



# Surge Protection Devices



## Most people have heard of the term ‘surge protector’ but what are they, how do they work, and are they necessary in the UK?

### What is a surge protector?

Surge protectors are designed to limit the voltage supplied to an electric device. Surge protection devices (SPDs) are designed to prevent electric shock and prevent excess voltage from damaging an installation’s wiring infrastructure. It does this by either blocking or shorting to ground any excessive voltages above a safe threshold.



### What are surges?

Electricity moves along a wire in a similar way to water running through a pipe. As the electricity flows it creates areas of low and high pressure - in electrical terms this is known as high and low electrical potential energy. The difference in this potential energy is measured by voltage and if it rises above the normal voltage for 3 nanoseconds or more, it is known as a surge.

During a surge the voltage increases and will surge through the system heating up the wiring which can cause fires or damage to equipment. It can even destroy equipment or wipe data from it.

The surge protector is designed to pick up any excess voltage and divert the excess electricity into a grounding wire. For this reason, a surge protector must be properly grounded to work correctly.

### What causes electrical surges?

There are several things that can cause an electrical surge. Many people will immediately think of lightning as a cause. Lightning certainly is a common cause of electrical surges but in fact most power surges come from within your home or building.

The main causes of surges (Transients) include turning on or off electrical devices, faulty or damaged wiring, downed power lines or a fault at the power source.



### Do you need protection?

It all comes down to choice, but a surge protector is advisable. All electric wiring deteriorates over the years and equipment/appliances such as fridge freezers motors etc are known to cause surges as well. Then, there’s always the possibility of a lightning strike. An SPD is a relatively inexpensive device that puts itself in harms way to protect the equipment that really matters.

# Meet the IMO SPD Range

## THE ONLY THREE PRODUCTS YOU WILL EVER NEED!



### SPDS-201N Compact Single Module SPD

- ⚡ 20kA Fault Level
- ⚡ Protects ALL earthing systems - TN, TT, IT
- ⚡ Type 2/3 Rated Protection



### SPD2-401N Two Pole SPD

- ⚡ 40kA Fault Level
- ⚡ Protects ALL earthing systems - TN, TT, IT
- ⚡ Type 2/3 Rated Protection



### SPD4-403N Four Pole SPD

- ⚡ 40kA Fault Level
- ⚡ Protects ALL earthing systems - TN, TT, IT
- ⚡ Type 2/3 Rated Protection



## UNIVERSAL PROTECTION - AVAILABLE FROM STOCK

## What the SPD range from IMO offers:

- ✔ Compact / 2P / 4P devices to cover all applications
- ✔ Competitively priced & available from stock
- ✔ Protects all earthing systems - TN, TT, IT - Type 2/3
- ✔ Suitable for 20kA & 40kA systems
- ✔ The only surge protection devices you'll need!



## IMO SPDs: Protection Rating

The SPD range from IMO are for Type 2 and Type 3 surge protection and as such can be used for either requirement as follows:-

Type  
**2**

### Type 2 Protection Rating

The Type 2 SPD is the main protection system for all low voltage electrical installations. Installed in each electrical switchboard, it prevents the spread of overvoltages in the electrical installations and protects the loads.

Type  
**3**

### Type 3 Protection Rating

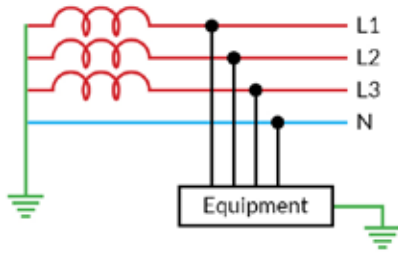
The Type 3 SPD has a low discharge capacity. They must therefore mandatorily be installed as a supplement to Type 2 SPD and in the vicinity of sensitive loads.

# IMO SPDs: Compatible Network Systems

TT

**TT System (earthed neutral)**

One point at the supply source is connected directly to earth.

