BREMAS

BETTER SWITCHES

PRODUCTS AND SOLUTIONS
FOR PHOTOVOLTAIC APPLICATIONS

5 PATENTS

+

3 PATENTS

Pending

MADE IN ITALY

bremas.it/en

BREMAS

BETTER SWITCHES

GENERAL CATALOGUE


BREMAS
BETTER SWITCHES

BREMAS
BETTER SWITCHES

QUALITY MAKES OUR PRODUCTS GREAT

Bremas is a recognized specialist in the development and production of high-quality components for photovoltaic applications.

With a strong focus on innovation and performance, Bremas offers a complete range of products designed to meet the demanding needs of the renewable energy sector.

The company has invested significantly in research and development over the years, which has led to the creation of numerous patents and innovative solutions.
Our company is managed in full accordance with UNI EN ISO 9001, ISO 14001 and all our products are verified in our laboratory under the most stringent standards to guarantee performance, durability and safety.

BREMAS
BETTER SWITCHES

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BREMAS

BETTER SWITCHES

SOLAR GUARDIAN

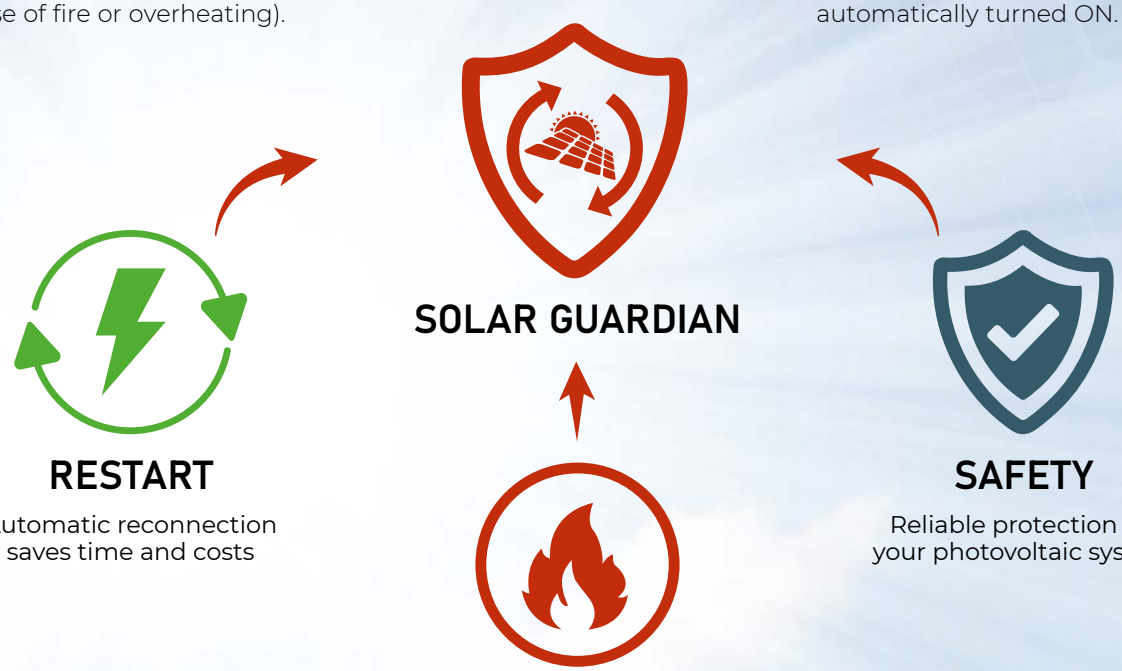
Smart Safety and Automatic Restart for PV Systems

01

The **SOLAR GUARDIAN** has been especially developed as a safety device for direct current (DC) photovoltaic installations. The DC switch is used to disconnect the connected strings of the installation in case of an emergency situation (for example in case of fire or overheating).

In case of AC line interruption of the building, the **SOLAR GUARDIAN** automatically shutdowns the DC lines of the PV system thanks to the electronic board.

The DC disconnect switch(es) is(are) automatically turned OFF if the AC power line is interrupted for a time longer than approx. 3 seconds. Once the AC line is restored (stable for at least approx. 3 seconds), the DC disconnect switch(es) is(are) automatically turned ON.



Discover more about our range of Solar Guardian FB and KA and KB Series. Visit our website or contact our technical team for further information.

Residential

Industrial & Commercial

Disconection modes

AUTOMATIC DISCONNECTION AND RECONNECTION

Automatic OFF: The DC lines disconnect automatically if the AC line is interrupted for more than 3 seconds.

Automatic ON: The DC lines reconnect automatically once the AC line is restored and stable for at least 5 seconds.

MAINTAINED AUTOMATIC DISCONNECTION

Automatic OFF: DC lines disconnect and remain inactive after a manual remote command.

Automatic ON: DC lines reconnect when the manual command is released, after verifying AC line status.

AUTOMATIC DISCONNECTION FOR OVERTEMPERATURE

Automatic OFF: DC lines disconnect if the cabinet temperature exceeds 100°C.

Additional functions

STATUS SIGNALING

The electronic board uses relay contacts to indicate the disconnect switch's status, enabling remote visual indicators (e.g., near the manual safety switch).

CABLE-ENABLED CONTROL

Easily monitor and manage your photovoltaic system with integrated Modbus connectivity for stable and reliable remote access.

4G CONNECTIVITY

Ensure reliable monitoring and management of your photovoltaic system with 4G connectivity, offering seamless access even in remote locations.

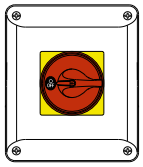
FB Series - Up to 6 inputs

PLUG & PLAY Ready to use

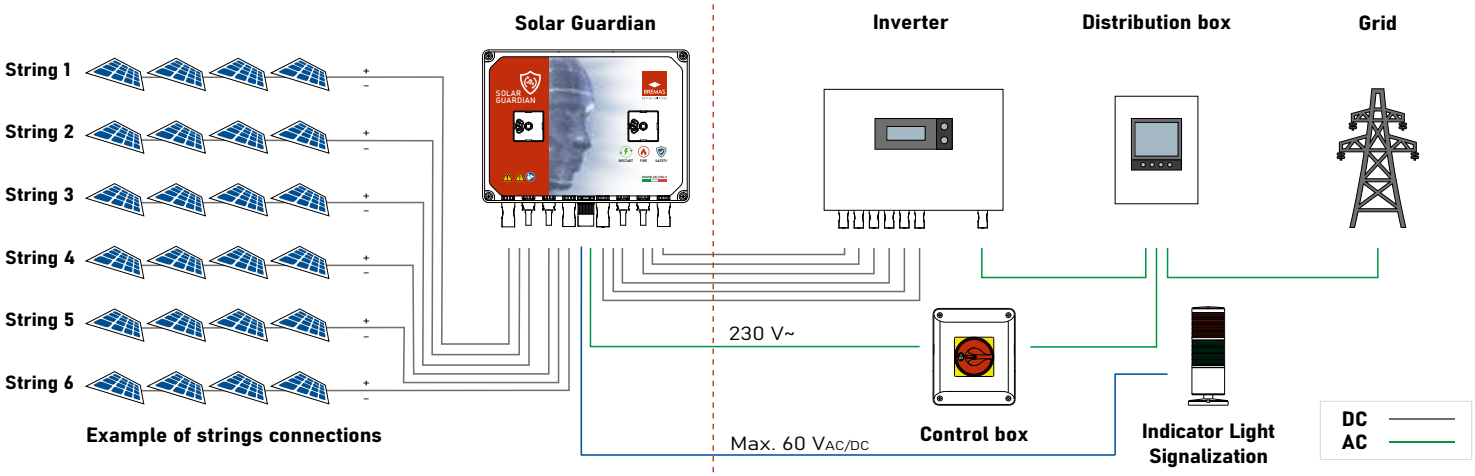
PV inputs	PV1 cat. per input	PV1 cat. per input	Code	PV inputs	PV1 cat. per input	PV1 cat. per input	Code
1	1000V - 50A	1500V - 20A	FB150301MUA2MC	4	1000V - 50A	1500V - 20A	FB150304NUA2MC
2			FB150302MUA2MC	5			FB150305NUA2MC
3			FB150303MUA2MC	6			FB150306NUA2MC

We are available for additional custom configurations. Feel free to reach out to discuss your specific needs.

Accessories - Control box



Code	Description
SB0203B110AL6	Enclosed AC switch for emergency stop



SOLAR GUARDIAN KIT

DISCONNECT SWITCH

From 1 to 7 couple of inputs

ELECTRONIC BOARD

For Fire, Safety &
Restart management

Bremas Ersce S.p.A. recommends installing the **SOLAR GUARDIAN** away from direct sunlight.

KA - KB Series – Solar Guardian Kit up to 14 inputs

PV inputs	PV1 cat. per input	PV1 cat. per input	Code
1	1000V - 50A	1500V - 20A	KA1503001MUAEC
2			KA1503002MUAEC
3			KA1503003MUAEC
4			KA1503004MUAEC
5			KA1503005MUAEC
6			KA1503006MUAEC
7			KA1503007MUAEC

PV inputs	PV1 cat. per input	PV1 cat. per input	Code
8	1000V - 50A	1500V - 20A	KB1503008MUAEC
10			KB1503010MUAEC
12			KB1503012MUAEC
14			KB1503014MUAEC

We are available for additional custom configurations. Feel free to reach out to discuss your specific needs.

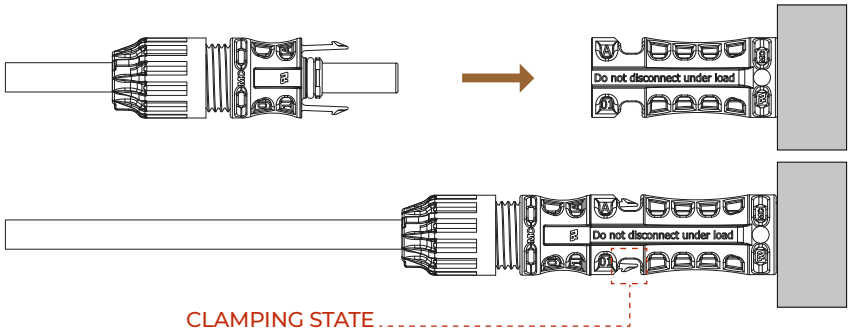
Technical data of SOLAR GUARDIAN IEC EN 60947-3

Rated insulation voltage	Ui	V	1500	
Rated impluse withstand voltage	Uimp	kV	8	
Rated thermal current	Ith	A	50	
DC Inputs				
Number of inputs	From ... up to		1 ... 6	
Utilization category			PV1	PV2
Rated operational current at 1500 V	Ie	A	20	8
Rated operational current at 1300 V	Ie	A	25	10
Rated operational current at 1250 V	Ie	A	30	12
Rated operational current at 1000 V	Ie	A	50	20
Rated operational current at 800 V	Ie	A	-	30
Rated operational current at 700 V	Ie	A	-	40
Over temperature shutdown				
Temperature for automatic shutdown		°C	+100	
Short circuit protection				
Rated conditional short-circuit current		kA	5	
Max fuse size for short circuit protection	gPV	A	50	
Rated short-time withstand current (1s)	Icw	A	780	
Rated short-circuit making capacity	Icm	kA	1,4	
Mechanical and electrical features				
Mechanical endurance	cycles	Nr	9.700	
Electrical endurance	cycles	Nr	300	
Panel connectors mounted on the Solar Guardian				
MC4 plug-in connectors STAUBLI EVO2		Female	32.0346P0001	
MC4 plug-in connectors STAUBLI EVO2		Male	32.0347P0001	
Coupler connectors reccomended (not included in the Solar Guardian)				
MC4 plug-in connectors STAUBLI EVO2		Female	32.0318P0001	
MC4 plug-in connectors STAUBLI EVO2		Male	32.0319P0001	
Protection degree IEC EN 61439-2				
Solar Guardian			IP56	
Ambient conditions				
Pollution degree			2	
Operational ambient temperature		°C	-30 ÷ +50	
Storage ambient temperature		°C	-30 ÷ +85	
Damp heat test IEC 60068-2-30		°C	90-100% at +55°C	

Warning!

All **EVO2 connectors** must be correctly installed and securely sealed with an **isolator** to ensure compliance with the **IP56** rating.

Terminals recommended for the installation 32.0318P0001 (female) and 32.0319P0001 (male) are not included in the **SOLAR GUARDIAN**.



Technical data of SOLAR GUARDIAN KIT IEC EN 60947-3

Rated insulation voltage	Ui	V	1500	
Rated impluse withstand voltage	Uimp	kV	8	
Rated thermal current	Ith	A	50	
Power loss per layer at 20 A / 50 A		W	0,2 / 1,25	
DC Inputs				
Utilization category			PV1	PV2
Rated operational current at 1500 V	Ie	A	20	8
Rated operational current at 1300 V	Ie	A	25	10
Rated operational current at 1250 V	Ie	A	30	12
Rated operational current at 1100 V	Ie	A	-	-
Rated operational current at 1000 V	Ie	A	50	20
Rated operational current at 800 V	Ie	A	-	30
Rated operational current at 750 V	Ie	A	-	-
Rated operational current at 700 V	Ie	A	-	40
Rated operational current at 600 V	Ie	A	-	-
Rated operational current at 500 V	Ie	A	-	-
Short circuit protection				
Rated conditional short-circuit current		kA	5	
Max fuse size for short circuit protection	gPV	A	50	
Rated short-time withstand current (1 s)	Icw	A	780	
Rated short-circuit making capacity	Icm	kA	1,4	
Terminals				
Cross-section of flexible/solid wires	Max.	mm2	2 x 6	
		AWG	2 x 10	
Cross-section of wires with fork lug	Max.	mm2	1 x 16	
		AWG	1 x 6	
Connection type			Screws M4 - PH2	
Screw tightening torque	Nm		1,7 ±10%	
	lb.in		12 ±10%	
Protection degree IEC 529 EN 60529				
To the terminals			IP20	
Ambient conditions				
Pollution degree			2	
Operational ambient temperature		°C	-30 ÷ +85	
Storage ambient temperature		°C	-30 ÷ +85	
Damp heat test IEC 60068-2-30		°C	90-100% RH at +55°C	

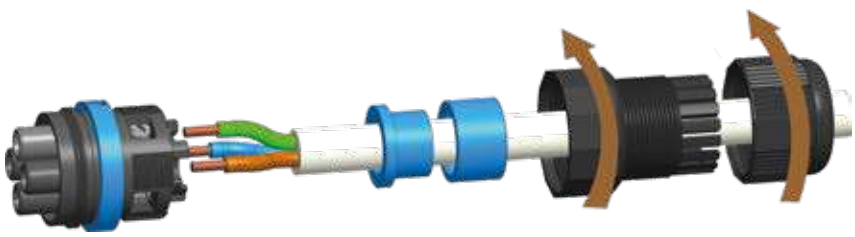
Motor characteristics

Rated operational voltage	Ue	Vdc	24 ±5%
Rated operational current	Ie	A	0,3
Terminal type			Solder
Protection degree to the terminals			IP00

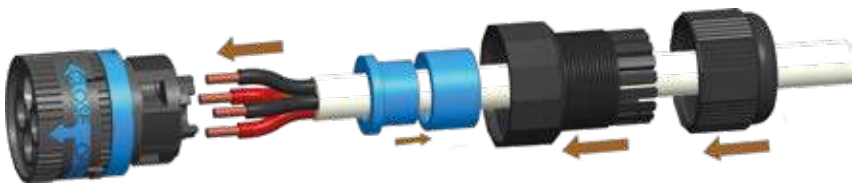
Technical specification of AUXILIARY CONNECTORS

L-N-GND Connector (AC Main Power)			
Rated operational voltage	Ui	VAC	500
Working frequency		Hz	50 ÷ 60
Rated impluse withstand voltage	Uimp	kV	4
Rated operational current	Ie	A	17,5
Nominal operating voltage	Un	VAC	100 ÷ 240
Nominal power dissipation	Max	W	10
Nominal current	In	mA	40 (at 230V)
Degree of protection			IP68
Connection type			M3 screws
Tightening torque	Max	Nm	0,8
Cross-section of flexible/solid wires	Min-Max	mmq	0,5 ... 4
Cable Diameter	Min-Max	mm	7 ... 12
Operational ambient temperature	Tamb	°C	-40 ÷ +125
FB Connector (Feedback FB1 e FB2)			
Rated operational voltage	Ui	VAC/DC	500
Working frequency		Hz	50 ÷ 60
Rated impluse withstand voltage	Uimp	kV	4
Rated operational current	Ie	A	17,5
Nominal operating voltage of contact	Un max	VAC/DC	60
Nominal external power of contact	Max	W	60
Nominal current of contact	In max	A	1
Degree of protection			IP68
Connection type			M3 screws
Tightening torque	Max	Nm	0,8
Cross-section of flexible/solid wires	Min-Max	mmq	0,5 ... 4
Cable Diameter	Min-Max	mm	7 ... 12
Operational ambient temperature	Tamb	°C	-40 ÷ +125

AC Main Power

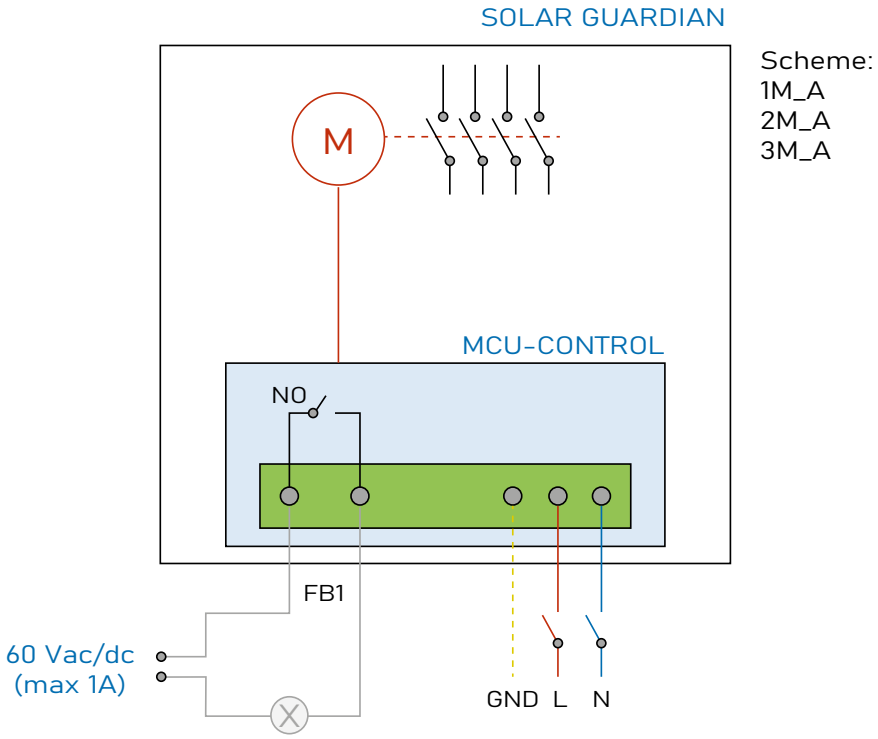


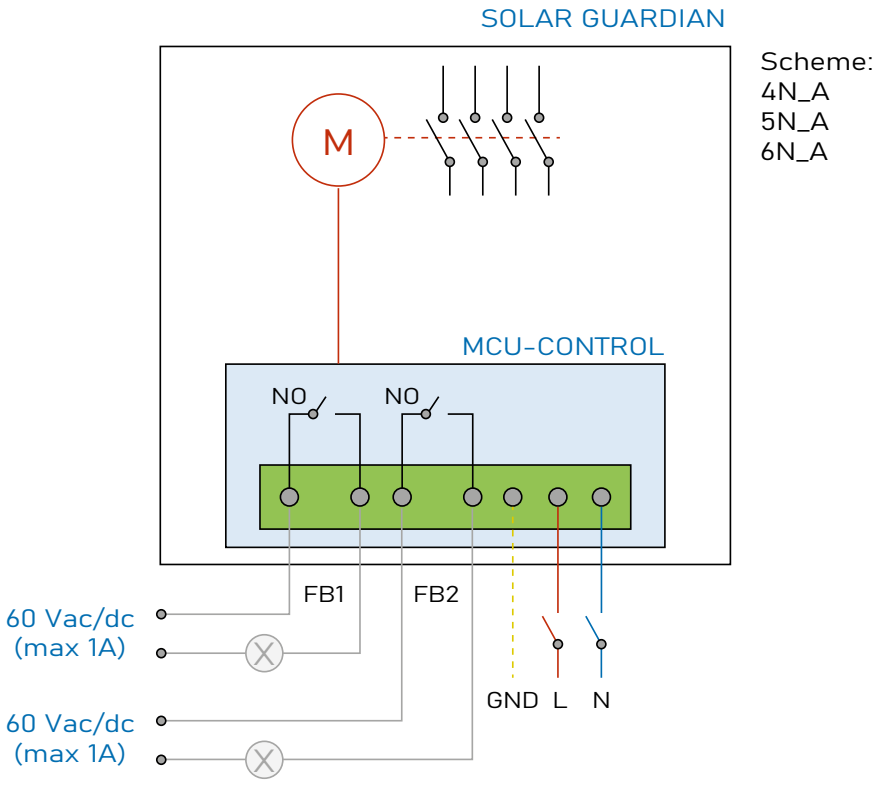
Feedback FB1 (FB2)



Electrical circuit

Example of wiring connection for KA and KB Series

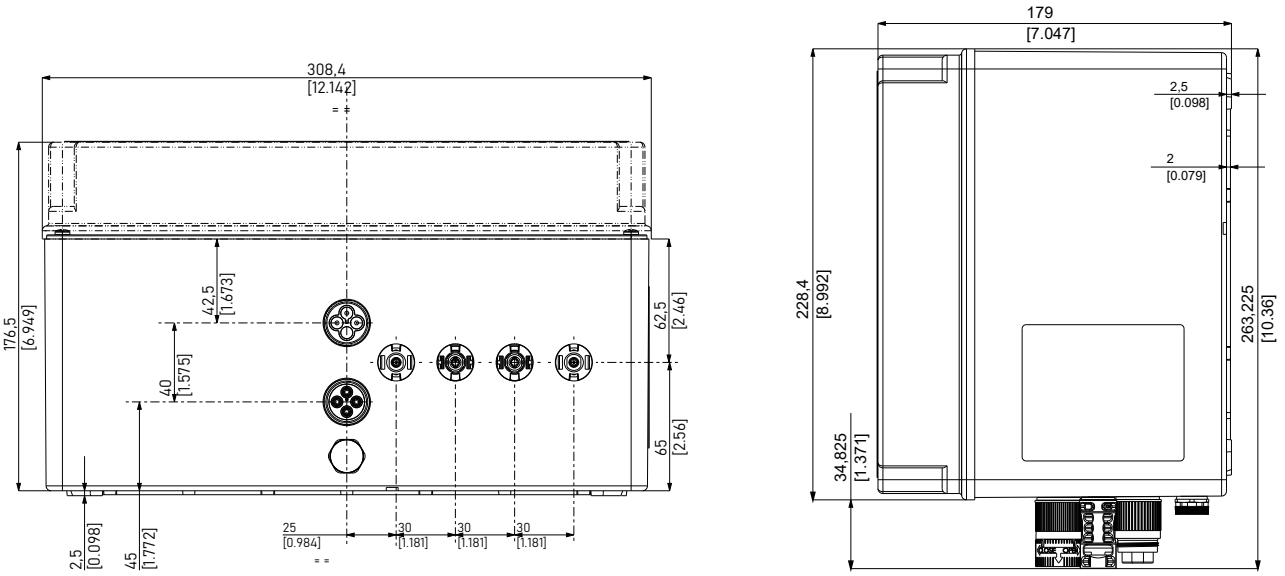




Features

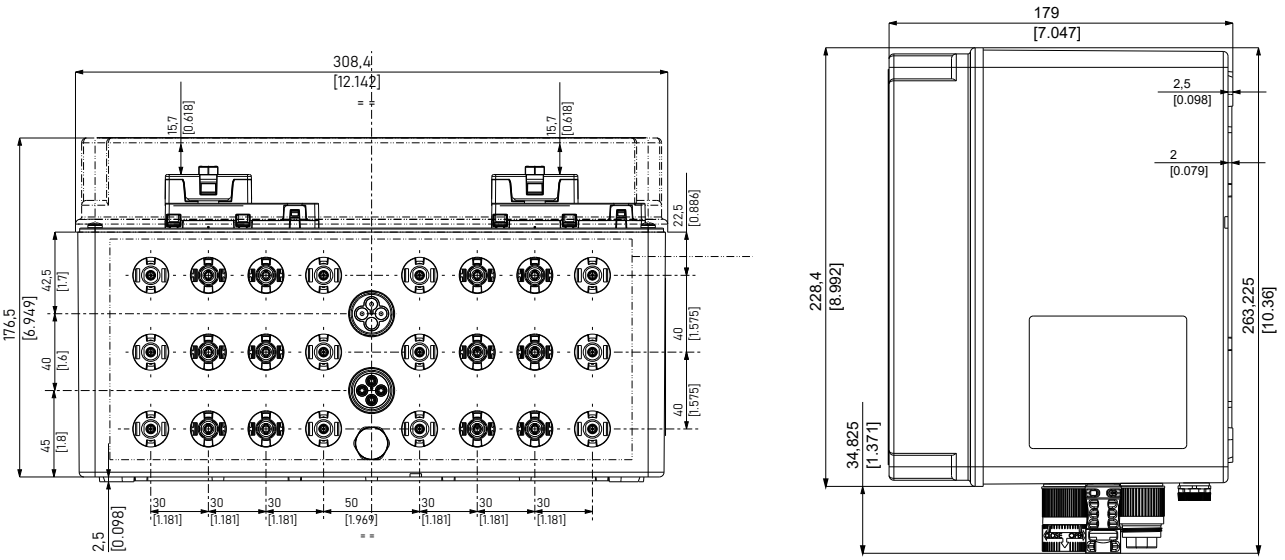
Dimensions
FB series - 1 Input

Dimension in mm
in [inch]



Dimensions
FB series - 6 Inputs

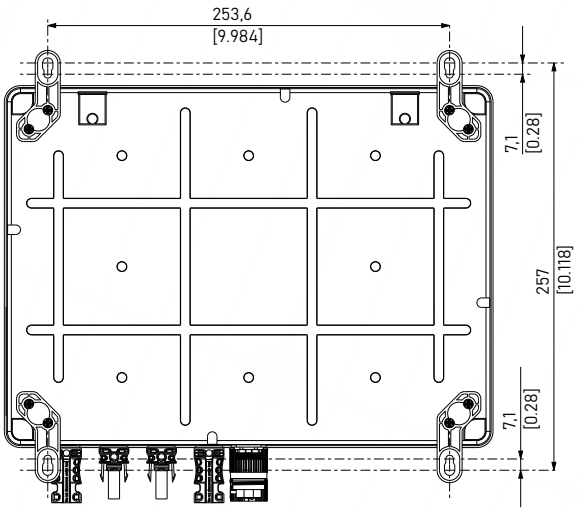
Dimension in mm
in [inch]

