

Technical catalogue

# S800PV

The High Performance MCB  
Photovoltaic



**ABB**

# A question of Power.

## S800PV-S PV string protection

### The S800PV. Maximum safety for use in photovoltaic systems

The S800PV is the only PV switch that already bears its application in the name. Specially developed and approved for the demands of photovoltaics.

■ **More voltage.**

Higher nominal voltage range up to 1200 VDC.  
Rated continuous current up to 125A.

■ **More space.**

Highly compact dimensions for space-saving installation on the DIN rail.

■ **More comfort.**

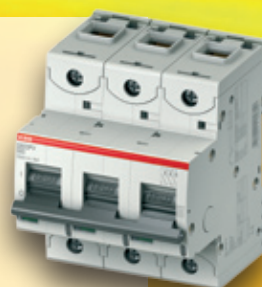
Disconnecter properties for comfortable switching even under load.

■ **More accessories.**

Wide range of accessories, for example for remote switching, fault signalling and external driving.



S802PV-S

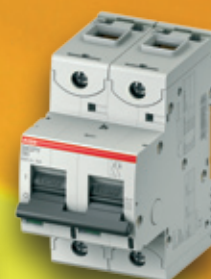


S803PV-S



S804PV-S

## S800PV-M DC main switch



S802PV-M








S803PV-M



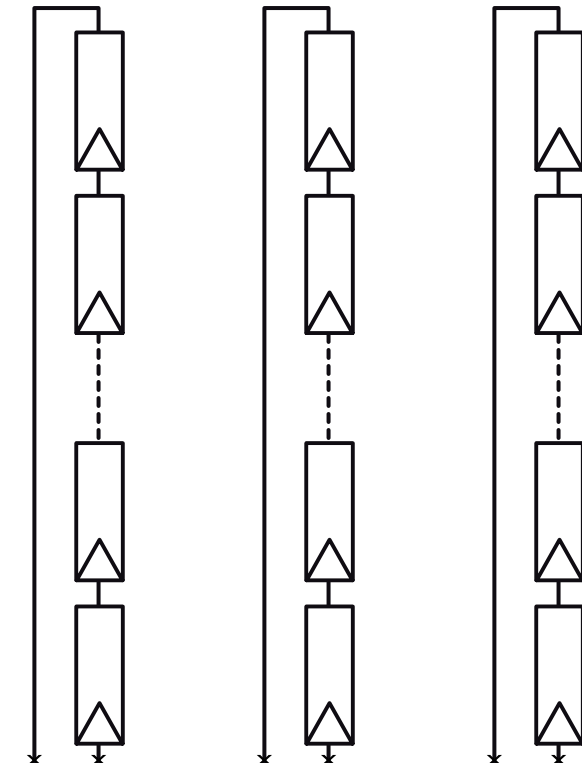
S804PV-M

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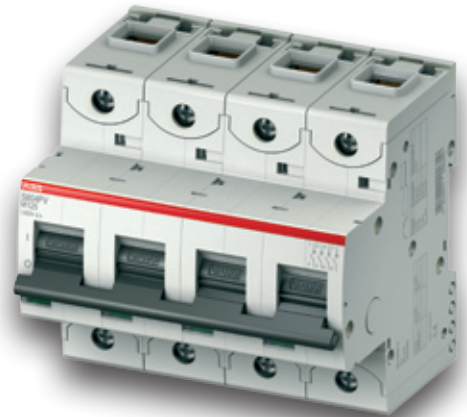
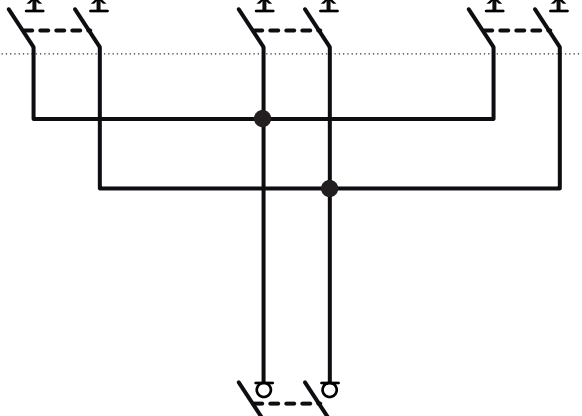
# Fuseless PV distribution for maximum system availability

String protection



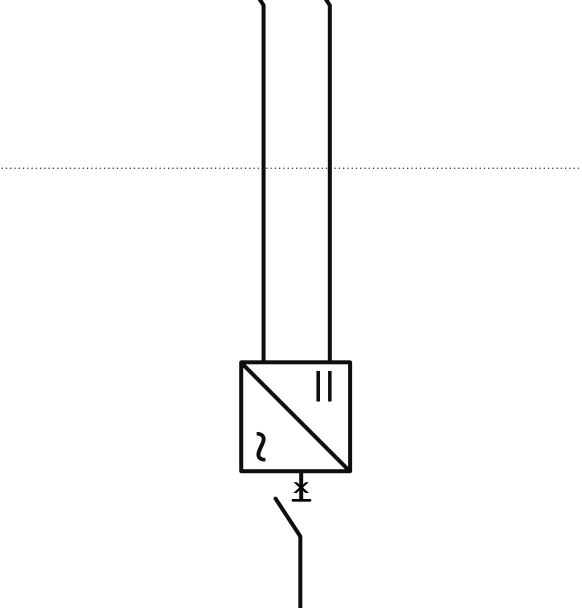
2CCC413246F0001

DC main switch



2CCC413251F0001

AC-side protection



2CCC413015F0001

## S800PV-S

*The high-performance string protection MCB*

The High-Performance MCB S800PV-S specially developed for use in photovoltaic systems offers reliable protection for PV modules and lines against reverse currents from defective strings and AC regenerative feedback due to defective inverters. The high demands of PV systems have already been taken into consideration in the development of the S800PV-S:

- Optimum protection for cost-intensive system components
- Minimised standstill times thanks to reclosing capability
- Simple fault signalling
- High ambient temperatures
- Covers all common PV system voltages and currents
- Selective string shutdown even under load
- Easy installation thanks to DIN rail mounting
- Remote shutdown using working current and low-voltage trips possible
- In operation worldwide in generator terminal boxes and inverters

## S800PV-M

*Switch disconnecter for DC side isolation of PV systems*

With highly compact design for installation on the DIN rail, the S800PV-M switch disconnecter offers safety-relevant isolation properties. As master switch for PV systems, the whole DC side can thus be safely isolated - locally or remote. Here again, consideration was given to the special ambient influences of photovoltaic systems up to 1200 VDC even at the development stage:

