

AC Variable Speed Drives for Industry

0.37-710kW (0.5-950HP)



The drive for **perfection**



The drive for perfection

We put more in, so you get more out...

- Better diagnostics - easy to programme in many languages
- Quicker response to dynamic load changes
- Connection to the latest industrial fieldbus systems



1984
VL series: First miniature 3Ø analogue drive



1986
CUB VC150: First low cost analogue 1Ø drive



1987
VL 11-22



1988
CD Mk1: First digital 3Ø inverter with RS485 comms



2010
VXG



2007
VXR



2004
CUB:
1Ø and
3Ø series

IMO Jaguar

After twenty five years, IMO Jaguar AC variable speed drives continue to deliver innovation and efficiency worldwide.

The product of twenty five years continuous innovation, today's range of variable speed drives, comprises single and three phase CUB and VXR series from 0.4kW and VXG series up to 710kW, which remains at the forefront of frequency inverter technology.

Today the Jaguar variable speed drive is helping engineers bring significant energy saving, greater efficiency, reliability and performance to their daily operations. The Jaguar drive is being used 24 hours a day, 7 days a week, 365 days a year, worldwide, in applications ranging from simple fans or pumps through to the most demanding and complex machines.

The Jaguar range of drives is allowing engineers to control the speed of their electric motors and pumps with even more accuracy and efficiency. This is resulting in better reliability, as the life of the motor or pump can be extended due to less wear and tear, providing overall improved performance on older more unreliable systems.

The energy saving a Jaguar variable speed drive delivers by controlling the speed of a pump or fan during quieter periods could be significant. As awareness of energy saving has increased IMO has used its twenty five years of inverter technology experience to develop its 5 Stage Pentagon Plan, delivering an unrivalled solution to your energy saving needs.

Just as important, with all this experience behind us, our engineers have the edge in application expertise and sheer drive know-how to help, without hassle, customers achieve their optimum solution. Boasting the largest stock of AC drives in the country, backed as always by our unique five year guarantee, IMO is the only manufacturer in the world to underwrite your energy saving.



IMO Jaguar. The technology... the support... the drive.



1989
CUB VCD series:
First 1Ø digital
inverter

1990
CD 11-30

1991
DX and CD
45-90 HVAC

1992
CDS and
CD MK2

1993
Dinverter:
First DIN rail
mountable
micro drive

1994
DXE: First
sensorless
vector control
system

1995
VX: Torque
Vector
series

The only inverter in the world to underwrite
your **Energy Saving!**



2003
TE: IP54
and LE:
Lift/hoist
specific

2002
Over 5 million
installed world-wide

2001
VXSM

2000
VXM and CUB CM:
First closed loop
Dynamic Torque
Vector Jaguar

1998
Common
fieldbus
options

1997
CUB C

1996
VXS: Compact low cost
Torque Vector series

Which is the right Jaguar Drive for you?



From our market leading CUB, VXR and VXG range of drives with varying functionality and power, IMO has the right frequency inverter to meet the needs of your application, whatever it might be. From a simple small pump or fan through to the most complex large scale hoists, you can be assured that IMO has the drive and the knowledge to meet your application needs.



The IMO CUB features a full range of functions, a compact body, simple operation, wide model variations and global compatibility. It will meet the needs of higher performance machines and equipment such as conveyors, fans, pumps, centrifugal separators and food processing machines, as well as the needs of system integration, energy saving, labour saving and total cost reduction.



With an extended range of functions, the IMO VXR features connectivity, compact body, wide model variations and global compatibility. The VXR with Dynamic Torque Vector Control sets new standards for vector controlled drives. It will meet the needs of high performance machines and equipment such as pumps, fans, conveyors, material handling machines, packaging, special machines and textile machines.



The high performance VXG, multi function inverter. boasts state-of-the-art technology, with control performance that has evolved to a new dimension. Control methods now include: PG Vector control, sensorless vector control, dynamic torque vector control and V/F Control. It meets the need of the most demanding drives applications such as hoisting, packaging, material handling, wood, textile and process machinery.

The IMO Jaguar range is ready to answer your needs, providing the highest performance levels in the industry and redefining the common sense of general-purpose inverters.

CUB applications include...



- ◀ Small Fans & Pumps
- ◀ Woodworking Machines ▶
- ◀ Small Conveyors



VXR applications include...



- ◀ Fans
- ◀ Conveyors ▶
- ◀ Mixers



- ▲ Dosing Pumps
- ◀ Chairlifts ▶
- ▼ Palletisers



- ◀ Food Processing ▶
- ◀ Shrink Wrappers
- ◀ Small Industrial Refrigerators ▶



VXG applications include...



- ◀ Fans
- ◀ Textile Machines ▶
- ◀ Extruders



- ▲ Hoists
- ◀ Washing Machines ▶
- ▼ Fillers / Cappers



- ◀ Compressors ▶
- ◀ Crushers
- ◀ Baggage Conveyors ▶



IMO Jaguar: saving energy... and money!

As the awareness of Energy Saving has increased, IMO has used its 25 years of inverter technology experience to develop its “5 Stage Pentagon Plan” delivering an unrivalled solution to your energy saving needs.



What are the 5 stages of the IMO Pentagon Plan?



1. Why should you care about energy saving and its affect on your business?

Lowering energy usage is a global issue that has been proven to mitigate climate change and increased carbon emissions and lower your operating costs!



2. How can the IMO Jaguar range of inverters help lower your energy costs?

A single IMO Jaguar Inverter can deliver significant energy savings and cost reductions by controlling the speed of equipment that is traditionally “dampened” such as a fan or pump.



3. What could your potential energy savings be and how can you afford them?

Energy saving products can start providing payback as soon as they have been installed and these savings can be substantial. IMO offers a comprehensive JAGSAVER review of your application to evaluate these savings and works closely with you to identify the best financing solution, including the option of 0% financing from the Carbon Trust.



4. Can IMO prove that this technology really delivers energy savings?

Yes. IMO has many examples of customer applications that have generated savings, some as high as €1000 per day.



5. What do you need to do next?

Make a difference to your company by taking the action of reducing your energy consumption and lowering your daily energy bills. Contact IMO for a free JAGSAVER review.

The IMO Pentagon Plan is supported by IMO’s position as the only inverter manufacturer in the world to underwrite your energy savings for a minimum of 5 years.