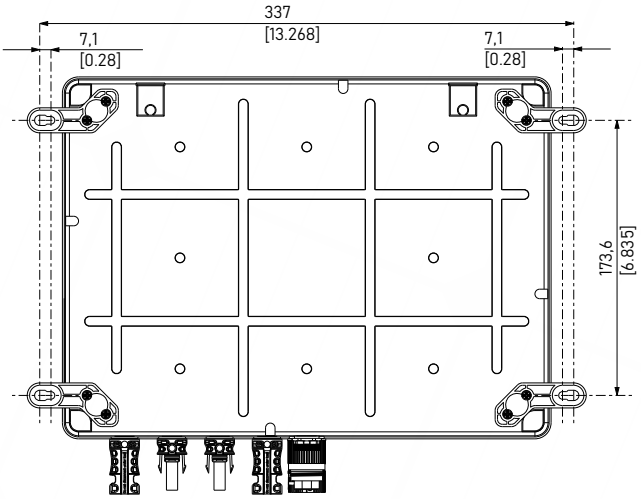


Dimensions

Wall fixing holes for brackets FB serie - up to 6 inputs

Dimension in mm
in [inch]

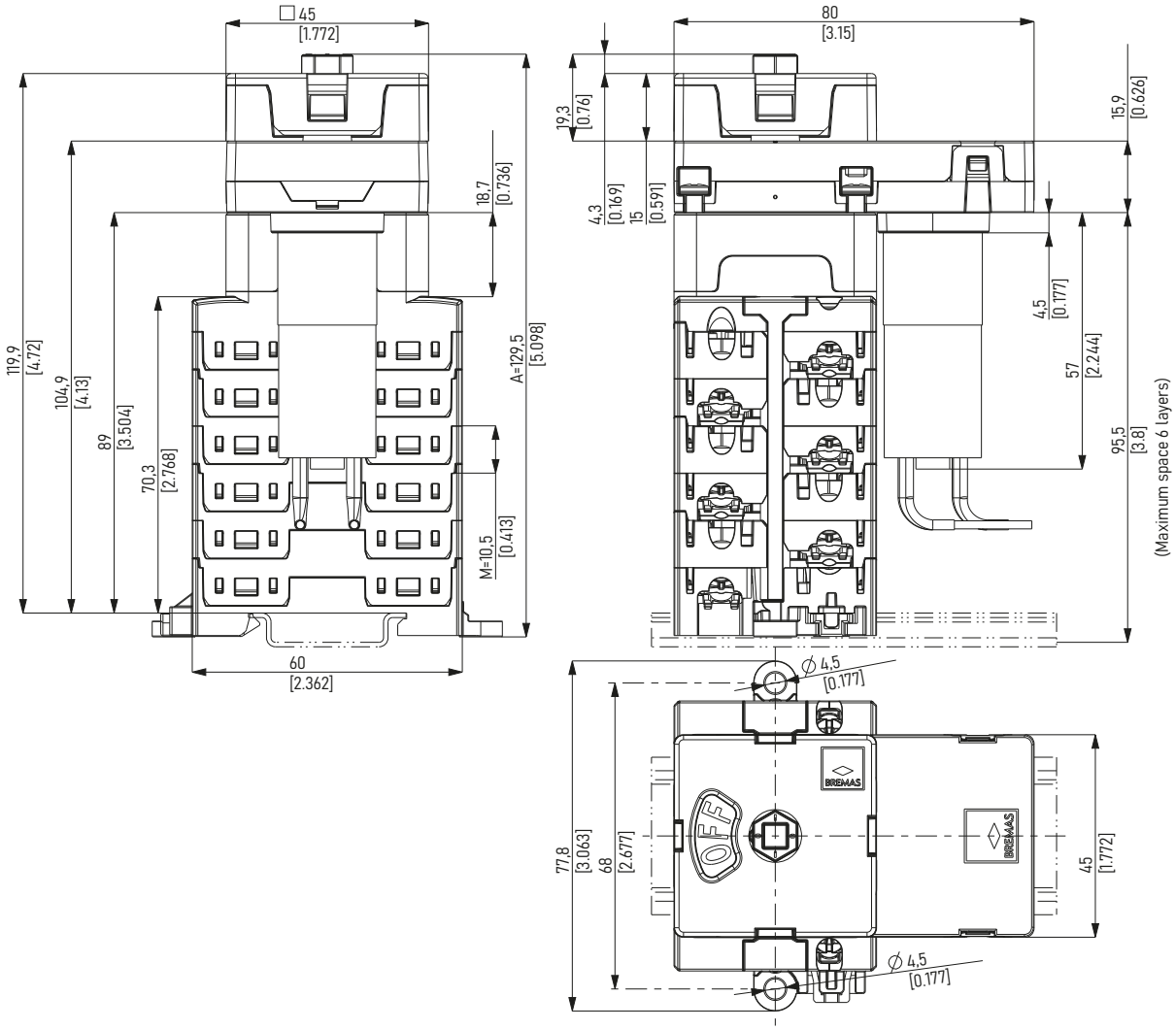




Dimensions

KA and KB series - Up to 7 Inputs

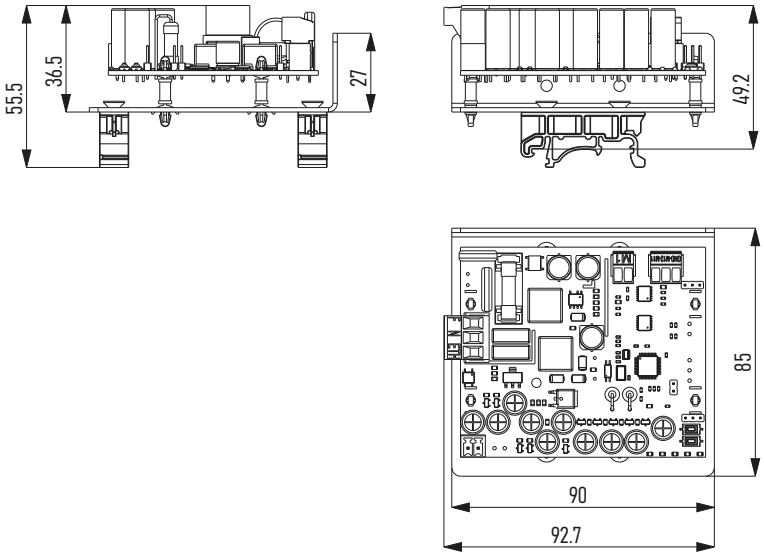
Dimension in mm
in [inch]



	KA and KB series						
PV inputs	1	2	3	4	5	6	7
Number of layers	4	6	8	10	12	14	16
A dimensions (mm)	108,5	129,5	150,5	171,5	192,5	213,5	234,5

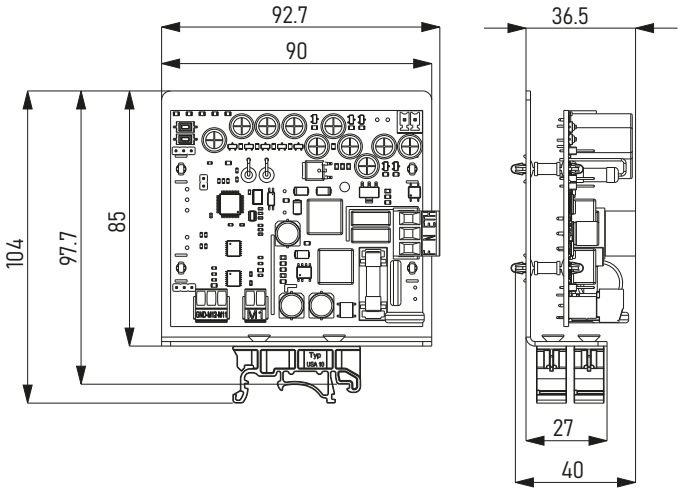
Dimensions
Horizontal fixing of PCB on DIN rail

Dimension in mm



Dimensions
Vertical fixing of PCB on DIN rail

Dimension in mm



BREMAS

BETTER SWITCHES

STRING BOXES

DC, AC/DC and AC boxes up to 10 KW

02

DC STRING BOXES
DIRECT CURRENT

AC/DC STRING BOXES
ALTERNATING AND DIRECT CURRENT

AC STRING BOXES
ALTERNATING CURRENT

Discover more about our range of String Boxes MB Series.
Visit our website or contact our technical team for further information.

DC String boxes must be positioned between the strings of PV panels and the inverter, to guarantee **protection** and **isolation** of the connection between the two parts.

The string boxes are made using specific components for the protection and wiring of a **single string, two strings in parallel or two independent strings**. Furthermore, it is possible to request **customized** configurations with wiring adapted to the type of PV system.

Pre-wired string boxes with nominal voltage of **600 Vdc** and **1000 Vdc** are available, with overvoltage protection via **type 2 Surge Protective Devices (SPD)**, overcurrent protection via **fuse holders base (fuses included)**, and isolation via **disconnect switches** specific for **DC-PV1** and **DC-PV2** use categories (according to **IEC EN 60947-3**).

SOLUTIONS

The **AC/DC string boxes** provide **protection** and **isolation** of the **DC** connection between the strings of photovoltaic panels and the inverter, and all the protection and management components of the **AC** connection downstream of the inverter.

Both connections are contained in a **single** cabinet, divided into two sections isolated from each other:

- the DC connection, with nominal voltage of **600 Vdc** and **1000 Vdc**, provides overvoltage protection via type 2 Surge Protective Devices (SPD), overcurrent protection via **fuse holders base (fuses included)**, and isolation via **disconnect switches** specific for **DC-PV1** and **DC-PV2** use categories (according to **IEC EN 60947-3** standard);
- the **AC connection**, for **single-phase 230 Vac** systems, provides overvoltage protection via **type 2 Surge Protective Devices**, and automatic interruption via a **Residual Current Circuit Breaker with Overcurrent Protection (RCBO)**.

Standard electrical cabinets specific to the protection and wiring of **a single string, two strings in parallel**, or **two independent strings**. Furthermore, it is possible to request **customized** configurations with wiring adapted to the type of photovoltaic and electrical systems.

The **AC string boxes** provide **protection** and **management** of the AC connection downstream of the inverter in a photovoltaic system.

Pre-wired string boxes for mono-phase systems type with nominal voltage of **230 Vac** are available, with overvoltage protection via **type 2 Surge Protective Devices (SPD)**, and automatic interruption via **Residual Current Circuit Breaker with Overcurrent Protection (RCBO)**. Furthermore, it is possible to request **customized** configurations with wiring adapted to the type of electrical system.

Installation both **indoors** and **outdoors**, thanks to enclosures made of insulating material with IP65 protection degree.

Electrical cabinets made in compliance with the harmonized technical standards **IEC EN 61439-1/2**.

DC STRING BOXES
Direct Current

1 string 600 Vdc

- 1x DC input - 1x DC output
- 1x disconnect switch, 32 A at 600 Vdc (DC-PV1)
- 1x Surge Protective Device, 600 Vdc, In=18 kA, Type 2
- 1x fuse holder base 1000 Vdc + 2x gPV fuse 20 A
- Enclosure in insulating material, 8 DIN modules, 1 row, IP65

1 string 1000 Vdc

- 1x DC input - 1x DC output
- 1x disconnect switch, 30 A at 1000 Vdc (DC-PV1)
- 1x Surge Protective Device, 1000 Vdc, In=18 kA, Type 2
- 1x fuse holder base 1000 Vdc + 2x gPV fuse 20 A
- Enclosure in insulating material, 8 DIN modules, 1 row, IP65

DC

2 parallel strings 600 Vdc

- 2x DC inputs - 1x DC output
- 1x disconnect switch, 32 A at 600 Vdc (DC-PV1)
- 1x Surge Protective Device, 600 Vdc, In=18 kA, Type 2
- 2x fuse holder base 1000 Vdc + 4x gPV fuse 20 A
- Enclosure in insulating material 12 DIN modules, 1 row, IP65

2 parallel strings 1000 Vdc

- 2x DC inputs - 1x DC output
- 1x disconnect switch, 30 A at 1000 Vdc (DC-PV1)
- 1x Surge Protective Device, 1000 Vdc, In=18 kA, Type 2
- 2x fuse holder base 1000 Vdc + 4x gPV fuse 20 A
- Enclosure in insulating material 12 DIN modules, 1 row, IP65

2 single strings 600 Vdc

- 2x DC inputs - 2x DC outputs
- 2x disconnect switch, 32 A at 600 Vdc (DC-PV1)
- 2x Surge Protective Device, 600 Vdc, In=18 kA, Type 2
- 2x fuse holder base 1000 Vdc + 4x gPV fuse 20 A
- Enclosure in insulating material 24 DIN modules, 2 rows, IP65

2 single strings 1000 Vdc

- 2x DC inputs - 2x DC outputs
- 2x disconnect switch, 30 A at 1000 Vdc (DC-PV1)
- 2x Surge Protective Device, 1000 Vdc, In=18 kA, Type 2
- 2x fuse holder base 1000 Vdc + 4x gPV fuse 20 A
- Enclosure in insulating material 24 DIN modules, 2 rows, IP65

AC/DC STRING BOXES
Alternating and Direct Current

AC

DC

Single-phase 16 A - 1 string 600 Vdc

AC connection
. 1x AC input - 1x AC output
. 1x automatic Residual Current Circuit Breaker (300 mA - Class A) with Overcurrent Protection (16 A - Curve C)
. 1x 230 Vac Surge Protective Device, Type 2, for single-phase TT-TN systems

DC connection
. 1x DC input - 1x DC output
. 1x disconnect switch, 32 A at 600 Vdc (DC-PV1)
. 1x Surge Protective Device, 600 Vdc, In=18 kA, Type 2
. 1x fuse holder base 1000 Vdc + 2x gPV fuse 20 A

Box
. Enclosure in insulating material 24 DIN modules, 2 rows, IP65

Single-phase 16 A - 1 string 1000 Vdc

AC connection
. 1x AC input - 1x AC output
. 1x automatic Residual Current Circuit Breaker (300 mA - Class A) with Overcurrent Protection (16 A - Curve C)
. 1x 230 Vac Surge Protective Device, Type 2, for single-phase TT-TN systems

DC connection
. 1x DC input - 1x DC output
. 1x disconnect switch, 30 A at 1000 Vdc (DC-PV1)
. 1x Surge Protective Device, 1000 Vdc, In=18 kA, Type 2
. 1x fuse holder base 1000 Vdc + 2x gPV fuse 20 A

Box
. Enclosure in insulating material 24 DIN modules, 2 rows, IP65

Single-phase 25 A - 2 parallel strings 600 Vdc

AC connection
. 1x AC input - 1x AC output
. 1x automatic Residual Current Circuit Breaker (300 mA - Class A) with Overcurrent Protection (25 A - Curve C)
. 1x 230 Vac Surge Protective Device, Type 2, for single-phase TT-TN systems

DC connection
. 2x DC inputs - 1x DC output
. 1x disconnect switch, 32 A at 600 Vdc (DC-PV1)
. 1x Surge Protective Device, 600 Vdc, In=18 kA, Type 2
. 2x fuse holder base 1000 Vdc + 4x gPV fuse 20 A

Box
. Enclosure in insulating material 24 DIN modules, 2 rows, IP65

Single-phase 25 A - 2 parallel strings 1000 Vdc

AC connection
. 1x AC input - 1x AC output
. 1x automatic Residual Current Circuit Breaker (300 mA - Class A) with Overcurrent Protection (25 A - Curve C)
. 1x 230 Vac Surge Protective Device, Type 2, for single-phase TT-TN systems

DC connection
. 2x DC inputs - 1x DC output
. 1x disconnect switch, 30 A at 1000 Vdc (DC-PV1)
. 1x Surge Protective Device, 1000 Vdc, In=18 kA, Type 2
. 2x fuse holder base 1000 Vdc + 4x gPV fuse 20 A

Box
. Enclosure in insulating material 24 DIN modules, 2 rows, IP65

Single-phase 32 A - 2 single strings 600 Vdc

AC connection
. 1x AC input - 1x AC output
. 1x automatic Residual Current Circuit Breaker (300 mA - Class A) with Overcurrent Protection (32 A - Curve C)
. 1x 230 Vac Surge Protective Device, Type 2, for single-phase TT-TN systems

DC connection
. 2x DC inputs - 2x DC outputs
. 2x disconnect switch, 32 A at 600 Vdc (DC-PV1)
. 2x surge arrester, 600 Vdc, In=18 kA, Type 2
. 2x fuse holder base 1000 Vdc + 4x gPV fuse 20 A

Box
. Enclosure in insulating material 24 DIN modules, 2 rows, IP65

Single-phase 32 A - 2 single strings 1000 Vdc

AC connection
. 1x AC input - 1x AC output
. 1x automatic Residual Current Circuit Breaker (300 mA - Class A) with Overcurrent Protection (32 A - Curve C)
. 1x 230 Vac Surge Protective Device, Type 2, for single-phase TT-TN systems

DC connection
. 2x DC inputs - 2x DC outputs
. 2x disconnect switch, 30 A a 1000 Vdc (DC-PV1)
. 2x Surge Protective Device, 1000 Vdc, In=18 kA, Type 2
. 2x fuse holder base 1000 Vdc + 4x gPV fuse 20 A

Box
. Enclosure in insulating material 24 DIN modules, 2 rows, IP65

AC STRING BOXES
Alternating Current

Single-phase 16 A

. 1x AC input - 1x AC output
. 1x automatic Residual Current Circuit Breaker (300 mA - Class A) with Overcurrent Protection (16 A - Curve C)
. 1x 230 Vac Surge Protective Device, Type 2, for single-phase TT-TN systems
. Enclosure in insulating material, 8 DIN modules, 1 row, IP65

Single-phase 25 A

. 1x AC input - 1x AC output
. 1x automatic Residual Current Circuit Breaker (300 mA - Class A) with Overcurrent Protection (25 A - Curve C)
. 1x 230 Vac Surge Protective Device, Type 2, for single-phase TT-TN systems
. Enclosure in insulating material, 8 DIN modules, 1 row, IP65

Single-phase 32 A

. 1x AC input - 1x AC output
. 1x automatic Residual Current Circuit Breaker (300 mA - Class A) with Overcurrent Protection (32 A - Curve C)
. 1x 230 Vac Surge Protective Device, Type 2, for single-phase TT-TN systems
. Enclosure in insulating material, 8 DIN modules, 1 row, IP65

AC

DC String boxes

Application	Description	DC Side			Code
DC	1 string	600 Vdc	32 A	PV1	**MBD06A11T2F20**
DC	2 parallel strings				**MBD06A21T2F20**
DC	2 single strings				**MBD06A22T2F20**
DC	1 string	1000 Vdc	30 A	PV1	**MBD10A11T2F20**
DC	2 parallel strings				**MBD10A21T2F20**
DC	2 single strings				**MBD10A22T2F20**

AC/DC String boxes

Application	Description	DC Side			Code
AC/DC	Single-phase 16 A - 1 string	600 Vdc	32 A	PV1	**MBX06A11T2F20M16**
AC/DC	Single-phase 25 A - 2 parallel strings				**MBX06A21T2F20M25**
AC/DC	Single-phase 32 A - 2 single strings				**MBX06A22T2F20M32**
AC/DC	Single-phase 16 A - 1 string	1000 Vdc	30 A	PV1	**MBX10A11T2F20M16**
AC/DC	Single-phase 25 A - 2 parallel strings				**MBX10A21T2F20M25**
AC/DC	Single-phase 32 A - 2 single strings				**MBX10A22T2F20M32**

AC String boxes

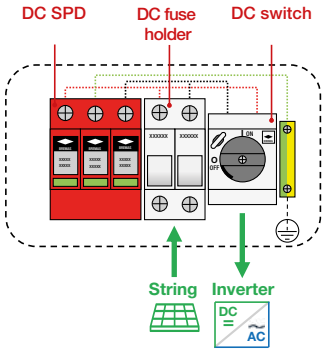
Application	Description	Code
AC	Single-phase 16 A	**MBAM16T2**
AC	Single-phase 25 A	**MBAM25T2**
AC	Single-phase 32 A	**MBAM32T2**

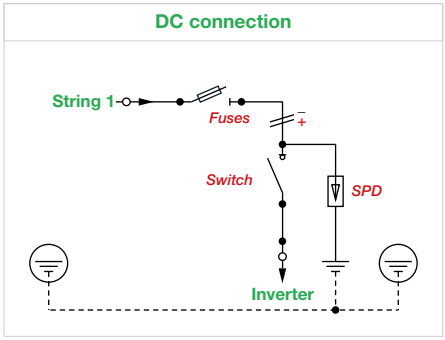
String boxes composition

Code	Enclosure dimension (lxhxp mm)	DC switches	DC fuse holders	DC fuses	DC surge protecion devices	AC surge protection devices	AC RCBOs
MBD06A11T2F20	215x190x100	1x DM100201E0ADRLE	1x FHPV1002P	2x F1038PV20	1x SA2PV060T2		
MBD06A21T2F20	317x250x140	1x DM100201E0ADRLE	2x FHPV1002P	4x F1038PV20	1x SA2PV060T2		
MBD06A22T2F20	317x420x140	2x DM100201E0ADRLE	2x FHPV1002P	4x F1038PV20	2x SA2PV060T2		
MBD10A11T2F20	215x190x100	1x DX120301E0ADRLE	1x FHPV1002P	2x F1038PV20	1x SA2PV100T2		
MBD10A21T2F20	317x250x140	1x DX120301E0ADRLE	2x FHPV1002P	4x F1038PV20	1x SA2PV100T2		
MBD10A22T2F20	317x420x140	2x DX120301E0ADRLE	2x FHPV1002P	4x F1038PV20	2x SA2PV100T2		
MBX06A11T2F20M16	317x420x140	1x DM100201E0ADRLE	1x FHPV1002P	2x F1038PV20	1x SA2PV060T2	1x SA40T2A1N032	1x SR06AC1NC16A300
MBX06A21T2F20M25	317x420x140	1x DM100201E0ADRLE	2x FHPV1002P	4x F1038PV20	1x SA2PV060T2	1x SA40T2A1N032	1x SR06AC1NC25A300
MBX06A22T2F20M32	317x420x140	2x DM100201E0ADRLE	2x FHPV1002P	4x F1038PV20	2x SA2PV060T2	1x SA40T2A1N032	1x SR06AC1NC32A300
MBX10A11T2F20M16	317x420x140	1x DX120301E0ADRLE	1x FHPV1002P	2x F1038PV20	1x SA2PV100T2	1x SA40T2A1N032	1x SR06AC1NC16A300
MBX10A21T2F20M25	317x420x140	1x DX120301E0ADRLE	2x FHPV1002P	4x F1038PV20	1x SA2PV100T2	1x SA40T2A1N032	1x SR06AC1NC25A300
MBX10A22T2F20M32	317x420x140	2x DX120301E0ADRLE	2x FHPV1002P	4x F1038PV20	2x SA2PV100T2	1x SA40T2A1N032	1x SR06AC1NC32A300
MBAM16T2	215x190x100					1x SA40T2A1N032	1x SR06AC1NC16A300
MBAM25T2	215x190x100					1x SA40T2A1N032	1x SR06AC1NC25A300
MBAM32T2	215x190x100					1x SA40T2A1N032	1x SR06AC1NC32A300

