NEW

IMO

SIM

NEW Mini Solar Isolator

Keeping Solar Safe

SIM Mini Solar Isolators

Mini TRUE DC Isolators for PV Systems

- Based on market-leading SI series design
- Compact smaller size
- Improved switching capacity
- Extended mounting options
- Guaranteed arc suppression (3ms typical)
- Operator independent switching mechanism
- Knife-edge contacts

UL508i

PENDING

The next evolution in DC isolation

When IMO first launched its SI Series DC isolator in 2009, little did it know that the SI would soon become the safety component of choice for many of the largest solar inverter manufacturers and installers around the world. Today, with nearly 4 million installations and zero reported electrical failures, the SI Series has proved itself more than capable of handling the most demanding DC switching applications.

The NEW SIM represents the next evolution in DC isolation offering all the benefits of its big brother in a compact, high reliability package. With a 35% reduction in cubic volume, reduced front plate “real-estate”, increased ratings and extended mounting options, the SIM is packed with features. Yet it retains the high reliability technology of the current SI Series including knife edge contacts, high speed operator independent switching mechanism and full arc control with guaranteed suppression time.

The NEW SIM represents the next step in meeting the global demand for high reliability, compact and competitive DC safety switching solutions.

Safety as standard

In solar installations, the DC isolator is like a vehicle air-bag. It is rarely called upon but, when required, carries a huge responsibility. So it's good to know that the IMO SI is safeguarding millions of solar installations around the world, without a single reported electrical failure.

Not surprising considering the product carries all the most important approvals including UL508i. In fact the IMO SI range of solar isolators have been tested by some of the most rigorous examiners and OEM manufacturers in the world, passing with flying colours every time.

Smaller... and better

When buying IMO you can be assured of the level of quality and reliability of our products. The SIM is no exception, and just because we have managed to squeeze everything that went into our market-leading SI range into the new SIM's compact body, we haven't compromised on reliability. In fact, we have increased the overall ratings and extended the mounting options.

SI16-DBL-2

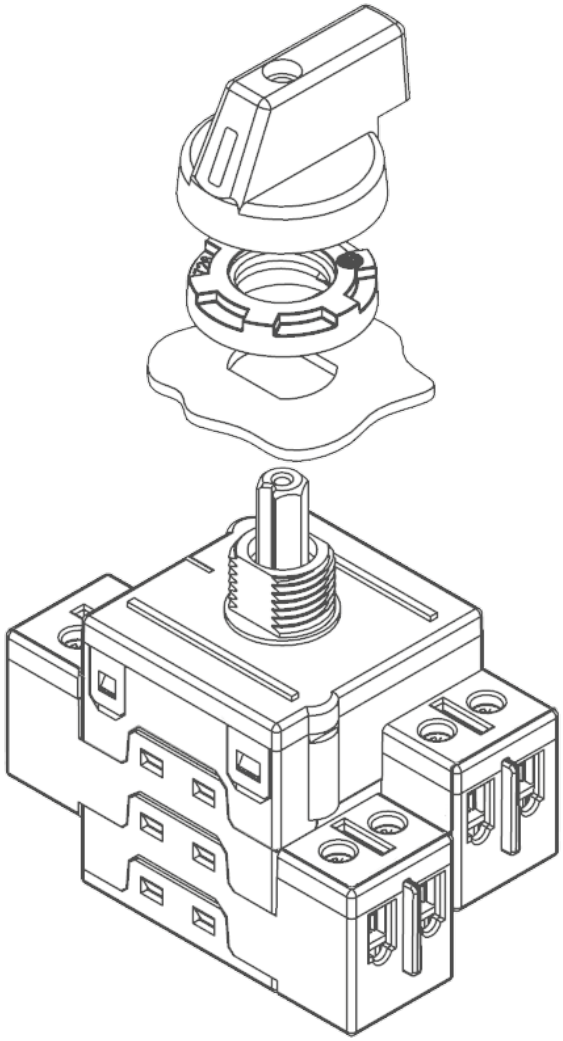
SIM16-DBL-4

The OEM's choice

The SI range of isolators was specifically developed for arduous DC disconnect applications and SI isolators are used by many of the largest Solar Inverter manufacturers in the world.

The new SIM range features the same independent trigger ratchet switching mechanism delivering arc extinguishing times of <5ms (3ms typical). Specially designed internal arc cooling chambers control temperature rise and increase safety while knife edge contacts increase reliability and prolong electrical life.

All this along with a 35% reduction in size makes the SIM Series the ideal next generation choice for OEMs globally.



Utilisation Categories

Utilisation Categories as are covered in the European Standards EN 60947-1 & EN60947-3 and define an equipment's intended application. The list of both AC and DC categories for low-voltage switchgear and controlgear are stated in EN 60947-1 Annex A along with the relevant product standards.

Manufacturers of both switchgear and controlgear should include in their technical product data all the operational ratings for the utilisation categories for which a product is designed and as such this should remove the confusion for users and designers in their selection of the correct product.

If we consider PV installations where there are requirements for switchgear being used on the DC side then the system falls typically within two categories below (for which the relevant standard is EN 60947-3)

DC-21 Switching of resistive loads, including moderate overloads
DC-22 Switching of mixed resistive and inductive loads, including moderate overloads

DC-PV1 Switching of single PV string(s) without reverse and overcurrents
DC-PV2 Switching of several PV strings with reverse and overcurrents

Compliance to the EN60947-3 utilisation categories involves the products completing a number of tests, these include the "Making and Breaking Capacity" (section 7.2.4.1/D7.2.4.1) and "Operational Performance" (section 7.2.4.2/D7.2.4.2). Verification of the operational making and breaking capacities are stated by reference to the rated operational voltage and rated operational current according to Table 3 and Table D7 (see extracts below).