- Reliable isolation of up to 125 A rated current at ambient temperatures of up to 60° C without any losses
- Safe switching of ohmic and inductive loads (inductive loads can occur with long line lengths)
- Extensive range of accessories

## S800

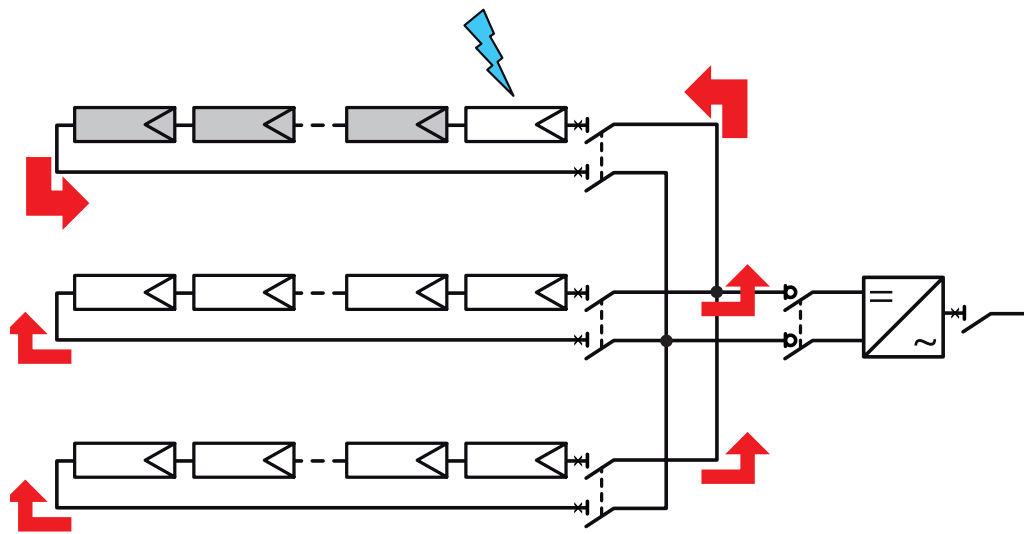
*The high-performance MCB for AC applications up to 50 kA short-circuit breaking capacity*

The extensive portfolio of the S800 Series for AC applications offers a large number of trip characteristics and short-circuit breaking capacities. Thanks to its selectivity and back-up properties, it therefore impresses as a circuit breaker on the AC side. Detailed information can be found in the technical catalogue of the S800 (2CCC413001C0107).

# Convincing answers for the fuseless protection of PV systems

The short-circuit current of solar cells, PV modules and strings is only slightly higher than the operating current. An overcurrent protective device designed for the short-circuit current of a string will therefore hardly trip in the event of a simple short-circuit in the string. A particularly fast trip is also not desirable as higher currents can flow briefly due i.a. to cloud enhancements or increased irradiation intensity due to reflection of the solar radiation.

The danger for the modules installed in the strings is created by the reverse currents from still intact strings occurring in the event of a fault.



## How does a reverse current occur - and what are the dangers?

A reverse current can be caused by short-circuit or an earth fault over one or more modules in a string of a PV system. This can occur i.a. in the event of damage to the insulation or in case of a short-circuit in the module or lines and can damage other modules installed in the string.

Bypass diodes installed in modern modules can offer no protection against reverse currents; they merely reduce the effects of shading. The sum of the short-circuit current of all intact strings can thus flow into the defective string - and not to the inverter.

## How high can reverse currents be?

Where strings are connected in parallel, the reverse current in the defective string is the aggregate current of the other strings:

$$I_r = (n_{sp} - 1) \times I_{sc}$$

Where:	$I_r$	Maximum reverse current
	$n_{sp}$	Number of strings connected in parallel
	$I_{sc}$	Short-circuit current of a solar module/string

With large PV-S systems comprising a large number of part-generators connected in parallel, the reverse currents of the faulty part-generator together with the aggregate currents of the surrounding part-generators can lead to very high system loads.

## How does the S800PV-S protect?

The S800PV-S string protection MCB developed specially for the demands of photovoltaic systems protects the string - and hence the cost-intensive investment - in three ways:

On the one hand, the magnetic trip trips reliably and quickly in the case of the fault described above. The high and quickly occurring reverse currents thus have no chance to endanger the system and hence the installed capital. On the other hand, the S800PV-S has a thermal trip. If a fault in the system results in slightly increased currents over a prolonged period, the high-performance MCB reliably disconnects the circuit here also. In addition, the S800PV-S offers disconnecter properties. If the MCB trips or is switched manually, the string is reliably and for non-earthed networks with all poles from the mains supply.

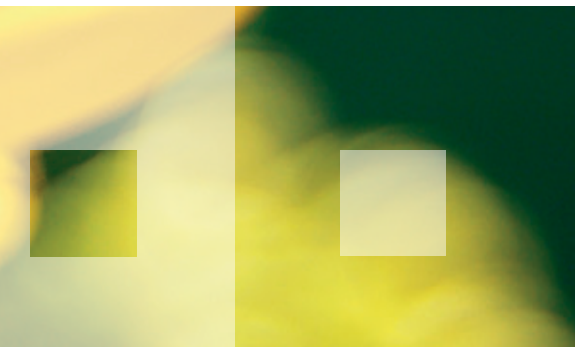
## What are the advantages of the S800PV-S compared with fuses?

Investors and operators of modern photovoltaic power stations attach importance to maximum earnings of the system. Stand still times have to be minimised, faults detracting from the earnings have to be detected and remedied as quickly as possible. In addition, strings have to be selectively switchable even under load in the event of a fault or for maintenance purposes - also remotely. For reasons of fire protection and personal safety, hazardous arcs have to be avoided. Furthermore, selective isolation of the strings in the event of inadequate system performance should permit quick fault detection.

All these points have been taken into consideration in the development of the S800PV-S. The possibility of quick restarting after a fault, the signalling of the operating state by means of auxiliary and signal contacts, the safe and - if required - remote controlled isolation even under load and the safe extinguishing of the arc in the double chamber system are characteristic of the S800PV-S. Last but not least the S800PV-S offers flexible and space-saving installation compared with fuses for high DC voltages and currents.