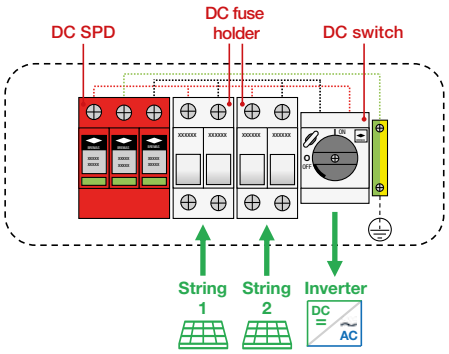
Electrical circuit

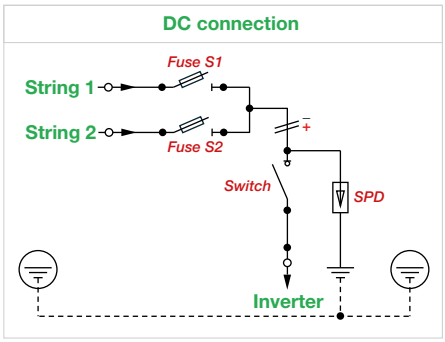
DC String boxes - 1 String



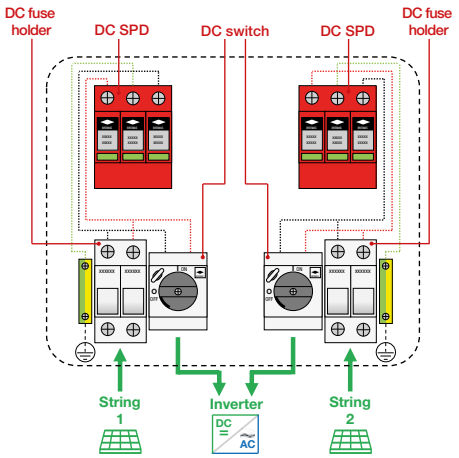


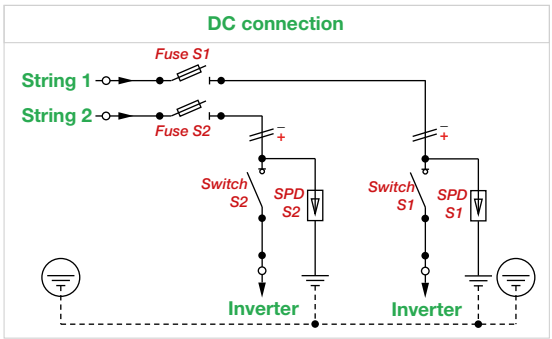
DC String boxes - 2 Parallel strings



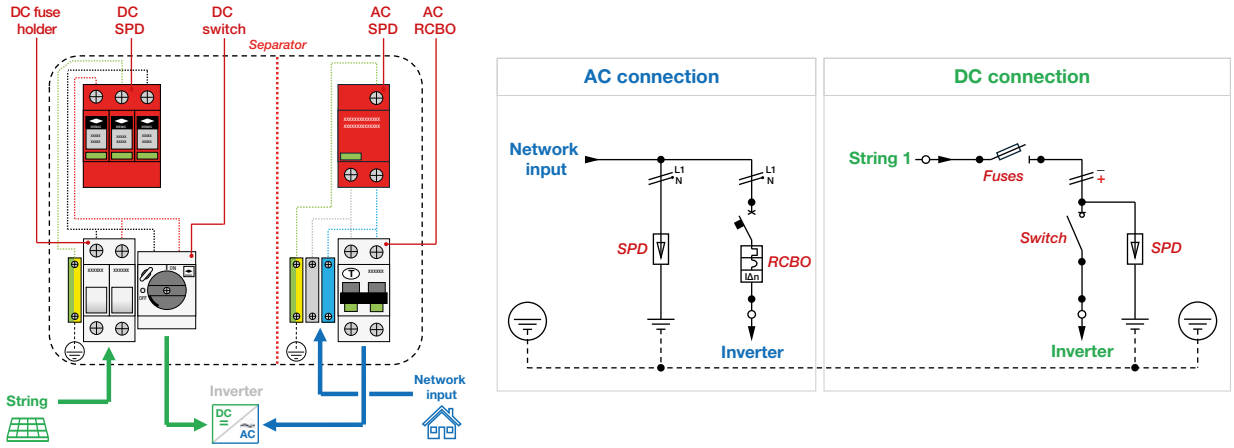


DC String boxes - 2 Single strings

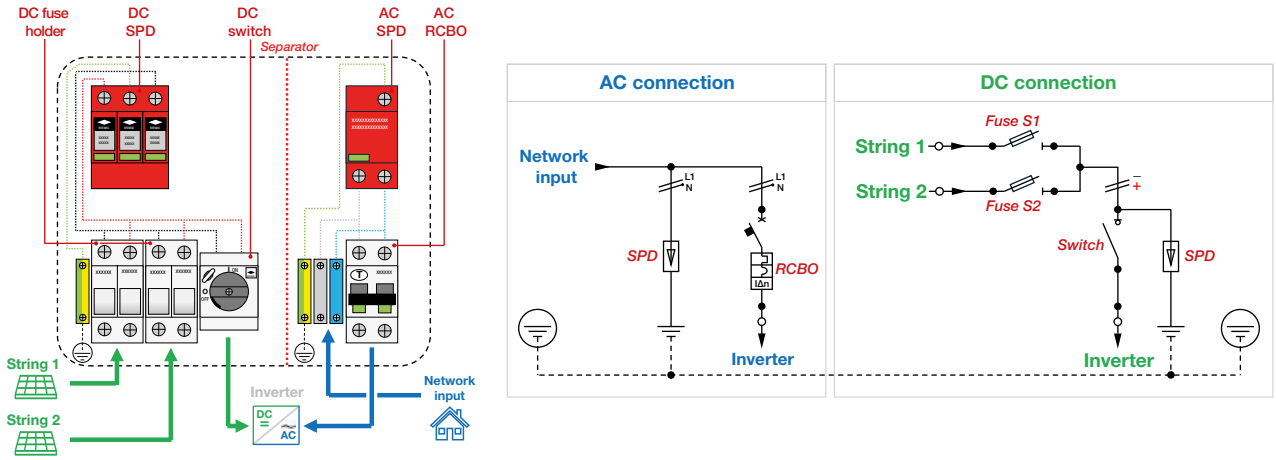




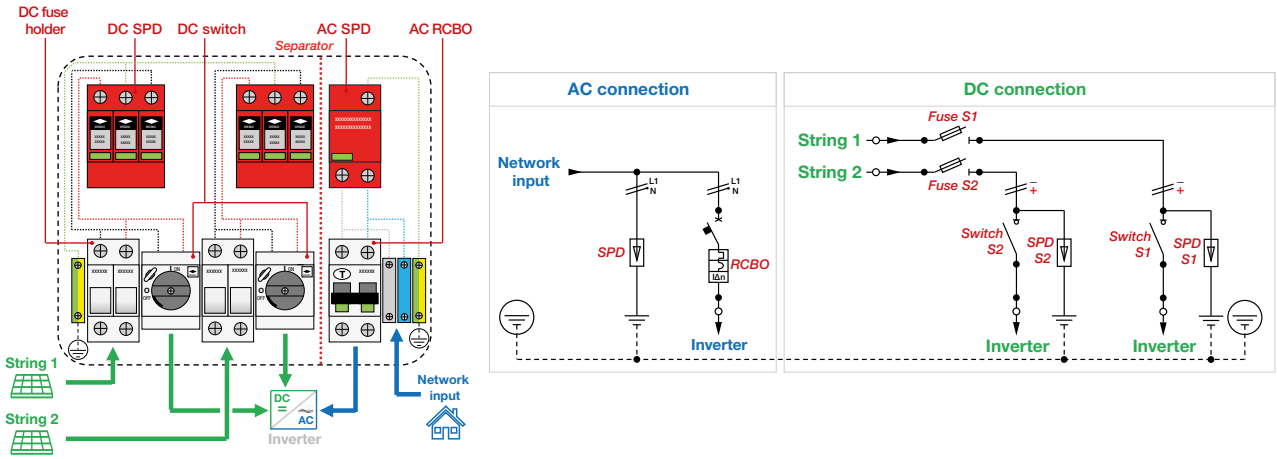
AC/DC String boxes - Single-phase, 1 String



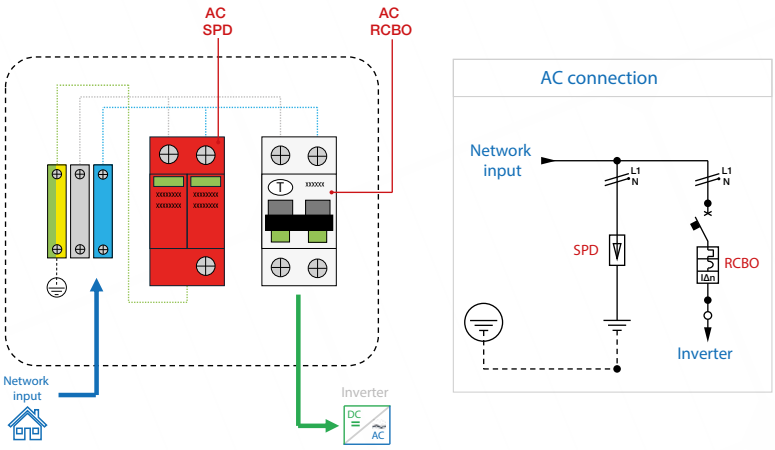
AC/DC String boxes - Single-phase, 2 Parallel strings



AC/DC String boxes - Single-phase, 2 Single strings



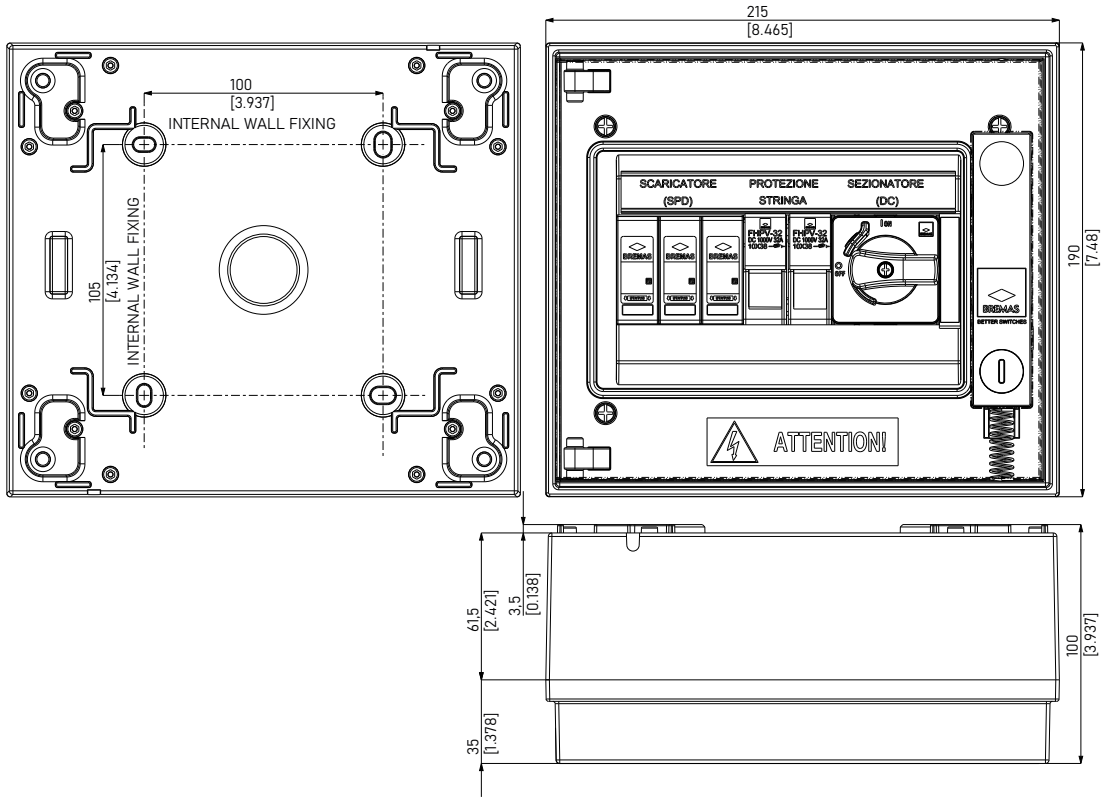
AC String boxes - Single-phase, 16-25-32 A



Features

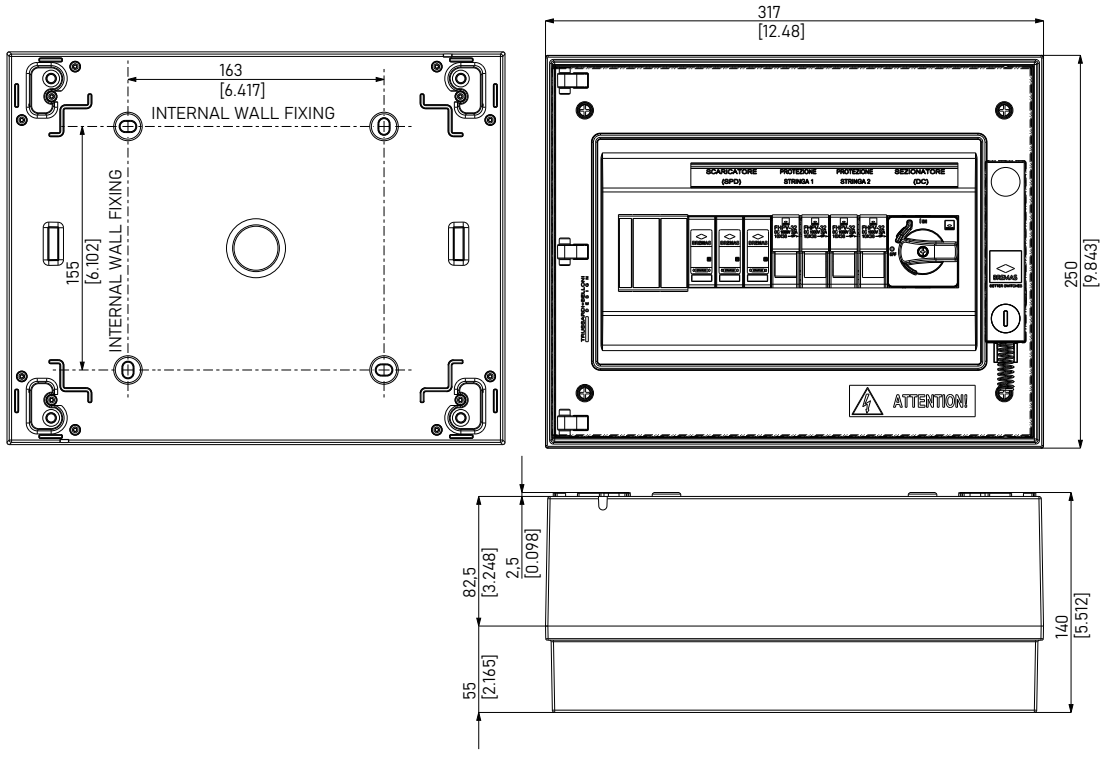
Dimensions
MB series - Size 1

Dimension in mm
in [inch]



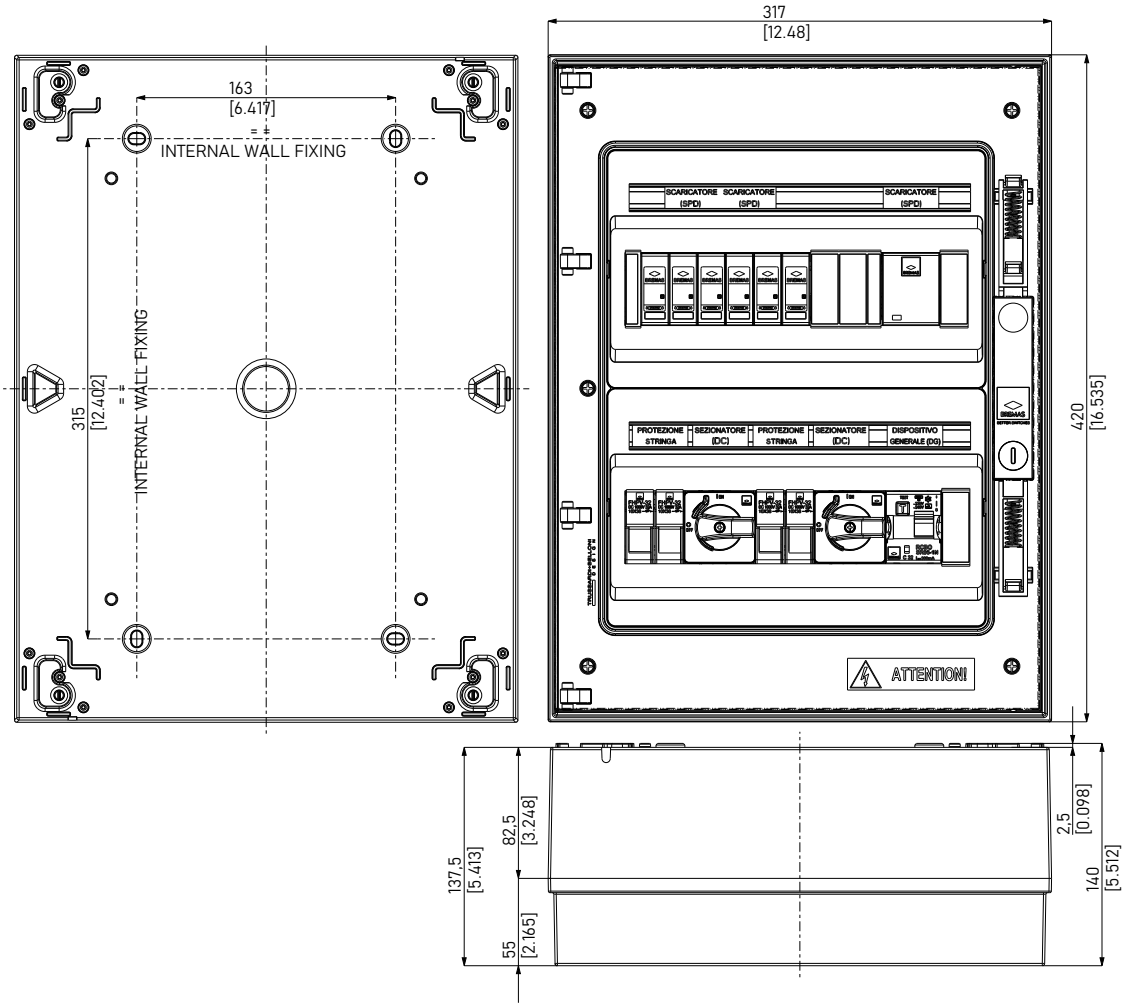
Dimensions
MB series - Size 2

Dimension in mm
in [inch]



Dimensions
MB series - Size 3

Dimension in mm
in [inch]



BREMAS

BETTER SWITCHES

DC DISCONNECT SWITCHES

DC switches up to 1500 Vdc 30A and 1000 Vdc 60A PV1

03

DP-DK-DM-DX-DU SERIES

DC disconnect switches

Highest standards of quality

The Bremas **DP-DK-DM-DX-DU** series of disconnect switches has been specifically designed for DC applications in the solar industry, with the most compact dimensions and the highest switching power on the market. Capable of breaking 60 A and 1000 Vdc, or 30 A at 1500 Vdc, with only 45 mm (1,77") of total depth, the **DP-DK-DM-DX-DU** series is the most complete and versatile range of disconnect switches for the solar industry.

- Rated current: 60 A
- Rated insulation voltage: 1500 V
- PV1 and PV2 tested
- Terminal protection degree IP20
- Different mounting possibilities
- Padlockable handles and knobs
- IP66, NEMA 4X and IP67

Discover more about our range of DC Switches DP-DK-DM-DX-DU Series. Visit our website or contact our technical team for further information.

Code structure

DX	150	30	1	2U	A	L	MVU5	E
Series	Rated Voltage	Rated Current	N° of inputs	Poles configuration	Handle position	Mounting type	Plate and/ or knob	Suffixes (optional)

A complete range for DC applications

DC
Disconnect
Switches

Selected materials

The materials we employ have been carefully studied: the contacts are built with an exclusive alloy specifically made. The plastic components are made with V0 materials, the highest self-extinguishing degree. The handles are made with UV rays resistant materials.

Designed for the inverters of the next generation

Thanks to the modular construction, a single switch can manage up to 8 DC inputs/MPPT, and up to 16 poles.

Best powerful contact system

Reduced the time of the electric arc and better guarantees its fast extinction.

Worldwide installations

Certified according to the European standard IEC EN 60947 (TÜV), the Chinese regulation (CCC), the American standard (UL), and the Australian standard (RCM).

5 PATENTS

5 Patents

The 5 Patents that protecting our DC disconnect switches are the result of our continuous R&D effort.

\+

3 PATENTS

Pending

Easy identification to positive (+) and negative (-) inputs

RED for Positive inputs/outputs. BLACK for Negative inputs/outputs.

Connection and easy wiring

The patented contacts solution permits to connect both the input and output cables in a linear way. The connecting terminals assure a trouble-free use of the screwdriver both in case of panel and base mounting. Designed for an optimal space exploitation: wires do not interfere with each other even in case of mounting adjacent to walls or other devices.

DP-DK-DM-DX Series - Product range for IEC market

Poles	Description		Series
1+1	1000 Vdc	12 A	DP10012
	750 Vdc	25 A	
	600 Vdc	32 A	
1+1	1200 Vdc	8 A	DK10016
	1000 Vdc	16 A	
	750 Vdc	32 A	
	500 Vdc	50 A	
1+1	1100 Vdc	12 A	DM10020
	1000 Vdc	20 A	
	750 Vdc	32 A	
	700 Vdc	40 A	
	500 Vdc	50 A	
1+1	1500 Vdc	10 A	DX12030
	1250 Vdc	20 A	
	1000 Vdc	30 A	
	800 Vdc	45 A	
1+1	1500 Vdc	15 A	DX12030..U
	1250 Vdc	25 A	
	110 Vdc	30 A	
	1000 Vdc	40 A	
	800 Vdc	50 A	
1+1	1500 Vdc	20 A	DX15030..U
	1300 Vdc	25 A	
	1250 Vdc	30 A	
	1000 Vdc	50 A	
1+1	1500 Vdc	30 A	DX15030..P*
	1000 Vdc	60 A	

* No TUV approved

PV1 RATED

DU Series - Product range for American market

Poles	Description		Series
1+1	600 Vdc	20 A	DU06020
1+1	1000 Vdc	20 A	DU10020
	600 Vdc	40 A	
1+1	1500 Vdc	20 A	DU15020
	1000 Vdc	40 A	
	800 Vdc	50 A	
2+1	1500 Vdc	30 A	DU15030
	1000 Vdc	50 A	

Technical data IEC EN 60947-3

					DP10012		DK10016		DM10020		DX12030	
Technical data IEC EN 60947-3	**Rated insulation voltage**	Ui	V		1500							
	Rated impulse withstand voltage	Uimp	kV		8							
	Rated thermal current	Ith	A		50							
	Power loss per layer at 20 A / 50 A		W		0,2 / 1,25							
	DC inputs											
	Utilization category				PV1	PV2	PV1	PV2	PV1	PV2	PV1	PV2
	Rated operational current at 1500 V	Ie	A		-	-	-	-	-	-	10	5
	Rated operational current at 1300 V	Ie	A		-	-	-	-	-	-	-	-
	Rated operational current at 1250 V	Ie	A		-	-	-	-	-	-	20	8
	Rated operational current at 1200 V	Ie	A		-	-	8	-	-	-	-	-
	Rated operational current at 1100 V	Ie	A		-	-	-	-	12	5	-	-
	Rated operational current at 1000 V	Ie	A		12	4	16	6	20	10	30	12
	Rated operational current at 800 V	Ie	A		-	-	-	-	-	-	45	17
	Rated operational current at 750 V	Ie	A		25	10	32	12	32	18	-	-
	Rated operational current at 700 V	Ie	A		-	-	-	16	40	20	-	25
	Rated operational current at 600 V	Ie	A		32	16	-	-	-	-	-	-
	Rated operational current at 500 V	Ie	A		-	-	50	-	50	-	-	-
	Short circuit protection											
	Rated conditional short-circuit current		kA		5							
	Max fuse size for short circuit protection	gPV	A		50							
	Rated short-time withstand current (1 s)	Icw	A		780							
	Rated short-circuit making capacity	Icm	kA		1,4							
	AC inputs											
	Utilization category				-		AC-21B		-		-	
	Rated insulation voltage	Ui	V		-		690		-		-	
	Rated impulse withstand voltage	Uimp	kV		-		8		-		-	
	Rated thermal current	Ith	A		-		63		-		-	
	Rated operational current	Ie	690 V		-		63		-		-	
Technical data UL 508i	**DC inputs**											
	Rated operational current at 1500 V	Ie	A		-	-	-	-	-	-	-	-
	Rated operational current at 1000 V	Ie	A		-	-	-	-	-	-	-	-
	Rated operational current at 800 V	Ie	A		-	-	-	-	-	-	-	-
	Rated operational current at 600 V	Ie	A		-	-	-	-	-	-	-	-
	Short circuit protection											
	Rated conditional short-circuit current		kA		-	-	-	-	-	-	-	-
	Max fuse size for short circuit protection	gPV	A		-	-	-	-	-	-	-	-
Mechanical characteristics	**Terminals**											
	Cross-section of flexible/solid wires	Max.	mm^2		2x 6							
			AWG		2x 10							
	Cross-section of wires with fork lug	Max.	mm^2		1x 16							
			AWG		1x 6							
	Screw type				M4 - PH2							
	Screw tightening torque	Nm			1,7 ±10%							
		lb·in			12 ±10%							
	Protection degree IEC 529 EN 60529											
	To the terminals				IP20							
	Ambient conditions											
	Pollution degree				2							
	Operational ambient temperature		°C		-40 ÷ +85							
	Storage ambient temperature		°C		-40 ÷ +85							
	Damp heat test IEC60068-2-30				90-100% RH at +55 °C							

DX12030..U		DX15030..U		DX15030..P*	
1500					
8					
50		50		60	
0,2 / 1,25					
PV1	PV2	PV1	PV2	PV1	PV2
15	6	20	8	30	12
-	-	25	10	-	-
25	10	30	12	-	-
-	-	-	-	-	-
30	12	-	-	-	-
40	16	50	20	60	25
50	20	-	30	-	-
-	-	-	-	-	-
-	30	-	40	-	-
-	-	-	-	-	-
-	-	-	-	-	-
5					
50		50		63	
780					
1,4					
-		-		-	
-		-		-	
-		-		-	
-		-		-	
-		-		-	

DU06020	DU10020	DU15020	DU15030
1500			
8			
50			
0,2 / 1,25			
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
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-	-	-	-
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-	-	-	-
-	-	-	-
-	-	-	-

-	-	20	30
-	20	40	50
-	-	50	-
20	40	-	-
5			
50			63

Suitable for use on a circuit capable of delivery not more than 5.000 rms symmetrical Amperes, 1500 Vdc max, when protected by fuses

2x 6
2x 10
1x 16
1x 6
M4 - PH2
1,7 ±10%
12 ±10%
IP20
2
-40 ÷ +85
-40 ÷ +85
90-100% RH at +55 °C

2x 6
2x 10
1x 16
1x 6
M4 - PH2
1,7 ±10%
12 ±10%
IP20
3
-40 ÷ +70
-40 ÷ +85
90-100% RH at +55 °C

* No TUV approved

Applications

Inverter	String combiner boxes	Energy storage systems (ESS)	PV Plant
	  		

Protection degree

The highest level of waterproof and dustproof in photovoltaic industry certified by TÜV and UL. IP66 / NEMA 4X as a standard, IP67 is optional. Please contact us for more information.

IP66 - Water resistant against powerful jets

To pass IP66 testing, the fixture must be able to protect against powerful water jets. Water projected in powerful jets (12.5 mm nozzle) against the enclosure from any direction shall have no harmful effects.
Test duration: at least 3 minutes.
Water volume: 100 litres per minute.
Pressure: 100 kPa at distance of 3 m.

NEMA 4X - Water resistant against water sprayed from a hose

The NEMA rating is an American standard that outlines the protection level against environmental conditions. The NEMA 4X level, much like the IP66, provides excellent protection against dust and water, and also offers corrosion resistance.

This protection is required for the main PV installation

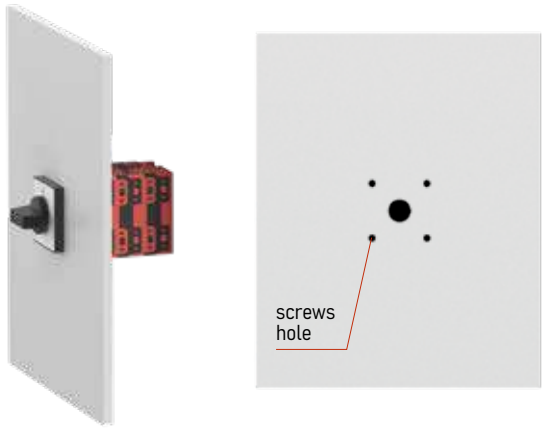
IP67 - Protected against complete temporary water submersion

To pass IP67 testing, ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time (up to 1 m of submersion).
Test duration: 30 minutes.
Immersion at depth of at least 1 m measured at bottom of device, and at least 15 cm measured at top of device.

