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SURGE PROTECTION DEVICES TYPE 1 AND 2

- Monoblock versions:
1P, 1P+N, 2P, 3P, 3P+N, 4P
- IEC impulse current I_{imp} (10/350 μ s): 25kA
- IEC maximum discharge current I_{max} (8/20 μ s): 100kA
- SPD status indicator
- Version with contact type of remote status indicator signalling.



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SURGE PROTECTION DEVICES TYPE 1, 2 AND 3

- Versions with plug-in cartridge:
1P, 1P+N, 2P, 3P, 3P+N, 4P
- IEC impulse current I_{imp} (10/350 μ s): 12.5kA
- IEC maximum discharge current I_{max} (8/20 μ s): 60kA
- IEC combined surge U_{oc}/I_{sc} (1.2/50, 8/20 μ s): 10kV/5kA
- Single module status indicator
- Version with contact type of remote status indicator signalling.



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SURGE PROTECTION DEVICES TYPE 2

- Versions with plug-in cartridge:
1P, 1P+N, 2P, 3P, 3P+N, 4P
- IEC maximum discharge current I_{max} (8/20 μ s): 40kA
- IEC rated discharge current I_n (8/20 μ s): 20kA
- Single module status indicator
- Versions with and without contact type of remote status indicator signalling.



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SURGE PROTECTION DEVICES TYPE 2 FOR PHOTOVOLTAIC APPLICATIONS

- Versions with plug-in cartridge: +, -, PE
- Maximum operational voltage: 1500VDC
- IEC maximum discharge current I_{max} (8/20 μ s): 40kA
- IEC rated discharge current I_n (8/20 μ s): 20kA
- Single module status indicator
- Versions with or without contact type of remote status indicator signalling
- Versions compliant with UTE C 61740-51 guide
- UL Recognized versions.



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SPARE PLUG-IN CARTRIDGES

- Versions suitable for SPDs:
 - Type 1, 2 and 3
 - Type 2
 - Type 2 for photovoltaic applications
- Status indicator for single modules.



- Protection against overvoltage and high surge conditions caused by direct or indirect lightning strikes
- Types with plug-in cartridges provide fast servicing capability
- Mechanical indicator for visual failure status signalling of single modules
- Versions with or without contact type of remote SPD status indicator signalling
- Versions for photovoltaic applications.

Surge protection devices (SPD)

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Surge protection devices Type 1 and 2



SA1 1P A320R



SA1 3N A320R

Order code	Pole arrangement	Contact remote available	DIN size	Qty per pkg	Wt
			n°	n°	[kg]

MONOBLOCK VERSION.
IEC impulse current Iimp (10/350µs) 25kA per pole.

SA1 1P A320R	1P	YES	2	1	0.275
SA1 1N A320R	1P+N	YES	3	1	0.390
SA1 2P A320R	2P	YES	2	1	0.395
SA1 3P A320R	3P	YES	3	1	0.595
SA1 3N A320R	3P+N	YES	5	1	0.760
SA1 4P A320R	4P	YES	4	1	0.780

Characteristics

Type	IEC rated voltage Un [V]	IEC voltage protection level Up [kV]	Power installation system
SA1 1P A320R	230	<1.3	—
SA1 1N A320R	230	<1.4	TT, TN-S
SA1 2P A320R	230	<1.4	TN-S
SA1 3P A320R	230/400	<1.4	TN-C
SA1 3N A320R	230/400	<1.4	TT, TN-S
SA1 4P A320R	230/400	<1.4	TN-S

Main characteristics

The surge protection device type SA1 combines the performance of SPD type 1 and 2 into a single product. It protects against direct and indirect lightning strikes as well as induced overvoltage conditions. It can be installed in areas with a high risk of direct lightning strikes, inside main distribution boards or sub-distribution boards.

Operational characteristics

- IEC maximum continuous operating voltage Uc: 320VAC/420VDC
- IEC maximum discharge current I_{max} (8/20µs): 100kA per pole
- IEC rated discharge current I_n (8/20µs): 25kA per pole
- Standard-supplied contact type of remote status indicator signalling
- IEC degree of protection: IP20.

Reference standards

Comply with standards: IEC 61643-1, EN 61643-11.