Test Conditions for Making & Breaking Capacities

Utilisation categories	Rated operational categories	Making			Breaking			Number of operating cycles
		I/I_e	U/U_e	L/R ms	I_c/I_e	U_r/U_e	L/R ms	
DC-21A - DC-21B	All values	1.5	1.05	1	1.5	1.05	1	5
DC-22B	All values	4	1.05	2.5	4	1.05	2.5	5
DC-PV1	All values	1.5	1.05	1	1.5	1.05	1	5
DC-PV2	All values	4	1.05	1	4	1.05	1	5

Test Conditions for Number of On Load Operating Cycles

Utilisation categories	Number of operating cycles per hour	Number of operating cycles					
		A categories			B categories		
		Without current	With current	Total	Without current	With current	Total
DC-21A/B & DC-22B	120	8,500	1,500	10,000	1,700	300	2,000
DC-PV1 & DC-PV2	120	9,700	300	10,000	-	-	-

Utilisation categories	Rated operational categories	Making			Breaking		
		I/I_e	U/U_e	L/R ms	I_c/I_e	U_r/U_e	L/R ms
DC-21A - DC-21B	All Values	1	1	1	1	1	1
DC-22B	All Values	1	1	2	1	1	2
DC-PV1	All Values	1	1	1	1	1	1
DC-PV2	All Values	1	1	1	1	1	1

I=making current I_c=breaking current I_e=rated operational current
U=applied voltage U_e=rated operational voltage U_r=operational frequency or d.c recovery voltage

Ordering Variations

Lever Handle Models

Panel Mount (4-screw) 64 x 64 Estcutcheon Plate Lever Handle, IP66	Panel Mount (2-screw) 64 x 64 Escutcheon Plate Lever Handle, IP66	Single Hole Mount (22.5mm) 48 x 48 Escutcheon Plate Lever Handle, IP66	Single Hole Mount (16mm) No Escutcheon Plate Lever Handle, IP66	Base Mount (door coupling) 64 x 64 Escutcheon Plate Lever Handle, IP66	Modular Switch Lever Handle, IP40
					
SIM**PM64*	SIM**PMT64*	SIM**SHM*	SIM**SHMS*	SIM**BMDC64*	SIM**DB*

Lever Handle Models with Lockable OFF

Panel Mount (4-screw) 64 x 64 Estcutcheon Plate Lockable Lever Handle, IP66	Panel Mount (2-screw) 64 x 64 Escutcheon Plate Lockable Lever Handle, IP66	Single Hole Mount (22.5mm) 48 x 48 Escutcheon Plate Lockable Lever Handle, IP66	Base Mount (door coupling) 64 x 64 Escutcheon Plate Lockable Lever Handle, IP66	Modular Switch Lockable Lever Handle, IP40
				
SIM**PML64*	SIM**PMTL64*	SIM**SHML*	SIM**BMDCL64*	SIM**DBL*

Rotary Handle Models with Lockable OFF

Panel Mount (4-screw) 64 x 64 Lockable Rotary Handle, IP66	Base Mount (door coupling) 64 x 64 Lockable Rotary Handle, IP66	Enclosed Version Lockable Rotary Handle, IP67
		
SIM**PM64R*	SIM**BMDC64R*	SIM**PEL64R*

NOTE:

For description of each mounting mechanism please refer to pages 12-15.

IP ratings are for front panel and enclosed.

Part Number Configuration

SIM **16** - **PM64R** - **2**

Series

SIM Mini DC Solar Isolator	SIM

Switch Rating

16 Amp	16
25 Amp	25
32 Amp	32

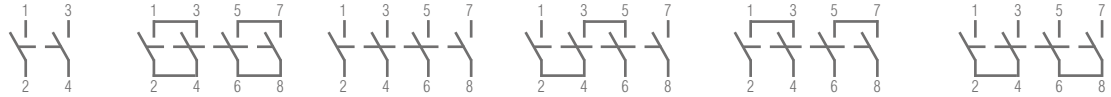
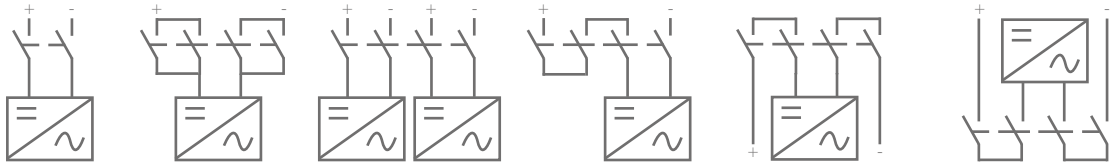
Number of Poles (see Switching Configurations on p.5)

2	2-Pole
2H	2-Pole 4 Parallel Poles
4	4-Pole
4S	2-Pole 4 Poles in Series (Input Top, Output botton)
4T	2-Pole 4 Poles in Series (Input & Output bottom)
4B	2-Pole 4 Poles in Series (Input & Output top)

