT 890-NX8 UL
MK.6990.0100	CABLE POWER 10M W/CONNECT 890-NX8 UL
MK.6990.0150	CABLE POWER 15M W/CONNECT 890-NX8 UL
MK.6990.0250	CABLE POWER 25M W/CONNECT 890-NX8 UL

Cables can be delivered with other lengths; add (or subtract) the cable price per meter.

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