Surge protection devices Type 1, 2 and 3



SA0 1P A320R



SA0 2P A320R

Order code	Pole arrangement	Contact remote available	DIN size	Qty per pkg	Wt
			n°	n°	[kg]

VERSION WITH PLUG-IN CARTRIDGE.
IEC impulse current Iimp (10/350µs) 12.5kA per pole.

SA0 1P A320R	1P	YES	1	1	0.195
SA0 1N A320R	1P+N	YES	2	1	0.365
SA0 2P A320R	2P	YES	2	1	0.370
SA0 3P A320R	3P	YES	3	1	0.540
SA0 3N A320R	3P+N	YES	4	1	0.670
SA0 4P A320R	4P	YES	4	1	0.670

Characteristics

Type	IEC rated voltage Un [V]	IEC voltage protection level Up [kV]	Power installation system
SA0 1P A320R	230	<1.5	—
SA0 1N A320R	230	<1.5	TT, TN-S
SA0 2P A320R	230	<1.5	TN-S
SA0 3P A320R	230/400	<1.5	TN-C
SA0 3N A320R	230/400	<1.5	TT, TN-S
SA0 4P A320R	230/400	<1.5	TN-S

Main characteristics

The surge protection device type SA0 with plug-in cartridge combines the performance of SPD type 1, 2 and 3 into a single product. It is ideal in all those systems of reduced extent to protect the load, side downstream of main circuit breaker to terminal equipment. It protects against direct and indirect lightning strikes as well as induced overvoltage conditions. It can be installed inside main distribution boards and close by terminal equipment. The protection cartridges are plug-in and can be easily replaced for quick servicing.

Operational characteristics

- IEC maximum continuous operating voltage Uc: 320VAC/420VDC
- IEC maximum discharge current I_{max} (8/20µs): 60kA per pole
- IEC rated discharge current I_n (8/20µs): 25kA per pole
- IEC combined surge Uoc/Isc(1.2/50, 8/20µs): 10kV/5kA.
- Standard-supplied contact type of remote status indicator signalling
- IEC degree of protection: IP20.

Reference standards

Comply with standards: IEC 61643-1, EN 61643-11.

Surge protection devices Type 2



SA2 2P A320R



SA2 3N A320R

new

Order code	Pole arrangement	Contact remote available	DIN size	Qty per pkg	Wt
			n°	n°	[kg]

VERSION WITH PLUG-IN CARTRIDGES.
IEC maximum discharge current I_{max} (8/20 μ s) 40kA per pole.

SA2 1P A320	1P	NO	1	1	0.140
SA2 1P A320R	1P	YES	1	1	0.145
SA2 1N A320	1P+N	NO	2	1	0.240
SA2 1N A320R	1P+N	YES	2	1	0.245
SA2 2P A320	2P	NO	2	1	0.260
SA2 2P A320R	2P	YES	2	1	0.265
SA2 3P A320	3P	NO	3	1	0.370
SA2 3P A320R	3P	YES	3	1	0.375
SA2 3N A320	3P+N	NO	4	1	0.465
SA2 3N A320R	3P+N	YES	4	1	0.470
SA2 4P A320	4P	NO	4	1	0.480
SA2 4P A320R	4P	YES	4	1	0.485

Characteristics

Type	IEC rated voltage U_n [V]	IEC voltage protection level U_p [kV]	Power installation system
SA2 1P A320...	230	<1.5	—
SA2 1N A320...	230	<1.5	TT, TN-S
SA2 2P A320...	230	<1.5	TN-S
SA2 3P A320...	230/400	<1.5	TN-C
SA2 3N A320...	230/400	<1.5	TT, TN-S
SA2 4P A320...	230/400	<1.5	TN-S

Main characteristics

The surge protection device type SA2 is suitable for installation in sub-distribution boards and close to terminal equipment.
It protects against indirect overvoltages.
The protection cartridges are plug-in and can be easily replaced for quick servicing.

Operational characteristics

- IEC maximum continuous voltage U_c : 320VAC/420VDC
- IEC rated discharge current I_n (8/20 μ s): 20kA per pole
- Versions with or without contact type of remote status indicator signalling
- IEC degree of protection: IP20.

Reference standards

Compliant with standards: IEC 61643-1, EN 61643-11.

Surge protection devices Type 2 for photovoltaic applications



SA2 DB...



SA2 DA...R

new

Order code	Pole arrangement	Contact remote available	DIN size	Qty per pkg	Wt
			n°	n°	[kg]

VERSION WITH PLUG-IN CARTRIDGE.
IEC maximum discharge current I_{max} (8/20 μ s) 40kA per pole.