## Ordering details

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# S800PV-S

## Photovoltaic String Protection



2CCC413246F0001

Icu [kA]	Current rating [A]	Type designation	Product number	EAN number	Weight [kg]	Packaging unit
5	10	S802PV-S10	2CCP842001R1109	7612271210939	0.49	1
5	13	S802PV-S13	2CCP842001R1139	7612271210946	0.49	1
5	16	S802PV-S16	2CCP842001R1169	7612271210953	0.49	1
5	20	S802PV-S20	2CCP842001R1209	7612271210960	0.49	1
5	25	S802PV-S25	2CCP842001R1259	7612271210977	0.49	1
5	32	S802PV-S32	2CCP842001R1329	7612271210984	0.49	1
5	40	S802PV-S40	2CCP842001R1409	7612271210991	0.49	1
5	50	S802PV-S50	2CCP842001R1509	7612271211004	0.49	1
5	63	S802PV-S63	2CCP842001R1639	7612271211011	0.49	1
5	80	S802PV-S80	2CCP842001R1809	7612271211028	0.49	1
5	100	S802PV-S100	2CCP842001R1829	7612271214968	0.49	1
5	125	S802PV-S125	2CCP842001R1849	7612271214999	0.49	1



2CCC413247F0001

Icu [kA]	Current rating [A]	Type designation	Product number	EAN number	Weight [kg]	Packaging unit
5	10	S803PV-S10	2CCP843001R1109	7612271211035	0.74	1
5	13	S803PV-S13	2CCP843001R1139	7612271211042	0.74	1
5	16	S803PV-S16	2CCP843001R1169	7612271211059	0.74	1
5	20	S803PV-S20	2CCP843001R1209	7612271211066	0.74	1
5	25	S803PV-S25	2CCP843001R1259	7612271211073	0.74	1
5	32	S803PV-S32	2CCP843001R1329	7612271211080	0.74	1
5	40	S803PV-S40	2CCP843001R1409	7612271211097	0.74	1
5	50	S803PV-S50	2CCP843001R1509	7612271211103	0.74	1
5	63	S803PV-S63	2CCP843001R1639	7612271211110	0.74	1
5	80	S803PV-S80	2CCP843001R1809	7612271211127	0.74	1
5	100	S803PV-S100	2CCP843001R1829	7612271214975	0.74	1
5	125	S803PV-S125	2CCP843001R1849	7612271215002	0.74	1



2CCC413248F0001

Icu [kA]	Current rating [A]	Type designation	Product number	EAN number	Weight [kg]	Packaging unit
5	10	S804PV-S10	2CCP844001R1109	7612271211134	0.98	1
5	13	S804PV-S13	2CCP844001R1139	7612271211141	0.98	1
5	16	S804PV-S16	2CCP844001R1169	7612271211158	0.98	1
5	20	S804PV-S20	2CCP844001R1209	7612271211165	0.98	1
5	25	S804PV-S25	2CCP844001R1259	7612271211172	0.98	1
5	32	S804PV-S32	2CCP844001R1329	7612271211189	0.98	1
5	40	S804PV-S40	2CCP844001R1409	7612271211196	0.98	1
5	50	S804PV-S50	2CCP844001R1509	7612271211202	0.98	1
5	63	S804PV-S63	2CCP844001R1639	7612271211219	0.98	1
5	80	S804PV-S80	2CCP844001R1809	7612271211226	0.98	1
5	100	S804PV-S100	2CCP844001R1829	7612271214982	0.98	1
5	125	S804PV-S125	2CCP844001R1849	7612271215019	0.98	1

# S800PV-M

## Photovoltaic DC Main Switch



2CCC413249F0001



Icw [kA]	Current rating [A]	Type designation	Product number	EAN number	Weight [kg]	Packaging unit
1.5	32	S802PV-M32	2CCP812001R1329	7612271211233	0.43	1
1.5	63	S802PV-M63	2CCD842001R1590	7612271215026	0.43	1
1.5	125	S802PV-M125	2CCP812001R1849	7612271211240	0.43	1



2CCC413250F0001



Icw [kA]	Current rating [A]	Type designation	Product number	EAN number	Weight [kg]	Packaging unit
1.5	32	S803PV-M32	2CCP813001R1329	7612271211257	0.65	1
1.5	63	S803PV-M63	2CCD843001R1590	7612271215033	0.65	1
1.5	125	S803PV-M125	2CCP813001R1849	7612271211264	0.65	1



2CCC413251F0001



Icw [kA]	Current rating [A]	Type designation	Product number	EAN number	Weight [kg]	Packaging unit
1.5	32	S804PV-M32	2CCP814001R1329	7612271211271	0.86	1
1.5	63	S804PV-M63	2CCD844001R1590	7612271215040	0.86	1
1.5	125	S804PV-M125	2CCP814001R1849	7612271211288	0.86	1

Ordering details

# S800PV

## Accessories



2CCC413069F0001

Auxiliary contact	Type designation	Product number	EAN number	Weight [kg]	Packaging unit
Auxiliary contact	S800-AUX	2CCS800900R0011	7612271206802	0.05	1



2CCC413070F0001

Combined auxiliary and signal contact	Type designation	Product number	EAN number	Weight [kg]	Packaging unit
Auxiliary/signal contact	S800-AUX/ALT	2CCS800900R0021	7612271206819	0.05	1



2CCC413239F0001

Shunt operation release	Type designation	Product number	EAN number	Weight [kg]	Packaging unit
Shunt operation release 12 VAC/DC	S800-SOR12	2CCS800900R0201	7612271212070	0.15	1
Shunt operation release 24 VAC/DC	S800-SOR24	2CCS800900R0191	7612271208318	0.15	1
Shunt operation release 48...130 VAC/DC	S800-SOR130	2CCS800900R0221	7612271208349	0.15	1
Shunt operation release 110...0.250 VAC/DC	S800-SOR250	2CCS800900R0211	7612271208332	0.15	1
Shunt operation release 220...0.400 VAC/DC	S800-SOR400	2CCS800900R0231	7612271208356	0.15	1



2CCC413240F0001

Undervoltage release	Type designation	Product number	EAN number	Weight [kg]	Packaging unit
Under voltage release 24...36 VAC/DC	S800-UVR36	2CCS800900R0241	7612271208363	0.15	1
Under voltage release 48...0.60 VAC/DC	S800-UVR60	2CCS800900R0251	7612271208370	0.15	1
Under voltage release 110...130 VAC/DC	S800-UVR130	2CCS800900R0261	7612271208387	0.15	1
Under voltage release 220... 250 VAC/DC	S800-UVR250	2CCS800900R0271	7612271208394	0.15	1



2CCC413061F0002

**Rotary drive adapter for 2...4-pole high-performance drive**

Type designation	Product number	EAN number	Weight [kg]	Packaging unit
Rotary Drive	S800-RD	2CCS800900R0041	7612271208172 0.08	1



2CCC413062F0001

**Anthracite rotary handle for door assembly**

Type designation	Product number	EAN number	Weight [kg]	Packaging unit
Anthracite rotary handle	S800-RHE-H	1SDA060150R1	8015644625771 0.21	1



2CCC413063F0001

**Red emergency rotary handle for door assembly**

Type designation	Product number	EAN number	Weight [kg]	Packaging unit
Red rotary handle	S800-RHE-EM	1SDA060151R1	8015644625764 0.21	1