This protection is required for floating PV installation

Fixing type

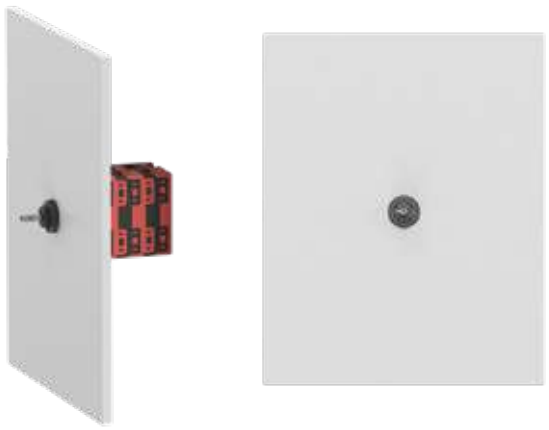
Panel mounting



Fixing by 4 screws

36x36 mm hole interaxis
48x48 mm hole interaxis

Main features
No bending of the switch



Fixing by M16 hole

Fixing with nut by M16 x 1,5 mm single hole

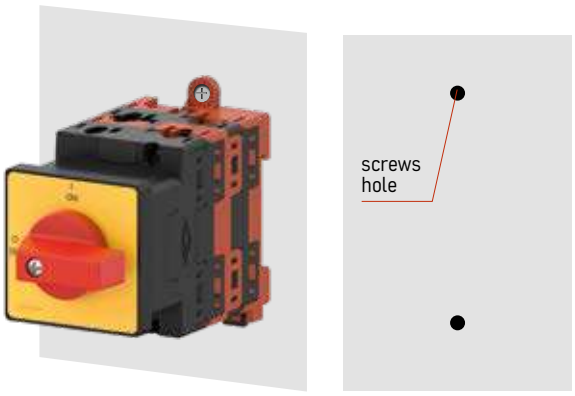
Main features
Reduced assembly time

Base mounting

Fixing on DIN rail

Mechanical fixing on DIN rail

Main features
Assembly tools not required



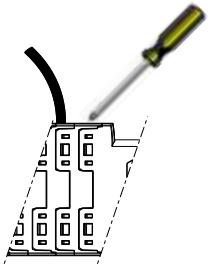
Fixing by 2 screws

68 mm hole interaxis

Main features
DIN rail not needed

Mounting type

Terminal screws orientation



Base mounting **Head up**

Product image	Description	Mounting type
	Back-side for DIN rail or 2 screws fixing For direct operation With pre-mounted knob and/or plate	E
	Back-side for DIN rail or 2 screw fixing For standard distribution boards (45 mm window) With pre-mounted knob	D

Panel mounting

Product image	Description	Mounting type
	Fixing M16 x 1,5 mm (L = 12 mm)	L
	Fixing 36x36 mm with 4 tapping screws	T
	Fixing 48x48 mm with 4 tapping screws	C

Double mounting

Product image	Description	Mounting type
	Back-side for DIN rail or 2 screws fixing Fixing M16 (L = 12 mm)	V
	Back-side for DIN rail or 2 screws fixing Fixing 36x36 mm with 4 tapping screws	W
	Back-side for DIN rail or 2 screws fixing Fixing 48x48 mm with 4 tapping screws	J

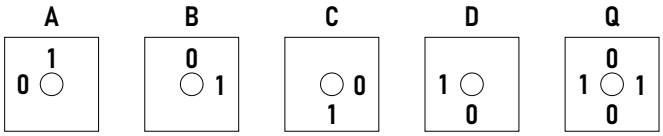
We are available for additional custom configurations. Feel free to reach out to discuss your specific needs.

Configuration

Handle position

Available for base mounting, panel mounting or double mounting

A = 9 (OFF) and 12 o'clock (ON)
B = 12 (OFF) and 3 o'clock (ON)
C = 3 (OFF) and 6 o'clock (ON)
D = 6 (OFF) and 9 o'clock (ON)
Q = 12 (OFF) and 3 o'clock (ON); 6 (OFF) and 9 o'clock (ON)



N° of inputs and poles configuration

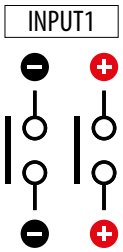
N° of inputs

A single switch can manage up to 6 inputs/MPPT for DP-DK-DM-DX series, and up to 4 inputs/MPPT for DU series, with two poles each one (negative and positive polarity).

Poles configuration

It is possible to realize different poles configurations.
The standard configuration supplied is "Poles 1+1".

Poles 1+1

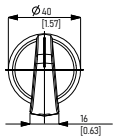
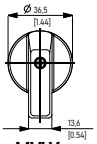
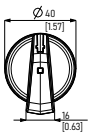


We are available for additional custom configurations. Feel free to reach out to discuss your specific needs.

Handles and plates

DP-DM-DK-DX Series

Panel mounting – Fixing by 4 screws – IP66 handles			
	 RV4	 RW4	 RV6
	 RW6	 RKU6S	 RL6S

Panel mounting / Double mounting – Fixing with nut by M16 x 1,5 mm single hole							
	Screw fixing 		Snap on fixing 				
	 MVU5	 MVU6	 MSU5	ML6	MKU6	ML5	MKU5

DU Series

Panel mounting - Fixing by 4 screws - NEMA 4X handles		
	 RV4UL	 RW4UL
	 RV6UL	 RW6UL

Panel mounting / Double mounting – Fixing with nut by M16 x 1,5 mm single hole					
	 MKU5	 MLU5	 MKU6	 MLU6
				

International approvals

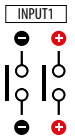
	International	USA	China*	Australia
Series				
DP10012	•		•	
DK10016	•		•	
DM10020	•		•	
DX12030	•		•	•
DX12030..U	•		•	•
DX15030..U	•		•	•
DX15030..P			•	
DU06020		•		
DU10020		•		
DU15020		•		
DU15030		•		

*On request

DP-DK-DM-DX Series

For standard distribution boards (45mm window)

N° of poles 1x (1+1)



Base mounting

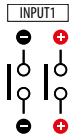
Pre-mounted knob

Fixing on DIN rail or by 2 screws

Series	PV1 cat. per input	PV1 cat. per input	Code	N° of layers
DP	600 V - 32 A	1000 V - 12 A	**DP100121E0ADRND**	3*
DK	750 V - 32 A	1000 V - 16 A	**DK100161E0ADRND**	3*
DM	700 V - 40 A	1000 V - 20 A	**DM100201E0ADRND**	3*
DX	1000 V - 30 A	1500 V - 10 A	**DX120301E0ADRND**	3*
DX..U	1000 V - 40 A	1500 V - 15 A	**DX120301EUADRND**	3*
	1000 V - 50 A	1500 V - 20 A	**DX150301EUADRND**	3*
DX..P	1000 V - 60 A	1500 V - 30 A	**DX150301EPADRND**	3*

* One layer is empty

N° of poles 1x (1+1)



Base mounting

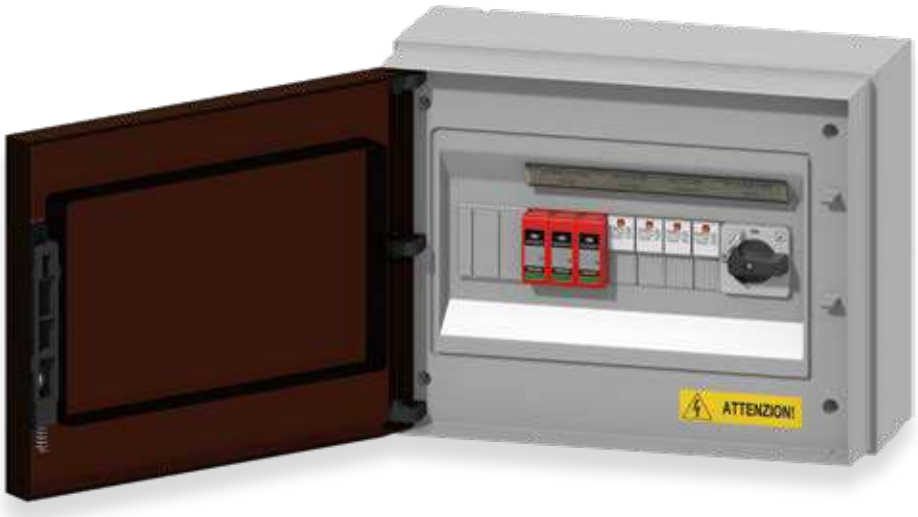
Pre-mounted knob - Padlockable

Fixing on DIN rail or by 2 screws

Series	PV1 cat. per input	PV1 cat. per input	Code	N° of layers
DP	600 V - 32 A	1000 V - 12 A	**DP100121E0ADRLE**	3*
DK	750 V - 32 A	1000 V - 16 A	**DK100161E0ADRLE**	3*
DM	700 V - 40 A	1000 V - 20 A	**DM100201E0ADRLE**	3*
DX	1000 V - 30 A	1500 V - 10 A	**DX120301E0ADRLE**	3*
DX..U	1000 V - 40 A	1500 V - 15 A	**DX120301EUADRLE**	3*
	1000 V - 50 A	1500 V - 20 A	**DX150301EUADRLE**	3*
DX..P	1000 V - 60 A	1500 V - 30 A	**DX150301EPADRLE**	3*

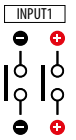
* One layer is empty

Example of applications



DP-DK-DM-DX Series - For direct operation

N° of poles 1x (1+1)



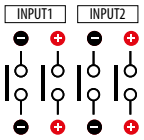
Base mounting - Pre-mounted knob

Fixing on DIN rail or by 2 screws

Series	PV1 cat. per input	PV1 cat. per input	Code	N° of layers
DP	600 V - 32 A	1000 V - 12 A	DP10012120AERW4E	2
DK	750 V - 32 A	1000 V - 16 A	DK10016120AERW4E	2
DM	700 V - 40 A	1000 V - 20 A	DM10020120AERW4E	2
DX	1000 V - 30 A	1500 V - 10 A	DX120301E0AERW4E	3*
DX..U	1000 V - 40 A	1500 V - 15 A	DX120301EUAERW4E	3*
	1000 V - 50 A	1500 V - 20 A	DX150301EUAERW4E	3*
DX..P	1000 V - 60 A	1500 V - 30 A	DX150301EPAERW4E	3*

* One layer is empty

N° of poles 2x (1+1)



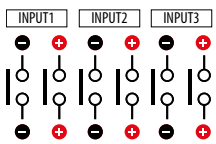
Base mounting - Pre-mounted knob

Fixing on DIN rail or by 2 screws

Series	PV1 cat. per input	PV1 cat. per input	Code	N° of layers
DP	600 V - 32 A	1000 V - 12 A	DP10012220AERW4E	4
DK	750 V - 32 A	1000 V - 16 A	DK10016220AERW4E	4
DM	700 V - 40 A	1000 V - 20 A	DM10020220AERW4E	4
DX	1000 V - 30 A	1500 V - 10 A	DX120302E0AERW4E	5*
DX..U	1000 V - 40 A	1500 V - 15 A	DX120302EUAERW4E	5*
	1000 V - 50 A	1500 V - 20 A	DX150302EUAERW4E	5*
DX..P	1000 V - 60 A	1500 V - 30 A	DX150302EPAERW4E	5*

* One layer is empty

N° of poles 3x (1+1)



Base mounting - Pre-mounted knob

Fixing on DIN rail or by 2 screws

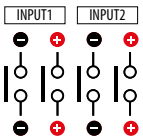
Series	PV1 cat. per input	PV1 cat. per input	Code	N° of layers
DP	600 V - 32 A	1000 V - 12 A	DP10012320AERW4E	6
DK	750 V - 32 A	1000 V - 16 A	DK10016320AERW4E	6
DM	700 V - 40 A	1000 V - 20 A	DM10020320AERW4E	6
DX	1000 V - 30 A	1500 V - 10 A	DX120303E0AERW4E	7*
DX..U	1000 V - 40 A	1500 V - 15 A	DX120303EUAERW4E	7*
	1000 V - 50 A	1500 V - 20 A	DX150303EUAERW4E	7*
DX..P	1000 V - 60 A	1500 V - 30 A	DX150303EPAERW4E	7*

* One layer is empty

We are available for additional custom configurations. Feel free to reach out to discuss your specific needs.

DU Series - For direct operation

N° of poles 1x (1+1)



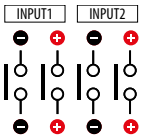
Base mounting - Pre-mounted knob

Fixing on DIN rail or by 2 screws

Series	UL per input	UL per input	Code	N° of layers
DU	600 V - 20 A	-	**DU06020120AERW4UL**	2
DU	600 V - 40 A	1000 V - 20 A	**DU10020120AERW4UL**	2
DU	1000 V - 40 A	1500 V - 20 A	**DU15020120AERW4UL**	2
DU*	1000 V - 50 A	1500 V - 30 A	**DU15030130AERW4UL**	3

* N° of poles 2x (2+1)

N° of poles 2x (1+1)



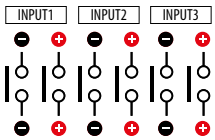
Base mounting - Pre-mounted knob

Fixing on DIN rail or by 2 screws

Series	UL per input	UL per input	Code	N° of layers
DU	600 V - 20 A	-	**DU06020220AERW4UL**	4
DU	600 V - 40 A	1000 V - 20 A	**DU10020220AERW4UL**	4
DU	1000 V - 40 A	1500 V - 20 A	**DU15020220AERW4UL**	4
DU*	1000 V - 50 A	1500 V - 30 A	**DU15030230AERW4UL**	6

* N° of poles 2x (2+1)

N° of poles 3x (1+1)



Base mounting - Pre-mounted knob

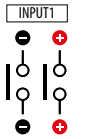
Fixing on DIN rail or by 2 screws

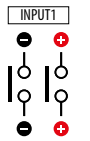
Series	UL per input	UL per input	Code	N° of layers
DU	600 V - 20 A	-	**DU06020320AERW4UL**	6
DU	600 V - 40 A	1000 V - 20 A	**DU10020320AERW4UL**	6
DU	1000 V - 40 A	1500 V - 20 A	**DU15020320AERW4UL**	6
DU*	1000 V - 50 A	1500 V - 30 A	**DU15030330AERW4UL**	9

* N° of poles 3x (2+1)

We are available for additional custom configurations. Feel free to reach out to discuss your specific needs.

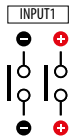
DP-DK-DM-DX Series - 1 input / MPPT

N° of poles 1x (1+1)			Panel mounting			
						
			4 screws 36x36 mm	Single hole M16		
Series	**PV1 cat. per input**	**PV1 cat. per input**	**Code**	**Code**	**Code**	**N° of layers**
DP	600 V - 32 A	1000 V - 12 A	**DP10012120ATRV4E**	**DP10012120ALMVU5E**	**DP10012120ALMVU6E**	2
DK	750 V - 32 A	1000 V - 16 A	**DK10016120ATRV4E**	**DK10016120ALMVU5E**	**DK10016120ALMVU6E**	2
DM	700 V - 40 A	1000 V - 20 A	**DM10020120ATRV4E**	**DM10020120ALMVU5E**	**DM10020120ALMVU6E**	2
DX	1000 V - 30 A	1500 V - 10 A	**DX12030120ATRV4E**	**DX12030120ALMVU5E**	**DX12030120ALMVU6E**	2
DX..U	1000 V - 40 A	1500 V - 15 A	**DX1203012UATRV4E**	**DX1203012UALMVU5E**	**DX1203012UALMVU6E**	2
	1000 V - 50 A	1500 V - 20 A	**DX1503012UATRV4E**	**DX1503012UALMVU5E**	**DX1503012UALMVU6E**	2
DX..P	1000 V - 60 A	1500 V - 30 A	**DX1503012PATRV4E**	**DX1503012PALMVU5E**	**DX1503012PALMVU6E**	2

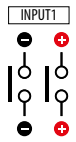
N° of poles 1x (1+1)			Panel mounting			
						
			4 screws 36x36 mm	Single hole M16		
Series	**PV1 cat. per input**	**PV1 cat. per input**	**Code**	**Code**	**Code**	**N° of layers**
DP	600 V - 32 A	1000 V - 12 A	**DP10012120ATRKU6SE**	**DP10012120ALML5E**	**DP10012120ALMKU6E**	2
DK	750 V - 32 A	1000 V - 16 A	**DK10016120ATRKU6SE**	**DK10016120ALML5E**	**DK10016120ALMKU6E**	2
DM	700 V - 40 A	1000 V - 20 A	**DM10020120ATRKU6SE**	**DM10020120ALML5E**	**DM10020120ALMKU6E**	2
DX	1000 V - 30 A	1500 V - 10 A	**DX12030120ATRKU6SE**	**DX12030120ALML5E**	**DX12030120ALMKU6E**	2
DX..U	1000 V - 40 A	1500 V - 15 A	**DX1203012UATRKU6SE**	**DX1203012UALML5E**	**DX1203012UALMKU6E**	2
	1000 V - 50 A	1500 V - 20 A	**DX1503012UATRKU6SE**	**DX1503012UALML5E**	**DX1503012UALMKU6E**	2
DX..P	1000 V - 60 A	1500 V - 30 A	**DX1503012PATRKU6SE**	**DX1503012PALML5E**	**DX1503012PALMKU6E**	2

We are available for additional custom configurations. Feel free to reach out to discuss your specific needs.

DU Series - 1 input / MPPT

N° of poles 1x (1+1)			Panel mounting			
			 4 screws 36x36 mm		 Single hole M16	
Series	**UL per input**	**UL per input**	**Code**	**Code**	**Code**	**N° of layers**
DU	600 V - 20 A	-	**DU06020120ATRV4UL**	**DU06020120ALMKU5**	**DU06020120ALMLU5**	2
DU	600 V - 40 A	1000 V - 20 A	**DU10020120ATRV4UL**	**DU10020120ALMKU5**	**DU10020120ALMLU5**	2
DU	1000 V - 40 A	1500 V - 20 A	**DU15020120ATRV4UL**	**DU15020120ALMKU5**	**DU15020120ALMLU5**	2
DU*	1000 V - 50 A	1500 V - 30 A	**DU15030130ATRV4UL**	**DU15030130ALMKU5**	**DU15030130ALMLU5**	3

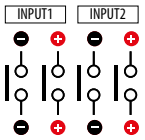
* N° of poles 1x (2+1)

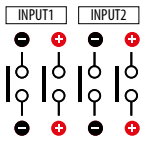
N° of poles 1x (1+1)			Panel mounting			
			 4 screws 36x36 mm		 Single hole M16	
Series	**UL per input**	**UL per input**	**Code**	**Code**	**Code**	**N° of layers**
DU	600 V - 20 A	-	**DU06020120ATRW4UL**	**DU06020120ALMKU6**	**DU06020120ALMLU6**	2
DU	600 V - 40 A	1000 V - 20 A	**DU10020120ATRW4UL**	**DU10020120ALMKU6**	**DU10020120ALMLU6**	2
DU	1000 V - 40 A	1500 V - 20 A	**DU15020120ATRW4UL**	**DU15020120ALMKU6**	**DU15020120ALMLU6**	2
DU*	1000 V - 50 A	1500 V - 30 A	**DU15030130ATRW4UL**	**DU15030130ALMKU6**	**DU15030130ALMLU6**	3

* N° of poles 1x (2+1)

We are available for additional custom configurations. Feel free to reach out to discuss your specific needs.

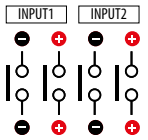
DP-DK-DM-DX Series - 2 inputs / MPPT

N° of poles 2x (1+1)			Panel mounting			
						
			4 screws 36x36 mm	Single hole M16		
Series	**PV1 cat. per input**	**PV1 cat. per input**	**Code**	**Code**	**Code**	**N° of layers**
DP	600 V - 32 A	1000 V - 12 A	**DP10012220ATRV4E**	**DP10012220ALMVU5E**	**DP10012220ALMVU6E**	4
DK	750 V - 32 A	1000 V - 16 A	**DK10016220ATRV4E**	**DK10016220ALMVU5E**	**DK10016220ALMVU6E**	4
DM	700 V - 40 A	1000 V - 20 A	**DM10020220ATRV4E**	**DM10020220ALMVU5E**	**DM10020220ALMVU6E**	4
DX	1000 V - 30 A	1500 V - 10 A	**DX12030220ATRV4E**	**DX12030220ALMVU5E**	**DX12030220ALMVU6E**	4
DX..U	1000 V - 40 A	1500 V - 15 A	**DX1203022UATRV4E**	**DX1203022UALMVU5E**	**DX1203022UALMVU6E**	4
	1000 V - 50 A	1500 V - 20 A	**DX1503022UATRV4E**	**DX1503022UALMVU5E**	**DX1503022UALMVU6E**	4
DX..P	1000 V - 60 A	1500 V - 30 A	**DX1503022PATRV4E**	**DX1503022PALMVU5E**	**DX1503022PALMVU6E**	4

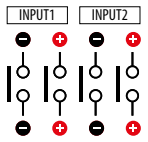
N° of poles 2x (1+1)			Panel mounting			
						
			4 screws 36x36 mm	Single hole M16		
Series	**PV1 cat. per input**	**PV1 cat. per input**	**Code**	**Code**	**Code**	**N° of layers**
DP	600 V - 32 A	1000 V - 12 A	**DP10012220ATRKU6SE**	**DP10012220ALML5E**	**DP10012220ALMKU6E**	4
DK	750 V - 32 A	1000 V - 16 A	**DK10016220ATRKU6SE**	**DK10016220ALML5E**	**DK10016220ALMKU6E**	4
DM	700 V - 40 A	1000 V - 20 A	**DM10020220ATRKU6SE**	**DM10020220ALML5E**	**DM10020220ALMKU6E**	4
DX	1000 V - 30 A	1500 V - 10 A	**DX12030220ATRKU6SE**	**DX12030220ALML5E**	**DX12030220ALMKU6E**	4
DX..U	1000 V - 40 A	1500 V - 15 A	**DX1203022UATRKU6SE**	**DX1203022UALML5E**	**DX1203022UALMKU6E**	4
	1000 V - 50 A	1500 V - 20 A	**DX1503022UATRKU6SE**	**DX1503022UALML5E**	**DX1503022UALMKU6E**	4
DX..P	1000 V - 60 A	1500 V - 30 A	**DX1503022PATRKU6SE**	**DX1503022PALML5E**	**DX1503022PALMKU6E**	4

We are available for additional custom configurations. Feel free to reach out to discuss your specific needs.

DU Series - 2 inputs / MPPT

N° of poles 2x (1+1)		Panel mounting			
		 4 screws 36x36 mm		 Single hole M16	
Series	**UL per input**	**UL per input**	**Code**	**Code**	**Code**	**N° of layers**
DU	600 V - 20 A	-	**DU06020220ATRV4UL**	**DU06020220ALMKU5**	**DU06020220ALMLU5**	4
DU	600 V - 40 A	1000 V - 20 A	**DU10020220ATRV4UL**	**DU10020220ALMKU5**	**DU10020220ALMLU5**	4
DU	1000 V - 40 A	1500 V - 20 A	**DU15020220ATRV4UL**	**DU15020220ALMKU5**	**DU15020220ALMLU5**	4
DU*	1000 V - 50 A	1500 V - 30 A	**DU15030230ATRV4UL**	**DU15030230ALMKU5**	**DU15030230ALMLU5**	6

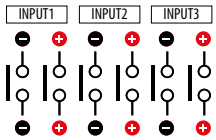
* N° of poles 2x (2+1)

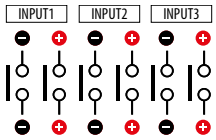
N° of poles 2x (1+1)		Panel mounting			
		 4 screws 36x36 mm		 Single hole M16	
Series	**UL per input**	**UL per input**	**Code**	**Code**	**Code**	**N° of layers**
DU	600 V - 20 A	-	**DU06020220ATRW4UL**	**DU06020220ALMKU6**	**DU06020220ALMLU6**	4
DU	600 V - 40 A	1000 V - 20 A	**DU10020220ATRW4UL**	**DU10020220ALMKU6**	**DU10020220ALMLU6**	4
DU	1000 V - 40 A	1500 V - 20 A	**DU15020220ATRW4UL**	**DU15020220ALMKU6**	**DU15020220ALMLU6**	4
DU*	1000 V - 50 A	1500 V - 30 A	**DU15030230ATRW4UL**	**DU15030230ALMKU6**	**DU15030230ALMLU6**	6

* N° of poles 2x (2+1)

We are available for additional custom configurations. Feel free to reach out to discuss your specific needs.

DP-DK-DM-DX Series - 3 inputs / MPPT

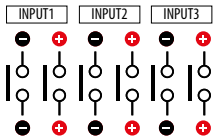
N° of poles 3x (1+1)			Panel mounting			
			 4 screws 36x36 mm		 Single hole M16	
Series	**PV1 cat. per input**	**PV1 cat. per input**	**Code**	**Code**	**Code**	**N° of layers**
DP	600 V - 32 A	1000 V - 12 A	**DP10012320ATRV4E**	**DP10012320ALMVU5E**	**DP10012320ALMVU6E**	6
DK	750 V - 32 A	1000 V - 16 A	**DK10016320ATRV4E**	**DK10016320ALMVU5E**	**DK10016320ALMVU6E**	6
DM	700 V - 40 A	1000 V - 20 A	**DM10020320ATRV4E**	**DM10020320ALMVU5E**	**DM10020320ALMVU6E**	6
DX	1000 V - 30 A	1500 V - 10 A	**DX12030320ATRV4E**	**DX12030320ALMVU5E**	**DX12030320ALMVU6E**	6
DX..U	1000 V - 40 A	1500 V - 15 A	**DX1203032UATRV4E**	**DX1203032UALMVU5E**	**DX1203032UALMVU6E**	6
	1000 V - 50 A	1500 V - 20 A	**DX1503032UATRV4E**	**DX1503032UALMVU5E**	**DX1503032UALMVU6E**	6
DX..P	1000 V - 60 A	1500 V - 30 A	**DX1503032PATRV4E**	**DX1503032PALMVU5E**	**DX1503032PALMVU6E**	6

N° of poles 3x (1+1)			Panel mounting			
			 4 screws 36x36 mm		 Single hole M16	
Series	**PV1 cat. per input**	**PV1 cat. per input**	**Code**	**Code**	**Code**	**N° of layers**
DP	600 V - 32 A	1000 V - 12 A	**DP10012320ATRKU6SE**	**DP10012320ALML5E**	**DP10012320ALMKU6E**	6
DK	750 V - 32 A	1000 V - 16 A	**DK10016320ATRKU6SE**	**DK10016320ALML5E**	**DK10016320ALMKU6E**	6
DM	700 V - 40 A	1000 V - 20 A	**DM10020320ATRKU6SE**	**DM10020320ALML5E**	**DM10020320ALMKU6E**	6
DX	1000 V - 30 A	1500 V - 10 A	**DX12030320ATRKU6SE**	**DX12030320ALML5E**	**DX12030320ALMKU6E**	6
DX..U	1000 V - 40 A	1500 V - 15 A	**DX1203032UATRKU6SE**	**DX1203032UALML5E**	**DX1203032UALMKU6E**	6
	1000 V - 50 A	1500 V - 20 A	**DX1503032UATRKU6SE**	**DX1503032UALML5E**	**DX1503032UALMKUE**	6
DX..P	1000 V - 60 A	1500 V - 30 A	**DX1503032PATRKU6SE**	**DX1503032PALML5E**	**DX1503032PALMKUE**	6

We are available for additional custom configurations. Feel free to reach out to discuss your specific needs.