SA2 DB 600	+, -, PE	NO	2	1	0.320
SA2 DB 600R	+, -, PE	YES	2	1	0.325
SA2 DB K00	+, -, PE	NO	3	1	0.420
SA2 DB K00R	+, -, PE	YES	3	1	0.425

Versions compliant with UTE C 61740-51 Guide.

SA2 DA 600R	+, -, PE	YES	2	1	0.285
SA2 DA K00R	+, -, PE	YES	2	1	0.305
SA2 DA K20R	+, -, PE	YES	3	1	0.410
SA2 DA K50R	+, -, PE	YES	3	1	0.500

Characteristics

Type	IEC rated voltage U_n [VDC]	IEC continuous voltage U_{cpv} [kV]	IEC voltage protection level U_p [kV]
SA2 DB 600...	600	600	<1.9
SA2 DB K00...	1000	1000	<3.6
SA2 DA 600R	600	600	<2.2
SA2 DA K00R	1000	1000	<2.8
SA2 DA K20R	1200	1200	<4.4
SA2 DA K50R	1500	1500	<4.8

Main characteristics

The surge protection device type SA2 D with plug-in cartridge for photovoltaic applications is suitable for installation on the direct-current end of a photovoltaic system and protects against induced overvoltage conditions.

The protection cartridges are plug-in and can be easily replaced for quick servicing.

Operational characteristics

- IEC maximum continuous voltage U_{cpv} : 600VDC, 1000VDC, 1200VDC, 1500VDC
- IEC rated discharge current I_n (8/20 μ s): 20kA per pole
- IEC temporary overvoltage (TOV) U_t : 1.5 U_{cpv} (for SA2 DA... type only)
- Versions with or without contact type of remote status indicator signalling
- IEC degree of protection: IP20.

Certifications and compliance

Certifications obtained: UL Recognized for USA and Canada (file number not available at time of catalogue printing), as Surge-protective Devices - Component, for SA2DA600R, SA2DAK00R and SA2DAK20R types only.

Products having this type of marking are intended for use as components of complete workshop-assembled equipment.

Compliant with standards: IEC 61643-1, EN 61643-11 for all; also UL 1449 for SA2 DA 600R, SA2 DA K00R and SA2 DA K20R types and UTE C 61740-51 for SA2 DA... types.

Accessories and spare parts Plug-in cartridges



SAX 00 P A320



SAX 02 P A320

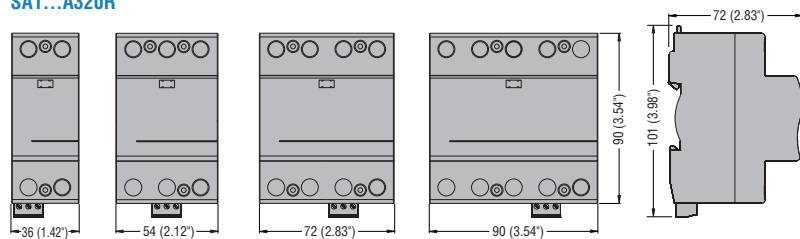
new

Order code	Description	Qty per pkg	Wt
		n°	[kg]
SAX 00 P A320	For SA0... types	1	0.100
SAX 02 P A320	For SA2...A... types	1	0.100
SAX 02 DA 600	For SA2 DA 600R type	1	0.100
SAX 02 DA K00	For SA2 DA K00R type	1	0.100
SAX 02 DA K20	For SA2 DA K20R type	1	0.100
SAX 02 DA K50	For SA2 DA K50R type	1	0.100
SAX 02 DB 600	For SA2 DB 600... types	1	0.100
SAX 02 DB K00	For SA2 DB K00... types	1	0.100

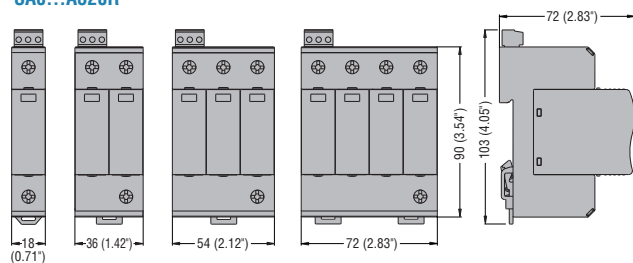
Reference standards

Compliant with standards: IEC 61643-1, EN 61643-11 for all; also UTE C 61740-51 for SAX 02 DA... types.