Climate change can be defined as “A regional change in temperature and weather patterns.” Current scientific evidence indicates a noticeable link between climate change over the last century and the increased burning of fossil fuels.

What is being done and is your business already being effected?

Climate change is recognised as a global problem and nations are working across the world to reduce their greenhouse gas emissions by 5.2% by 2012. The UK’s target is 34% (1990 emission levels) by 2020 and will increase to 42% if international agreement is secured.

The UK is affected by the Climate Change Levy which came into effect on 1st April 2001. This applies to energy used in the non-domestic sector (industry, commerce and the public sector).

How can an inverter make a difference?

With unstable energy prices that have increased significantly in recent years due to supply worries, it makes sense for industry to focus on applications that are the largest users of electricity. Fans and Pumps make up a significant portion of electric motor applications in industry estimated to be in excess of 50%.

When specifying a new motor, it is common for engineers to specify one that is more than capable of doing the job in the worst circumstances.

A Centrifugal Fan or Pump is one example of where this theory is usually applied. On such variable torque applications, torque (current) varies with the square of the speed and power in proportion to the cube of the speed, often referred to as “Cube Law”. However, speed reduction is usually achieved by “damping”, akin to slowing a car by braking without releasing the accelerator.

By using an inverter to electronically reduce the speed of the fan or pump and applying Cube Law, the power actually reduces by the cube of the speed change. It follows that a 20% reduction in speed equates to a 50% reduction in power.



What is a Jaguar Drive?

With energy saving payback points typically varying between 12 and 18 months, the IMO Jaguar’s unique FIVE year warranty makes it the only inverter in the world that actually underwrites your energy cost savings.

IMO define the Jaguar Inverter as a product with over 25 years continuous innovation putting you in total control of your motor performance, operation and output.

- IMO Jaguar Inverter sizes:
- Jaguar Cub 0.4kW to 4.0kW
 - Jaguar VXR 0.4kW to 15kW
 - Jaguar VXG 0.37kW to 710kW

Company: IMO Precision Controls		Application name: Jaguar VXM	
Fill in the 'green' boxes for the current or estimated flow rates to get a potential annual cost saving when using IMO Jaguar VSD. Savings are shown against six existing Flow Control options			
Days per week =	5	SELECT EXISTING FLOW CONTROL SYSTEM TO BE REPLACED (enter '1' in the box to indicate current control)	
Weeks per year =	52	Output Damper (or Valve)	34421 kWh/yr
Flow Rate	Hours per day	Flow Damper	29293 kWh/yr
20		Flow Guide Valve	13608 kWh/yr
25		Flow Throttle	3588 kWh/yr
30		Edly Current Coupling	18328 kWh/yr
35		Constant flow - no control	32370.6 kWh/yr
40			
45			
50			
55			
60			
65			
70			
75			
80	12		
85			
90			
95			
100			
Motor size (kW)	30	Cost of Inverter (£)	500
Peak Elec. Cost (£/kWh)	0.075	Cost of Installation (£)	500
		TOTAL RETROFIT COST	£ 2,450
		ENERGY SAVINGS per YEAR	£1,721
		SAVINGS per YEAR	£1,721
		PAYBACK PERIOD	1.4 Years

An IMO engineer is able to offer you our free energy review, using IMO’s JAGSAVER estimator application software. Once complete, your potential energy savings can be quickly identified.

What savings can you make?

As an example we have taken a typical 75kW motor on a pumping application running 12 hours a day, 350 days per year with a utility rate of 7.5p per kWh.

$$100\% \text{ Speed} = 75\text{kW} \times (1.00) \text{ cubed} \times 12 \text{ hours} \times 350\text{days} \times \text{£}0.075 = \text{£}23,625$$

$$80\% \text{ Speed} = 75\text{kW} \times (0.8) \text{ cubed} \times 12 \text{ hours} \times 350\text{days} \times \text{£}0.075 = \text{£}12,096$$

This provides the user with a saving of: = £11,529 or 51% and a payback period within 7 months using a Jaguar Inverter.

How can you afford it?

Energy savings offered by IMO Jaguar Inverters often means that capital investment is paid back within months. IMO will work with you and other departments within your business to access and complete the finance process.

Energy Efficiency Loans from the Carbon Trust are a cost effective way to replace or upgrade your existing equipment to more energy efficient standards. This delivers immediate benefits in carbon emission reduction and cost savings. If your spend is less than £500,000 on your energy, you could be eligible for an interest free loan from the Carbon Trust.

IMO can provide you with full details of Carbon Trust interest-free loans and assist you through the process of applying for a loan that can range from £3,000 to £400,000 with a repayment period of up to 4 years.

ECAs (Enhanced Capital Allowances) further reduce the costs of installing qualifying plant equipment. You will find IMO Jaguar on the Qualifying Technologies List ETL at www.eca.gov.uk.

For companies that do not qualify, a range of other financial packages are available from IMO that will assist you with your cash flow and enhance your business competitiveness.

Does the technology work?

One of many examples of IMO enabling manufacturers to fight back against the rapidly rising cost of energy was our work with an Italian manufacturer of paper bleaching agents. The company is now benefiting from savings of €1000 per day in production costs following the installation of 8 – 280kW IMO Jaguar Inverters to grinding mixers at its plant in North West Italy.



Each of the mixing vessels is equipped with a vertically mounted 250kW/400v/4-pole motor, which drives the grinding paddles through reduction gearboxes. These motors are controlled by IMO Jaguar energy-saving inverters.

Working closely with IMO, a local system builder installed the 8- IMO Jaguar VXM280K Inverters.

The result is the original mixers operate at a reduced inverter/motor frequency of approximately 42Hz. This cut in running speed and motor current maintains production quality and provides savings in the order of €1000 per day in production costs.

Now what do you need to do?

Call us now to discuss your energy projects and thoughts. We are ready and waiting to work with you directly to address these issues and to help reduce your costs.

IMO Jaguar CUB micro-inverters

1Ø: 0.37-2.2kW (0.5-3HP)

3Ø: 0.37-4.0kW (0.5-5HP)



Key Features

- IP20 side-by-side mounting
- Optional integrated EMI filtered models
- RoHS, CE marked, UL / cUL approved
- Revolutionary diagnostics
- DC injection braking for fast stopping
- Input and output phase-loss protection
- High performance STV control
- PID control mode as standard
- Impact load stall prevention
- 7 user-configurable preset speeds
- 3 user-defined skip frequencies
- Sink / source logic
- Optional copy unit / remote operator
- Timer / one-shot operating mode
- Loss-of-load output signal
- Inputs configurable for ON/NOT-ON operation
- Life time / service due alarm output
- Internal brake chopper
- RS485/Modbus RTU communication options
- Jaguar Loader diagnostic software

Ideal for OEM and end users alike, this powerful little inverter uses our latest Simplified Torque Vector open loop control architecture to give optimum torque output from a standard AC motor.

