

Variable Speed Drive - AC10 Series

Overview

Description

The AC10 Compact Drive is a simple, reliable and economical solution to every-day motor control applications requiring speed or torque control within the power range of 0.2 kW to 180 kW for IP20 and 0.4 kW to 15 kW for IP66. Having compact dimensions and features normally only associated with higher specification drives, including, sensorless vector mode for control of Permanent Magnet (PMAC) and AC induction motors, output frequency up to 590 Hz, 3 phase 400 V supplies in all 11 frame sizes and a full 150 % overload at 0.5 Hz for 1 minute, AC10 provides an optimised solution for OEM machine builders looking for a compact, cost-effective drive without compromising on performance.

Features

Simplicity

AC10 is designed to reduce the time and effort required to install, setup and commission through its easy to use integrated keypad. Minimal wiring requirements and two easily accessed terminal rails make AC10 fast and simple to install, having you up and running in no time at all. Auto-tuning sensorless vector mode takes AC10 beyond simple V/Hz control allowing users requiring greater dynamic speed or torque control for their application to benefit from the drives enhanced 0.5 % speed and 5 % torque accuracy.

Reliability

Proven technology and manufacturing techniques ensure AC10 has been engineered and built to deliver consistently outstanding levels of performance day in, day out ensuring maximum uptime and productivity. Thanks to its conformally coated PCBs, AC10 is able to withstand even the most arduous class 3C3 environment which many other drives in this class would struggle with, allowing you to operate AC10 with the utmost confidence in more applications.



Technical Characteristics IP20 - Overview

Power Supply	220 ... 240 VAC ±15 % Single Phase 220 ... 240 VAC ±15 % Three Phase 380 ... 480 VAC +10 % -15 % Three Phase
Input Frequency	50/60 Hz
Power Range	0.2...180 kW
Operating Temperature	0...40 °C
Analogue Inputs	1x (0-10V), 1x (0-10V, 0-5V, 0-20mA, 4-20mA)
Analogue Outputs	1x (0-10 V, 0-20 mA) frames 1-5 2x (0-10 V, 0-20 mA) frames 6-11
Digital Inputs	5x 24 VDC frames 1-5, 8x 24 VDC frames 6-11
Digital Outputs	1x 24 VDC frames 1-5 2x 24 VDC frames 6-11
Relay Output	1x 5 A @230 VAC



Technical Characteristics IP66 - Overview

Power Supply	220 ... 240 VAC ±15 % Single Phase 220 ... 240 VAC ±15 % Three Phase 380 ... 480 VAC +10 % -15 % Three Phase
Input Frequency	50/60 Hz
Power Range	0.4...15 kW
Operating Temperature	0...50 °C
Analogue Inputs	1x (0-10V), 1x (0-10V, 0-5V, 0-20mA, 4-20mA)
Analogue Outputs	1x (0-10 V, 0-20 mA)
Digital Inputs	6x 24 VDC
Digital Outputs	1x 24 VDC
Relay Output	1x 5 A @230 VAC



Electrical Characteristics

Power Supply	220 ... 240 VAC ±15 % Single Phase 220 ... 240 VAC ±15 % Three Phase 380 ... 480 VAC +10 % -15 % Three Phase
Rated Input Frequency	50/60 Hz
Maximum Switching Frequency	10 kHz without derating
Overload	150% of Rated Current for 60s, 200% for 2s
Output Frequency	0.5...590 Hz
Switching Frequency	2...10kHz selectable
Control Mode	Volts/Hertz or Sensorless Vector (SLV) Mode
Earth Leakage Current	>10 mA (all models)

Environmental Characteristics

Temperature range	Operating Temperature: 0...+50 °C (derate above 40 °C, IP20 only)
Humidity	Operating humidity: Below 90 % Relative Humidity, non-condensing
Vibration	Below 0.5 g
Altitude	1000 m ASL
Protection Degree	IP20 & IP66
Chemically Active Substances	For the standard product, compliance with EN60271-3-3 is Class 3C3

Standards and Compliance

European Certification	This product conforms with the Low Voltage Directive 2006/95/EC and Electro-Magnet Compatibility Directive 2004/108/EC. Compliant with European Standards EN 61800-5-1:2007 and EN 61800-3:2004+A1:2012 "Adjustable speed electrical power drive systems"
North American	PENDING: Complies with the NEC NFPA 70, Underwriters Laboratories (UL) Listed to UL508C
Canada	PENDING: Complies with the Canadian Electrical Code, Underwriters Laboratories (UL) Listed to CSA 22.2 No. 14

AC10 IP20

IE2 Efficiency MR Series AC Induction Motors

An ideal complement to AC10, the MR Series AC Induction motors are IE2 efficient and start from a power range of 0.09 kW. Featuring optional axial in-line force ventilation fan and holding brake, the MR motor is a high quality durable AC motor which when matched to the AC10 will provide you with a complete motor/drive package that will deliver optimal performance in your application.