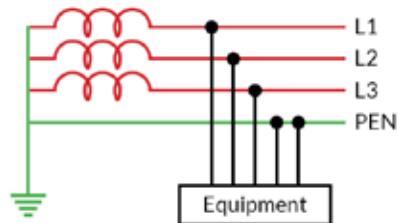


*TT System - 230/400V*

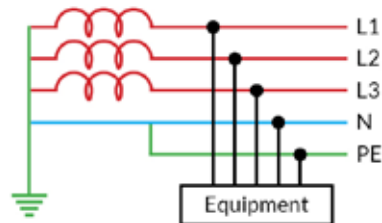
TN

**TN System (exposed conductive parts connected to the neutral)**

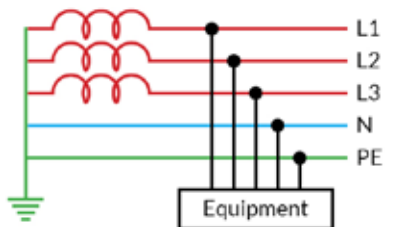
The source is earthed as for the TT system (above). In the installation, all exposed and extraneous conductive parts are connected to the neutral conductor. Several TN System versions exist.



*TNC System - 230/400V*



*TNC-S System - 230/400V*

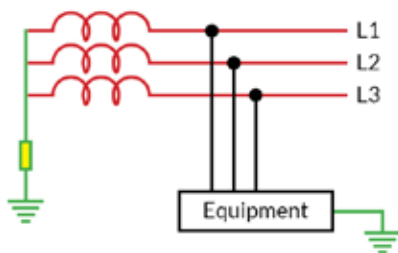


*TNS System - 230/400V*

IT

**IT System (isolated neutral)**

No intentional connection is made between the neutral point of the supply source and earth.



*IT System - 230/400/600V*

## SPD Series

Our standard range of Surge Protection Devices, available in 2P or 4P configurations, with both designed to cover all applications, protecting all earthing systems.

- 2P / 4P devices to cover all applications
- Competitively priced & available from stock
- Protects all earthing systems - TN, TT, IT - Type 2/3
- Suitable for 20kA & 40kA systems
- The only surge protection devices you'll need



All IMO SPD devices offer pluggable modules that enable you to easily swap out for parts replacement. The modules of the 2 and 4 pole version are the same units, this ability to interchange modules across the range makes ordering simple. Each module features coding pins and guides to assist correct insertion of the module.

### Universal Protection - Available from Stock

IMO SPD devices are available in a number of different configurations, however, the following two products are available immediately from stock for universal protection:



**SPD2-401N**  
Two Pole  
40kA Fault Level



**SPD4-403N**  
Four Pole  
40kA Fault Level

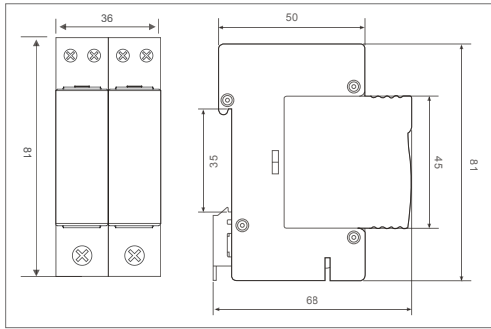


### Technical Data

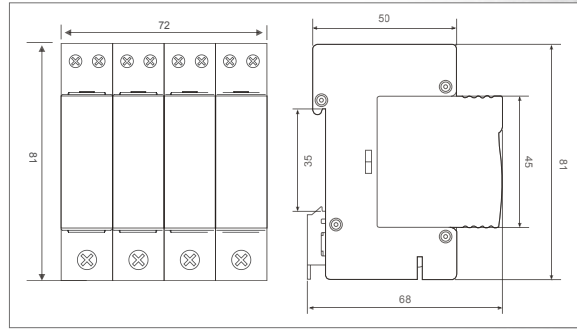
Part Number	Universal Protection - Available From Stock	
	SPD2-401N	SPD4-403N
Type Of Network Systems	TN, TT, IT	TN, TT, IT
Maximum Continuous Voltage	275V	
Maximum Discharge Surge Current	40kA	40kA
Normal Discharge Current	20kA	20kA
Voltage Protection Level	1.2kV	1.2kV
Fuse Or Circuit Breaker	20A	32A
Response Time	<25ns	
Remote Signalling Of Disconnection	Option	
Protection Rating	IP20	
Connection	Screw Terminal: 4 to 25mm <sup>2</sup> , By Busbar	
Temperature Range	-40°C +80°C	
Disconnection Indicator	Green window: Healthy / Red window: Replace	
Mounting	Symmetrical Rail (EN50022/DIN46277-3) 35mm	
Housing Material	PA6 UL94-V0	