2CCC413064F0001

**Axial extension Rotary drive – rotary handle 500 mm**

Type designation	Product number	EAN number	Weight [kg]	Packaging unit
Axial extension 500 mm	S800-RHE-S	1SDA060179R1	8015644626242 0.19	1

**IP54 kit for door installation**

Type designation	Product number	EAN number	Weight [kg]	Packaging unit
IP54 Kit	S800-RHE-IP54	1SDA060180R1	8015644626259 0.08	1

# S800PV

## Accessories



2CCC413068F0001

Intermediate piece 9 mm	Type designation	Product number	EAN number	Weight [kg]	Packaging unit
Intermediate piece 9 mm	S800-IP9	2CCS800900R0031	7612271208202	0.01	1



2CCC413068F0001

Padlock device	Type designation	Product number	EAN number	Weight [kg]	Packaging unit
Padlock device 4 mm	S800-PLL	2CCS800900R0051	7612271208189	0.0015	10



2CCC413046F0004

Interchangeable terminal adapter kit	Type designation	Product number	EAN number	Weight [kg]	Packaging unit
Ring-lug cable connection 40...125A	S800-RT2125	2CCS800900R0391	7612271208240	0.03	2
Ring-lug cable connection 10...32A	S800-RT232	2CCS800900R0431	7612271211981	0.03	2



2CCC413254F0001

Pole connector	Type designation	Product number	EAN number	Weight [kg]	Packaging unit
Pole connector 50 A	S802-LINK50	2CCS800900R0411	7612271211295	0.03	10

S800-ILS	Type designation	Product number	EAN number	Weight [kg]	Packaging unit
Identification Labeling System 168x6x11.5mm	S800-ILS	2CCS800900R0121	7612271208271	0.01	1









# ABB Properties

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# Photovoltaic High Performance MCB

## Characteristic of the S800PV-S

### Characteristic

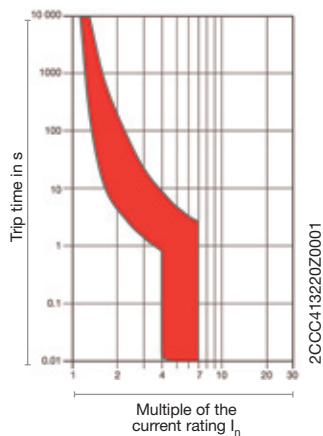


#### Tripping characteristic

Thermal release  $1.05 \dots 1.3 \times I_n$   
 Electromagnetic release  $6 \times I_n$   
 Calibration temperature  $30^\circ \text{C}$

Polarity-independent DC protection in photovoltaic plants up to 1200VDC  
 at a time constant  $\leq 5 \text{ ms}$ .

### Tripping characteristic



### Tripping behaviour of the characteristic in accordance with IEC 60947-2

Type	Currents	Thermal trip		Electromagnetic trip Test current
		Small test current	Large test current	
PV-S	10...125 A	$1.05 \times I_n$	$1.3 \times I_n$	$6 \times I_n$

# Properties

## Special features of S800PV-S, S800PV-M

### String protection with S800PV-S

A large proportion of the costs for photovoltaic systems is tied up in the equipment for the DC generation. The S800PV-S protects these investments in the event of a fault.

- Convincing:** Suitable for up to 1200 VDC
- Loadable:** String protection up to 125 A  
Reliable protection at high ambient temperatures
- Tested:** Ultimate short circuit breaking capacity I<sub>cu</sub> of 5 kA in accordance with IEC60947-2
- Fast:** Reclosable for minimum standstill times
- Safe:** Reliable disconnecter properties, switching under load
- Flexible:** Extensive range of accessories for remote shutdown and fault signalling

### System isolation with S800PV-M

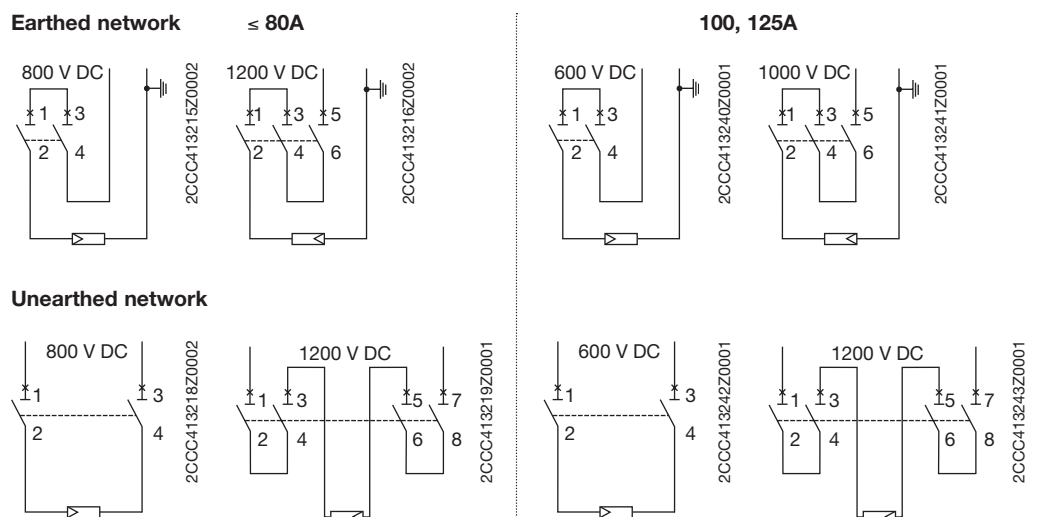
The use of a DC switch disconnecter can be implemented reliably and in the minimum of space with the S800PV-M. Not only the pole-independent installation offers enormous user friendliness here:

- Convincing:** Suitable for up to 1200 VDC
- Loadable:** System switch disconnecter up to 125 A  
No change in operating behaviour up to 60° C ambient temperature  
Reliable switching of ohmic and inductive loads
- Compact:** Minimum dimensions with maximum efficiency
- Tested:** Short-time withstand current I<sub>cw</sub> of 1.5 kA in accordance with IEC60947-3
- Safe:** Reliable isolation properties, switching under load

