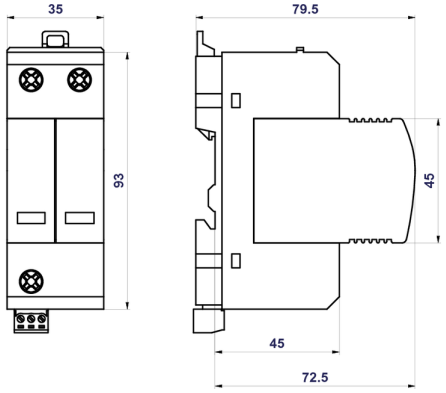
hakel®
Hz in Hearts



HSA PV 400/2 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+, L- and 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.

Type		HSA PV 400/2 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}	400 V DC
Maximum continuous operating voltage (±/PE)	U_{CPV}	200 V DC
Max. voltage of PV generator $U_{OCSTC} \leq U_{CPV} / 1.2$	U_{OCSTC}	330 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)	I_n	20 kA
Voltage protection level at I_n (+/-)	U_p	< 1.6 kV
Voltage protection level at I_n (±/PE)	U_p	< 0.8 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 mm²
Clamp fastening range (stranded conductor)		2.5 ÷ 25 mm²
Tightening moment		4 Nm
Installation		On DIN rail 35 mm
Modular width		2 TE

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Type		HSA PV 400/2 M S
Operating position		Any
Product placement environment		Internal
SPD failure mode		OCFM
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
Modular design		Yes
Article number of the varistor spare module		27 253
Lifetime		> 100 000 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 61643-32:2017
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		
Mass	m	240 g
Mass (including the packaging)	m	255 g
Packaging dimensions (H x W x D)		43 x 112 x 87 mm
Packaging value	V	0.42 dm^3
ETIM group		EG000021
ETIM class		EC000941
Customs tariff no.		85363010
EAN code		8590681187289
Art. number		**27 231**

The link in the QR code leads to the online presentation of the **HSA PV 400/2 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**

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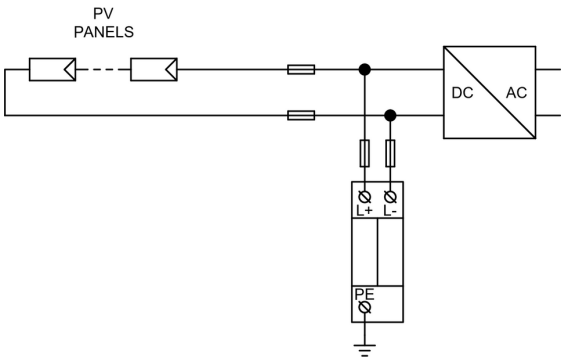
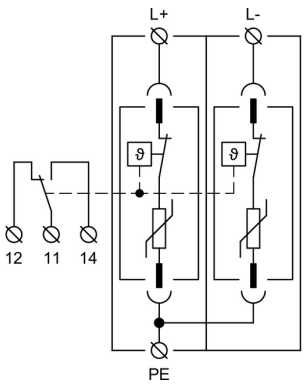
Application wiring diagram (installation)



Internal diagram



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