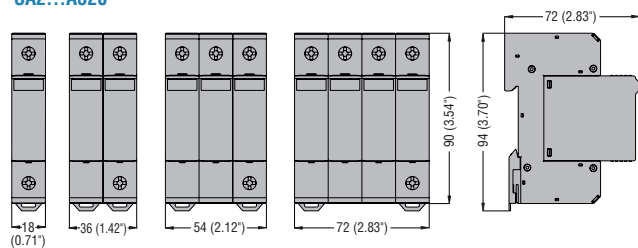
SA1...A320R



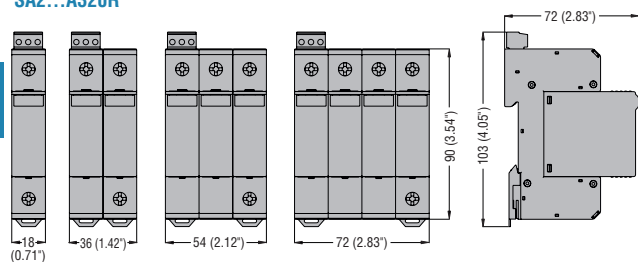
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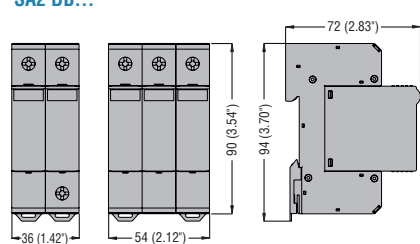
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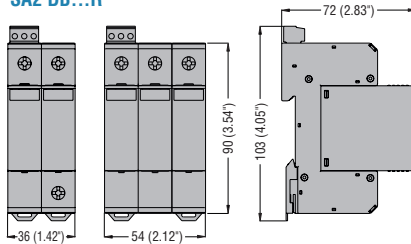
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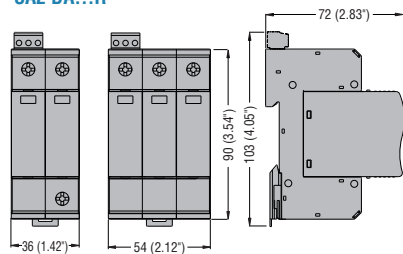
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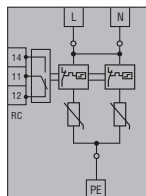
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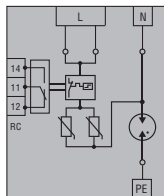
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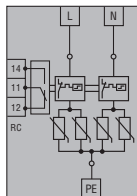
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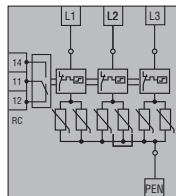
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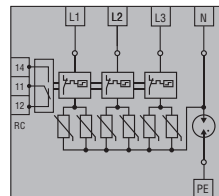
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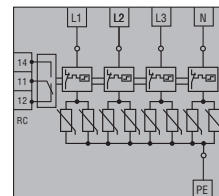
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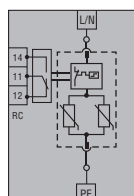
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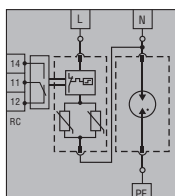
SA1 4P A320R



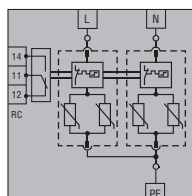
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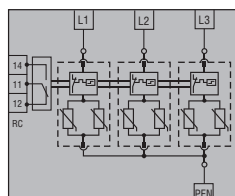
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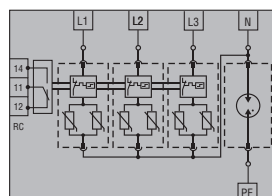
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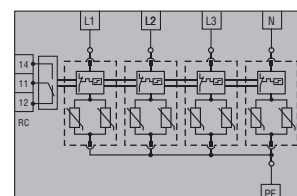
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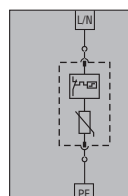
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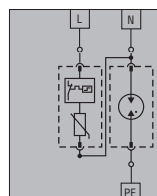
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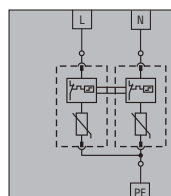
SA2 1P A320



