BREMAS

BETTER SWITCHES

DC DISCONNECT SWITCHES AND SURGE PROTECTIVE DEVICES

FOR PV APPLICATIONS

MADE IN ITALY

bremas.it


BREMAS
BETTER SWITCHES

BREMAS

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QUALITY MAKES OUR PRODUCTS GREAT

With over 50 years of experience we are specialist in the manufacturing of cam switches, disconnect switches, position and safety switches, power tools switches and relay sockets.

We design and build extremely reliable and efficient products: our company is managed in full accordance with UNI EN ISO 9001 and all our products are verified in our laboratory under the most stringent standards to guarantee performance, durability and safety.

We have a state of the art R&D department committed to develop new, better products. We have gained a wide experience in designing custom products for different industrial sectors: our technicians constantly interact with customers to develop solutions which can offer significant added value.

DP-DK-DM-DX-DU Series

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

Up to 60 A at 1000 Vdc

Up to 30 A at 1500 Vdc

With only 45 mm

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 6 DC inputs/MPPT, and up to 12 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.

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-DU Series - Product range

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

DU06020	DU10020	DU15020	DU15030
Poles 1+1	Poles 1+1	Poles 1+1	Poles 2+1
600 Vdc 20 A	**1000 Vdc** 20 A	**1500 Vdc** 20 A	**1500 Vdc** 30 A
	600 Vdc 40 A	**1000 Vdc** 40 A	**1000 Vdc** 60 A
		800 Vdc 50 A	

Technical data

				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 a +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	50	50	60
0,2 / 1,25			
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
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-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	20	30
-	20	40	60
-	-	50	-
20	40	-	-
5			
50	50	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 6
2x 10	2x 10
1x 16	1x 16
1x 6	1x 6
M4 - PH2	M4 - PH2
1,7 ±10%	1,7 ±10%
12 ±10%	12 ±10%
IP20	IP20
2	3
-40 ÷ +85	-40 ÷ +85
-40 ÷ +85	-40 ÷ +85
90-100% RH at +55 °C	90-100% RH at +55 °C

Applications

Inverter

String combiner boxes

Energy storage systems (ESS)

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

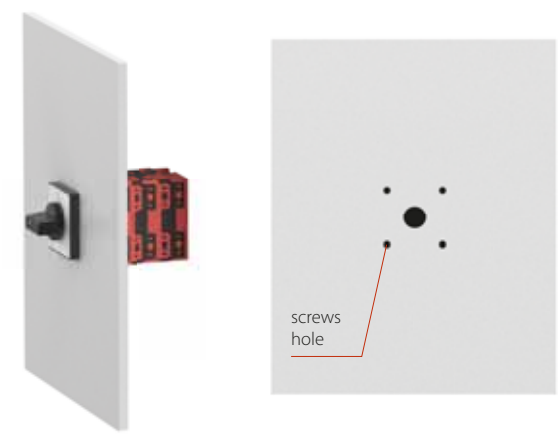
IP67 - Protected against complete temporary water submersion

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

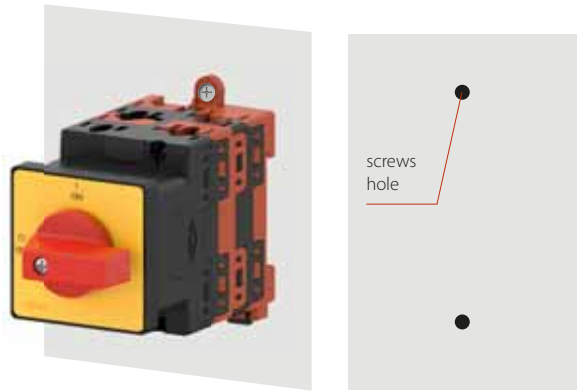
Main features
Reduced assembly time

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

Head up

Base mounting

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

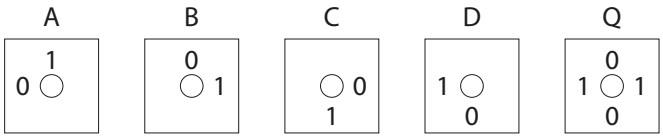
Other configurations available upon request.

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)

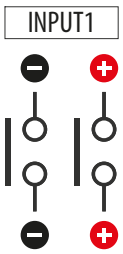


N° of inputs and poles configuration

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

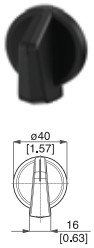
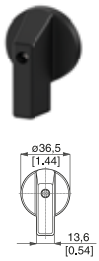


Other configurations available upon request

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						
 	 MVU5	 MVU6	 ML6	 MKU6	 ML5	 MKU5

DU Series

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

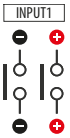
Panel mounting / Double mounting – Fixing with nut by M16 x 1,5 mm single hole					
 	 MKU5	 MLU5	 MKU6	 MLU6

Approvals

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

DP - DK - DM - DX Series
For standard distribution boards (45 mm window)

N° of poles 1x (1+1)



Base mounting

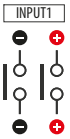
Pre-mounted knob

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

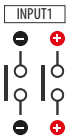
Fixing on DIN rail or by 2 screws

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

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

N° of poles 1x (1+1)



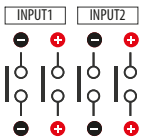
Base mounting - Pre-mounted knob

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)



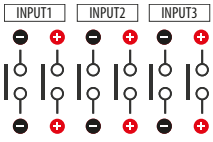
Base mounting - Pre-mounted knob

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

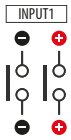
Fixing on DIN rail or by 2 screws

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

DU Series - For direct operation

N° of poles 1x (1+1)



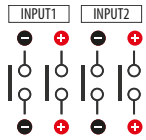
Base mounting - Pre-mounted knob

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 - 60 A	1500 V - 30 A	**DU15030130 AERW4UL**	3

* N° of poles 1x (2+1)

N° of poles 2x (1+1)