Other Configurations					
SPD2-201N	SPD2-20-275	SPD2-40-275	SPD4-20-275	SPD4-40-275	SPD4-203N
TN, TT, IT	TN	TN	TN	TN	TN, TT, IT
275V					
20kA	20kA	40kA	20kA	40kA	20kA
10kA	10kA	20kA	10kA	20kA	10kA
1.0kV	1.0kV	1.2kV	1.0kV	1.2kV	1.0kV
20A	20A	32A	20A	32A	20A
<25ns					
Option					
IP20					
Screw Terminal: 4 to 25mm <sup>2</sup> , By Busbar					
-40°C +80°C					
Green window: Healthy / Red window: Replace					
Symmetrical Rail (EN50022/DIN46277-3) 35mm					
PA6 UL94-V0					

## Dimensions (mm)

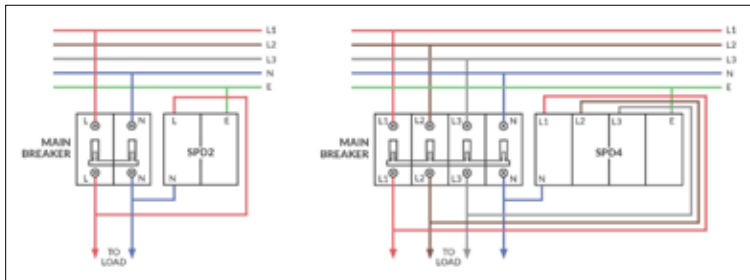


SPD2-XXX



SPD4-XXX

## Wiring Diagram



## Surge Protection Bases

Part Number	SPD2P-BASE	SPD2PN-BASE	SPD4P-BASE	SPD4PN-BASE
Number Of Modules	2	2	4	4
Protection Rating	IP20			
Temperature Range	-40°C +80°C			
Mounting	Symmetrical Rail (EN50022/DIN46277-3) 35mm			
Housing Material	PA6 UL94-V0			

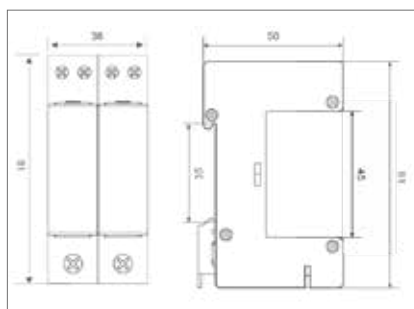


## Surge Protection Modules

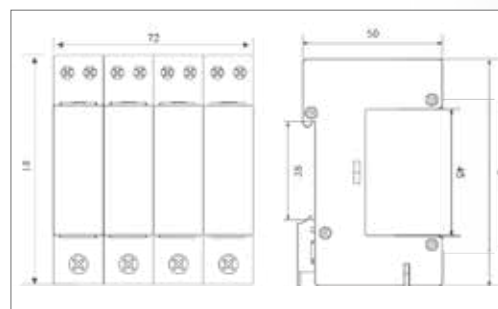
Part Number	SPDM-20-275	SPDM-40-275	SPDNPE-20-255	SPDNPE-40-255
Type Of Network Systems	TN, TT, IT			
Maximum Continuous Voltage	275V	275V	255V	255V
Maximum Discharge Surge Current	20kA	40kA	20kA	40kA
Normal Discharge Current	10kA	20kA	10kA	20kA
Voltage Protection Level	1.0kV	1.2kV	1.2kV	1.5kV
Fuse Or Circuit Breaker	20A	32A	20A	32A
Response Time	<25ns			
Protection Rating	IP20			
Temperature Range	-40°C +80°C			
Disconnection Indicator	Green window: Healthy / Red window: Replace		-	-



