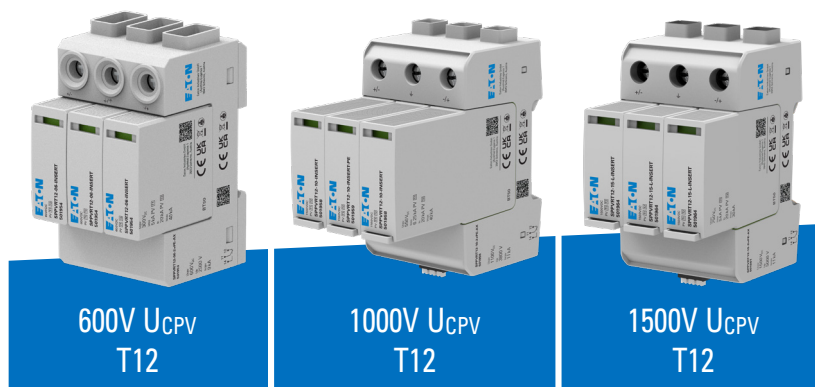




Description

- DC Surge Protection Devices (SPD) for photovoltaic systems
- Versatile product range covering 600 - 1500 V DC applications
- Test class 1 and 2 combined devices for applications with a risk of damage from direct lightning strikes
- Remote contact available for all types (-AX)

Types

SPPVR – “AX”

- These types come with an auxiliary contact

Test class 1 and 2 combined SPD for 600 V DC applications

- Powerful yet compact solution for 600 V DC applications
- Perfect fit for enclosures such as CI-Safety
- Replacement plugs available
- Available as -AX type which comes already equipped with an auxiliary contact
- Operational temperature range up to 85°C to perform well under harsh conditions

U_{CPV} (Voltage per MPPT)	Test class	Type Designation	Article No.	Units per package (Pcs.)
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-AX type with integrated auxiliary contact

600 V	T12	SPPVRT12-06-2+PE	EP-501952	1
600 V	T12	SPPVRT12-06-2+PE-AX	EP-501953	1

EP-501953_L

**Replacement inserts for SPPVRT12-06-2+PE(-AX)**

(+) / (-) / PE	SPPVRT12-06-INSERT	EP-501954	1
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EP-501954_L

**Technical Data****SPPVRT12-06-2+PE(-AX)****General data**

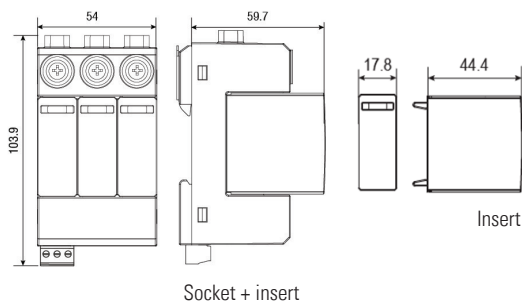
Standards/regulations	IEC 61643-31:2018
	EN 61643-31:2019
Pollution degree	2
Housing material	UL 94 V-0 (Thermoplastic)
Degree of protection	IP20
Ambient temperature (operation)	Ta -40°C up to +85 °C
Permissible humidity (operation)	RH 5% up to 95%
Max. altitude	2000 m

Electric data

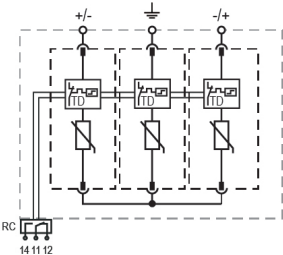
Mode of Protection	(+) – PE / (-) – PE / (+) – (-)
Number of Ports	1
Nominal Voltage	U_{CPV} 600 V DC
Nominal Discharge Current (8/20 µs)	I_n 20 kA
Maximum Discharge Current (8/20 µs)	I_{max} 40 kA
Impulse Discharge Current (10/350 µs)	I_{imp} 5 kA
Total Discharge Current (8/20 µs)	I_{total} 40 kA
Total Discharge Current (10/350 µs)	I_{total} 5 kA
Rated short circuit current rating	I_{SCPV} 9 kA
Specific energy	W/R 1.56 kJ/Ω
Charge	Q 1.25 As
Response Time	tA < 25 ns
Voltage protection level	(+) - (-) < 2.5 kV
	(+) - PE < 2.5 kV
	(-) – PE < 2.5 kV
Thermal Protection	Yes (integrated)