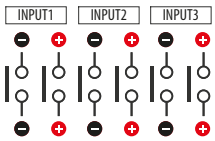
Base mounting - Pre-mounted knob

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 - 60 A	1500 V - 30 A	**DU15030230 AERW4UL**	6

* N° of poles 2x (2+1)

N° of poles 3x (1+1)



Base mounting - Pre-mounted knob

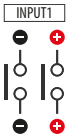
Fixing on DIN rail or by 2 screws

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 - 60 A	1500 V - 30 A	**DU15030330 AERW4UL**	9

* N° of poles 3x (2+1)

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

N° of poles 1x (1+1)



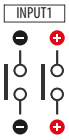
Panel mounting

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

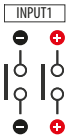
4 screws 36x36 mm

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

DU Series - 1 input / MPPT

N° of poles 1x (1+1)



Panel mounting

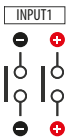
4 screws 36x36 mm

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 - 60 A	1500 V - 30 A	DU15030130 ATRV4UL	DU15030130 ALMKU5	DU15030130 ALMLU5	3

* N° of poles 1x (2+1)

N° of poles 1x (1+1)



Panel mounting

4 screws 36x36 mm

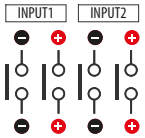
Single hole M16

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 - 60 A	1500 V - 30 A	DU15030130 ATRW4UL	DU15030130 ALMKU6	DU15030130 ALMLU6	3

* N° of poles 1x (2+1)

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

N° of poles 2x (1+1)



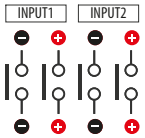
Panel mounting

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

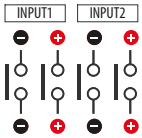
4 screws 36x36 mm

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

DU Series - 2 inputs / MPPT

N° of poles 2x (1+1)



Panel mounting

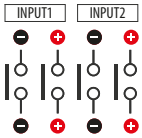
4 screws 36x36 mm

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 - 60 A	1500 V - 30 A	DU15030230 ATRV4UL	DU15030230 ALMKU5	DU15030230 ALMLU5	6

* N° of poles 2x (2+1)

N° of poles 2x (1+1)



Panel mounting

4 screws 36x36 mm

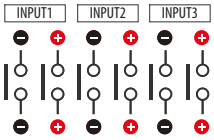
Single hole M16

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 - 60 A	1500 V - 30 A	DU15030230 ATRW4UL	DU15030230 ALMKU6	DU15030230 ALMLU6	6

* N° of poles 2x (2+1)

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

N° of poles 3x (1+1)



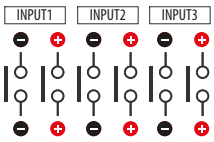
Panel mounting

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

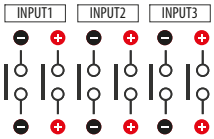
4 screws 36x36 mm

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

DU Series - 3 inputs / MPPT

N° of poles 3x (1+1)



4 screws 36x36 mm

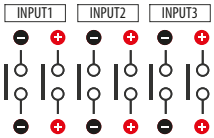
Panel mounting

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 - 60 A	1500 V - 30 A	DU15030330 ATRV4UL	DU15030330 ALMKU5	DU15030330 ALMLU5	9

* N° of poles 3x (2+1)

N° of poles 3x (1+1)



4 screws 36x36 mm

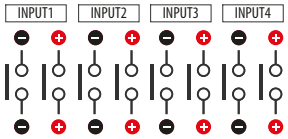
Panel mounting

Single hole M16

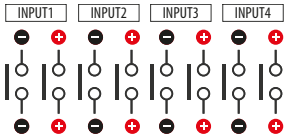
Series	UL per input	UL per input	Code	Code	Code	N° of layers
DU	600 V - 20 A	-	DU06020320ATRW4UL	DU06020320ALMKU6	DU06020320ALMLU6	6
DU	600 V - 40 A	1000 V - 20 A	DU10020320ATRW4UL	DU10020320ALMKU6	DU10020320ALMLU6	6
DU	1000 V - 40 A	1500 V - 20 A	DU15020320ATRW4UL	DU15020320ALMKU6	DU15020320ALMLU6	6
DU*	1000 V - 60 A	1500 V - 30 A	DU15030330 ATRW4UL	DU15030330 ALMKU6	DU15030330 ALMLU6	9

* N° of poles 3x (2+1)

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

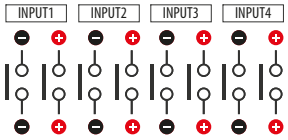
N° of poles 4x (1+1)			Panel mounting	Double mounting		
			 4 screws 36x36 mm	 Single hole M16		
Series	**PV1 cat. per input**	**PV1 cat. per input**	**Code**	**Code**	**Code**	**N° of layers**
DP	600 V - 32 A	1000 V - 12 A	**DP10012420ATRV4E**	**DP10012420AVMVU5E**	**DP10012420AVMVU6E**	8
DK	750 V - 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**	**DX120304E0AVMVU5E***	**DX120304E0AVMVU6E***	8
DX..U	1000 V - 40 A	1500 V - 15 A	**DX1203042UATRV4E**	**DX120304EUAVMVU5E***	**DX120304EUAVMVU6E***	8
	1000 V - 50 A	1500 V - 20 A	**DX1503042UATRV4E**	**DX150304EUAVMVU5E***	**DX150304EUAVMVU6E***	8
DX..P	1000 V - 60 A	1500 V - 30 A	**DX1503042PATRV4E**	**DX150304EPAVMVU5E***	**DX150304EPAVMVU6E***	8