The Jaguar CUB drives deliver a higher motor starting torque using STV technology, a simplified version of IMO Jaguar's renowned torque-vector control system for consistently powerful operation. Running at 5Hz and employing both advanced magnetic flux estimator and motor slip compensation with auto-boost, starting torque can be as much as 150% or more.

The drive is available in ratings from 0.4kW through to 2.2kW in single phase / 230V, and 0.4kW to 4kW in 3 phase / 400V. Cubs rated 1.5kW and above can be specified with an integral braking resistor, while smaller models can be easily connected to an external bolt-on braking resistor option making it ideal for applications such as stopping higher inertia loads that call for large reserves of regenerative braking power.

By keeping motor loss to a minimum, the Jaguar Cub saves electrical power in fan or pump applications and thanks to its unique technology improves voltage control performance and reduces motor instability at low speed to about a half or less, at 1Hz, than that of a conventional inverter. Even when the motor load fluctuates, the slip compensation function ensures smooth operation.

With its impressively high specification and feature set, the built-in benefits of the CUB make it the perfect choice for small applications such as fans, conveyors, chemical dosing pumps, chairlifts, lab mixers and food processing equipment.

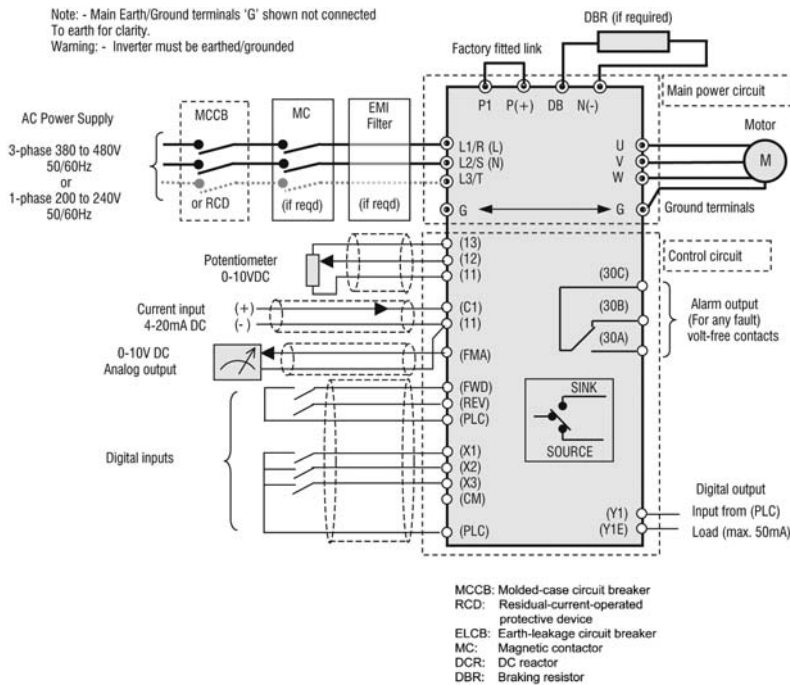


Options & Ordering



		1 Phase				3 Phase			
Output Frequency	0.5 - 400Hz								
Overload Capacity	150% for 60 secs - 200% for 0.5 secs								
Power Supply Voltage	1 phase, 200-240V, -15% / +10%				3 Phase, 380-480V, -15% / +10%				
Starting Torque	200% at 5Hz								
PWM Switching Frequency	0.75kHz - 14kHz								
Enclosure	IP20								
Communications	RS485 / Modbus RTU								
Dynamic Braking	Inbuilt								
EMC	Class A	External Option	Integrated	External Option	Integrated	External Option	Integrated	External Option	Integrated
	Class B	External Option	Dim	External Option	Dim	External Option	Dim	External Option	Dim
Motor Power (kW/HP)	0.37/0.5	CUB3A-1	1A	CUB3A-1E	1B	CUB1A5-4	2B	CUB1A5-4E	2F
	0.75/1	CUB5A-1	1D	CUB5A-1E	2C	CUB2A5-4	2C	CUB2A5-4E	2G
	1.5/2	CUB8A-1	2E	CUB8A-1E	3G	CUB3A7-4	2C	CUB3A7-4E	2G
	2.2/3	CUB11A-1	3C	CUB11A-1E	3G	CUB5A5-4	2C	CUB5A5-4E	3G
	4/5	-	-	-	-	CUB9A-4	3C	CUB9A-4E	3G

Power & Control connections



Dimensions

H	W	Depth	a	b	c	d	e	f	g
120	80	1	95	115	140				
130	110	2		115	139	149	158		
180	140	3			139				182

Accessories



Additional CUB Keypad

Comms Lead



Brake Resistor

Turn to accessories page for the complete range.

IMO Jaguar VXR

the mechanical handling solution



1Ø 230V: 0.37-2.2kW (0.5-3HP)
3Ø 230V: 0.37-15kW (0.5-20HP)
3Ø 400V: 0.37-15kW (0.5-20HP)

Key Features

- IP20 side-by-side mounting
- Optional integrated EMI filtered models
- Fast response to dynamic load changes - 64MHz CPU
- RoHS, CE, UL/cUL compliant
- V/F or Dynamic Torque Vector control
- 300% starting torque between 1-3Hz
- Improved open-loop low-speed stability
- Hit-and-Stop control with holding torque
- Mechanical brake control output - torque generated
- PID with dancer control
- PTC thermistor input
- Input and Output phase-loss protection
- Loss-of-command signal detection
- Life time / service due alarm output
- Internal brake chopper
- Thermostatically operated long-life cooling fans (designed to operate for 10 years at 40°C)
- RS485 (RJ-45 IN/OUT / Profibus / DeviceNet option cards)
- Optional multi-function back-lit keypad with parameter COPY mode
- Encoder feedback (closed-loop) and shaft-synchronizing options
- Synchronous (Permanent Magnet) motor options

The Jaguar VXR's wide range from 0.37kW to 15kW ratings come in 5 frame sizes in 200V series single and three-phase input, also 380-480V series three phase input units, all with integrated braking.