Mounting Type

Panel Mount (4-screw), 64 x 64 Escutcheon Plate, Lever Handle	PM64	Single Hole (16mm) Mount, No Escutcheon Plate, Lever Handle	SHMS
Panel Mount (4-screw), 64 x 64 Escutcheon Plate, Lockable Lever Handle	PML64	Base Mount (DIN Rail), 64 x 64 Escutcheon Plate, Lever Handle	BMDC64
Panel Mount (4-screw), 64 x 64 Lockable Rotary Handle	PM64R	Base Mount (DIN Rail), 64 x 64 Escutcheon Plate, Lockable Lever Handle	BMDCL64
Panel Mount (2-screw), 64 x 64 Escutcheon Plate, Lever Handle	PMT64	Base Mount (DIN Rail), 64 x 64 Lockable Rotary Handle	BMDC64R
Panel Mount (2-screw), 64 x 64 Escutcheon Plate, Lockable Lever Handle	PMTL64	Modular Switch, Lever Handle	DB
Single Hole (22.5mm) Mount, 48 x 48 Escutcheon Plate, Lever Handle	SHM	Modular Switch, Lockable Lever Handle	DBL
Single Hole (22.5mm) Mount, 48 x 48 Escutcheon Plate, Lockable Lever Handle	SHML	Enclosed Version, Lockable Rotary Handle	PEL64R

Switching Configurations

Type	2-pole	2-pole 4 parallel poles	4-pole	2-pole 4 poles in series Input on top Output bottom	2-pole 4 poles in series Input and Output bottom	2-pole 4 poles in series Input and Output on top
SIM16	2	2H	4	4S	4T	4B
SIM25	2	2H	4	4S	4T	4B
SIM32	2	2H	4	4S	4T	4B
Contacts Wiring Diagram						
Switching example						

Technical Data for DC *according to IEC 60947-3*

Type		DC21B (DC-PV1) 500V	600V	700V	800V	900V	1000V	1200V	1500V	DC22B 500V	600V	800V	1000V
2 poles in series	SIM16 ..	16A	16A	16A	16A	16A	10A	7A	3A	7A	5.5A	2A	1A
	SIM25 ..	25A	25A	25A	19A	17A	11.5A	8.5A	5A	8A	6A	2.5A	1.5A
1 2	SIM32 ..	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC
2 poles in series + 2 parallel	SIM16 ..	29A	29A	22A	17A	16A	10A	7A	3A	-	-	-	-
1 2 3 4	SIM25 ..	45A	36A	27A	19A	17A	12A	9A	5A	-	-	-	-
	SIM32 ..	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC	-	-	-	-
4 poles in series	SIM16 ..	16A	16A	16A	16A	16A	16A	16A	16A	16A	16A	11.5A	8A
	SIM25 ..	25A	25A	25A	25A	25A	25A	25A	25A	25A	25A	12A	9A
1 2 3 4	SIM32 ..	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC

DC21A/DC21B Switching of DC-resistive loads including moderate overloads, Time constant L/R≤1ms
DC22B Switching of DC-resistive and inductive loads including moderate overloads, Time constant L/R≤2.5ms (e.g. shunt motors)

Technical Data for DC *according to UL508i*

Type		UL508i 200V	350V	500V	600V
2 poles in series	SIM16 ..	16A	16A	16A	16A
	SIM25 ..	25A	25A	25A	25A
1 2	SIM32 ..	TBC	TBC	TBC	TBC
2 poles in series + 2 parallel	SIM16 ..	29A	29A	29A	21A
1 2 3 4	SIM25 ..	45A	45A	38A	27A
	SIM32 ..	TBC	TBC	TBC	TBC
4 poles in series	SIM16 ..	16A	16A	16A	16A
	SIM25 ..	25A	25A	25A	25A
1 2 3 4	SIM32 ..	TBC	TBC	TBC	TBC

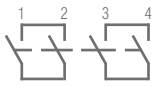
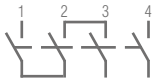
Insulated Jumper

for series and parallel switching of contacts

Part Number	SIVM-B1
Pack	100
Weight	6.6g/pc.

Technical Data

Data according to IEC 60947-3, VDE 0660, GB14048.3

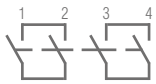
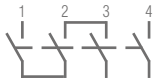
Main Contacts			Type	SIM16	SIM25	SIM32
Rated thermal current I_{the}			A	16	25	32
Rated insulation voltage U_i 1)			V	1000	1000	1000
Rated insulation voltage U_i 2)			V	1500	1500	1500
Distance of contacts (per pole)			mm	8	8	8
Rated operational current I_e		300V	A	16	23	TBC
	1 pole	400V	A	12	14	TBC
DC21A	1	500V	A	9	11	TBC
		600V	A	6	8	TBC
		700V	A	4.5	6	TBC
		800V	A	3	4	TBC
		900V	A	2.5	3	TBC
		1000V	A	1.5	2	TBC
	2 poles in series	500V	A	16	25	TBC
	2	600V	A	16	25	TBC
		700V	A	16	23	TBC
		800V	A	16	20	TBC
		900V	A	13	16	TBC
		1000V	A	9	11	TBC
		1200V	A	6	8	TBC
		1500V	A	3	4	TBC
	2 poles in series	500V	A	29	45	TBC
	+ 2 poles parallel	600V	A	29	45	TBC
	2H	700V	A	16	23	TBC
		800V	A	16	20	TBC
		900V	A	13	16	TBC
		1000V	A	9	11	TBC
		1200V	A	6	8	TBC
		1500V	A	3	4	TBC
	4 poles in series	500V	A	16	25	TBC
	4S/4T/4B	600V	A	16	25	TBC
		700V	A	16	25	TBC
		800V	A	16	25	TBC
		900V	A	16	25	TBC
		1000V	A	16	25	TBC
		1200V	A	16	25	TBC
		1500V	A	16	25	TBC
Rated operational current I_e						
AC21B	2, 4	U_e max. 440V	A	16	25	TBC
	2H	U_e max. 440V	A	29	45	TBC
Rated conditional short circuit current			kA_{eff}	5	5	5
Max. fuse size		gL (gG)	A	40	63	80
Mechanical life			$x10^3$	10	10	10
Rated short-time	I_{cw}	2, 4	A	800	900	1000
withstand current (1s)		2H, 4S, 4T, 4B	A	1300	1500	1700
Short circuit	I_{cm}	2, 4	A	800	900	1000
making capacity		2H, 4S, 4T, 4B	A	1300	1500	1700
Maximum cable cross sections		(inc. jumper SIVM-B1)				
solid stranded			mm^2	1.5 - 10	4 - 10	4 - 10
flexible			mm^2	1.5 - 10	4 - 10	4 - 10
flexible (+ multicore cable end)			mm^2	1.5 - 10	4 - 10	4 - 10
Size of terminal screw				M3.5	M3.5	M3.5
Tightening torque			Nm	1.4	1.4	1.4
2 cables per clamp without jumper SIVM-B1						
	solid or stranded		mm^2		2 x 0.5mm^2 to 2x6mm^2	
Maximum ambient temperature						
Operation	open		°C		-40 to +65	
	enclosed		°C		-40 to +45	
Storage			°C		-50 to +90	