* N° of layers 9, one is empty

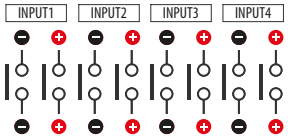
N° of poles 4x (1+1)			Panel mounting	Double mounting		
			 4 screws 36x36 mm	 Single hole M16		
Series	**PV1 cat. per input**	**PV1 cat. per input**	**Code**	**Code**	**Code**	**N° of layers**
DP	600 V - 32 A	1000 V - 12 A	**DP10012420ATRKU6SE**	**DP10012420AVML5E**	**DP10012420AVMKU6E**	8
DK	750 V - 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**	**DX120304E0AVML5E***	**DX120304E0AVMKU6E***	8
DX..U	1000 V - 40 A	1500 V - 15 A	**DX1203042UATRKU6SE**	**DX120304EUAVML5E***	**DX120304EUAVMKU6E***	8
	1000 V - 50 A	1500 V - 20 A	**DX1503042UATRKU6SE**	**DX150304EUAVML5E***	**DX150304EUAVMKU6E***	8
DX..P	1000 V - 60 A	1500 V - 30 A	**DX1503042PATRKU6SE**	**DX150304EPAVML5E***	**DX150304EPAVMKU6E***	8

* N° of layers 9, one is empty

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	

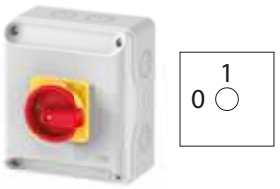
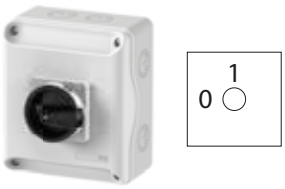
Series	UL per input	UL per input	Code	Code	Code	N° of layers
DU	600 V - 20 A	-	DU06020420ATRW4UL	DU06020420AVMKU6	DU06020420AVMLU6	8
DU	600 V - 40 A	1000 V - 20 A	DU10020420ATRW4UL	DU10020420AVMKU6	DU10020420AVMLU6	8
DU	1000 V - 40 A	1500 V - 20 A	DU15020420ATRW4UL	DU15020420AVMKU6	DU15020420AVMLU6	8

Enclosed disconnect switches

Enclosed DC disconnect switches IP65

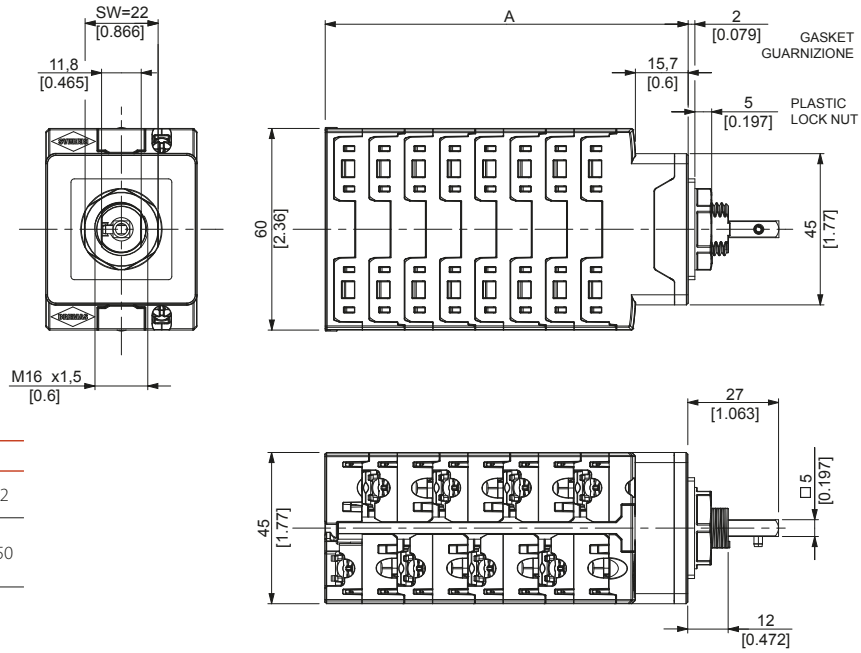
- Nominal current from 12 A up to 60 A
- Nominal voltage up to 1500 Vdc
- Up to 4 DC Poles switching
- Compact dimensions
- Maximum terminal access
- IEC EN 60947 certified
- IP65 protection degree
- Double insulation ABS thermoplastic enclosure
- Handles padlockable in "OFF" position
- Cable entry knockout to simplify wiring
- UV rays resistant materials

DP - DK - DM - DX Series - Enclosed disconnect switches

				Enclosure B140 - IP65	
					
				Yellow/Red padlockable handle	Grey/Black padlockable handle
Series	**PV1 cat. per input**	**PV1 cat. per input**	**N° of poles**	**Code**	**Code**
DP	600 V - 32 A	1000 V - 12 A	1x (1+1)	**DP10012120AB140ML6**	**DP10012120AB140MKU6**
			2x (1+1)	**DP10012220AB140ML6**	**DP10012220AB140MKU6**
DK	750 V - 32 A	1000 V - 16 A	1x (1+1)	**DK10016120AB140ML6**	**DK10016120AB140MKU6**
			2x (1+1)	**DK10016220AB140ML6**	**DK10016220AB140MKU6**
DM	700 V - 40 A	1000 V - 20 A	1x (1+1)	**DM10020120AB140ML6**	**DM10020120AB140MKU6**
			2x (1+1)	**DM10020220AB140ML6**	**DM10020220AB140MKU6**
DX	1000 V - 30 A	1500 V - 10 A	1x (1+1)	**DX12030120AB140ML6**	**DX12030120AB140MKU6**
			2x (1+1)	**DX12030220AB140ML6**	**DX12030220AB140MKU6**
DX..U	1000 V - 40 A	1500 V - 15 A	1x (1+1)	**DX1203012UAB140ML6**	**DX1203012UAB140MKU6**
			2x (1+1)	**DX1203022UAB140ML6**	**DX1203022UAB140MKU6**
	1000 V - 50 A	1500 V - 20 A	1x (1+1)	**DX1503012UAB140ML6**	**DX1503012UAB140MKU6**
			2x (1+1)	**DX1503022UAB140ML6**	**DX1503022UAB140MKU6**
DX..P	1000 V - 60 A	1500 V - 30 A	1x (1+1)	**DX1503012PAB140ML6**	**DX1503012PAB140MKU6**
			2x (1+1)	**DX1503022PAB140ML6**	**DX1503022PAB140MKU6**