With its Class Leading CPU Processing power, the VXR provides superior speed and positioning accuracy, allowing better control even with rapidly changing loads.

Every Jaguar VXR is supplied with a removable keypad as standard. The addition of a standard LAN cable offers a remote display which can be programmed to display up to 19 different readouts. An optional dual display backlit LCD keypad is available offering larger LED display for the selected readout and also plain text programming and diagnostics. This display features a fully customisable menu so you can create the most friendly parameter list for your own use, choosing as many or as few parameters as you like.

Equally at home on demanding lift or hoisting applications as on fans or pumps, VXR has a series of application groups enabling easy setup for the relevant control, for example, brake control for lifting / indexing; multi-setpoint PID with sleep function; 2 stage PID on winding applications using dancer input. These are just a few of the many diverse tasks VXR can tackle.

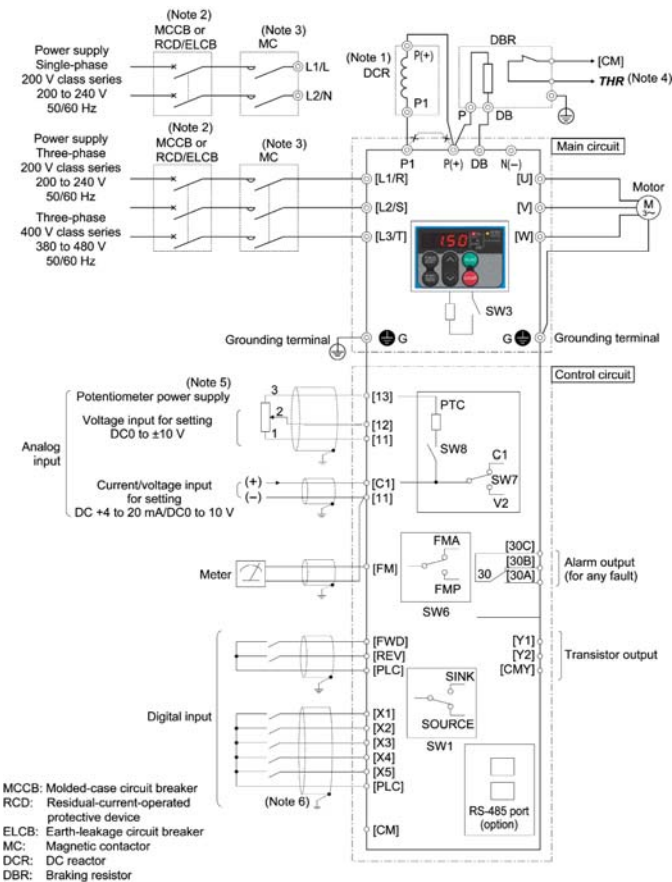


Options & Ordering



		1 Phase				3 Phase			
Output Frequency	0.5 - 400Hz								
Overload Capacity	150% for 60 secs - 200% for 0.5 secs								
Power Supply Voltage	1 phase, 200-240V, +/- 10%				3 Phase, 380-480V, -15% / +10%				
Starting Torque	300% between 1-3Hz								
PWM Switching Frequency	0.75kHz - 15kHz								
Enclosure	IP20								
Communications	RS485 / Modbus RTU (Standard), Profibus, DeviceNet (Option Cards)								
Dynamic Braking	Inbuilt								
EMC	Class A	External Option		Integrated		External Option		Integrated	
	Class B	External Option		Dim	External Option		Dim	External Option	
Motor Power (kW/HP)	0.37/0.5	VXR3A-1	1A	VXR3A-1E	1A	VXR1A5-4	2A	VXR1A5-4E	2D
	0.75/1	VXR5A-1	1B	VXR5A-1E	2B	VXR2A5-4	2B	VXR2A5-4E	2E
	1.5/2.2	VXR8A-1	2C	VXR8A-1E	3B	VXR3A7-4	2B	VXR3A7-4E	2F
	2.2/3	VXR11A-1	3A	VXR11A-1E	3B	VXR5A5-4	2B	VXR5A5-4E	3B
	4/5	-	-	-	-	VXR9A-4	3A	VXR9A-4E	3B
	5.5/7.5	-	-	-	-	VXR13A-4	4A	VXR13A-4E	4B
	7.5/10	-	-	-	-	VXR18A-4	4A	VXR18A-4E	4B
	11/15	-	-	-	-	VXR24A-4	5A	VXR24A-4E	5B
	15/20	-	-	-	-	VXR30A-4	5A	VXR30A-4E	5B

Power & Control connections



Dimensions

H	W	Depth	a	b	c	d	e	f
120	80	1	107	127	152			
130	110	2		127	152	160	169	
180	140	3			152			195
220	180	4				160		
260	220	5						195

Accessories

Comms Module



Additional VXR Keypad

Comms Lead



Turn to accessories page for the complete range.

IMO Jaguar VXG high performance drives

3Ø: 0.37-710kW (0.5-950HP)



Key Features

- User configurable 'quick-start' menu
- IP20 side-by-side mounting (IP40 option kit)
- Integrated EMC filter (EN61800-3 2004 cat C3)
- PLC logic type function
- RoHS, CE, UL/cUL compliant
- V/F, Torque Vector and closed loop control
- Loss-of-command signal detection
- 200% starting torque between 0.3-5Hz.
- Improved open-loop low-speed stability
- Safety input: digital input to enable/disable the IGBT devices of the inverter output stage
- Mechanical brake control output - torque generated
- PID thermistor input
- Input and Output phase-loss protection
- Life time / service due alarm output
- Thermostatically operated long-life cooling fans (designed to operate for 10 years at 40°C)
- Optional Keypad with mini USB port.
- Standard multi-function back-lit keypad with parameter copy mode
- Encoder feedback (closed-loop) and shaft-synchronizing options
- Synchronous (Permanent Magnet) motor options
- Internal brake chopper up to 22kW (30-110kW upon request)

The Jaguar VXG is the next generation of inverter technology, taking over from the market leading VXM. It has been designed specifically to be a high performance, multifunctional inverter, that can answer the needs of today's most demanding applications.

The VXG represents a sensorless vector controlled drive and includes true closed-loop vector control when used with encoder feedback. With ratings ranging from 0.4kW to 710kW, this makes the VXG a high performance AC Drive boasting advanced EMC friendly technology suitable for the most demanding applications.