1) Suitable at overvoltage category I to III, pollution degree 3 (standard-industry): Uimp = 8kV.

2) Suitable at overvoltage category I to III, pollution degree 2 (min.IP55): Uimp = 8kV.

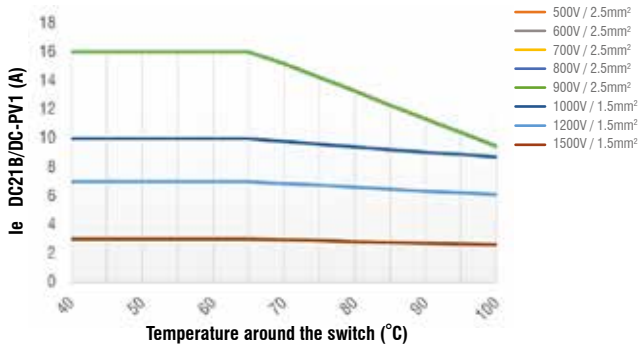
Technical Data continued

Data according to UL508i File E359344, Category no.: NMSJ and UL508 File E332938, Category no.: NRNT2, NRNT8

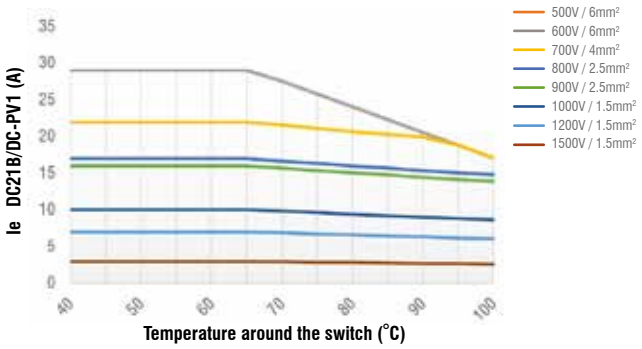
Main Contacts				Type	SIM16	SIM25	SIM32
Ampere-Rating "General Use"		DC					
	1 pole	350V		A	4	5	TBC
	1	500V		A	4	5	TBC
		600V		A	4	5	TBC
		700V		A	-	-	-
		800V		A	-	-	-
		900V		A	-	-	-
		1000V		A	-	-	-
	2 poles in series	350V		A	16	25	TBC
	2	500V		A	16	25	TBC
		600V		A	16	25	TBC
		700V		A	-	-	-
		800V		A	-	-	-
		900V		A	-	-	-
		1000V		A	-	-	-
	+ 2 poles parallel	350V		A	29	45	TBC
	2H	400V		A			
		500V		A	29	38	TBC
		600V		A	21	23	TBC
		700V		A	-	-	-
		800V		A	-	-	-
		900V		A	-	-	-
		1000V		A	-	-	-
	4 poles in series	350V		A	16	25	TBC
	4S	500V		A	16	25	TBC
		600V		A	16	25	TBC
		700V		A	-	-	-
		800V		A	-	-	-
		900V		A	-	-	-
		1000V		A	-	-	-
Fuse size (RK5) Industrial Control Switch							
5kA / 600V				A	40	60	80
Maximum cable cross sections		(including jumper SIMV-B1)					
solid				AWG	20 - 10	20 - 10	20 - 10
stranded				AWG	20 - 6	20 - 6	20 - 6
Size of terminal screw					M3.5	M3.5	M3.5
Tightening torque				lb.inch	12.4	12.4	12.4

Derating Curves for SIM16

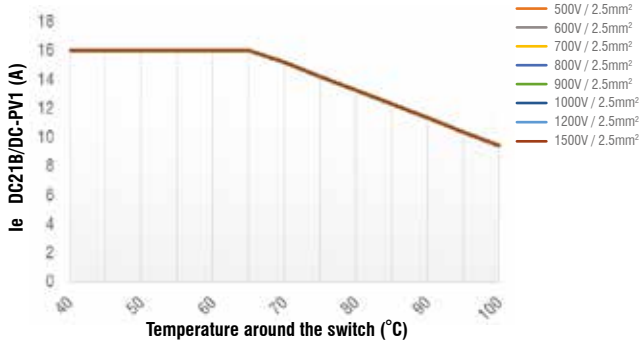
Switch SIM16 2 poles all types except PEL64R