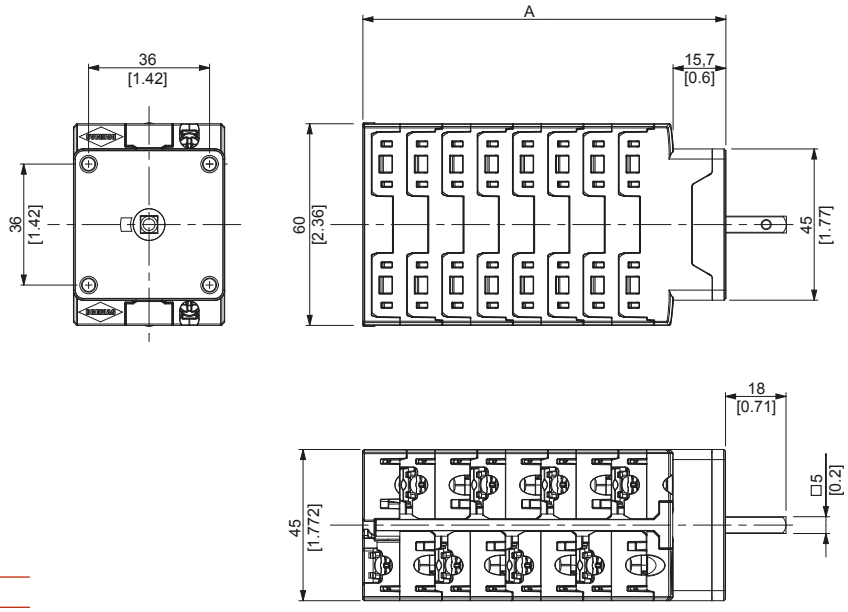
Dimensions

Panel mounting L - Fixing M16



	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

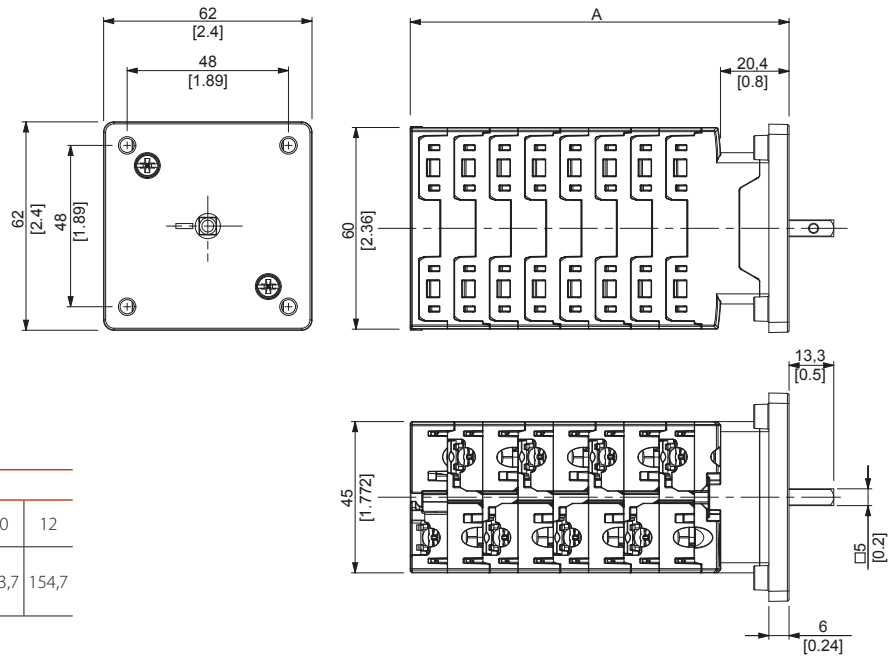
Panel mounting T - Fixing with 4 screws 36x36 mm