These applications range from presses, hoists, mixers and crushers to fans and pumps. Unlike other inverters currently on the market, the Jaguar series generates low electro-magnetic noise, which is associated with interference of other sensitive equipment. It has been carefully designed using soft switching techniques for both the power devices and the switch mode power supply devices, resulting in potentially troublesome emissions being greatly reduced.

The VXG features improved performance by providing a selection of control methods including: PG vector control, sensorless vector control, dynamic torque vector control and V/F control as well as improved performance of current response and speed response (vector control).

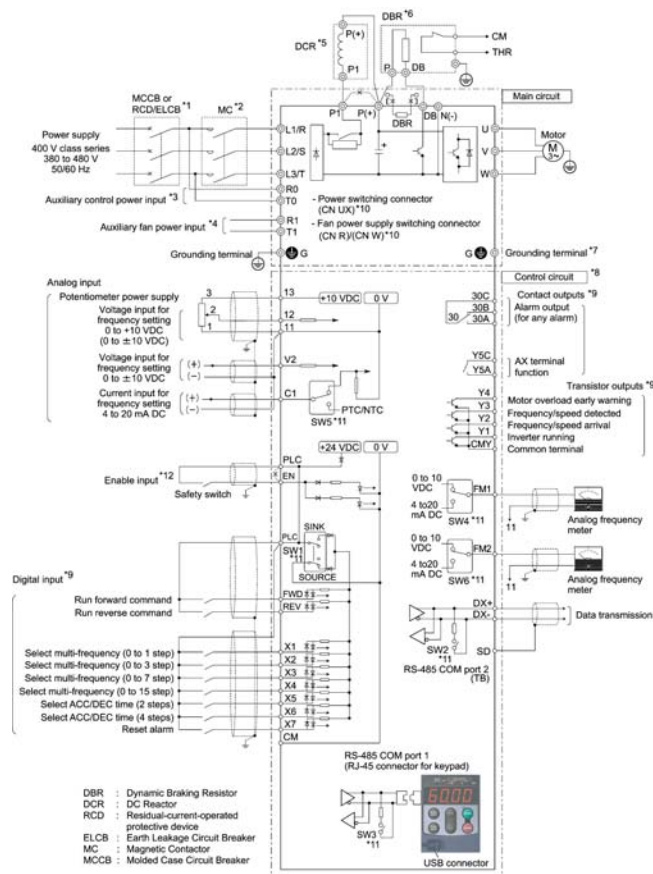


Options & Ordering



3 Phase								
Output Frequency	0.5 - 500Hz							
Overload Capacity	150% for 60 secs - 200% for 3 secs							
Power Supply Voltage	3 phase, 380-480V, -15% / +10%							
Starting Torque	200% / 0.3Hz							
PWM Switching Frequency	0.75kHz - 16kHz							
Enclosure	IP20							
Communications	RS485 / Modbus RTU (Standard), Profibus, DeviceNet, CC-Link, CANopen (Option Cards)							
Dynamic Braking	Inbuilt upto 22kW							
EMC	Cat 3		Integrated					
Motor Power (kW/HP)	C.T Rating	V.T. Rating	Dim	C.T. Rating	V.T. Rating	Dim	Dim	
0.4/0.5			VXG1A5-4E	1A	55/75	75/100	VXG150AL-4E	7E
0.75/1			VXG2A5-4E	1B	75/100	90/125	VXG176AL-4E	8E
1.5/2.2			VXG3A7-4E	2B	90/125	110/150	VXG210AL-4E	9F
2.2/3			VXG5.5A-4E	2B	110/150	132/200	VXG253AL-4E	9F
4/5			VXG9A-4E	2B	132/200	160/250	VXG304AL-4E	10G
5.5/7.5	7.5/10		VXG16A5L-4E	3C	160/250	200/300	VXG377AL-4E	10G
7.5/10	11/15		VXG23AL-4E	3C	200/300	220/350	VXG415AL-4E	11G
11/15	15/20		VXG30A5L-4E	3C	220/350	280/450	VXG520AL-4E	11G
15/20	18.5/25		VXG37AL-4E	4C	280/450	315/500	VXG650L-4E	12H
18.5/25	22/30		VXG45AL-4E	4C	315/500	355/470	VXG740AL-4E	12H
22/30	30/40		VXG60AL-4E	4C	355/470	400/600	VXG840AL-4E	13H
30/40	37/50		VXG75AL-4E	5D	400/600	500/700	VXG960AL-4E	13H
37/50	45/60		VXG91AL-4E	5D	500/700	630/900	VXG1170AL-4E	14I
45/60	55/75		VXG112AL-4E	6E	630/900	710/950	VXG1370AL-4E	14I

Power & Control connections



Dimensions

H	W	Depth	a	b	c	d	e	f	g	h	i
260	110	1	132	145							
260	150	2		145							
260	220	3			195						
400	250	4			195						
550	326	5				225					
615	361	6					270				
675	361	7					270				
740	361	8					270				
740	536	9						315			
1000	536	10							360		
1000	680	11							360		
1400	680	12								440	
1400	880	13								440	
1550	1550	14									500

Accessories



Braking Unit →



← Additional VXG Keypad

Turn to accessories page for the complete range.

IMO Jaguar LFT

the benchmark for lifts



3Ø: 400V/5.5-22kW (7.5-30HP)

4kW (5.5HP), 30kW (20HP), 37kW (50HP)
and 45kW (60HP) available soon

- Very high overload capability: 200% of rated current for 10 seconds
- Rated for a very heavy duty: 80% ED at 45°C ambient temperature
- Fast current response, obtaining a low torque ripple and very good rollback correction without using load cell
- Speed accuracy of $\pm 0.01\%$
- Safety input: digital input to enable / disable the IGBT devices of the inverter output stage
- Remote/Local operation can be easily switched by pressing one key
- Allows saving of complete parameter sets of three inverters
- Pole-tuning of permanent magnet synchronous motor can be performed without moving the motor
- 1 RS485 port as standard, with ModBus RTU and DCP 3 protocols
- CAN hardware is integrated which allows CAN Open communication
- Brake control function
- Main contactors control function
- 16 kHz switching frequency (non audible motor noise)
- Allows the definition of the Quick Access Menu (menu 0)
- Can be connected remotely using standard LAN cable
- Short floor operation
- 3 speed loop PI gains sets: one for zero speed, one for low speed and one for high speed
- Very simple rescue operation (using battery / UPS)
- Powerful ramp generator (10 different linear ramps and 10 different S curves)
- Direct-to-floor operation (operation without creep speed)
- Anticipated door opening, Speed error detection, Auto-reset function
- The cooling fan can be automatically disconnected when the inverter is cold, increasing the life of the fan and avoiding excessive acoustic noise when the inverter is not operating

The Jaguar range of LFT is aimed at giving lift applications a significant performance boost. Of particular note is the LFT's ability to be driven by battery power, thus allowing otherwise trapped lift passengers to be rescued quickly and easily in the event of mains power failure.