SPPVRT12-06-2+PE(-AX)		
Electric data (-AX contact)		
Switching capabilities	AC	1 A @ 120 – 250 V
	DC	0.5 A @ 12 – 48 V
Permissible conductor cross section (max)	Solid	1.5 mm ²
Technical data		
Mounting	Din-Rail (35 mm, EN 60715)	
Connections	1x (+), 1x (-). 1x PE	
Permissible conductor cross section (max)	Solid	6 mm ²
	Stranded	35 mm ²
	Flexible	25 mm ²

Dimensions (mm)



Internal Configuration



Test class 1 and 2 combined SPD for 1000 V DC applications

- Powerful yet compact solution for 1000 V DC applications
- High I_{imp} / I_{total} rating to omit the need for a risk assessment of the application
- Perfect fit for enclosures such as CI-Safety
- Replacement plugs available
- Available as -AX type which comes already equipped with an auxiliary contact
- Operational temperature range up to 85°C to perform well under harsh conditions
- Could be mounted in:
 - xEnergy Safety Ci: Types AV...-200
 - xEnergy Basic EWK: Types EWK-G...
 - xComfort IKA: Types IKA-1/12... or bigger, only when mounted in middle position

U_{CPV} (Voltage per MPPT)	Test class	Type Designation	Article No.	Units per package (Pcs.)
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-AX type with integrated auxiliary contact

EP-501956_L



1000 V	T12	SPPVRT12-10-2+PE	EP-501955	1
1000 V	T12	SPPVRT12-10-2+PE-AX	EP-501956	1

Replacement inserts for SPPVRT12-10-2+PE(-AX)

EP-501958_L



(+) / (-)	SPPVRT12-10-INSERT	EP-501958	1
PE	SPPVRT12-10-INSERT-PE	EP-501959	1

Technical Data**SPPVRT12-10-2+PE(-AX)****General data**

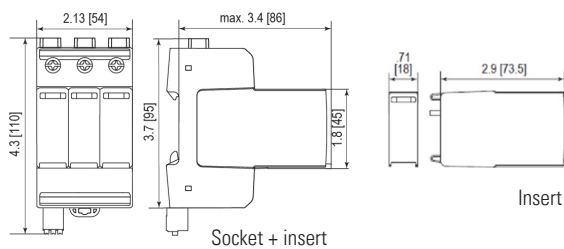
Standards/regulations	IEC 61643-31:2018 EN 61643-31:2019
Pollution degree	2
Housing material	UL 94 V-0 (Thermoplastic)
Degree of protection	IP20
Ambient temperature (operation)	Ta -40°C up to +85 °C
Permissible humidity (operation)	RH 5% up to 95%
Max. altitude	4000 m

Electric data

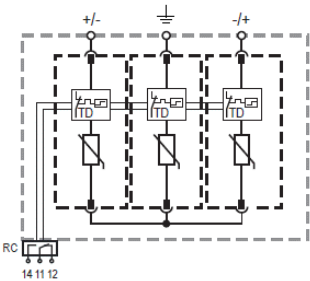
Mode of Protection	(+) – PE / (-) – PE / (+) – (-)
Number of Ports	1
Nominal Voltage	U_{CPV} 1100 V DC
Nominal Discharge Current (8/20 μ s)	I_n 20 kA
Maximum Discharge Current (8/20 μ s)	I_{max} 40 kA
Impulse Discharge Current (10/350 μ s)	I_{imp} 6.25 kA
Total Discharge Current (8/20 μ s)	I_{total} 50 kA
Total Discharge Current (10/350 μ s)	I_{total} 12.5 kA
Rated short circuit current rating	I_{SCPV} 11 kA
Specific energy	W/R 9.77 kJ/ Ω
Charge	Q 3.12 As
Response Time	t_A < 25 ns
Voltage protection level	(+) - (-) < 3.8 kV (+) - PE < 3.8 kV (-) – PE < 3.8 kV
Thermal Protection	Yes (integrated)