DU Series - 3 inputs / MPPT

N° of poles 3x (1+1)



Panel mounting

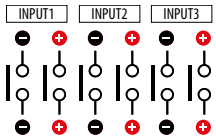
4 screws 36x36 mm

Single hole M16

Series	UL per input	UL per input	Code	Code	Code	N° of layers
DU	600 V - 20 A	-	DU06020320ATRV4UL	DU06020320ALMKU5	DU06020320ALMLU5	6
DU	600 V - 40 A	1000 V - 20 A	DU10020320ATRV4UL	DU10020320ALMKU5	DU10020320ALMLU5	6
DU	1000 V - 40 A	1500 V - 20 A	DU15020320ATRV4UL	DU15020320ALMKU5	DU15020320ALMLU5	6
DU*	1000 V - 50 A	1500 V - 30 A	DU15030330ATRV4UL	DU15030330ALMKU5	DU15030330ALMLU5	9

* N° of poles 3x (2+1)

N° of poles 3x (1+1)



Panel mounting

4 screws 36x36 mm

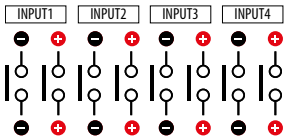
Single hole M16

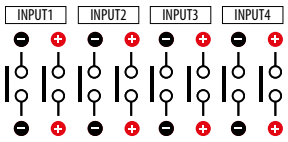
Series	UL per input	UL per input	Code	Code	Code	N° of layers
DU	600 V - 20 A	-	DU06020320ATRW4UL	DU06020320ALMKU6	DU06020320ALMLU6	6
DU	600 V - 40 A	1000 V - 20 A	DU10020320ATRW4UL	DU10020320ALMKU6	DU10020320ALMLU6	6
DU	1000 V - 40 A	1500 V - 20 A	DU15020320ATRW4UL	DU15020320ALMKU6	DU15020320ALMLU6	6
DU*	1000 V - 50 A	1500 V - 30 A	DU15030330ATRW4UL	DU15030330ALMKU6	DU15030330ALMLU6	9

* N° of poles 3x (2+1)

We are available for additional custom configurations. Feel free to reach out to discuss your specific needs.

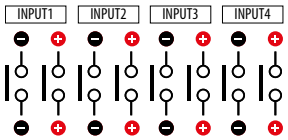
DP-DK-DM-DX Series - 4 inputs / MPPT

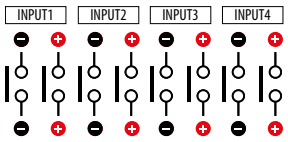
N° of poles 4x (1+1)			Panel mounting	Double mounting		
			 4 screws 36x36 mm	 Single hole M16		
Series	**PV1 cat. per input**	**PV1 cat. per input**	**Code**	**Code**	**Code**	**N° of layers**
DP	600 V - 32 A	1000 V - 12 A	**DP10012420ATRV4E**	**DP10012420AVMVU5E**	**DP10012420AVMVU6E**	8
DK	750 V - 32 A	1000 V - 16 A	**DK10016420ATRV4E**	**DK10016420AVMVU5E**	**DK10016420AVMVU6E**	8
DM	700 V - 40 A	1000 V - 20 A	**DM10020420ATRV4E**	**DM10020420AVMVU5E**	**DM10020420AVMVU6E**	8
DX	1000 V - 30 A	1500 V - 10 A	**DX12030420ATRV4E**	**DX12030420AVMVU5E**	**DX12030420AVMVU6E**	8
DX..U	1000 V - 40 A	1500 V - 15 A	**DX1203042UATRV4E**	**DX1203042UAVMVU5E**	**DX1203042UAVMVU6E**	8
	1000 V - 50 A	1500 V - 20 A	**DX1503042UATRV4E**	**DX1503042UAVMVU5E**	**DX1503042UAVMVU6E**	8
DX..P	1000 V - 60 A	1500 V - 30 A	**DX1503042PATRV4E**	**DX1503042PAVMVU5E**	**DX1503042PAVMVU6E**	8

N° of poles 4x (1+1)			Panel mounting	Double mounting		
			 4 screws 36x36 mm	 Single hole M16		
Series	**PV1 cat. per input**	**PV1 cat. per input**	**Code**	**Code**	**Code**	**N° of layers**
DP	600 V - 32 A	1000 V - 12 A	**DP10012420ATRKU6SE**	**DP10012420AVML5E**	**DP10012420AVMKU6E**	8
DK	750 V - 32 A	1000 V - 16 A	**DK10016420ATRKU6SE**	**DK10016420AVML5E**	**DK10016420AVMKU6E**	8
DM	700 V - 40 A	1000 V - 20 A	**DM10020420ATRKU6SE**	**DM10020420AVML5E**	**DM10020420AVMKU6E**	8
DX	1000 V - 30 A	1500 V - 10 A	**DX12030420ATRKU6SE**	**DX12030420AVML5E**	**DX12030420AVMKU6E**	8
DX..U	1000 V - 40 A	1500 V - 15 A	**DX1203042UATRKU6SE**	**DX1203042UAVML5E**	**DX1203042UAVMKU6E**	8
	1000 V - 50 A	1500 V - 20 A	**DX1503042UATRKU6SE**	**DX1503042UAVML5E**	**DX1503042UAVMKU6E**	8
DX..P	1000 V - 60 A	1500 V - 30 A	**DX1503042PATRKU6SE**	**DX1503042PAVML5E**	**DX1503042PAVMKU6E**	8

We are available for additional custom configurations. Feel free to reach out to discuss your specific needs.

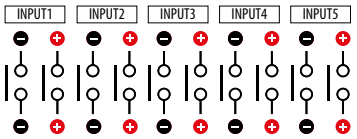
DU Series - 4 inputs / MPPT

N° of poles 4x (1+1)			Panel mounting	Double mounting		
			 4 screws 36x36 mm	 Single hole M16		
Series	**UL per input**	**UL per input**	**Code**	**Code**	**Code**	**N° of layers**
DU	600 V - 20 A	-	**DU06020420ATRV4UL**	**DU06020420AVMKU5**	**DU06020420AVMLU5**	8
DU	600 V - 40 A	1000 V - 20 A	**DU10020420ATRV4UL**	**DU10020420AVMKU5**	**DU10020420AVMLU5**	8
DU	1000 V - 40 A	1500 V - 20 A	**DU15020420ATRV4UL**	**DU15020420AVMKU5**	**DU15020420AVMLU5**	8

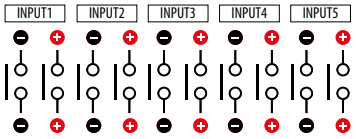
N° of poles 4x (1+1)			Panel mounting	Double mounting		
			 4 screws 36x36 mm	 Single hole M16		
Series	**UL per input**	**UL per input**	**Code**	**Code**	**Code**	**N° of layers**
DU	600 V - 20 A	-	**DU06020420ATRW4UL**	**DU06020420AVMKU6**	**DU06020420AVMLU6**	8
DU	600 V - 40 A	1000 V - 20 A	**DU10020420ATRW4UL**	**DU10020420AVMKU6**	**DU10020420AVMLU6**	8
DU	1000 V - 40 A	1500 V - 20 A	**DU15020420ATRW4UL**	**DU15020420AVMKU6**	**DU15020420AVMLU6**	8

We are available for additional custom configurations. Feel free to reach out to discuss your specific needs.

DP-DK-DM-DX Series - 5 inputs / MPPT

N° of poles 5x (1+1)	Panel mounting	Double mounting		
	 4 screws 36x36 mm	 Single hole M16		

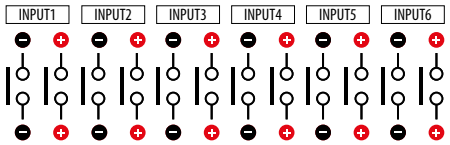
Series	PV1 cat. per input	PV1 cat. per input	Code	Code	Code	N° of layers
DP	600 V - 32 A	1000 V - 12 A	DP10012520ATRV4E	DP10012520AVMVU5E	DP10012520AVMVU6E	10
DK	750 V - 32 A	1000 V - 16 A	DK10016520ATRV4E	DK10016520AVMVU5E	DK10016520AVMVU6E	10
DM	700 V - 40 A	1000 V - 20 A	DM10020520ATRV4E	DM10020520AVMVU5E	DM10020520AVMVU6E	10
DX	1000 V - 30 A	1500 V - 10 A	DX12030520ATRV4E	DX12030520AVMVU5E	DX12030520AVMVU6E	10
DX..U	1000 V - 40 A	1500 V - 15 A	DX1203052UATRV4E	DX1203052UAVMVU5E	DX1203052UAVMVU6E	10
	1000 V - 50 A	1500 V - 20 A	DX1503052UATRV4E	DX1503052UAVMVU5E	DX1503052UAVMVU6E	10
DX..P	1000 V - 60 A	1500 V - 30 A	DX1503052PATRV4E	DX1503052PAVMVU5E	DX1503052PAVMVU6E	10

N° of poles 5x (1+1)	Panel mounting	Double mounting		
	 4 screws 36x36 mm	 Single hole M16		

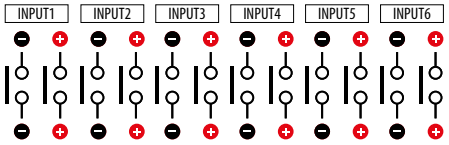
Series	PV1 cat. per input	PV1 cat. per input	Code	Code	Code	N° of layers
DP	600 V - 32 A	1000 V - 12 A	DP10012520ATRKU6SE	DP10012520AVML5E	DP10012520AVMKU6E	10
DK	750 V - 32 A	1000 V - 16 A	DK10016520ATRKU6SE	DK10016520AVML5E	DK10016520AVMKU6E	10
DM	700 V - 40 A	1000 V - 20 A	DM10020520ATRKU6SE	DM10020520AVML5E	DM10020520AVMKU6E	10
DX	1000 V - 30 A	1500 V - 10 A	DX12030520ATRKU6SE	DX12030520AVML5E	DX12030520AVMKU6E	10
DX..U	1000 V - 40 A	1500 V - 15 A	DX1203052UATRKU6SE	DX1203052UAVML5E	DX1203052UAVMKU6E	10
	1000 V - 50 A	1500 V - 20 A	DX1503052UATRKU6SE	DX1503052UAVML5E	DX1503052UAVMKU6E	10
DX..P	1000 V - 60 A	1500 V - 30 A	DX1503052PATRKU6SE	DX1503052PAVML5E	DX1503052PAVMKU6E	10

We are available for additional custom configurations. Feel free to reach out to discuss your specific needs.

DP-DK-DM-DX Series - 6 inputs / MPPT

N° of poles 6x (1+1)	Panel mounting	Double mounting	
	 4 screws 36x36 mm	 Single hole M16	

Series	PV1 cat. per input	PV1 cat. per input	Code	Code	Code	N° of layers
DP	600 V - 32 A	1000 V - 12 A	DP10012620ATRV4E	DP10012620AVMVU5E	DP10012620AVMVU6E	12
DK	750 V - 32 A	1000 V - 16 A	DK10016620ATRV4E	DK10016620AVMVU5E	DK10016620AVMVU6E	12
DM	700 V - 40 A	1000 V - 20 A	DM10020620ATRV4E	DM10020620AVMVU5E	DM10020620AVMVU6E	12
DX	1000 V - 30 A	1500 V - 10 A	DX12030620ATRV4E	DX12030620AVMVU5E	DX12030620AVMVU6E	12
DX..U	1000 V - 40 A	1500 V - 15 A	DX1203062UATRV4E	DX1203062UAVMVU5E	DX1203062UAVMVU6E	12
	1000 V - 50 A	1500 V - 20 A	DX1503062UATRV4E	DX1503062UAVMVU5E	DX1503062UAVMVU6E	12
DX..P	1000 V - 60 A	1500 V - 30 A	DX1503062PATRV4E	DX1503062PAVMVU5E	DX1503062PAVMVU6E	12

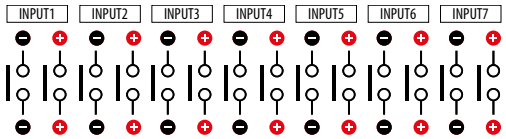
N° of poles 6x (1+1)	Panel mounting	Double mounting	
	 4 screws 36x36 mm	 Single hole M16	

Series	PV1 cat. per input	PV1 cat. per input	Code	Code	Code	N° of layers
DP	600 V - 32 A	1000 V - 12 A	DP10012620ATRKU6SE	DP10012620AVML5E	DP10012620AVMKU6E	12
DK	750 V - 32 A	1000 V - 16 A	DK10016620ATRKU6SE	DK10016620AVML5E	DK10016620AVMKU6E	12
DM	700 V - 40 A	1000 V - 20 A	DM10020620ATRKU6SE	DM10020620AVML5E	DM10020620AVMKU6E	12
DX	1000 V - 30 A	1500 V - 10 A	DX12030620ATRKU6SE	DX12030620AVML5E	DX12030620AVMKU6E	12
DX..U	1000 V - 40 A	1500 V - 15 A	DX1203062UATRKU6SE	DX1203062UAVML5E	DX1203062UAVMKU6E	12
	1000 V - 50 A	1500 V - 20 A	DX1503062UATRKU6SE	DX1503062UAVML5E	DX1503062UAVMKU6E	12
DX..P	1000 V - 60 A	1500 V - 30 A	DX1503062PATRKU6SE	DX1503062PAVML5E	DX1503062PAVMKU6E	12

We are available for additional custom configurations. Feel free to reach out to discuss your specific needs.

DP-DK-DM-DX Series - 7 inputs / MPPT

N° of poles 7x (1+1)

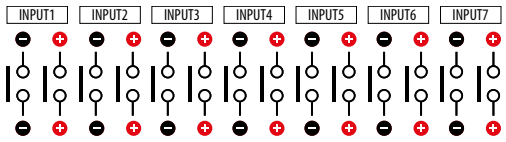


Double mounting

Single hole M16

Series	PV1 cat. per input	PV1 cat. per input	Code	Code	N° of layers
DP	600 V - 32 A	1000 V - 12 A	DP10012720AVMVU5E	DP10012720AVMVU6E	14
DK	750 V - 32 A	1000 V - 16 A	DK10016720AVMVU5E	DK10016720AVMVU6E	14
DM	700 V - 40 A	1000 V - 20 A	DM10020720AVMVU5E	DM10020720AVMVU6E	14
DX	1000 V - 30 A	1500 V - 10 A	DX12030720AVMVU5E	DX12030720AVMVU6E	14
DX..U	1000 V - 40 A	1500 V - 15 A	DX1203072UAVMVU5E	DX1203072UAVMVU6E	14
	1000 V - 50 A	1500 V - 20 A	DX1503072UAVMVU5E	DX1503072UAVMVU6E	14
DX..P	1000 V - 60 A	1500 V - 30 A	DX1503072PAVMVU5E	DX1503072PAVMVU6E	14

N° of poles 7x (1+1)



Double mounting

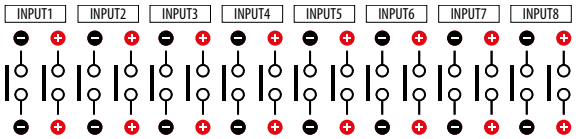
Single hole M16

Series	PV1 cat. per input	PV1 cat. per input	Code	Code	N° of layers
DP	600 V - 32 A	1000 V - 12 A	DP10012720AVML5E	DP10012720AVMKU6E	14
DK	750 V - 32 A	1000 V - 16 A	DK10016720AVML5E	DK10016720AVMKU6E	14
DM	700 V - 40 A	1000 V - 20 A	DM10020720AVML5E	DM10020720AVMKU6E	14
DX	1000 V - 30 A	1500 V - 10 A	DX12030720AVML5E	DX12030720AVMKU6E	14
DX..U	1000 V - 40 A	1500 V - 15 A	DX1203072UAVML5E	DX1203072UAVMKU6E	14
	1000 V - 50 A	1500 V - 20 A	DX1503072UAVML5E	DX1503072UAVMKU6E	14
DX..P	1000 V - 60 A	1500 V - 30 A	DX1503072PAVML5E	DX1503072PAVMKU6E	14

We are available for additional custom configurations. Feel free to reach out to discuss your specific needs.

DP-DK-DM-DX Series - 8 inputs / MPPT

N° of poles 8x (1+1)

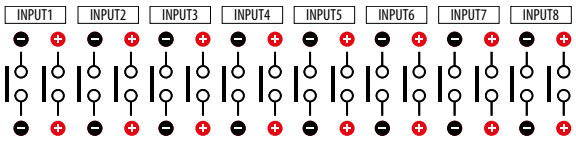


Double mounting

Single hole M16

Series	PV1 cat. per input	PV1 cat. per input	Code	Code	N° of layers
DP	600 V - 32 A	1000 V - 12 A	DP10012820AVMVU5E	DP10012820AVMVU6E	16
DK	750 V - 32 A	1000 V - 16 A	DK10016820AVMVU5E	DK10016820AVMVU6E	16
DM	700 V - 40 A	1000 V - 20 A	DM10020820AVMVU5E	DM10020820AVMVU6E	16
DX	1000 V - 30 A	1500 V - 10 A	DX12030820AVMVU5E	DX12030820AVMVU6E	16
DX..U	1000 V - 40 A	1500 V - 15 A	DX1203082UAVMVU5E	DX1203082UAVMVU6E	16
	1000 V - 50 A	1500 V - 20 A	DX1503082UAVMVU5E	DX1503082UAVMVU6E	16
DX..P	1000 V - 60 A	1500 V - 30 A	DX1503082PAVMVU5E	DX1503082PAVMVU6E	16

N° of poles 8x (1+1)



Double mounting

Single hole M16

Series	PV1 cat. per input	PV1 cat. per input	Code	Code	N° of layers
DP	600 V - 32 A	1000 V - 12 A	DP10012820AVML5E	DP10012820AVMKU6E	16
DK	750 V - 32 A	1000 V - 16 A	DK10016820AVML5E	DK10016820AVMKU6E	16
DM	700 V - 40 A	1000 V - 20 A	DM10020820AVML5E	DM10020820AVMKU6E	16
DX	1000 V - 30 A	1500 V - 10 A	DX12030820AVML5E	DX12030820AVMKU6E	16
DX..U	1000 V - 40 A	1500 V - 15 A	DX1203082UAVML5E	DX1203082UAVMKU6E	16
	1000 V - 50 A	1500 V - 20 A	DX1503082UAVML5E	DX1503082UAVMKU6E	16
DX..P	1000 V - 60 A	1500 V - 30 A	DX1503082PAVML5E	DX1503082PAVMKU6E	16

We are available for additional custom configurations. Feel free to reach out to discuss your specific needs.

DC ISOLATOR SWITCHES

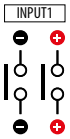
Enclosed IP65

- Nominal current from 12 A up to 60 A
- Nominal voltage up to 1500 Vdc
- Up to 4 DC Poles switching
- Double insulation ABS thermoplastic enclosure
- IP65 protection degree
- Cover interlock with knob in "ON" position
- Handle padlockable in “OFF” position
- Maximum terminal access
- UV rays resistant materials
- Compact dimensions
- IEC EN 60947 certified

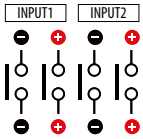
PV1 PV2 RATED CE UKCA

IB Series

N° of poles 1x (1+1)



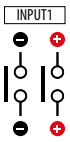
N° of poles 2x (1+1)



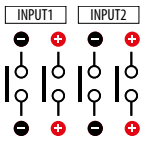
Series	PV1 cat. per input	PV1 cat. per input	N° of poles	Yellow/Red padlockable handle Code	Grey/Black padlockable handle Code
IBP	600 V - 32 A	1000 V - 12 A	1x (1+1)	IBP10012120AR	IBP10012120AB
			2x (1+1)	IBP10012220AR	IBP10012220AB
IBK	750 V - 32 A	1000 V - 16 A	1x (1+1)	IBK10016120AR	IBK10016120AB
			2x (1+1)	IBK10016220AR	IBK10016220AB
IBM	700 V - 40 A	1000 V - 20 A	1x (1+1)	IBM10020120AR	IBM10020120AB
			2x (1+1)	IBM10020220AR	IBM10020220AB
IBX	1000 V - 30 A	1500 V - 10 A	1x (1+1)	IBX12030120AR	IBX12030120AB
			2x (1+1)	IBX12030220AR	IBX12030220AB
IBX..U	1000 V - 40 A	1500 V - 15 A	1x (1+1)	IBX1203012UAR	IBX1203012UAB
			2x (1+1)	IBX1203022UAR	IBX1203022UAB
	1000 V - 50 A	1500 V - 20 A	1x (1+1)	IBX1503012UAR	IBX1503012UAB
			2x (1+1)	IBX1503022UAR	IBX1503022UAB
IBX..P	1000 V - 60 A	1500 V - 30 A	1x (1+1)	IBX1503012PAR	IBX1503012PAB
			2x (1+1)	IBX1503022PAR	IBX1503022PAB

Pre-wired with MC4 connectors

N° of poles 1x (1+1)



N° of poles 2x (1+1)

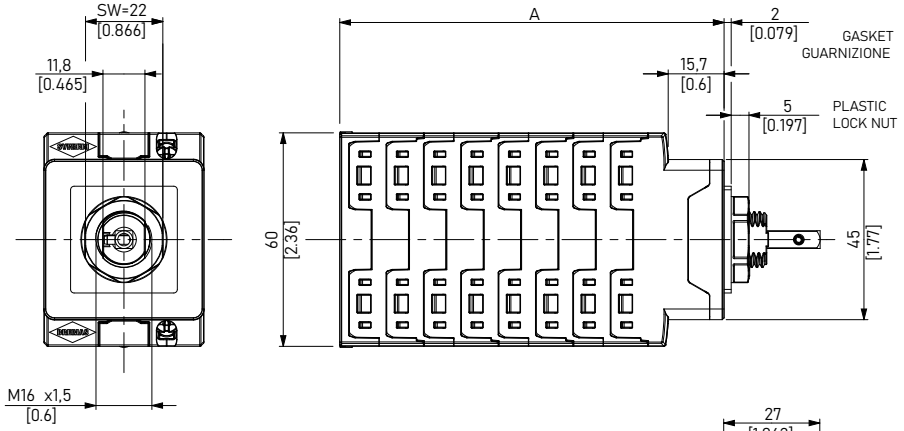


Series	PV1 cat. per input	PV1 cat. per input	N° of poles	Yellow/Red padlockable handle Code	Grey/Black padlockable handle Code
IBP	600 V - 32 A	1000 V - 12 A	1x (1+1)	IBP10012120ARMC	IBP10012120ABMC
			2x (1+1)	IBP10012220ARMC	IBP10012220ABMC
IBK	750 V - 32 A	1000 V - 16 A	1x (1+1)	IBK10016120ARMC	IBK10016120ABMC
			2x (1+1)	IBK10016220ARMC	IBK10016220ABMC
IBM	700 V - 40 A	1000 V - 20 A	1x (1+1)	IBM10020120ARMC	IBM10020120ABMC
			2x (1+1)	IBM10020220ARMC	IBM10020220ABMC
IBX	1000 V - 30 A	1500 V - 10 A	1x (1+1)	IBX12030120ARMC	IBX12030120ABMC
			2x (1+1)	IBX12030220ARMC	IBX12030220ABMC
IBX..U	1000 V - 40 A	1500 V - 15 A	1x (1+1)	IBX1203012UARMC	IBX1203012UABMC
			2x (1+1)	IBX1203022UARMC	IBX1203022UABMC
	1000 V - 50 A	1500 V - 20 A	1x (1+1)	IBX1503012UARMC	IBX1503012UABMC
			2x (1+1)	IBX1503022UARMC	IBX1503022UABMC

Features

Dimensions
Panel mounting L - Fixing M16

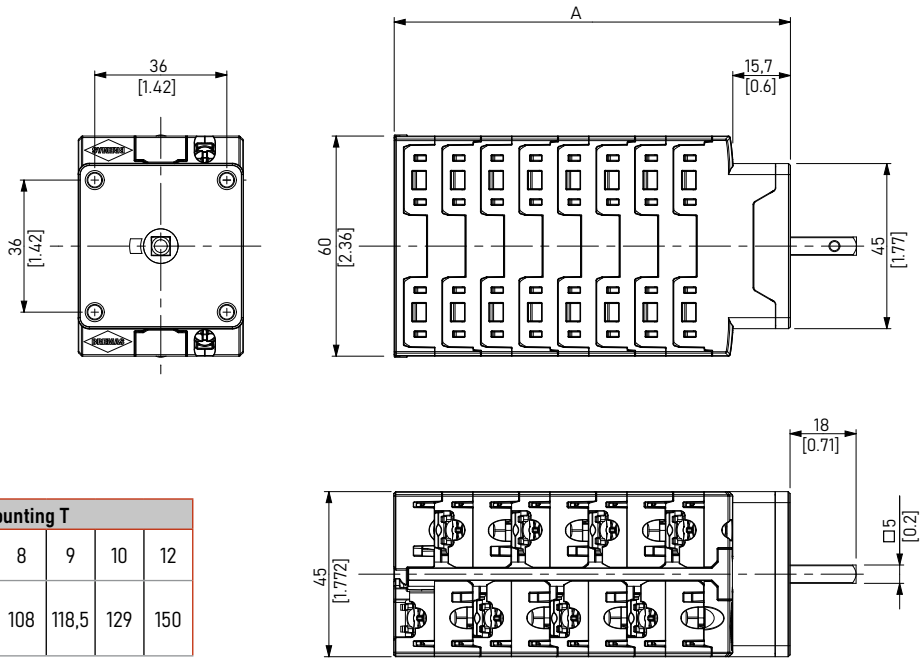
Dimension in mm
in [inch]



	Panel mounting L							
Number of layers	2	3	4	6	8	9	10	12
A dimensions (mm)	45	55,5	66	87	108	118,5	129	150

Dimensions
Panel mounting T - Fixing with 4 screws 36x36 mm

Dimension in mm
in [inch]

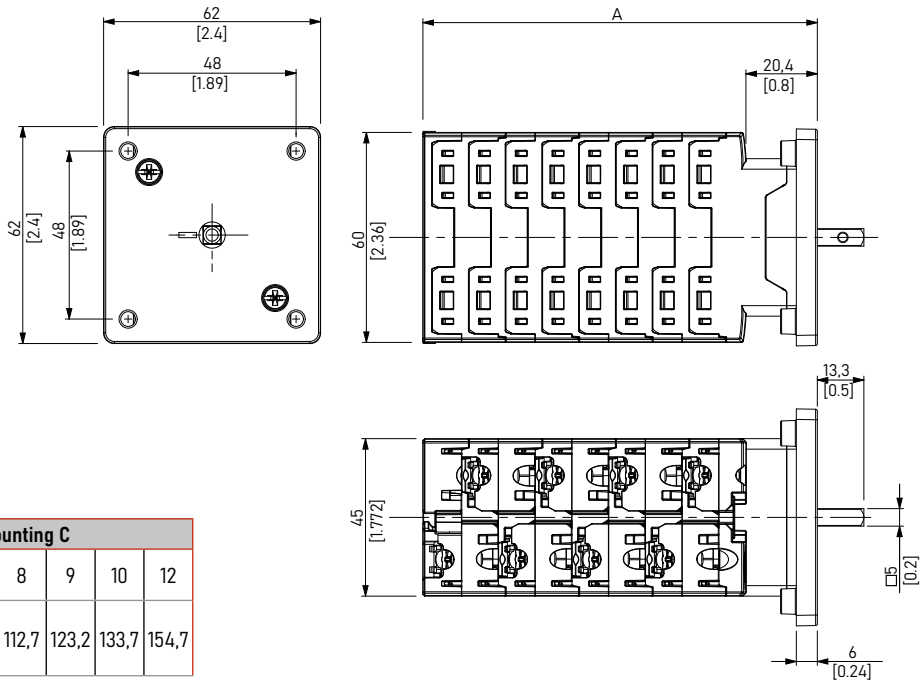


	Panel mounting T							
Number of layers	2	3	4	6	8	9	10	12
A dimensions (mm)	45	55,5	66	87	108	118,5	129	150

