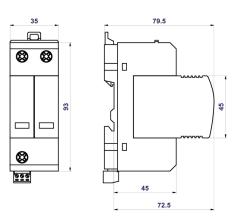




HSA PV 600/2 M S

- Surge arresters type T2 intended for photovoltaic systems (PV) at U or Y connection.
- The advantage of the Y connection versus the U connection is the resistance to the earth connection of the working conductors and zero residual (leakage) current through the PE conductor.
- Particular varistor sectors, connected between the terminals L+, Land PE are equipped with internal disconnectors, which are activated when the varistors fail (overheat) and they are able to interrupt the DC current.
- Special construction of the internal disconnector allows installation without a back-up fuse.



- They are installed on the DC side in PV applications without an external LPS or with an external LPS, where the sufficient distance "s" is observed.
- Suitable for all LPL levels.
- Ensure the equipotential bonding of positive and negative busbars of PV systems and the elimination of transient overvoltage that originates during the atmospheric discharges or switching processes.
- **M** indication specifies a type of construction with removable module.
- S indication specifies a version with remote monitoring.

Туре		HSA PV 600/2 M S
Test class according to EN 61643-11:2012 and EN 61643-31:2019		T2
System		DC
PV system type		Ungrounded
SPD connection type		U
Maximum continuous operating voltage (+/-)	U _{CPV}	600 V DC
Maximum continuous operating voltage (±/PE)	U _{CPV}	300 V DC
Max. voltage of PV generator $U_{OCSTC} \le U_{CPV} / 1.2$	U _{OCSTC}	500 V
Short-circuit current rating	I _{SCPV}	10 kA
Total discharge current (8/20) ±->PE	I_{Total}	40 kA
Maximum discharge current (8/20)	I _{max}	40 kA
Nominal discharge current for class II test (8/20)	l _n	20 kA
Voltage protection level at In (+/-)	Up	< 2.5 kV
Voltage protection level at I_n (±/PE)	Up	< 1.25 kV
Response time (+/-)	t _A	< 25 ns
Response time (±/PE)	t _A	< 25 ns
Housing material		Polyamid PA6, UL94 V-0
Degree of protection		IP20
Operating temperature	θ	-40 ÷ 70 °C
Humidity range	RH	5 ÷ 95 %
Minimum cross-section of connected Cu conductors according to IEC 61643-32:2017 (doesn't apply to "V" connection) for T2	S	2.5 mm² (L+, L-) 6 mm² (PE)
Clamp fastening range (solid conductor)		2.5 ÷ 35 mm ²
Clamp fastening range (stranded conductor)		$2.5 \div 25 \text{ mm}^2$
Tightening moment		4 Nm
Installation		On DIN rail 35 mm
Modular width		2 TE