SPPVRT12-10-2+PE(-AX)		
Electric data (-AX contact)		
Switching capabilities	AC	1 A @ 120 – 250 V
	DC	0.5 A @ 12 – 48 V
Permissible conductor cross section (max)	Solid	1.5 mm ²
Technical data		
Mounting	Din-Rail (35 mm, EN 60715)	
Connections	1x (+), 1x (-). 1x PE	
Permissible conductor cross section (max)	Solid	35 mm ²
	Stranded	35 mm ²
	Flexible	25 mm ²

Dimensions (mm)



Internal Configuration



Test class 1 and 2 combined SPD for 1500 V DC applications

- Powerful yet compact solution for 1500 V DC applications
- High I_{imp} / I_{total} rating to omit the need for a risk assessment of the application
- Perfect fit for enclosures such as CI-Safety
- Replacement plugs available
- Available as -AX type which comes already equipped with an auxiliary contact
- Operational temperature range up to 85°C to perform well under harsh conditions

U_{CPV}
(Voltage per MPPT)

Test class

Type
Designation

Article No.

Units per package
(Pcs.)

-AX type with integrated auxiliary contact

EP-501961_L



1500 V	T12	SPPVRT12-15-2+PE	EP-501960	1
1500 V	T12	SPPVRT12-15-2+PE-AX	EP-501961	1

Replacement inserts for SPPVRT12-15-2+PE(-AX)

EP-501964_L



(+) / (-) / PE	SPPVRT12-15-L-INSERT	EP-501964	1
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Technical Data**SPPVRT12-15-2+PE(-AX)****General data**

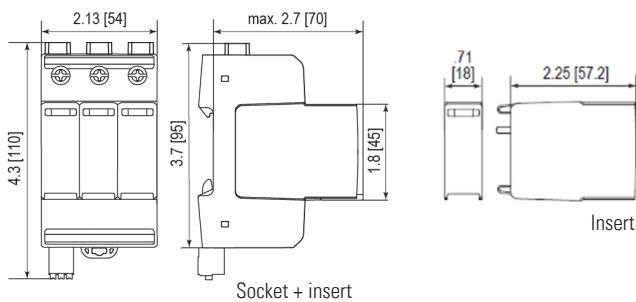
Standards/regulations	IEC 61643-31:2018
	EN 61643-31:2019
Pollution degree	2
Housing material	UL 94 V-0 (Thermoplastic)
Degree of protection	IP20
Ambient temperature (operation)	Ta -40°C up to +85 °C
Permissible humidity (operation)	RH 5% up to 95%
Max. altitude	4000 m

Electric data

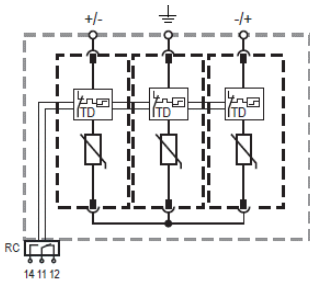
Mode of Protection	(+) – PE / (-) – PE / (+) – (-)
Number of Ports	1
Nominal Voltage	U_{CPV} 1500 V DC
Nominal Discharge Current (8/20 µs)	I_n 20 kA
Maximum Discharge Current (8/20 µs)	I_{max} 30 kA
Impulse Discharge Current (10/350 µs)	I_{imp} 5 kA
Total Discharge Current (8/20 µs)	I_{total} 40 kA
Total Discharge Current (10/350 µs)	I_{total} 5 kA
Rated short circuit current rating	I_{SCPV} 11 kA
Specific energy	W/R 6.25 kJ/Ω
Charge	Q 2.5 As
Response Time	t_A < 25 ns
Voltage protection level	(+) - (-) < 5 kV
	(+) - PE < 5 kV
	(-) – PE < 5 kV
Thermal Protection	Yes (integrated)