### Maximum device voltages

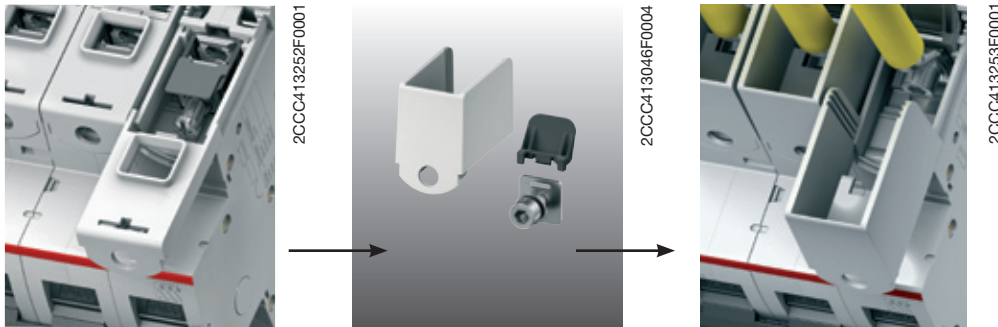
	2-pole	3-pole	4-pole
<b>S800PV-S</b>			
I <sub>e</sub> 10...80 A	800 VDC	1200 VDC	1200 VDC
I <sub>e</sub> 100...125 A	600 VDC	1000 VDC	1200 VDC
<b>S800PV-M</b>			
I <sub>e</sub> 32, 63, 125 A	800 VDC	1200 VDC	1200 VDC

### Exemplary circuit diagrams



# Properties

## Special features of S800PV-S, S800PV-M



### Reliable: The interchangeable load and line terminal adapter

The standard S800PV equipment with interchangeable load and line terminal adapter for strands, cables and rigid conductors prevents incorrect connection of the terminals.

There is an optional interchangeable terminal adapter kit available which can quickly and safely convert a cage-type terminal to a ring-lug cable connection.

### Double protection: The double-chamber system

Thanks to the double-chamber system, every single pole of a S800PV can build up twice the back-e.m.f. compared with conventional single-chamber systems. The switching arc is thus quickly and reliably eliminated in the extinguishing chamber. This offers additional protection in the event of wiring errors.



### Safety first: The display of the operating state of the S800PV-S

As an additional feature, the S800PV-S offers convenient troubleshooting with the trip position. This position indicates whether high-performance MCB has been tripped by a thermal or magnetic release. If the S800PV-S is switched manually, it cannot take up this position; it moves to the 0 position. The user can thus see at a glance whether a fault has occurred.

### Unique: Conformity with standards and quality assurance

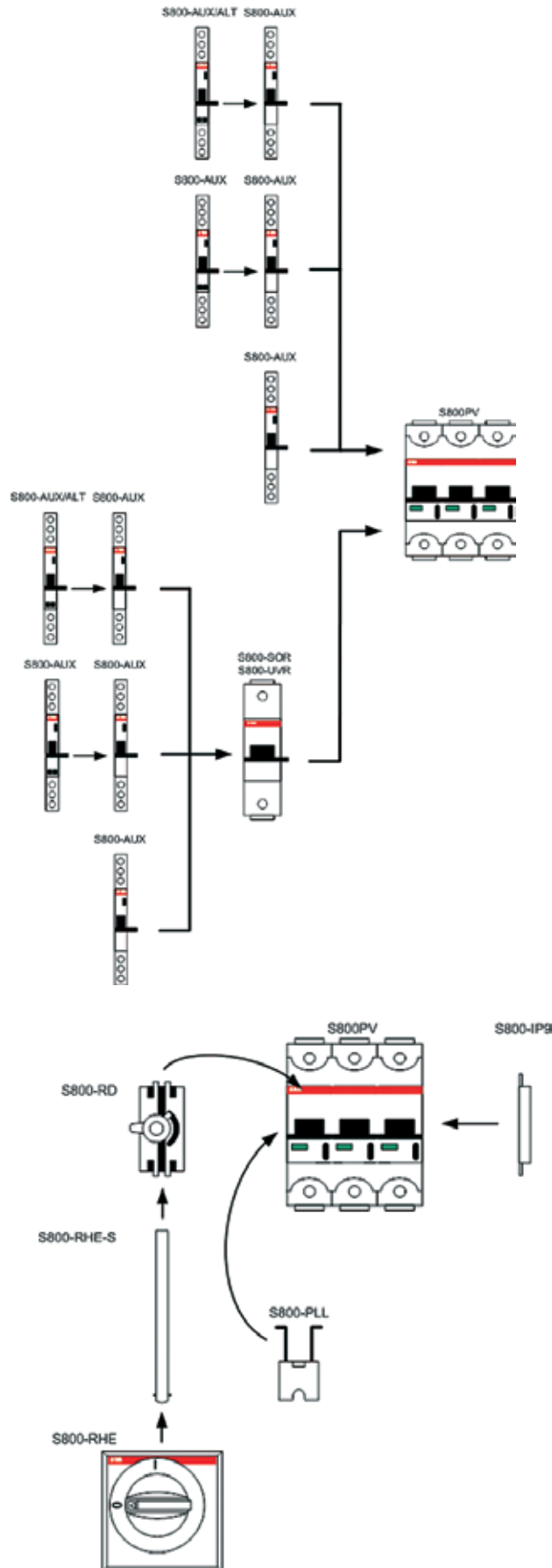
Both the photovoltaic High Performance MCB S800PV and the accessories conform to the international standards IEC 60947-2 and IEC 60947-3. The quality assurance system of ABB Schweiz AG CMC Low Voltage Products conforms to the international standard ISO 9001:2000. The efforts of ISO14001-certified ABB Schweiz AG CMC Low Voltage Products in the area of environmental protection are however not limited merely to keeping to international standards, we are also actively and voluntarily committed to environmental protection and have as confirmation of achieving our targets linked with the reduction of CO2 emissions received the EnAW label from the Swiss Energy Agency. In order to keep this label, we undergo an independent examination every two years.

We feel committed to an integral approach to reducing pollution which is clearly reflected in our choice of plastics (choosing those without toxic objections), packing materials which can be recycled and the way we work with resources in an environmentally-aware manner.

# Properties

## Accessories

### Electrical properties



2CCC413213Z0001

2CCC413214Z0001

# Properties

## Accessories



2CCC413069F0001

### S800-AUX

#### Auxiliary contact for external display

The S800-AUX auxiliary contact serves as an electrical indication of the operating status of the High Performance MCB. The two changeover contacts always switch at the same time as the pole contacts and can detect the following operating states:

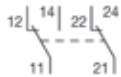
- Manual tripping
- Tripping as a result of thermal overload
- Tripping as a result of magnetic overload (short-circuit)

#### Function of the test button

The test button, which can be operated using a tool, allows the user to simulate the function of the auxiliary contact without tripping the High Performance MCB itself.

#### Function of the two changeover contacts

- Off position of High Performance MCB      Contacts 11-12 and 21-22 closed
- On position of High Performance MCB      Contacts 11-14 and 21-24 closed



#### Options for fitting the auxiliary contact

- The user can fit two S800-AUX auxiliary contacts to the left side of the High Performance MCB.