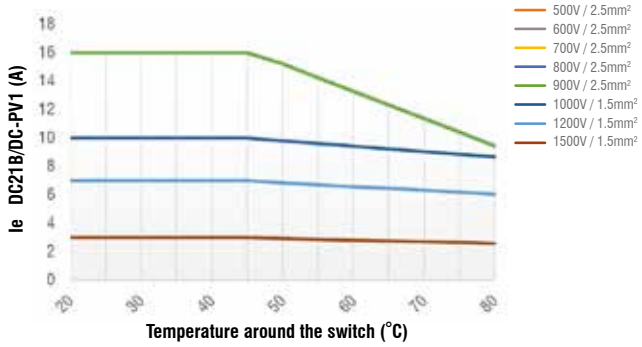
Switch SIM16 2H all types except PEL64R



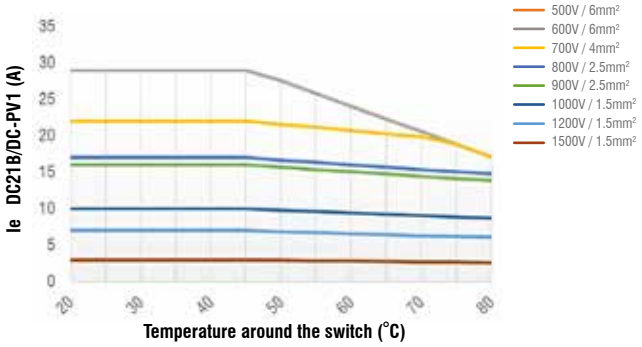
Switch SIM16 4S/T/B all types except PEL64R



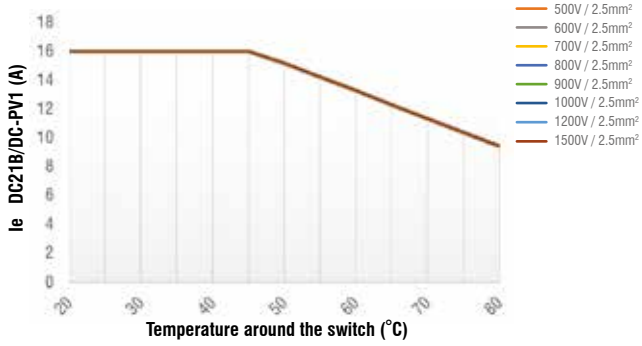
Switch SIM16 2 poles PEL64R type



Switch SIM16 2H PEL64R type

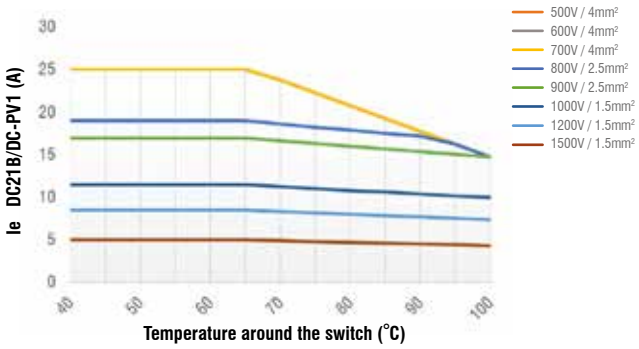


Switch SIM16 4S/T/B PEL64R type

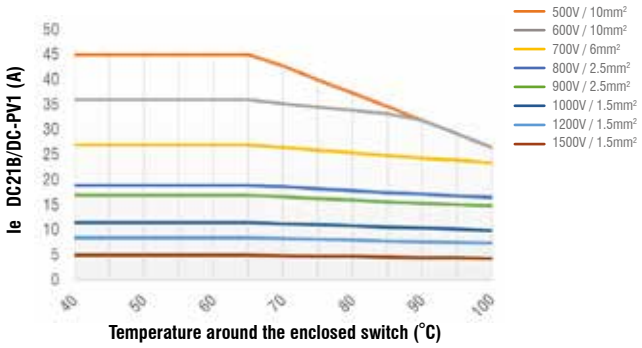


Derating Curves for SIM25

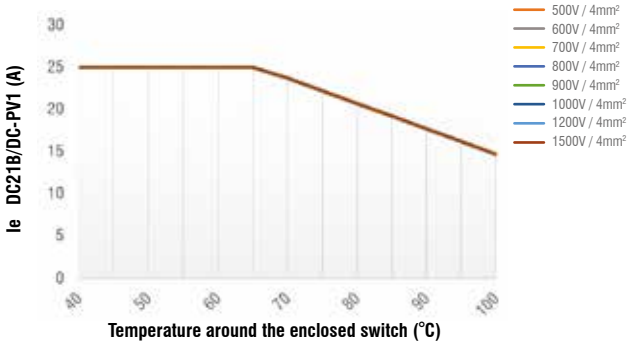
Switch SIM25 2 poles all types except PEL64R



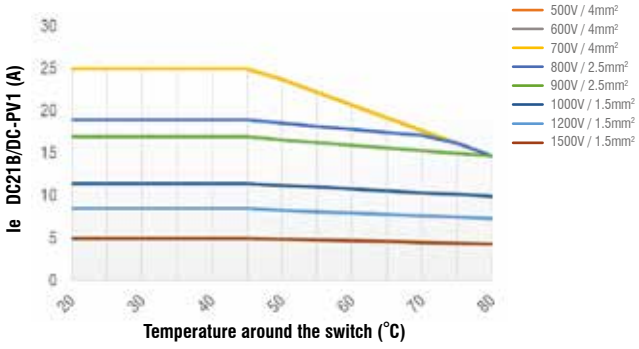
Switch SIM25 2H all types except PEL64R



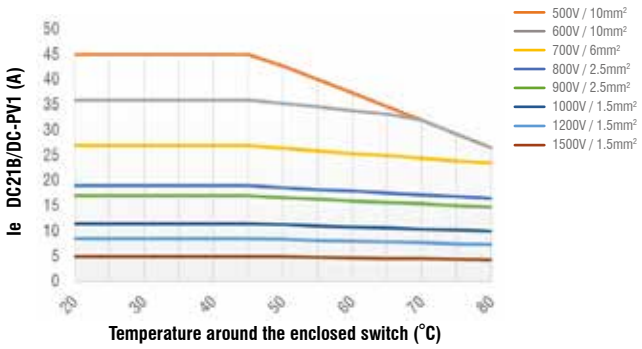
Switch SIM25 4S/T/B all types except PEL64R