SPPVRT12-15-2+PE(-AX)		
Electric data (-AX contact)		
Switching capabilities	AC	1 A @ 120 – 250 V
	DC	0.5 A @ 12 – 48 V
Permissible conductor cross section (max)	Solid	1.5 mm²
Technical data		
Mounting	Din-Rail (35 mm, EN 60715)	
Connections	1x (+), 1x (-), 1x PE	
Permissible conductor cross section (max)	Solid	35 mm²
	Stranded	35 mm²
	Flexible	25 mm²

Dimensions (mm)



Internal Configuration





Description

- DC Surge Protection Device (SPD) for photovoltaic systems
- One SPD protects 2 MPPT, offering a compact yet powerful solution
- Test class 1 and 2 combined tested device for applications with a risk of damage from direct lightning strikes
- Remote contact integrated

Type SPPVR-“AX”

- These types come with an auxiliary contact

Test class 1 and 2 combined 2 MPPT SPD for 1000 V DC applications

- Powerful yet compact solution for 1000 V DC applications
- Space saving solution to protect 2 MPPT in one protection device
- Replacement plugs available for easy replacement
- This type already comes equipped with an auxiliary contact

U_{CPV} (Voltage per MPPT)	Test class	Type Designation	Article No.	Units per package (Pcs.)
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-AX type with integrated auxiliary contact

EP-501957_L



1100 V	T12	SPPVRT12-10-4+PE+AX	EP-501957	1
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Replacement inserts for SPPVRT12-10-4+PE+AX

EP-501962_L



(+) / (-)		SPPVRT12-10-4-INSERT	EP-501962	1
PE		SPPVRT12-10-4-PE-INSERT	EP-501963	1

Technical Data

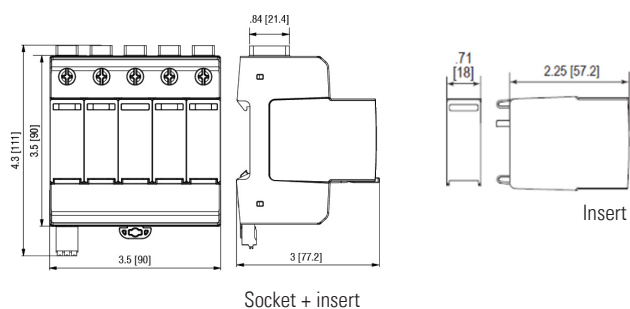
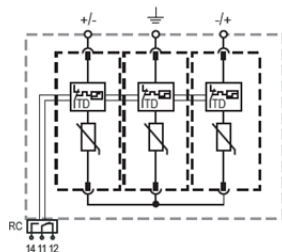
SPPVRT12-10-4+PE+AX		
General data		
Standards/regulations		IEC 61643-31:2018 EN 61643-31:2019
Pollution degree		2
Housing material		UL 94 V-0 (Thermoplastic)
Degree of protection		IP20
Ambient temperature (operation)	Ta	-40°C up to +70 °C
Permissible humidity (operation)	RH	5% up to 95%
Max. altitude		4000 m
Electric data		
Mode of Protection		(+) – PE / (-) – PE / (+) – (-)
Number of Ports		1
Nominal Voltage	U _{CPV}	1100 V DC
Nominal Discharge Current (8/20 μs)	I _n	20 kA
Maximum Discharge Current (8/20 μs)	I _{max}	40 kA
Impulse Discharge Current (10/350 μs)	I _{imp}	5 kA
Total Discharge Current (8/20 μs)	I _{total}	50 kA
Total Discharge Current (10/350 μs)	I _{total}	10 kA
Rated short circuit current rating	I _{SCPV}	11 kA
Specific energy	W/R	6.25 kJ/Ω
Charge	Q	2.5 As
Response Time	t _A	< 25 ns
Voltage protection level	(+) - (-)	< 3.8 kV
	(+) - PE	< 3.8 kV
	(-) – PE	< 3.8 kV
Thermal Protection		Yes (integrated)

