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MC Drives

Low Voltage Mobile Drives for Induction Motors
24 to 96 VDC



ENGINEERING YOUR SUCCESS.



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- This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.
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Low Voltage Mobile Drives for Induction Motors - MC Drives

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Parker Hannifin

The global leader in motion and control technologies

A world class player on a local stage

Global Product Design

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

Local Application Expertise

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

Manufacturing to Meet Our Customers' Needs

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

Electromechanical Worldwide Manufacturing Locations

Europe

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

Asia

Wuxi, China
 Chennai, India

North America

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



Offenburg, Germany

Local Manufacturing and Support in Europe

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

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



Milan, Italy



Littlehampton, UK



- Electromechanical Manufacturing
- Parker Sales Offices
- Distributors



Dijon, France

Low Voltage Mobile Drives for Induction Motors - MC Drives

Overview

Description

Parker MC series represents the latest design standards for compact and reliable controllers for mobile applications.

Providing a motor control solution for battery systems between 24 and 96 VDC, the MC motor controllers provide OEMs with a superb combination of power, performance and functionality.

The compact dimensions and high efficiency of this controller make integration into very tight spaces a reality without sacrificing output performance. It's design has been optimized to produce the lowest possible installed cost, whilst still maintaining superior reliability even in the most demanding of applications.



Product Features

- Advanced field oriented vector control
- Auto-configuration of typical induction motors
- Customization possible (firmware)
- High efficiency cold plate heat sink design
- IP65 protection class
- Motor temperature sensor input
- Encoder supply output (5 V)
- AB encoder input
- Dual, configurable throttle inputs
- Configurable CAN communication
- Parker IQAN compatible
- Ability to control vehicle control tasks separately from motor control
- 5 configurable coil drive outputs
- 2 configurable digital outputs
- 2 Analogue inputs / 6 Digital inputs
- Powerful MC configuration utility for system design and diagnostics
- Safety Interlock relay for battery connection

Applications

- Utility vehicles
- handling equipment, handling gantries
- Refuse Truck
- Bus and Coach
- City van
- Turf care
- Street sweepers
- Other hydraulic pump control

Technical characteristics - overview

Model	MC
Motor type	AC induction
Nominal voltage	24/96 VDC
Max 2 min current	800 Arms
Max 2 min power	60.6 kVA
Switching freq (induction)	10 kHz
Operating temperature	-40 °C to 50 °C
Storage temperature	-40 °C to 95 °C
Protection	IP65
Control type	Speed or Torque control for Induction (for PMAC, consult your local Parker sales office)
Feedback	Quadrature encoder (closed loop speed control)
Communications	CANopen, RS232/485 serial
Cooling	Air-cooled
Certifications	UL recognized component per UL583, EMC: designed to EN12895, Safety: designed to EN1175, CE marked to EN 61800-5-1 (Safety, Low Voltage Directive)

Technical Data

Part number	Switching frequency	Max Output frequency	Rms output 1 hour Current A	Rms output 2 min current A	Nominal Input Voltage V
MCC-02-0180-01-02	10kHz	300Hz ¹	90	180	24
MCC-02-0250-01-02			125	250	24
MCC-04-0200-01-02			100	200	36-48
MCC-08-0175-01-02			80	175	48-80
MCD-02-0350-01-02			175	350	24
MCD-04-0275-01-02			140	275	36-48
MCD-04-0350-01-02			175	350	36-48
MCD-08-0250-01-02			110	250	48-80
MCE-03-0400-01-02			175	400	24-36
MCE-03-0500-01-02			240	500	24-36
MCE-04-0450-01-02			205	450	36-48
MCE-04-0550-01-02			250	550	36-48
MCE-08-0350-01-02			100	350 (1 min)	48-80
MCF-03-0650-01-02			300	650	24-36
MCF-03-0800-01-02			355	800	24-36
MCF-04-0650-01-02			295	650	36-48
MCF-08-0450-01-02			155	450	48-80
MCF-08-0550-01-02			190	550	48-80
MCF-08-0650-01-02			195	650 (1 min)	48-80
MCF-09-0550-01-02			175	550	72-96
MCF-09-0650-01-02	200	650	72-96		