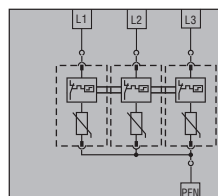
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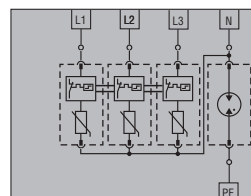
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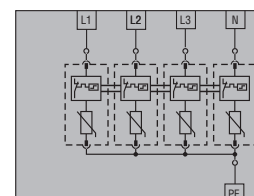
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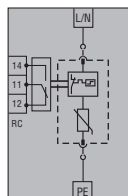
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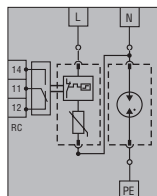
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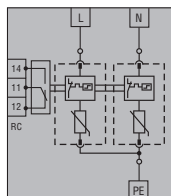
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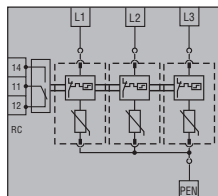
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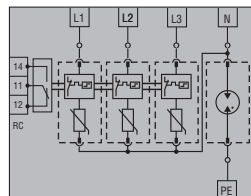
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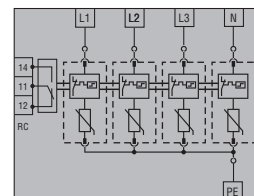
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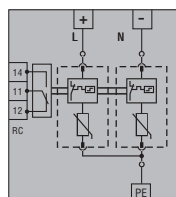
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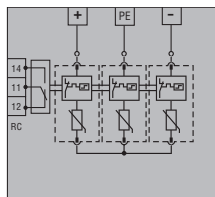
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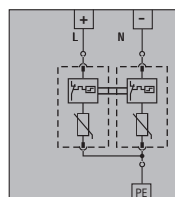
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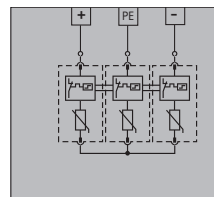
SA2 DB K00R



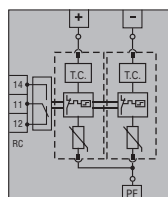
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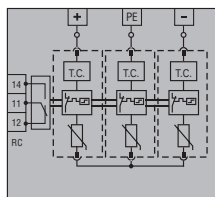
SA2 DB K00



**SA2 DA 600R -
SA2 DA K00R**



**SA2 DA K20R
SA2 DA K50R**



TYPE	with contact	SA1 1P A320R	SA1 1N A320R	SA1 2P A320R	SA1 3P A320R	SA1 3N A320R	SA1 4P A320R
ELECTRICAL PROPERTIES							
SPD per EN 61643-11		Type 1 and 2					
SPD per IEC 61643-1		Class I, II					
IEC rated voltage Un	VAC	230	230	230	230 / 400	230 / 400	230 / 400
IEC maximum continuous voltageUc	VAC / VDC	320 / 420					
IEC impulse current Iimp (10/350) (L-N/N-PE)	kA	25	25 / 50	25 per pole	25 per pole	25 / 100	25 per pole
IEC max impulse current Imax (8/20) (L-N/N-PE)	kA	100	100 / 100	100 per pole	100 per pole	100 / 100	100 per pole
IEC rated discharge current In (8/20) (L-N/N-PE)	kA	25	25 / 50	25 per pole	25 per pole	25 / 100	25 per pole
IEC voltage protection level Up (L-N/N-PE)	kV	< 1.3	< 1.4 / < 1.5	< 1.4	< 1.4	< 1.4 / < 1.75	< 1.4
Temporary overvoltage (TOV) Ut (L-N for 5s)	VAC	335					
IEC residual voltage Ures (L-N/N-PE) at 3kA (8/20)	kV	0.9	0.9 / 0.2	0.9	0.9	0.9 / 0.2	0.9
IEC follow current If (N-PE)	Arms	—	>100	—	—	>100	—
Tripping time ta (L-N/N-PE)	ns	< 25	< 25 / 100	< 25	< 25	< 25 / 100	< 25
Thermal isolation protection		Yes					
IEC back-up protection fuse (supply > 250A) (L-N/N-PE)	A	250 (gL/gG class)					
IEC maximum short-circuit current	kA	25 / 50 Hz					
Status indicator - operating / failure		Green / Red					
CONNECTIONS							
IEC degree of protection	IP	20					
Terminal tightening torque	Nm	3					
Maximum conductor section	mm²	25 (flexible) / 35 (rigid)					
Type of signalling contact		Changeover (SPDT)					
Contact capacity	A	0.5A 250VAC; 3A 125VAC; 0.1A 250VDC; 0.2A 125VDC					
Contact terminal tightening torque	Nm	0.25					
Maximum contact conductor section	mm²	1.5					
AMBIENT CONDITIONS							
Operating temperature	°C	-40....+80					
Fixing		On 35mm DIN rail (IEC/EN 60715)					
Housing material		Termoplastic, RAL 7035, UL 94 V-0					