The LFT has a unique input function that uses timers to filter any difference between BRKS and BRKE signals to check that the lift brake has actually operated. A dedicated brake control signal (BRKS) means that the LFT directly controls the opening and closing of the mechanical brake without assistance from the main lift controller. The LFT also contains built-in adjustable timers to delay the BRKS signal in order to match the mechanical brakes' actual opening and closing time.

Other features include a restart time function, which avoids damage from contactor racing causing harmful regenerative currents emanating from the motor, and a contactor controller which times the opening and closing of the magnetic contactor in sequence with the inverter and motor operation. Thus, start and end delay times allow contactor operation without making or breaking motor current.

In closed loop applications the LFT does not need an external signal for zero speed command. This helps to avoid shock at starting and stopping due to car roll-back.

In open loop applications to avoid possible "jolts" the user can choose between start using a pre-programmed starting frequency held for a period of time, or start by holding on DC braking for a short time.

The LFT includes a match timer to validate speed change commands. This function is useful for lift controllers using relays for output switching that could bounce and give false signals to the inverter drive.



IMO Jaguar ECO

the pump and fan solution



3Ø: 400V/0.75-500kW (1-700HP)

- 3PH 400V 0.75kW-500kW (1-700HP)
- Multi Pump Cascade Control
- Motor Pick-up during idling
- Automatic Energy Saving operation
- Cooling fan ON/OFF control function
- Quick Setup Menu
- Sleep Function with Low Limiter
- Full PID Control Functions
- Protection of Motor with PTC thermistor
- Cumulative running time is recorded and displayed
- A Long-life cooling fan is provided
- Protective function for grounding fault
- Protective function against phase loss in input/output
- Alarm History for the last 4 alarms recorded
- Analog Input Monitor
- Standard Keypad capable of remote operation with optional extension cable

The ECO inverter has been specifically designed for fan and pump applications, with features such as the special functions for the HVAC and pump market, multi pump control, space saving, simple operation, automatic energy saving and power savings for variable torque loads.

With its Multi Pump control function the inverter can control more than one pump at a time by using the two types of control: floating inverter-driven control or fixed inverter-driven control. In the first instance, all pumps are supplied by the inverter (when the first one reaches the maximum speed it is switched to the mains supply and then the second is started with the inverter); in this case the maximum number of pumps that can be controlled is three. In the second instance only one pump is always supplied by the inverter and the others are supplied directly from the mains; in this case the maximum number of pumps is five.

By using its low output torque detection function, the ECO is able to detect an abnormal sudden change of the load torque. As an example, this function can be used to detect that the transmission belt of a fan is broken.

A new feature that is included as standard, is the automatic energy-saving function. This controls the system so as to minimize the total loss (motor loss plus inverter loss), rather than just the motor loss as in the predecessor models. This feature contributes to further saving of energy in fan and pump applications with fans and pumps.

Like the rest of the IMO Jaguar range, the ECO provides complete maintenance information: the information of the last 4 alarms is saved in the inverter memory (code of the alarm, output frequency, output voltage, output current, digital inputs and outputs status,...); also the cumulative running time of the inverter fan, cumulative running of the inverter and the actual capacity of the main DC link capacitors is stored inside the inverter. This information can be used to take preventive maintenance measures.



IMO Jaguar Accessories

Available off the shelf, IMO has all the add-ons you need to integrate Jaguar drives into complete system solutions.

EMC filters

High frequency conducted emissions can disturb other sensitive equipment connected to a shared power supply. Fitting the correct filter to your drive will reduce radio frequency interference (RFI) and minimise the risk of problems.

All Jaguar drives and filters are CE marked and comply with relevant European standards when installed in accordance with instruction manuals and EC Declarations of Conformity.

Filter Part No.	Filter Type	Related Jaguar Inverter
RF175-M	Free standing, Cat C3	All 1 PH up to 0.75kW
RF150-MH	Free Standing, Cat C3	All 1 PH up to 1.5kW
RF5A5-4B	Footprint, Cat C1	CUB1A5-4, CUB2A5-4, CUB3A7-4, CUB5A5-4, VXR1A5-4, VXR2A5-4, VXR3A7-4, VXR5A5-4
RF5A-1B	Footprint, Cat C1	CUB3A-1, CUB5A-1, VXR3A-1, VXR5A-1
RF9A-4B	Footprint, Cat C1	CUB9A-4, VXR9A-4
RF8A-1B	Footprint, Cat C1	CUB8A-1, VXR8A-1
RF11A-1B	Footprint, Cat C1	CUB11A-1, VXR11A-1
RF18A-4B	Footprint, Cat C1	VXR13A-4, VXR18A-4
RF30A-4B	Footprint, Cat C1	VXR24A-4, VXR30A-4
RF2A5-4B	Footprint, Cat C1	VXG1A5-4E, VXG2A5-4E
RF10A-4B	Footprint, Cat C1	VXG4A-4E, VXG5A5-4E, VXG9A-4E
RF23A-4B	Footprint, Cat C1	VXG16A5L-4E, VXG23AL-4E
RF30A5-4B	Footprint, Cat C1	VXG30A5L-4E
RF60A-4B	Footprint, Cat C1	VXG37AL-4E, VXG45AL-4E, VXG60AL-4E
RF75A-4B	Free standing, Cat C2	VXG75AL-4E
RF176A-4B	Free standing, Cat C2	VXG91AL-4E, VXG112AL-4E, VXG150AL-4E, VXG175AL-4E
RF304-4B	Free standing, Cat C3	VXG210AL-4E, VXG253AL-4E, VXG304AL-4E
RF520A-4B	Free standing, Cat C3	VXG377AL-4E, VXG415AL-4E, VXG520AL-4E
RF840A-4B	Free standing, Cat C3	VXG650AL-4E, VXG740AL-4E, VXG840AL-4E
RF960A-4B	Free standing, Cat C3	VXG960AL-4E
RF1370-4B	Free standing, Cat C3	VXG960AL-4E



DC and AC reactors

Essential in electronic drive installations, DC and AC reactors reduce low order harmonic distortion in the main power supply system, improve power factor and reduce damaging fault currents in the event of a short-circuit at a drive's input terminals. If a very long motor cable has to be used, an AC reactor on the output side of a drive can limit peak voltages that could damage the motor's insulation and prevent nuisance over-current alarms due to cable charge-up.