	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

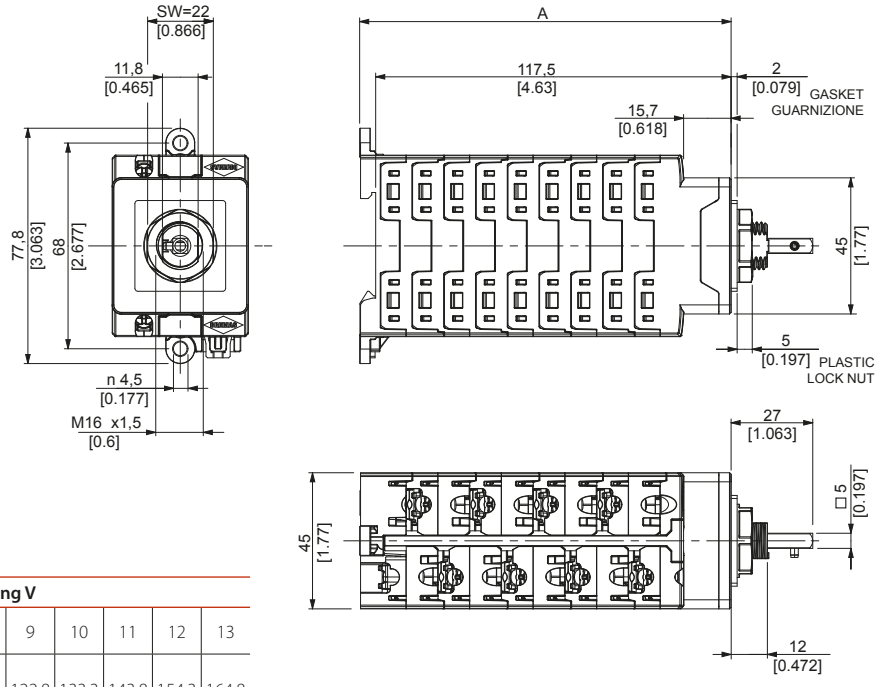
Dimensions

Panel mounting C - Fixing with 4 screws 48x48 mm



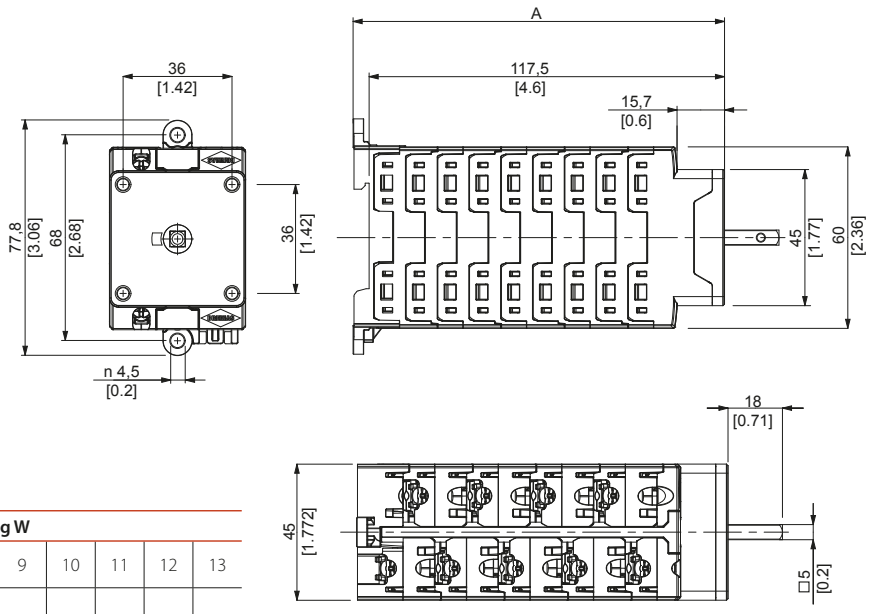
	Panel mounting C							
Number of layers	2	3	4	6	8	9	10	12
A dimensions (mm)	49,7	60,2	70,7	91,7	112,7	123,2	133,7	154,7

Double mounting V - Fixing M16



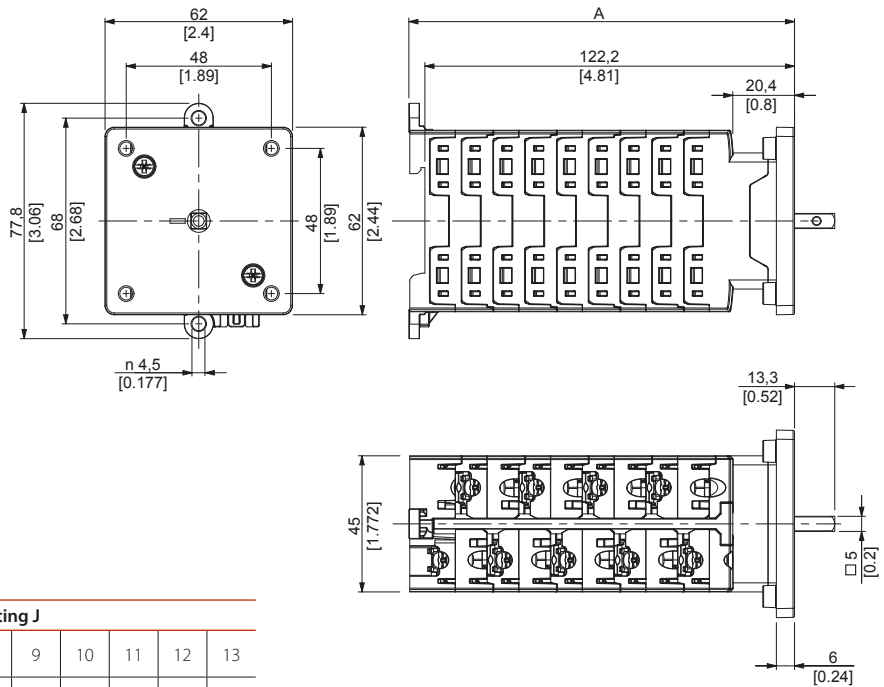
	Double mounting V											
Number of layers	2	3	4	5	6	7	8	9	10	11	12	13
A dimensions (mm)	49,3	59,8	70,3	80,8	91,3	101,8	112,3	122,8	133,3	143,8	154,3	164,8

Double mounting W - Fixing with 4 screws 36x36 mm



	Double mounting W											
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

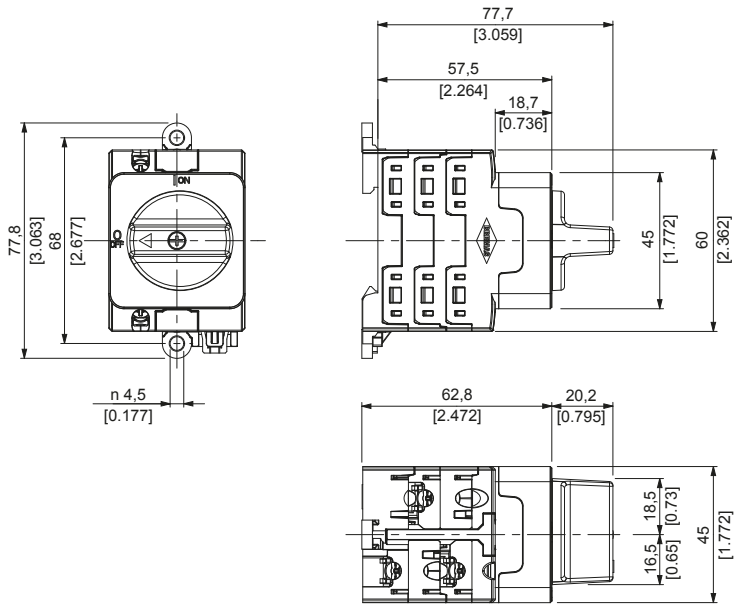
Double mounting J - Fixing with 4 screws 48x48 mm