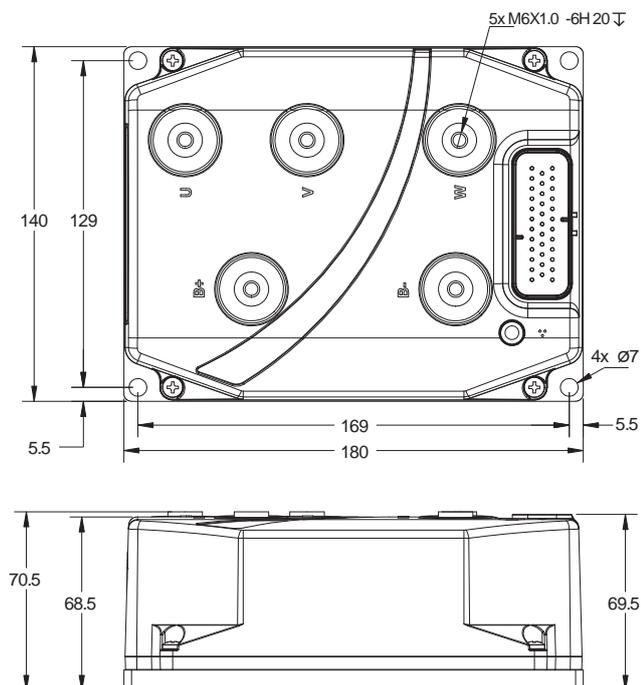
Notes: All current ratings are rms values per motor phase.

Continuous current for design life is the maximum long-term current, at an internal heatsink long-term temperature of 70 °C (158 °F), at which the controller will achieve its design life (20,000 h for 24 ... 80 V). Note that much higher 1 h ratings can be achieved with additional heatsinking.

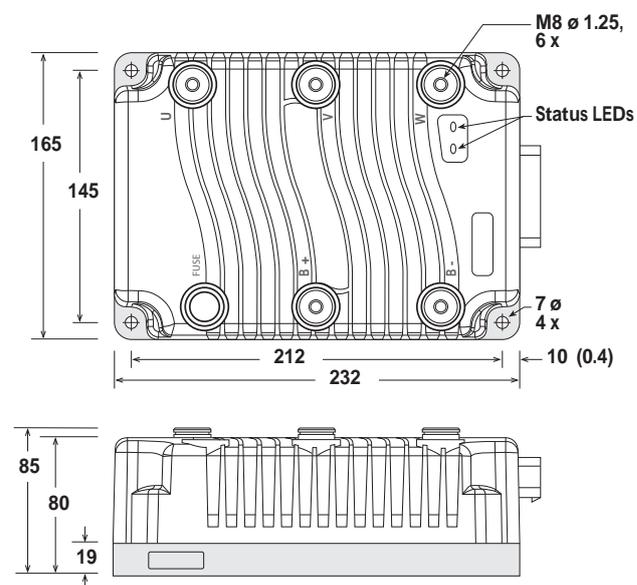
¹ 300 Hz with induction-only software, OS20-OS22.