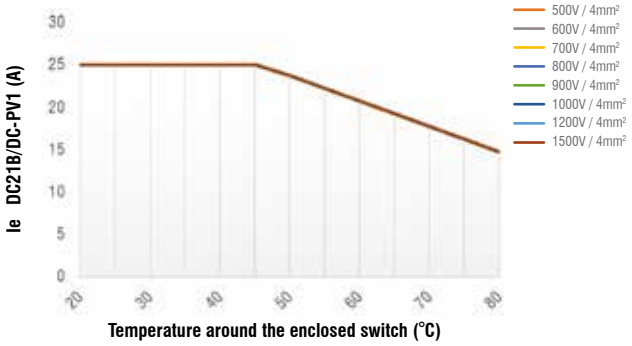
Switch SIM25 2 poles PEL64R type



Switch SIM25 2H PEL64R type



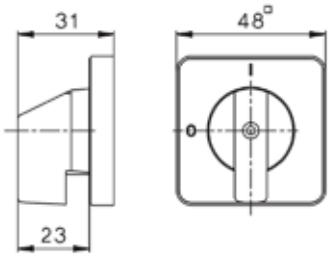
Switch SIM25 4S/T/B PEL64R type



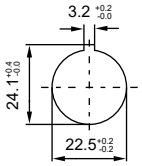
Handle Options

48 x 48 Lever Handle

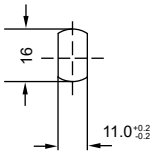
IP66 - NEMA 4X



Mounting Hole(s)



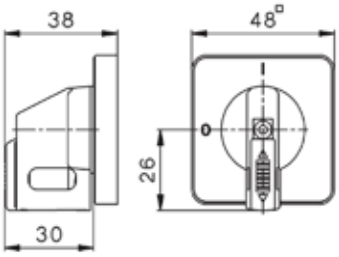
SHM Version

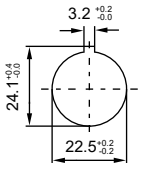


SHMS Version
(No escutcheon plate)

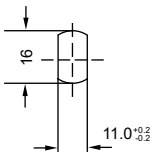
48 x 48 Lever Handle with Lockable OFF

IP66 - NEMA 4X





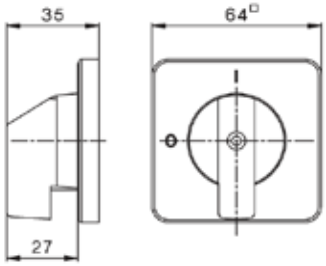
SHML Version

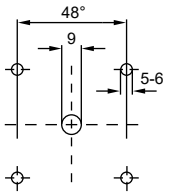


SHMSL Version
(No escutcheon plate)

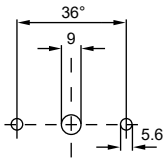
64 x 64 Lever Handle

IP66 - NEMA 3R





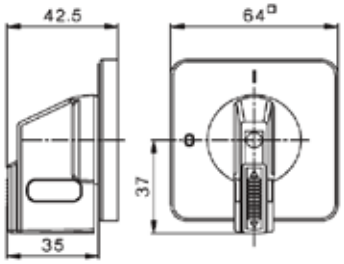
PM Version

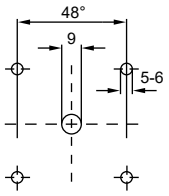


PMT Version

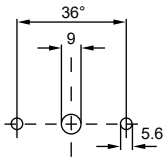
64 x 64 Lever Handle with Lockable OFF

IP66 - NEMA 3R





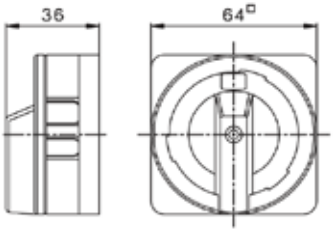
PM Version

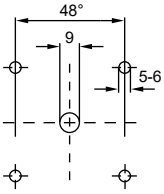


PMT Version

64 x 64 Rotary Handle with Lockable OFF

IP66 - NEMA 4X
(PEL64R version - IP67)



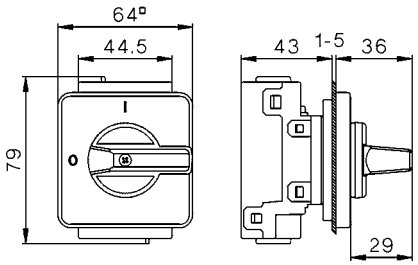


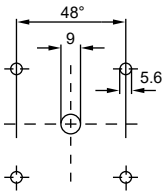
PM Version
Note: BMDC Version only requires central hole

Dimensions (mm)

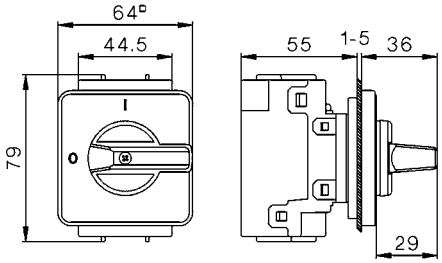
Mounting Hole

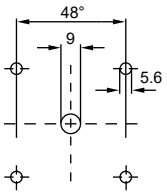
SIM-PM64-2**
Panel Mounting
64x64 Escutcheon Plate - 2 Pole