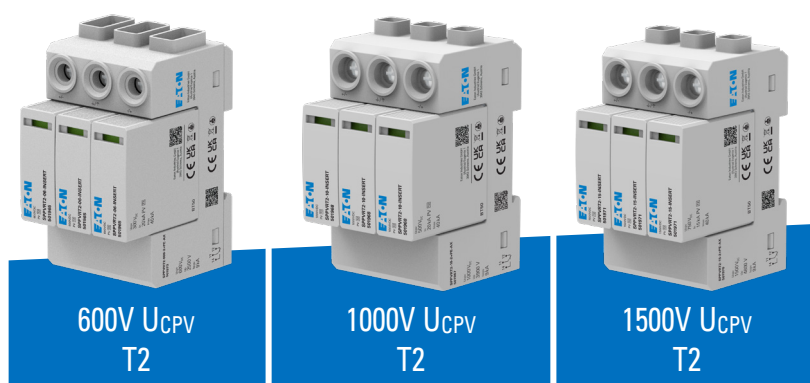
SPPVRT12-10-4+PE+AX**Electric data (-AX contact)**

Switching capabilities	AC	1 A @ 120 – 250 V
	DC	0.5 A @ 12 – 48 V
Permissible conductor cross section (max)	Solid	1.5 mm ²

Technical data

Mounting	Din-Rail (35 mm, EN 60715)	
Connections	2x (+), 2x (-). 1x PE	
Permissible conductor cross section (max)	Solid	35 mm ²
	Stranded	35 mm ²
	Flexible	25 mm ²

Dimensions (mm)**Internal Configuration**



Description

- DC Surge Protection Devices (SPD) for photovoltaic systems
- Versatile product range covering 600 - 1500 V DC applications
- Class 2 tested devices for the majority of applications
- Remote contact available for all types (-AX)

Types

SPPVR – “AX”

- These types come with an auxiliary contact

Test class 2 SPD for 600 V DC applications

- Powerful yet compact solution for 600 V DC applications
- Perfect fit for enclosures such as IKA, CI-Safety or similar
- Replacement plugs available
- Available as -AX type which comes already equipped with an auxiliary contact
- Operational temperature range up to 85°C to perform well under harsh conditions

U_{CPV}
(Voltage per MPPT)

Test class

Type
Designation

Article No.

Units per package
(Pcs.)

-AX type with integrated auxiliary contact

EP-501973_L



600 V	T2	SPPVRT2-600-2+PE	EP-501972	1
600 V	T2	SPPVRT2-600-2+PE-AX	EP-501973	1

Replacement inserts for SPPVRT2-600-2+PE(-AX)

EP-501965_L



(+) / (-) / PE	SPPVRT2-06-INSERT	EP-501965	1
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Technical Data**SPPVRT2-600-2+PE(-AX)****General data**

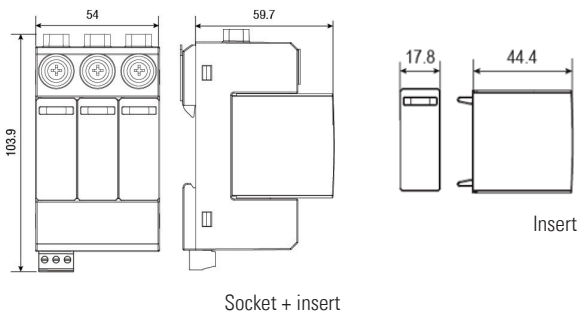
Standards/regulations	IEC 61643-31:2018 EN 61643-31:2019	
Pollution degree	2	
Housing material	UL 94 V-0 (Thermoplastic)	
Degree of protection	IP20	
Ambient temperature (operation)	Ta	-40°C up to +85 °C
Permissible humidity (operation)	RH	5% up to 95%
Max. altitude	2000 m	