Dimensions

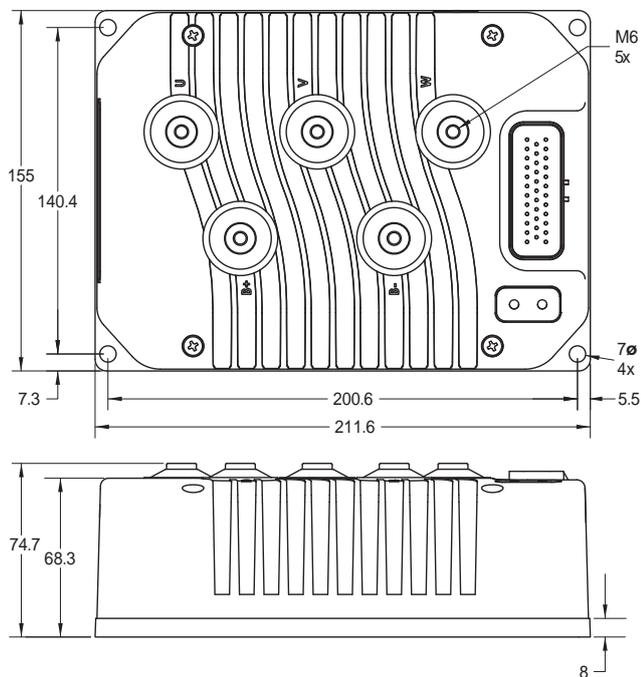
MC C



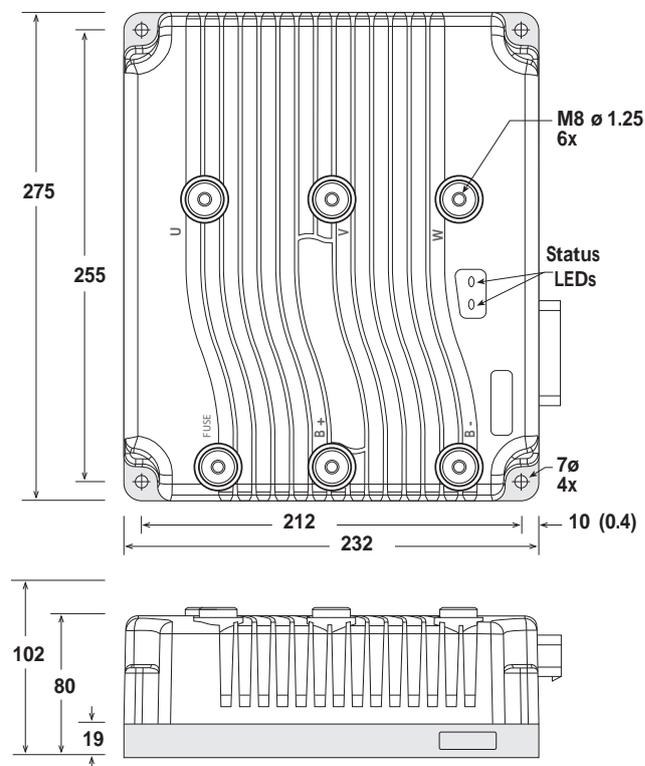
MC E



MC D



MC F



Dimensions [mm]

Related Products

CFR - Low voltage induction motors for mobile applications

Description

This range of AC induction motors has been specifically developed for battery-operated vehicles. These low cost air-cooled induction motors (ACIM) are automatically recognised by the MC drives. Typically adapted for Electro-Hydraulic Pumps (EHP), the Parker's product support team will work with pump division to coordinate mechanical solution.

Product Features

- Ruggedised low voltage induction motor
- Speed up to 3500 rpm
- Power up to 40 kW
- Torque up to 150 Nm
- IP rating: IP20 to IP65
- Built-in thermal sensor for monitoring motor temperature
- Customisation possibilities (shaft, flange, additional fan if required)

Typical applications

- Electric power steering
- Electro-Hydraulic pump for small power hydraulic cylinders

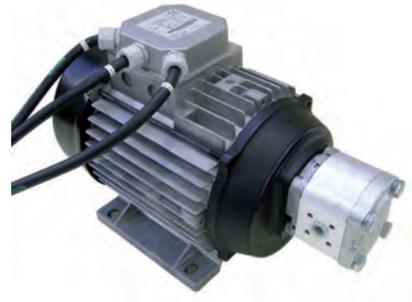


Electro-Hydraulic Pumps (EHP)

Subsystem capabilities

Parker offers pre-engineered and customisable EHP to assist in the development of hybrid-electric vehicle platforms. The EHP kit will include a low voltage MC drive + AC induction motor + hydraulic pump - fixed displacement (vane or gear style) or variable displacement (bent-axis piston style)

Please consult your local sales office to discuss your specific application requirements.



Order Code

	1	2	3		4		5		6		7
Order example	M	C	C	-	04	-	0450	-	01	-	00

1 Inverter family

M Mobile Inverter

2 Control module build

C Low Voltage - 24, 48, 80 VDC

3 Frame size

C
D MC Series
E
F

4 Maximum operating voltage

Low Voltage MC Series Inverter

02 24 VDC

03 36 VDC

04 48 VDC

08 80 VDC

09 96 VDC

5 Peak current ratings

24 VDC Nominal Voltage

0180 180 A - MC Series Frame C

0250 250 A - MC Series Frame C

0350 350 A - MC Series Frame D

36 VDC Nominal Voltage

0400 400 A - MC Series Frame E

0500 500 A - MC Series Frame E

0650 650 A - MC Series Frame F

0800 800 A - MC Series Frame E

48 VDC Nominal Voltage

0200 200 A - MC Series Frame C

0275 275 A - MC Series Frame D

0350 350 A - MC Series Frame D

0450 450 A - MC Series Frame E

0450 450 A - MC Series Frame F

0550 550 A - MC Series Frame E

0650 650 A - MC Series Frame F

80 VDC Nominal Voltage

0175 175 A - MC Series Frame C

0250 250 A - MC Series Frame D

0350 350 A - MC Series Frame E

0450 450 A - MC Series Frame F

0550 550 A - MC Series Frame F

0650 650 A - MC Series Frame F

96 VDC Nominal Voltage

0550 550 A - MC Series Frame F

0650 650 A - MC Series Frame F

6 Branding

01 Parker branded

7 Special options

00 E Version with PMAC

02 E Version without PMAC



Parker's Motion & Control Technologies

At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further info call 00800 27 27 5374



Aerospace

Key Markets

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

Key Products

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



Climate Control

Key Markets

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

Key Products

Accumulators
Advanced actuators
CO₂ controls
Electronic controllers
Filter driers
Hand shut-off valves
Heat exchangers
Hose & fittings
Pressure regulating valves
Refrigerant distributors
Safety relief valves
Smart pumps
Solenoid valves
Thermostatic expansion valves



Electromechanical

Key Markets

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

Key Products

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



Filtration

Key Markets

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

Key Products

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



Fluid & Gas Handling

Key Markets

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

Key Products

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



Hydraulics

Key Markets

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

Key Products

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



Pneumatics

Key Markets

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

Key Products

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



Process Control

Key Markets

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

Key Products

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



Sealing & Shielding

Key Markets

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

Key Products

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

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US Product Information Centre

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