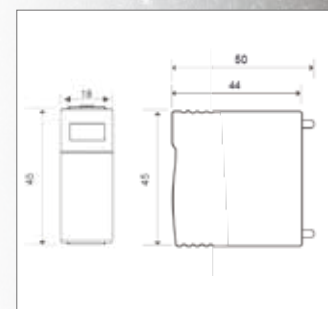
## Surge Protection Bases & Modules Dimensions (mm)



SPD2-BASE



SPD4-BASE



SPDM-XXX / SPDNPE-XXX

## SPDS Series

Our compact range of Surge Protection Devices, available in 1P configuration, designed to cover all applications, protecting all earthing systems.

- Compact 1P+N devices to cover all applications
- Competitively priced & available from stock
- Protects all earthing systems - TN, TT, IT - Type 2/3
- Suitable for 20kA & 40kA systems
- The only surge protection devices you'll need



IMMO SPDS devices offer pluggable modules that enable you to easily swap out for parts replacement. As the modules are standardised, it means that you can interchange them across the range without the need to re-wiring. Each module features a cleverly designed protective structure to assist correct insertion of the module.

### Universal Protection - Available from Stock

IMMO SPDS devices are available in two different configurations, however, the following product is available immediately from stock for universal protection:



**SPDS-201N**  
Compact Single Module  
20kA Fault Level

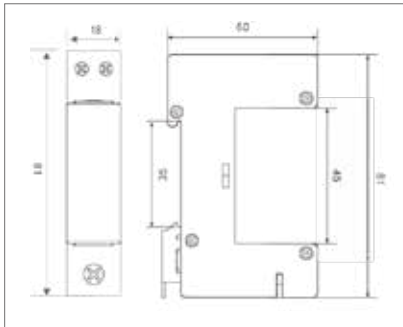


### Technical Data

	Universal Protection - Available From Stock	Other Configuration
Part Number	SPDS-201N	SPDS-401N
Max. continuous operating voltage	275V AC (L-N) , 255V AC (N-PE)	275V AC (L-N) , 255V AC (N-PE)
Max. discharge current	20kA	40kA
Nominal discharge current	10kA	20kA
Voltage protection	1.2kV	1.5kV
Fuse or Circuit Breaker	20A	32A
Combination method	1+1	1+1
Short circuit current	500 A	500 A
Status indicator	Green window: Healthy / Red window: Replace	Green window: Healthy / Red window: Replace
Wiring capacity	2.5mm (L-N), 4mm (N-PE)	2.5mm (L-N), 4mm (N-PE)
Degree of protection (IP code)	IP20	IP20
Power supply network	TN, TT, IT	TN, TT, IT
Mounting	Symmetrical Rail (EN50022/DIN46277-3) 35mm	Symmetrical Rail (EN50022/DIN46277-3) 35mm
Ambient temperature	-40°C +80°C	-40°C +80°C
Ambient humidity	5%-95%	5%-95%
Altitude	< 2000m	< 2000m
Standard conformity	IEC61643-11:2011, EN61643-11:2012	IEC61643-11:2011, EN61643-11:2012