Part No.	Motor (kW)	Amps (A)	Impedance (mH)
VXLC0.4	0.4	1.5	50
VXLC0.75	0.75	2.5	30
VXLC1.5	1.5	4	16
VXLC2.2	2.2	5.5	12
VXLC4.0	4	9	7
VXLC5.5	5.5	13	4
VXLC7.5	7.5	18	3.5
VXLC11	11	22	2.5
VXLC15	15	34	1.8
VXLC18	18.5	41	1.4
VXLC22	22	49	1.3
VXLC30	30	80	0.86
VXLC37	37	100	0.7
VXLC45	45	120	0.58
VXLC55	55	146	0.47
VXLC75	75	200	0.35
VXLC90	90	238	0.29
VXLC110	110	291	0.24
VXLC132	132	326	0.215
VXLC160	160	395	0.177
VXLC200	200	494	0.142
VXLC220	220	557	0.126
VXLC280	280	700	0.1



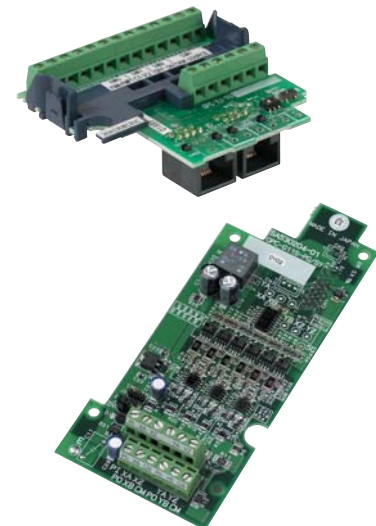
AC reactors are also available. Contact IMO for price and availability.

Keypad, Cables & Option Cards

A range of option cards are available for the following applications:

- Synchronisation (SY) -** Synchronises the speed of two identical geared motors in master/slave mode. *VXR and VXG only.*
- Encoder feed back (EFC) -** Maintains constant shaft speed of an induction motor via high accuracy speed control and fast response to step loading, and can also enable a motor to develop full torque at zero speed. *VXR and VXG only.*
- Analog(AIO), Digital(DIO) & Relay(RY) -** Expand standard input and output functions etc, and convert transistor outputs to relay outputs. *VXR and VXG only.*
- Remote operator panel / copy unit -** For remote operation and display. *CUB, VXR and VXG.*
- RS485 -** A miniature interface board for serial communications. *CUB only.*
- Fieldbus -** Plug-in Profibus DP and DeviceNet modules are amongst the many high-speed factory automation protocols available for *VXR and VXG only.* Contact IMO for more details.

Part No.	CUB	VXR	VXG
RS485 / Modbus RTU	CUBRS485	Standard	Standard
Relay Output Card	-	-	OPC-G1-RY
Digital Output Card	-	-	OPC-G1-DO
Digital input Card	-	-	OPC-G1-DI
Digital I/O Card	-	VXR-DIO	-
Analogue I/O Card	-	-	OPC-G1-AIO
PG Card	-	VXR-EFC	OPC-G1-PG
Sync Card	-	VXR-SY	-
Device Net	-	VXR-DEV	OPC-G1-DEV
Profibus DP	-	VXR-PROF	OPC-G1-PDP
Canopen	-	-	OPC-G1-COP
T-Link	-	-	OPC-G1-TL
CC-Link	-	-	OPC-G1-CCL
SX-Bus Card	-	-	OPC-G1-SX
Multi Function Keypad	CUB-KEYPAD	OP-KP-LCD	OP-KP-LCD
USB Keypad	-	OP-KP-USB	OP-KP-USB
1 Mtr Connection Cable	JAGLEAD1M	JAGLEAD1M	JAGLEAD1M
2 Mtr Connection Cable	JAGLEAD2M	JAGLEAD2M	JAGLEAD2M
3 Mtr Connection Cable	JAGLEAD3M	JAGLEAD3M	JAGLEAD3M



Dynamic braking resistors

High-speed, solid-state switches are used, to aid the stopping or slowing of high inertia loads from high speed or to prevent a load over-hauling a motor. Regenerated energy must be dissipated into a specified resistor(s) to prevent the drive tripping on over-voltage. For advice on the required braking resistors for your application please contact IMO.

Part No.	Type	Resistance (ohms)	Power (W)
DBR100R400W	Extruded/IP55	100	400
DBR110R500W	Extruded/IP55	110	500
DBR160R400W	Extruded/IP55	160	400

(Braking modules integral as standard up to 22kW, please contact IMO for larger sets)



Ancillaries

The IMO Jaguar range also offers a wide selection of ancillaries that include, Keypad extension cables, potentiometers, relays, rpm readouts and many more. For full listing please contact IMO.