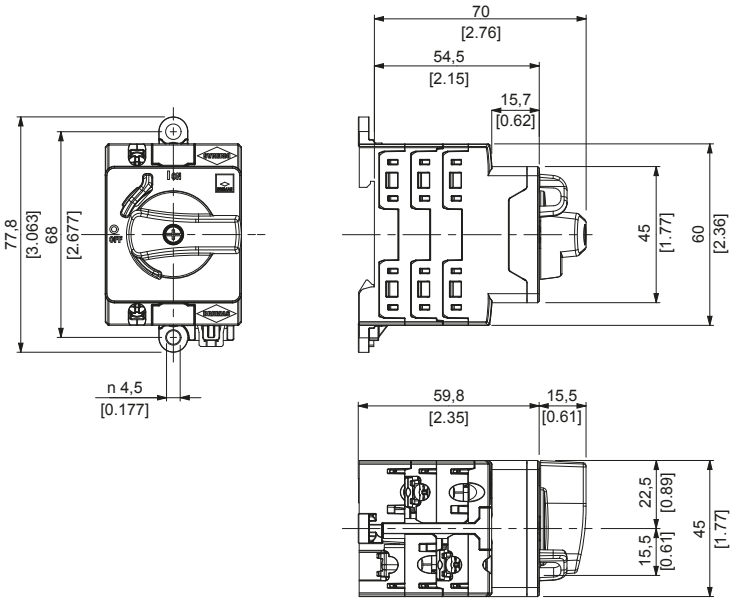
	Double mounting J											
Number of layers	2	3	4	5	6	7	8	9	10	11	12	13
A dimensions (mm)	54	64,5	75	85,5	96	106,5	117	127,5	138	148,5	159	169,5

Dimensions

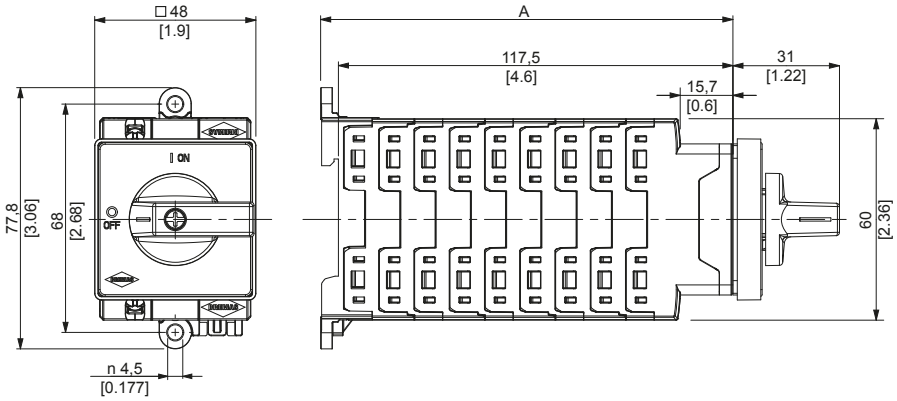
Base mounting D - Back-side for DIN rail or 2 screws fixing
For standard distribution boards (45 mm window)
With pre-mounted knob



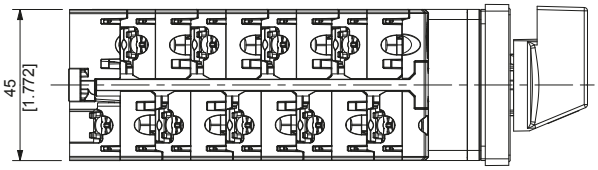
Base mounting D - Back-side for DIN rail or 2 screws fixing
For standard distribution boards (45 mm window)
With pre-mounted padlockable knob



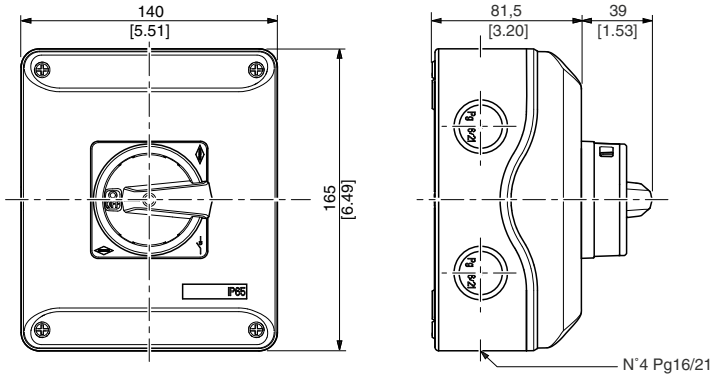
Base mounting E - Back-side for DIN rail or 2 screws fixing
For direct operation
With pre-mounted knob (RW4)



