

## 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 ( $\pm/PE$ )	$U_{CPV}$	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) $\pm \rightarrow PE$	$I_{Total}$	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 $I_n$ ( $\pm/PE$ )	$U_p$	< 0.8 kV
Response time (+/-)	$t_A$	< 25 ns
Response time ( $\pm/PE$ )	$t_A$	< 25 ns
Housing material		Polyamid PA6, UL94 V-0
Degree of protection		IP20
Operating temperature	$\theta$	-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 mm <sup>2</sup> (L+, L-) 6 mm <sup>2</sup> (PE)
Clamp fastening range (solid conductor)		2.5 ÷ 35 mm <sup>2</sup>
Clamp fastening range (stranded conductor)		2.5 ÷ 25 mm <sup>2</sup>
Tightening moment		4 Nm
Installation		On DIN rail 35 mm
Modular width		2 TE

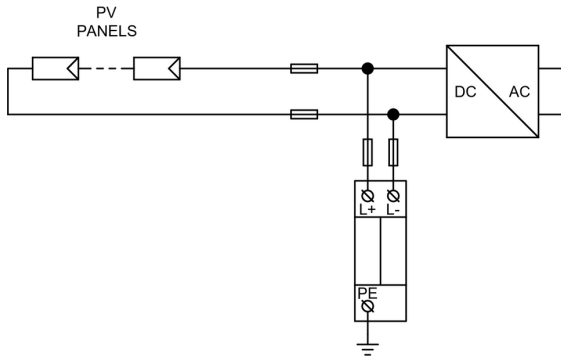
Type		HSA PV 400/2 M S
Operating position		Any
Product placement environment		Internal
SPD failure mode		OCFM
Signalling at the device		Optic
Importance of local signaling		OK – green target FAULT – red target
Remote signalling		Yes
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm <sup>2</sup> )		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
<b>Designed according to standards</b>		
Requirements and test methods for SPDs for photovoltaic installations		IEC 61643-31:2018
Safety of Flammability of Plastic Materials		UL 94
<b>Application standards</b>		
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
<b>Ordering, packaging and additional data</b>		
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 <sup>3</sup>
ETIM group		EG000021
ETIM class		EC000941
Customs tariff no.		85363010
EAN code		8590681187289
<b>Art. number</b>		<b>27 231</b>



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](http://www.hakel.com)



### Application wiring diagram (installation)



### Internal diagram