AC10 Drives Range

One of the smallest compact-drives available and with 11 different frame sizes covering a power range of 0.2 kW through to 180 kW, AC10 is a low-cost, compact solution for simple AC induction motor control in a wide range of applications across a host of different industries.



Flexible I/O

- Freely assignable digital inputs and outputs, and relay output to suit your application needs
- Analogue inputs & outputs for connection to speed potentiometers and panel meters
- Internal dynamic brake switch as standard



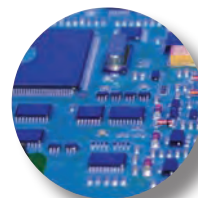
Modbus/RS485 communication

- Connection to Parker PDB drive setup and monitoring tool
- Connection to PLC or other Modbus RTU / RS485 network
- Clone module connection



Extra power when it's needed

- **150 % overload** for 60 seconds at 0.5 Hz to provide extra starting torque for shifting high inertia loads
- Output power can be uprated for operation in lower ambient temperatures



Suited to all environments

- Optional Internal **EMC filter** allows use in C3 industrial environments
- Conformal coating provides protection in arduous **class 3C3** environments
- Global availability and support
- 50 °C operating temperature
- Fan-cooled heatsink, convection cooled electronics





Simple or enhanced performance

- Simple V/Hz control for general energy saving applications
- Enhanced auto-tuning sensorless vector control providing higher dynamic performance for applications requiring greater speed or torque accuracy
- Sensorless PMAC & AC Induction Motor control



All at the touch of a button

- Standard ergonomic keypad providing full access to all drive functions
- 4 LEDs provide instant indication of drive status
- Remote mountable keypad option for ease of setup and operation



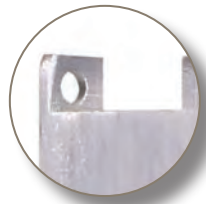
Simplified Setup

- Simple out of the box operation thanks to integrated macros and quick start guide
- Basic speed control
- Speed preset
- Raise / Lower
- Auto / Man
- PID control
- Essential services (Fire Mode)
- Catch a spinning load (Fly-Catching)



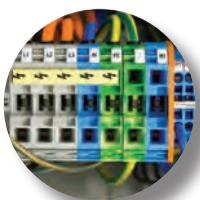
High Speed Operation

- **Up to 590 Hz output** for high speed operations such as spindles, centrifuges, mixers etc.



Compact Dimensions

- When compared to other compact drives of similar functionality, AC10 is noticeably more compact reducing cabinet space and freeing up valuable floor space.



Choice of operating voltages

- 230 V single and three phase input up to 2.2 kW
- 400 V three phase input from 0.2 kW through to 180 kW
- Internal DC link choke from 30 kW removing the need for external line reactor



Control at your fingertips

AC10 comes complete with an ergonomic operator keypad as standard featuring 4 LED drive status indicators, a 4 digit 7 segment LED display and a tactile membrane style keypad.

In addition to displaying status and running information, the LED display is also used to access drive configuration parameters which can be quickly and easily changed via the keypad.

The keypad can also be used to take local control of the motor to start, stop, increase or decrease motor speed.

An optional keypad is also available and can be mounted remotely from the drive.

Sensorless Permanent Magnet (PMAC) Motor Control

AC10 is capable of providing control of any sensorless PMAC motor, such as the Parker NX series. Servo motor technology can deliver up to 10 % more energy savings than conventional induction motors and can also be up to 75 % smaller in size.



AC10 IP66

IP66 / NEMA 4x apply to IEC standard 60529-2004 and assess the capability of an enclosure to resist specific environmental conditions. Parker AC10 IP66 offers all the great benefits of the AC10 series drives but with added environmental protection, validated by the IEC, to allow operation in difficult conditions.

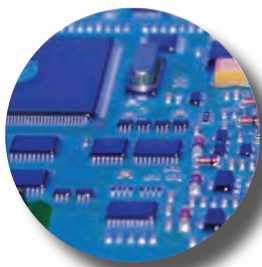


Applications

AC10 IP66 provides a no-fuss approach to general purpose industrial motor control applications across a wide range of industries.

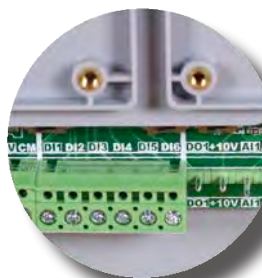
The IP66 enclosure enables use in both indoor and outdoor applications where environmental conditions may be a concern, such as wash-down areas in food and beverage facilities and use in waste plants or rooftop units.

For outdoor applications the drive should be installed under a suitable cover to provide protection against potential damage caused by direct exposure to sun, ice and snow.