	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

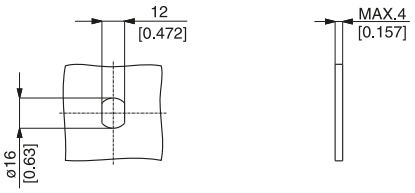


Enclosed disconnect switches

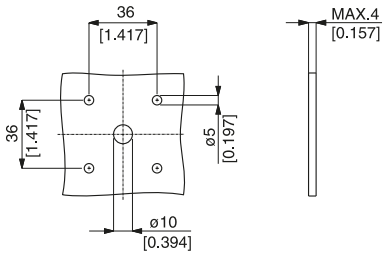


Drilling templates

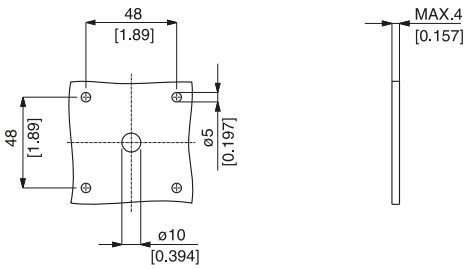
Mounting type L



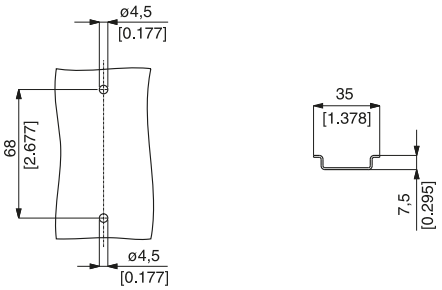
Mounting type T



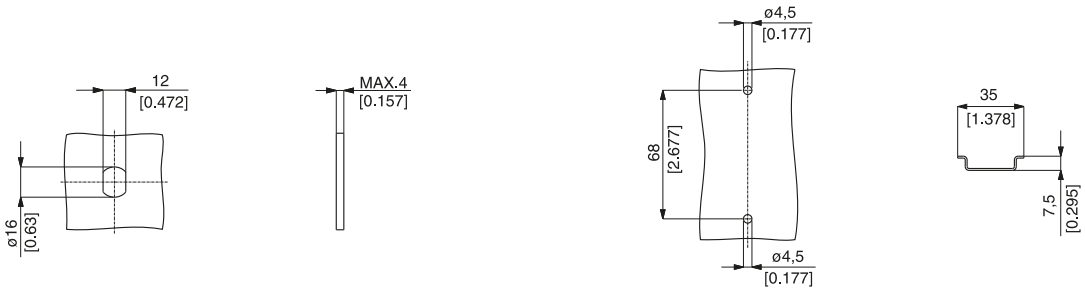
Mounting type C



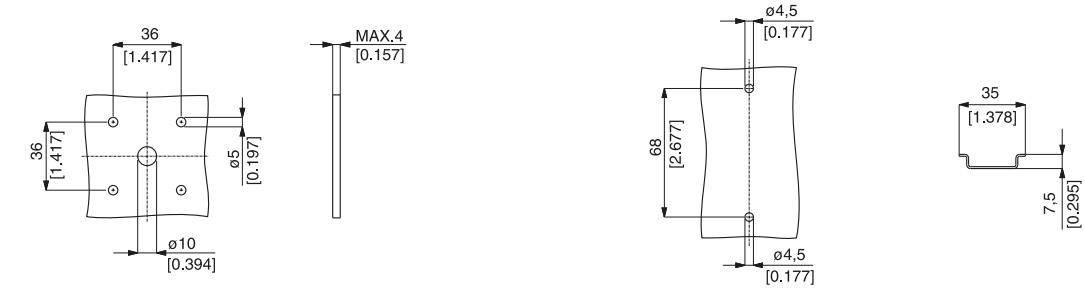
Mounting type D / E



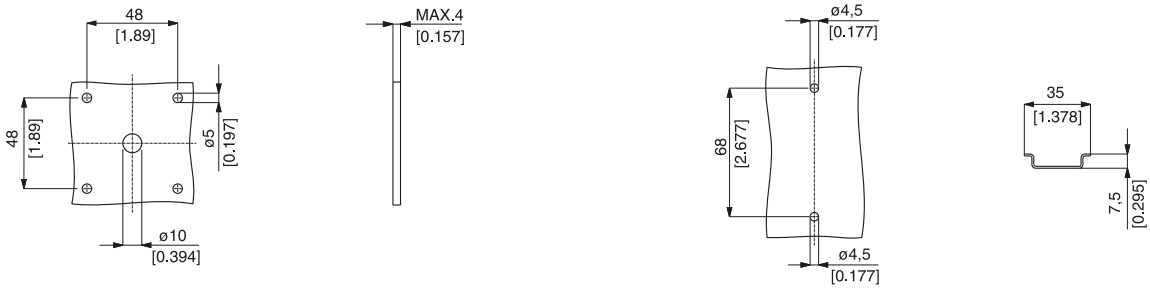
Mounting type V



Mounting type W



Mounting type J



Surge Protection

DC surge protective devices - SAPV Series

- Specifically designed for photovoltaic systems, DC application.
- According to standard EN 50539-11.
- Surge protective device Type 2 / Class II (IEC 61643-31).
- Suitable for protection against induced overvoltages (tested at 8/20 µs).
- Discharger elements made with Metal Oxide Varistor technology (MOV).
- Pluggable solution, to facilitate maintenance. With mechanical coding system which identifies the different plugs (cartridge), to avoid possible replacement errors.
- Integrated disconnection system capable of disconnecting the SPD at the end of its operating life time (OCFM).
- Local signaling of the operating status condition, available on the front side.
- Remote signaling of the operating status condition, with changeover relay.
- Without back-up fuse for short circuit current (I_{SCPV}) up to 1000 A.
- IP20 degree, on terminals.
- Fixing on DIN rail.
- Indoor installation.