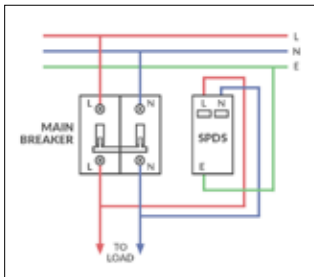


## Dimensions (mm)



SPD5-XXX

## Wiring Diagram



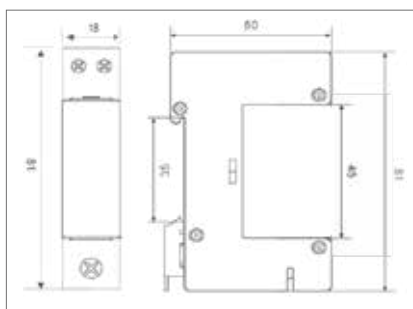
## Surge Protection Bases

Part Number	SPD1-BASE
Number Of Modules	1
Protection Rating	IP20
Temperature Range	-40°C +80°C
Mounting	Symmetrical Rail (EN50022/DIN46277-3) 35mm
Housing Material	PA6 UL94-V0

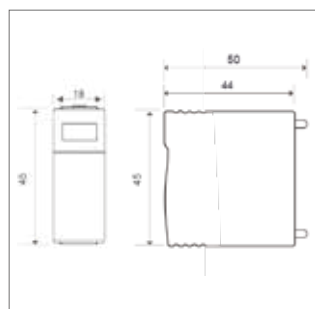
## Surge Protection Modules

Part Number	C-201N	C-401N
Type Of Network Systems	TN, TT, IT	
Maximum Continuous Voltage	275V	275V
Maximum Discharge Surge Current	20kA	40kA
Normal Discharge Current	10kA	20kA
Voltage Protection Level	1.0kV	1.2kV
Fuse or Circuit Breaker	20A	32A
Response Time	<25ns	
Protection Rating	IP20	
Temperature Range	-40°C +80°C	
Disconnection Indicator	Green window: Healthy / Red window: Replace	