Dimensions

Panel mounting C - Fixing with 4 screws 48x48 mm

Dimension in mm
in [inch]

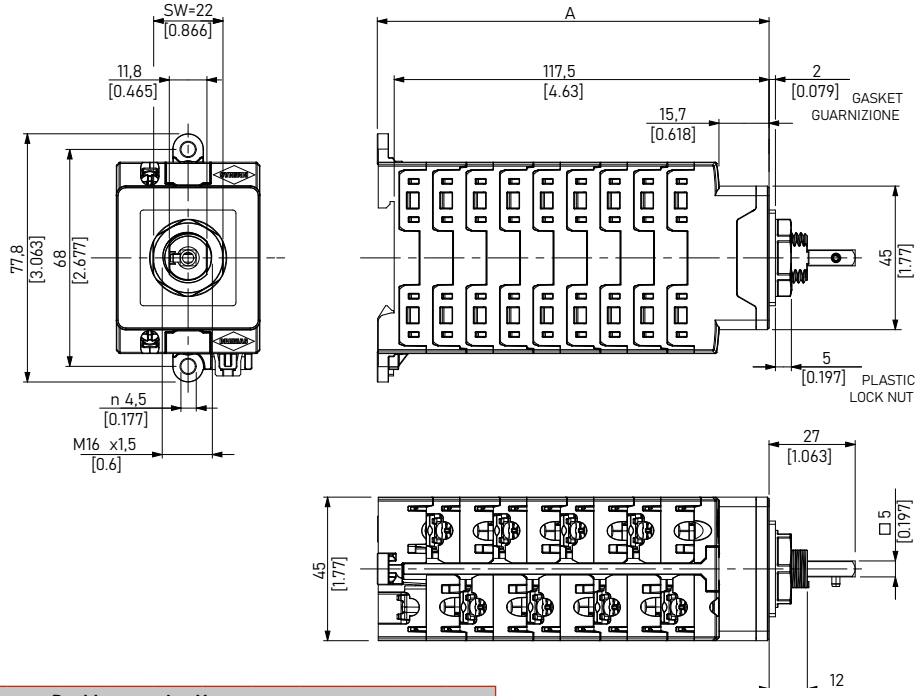


	Panel mounting C							
Number of layers	2	3	4	6	8	9	10	12
A dimensions (mm)	49,7	60,2	70,7	91,7	112,7	123,2	133,7	154,7

Dimensions

Double mounting V - Fixing M16

Dimension in mm
in [inch]

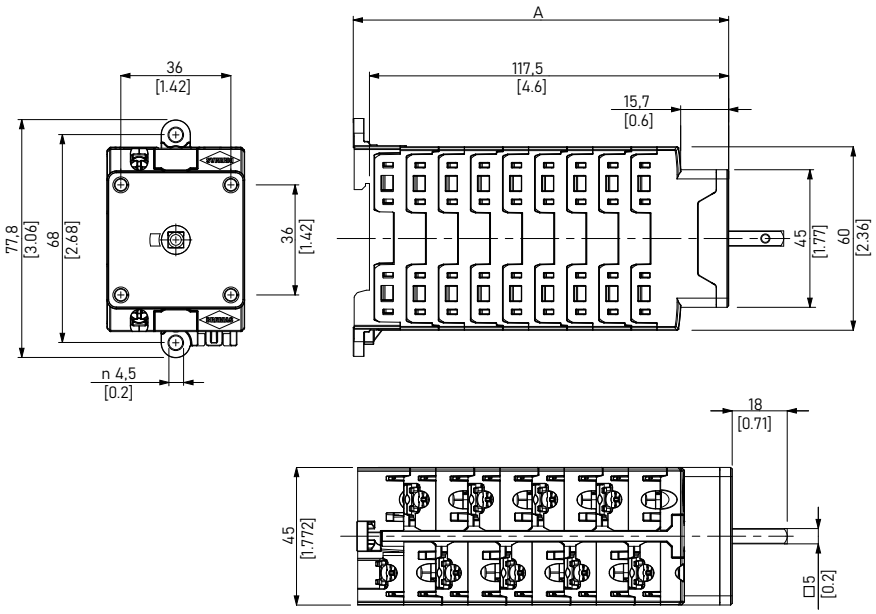


	Double mounting V														
Number of layers	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
A dimensions (mm)	49,3	59,8	70,3	80,8	91,3	101,8	112,3	122,8	133,3	143,8	154,3	164,8	175,3	185,8	196,3

Dimensions

Double mounting W - Fixing with 4 screws 36x36 mm

Dimension in mm
in [inch]

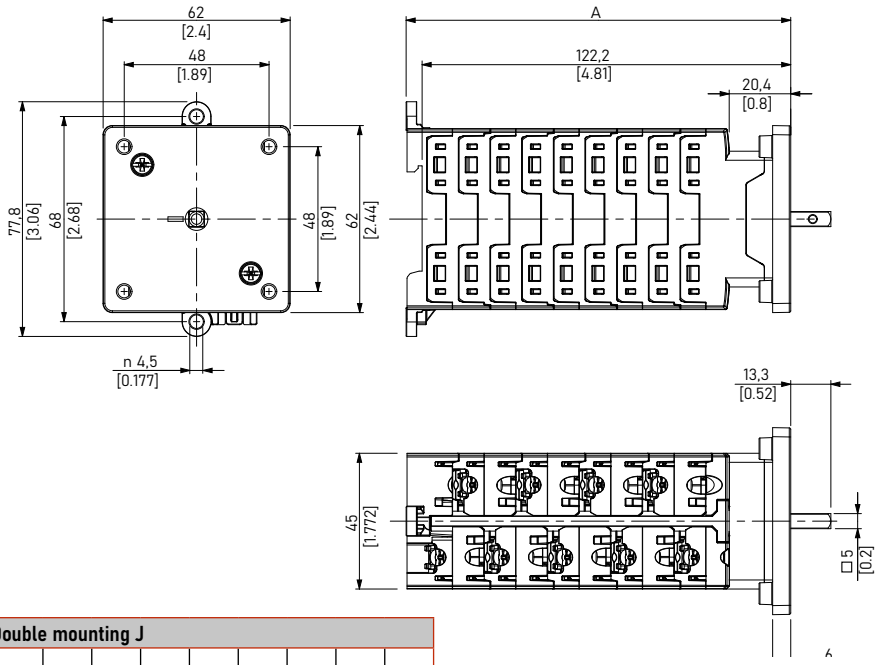


	Double mounting W														
Number of layers	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
A dimensions (mm)	49,3	59,8	70,3	80,8	91,3	101,8	112,3	122,8	133,3	143,8	154,3	164,8	175,3	185,8	196,3

Dimensions

Double mounting J - Fixing with 4 screws 48x48 mm

Dimension in mm
in [inch]

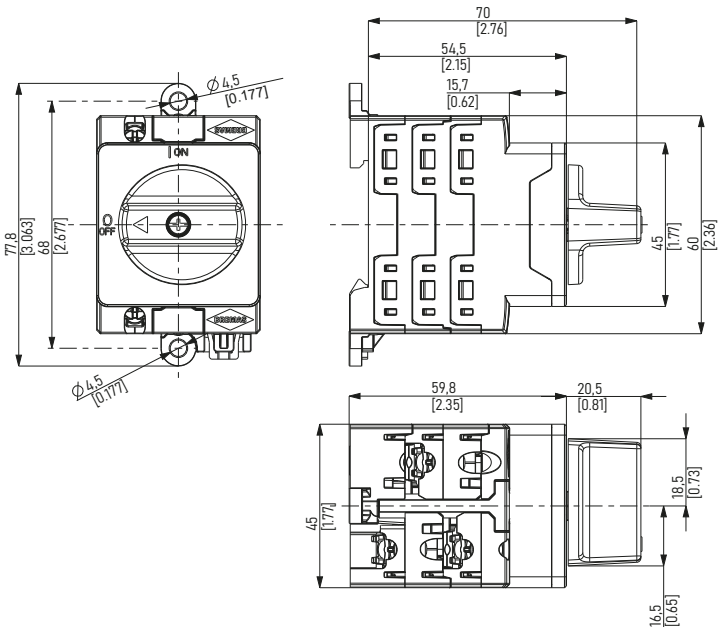


	Double mounting J														
Number of layers	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
A dimensions (mm)	54	64,5	75	85,5	96	106,5	117	127,5	138	148,5	159	169,5	180	190,5	201

Dimensions

Base mounting D - Back-side for DIN rail or 2 screws fixing
For standard distribution boards (45 mm window)
With pre-mounted knob RND

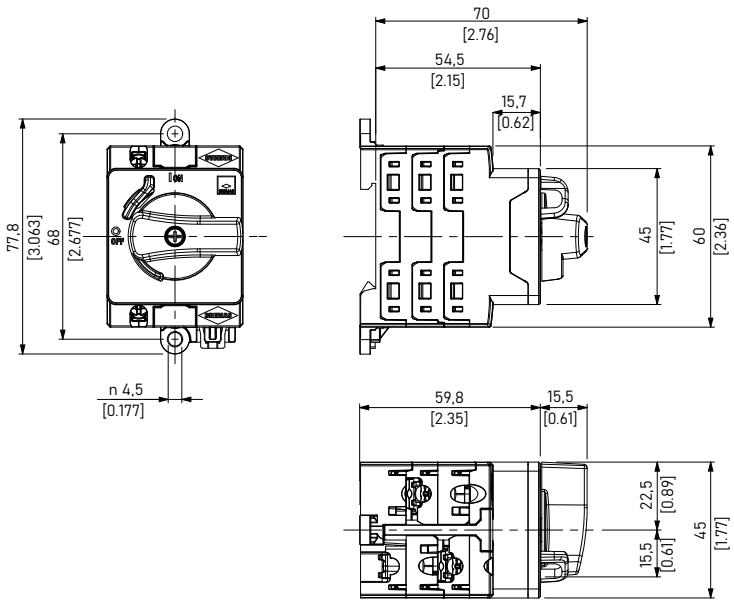
Dimension in mm
in [inch]



Dimensions

Base mounting D - Back-side for DIN rail or 2 screws fixing
For standard distribution boards (45 mm window)
With pre-mounted padlockable knob RLE

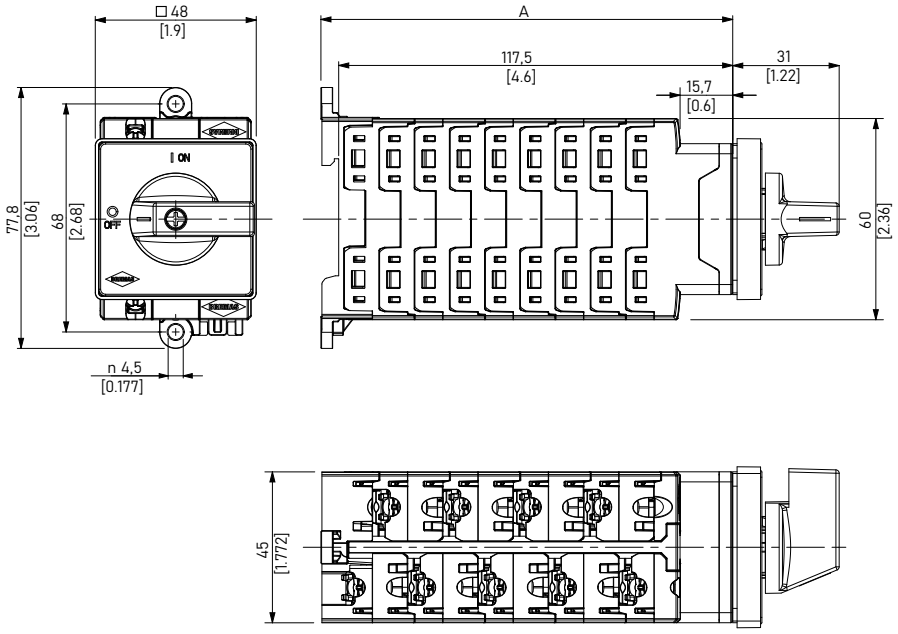
Dimension in mm
in [inch]



Dimensions

Base mounting E - Back-side for DIN rail or 2 screws fixing
For direct operation
With pre-mounted knob (RW4)

Dimension in mm
in [inch]

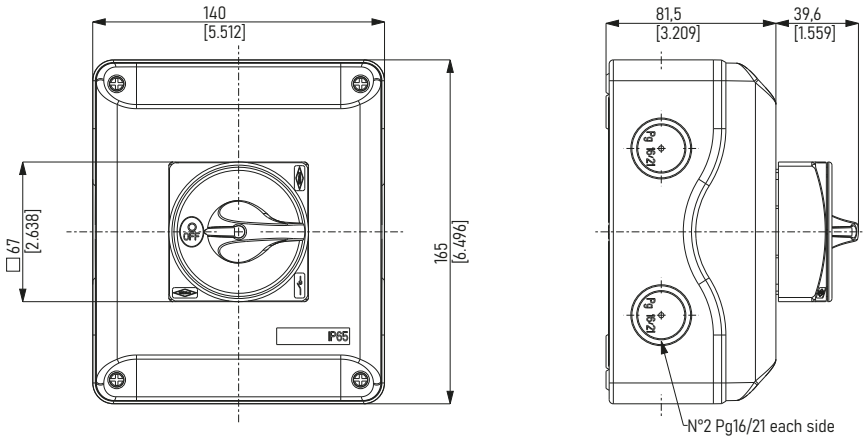


	Base mounting E											
Number of layers	2	3	4	5	6	7	8	9	10	11	12	13
A dimensions (mm)	49,3	59,8	70,3	80,8	91,3	101,8	112,3	122,8	133,3	143,8	154,3	164,8

Dimensions

IB Series

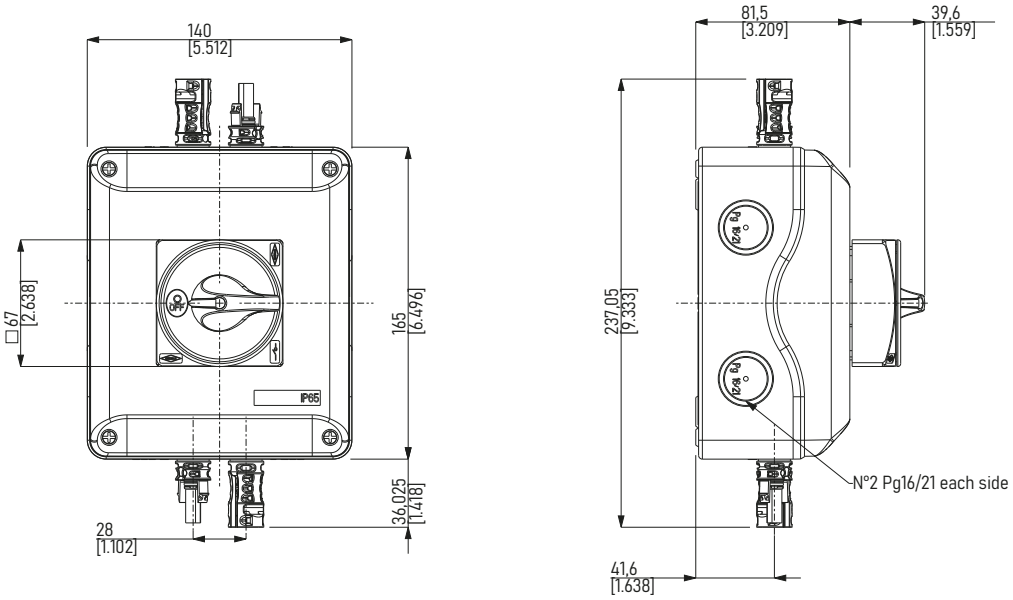
Dimension in mm
in [inch]



Dimensions

IB Series pre-wired with MC4 connectors 2P

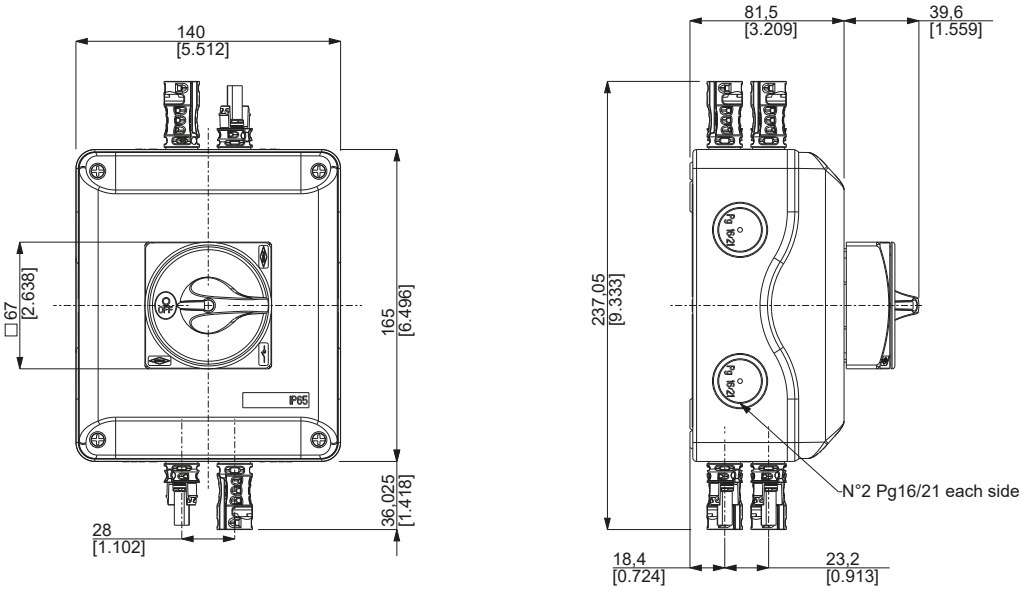
Dimension in mm
in [inch]



Dimensions

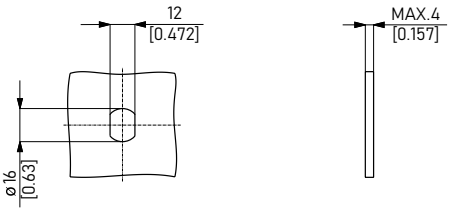
IB Series pre-wired with MC4 connectors 4P

Dimension in mm
in [inch]



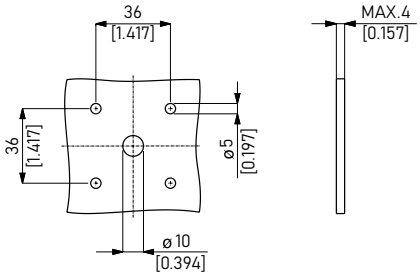
Dimensions
Drilling templates - Mounting type L

Dimension in mm
in [inch]



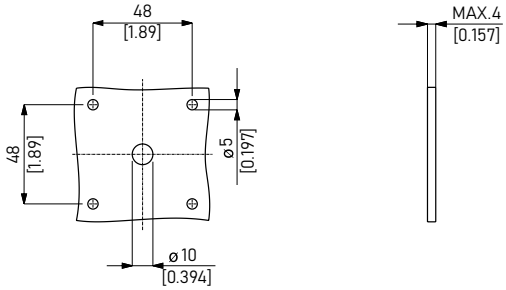
Dimensions
Drilling templates - Mounting type T

Dimension in mm
in [inch]



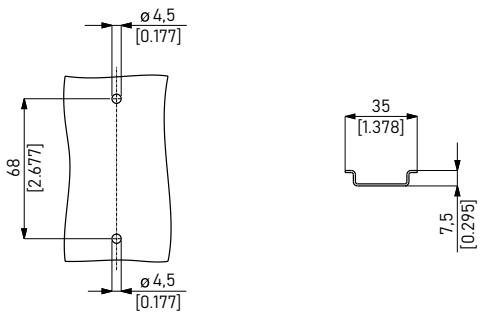
Dimensions
Drilling templates - Mounting type C

Dimension in mm
in [inch]



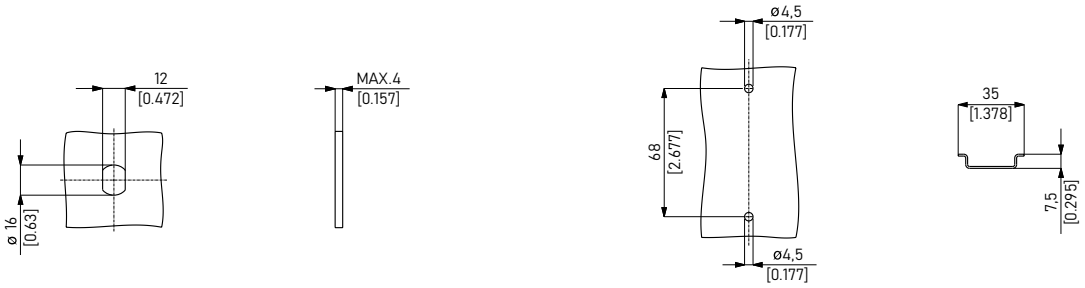
Dimensions
Drilling templates - Mounting type D / E

Dimension in mm
in [inch]



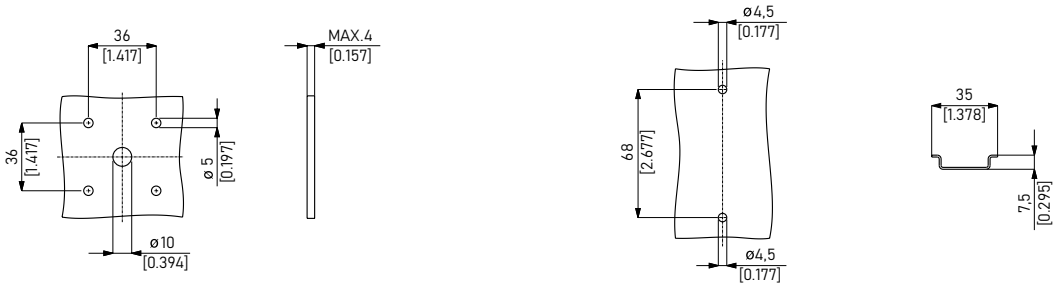
Dimensions
Drilling templates - Mounting type V

Dimension in mm
in [inch]



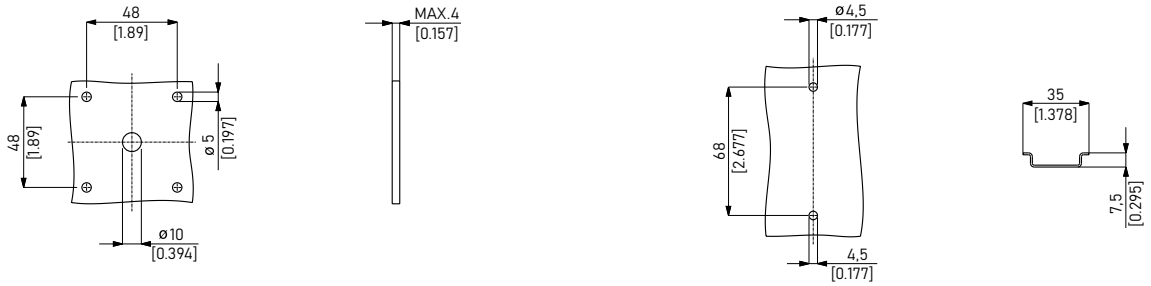
Dimensions
Drilling templates - Mounting type W

Dimension in mm
in [inch]



Dimensions
Drilling templates - Mounting type J

Dimension in mm
in [inch]



BREMAS

BETTER SWITCHES

SURGE PROTECTIVE DEVICES

DC and AC SPDs

04

DC SURGE PROTECTIVE DEVICES

Advanced protection for PV systems - SAPV Series

DC
Surge
Protective
Devices

Up to **1500V DC**

- Optimized for photovoltaic systems in DC application, ensuring maximum performance and reliability.
- According to standard EN 50539-11.
- Certified Surge Protective Device (SPD) Type 2 / Class II and Type 1+2 / Class I+II.
- Incorporates Metal Oxide Varistors (MOV) for superior surge discharge performance.
- Pluggable solution, to facilitate maintenance.
- Equipped with an integrated disconnection system (OCFM) for safe end-of-life operation.
- Front-side local status indication for real-time monitoring.
- Optional remote status signaling with a changeover relay.
- IP20-rated terminals for enhanced safety.
- Designed for quick and secure DIN rail mounting.
- Suitable for indoor installations in controlled environments.

Discover more about our range of SPD SAPV Series.
Visit our website or contact our technical team for further information.