2CCC413070F0001

### S800-AUX/ALT

#### Combined auxiliary and signal contact for external display

The combined S800-AUX/ALT auxiliary and signal contact serves as an electric indication of the operating status of the High Performance MCB.

The **AUX** auxiliary contact always switches at the same time as the main contacts of the High Performance MCB and can detect the following forms of tripping:

- Manual tripping
- Tripping as a result of thermal overload
- Tripping as a result of a magnetic overload (short-circuit)

The **ALT** signal contact can detect the following forms of High Performance MCB tripping:

- Tripping as a result of thermal overload
- Tripping as a result of a magnetic overload (short-circuit)

#### Function of the test button

The test button, which can be operated using a tool, allows the user to simulate the function of the combined auxiliary and signal contact without tripping the High Performance MCB itself.

#### Function of the ALT reset button

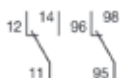
The reset button which can be operated in any way, resets the **ALT** signal contact after tripping. The high performance MCBs are activated regardless of the status of the **ALT** signal contact.

#### Function of the AUX changeover contact

- Off position of High Performance MCB      Contact 11-12 closed
- On position of High Performance MCB      Contact 11-14 closed

#### Function of the ALT changeover contact

- No ALT tripping      Contact 95-98 closed
- ALT tripping      Contact 95-96 closed



#### Options for fitting the combined S800-AUX/ALT contact

- The user can fit a combined auxiliary and signal contact to the left side of the High Performance MCB.



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## S800-SOR

### Shunt operation release

The S800-SOR serves for remote tripping of the S800 High Performance MCB by means of an electrical pulse. Operation of the shunt operating release is guaranteed for a voltage between 70% and 110% of the rated supply voltage  $U_n$  both in alternating and direct current.

#### Options for fitting the S800-SOR shunt operation release

- The user can fit the S800-UVR to the left side of the High Performance MCB.



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## S800-UVR

### Undervoltage release

The S800-UVR can be specially used as EMERGENCY STOP with a suitable EMERGENCY STOP button. The undervoltage release opens the S800 High Performance MCB release due to lack of the supply voltage or voltage drops to values under  $0.7 \times U_n$ . After tripping it is possible to switch on the S800 High Performance MCB from a voltage higher than  $0.85 \times U_n$ .

#### Options for fitting the S800-UVR undervoltage release

- The user can fit the S800-UVR to the left side of the High Performance MCB



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## S800-RD

### Rotary handle drive

The rotary drive can be supplied for assembly on the control panel door. Thanks to the ergonomic shape of the rotary handle, switching is almost effortless. The handle has a lock for the OFF position which prevents the S800 High Performance MCB from being switched on when in this position. Up to 3 padlocks with a bracket diameter of 7 mm (not within scope of delivery) can be fitted in the lock's longitudinal hole. This does not prevent the breaker from being operated or the parameters from being viewed. A rotary handle for switching machines can also be supplied. This features a red/emergency handle on a yellow base.

The rotary handle drive on the control panel door consists of the following three components:

- Rotary handle S800-RHE-H, -EM
- Shaft (500 mm) S800-RHE-S



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## S800-IP9

### Intermediate piece

The S800-IP9 intermediate piece corresponds to the profile of the High Performance MCB and is used to fill empty spaces left by devices. Thanks to its width of 9 mm, this intermediate piece can be used to fill the spaces of all units of the S800 range.

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# Properties

## Accessories

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### **S800-PLL** Padlock lever lock

Padlock lever lock S800-PLL reliably prevents unwanted activation and deactivation. Simply guide the padlock device bracket through the holes provided on the High Performance MCBs and lock with a padlock (bracket size  $\varnothing$  4mm – not included in scope of delivery). Even if the High Performance MCB is protected against undesirable cut-offs using a locking fixture, tripping in cases of overload or short-circuits as well as by S800-SOR and S800-UVR may of course still occur.

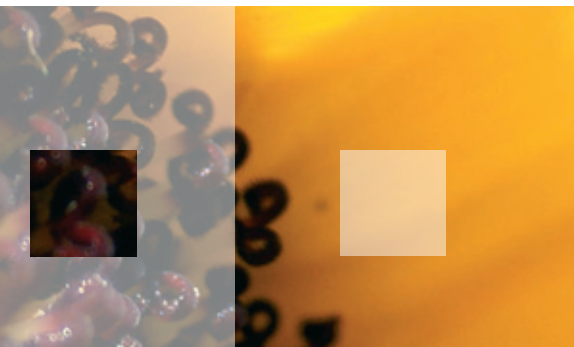
### **S800-ILS** Identification labeling system

The individual identification labelling system for ILS inscribed panels is a DIN A5 polyester film for inkjet and laser printers with resistance to high temperatures. (If using laser printers, please check whether self-adhesive films with a thickness of 250 microns can be printed). The adhesive coating 3M™9471 LE is UL-certified in file reference MH 11410. The individual panels are pre-stamped on one side. They can be inscribed by hand using ink, biro, pencil and felt tip pen.









# **ABB** Technical Data

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### **Technical Data**

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Accessories .....	4/4

# Technical Data

## S800PV

		S800PV		
		S	M	M
Characteristics				
Rated operational current $I_e$	[A]	10...80	100, 125	32, 63, 125
Poles		2...4	2...4	2...4
Rated operating voltage $U_e$				
(DC) 2-pole	[V]	800	600	800
(DC) 3-pole	[V]	1200	1000	1200
(DC) 4-pole	[V]	1200	1200	1200
Rated insulation voltage $U_i$	[V]	1500	1500	1500
Rated impulse withstand voltage $U_{imp}$	[kV]	8	8	8
Ultimate short-circuit breaking capacity $I_{cu}$ in accordance with IEC 60947-2				
(DC) 800V (2-pole)	[kA]	5	-	-
(DC) 1,200V (3-pole)	[kA]	5	-	-
(DC) 1,200V (4-pole)	[kA]	5	-	-
Rated short-circuit breaking capacity $I_{cs}$ in accordance with IEC 60947-2				
(DC) 800V (2-pole)	[kA]	5	-	-
(DC) 1,200V (3-pole)	[kA]	5	-	-
(DC) 1,200V (4-pole)	[kA]	5	-	-
Rated short-time withstand current $I_{cw}$ in accordance with IEC 60947-3				
(DC) 800V (2-pole)	[kA]	-	1.5	1.5
(DC) 1,200V (3-pole)	[kA]	-	1.5	1.5
(DC) 1,200V (4-pole)	[kA]	-	1.5	1.5
Rated short-circuit making capacity $I_{cm}$ in accordance with IEC 60947-3				
(DC) 800V (2-pole)	[kA]	-	0.5	0.5
(DC) 1,200V (3-pole)	[kA]	-	0.5	0.5
(DC) 1,200V (4-pole)	[kA]	-	0.5	0.5
Mounting position		any	any	any
Disconnecter properties		yes	yes	yes
Standards		IEC 60947-2	IEC 60947-3	IEC 60947-3
Connections Cu (10...32A)	[mm <sup>2</sup> ]	1...25 strand 1...35 cable	1...25 strand 1...35 cable	1...25 strand 1...35 cable
Connections Cu (40...125A)	[mm <sup>2</sup> ]	6..0.50 strand 6..0.70 cable	6..0.50 strand 6..0.70 cable	6..0.50 strand 6..0.70 cable
Tightening torque	[Nm]	min. 3 / max. 4	min. 3 / max. 4	min. 3 / max. 4
DC supply		any	any	any
Mounting on DIN top hat rail		EN 60715	EN 60715	EN 60715
Permissible operating ambient temperature	[°C]	-25...+60	-25...+60	-25...+60
Storage temperature	[°C]	-40...+70	-40...+70	-40...+70
Protection category		IP20	IP20	IP20
		IP40 (only actuation side)		
Resistance to vibration		IEC 60068-2-6; EN61373 Cat. 1/class B		
Utilisation category		A	DC-21A	DC-21A
Pollution degree		2	2	2
Overvoltage category		III	III	III