Product placement environment Internal SPD tailure mode Internal SPD tailure mode OCFM Signaling at the device Optic importance of local signaling FAULT - red target Remote signaling Yes Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 nm ²) AC: 250 V / 1.5 A, DC: 250 V / 0.1 A Valuar design Yes Article number of the varistor spare module Yes Lifetime > 100 000 h Designed according to standards UL 94 Application standards UL 94 Application principles for SPDs for photovoltaic installations IEC 61643-31:2018 Selection and application principles for SPDs connected to photovoltaic installations IEC 61643-32:2017 Selection and application principles for SPDs connected to photovoltaic installations IEC 61643-32:2017 Selection and application principles for SPDs connected to photovoltaic installations IEC 61643-32:2017 Selection and application principles for SPDs connected to photovoltaic installations IEC 61643-32:2017 Selection and application principles for SPDs connected to photovoltaic installations IEC 61643-32:2017	Туре		HSA PV 600/2 M S
SPD failure mode OCFM Signalling at the device Optic importance of local signaling OK - green target Remote signalling FAULT - red target Potential free signal contact (S) (recommended cross-section of remote monitoring nax. 1 mm²) AC: 250 V / 1.5 A, DC: 250 V / 0.1 A Votential free signal contact (S) (recommended cross-section of remote monitoring nax. 1 mm²) AC: 250 V / 1.5 A, DC: 250 V / 0.1 A Votular design Yes Article number of the varistor spare module Yes Idetime > 100 000 h Designed according to standards Ves Requirements and test methods for SPDs for photovoltaic installations IEC 61643-31:2018 Safety of Flammability of Plastic Materials UL 94 Application standards VL 94 Protection against lightning IEC 61643-32:2017 Selection and application principles for SPDs connected to photovoltaic installations EIC 61643-32:2020 ow-voltage electrical installations - Photovoltaic (PV) systems HD 60364-7-712:2016 Ordering, packaging and additional data Mas 253 g Mass (including the packaging) M 268 g Packaging dimensions (H x W x D) V 0.42 atm³	Operating position		Any
Signalling at the device Optic importance of local signaling OK - green target FAULT - red target Remote signalling Yes Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²) AC: 250 V / 1.5 A, DC: 250 V / 0.1 A Vodular design Yes Article number of the varistor spare module Yes Designed according to standards Yes Designed according to standards UL 94 Designed according to flastic Materials UL 94 Application standards UL 94 Protection against lightning IEC 61643-31:2018 Selection and application principles for SPDs connected to photovoltaic installations EC 61643-32:2010 Selection and application principles for SPDs connected to photovoltaic installations UL 94 Ordering, packaging and additional data EC 61643-32:2020 Outerical installations – Photovoltaic (PV) systems HD 60364-7-712:2016 Ordering, packaging and additional data Mas 253 g Mass (including the packaging) m 258 g Packaging dimensions (H x W x D) 43 x 112 x 87 mm Packaging value V 0.42 dm ³ ETIM class EC0000241 Customs tariff fno. EC0000241 EXIM code 8596801172100	Product placement environment		Internal
DescriptionOK - green target FAULT - red targetRemote signalingYesPotential free signal contact (S) (recommended cross-section of remote monitoring max.1 mm ²)AC: 250 V / 1.5 A, DC: 250 V / 0.1 AModular designYesArticle number of the varistor spare module27 245Lifetime> 100 000 hDesigned according to standardsIEC 6 1643-31:2018Bequirements and test methods for SPDs for photovoltaic installationsIEC 6 1643-31:2018Safety of Flammability of Plastic MaterialsUL 94Application standardsIEC 6 2005:2010Selection and application principles for SPDs connected to photovoltaic installationsIEC 6 1643-32:2017Selection and application principles for SPDs connected to photovoltaic installationsIEC 6 1643-32:2010Selection and application principles for SPDs connected to photovoltaic installationsIEC 61643-32:2010Selection and application principles for SPDs connected to photovoltaic installationsIEC 61643-32:2010Selection and application principles for SPDs connected to photovoltaic installationsIEC 61643-32:2010Selection and application principles for SPDs connected to photovoltaic installationsIEC 61643-32:2020Low-voltage electrical installations - Photovoltaic (PV) systemsHD 60364-7:712:2016Dreakaging and additional datam268 gPackaging valueV0.42 dm ³ Packaging valueV0.42 dm ³ Packaging valueV0.42 dm ³ Packaging valueV0.42 dm ³ ETIM classEC000021	SPD failure mode		OCFM