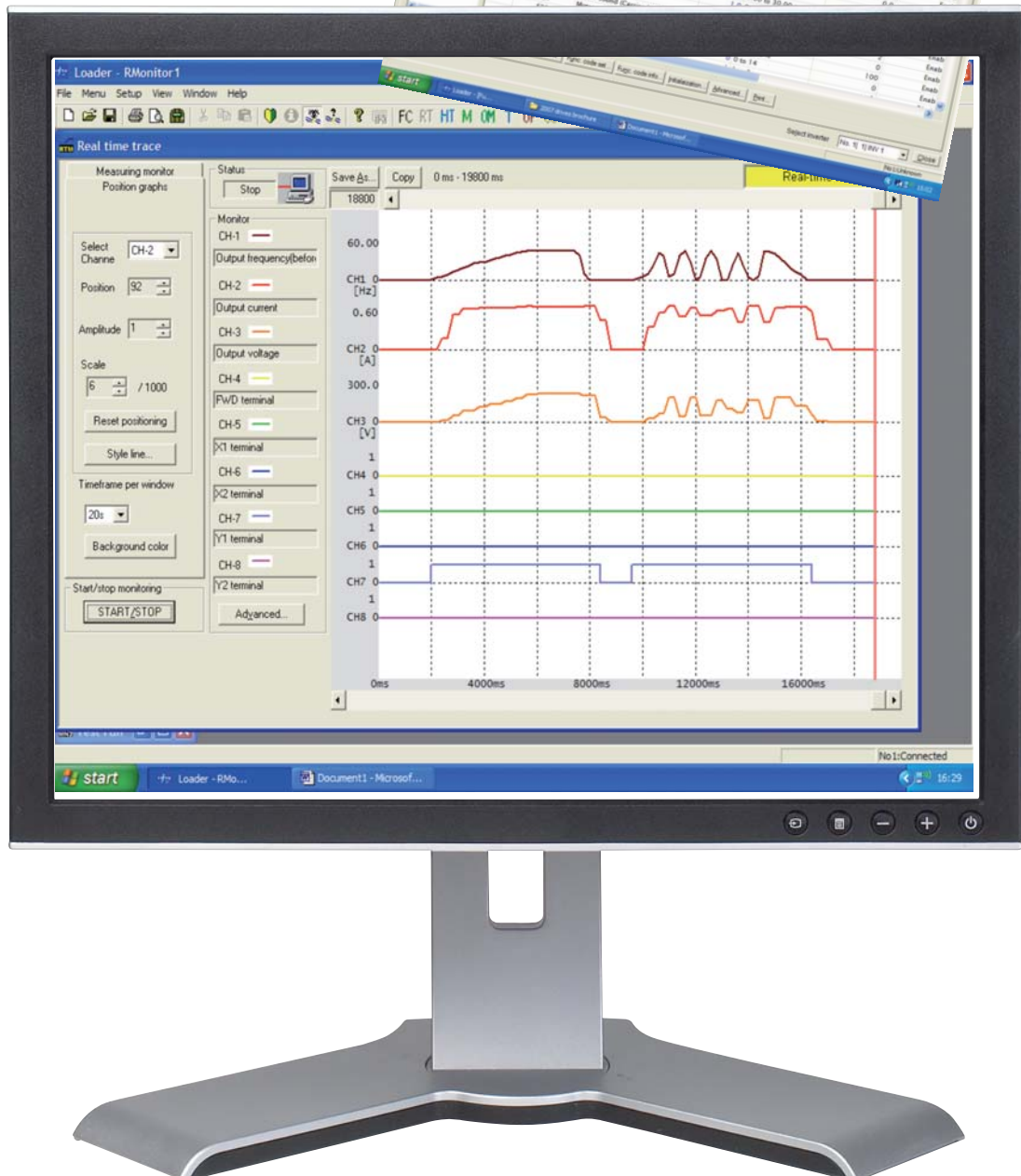


IMO Jaguar Loader free software

- Control test ■ Trend ■ Transfer
- Monitor ■ Commission ■ Program
- Print ■ Fault-find ■ Save

Free on CD or downloadable from our web site, Windows™ - compatible (XP or later) Loader lets you upload, download, and verify data between inverters by copy facility save data for multi-drive installations; create real-time trend graphs of frequency, current, torque, voltage, etc. and control and monitor the alarm status of an operating motor.

An RS232/485 converter (available from IMO) is needed to connect a PC to Jaguar VXG, VXR or CUB (with RS485 interface option).



Unrivalled Choice From the World's Finest

From a single product to a complete application solution IMO, has the product range and knowledge to meet today's most demanding application requirements.

The IMO Automation and Controls range fully addresses the sense, control and switch demands of today's factory automation and control environment. In terms of choice, the IMO line-up is peerless, offering everything today's panel builder needs. From circuit protection and panelware to PLCs and AC drives. The first company in Europe to do so, IMO gives a no-quibble three year warranty on the majority of its electronics based control components and a five year warranty on its successful range of IMO Jaguar Drives.

IMO Electronics is at the leading edge of electro-mechanical PCB component technology, with ranges of highly specified products designed to meet the most demanding applications. The company offers one of the most competitive, high quality and comprehensive PCB relay and Terminal Block connector ranges available, supported by sophisticated IT systems and infrastructure. The Electronics Division at IMO is perfectly positioned to meet all vendor and administration reduction requirements.

All products are manufactured to IMO's defined specification applying rigorous quality assurance and reliability standards. IMO products are built to comply with all relevant international approvals.



- Cam Switches
- Din Terminals
- Drives
- Enclosures
- Fieldbus remote I/O
- Isolators & Switch Fuses
- MCB & RCD
- Motor Circuit Breakers
- Motor Control Gear
- Panel Meters
- Relays
- Signal Conditioning
- Sockets
- Timers
- Power Supplies



- Drives
- Intelligent Terminals/HMI
- Limit Switches
- Photoelectric Switches
- PLCs
- Proximity Switches
- Temperature Controls



- Drives
- Intelligent Terminals/HMI
- Limit Switches
- Photoelectric Switches
- Proximity Switches
- PLCs
- Signal Conditioning
- Temperature Controls



- Safety Limit Switches



- Jaguar VXG 0.37-710kW
- Jaguar VXR 0.4-15kW
- Jaguar CUB 0.4-4kW



- Audible devices
- PCB Terminal blocks
- Relays - automotive
- Relays - power
- Relays - signal





IMO Precision Controls Limited
1000 North Circular Road
Staples Corner,
London NW2 7JP
United Kingdom

Tel: +44 (0)20 8452 6444
Fax: +44 (0)20 8450 2274
Email: imo@imopc.com
Web: www.imopc.com

IMO Automazione
Viale A. Volta 127/a
50131 Firenze,
Italia

Tel: +39 800 783281
Fax: +39 800 783282
Email: info@imopc.it
Web: www.imopc.it

IMO Jeambrun Automation SAS
Centre D'Affaires Rocroy
30, Rue de Rocroy
94100 Saint-Maur-Des-Fosses
France

Tel: +8000 452 6444
Fax: +8000 452 6445
Email: info@imopc.fr
Web: www.imopc.fr

IMO Canada
Unit 10, 1 Whitmore Road
Woodbridge,
Ontario L4L 8G4
Canada

Tel: +1 905 265 9844
Fax: +1 905 265 1749
Email: imocanada@imopc.com
Web: www.imopc.com