**Single-pole internal resistances and power losses at 25° C ambient temperature**

Current rating I <sub>n</sub> [A]	Internal resistance R <sub>i</sub> [mΩ]		Power loss P <sub>v</sub> [W]	
	PV-S	PV-M	PV-S	PV-M
10	15.2		1.5	
13	12.1		2.0	
16	12.1		3.1	
20	8.7		3.5	
25	6.8		4.2	
32	3.1	1.8	3.1	1.8
40	2.3		3.7	
50	1.7		4.3	
63	1.6		6.2	
80	1.0		6.4	
100	0.8		8.3	
125	0.6	0.5	5.4	7.2

**Influence of ambient temperature**

Devices fitted individually (details in A)

**S800PV-S**

In [A]	10°C	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C
10	11.2	11.0	10.7	10.4	10.0	9.6	9.3	9.0	8.7	8.4	8.0
13	14.6	14.3	13.9	13.5	13.0	12.5	12.1	11.7	11.3	10.9	10.4
16	17.9	17.6	17.1	16.6	16.0	15.4	14.9	14.4	13.9	13.4	12.8
20	22.4	22.0	21.4	20.8	20.0	19.2	18.6	18.0	17.4	16.8	16.0
25	28.0	27.5	26.8	26.0	25.0	24.0	23.3	22.5	21.8	21.0	20.0
32	35.8	35.2	34.2	33.3	32.0	30.7	29.8	28.8	27.8	26.9	25.6
40	44.8	44.0	42.8	41.6	40.0	38.4	37.2	36.0	34.8	33.6	32.0
50	56.0	55.0	53.5	52.0	50.0	48.0	46.5	45.0	43.5	42.0	40.0
63	70.6	69.3	67.4	65.5	63.0	60.5	58.6	56.7	54.8	52.9	50.4
80	89.6	88.0	85.6	83.2	80.0	76.8	74.4	72.0	69.6	67.2	64.0
100	112.0	110.0	107.0	104.0	100.0	96.0	93.0	90.0	87.0	84.0	80.0
125	140.0	137.5	133.8	130.0	125.0	120.0	116.3	112.5	108.8	105.0	100.0

# Technical Data

## Accessories

### Electrical properties

#### Auxiliary contact S800-AUX

Utilisation category		AC15 400/2A AC15 240/6A DC13 250/0.55A DC13 125V/1.1A DC13 60V/2A DC13 24V/4A
Continuous thermal current $I_n$	[A]	6
Rated insulation voltage $U_i$	[V]	690
Number of contacts		2
Rated impulse withstand voltage $U_{imp}$	[kV]	6
Pollution degree		3
Contact function		Changeover contacts
Connection Cu	[mm <sup>2</sup> ]	1 x 2.5 2 x 1.5
Tightening torque	[Nm]	1
AC/DC supply		any
Mounting on DIN top hat rail		EN 60715
Protection category		IP20
Permissible operating ambient temperature	[°C]	-25...+60
Storage temperature	[°C]	-40...+70
mech. device service life		6000 switching cycles
$I_{cu}$ with S450E		1000
Resistance to vibration		IEC 60068-2-6; EN 61373 Cat.1/class B 5g, 20 frequency cycle 5...150...5Hz at 24V AC/DC, 5 mA brief interrupt <10ms

#### Combined auxiliary and signal contact S800-AUX/ALT

Utilisation category		AC15 400/2A AC15 240/6A DC13 250/0.55A DC13 125V/1.1A DC13 60V/2A DC13 24V/4A
Continuous thermal current $I_n$	[A]	6
Rated insulation voltage $U_i$	[V]	690
Number of contacts		2 (1x AUX, 1x AUX/ALT)
Rated impulse withstand voltage $U_{imp}$	[kV]	6
Pollution degree		3
Contact function		Changeover contacts
Connection Cu	[mm <sup>2</sup> ]	1 x 2.5 2 x 1.5
Tightening torque	[Nm]	1
AC/DC supply		any
Mounting on DIN top hat rail		EN 60715
Protection category		IP20
Permissible operating ambient temperature	[°C]	-25...+60
Storage temperature	[°C]	-40...+70
mech. device service life		6000 switching cycles
$I_{cu}$ with S450E		1000
Resistance to vibration		IEC 60068-2-6; EN 61373 Cat.1/class B 5g, 20 frequency cycle 5...150...5Hz at 24V AC/DC, 5 mA brief interrupt <10ms

**Shunt operation release S800-SOR**

		S800-SOR24	S800-SOR130	S800-SOR250	S800-SOR400
Rated voltage $U_e$	[VAC/DC]	24	48...130	110...250	220...400
Operating range	[%] $U_e$			70...110	
Rated insulation voltage $U_i$	[V]			690	
Coil pull in consumption	[W/VA]	16.6	41.9...307.3	23...119	45...148.1
Rated frequency	[Hz]			DC; 50/60	
Pollution degree				3	
Connection Cu				1...25 strand	
	[mm <sup>2</sup> ]			1...35 cable	
Tightening torque	[Nm]			min.3/ max.4	
AC/DC supply				any	
Mounting on DIN top hat rail				EN 60715	
Protection category				IP20	
				IP40 (only actuation side)	
Permissible operating ambient temperature	[°C]			-25...+60	
Storage temperature	[°C]			-40...+70	
Resistance to vibration				IEC 60068-2-6; EN61373 Cat.1/class B	