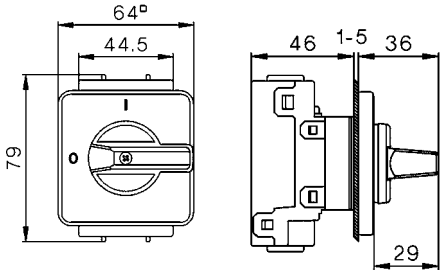


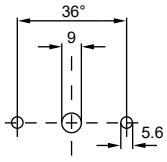
SIM-PM64-4**
Panel Mounting
64x64 Escutcheon Plate - 4 Pole



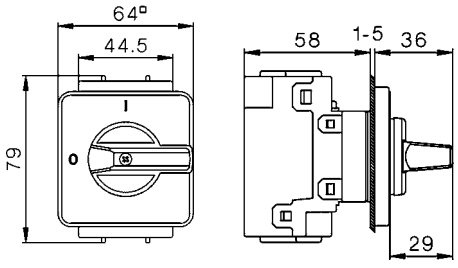


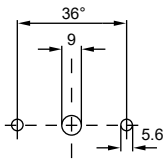
SIM-PMT64-2**
Panel Mounting
64x64 Escutcheon Plate - 2 Pole



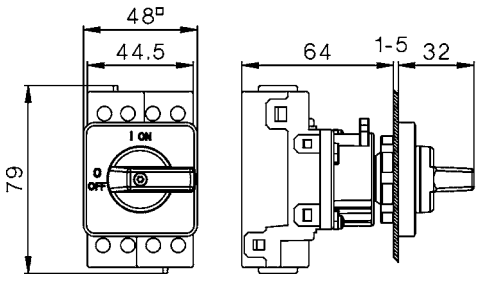


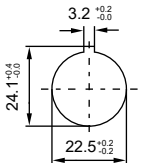
SIM-PMT64-4**
Panel Mounting
64x64 Escutcheon Plate - 4 Pole





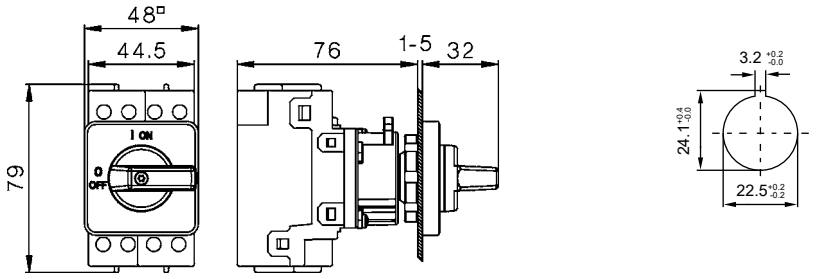
SIM-SHM-2**
Single Hole Mounting
Ø 22.5mm - 2 Pole



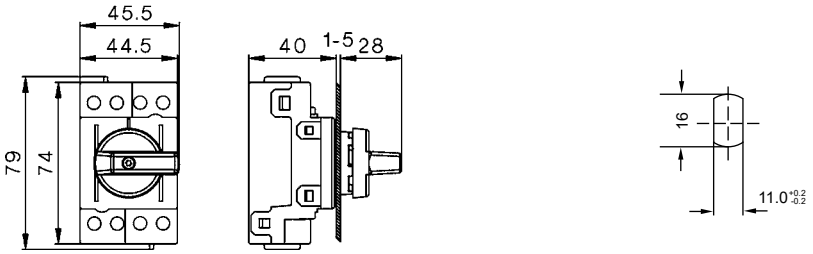


Mounting Hole

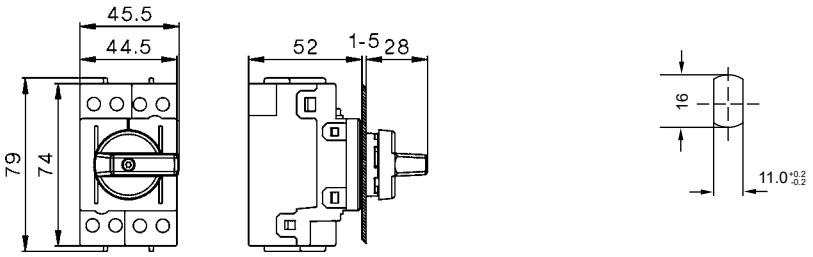
SIM-SHM-4**
Single Hole Mounting
Ø 22.5mm - 4 Pole



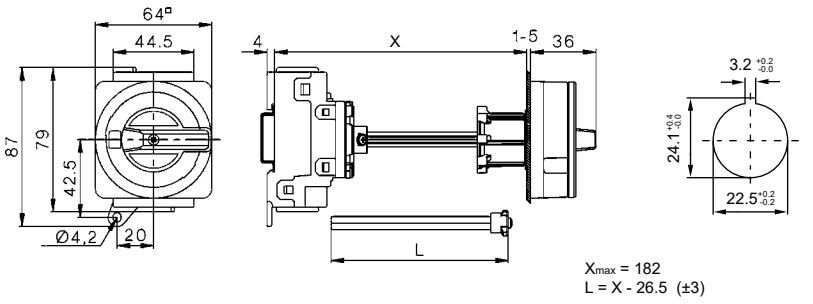
SIM-SHMS-2**
Single Hole Mounting
Ø 16mm - 2 Pole