## Surge Protection Bases & Modules Dimensions (mm)



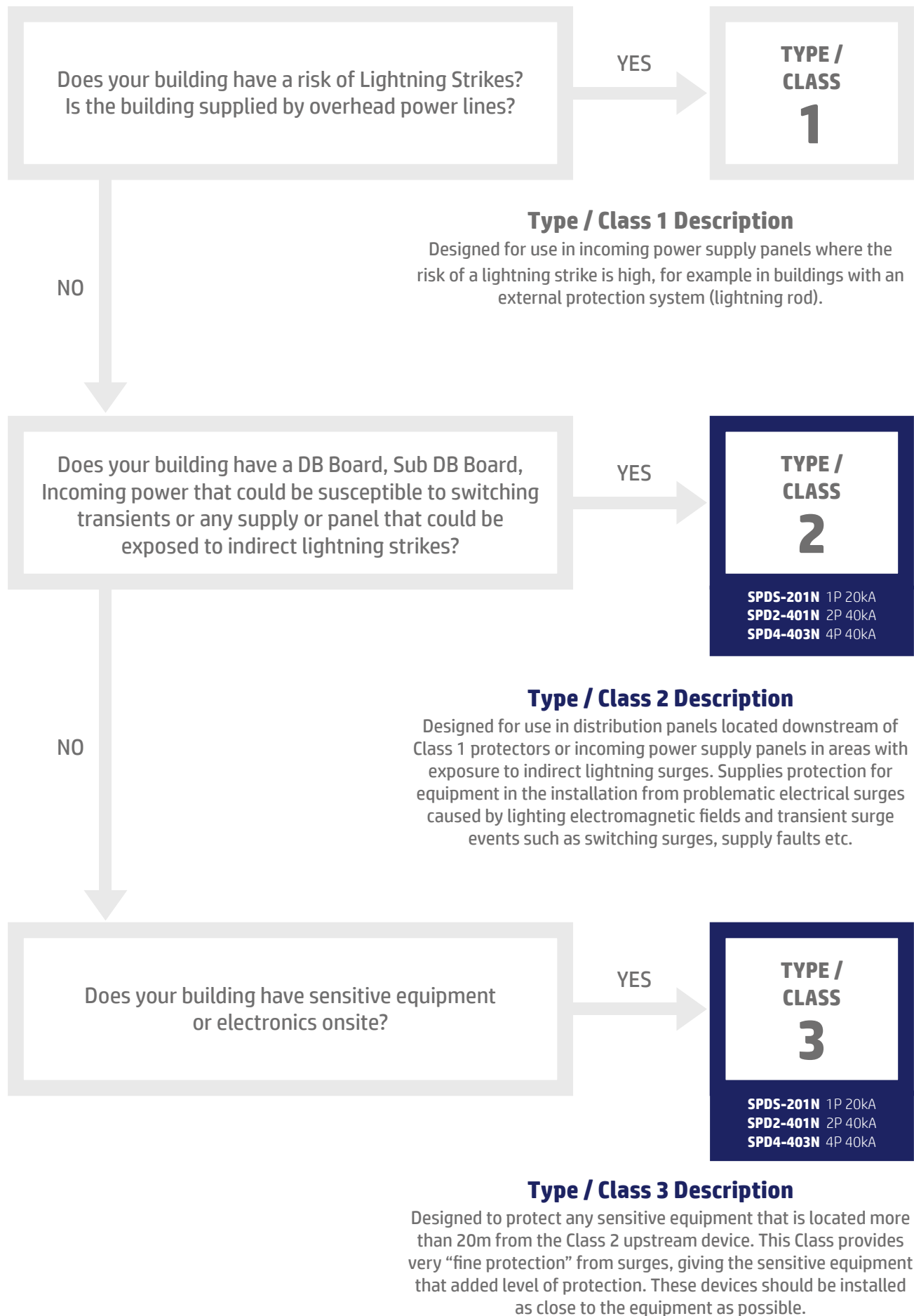
SPD1-BASE



C-201N / C-401N



## When & where to use SPDs?



**THE ONLY THREE  
PRODUCTS YOU  
WILL EVER NEED!**

**AVAILABLE**



**FROM STOCK**

## IMO Worldwide Offices

### IMO Precision Controls Limited

The Interchange  
Frobisher Way  
Hatfield, Herts AL10 9TG  
United Kingdom

Tel: 01707 414 444

Email: [imo@imopc.com](mailto:imo@imopc.com)  
Web: [www.imopc.com](http://www.imopc.com)

### IMO Jeambrun Automation SAS

5, Rue Alfred De Musset  
94100  
Saint-Maur-Des-Fosses  
France

Tel: 0800 912 712 (n° gratuit)

Email: [imo-fr@imopc.com](mailto:imo-fr@imopc.com)  
Web: [www.imojeambrun.fr](http://www.imojeambrun.fr)

### IMO Automazione

Via Belfiore 10,  
50144 Firenze (FI)  
Italia

Tel: 800 930 872 (toll free)

Email: [imo-it@imopc.com](mailto:imo-it@imopc.com)  
Web: [www.imopc.it](http://www.imopc.it)

### IMO Canada

1B-701 Rossland Road East  
Suite #608  
Whitby, Ontario L1N 9K3  
Canada

Tel: 416 639 0709

Email: [sales-ca@imopc.com](mailto:sales-ca@imopc.com)  
Web: [www.imopc.com](http://www.imopc.com)

### IMO Automation LLC

Steeplechase Industrial Park  
Suite E, 5845 Steeplechase Blvd  
Cumming, GA 30040  
USA

Tel: 404 476 8810

Email: [sales-na@imopc.com](mailto:sales-na@imopc.com)  
Web: [www.imoautomation.com](http://www.imoautomation.com)

### IMO South Africa (Pty) Ltd

Unit 12A, Longclaw Drive  
Montague Gardens  
Cape Town 7441  
South Africa

Tel: 021 551 1787

Email: [info@imopc.co.za](mailto:info@imopc.co.za)  
Web: [www.imopc.co.za](http://www.imopc.co.za)

### IMO Pacific Pty Ltd

Unit 9, Dillington Pass  
Landsdale  
Perth WA 6065  
Australia

Tel: 1300 34 21 31

Email: [sales@imopacific.com.au](mailto:sales@imopacific.com.au)  
Web: [www.imopacific.com.au](http://www.imopacific.com.au)



Errors and omissions excepted. Subject to change without notice. Information correct at time of print.