SAPV Series

TYPE 2 / Class II

Max. continuous operating voltage	Impulse current (10/350 µs)	Tot. discharge current (10/350 µs)	Nominal discharge current (8/20 µs)	Max. discharge current (8/20 µs)	Voltage protection level		Code	Remote signaling
U_{CPV} (Vdc)	I_{imp} (kA)	I_{tot} (kA)	I_n (kA)	I_{max} (kA)	U_P (kV)			
					(DC+) - PE, (DC-) - PE	(DC+) - (DC-)		
600	-	-	20	40	2,2	-	**SAPV060T2**	No
1000	-	-	20	40	4	4	**SAPV100T2**	No
1500	-	-	20	40	5,2	5,2	**SAPV150T2**	No
600	-	-	20	40	2,2	-	**SAPV060T2R**	Yes
1000	-	-	20	40	4	4	**SAPV100T2R**	Yes
1500	-	-	20	40	5,2	5,2	**SAPV150T2R**	Yes

TYPE 1+2 / Class I+II

Max. continuous operating voltage	Impulse current (10/350 µs)	Tot. discharge current (10/350 µs)	Nominal discharge current (8/20 µs)	Max. discharge current (8/20 µs)	Voltage protection level		Code	Remote signaling
U_{CPV} (Vdc)	I_{imp} (kA)	I_{tot} (kA)	I_n (kA)	I_{max} (kA)	U_P (kV)			
					(DC+) - PE, (DC-) - PE	(DC+) - (DC-)		
600	6,25	12,5	20	40	2,2	-	**SAPV060T12**	No
1000	6,25	12,5	20	40	4	4	**SAPV100T12**	No
1500	6,25	12,5	20	40	5,2	5,2	**SAPV150T12**	No
600	6,25	12,5	20	40	2,2	-	**SAPV060T12R**	Yes
1000	6,25	12,5	20	40	4	4	**SAPV100T12R**	Yes
1500	6,25	12,5	20	40	5,2	5,2	**SAPV150T12R**	Yes

Accessories

Replacement plug

Description	Max. continuous operating voltage	Code	Type / Class
	U_{CPV} (Vdc)		
For SPD DC Type 2 / Class II	600	**SAXCPV060T2**	2 / II
	1000	**SAXCPV100T2**	2 / II
	1500	**SAXCPV150T2**	2 / II
For SPD DC Type 1+2 / Class I+II	600	**SAXCPV060T12**	1+2 / I+II
	1000	**SAXCPV100T12**	1+2 / I+II
	1500	**SAXCPV150T12**	1+2 / I+II

Technical data

				SAPV060T2	SAPV060T2R
Standards					
Applicable Standards				IEC 61643-31 / EN 50536-11	
Technical data					
Maximum continuous operating voltage	(DC+) - PE, (DC-) - PE	U_{CPV}	V	600	
	(DC+) - (DC-)			-	
Nominal discharge current (8/20 µs)		I_n	kA	20	
Impulse Discharge Current (10/350 µs)		I_{imp}	kA	-	
Total discharge current (10/350 µs)		I_{tot}	kA	-	
Total discharge current (8/20 µs)		I_{tot}	kA	40	
Maximum discharge current (8/20 µs)		I_{max}	kA	40	
Voltage protection level	(DC+) - PE, (DC-) - PE	U_P	V	2,2	
	(DC+) - (DC-)			-	
Response time		t_A	ns	< 25	
Short-circuit current rating		I_{scpv}	kA	10	
Number of ports		Nr		1	
Functional data					
IEC/EN category	Type / Class			2 / II	
Protective elements				High energy MOV	
Mechanical characteristics					
Terminal screw torque		M_{max}	Nm	4,5	
Conductor cross section (max)		Solid, Stranded	mm^2	35	
			AWG	2	
		Flexible		25	
			AWG	4	
Mounting				35 mm DIN rail, EN 60715	
Degree of protection				IP20 (built-in)	
Housing material				Thermoplastic Extinguishing Degree UL 94 V-0	
Thermal Protection				Yes	
Operating State / Fault Indication				Green ok / Red defect	
Remote Contacts	Switching capacity	AC	V	-	250 / 125
			A	-	0,5 / 0,2
		DC	V	-	250 / 75
			A	-	0,1 / 0,5
	Conductor cross section (max)	Solid		-	1,5
			AWG	-	16
Dimensions (W-D-H)			mm	36 x 67 x 90	36 x 67 x 96
Weight			g	29,9	30,3
Ambient conditions					
Permissible operating humidity			%HR	5 ÷ 95	
Operating temperature		T_a	°C	-40 ÷ +70	
Atmospheric pressure and altitude			k Pa	80 ÷ 106	
			m	-500 / 2000	
Installation				Indoor	
Accessories					
Replacement plug				SAXCPV060T2	

TYPE 2 / Class II

SAPV100T2	SAPV100T2R	SAPV150T2	SAPV150T2R
IEC 61643-31 / EN 50536-11		IEC 61643-31 / EN 50536-11	
1000		1500	
1000		1500	
20		20	
-		-	
-		-	
40		40	
40		40	
4		5,2	
4		5,2	
< 25		< 25	
10		10	
1		1	
2 / II		2 / II	
High energy MOV		High energy MOV	
4,5		4,5	
35		35	
2		2	
25		25	
4		4	
35 mm DIN rail, EN 60715		35 mm DIN rail, EN 60715	
IP20 (built-in)		IP20 (built-in)	
Thermoplastic Extinguishing Degree UL 94 V-0		Thermoplastic Extinguishing Degree UL 94 V-0	
Yes		Yes	
Green ok / Red defect		Green ok / Red defect	
-	250 / 125	-	250 / 125
-	0,5 / 0,2	-	0,5 / 0,2
-	250 / 75	-	250 / 75
-	0,1 / 0,5	-	0,1 / 0,5
-	1,5	-	1,5
-	16	-	16
54 x 67 x 90	54 x 67 x 96	54 x 67 x 90	54 x 67 x 96
29,9	30,3	32,4	33,1
5 ÷ 95		5 ÷ 95	
-40 ÷ +70		-40 ÷ +70	
80 ÷ 106		80 ÷ 106	
-500 / 2000		-500 / 2000	
Indoor		Indoor	
SAXCPV100T2		SAXCPV150T2	

Technical data

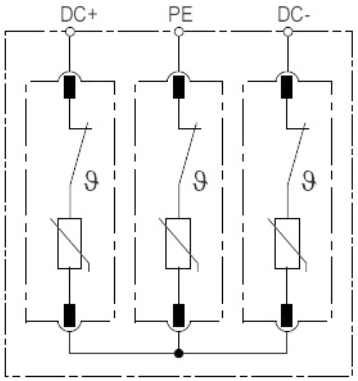
				SAPV060T12	SAPV060T12R
Standards					
Applicable Standards				IEC 61643-31 / EN 50536-11	
Technical data					
Maximum continuous operating voltage	(DC+) - PE, (DC-) - PE	U_{CPV}	V	600	
	(DC+) - (DC-)			-	
Nominal discharge current (8/20 µs)		I_n	kA	20	
Impulse Discharge Current (10/350 µs)		I_{imp}	kA	6,25	
Total discharge current (10/350 µs)		I_{tot}	kA	12,5	
Total discharge current (8/20 µs)		I_{tot}	kA	40	
Maximum discharge current (8/20 µs)		I_{max}	kA	40	
Voltage protection level	(DC+) - PE, (DC-) - PE	U_P	V	2,2	
	(DC+) - (DC-)			-	
Response time		t_A	ns	< 25	
Short-circuit current rating		I_{scpv}	kA	10	
Number of ports		Nr		1	
Functional data					
IEC/EN category	Type / Class			1+2 / I+II	
Protective elements				High energy MOV	
Mechanical characteristics					
Terminal screw torque		M_{max}	Nm	4,5	
Conductor cross section (max)		Solid, Stranded	mm^2	35	
			AWG	2	
		Flexible		25	
			AWG	4	
Mounting				35 mm DIN rail, EN 60715	
Degree of protection				IP20 (built-in)	
Housing material				Thermoplastic Extinguishing Degree UL 94 V-0	
Thermal Protection				Yes	
Operating State / Fault Indication				Green ok / Red defect	
Remote Contacts	Switching capacity	AC	V	-	250 / 125
			A	-	0,5 / 0,2
		DC	V	-	250 / 75
			A	-	0,1 / 0,5
	Conductor cross section (max)	Solid		-	1,5
			AWG	-	16
Dimensions (W-D-H)			mm	54 x 81 x 90	54 x 81 x 96
Weight			g	44	44,7
Ambient conditions					
Permissible operating humidity			%HR	5 ÷ 95	
Operating temperature		T_a	°C	-40 ÷ +70	
Atmospheric pressure and altitude			k Pa	80 ÷ 106	
			m	-500 / 2000	
Installation				Indoor	
Accessories					
Replacement plug				SAXCPV060T12	

TYPE 1+2 / Class I+II

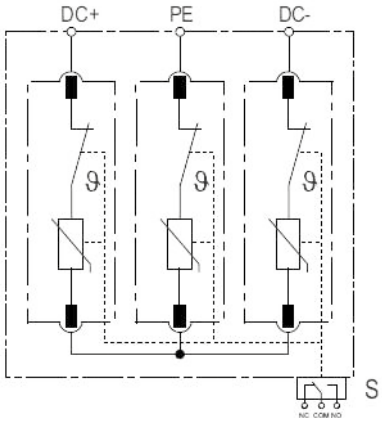
SAPV100T12	SAPV100T12R	SAPV150T12	SAPV150T12R
IEC 61643-31 / EN 50536-11		IEC 61643-31 / EN 50536-11	
1000		1500	
1000		1500	
20		20	
6,25		6,25	
12,5		12,5	
40		40	
40		40	
4		5,2	
4		5,2	
< 25		< 25	
10		10	
1		1	
1+2 / I+II		1+2 / I+II	
High energy MOV		High energy MOV	
4,5		4,5	
35		35	
2		2	
25		25	
4		4	
35 mm DIN rail, EN 60715		35 mm DIN rail, EN 60715	
IP20 (built-in)		IP20 (built-in)	
Thermoplastic Extinguishing Degree UL 94 V-0		Thermoplastic Extinguishing Degree UL 94 V-0	
Yes		Yes	
Green ok / Red defect		Green ok / Red defect	
-	250 / 125	-	250 / 125
-	0,5 / 0,2	-	0,5 / 0,2
-	250 / 75	-	250 / 75
-	0,1 / 0,5	-	0,1 / 0,5
-	1,5	-	1,5
-	16	-	16
54 x 81 x 90	54 x 81 x 96	54 x 81 x 90	54 x 81 x 96
44	44,7	46,2	47
5 ÷ 95		5 ÷ 95	
-40 ÷ +70		-40 ÷ +70	
80 ÷ 106		80 ÷ 106	
-500 / 2000		-500 / 2000	
Indoor		Indoor	
SAXCPV100T12		SAXCPV150T12	

Electrical circuit

SAPV ... T2
SAPV ... T12

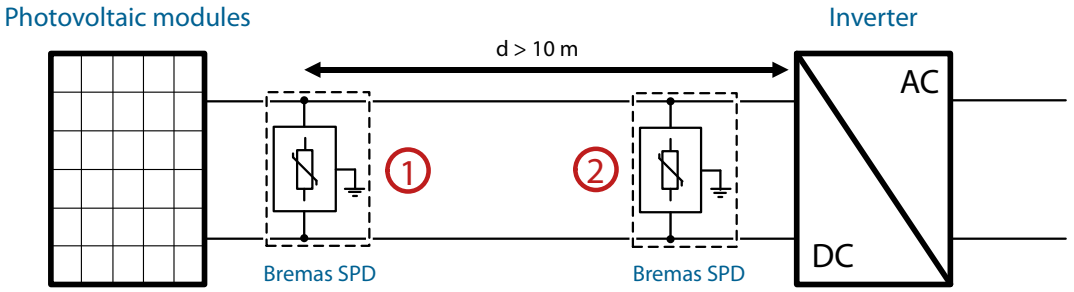


SAPV ... T2R
SAPV ... T12R



Features

Mounting

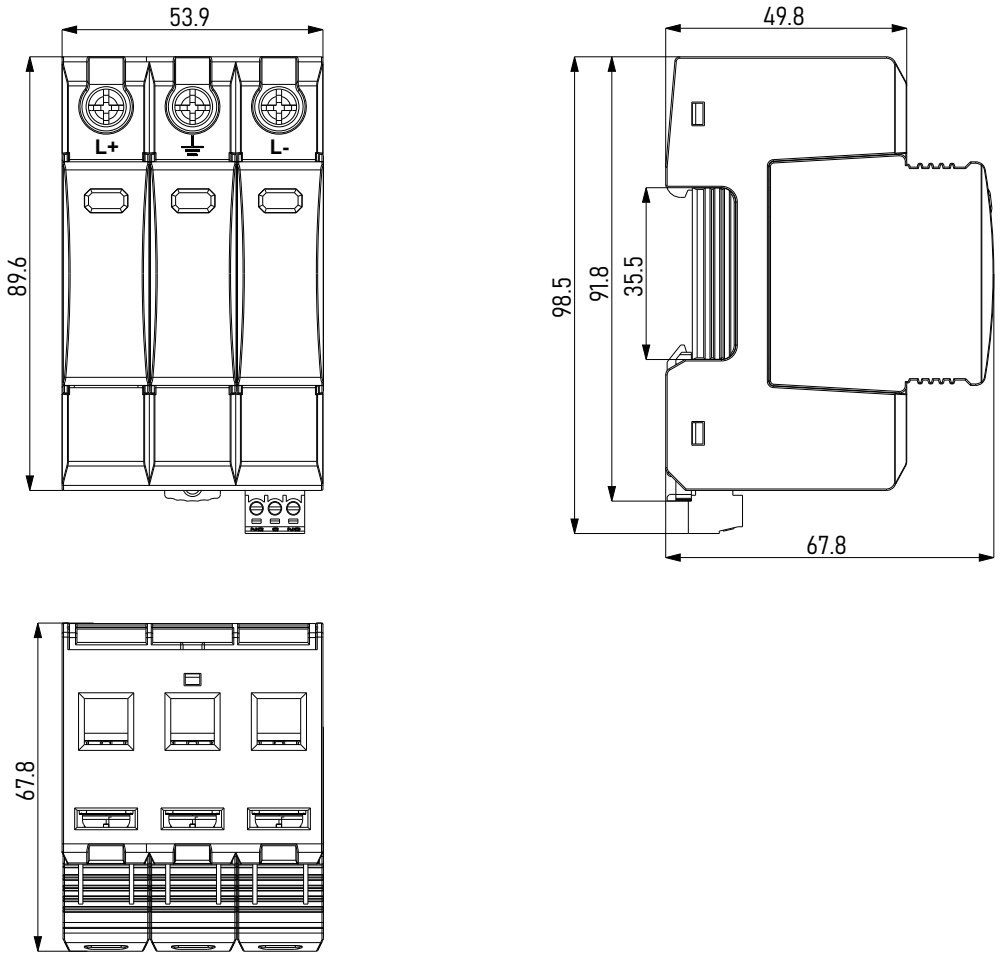


If d < 10 m, the Bremas SPD (2) is not required

Dimensions

SAPV ... T2
SAPV ... T2R

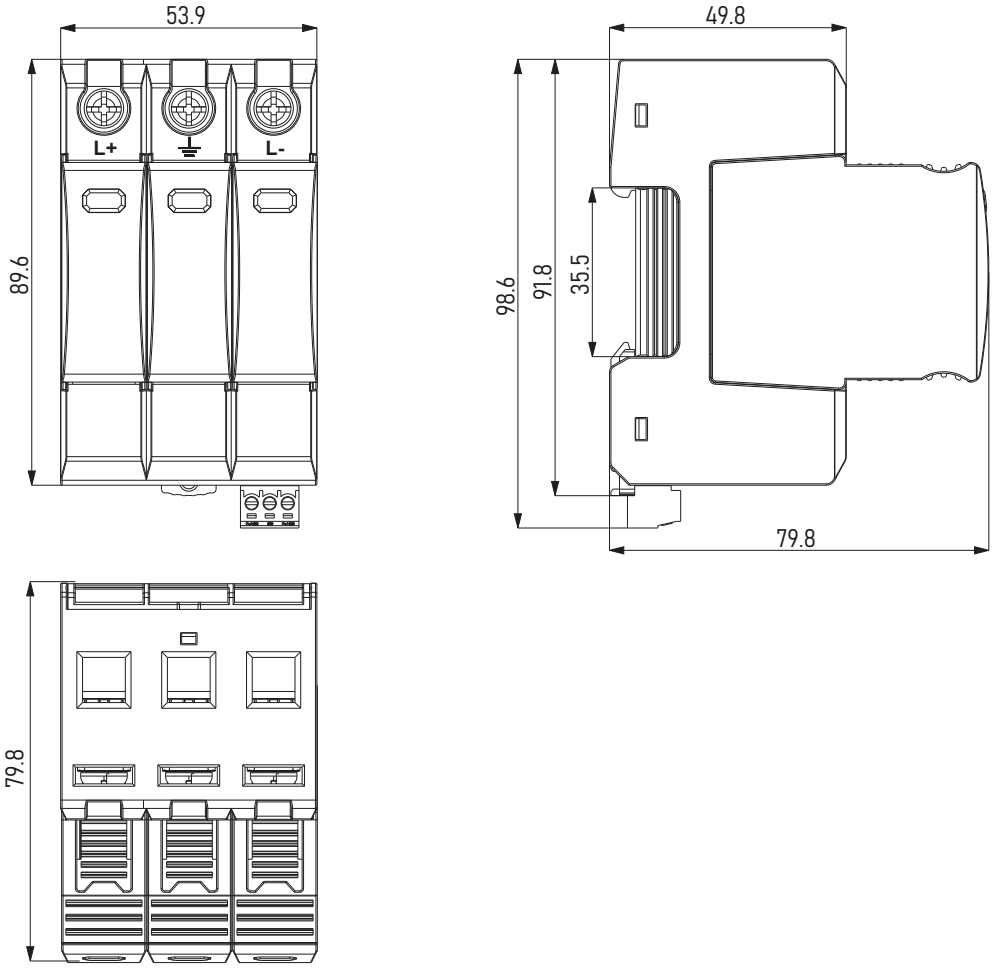
Dimension in mm



Dimensions

SAPV ... T12
SAPV ... T12R

Dimension in mm



AC SURGE PROTECTIVE DEVICES

Advanced protection for LV systems - SA Series

AC
Surge
Protective
Devices

- Engineered to safeguard low-voltage distribution boards from atmospheric surges.
- Delivers optimal surge protection for TN-S and TT systems.
- Certified Surge Protective Device (SPD) Type 2 / Class II and Type 1+2 / Class I+II.
- Incorporates Metal Oxide Varistors (MOV) and Gas Discharger Tubes (GDT) for superior surge discharge performance.
- Pluggable design for easy maintenance, featuring a mechanical coding system to prevent replacement errors.
- Equipped with an integrated disconnection system (OCFM) for safe end-of-life operation.
- Front-side local status indication for easy monitoring.
- Optional remote status signaling with a changeover relay.
- IP20-rated terminals for enhanced safety.
- Designed for quick and secure DIN rail mounting.
- Suitable for indoor installations in controlled environments.

Discover more about our range of SPD SA Series.
Visit our website or contact our technical team for further information.

SA Series

TYPE 2 / Class II

Max. continuous operating voltage		Impulse current (10/350 µs)		Nominal discharge current (8/20 µs)		Max. discharge current (8/20 µs)		Voltage protection level		Code	Remote signaling
U_{CPV} (Vdc)		I_{imp} (kA)		I_n (kA)		I_{max} (kA)		U_P (kV)			
L-N	N-PE	L-N	N-PE	L-N	N-PE	L-N	N-PE	L-N	N-PE		
320	255	-	-	20		40		1,6	1,5	**SA40T2A1N032**	No
320	255	-	-	20		40		1,6	1,5	**SA40T2A1N032R**	Yes

Max. continuous operating voltage		Impulse current (10/350 µs)		Nominal discharge current (8/20 µs)		Max. discharge current (8/20 µs)		Voltage protection level		Code	Remote signaling
U_{CPV} (Vdc)		I_{imp} (kA)		I_n (kA)		I_{max} (kA)		U_P (kV)			
L-N	N-PE	L-N	N-PE	L-N	N-PE	L-N	N-PE	L-N	N-PE		
320	255	-	-	20		40		1,6	1,5	**SA40T2A3N032**	No
320	255	-	-	20		40		1,6	1,5	**SA40T2A3N032R**	Yes

TYPE 1+2 / Class I+II

Max. continuous operating voltage		Impulse current (10/350 µs)		Nominal discharge current (8/20 µs)		Max. discharge current (8/20 µs)		Voltage protection level		Code	Remote signaling
U_{CPV} (Vdc)		I_{imp} (kA)		I_n (kA)		I_{max} (kA)		U_P (kV)			
L-N	N-PE	L-N	N-PE	L-N	N-PE	L-N	N-PE	L-N	N-PE		
320	255	12,5	25	20	25	50		1,6	1,5	**SA40T121N032**	No
320	255	12,5	25	20	25	50		1,6	1,5	**SA40T121N032R**	Yes

Max. continuous operating voltage		Impulse current (10/350 µs)		Nominal discharge current (8/20 µs)		Max. discharge current (8/20 µs)		Voltage protection level		Code	Remote signaling
U_{CPV} (Vdc)		I_{imp} (kA)		I_n (kA)		I_{max} (kA)		U_P (kV)			
L-N	N-PE	L-N	N-PE	L-N	N-PE	L-N	N-PE	L-N	N-PE		
320	255	12,5	50	20	25	50	100	1,6	1,5	**SA40T123N032**	No
320	255	12,5	50	20	25	50	100	1,6	1,5	**SA40T123N032R**	Yes

Accessories

Replacement plug

Description	Max. continuous operating voltage	Suitable for	Code	Type / Class
	U_{CPV} (Vdc)			
For SPD AC Type 2 / Class II	320	L-N	**SAXC40320T2**	2 / II
	255	N-PE	**SAXC40260T2**	2 / II
For SPD AC Type 1+2 / Class I+II	320	L-N	**SAXC40320T12**	1+2 / I+II
	255	N-PE	**SAXC40260T12**	1+2 / I+II

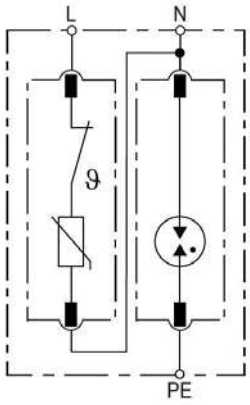
Technical data

				TYPE 2 / Class II		TYPE 1+2 / Class I+II	
				SA40T2A 1N/3N 032	SA40T2A 1N/3N 032 R	SA40T12 1N/3N 032	SA40T12 1N/3N 032 R
Standards							
Applicable Standards				IEC EN 61643-31		IEC EN 61643-31	
Technical data							
Nominal AC Voltage (50/60 Hz)		U_n	V_{AC}	230		230	
Maximum continuous operating voltage	L-N	U_C		320		320	
	N-PE			255		255	
Nominal discharge current (8/20 µs)	L-N	I_n	kA	20		20	
	N-PE			20		25	
Impulse discharge current (10/350 µs)	L-N	I_{imp}	kA	-		12,5	
	N-PE			-		25 (1N) / 50 (3N)	
Maximum discharge current (8/20 µs)	L-N	I_{max}	kA	40		50	
	N-PE			40		50 (1N) / 100 (3N)	
Specific energy	L-N	W/R	kJ / Ω	-		36 (1N) / 39 (3N)	
	N-PE			-		156 (1N) / 625 (3N)	
Charge	L-N	Q	A_S	-		6,25	
	N-PE			-		12,5 (1N) / 25 (3N)	
Voltage protection level	L-N		kV	1,6		1,6	
	N-PE			1,5		1,5	
Follow current interrupt rating	N-PE	A_{rms}		100		100	
Response time	L-N	t_A	ns	< 25		< 25	
	N-PE			< 100		< 100	
Back-up fuse (max)	gL / gG		A	125		160	
Short-circuit current rating	L-N	I_{sccr}	kA	25 / 50		25 / 50	
TOV withstand 5s	L-N	U_t	V	335		335	
TOV 120min	L-N		V	440		440	
		mode		Safe fail		Safe fail	
TOV withstand 200ms	N-PE		V	1200		1200	
Number of ports		Nr		1		1	
Functional data							
IEC/EN category	Type / Class			2 / II		1+2 / I+II	
Protective elements				High energy MOV and GDT		High energy MOV and GDT	
Protection mode				L-N / N-PE		L-N / N-PE	

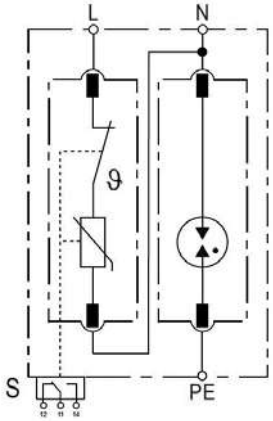
				TYPE 2 / Class II		TYPE 1+2 / Class I+II	
				SA40T2A 1N/3N 032	SA40T2A 1N/3N 032 R	SA40T12 1N/3N 032	SA40T12 1N/3N 032 R
Mechanical characteristics							
Terminal screw torque		M_{max}	Nm	4,5		4,5	
Conductor cross section (max)		Solid, Stranded	mm^2	35		35	
			AWG	2		2	
		Flexible		25		25	
			AWG	4		4	
Mounting				35 mm DIN rail, EN 60715		35 mm DIN rail, EN 60715	
Degree of protection				IP20 (built-in)		IP20 (built-in)	
Housing material				UL 94 V-0 (non-spread and self-extinguishing characteristics)		UL 94 V-0 (non-spread and self-extinguishing characteristics)	
Thermal Protection				Yes		Yes	
Operating State / Fault Indication				Green ok / Red defect		Green ok / Red defect	
Remote Contacts	Switching capacity	AC	V	-	250 / 125	-	250 / 125
			A	-	0,5 / 0,2	-	0,5 / 0,2
		DC	V	-	250 / 75	-	250 / 75
			A	-	0,1 / 0,5	-	0,1 / 0,5
	Conductor cross section (max)	Solid		-	1,5	-	1,5
			AWG	-	16	-	16
Dimensions (W-D-H)			mm	36 x 67 x 90 (1N)	36 x 67 x 96 (1N)	36 x 81 x 90 (1N)	36 x 81 x 96 (1N)
				72 x 67 x 90 (3N)	72 x 67 x 96 (3N)	72 x 81 x 90 (3N)	72 x 81 x 96 (3N)
Weight	1N/3N		g	19 / 36,5	19,3 / 37,2	25,2 / 54	25,8 / 54,9
Ambient conditions							
Permissible operating humidity			%HR	5 ÷ 95		5 ÷ 95	
Operating temperature		T_a	°C	-40 ÷ +70		-40 ÷ +70	
Atmospheric pressure and altitude			k Pa	80 ÷ 106		80 ÷ 106	
			m	-500 / 2000		-500 / 2000	
Installation				Indoor		Indoor	
Accessories							
Replacement plug	L-N			SAXC40320T2		SAXC40320T12	
	N-PE			SAXC40260T2		SAXC40260T12	

Electrical circuit

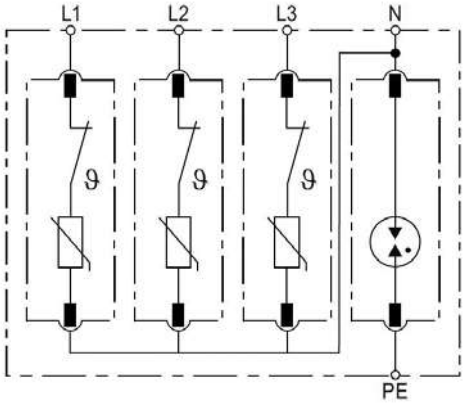
SA40T21N ...
SA40T121N ...



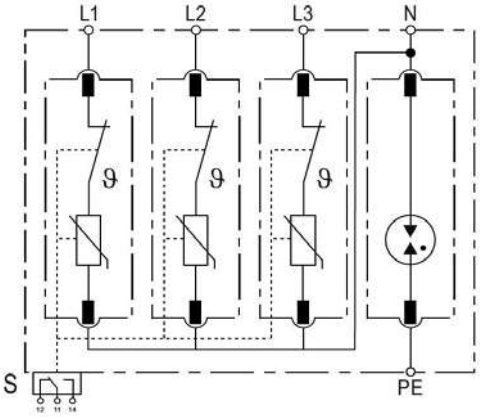
SA40T21N ... R
SA40T121N ... R



SA40T23N ...
SA40T123N ...