TYPE	with contact	SA0 1P A320R	SA0 1N A320R	SA0 2P A320R	SA0 3P A320R	SA0 3N A320R	SA0 4P A320R
ELECTRICAL PROPERTIES							
SPD per EN 61643-11		Type 1, 2 and 3					
SPD per IEC 61643-1		Class I, II, III					
IEC Rated voltage Un	VAC	230	230	230	230 / 400	230 / 400	230 / 400
IEC maximum continuous voltage Uc	VAC / VDC	320 / 420					
IEC impulse current Iimp (10/350) (L-N/N-PE)	kA	12.5	12.5 / 50	12.5 per pole	12.5 per pole	12,5 / 50	12.5 per pole
IEC max discharge current Imax (8/20) (L-N/N-PE)	kA	60	60 / 50	60 per pole	60 per pole	60 / 50	60 per pole
IEC rated discharge current In (8/20) (L-N/N-PE)	kA	25	25 / 30	25 per pole	25 per pole	25 / 30	25 per pole
IEC combined surge Uoc/Isc (1.2/50, 8/20)	kV/kA	10/5					
IEC voltage level protection Up (L-N/N-PE)	kV	< 1.5	< 1.5 / < 1.7	< 1.5	< 1.5	< 1.5 / < 1.7	< 1.5
IEC temporary overvoltage (TOV) Ut (L-N for 5s)	VAC	335					
IEC residual voltage Ures (L-N/N-PE) at 3kA (8/20)	kV	0.8	0.8 / 0.2	0.8	0.8	0.8 / 0.2	0.8
IEC follow current If (N-PE)	Arms	—	>100	—	—	>100	—
Tripping time ta (L-N/N-PE)	ns	< 25	< 25 / 100	< 25	< 25	< 25 / 100	< 25
Thermal isolation protection		Yes					
IEC back-up fuse (supply >160A) (L-N/N-PE)	A	160 (gL/gG class)					
IEC maximum short-circuit current	kA	25 / 50 Hz					
Status indicator - operating / failure		Green / Red					
CONNECTIONS							
IEC degree of protection	IP	20					
Terminal tightening torque	Nm	3					
Maximum conductor section	mm²	25 (flexible) / 35 (rigid)					
Type of signalling contact		Changeover (SPDT)					
Contact capacity	A	0.5A at 250VAC; 3A at 125VAC; 0.1A at 250VDC; 0.2A at 125VDC					
Contact terminal tightening torque	Nm	0.25					
Maximum contact conductor section	mm²	1.5					
AMBIENT CONDITIONS							
Operating temperature	°C	-40....+80					
Fixing		On 35mm DIN rail (IEC/EN 60715)					
Housing material		Thermoplastic, RAL 7035, UL 94 V-0					

TYPE	w/o contact	SA2 1P A320	SA2 1N A320	SA2 2P A320	SA2 3P A320	SA2 3N A320	SA2 4P A320
	with contact	SA2 1P A320R	SA2 1N A320R	SA2 2P A320R	SA2 3P A320R	SA2 3N A320R	SA2 4P A320R