DC

Surge
Protective
Devices

Technical data

			SAPV060T2	SAPV060T2R	SAPV100T2	SAPV100T2R
Standards						
Applicable Standards			EN 50539-11 / IEC 61643-31		EN 50539-11 / IEC 61643-31	
Technical data						
Residual current	I_{PE}	µA	< 500 (ac/dc)		< 500 (ac/dc)	
Permanent current for PV application	I_{CPV}	µA	< 500 (ac/dc)		< 500 (ac/dc)	
Maximum continuous operating voltage	U_{CPV}	Vdc	600		1040	
Nominal discharge current (8/20 µs)	I_n	kA	18		18	
Maximum discharge current (8/20 µs)	I_{max}	kA	40		40	
Total discharge current (8/20 µs)	I_{total}	kA	40		40	
Reference voltage (1 mA)	U_{REF}	Vdc	860		1500	
Short-circuit current without back-up fuse	I_{SCPV}	kA	1		1	
Voltage protection level	U_p	kV	< 2,7		< 3,5	
Remote signaling relay - Electrical parameters			-	230 Vac - 1 A 24 Vdc - 1 A	-	230 Vac - 1 A 24 Vdc - 1 A
Functional data						
SPD typology			Type 2 / Class II		Type 2 / Class II	
Protection technology			Metal Oxide Varistor (MOV)		Metal Oxide Varistor (MOV)	
Protection mode			L+ / PE, L / PE (common mode) L+ / L- (differential mode)		L+ / PE, L / PE (common mode) L+ / L- (differential mode)	
Typical response time	t_A	ns	< 25		< 25	
Thermal protection			Yes		Yes	
SPD failure mode			Open circuit (OCFM)		Open circuit (OCFM)	
Operating status signaling			Local, through display indicator (GREEN - Service; RED - End of lifetime)		Local, through display indicator (GREEN - Service; RED - End of lifetime)	
Mechanical characteristics						
Protection degree			IP20		IP20	
Number of ports		Nr.	1		1	
Maximum dimensions (W-D-H)		mm	53 x 74 x 94,6	53 x 74 x 99	53 x 74 x 94,6	53 x 74 x 99
Fixing			DIN rail		DIN rail	
Enclosure material			UL-V0 (non-spread and self-extinguishing characteristics)		UL-V0 (non-spread and self-extinguishing characteristics)	
Weight		g	276	283	315	322
Connection terminals Cross-sectional area of conductors		mm^2	4 ÷ 25		4 ÷ 25	
		AWG	11 ÷ 4		11 ÷ 4	
Connection terminals Tightening torque		Nm	3 (±10%)		3 (±10%)	
Remote signaling relay Cross-sectional area of conductors		mm^2		1,5		1,5
		AWG		15		15
Remote signaling relay Tightening torque		Nm		0,4 (±10%)		0,4 (±10%)
Ambient conditions						
Humidity		%HR	5 ÷ 95		5 ÷ 95	
Operating temperature	T_U	°C	-40 ÷ +70		-40 ÷ +70	
Installation			Indoor		Indoor	
Accessories						
Replacement plug			SAXCPV060		SAXCPV100	

SAPV Series

TYPE 2

Maximum continuous operating voltage U_{CPV}: 600 Vdc

Bremas SPD T2 600V 40kA

Maximum continuous operating voltage	Nominal discharge current (8/20 µs)	Maximum discharge current (8/20 µs)	Voltage protection level	Code	Remote signaling
U_{CPV} (Vdc)	I_n (kA)	I_{max} (kA)	U_P (kV)		
600	18	40	< 2,7	**SAPV060T2**	No
600	18	40	< 2,7	**SAPV060T2R**	Yes

Maximum continuous operating voltage U_{CPV}: 1040 Vdc

Bremas SPD T2 1040V 40kA

Maximum continuous operating voltage	Nominal discharge current (8/20 µs)	Maximum discharge current (8/20 µs)	Voltage protection level	Code	Remote signaling
U_{CPV} (Vdc)	I_n (kA)	I_{max} (kA)	U_P (kV)		
1040	18	40	< 3,5	**SAPV100T2**	No
1040	18	40	< 3,5	**SAPV100T2R**	Yes

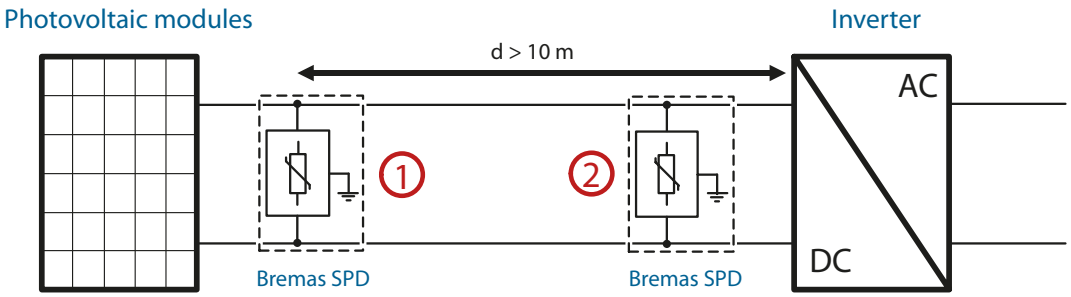
Accessories

Replacement plug

Maximum continuous operating voltage	Nominal discharge current (8/20 µs)	Maximum discharge current (8/20 µs)	Code	Description
U_{CPV} (Vdc)	I_n (kA)	I_{max} (kA)		
600	18	40	**SAXCPV060**	For Bremas SPD type SAPV060…
1040	18	40	**SAXCPV100**	For Bremas SPD type SAPV100…

Features

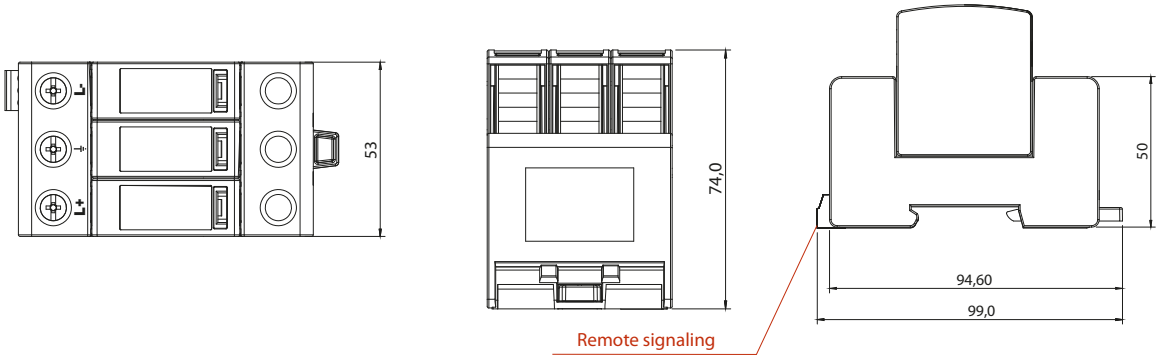
Distances



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

Dimensions

Data in mm



SOL 1123 GB

BREMAS
BETTER SWITCHES

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ISO 9001 Certified Quality System

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