Remote signal contact (S) (recommended cross-section of remote monitoring nax. 1 mm ²) AC: 250 V / 1.5 A, DC: 250 V / 0.1 A Potential free signal contact (S) (recommended cross-section of remote monitoring nax. 1 mm ²) AC: 250 V / 1.5 A, DC: 250 V / 0.1 A Wodular design Yes Article number of the varistor spare module Yes Lifetime > 100 000 h Designed according to standards IEC 61643-31:2018 Requirements and test methods for SPDs for photovoltaic installations IEC 61643-31:2018 Safety of Flammability of Plastic Materials UL 94 Application standards IEC 61643-32:2017 Protection against lightning IEC 61643-32:2017 Selection and application principles for SPDs connected to photovoltaic installations IEC 61643-32:2017 Selection and application principles for SPDs connected to photovoltaic installations IEC 61643-32:2017 Selection and application principles for SPDs connected to photovoltaic installations IEC 61643-32:2017 Selection and application principles for SPDs connected to photovoltaic installations IEC 61643-32:2017 Selection and application principles for SPDs connected to photovoltaic installations IEC 61643-32:2017 Selection and application principles for SPDs connected to photovoltaic installations IEC 61643-32:2017 <	Signalling at the device		Optic
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm²)AC: 250 V / 1.5 A, DC: 250 V / 0.1 AWodular designYesArticle number of the varistor spare module27 245Lifetime> 100 000 hDesigned according to standardsIEC 61643-31:2018Bequirements and test methods for SPDs for photovoltaic installationsIEC 61643-31:2018Safety of Flammability of Plastic MaterialsUL 94Application standardsIEC 61643-31:2018Protection against lightningIEC 61643-32:2010Selection and application principles for SPDs connected to photovoltaic installationsIEC 61643-32:2010Selection and application principles for SPDs connected to photovoltaic installationsIEC 61643-32:2010Selection and application principles for SPDs connected to photovoltaic installationsIEC 61643-32:2010Selection and application principles for SPDs connected to photovoltaic installationsIEC 61643-32:2010Selection and application principles for SPDs connected to photovoltaic installationsIEC 61643-32:2010Selection and application principles for SPDs connected to photovoltaic installationsIEC 61643-32:2010MassMasCL/TS 51643-32:2020Low-voltage electrical installations – Photovoltaic (PV) systemsHD 60364-7-712:2016Drdering, packaging and additional dataMasPackaging valueM253 gPackaging valueV0.42 dm³Packaging valueV0.42 dm³Packaging valueV0.42 dm³Packaging valueEC000941ET	Importance of local signaling		
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Article number of the varistor spare module27 245Lifetime> 100 000 hDesigned according to standardsIEC 61643-31:2018Requirements and test methods for SPDs for photovoltaic installationsIEC 61643-31:2018Safety of Flammability of Plastic MaterialsUL 94Application standardsUL 94Protection against lightningIEC 62305:2010Selection and application principles for SPDs connected to photovoltaic installationsIEC 61643-32:2017Selection and application principles for SPDs connected to photovoltaic installationsIEC 61643-32:2020Low-voltage electrical installations - Photovoltaic (PV) systemsHD 60364-7-712:2016Ordering, packaging and additional datam253 gMass (including the packaging)m268 gPackaging valueV0.42 dm³Packaging valueV0.42 dm³Packaging valueV0.42 dm³ETIM groupEC 6000021Customs tariff no.EC 6000941EAN code8590681172100	Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 $\mbox{mm}^2\mbox{)}$		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A
Lifetime >100 00 h Designed according to standards Requirements and test methods for SPDs for photovoltaic installations IEC 61643-31:2018 Safety of Flammability of Plastic Materials UL 94 Application standards Protection against lightning IEC 62305:2010 Selection and application principles for SPDs connected to photovoltaic installations IEC 61643-32:2027 Selection and application principles for SPDs connected to photovoltaic installations IEC 61643-32:2020 Low-voltage electrical installations – Photovoltaic (PV) systems HD 60364-7-712:2016 Drdering, packaging and additional data Mass (including the packaging) m 253 g Mass (including the packaging) m 268 g Packaging dimensions (H x W x D) Packaging value V 0.42 dm ³ ETIM group EG000021 ETIM class EC000941 Customs tariff no. EAN code S90681172100	Modular design		Yes
Designed according to standards Requirements and test methods for SPDs for photovoltaic installations IEC 61643-31:2018 Safety of Flammability of Plastic Materials UL 94 Application standards UL 94 Protection against lightning IEC 61643-32:2010 Selection and application principles for SPDs connected to photovoltaic installations IEC 61643-32:2017 Selection and application principles for SPDs connected to photovoltaic installations CLC/TS 51643-32:2020 Low-voltage electrical installations – Photovoltaic (PV) systems HD 60364-7.712:2016 Ordering, packaging and additional data m 253 g Mass (including the packaging) m 268 g Packaging dimensions (H x W x D) 43 x 112 x 87 mm Packaging value V 0.42 dm ³ ETIM group EC000021 EC000941 Customs tariff no. E500681172100 8590681172100	Article number of the varistor spare module		27 245