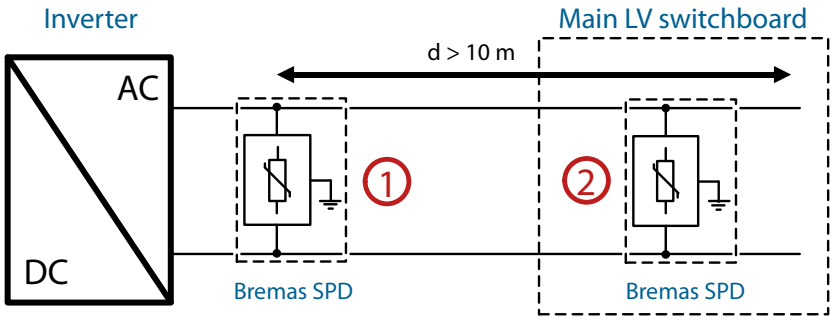


SA40T23N ... R
SA40T123N ... R



Features

Mounting

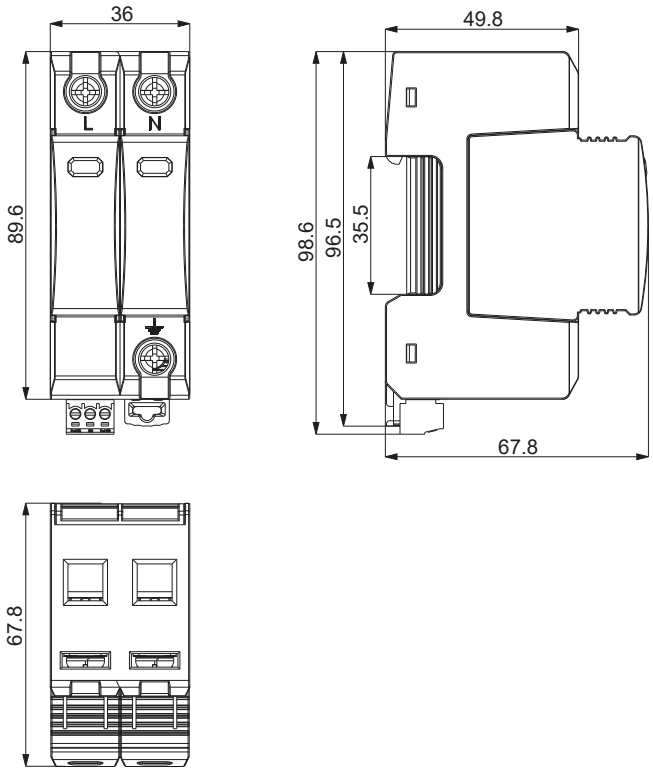


If d < 10 m, the Bremas SPD (2) is not required

Dimensions

SA40T21N ...
SA40T21N ... R

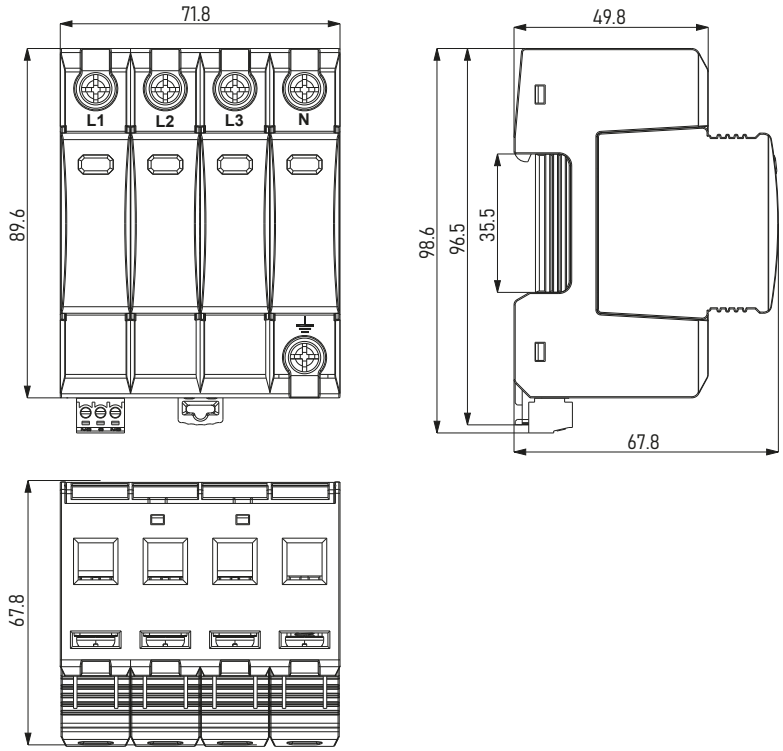
Dimension in mm



Dimensions

SA40T23N ...
SA40T23N ... R

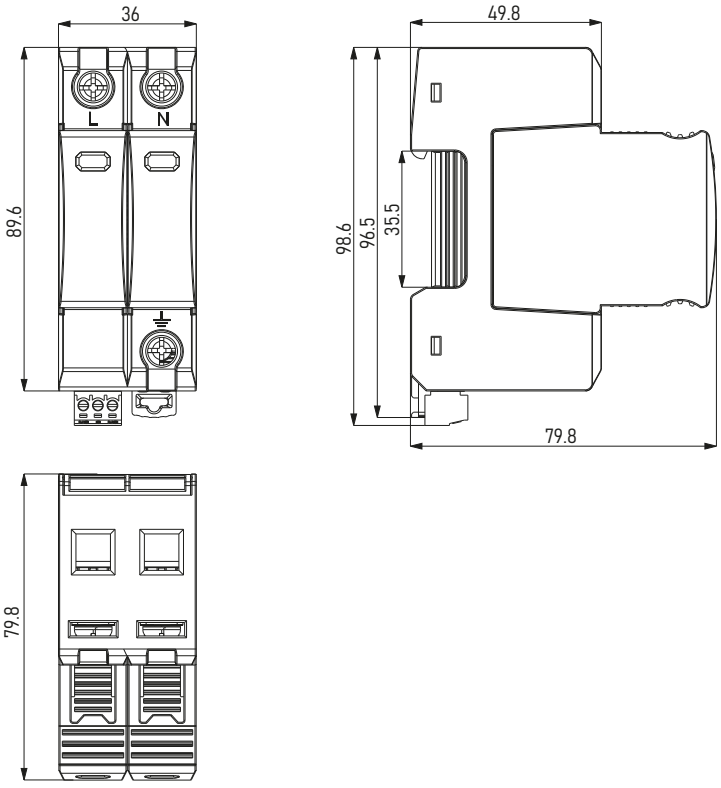
Dimension in mm



Dimensions

SA40T121N ...
SA40T121N ... R

Dimension in mm

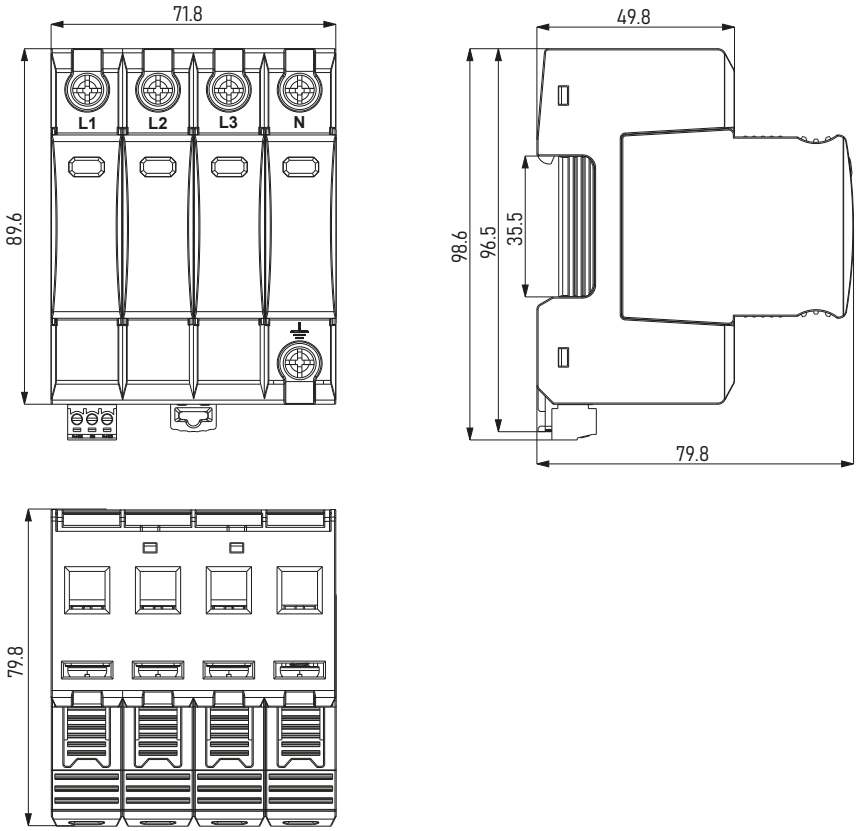


Dimensions

SA40T123N ...

SA40T123N ... R

Dimension in mm



BREMAS

BETTER SWITCHES

FUSE HOLDER

DC fuse holders 1000 Vdc

05

DC FUSE HOLDERS AND FUSE LINK

Fuse Protection - FHPV and CH10 Series

DC

Fuse
Protection

- Specifically designed for photovoltaic systems in DC application.
- Certified according to IEC 60269 and EN 60947-3.
- Suitable for system voltage up tp 1000 Vdc.
- Rated current up to 32 A.
- High breaking capacity fuse link for fault current protection.
- Compact fuse holders for DIN rail mounting.
- IP20-rated terminals for enhanced safety.
- Easy and safe replacement of the fuse cartridge.
- Visual indicator for fuse status (blown fuse detection).
- Ideal for use in PV combiner boxes and inverter protections.
- Suitable for indoor installations in controlled environments.

Discover more about our range of FHPV and CH10 Series.
Visit our website or contact our technical team for further information.

UK CA CE

FHPV Series

1 pole

2 poles

Fuse size*	Rated voltage	Rated current	N° of poles	LED indicator	Code
mm	V_n (Vdc)	I_n (A)			
10x38 gPV	1000	32	1	No	FHPV1001P
				Yes	FHPV1001PL
			2	No	FHPV1002P
				Yes	FHPV1002PL

* not included

10x38 gPV 1000V - Fuse-links Series

Fuse size*	Rated voltage	Rated current	Code
mm	V_n (Vdc)	I_n (A)	
10x38 gPV	1000	8	F1038PV08
		10	F1038PV10
		12	F1038PV12
		15	F1038PV15
		20	F1038PV20

* other currents available upon request

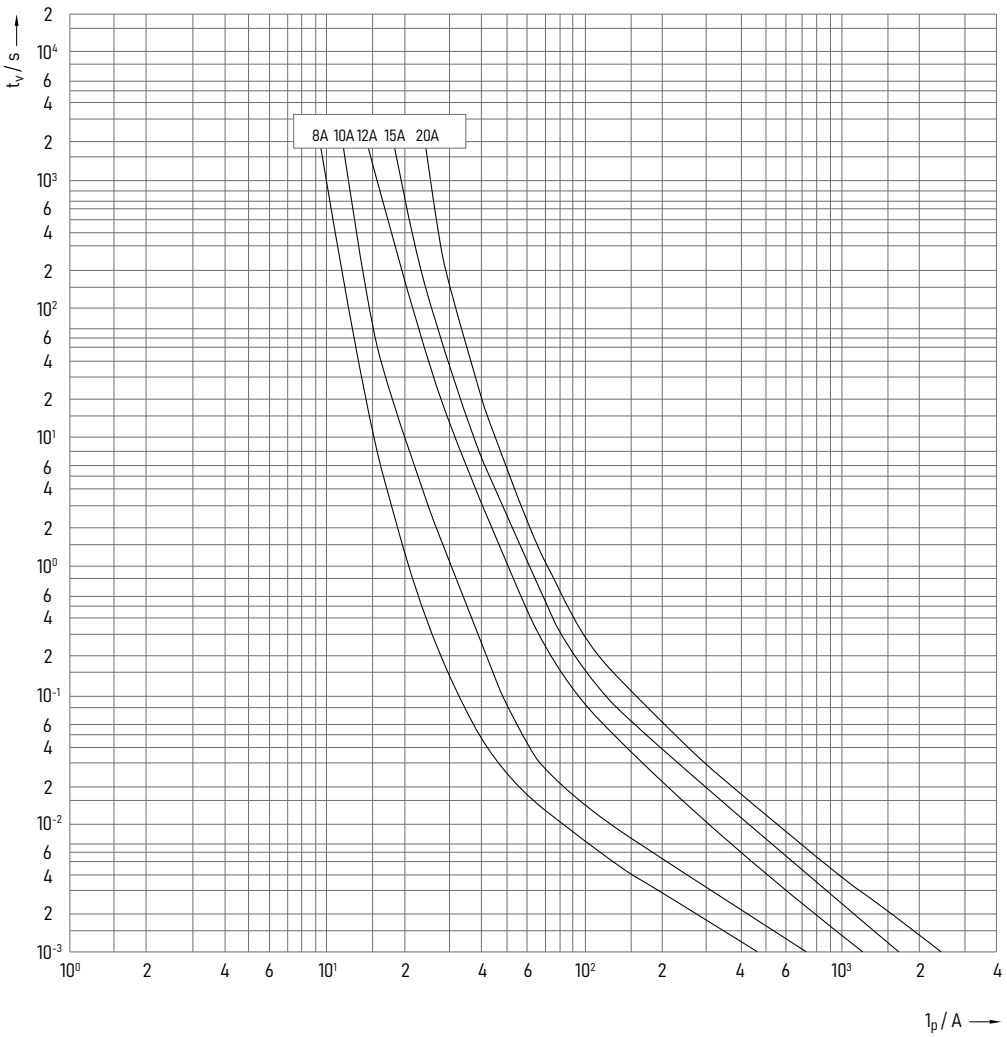
Technical data - Fuse holders

			FHPV		FHPV...L	
			1P	2P	1P	2P
Standards						
Applicable Standards			IEC 60947-1 IEC 60947-3		IEC 60947-1 IEC 60947-3	
Technical data						
Fuse size			10x38 gPV		10x38 gPV	
Version			Without indicator		Led indicator	
Rated voltage	V_n	Vdc	1000		1000	
Rated current	I_n	A	32		32	
Rated conditional short-circuit current		kA	20		20	
Rated insulation voltage	U_i	V	3110		3110	
Rated imp. withstand voltage	U_{imp}	kV	6		6	
Max power dissipation of the fuse-link		W	≤6W at 100% of the rated current ≤3W at 70% of the rated current		≤6W at 100% of the rated current ≤3W at 70% of the rated current	
LED indicator operating range		V_{dc}	-		1000	
Utilization category			DC-PV0		DC-PV0	
Mechanical characteristics						
N° of poles			2		2	
Degree of protection			IP20		IP20	
Terminal screw torque		Nm	3,5		3,5	
Conductor cross section (max)	Solid, Stranded	mm^2	16		16	
		AWG	2		2	
	Flexible	mm^2	16		16	
		AWG	4		4	
Mounting			35 mm DIN rail, EN 60715		35 mm DIN rail, EN 60715	
Weight		g	60,3	120,6	60,3	120,6
Ambient condition						
Humidity		%HR	90		90	
Operating ambient air temperature		°C	-5/+40		-5/+40	

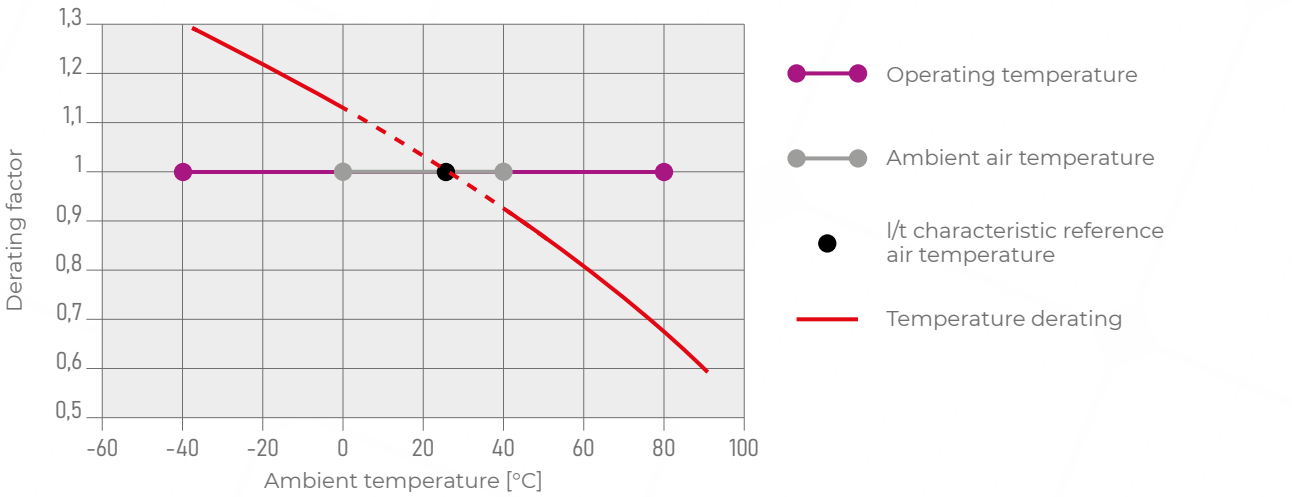
Technical data - Fuse links

				F1038PV08	F1038PV10	F1038PV12	F1038PV15	F1038PV20
Standards								
Applicable Standards				IEC 60269-6	IEC 60269-6	IEC 60269-6	IEC 60269-6	IEC 60269-6
Technical data								
Fuse size				10x38 gPV	10x38 gPV	10x38 gPV	10x38 gPV	10x38 gPV
Rated voltage		V_n	Vdc	1000	1000	1000	1000	1000
Rated current		I_n	A	8	10	12	15	20
Breaking capacity		IEC	kA	30	30	30	30	30
Pre-arcing Joule integral	L/R=2ms		A^2S	17	8,3	22	49	86
Operating Joule integral	L/R=2ms			65	33	73	145	245
Power dissipation	0,7 x I_n	Pd	W	0,8	1	0,8	1	1,3
	I_n			1,9	2,4	1,9	2,2	3,2
Weight			g	10	10	10	10	10

Time current characteristics I/t



Ambient air temperature of fuse-link



Legend:

T_{amb} - Ambient Temperature

TDF - Temperature Derating Factor

I_N - Nominal Current of Fuse-link

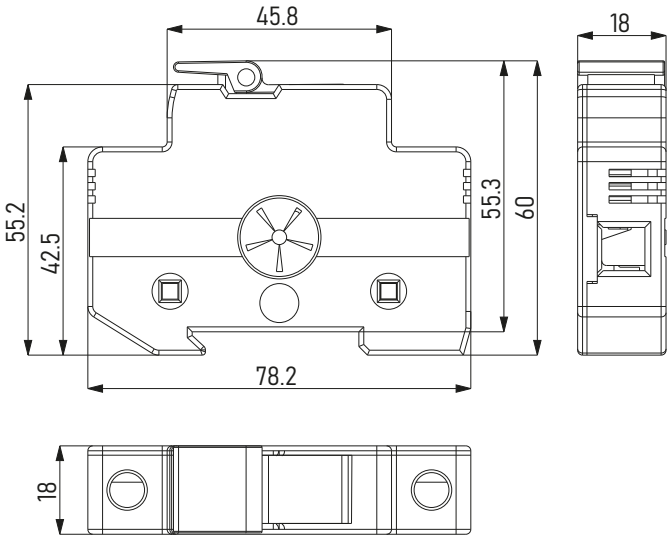
I_{TDF} - Nominal Current Including Temperature Derating Factor

Current calculation: $I_{TDF} = I_N \times TDF$

Features

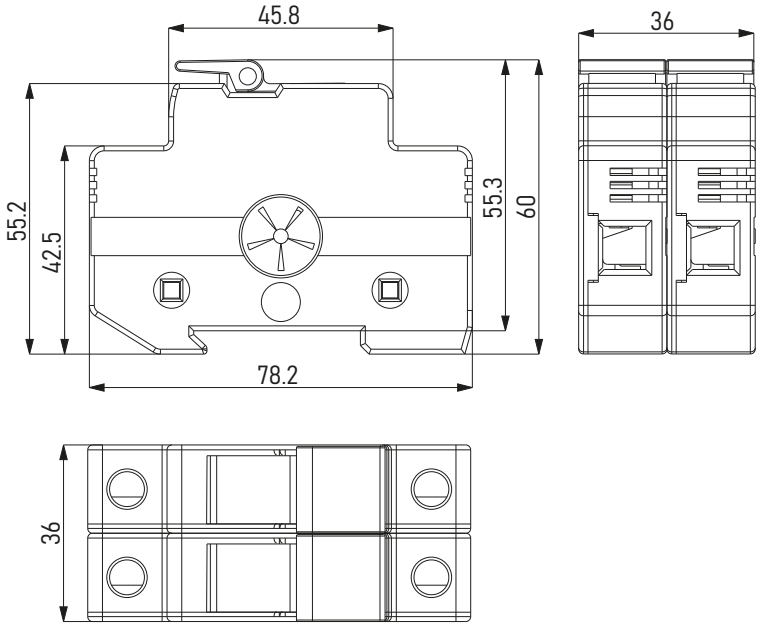
Dimensions
FHPV 1001P...

Dimension in mm



Dimensions
FHPV1002P...

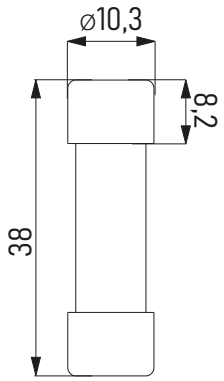
Dimension in mm



Dimensions

F1038PV...

Dimension in mm



BREMAS

BETTER SWITCHES

RCBO

Residual Current Breaker with Overcurrent

06

RCBOs - Residual Current Circuit Breakers with Overcurrent Protection

Compact protection for AC circuits - SR Series

AC

RCBOs

- Combined protection against overcurrent, short circuits and earth leakage.
- Ideal for use in photovoltaic AC switchboards, auxiliary protection circuits, SPI power supply protection, loads requiring earth fault detection with overcurrent safeguard.
- Tripping characteristic C, suitable for mixed resistive and inductive loads.
- Breaking capacity of 6 kA.
- Leakage current type A, suitable for sinusoidal and pulsating DC residual currents.
- Rated residual current: 300 mA.
- Versions available: 16-25-32 A.
- Conformity to IEC/EN 61009.
- 2 modules width (1P+N) - Compact DIN rail design.
- Rated voltage: 230/240 V AC - 50/60 Hz.
- Degree of protection: IP20.

Discover more about our range of RCBO SR Series.
Visit our website or contact our technical team for further information.

SR Series

Rated current	Rated residual current	N° of poles	Tripping characteristic	Leakage current type	Code
I_n (A)	IΔn (mA)				
16	300	2	C	A	SR06AC1NC16A300
25					SR06AC1NC25A300
32					SR06AC1NC32A300

We are available for additional custom configurations. Feel free to reach out to discuss your specific needs.

Technical data

			SR06AC1NC16A300	SR06AC1NC25A300	SR06AC1NC32A300
Standards					
Applicable Standards			IEC 61009	IEC 61009	IEC 61009
			EN 61009	EN 61009	EN 61009
Technical data					
Rated voltage	U_n	V_{AC}	230/240	230/240	230/240
Rated insulation voltage	U_i	V	500	500	500
Rated current	I_n	A	16	25	32
Rated frequency	F_n	Hz	50	50	50
Rated impulse withstand voltage	U_{imp}	kV	4	4	4
Rated short-circuit breaking capacity according to EN 61009		A	6000	6000	6000
Rated residual current	IΔn	mA	300	300	300
Peak withstand current		A	250	250	250
Back-up fuse	gG type	A	100	100	100
Tripping characteristic			C	C	C
Leakage current type			A	A	A
Current limiting class			3	3	3
Mechanical characteristics					
N° of poles (total)			2	2	2
N° of protected poles			1	1	1
Conductor cross section		mm^2	1-25	1-25	1-25
Terminal screw torque		Nm	3	3	3
Terminal screw			M5	M5	M5
Mounting position			Any	Any	Any
Resistance to vibrations acc. to IEC 60068-2-7			5g (10,60 & 500Hz)	5g (10,60 & 500Hz)	5g (10,60 & 500Hz)
Degree of protection			IP20	IP20	IP20
Dimensions (W-D-H)		mm	35 x 75,5 x 88	35 x 75,5 x 88	35 x 75,5 x 88
Built-in depth		mm	69	69	69
Width in number of modular spacings			2	2	2
Weight		g	220	225	230

Time current characteristics I/t

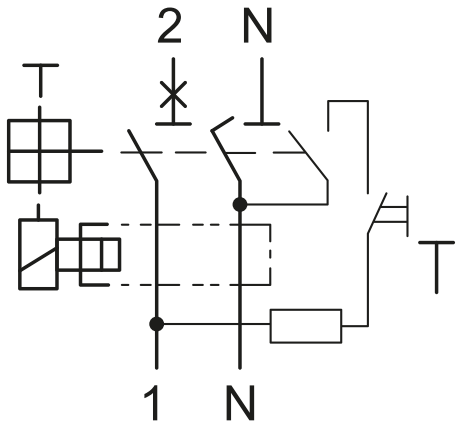
Conductor cross-section	Number of single conductors, rigid, single-wire CU conductor				
mm^2	1	2	3	4	5
1,5	V	V	V	V	X
2,5	V	V	V	X	X
4	V	V	V	X	X
6	V	V	X	X	X
10	V	V	X	X	X
16	V	X	X	X	X
25	V	X	X	X	X

Remark: When you use more than 2 cables you have to be careful how those cables are inserted, due to insure proper presure on each cable.

Conductor cross-section	Number of single conductors, flexible Cu conductors without cable ferrule					
mm^2	1	2	3	4	5	6
1,5	V	V	V	V	V	V
2,5	V	V	V	V	V	V
4	V	V	V	V	V	V
6	V	V	V	X	X	X
10	V	V	X	X	X	X
16	V	X	X	X	X	X
25	V	X	X	X	X	X

Combination of rigid single-wire and flexible multi-wire Cu conductors is not allowed

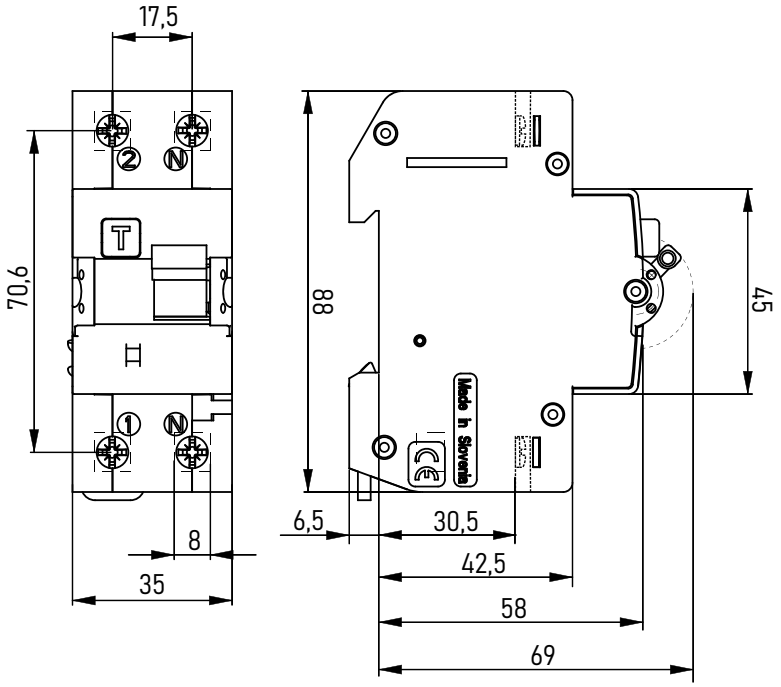
Electrical circuit



Features

Dimensions
SR Series

Dimension in mm




BREMAS
BETTER SWITCHES

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