Suited to all environments

- Robust IP66 rated enclosure for environmental protection
- Optional Internal **EMC filter** allows use in C3 industrial environments
- Conformal coating provides protection in arduous **class 3C3** environments
- 50 °C operating temperature



Flexible Connections

- Freely assignable digital inputs and outputs, and relay output to suit your application needs
- Internal dynamic brake switch as standard
- Connection to PLC or other Modbus RTU / RS485 network
- Clone module connection



Easy Connection Access

- Easy user access to connections with removable gland plate

Extra power when it's

- 150 % overload **load for 60 seconds** at 0.5 Hz to provide extra starting tor for shifting high inertia loads
- Output power can be uprated for operation in lower ambient temperature



When it's needed

- 60 seconds at extra starting torque for inertia loads
- Can be upgraded for ambient temperatures



All at the touch of a button

- Standard ergonomic keypad providing full access to all drive functions
- Simple out of the box operation thanks to integrated macros and quick start guide



High Speed Operation

- **Up to 590 Hz output** for high speed operations such as spindles, centrifuges, mixers etc.



Customisation Options

- User customisable option panel for:
 - Isolators
 - Switches
 - Push buttons
 - Indicators

Energy savings made simple

For applications such as fan control, energy savings of up to 50% can be achieved by using the AC10 IP66 to match the motor speed to process requirements.

In addition to saving energy, power factor can be improved, system noise reduced, maintenance periods extended and overall service life increased.

AC10 IP66 can be integrated close to the motor, regardless of the environmental conditions, saving in cabling costs, space and energy as well as the cost of separate cabinets.

Dependent upon the application, payback time can be as little as a few months.

Decentralisation

AC10 IP66 enables the decentralised drive system where the drives should be installed as close as possible to the motor it is running. Savings can be achieved through reductions in cable installation times as well as the cost of the cabling itself.

Because the drive is self-enclosed no cabinets are required to hold them, saving space and money. Self-enclosure also means that heat output from the drives does not need to be ventilated from the cabinet, leading to a system which is simpler and easier to maintain.

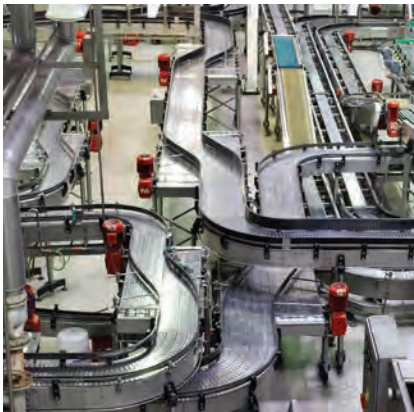
Applications

AC10 provides a no-fuss approach to general purpose industrial motor control applications across a wide range of industries, giving users the benefits of the inherent energy-saving properties of using a variable speed drive, as well as the improved reliability and extended service life benefits associated with smoother starting and stopping of regularly cycling loads.

Making use of pre-defined control logic, **Application Macros** enable users to quickly configure the AC10 for control of one of a number of pre-defined functions. Information is presented to the user in a template format which can then be simply and easily populated with the specific details of the application.

Typical applications for AC10 include...

- Conveyor
- Centrifuge
- Fans
- Mixers
- Packaging Machines
- Textile Machines
- Pumps
- Strapping Machines
- Labeling Machines
- Industrial Washing Machines
- Machine Tool Spindles
- Roller Doors



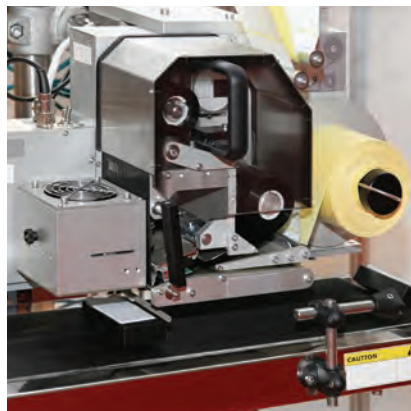
Conveyors



Fans

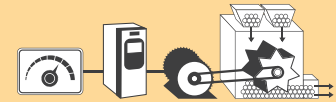


Mixers



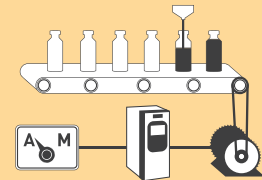
Packaging Machines

AC10 Standard Application Macros include...



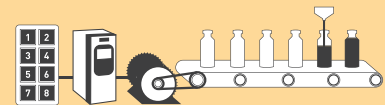
BASIC SPEED CONTROL

Set speed and voltage or current with start/stop direction control



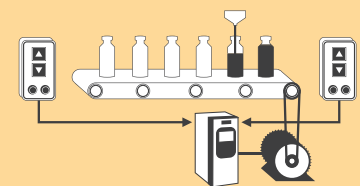
AUTOMATIC/MANUAL CONTROL

Set to run with local speed setting or external reference



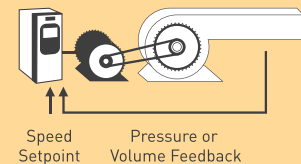
PRESET SPEED CONTROL

Select up to 8 pre-programmed speeds using digital inputs



RAISE/LOWER

Increase or reduce speed using digital inputs



PID CONTROL

Control the pressure, flow, temperature or any process variable