Electric data

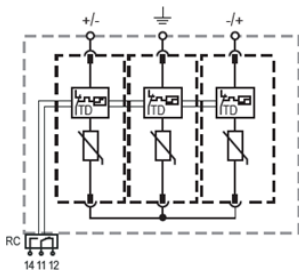
Mode of Protection	(+) – PE / (-) – PE / (+) – (-)	
Number of Ports	1	
Nominal Voltage	U_{CPV}	600 V DC
Nominal Discharge Current (8/20 µs)	I_n	20 kA
Maximum Discharge Current (8/20 µs)	I_{max}	40 kA
Total Discharge Current (8/20 µs)	I_{total}	40 kA
Rated short circuit current rating	I_{SCPV}	9 kA
Response Time	t_A	< 25 ns
Voltage protection level	(+) - (-)	< 2.5 kV
	(+) - PE	< 2.5 kV
	(-) – PE	< 2.5 kV
Thermal Protection	Yes (integrated)	

SPPVRT2-600-2+PE-(AX)		
Electric data (-AX contact)		
Switching capabilities	AC	1 A @ 120 – 250 V
	DC	0.5 A @ 12 – 48 V
Permissible conductor cross section (max)	Solid	1.5 mm ²
Technical data		
Mounting	Din-Rail (35 mm, EN 60715)	
Connections	1x (+), 1x (-). 1x PE	
Permissible conductor cross section (max)	Solid	6 mm ²
	Stranded	35 mm ²
	Flexible	25 mm ²

Dimensions (mm)



Internal Configuration



Test class 2 SPD for 1000 V DC applications

- Powerful yet compact solution for 1000 V DC applications
- Perfect fit for enclosures such as IKA, CI-Safety or similar
- Replacement plugs available
- Available as -AX type which comes already equipped with an auxiliary contact
- Operational temperature range up to 85°C to perform well under harsh conditions

U_{CPV}
(Voltage per MPPT)

Test class

Type
Designation

Article No.

Units per package
(Pcs.)

-AX type with integrated auxiliary contact

EP-501967_L



1000 V	T2	SPPVRT2-10-2+PE	EP-501966	1
1000 V	T2	SPPVRT2-10-2+PE-AX	EP-501967	1

Replacement inserts for SPPVRT2-10-2+PE(-AX)

EP-501968_L



(+) / (-) / PE	SPPVRT2-10-INSERT	EP-501968	1
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SPPVRT2-10-2+PE(-AX)**General data**

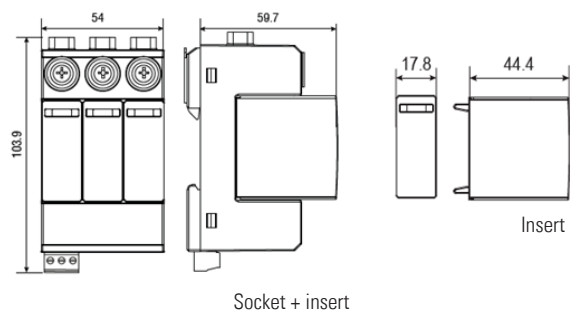
Standards/regulations	IEC 61643-31:2018 EN 61643-31:2019
Pollution degree	2
Housing material	UL 94 V-0 (Thermoplastic)
Degree of protection	IP20
Ambient temperature (operation)	Ta -40°C up to +85 °C
Permissible humidity (operation)	RH 5% up to 95%
Max. altitude	2000 m

Electric data

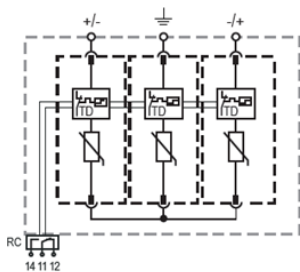
Mode of Protection	(+) – PE / (-) – PE / (+) – (-)
Number of Ports	1
Nominal Voltage	U_{CPV} 1000 V DC
Nominal Discharge Current (8/20 µs)	I_n 20 kA
Maximum Discharge Current (8/20 µs)	I_{max} 40 kA
Total Discharge Current (8/20 µs)	I_{total} 40 kA
Rated short circuit current rating	I_{SCPV} 9 kA
Response Time	t_A < 25 ns
Voltage protection level	(+) - (-) < 3.9 kV (+) - PE < 3.9 kV (-) – PE < 3.9 kV
Thermal Protection	Yes (integrated)