ELECTRICAL PROPERTIES

SPD per EN 61643-11		Type 2					
SPD per IEC 61643-1		Class II					
IEC rated voltage Un	VAC	230	230	230	230 / 400	230 / 400	230 / 400
IEC maximum continuous voltage U _c	VAC / VDC	320 / 420					
IEC max discharge current I _{max} (8/20) (L-N/N-PE)	kA	40	40 / 40	40 per pole	40 per pole	40 / 40	40 per pole
IEC rated impulse current I _n (8/20) (L-N/N-PE)	kA	20	20 / 20	20 per pole	20 per pole	20 / 20	20 per pole
IEC voltage protection level U _p (L-N/N-PE)	kV	< 1.5	< 1.5 / < 2	< 1.5	< 1.5	< 1.5 / < 2	< 1.5
IEC temporary overvoltage (TOV) U _t (L-N for 5s)	VAC	335					
IEC residual voltage U _{res} (L-N/N-PE) at 3kA (8/20)	kV	0.95	0.95 / 0.1	0.95	0.95	0.95 / 0.1	0.95
IEC follow current I _f (N-PE)	Arms	—	>100	—	—	>100	—
Tripping time t _a (L-N/N-PE)	ns	< 25	< 25 / 100	< 25	< 25	< 25 / 100	< 25
Thermal isolation protection		Yes					
IEC back-up protection fuse (supply > 125A) (L-N/N-PE)	A	125 (gL/gG class)					
IEC maximum short-circuit current	kA	25 / 50 Hz					
Status indicator - operating / failure		Green / Red					

CONNECTIONS

IEC degree of protection	IP	20					
Terminal tightening torque	Nm	3					
Maximum conductor section	mm ²	25 (flexible) / 35 (rigid)					
Type of signalling contact		Changeover (SPDT)					
Contact capacity	A	0.5A at 250VAC; 3A at 125VAC; 0.1A at 250VDC; 0.2A at 125VDC					
Contact terminal tightening torque	Nm	0.25					
Maximum contact conductor section	mm ²	1.5					

AMBIENT CONDITIONS

Operating temperature	°C	-40...+80					
Fixing		On 35mm DIN rail (IEC/EN 60715)					
Housing material		Thermoplastic, RAL 7035, UL 94 V-0					

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TYPE	w/o contact	—	—	—	—	SA2 DB 600	SA2 DB K00
	with contact	SA2 DA 600R	SA2 DA K00R	SA2 DA K20R	SA2 DA K50R	SA2 DB 600R	SA2 DB K00R

ELECTRICAL PROPERTIES

Certifications obtained		UL Recognized for USA and Canada				—	
SPD per EN 61643-11		Type 2					
SPD per IEC 61643-1		Class II					
IEC rated voltage Un	VDC	600	1000	1200	1500	600	1000
IEC maximum continuous voltage Ucpv	VDC	600	1000	1200	1500	600	1000
IEC maximum discharge current Imax (8/20)	kA	40 per pole	30 per pole	40 per pole	40 per pole	40 per pole	40 per pole
IEC rated discharge current In (8/20)	kA	20 per pole	20 per pole	20 per pole	20 per pole	20 per pole	20 per pole
IEC voltage protection level Up	kV	< 2.2	< 2.8	< 4.4	< 4.8	< 1.9	< 3.65
IEC residual voltage Ures at 3kA (8/20)	kV	1					
Tripping time ta	ns	< 25					
Thermal isolation protection		Yes					
IEC short-circuit withstand current Iscwpv	A	1000				—	
UL maximum discharge current (8/20)	kA	50 per pole	20 per pole	50 per pole	—		
UL voltage protection rating VPR	kV	2	4	4	—		
UL max continuous operating voltage MCOV	V	600	1000	1000	—		
UL nominal discharge current In (8/20)	kA	20 per pole	10 per pole	20 per pole	—		
Status indicator - operating / failure		Green / Red					

CONNECTIONS

IEC degree of protection	IP	20	
Terminal tightening torque	Nm / lbin	3 / 26	3 / 26
Maximum conductor section	mm² / AWG	25 / 3 (flexible / stranded); 35 / 2 (rigid / solid)	
Type of signalling contact, if any		Changeover (SPDT)	
Contact capacity	A	0.5A at 250VAC; 3A at 125VAC; 0.1A at 250VDC; 0.2A at 125VDC	
Contact terminal tightening torque	Nm / lbin	0.25 / 2.2	
Max contact conductor section	mm² / AWG	1.5 / 16	

AMBIENT CONDITIONS

Operating temperature	°C	-40...+80					
Fixing		On 35mm DIN rail (IEC/EN 60715)					
Housing material		Thermoplastic, RAL 7035, UL 94 V-0					