SIM-SHMS-4**
Single Hole Mounting
Ø 16mm - 4 Pole

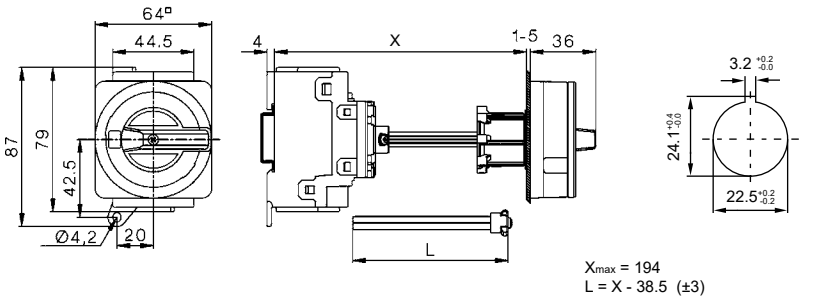


SIM-BMDC64R-2**
Base Mounting with door coupling
64x64 Escutcheon Plate - 2 Pole



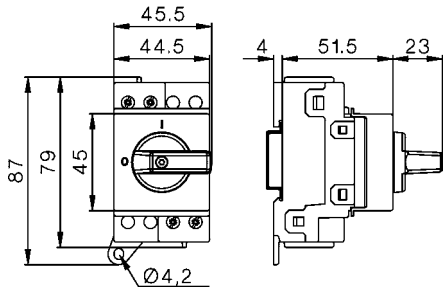
X_{max} = 182
L = X - 26.5 (±3)

SIM-BMDC64R-4**
Base Mounting with door coupling
64x64 Escutcheon Plate - 4 Pole

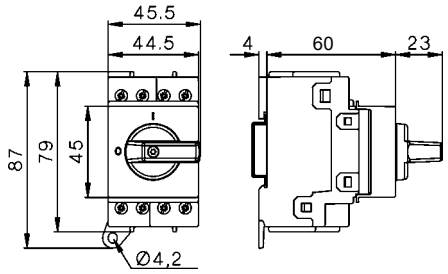


X_{max} = 194
L = X - 38.5 (±3)

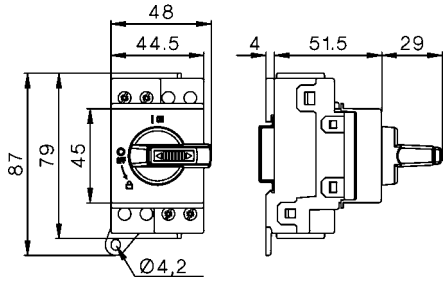
SIM-DB-2**
Modular Switch
2 Pole



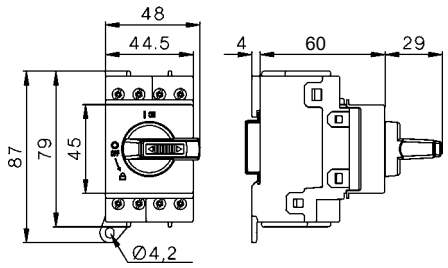
SIM-DB-4**
Modular Switch
4 Pole



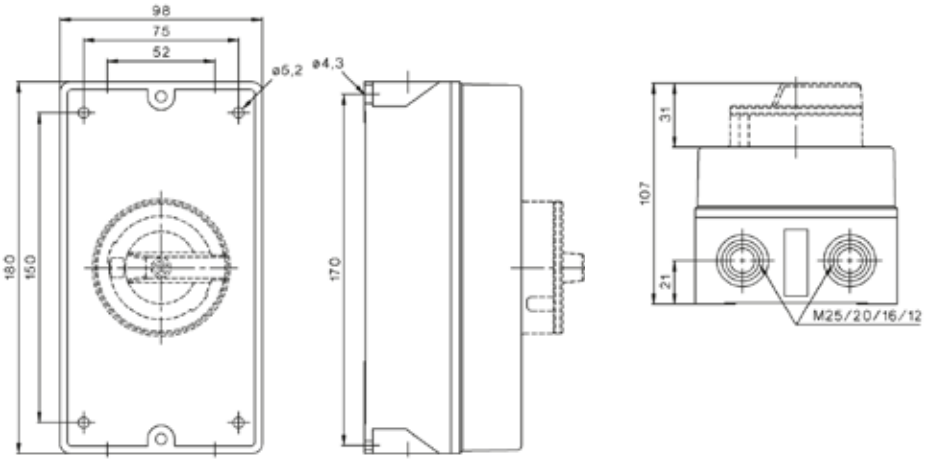
SIM-DBL-2**
Lockable Modular Switch
2 Pole



SIM-DBL-4**
Lockable Modular Switch
4 Pole



SIM-PEL64R-***
Plastic Enclosure



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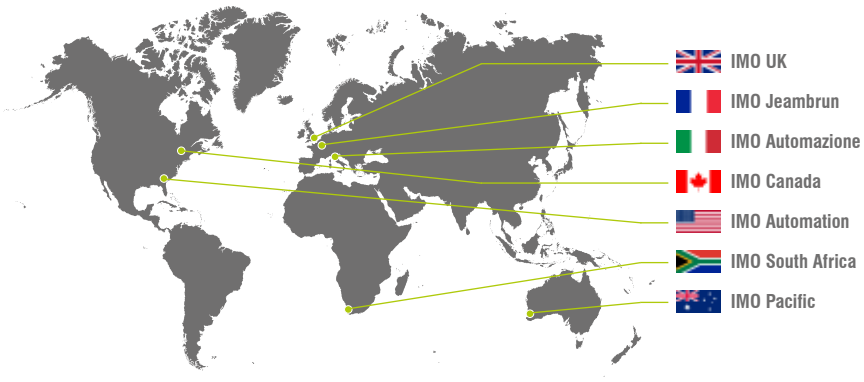

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