SPPVRT2-10-2+PE(-AX)		
Electric data (-AX contact)		
Switching capabilities	AC	1 A @ 120 – 250 V
	DC	0.5 A @ 12 – 48 V
Permissible conductor cross section (max)	Solid	1.5 mm ²
Technical data		
Mounting	Din-Rail (35 mm, EN 60715)	
Connections	1x (+), 1x (-). 1x PE	
Permissible conductor cross section (max)	Solid	6 mm ²
	Stranded	35 mm ²
	Flexible	25 mm ²

Dimensions (mm)



Internal Configuration



Test class 2 SPD for 1500 V DC applications

- Powerful yet compact solution for 1500 V DC applications
- Perfect fit for enclosures such as IKA, CI-Safety or similar
- Replacement plugs available
- Available as -AX type which comes already equipped with an auxiliary contact
- Operational temperature range up to 85°C to perform well under harsh conditions

U_{CPV}
(Voltage per MPPT)

Test class

Type
Designation

Article No.

Units per package
(Pcs.)

-AX type with integrated auxiliary contact

EP-501970_L



1500 V	T2	SPPVRT2-15-2+PE	EP-501969	1
1500 V	T2	SPPVRT2-15-2+PE-AX	EP-501970	1

Replacement inserts for SPPVRT2-15-2+PE(-AX)

EP-501971_L



(+) / (-) / PE		SPPVRT2-15-INSERT	EP-501971	1
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SPPVRT2-15-2+PE(-AX)**General data**

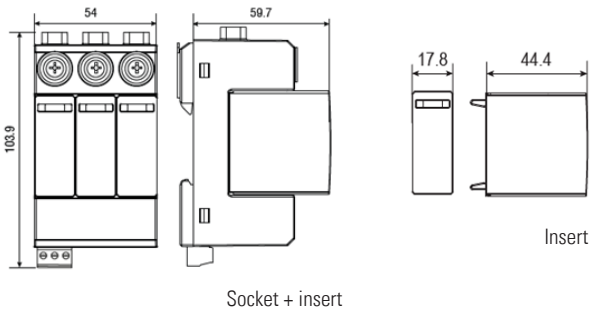
Standards/regulations		IEC 61643-31:2018 EN 61643-31:2019
Pollution degree		2
Housing material		UL 94 V-0 (Thermoplastic)
Degree of protection		IP20
Ambient temperature (operation)	Ta	-40°C up to +85 °C
Permissible humidity (operation)	RH	5% up to 95%
Max. altitude		2000 m

Electric data

Mode of Protection		(+) – PE / (-) – PE / (+) – (-)
Number of Ports		1
Nominal Voltage	U_{CPV}	1500 V DC
Nominal Discharge Current (8/20 µs)	I_n	20 kA
Maximum Discharge Current (8/20 µs)	I_{max}	40 kA
Total Discharge Current (8/20 µs)	I_{total}	40 kA
Rated short circuit current rating	I_{SCPV}	9 kA
Response Time	t_A	< 25 ns
Voltage protection level	(+) - (-)	< 4.8 kV
	(+) - PE	< 4.8 kV
	(-) – PE	< 4.8 kV
Thermal Protection		Yes (integrated)

SPPVRT2-15-2+PE(-AX)		
Electric data (-AX contact)		
Switching capabilities	AC	1 A @ 120 – 250 V
	DC	0.5 A @ 12 – 48 V
Permissible conductor cross section (max)	Solid	1.5 mm ²
Technical data		
Mounting	Din-Rail (35 mm, EN 60715)	
Connections	1x (+), 1x (-). 1x PE	
Permissible conductor cross section (max)	Solid	6 mm ²
	Stranded	35 mm ²
	Flexible	25 mm ²

Dimensions (mm)



Internal Configuration