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Safety of Flammability of Plastic Materials UL 94 Application standards Protection against lightning IEC 62305:2010 Selection and application principles for SPDs connected to photovoltaic installations Selection and application principles for SPDs connected to photovoltaic installations Selection and application principles for SPDs connected to photovoltaic installations Selection and application principles for SPDs connected to photovoltaic installations Selection and application principles for SPDs connected to photovoltaic installations Selection and application principles for SPDs connected to photovoltaic installations Selection and application principles for SPDs connected to photovoltaic installations Selection and application principles for SPDs connected to photovoltaic installations Selection and application principles for SPDs connected to photovoltaic installations Selection and application principles for SPDs connected to photovoltaic installations Selection and application principles for SPDs connected to photovoltaic installations Selection and application principles for SPDs connected to photovoltaic installations Selection and application principles for SPDs connected to photovoltaic installations Selection and application principles for SPDs connected to photovoltaic installations Selection and application principles for SPDs connected to photovoltaic installations Selection and application principles for SPDs connected to photovoltaic installations Selection and application principles for SPDs connected to photovoltaic installations Selection and application principles for SPDs connected to photovoltaic installations Selection and application principles for SPDs connected to photovoltaic installations Selection and application principles for SPDs connected to photovoltaic installations Mass (including the packaging) Mass (including the packaging) Mass (including the packaging) No L 20 Mass (Including the packaging and Additional data Selection and Additional data Selection application (Includ	Designed according to standards		
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Protection against lightningIEC 62305:2010Selection and application principles for SPDs connected to photovoltaic installationsIEC 61643-32:2017Selection and application principles for SPDs connected to photovoltaic installationsCLC/TS 51643-32:2020Low-voltage electrical installations – Photovoltaic (PV) systemsHD 60364-7-712:2016Drdering, packaging and additional datam253 gMassm268 gPackaging dimensions (H x W x D)m268 gPackaging valueV0.42 dm³Packaging valueV0.42 dm³ETIM groupEC000941EC000941Customs tariff no.8590681172100	Safety of Flammability of Plastic Materials		UL 94
Selection and application principles for SPDs connected to photovoltaic installationsIEC 61643-32:2017Selection and application principles for SPDs connected to photovoltaic installationsCLC/TS 51643-32:2020Low-voltage electrical installations – Photovoltaic (PV) systemsHD 60364-7-712:2016Ordering, packaging and additional datam253 gMassm268 gPackaging dimensions (H x W x D)m268 gPackaging valueV0.42 dm³ETIM groupEC000021ETIM groupEC000941Customs tariff no.853063010EAN code8590681172100	Application standards		
Selection and application principles for SPDs connected to photovoltaic installationsCLC/TS 51643-32:2020Low-voltage electrical installations – Photovoltaic (PV) systemsHD 60364-7-712:2016Ordering, packaging and additional datam253 gMassm253 gMass (including the packaging)m268 gPackaging dimensions (H x W x D)43 x 112 x 87 mmPackaging valueV0.42 dm³ETIM groupEG000021ETIM classEC000941Customs tariff no.85363010EAN code8590681172100	Protection against lightning		IEC 62305:2010
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Packaging valueV0.42 dm³ETIM groupEG000021ETIM classEC000941Customs tariff no.85363010EAN code8590681172100	Mass (including the packaging)	m	268 g
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EAN code 8590681172100	ETIM class		EC000941
	Customs tariff no.		85363010
Art. number 27 235	EAN code		8590681172100
	Art. number		27 235



The link in the QR code leads to the online presentation of the **HSA PV 600/2 M S**. There, in addition to the always up-to-date data sheet, you will also find all diagrams and drawings, declarations of conformity, or 2D or 3D models and other necessary materials. For more information, visit **www.hakel.com**





Application wiring diagram (installation)