**Under voltage release S800-UVR**

		S800-UVR36	S800-UVR60	S800-UVR130	S800-UVR250
Rated voltage $U_e$	[VAC/DC]	24...36	48...60	110...130	220...250
Operating range					
open	[%] $U_e$			35...70	
closed	[%] $U_e$			85	
Rated insulation voltage $U_i$	[V]			690	
Coil pull in consumption	[W/VA]	1.11...1.14	1.14...1.25	1.3...1.41	1.71...1.91
Rated frequency	[Hz]			DC; 50/60	
Pollution degree				3	
Connection Cu				1...25 strand	
	[mm <sup>2</sup> ]			1...35 cable	
Tightening torque	[Nm]			min.3/ max.4	
AC/DC supply				any	
Mounting on DIN top hat rail				EN 60715	
Protection category				IP20	
				IP40 (only actuation side)	
Permissible operating ambient temperature	[°C]			-25...+60	
Storage temperature	[°C]			-40...+70	
Resistance to vibration				IEC 60068-2-6; EN61373 Cat.1/class B	







# Dimensional drawings

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### Pole dimensions

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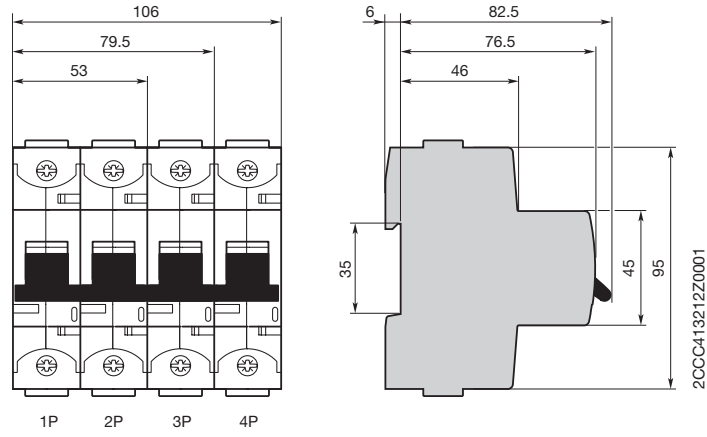
### Dimensions of accessories

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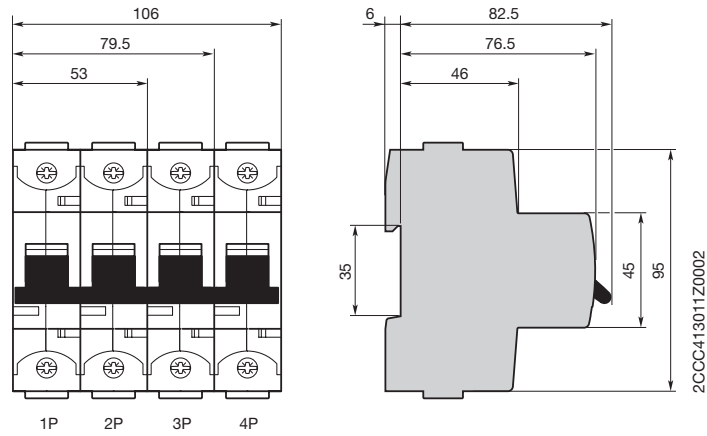
# Pole dimensions

## Photovoltaic High Performance MCB

S800PV-S

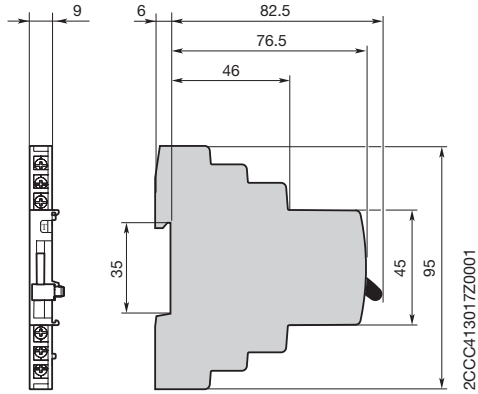


S800PV-M

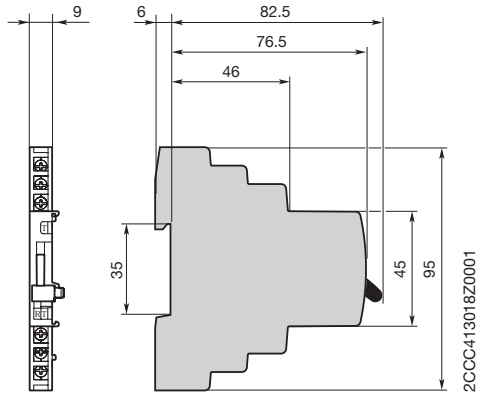


# Dimensions of accessories

S800-AUX

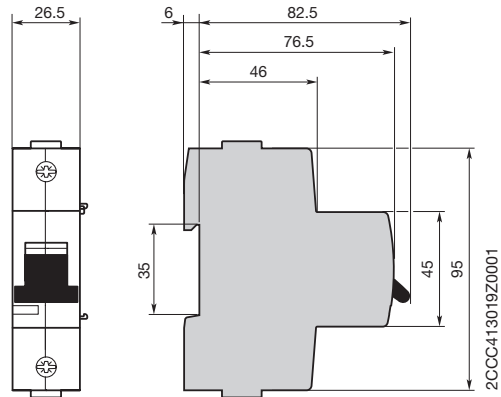


S800-AUX/ALT

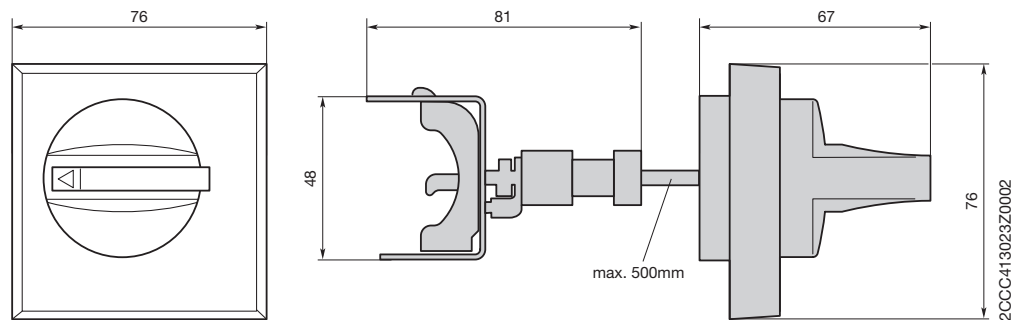


## Dimensions of accessories

S800-SOR  
S800-UVR



S800-RD+S800-RHE





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