



## HSAF16/60VDC

- Two-port surge arresters type T3 with high-frequency filters for serial connection.
- Intended for protection of electronic appliances against the effects of switching, induced and residual overvoltage in DC power supply systems.
- Contain an improved thermal fuse, which ensures timely disconnection of HSAF\*VDC S from the power grid during the MOV's overheating and thus prevents damage to the HSAF\*VDC S.
- Installed at the boundaries of LPZ 2 – LPZ 3, as close to the device to be protected as possible (no further than 5 m).
- In front of HSAF\*VDC S must be installed a lightning current and surge arrester T1 and T2 from HAKEL company.
- **S** indication specifies a version with remote monitoring.

Type		HSAF16/60VDC
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T3
System		DC
Rated operating DC voltage	$U_N$	60 V
Maximum continuous operating voltage DC	$U_C$	72 V
Rated load current	$I_L$	16 A
Open circuit voltage of the combination wave generator (+/-, $\pm$ /PE)	$U_{OC}$	4 kV
Voltage protection level at $U_{OC}$ (+/-)	$U_p$	< 0.55 kV
Voltage protection level at $U_{OC}$ ( $\pm$ /PE)	$U_p$	< 0.4 kV
Nominal discharge current for class II test (8/20) +/-, $\pm$ /PE	$I_n$	2 kA
Total discharge current (8/20) $\pm$ ->PE	$I_{Total}$	4 kA
Asymmetrical attenuation of filter at $f = 4$ MHz		> 80 dB
Asymmetrical attenuation of filter at $f = 0.15 \div 30$ MHz		> 35 dB
Response time (+/-)	$t_A$	< 25 ns
Response time ( $\pm$ /PE)	$t_A$	< 100 ns
Power dissipation	PZ	< 3.5 W
Maximal back-up fuse		16 A gL/gG
Residual current	$I_{PE}$	$\leq 1\,800\ \mu\text{A}$
Short-circuit current rating at maximum back-up fuse	$I_{SCCR}$	6 kA <sub>rms</sub>
Lightning protection zone		LPZ 2-3
Housing material		Polyamid PA6, UL94 V-0
Degree of protection		IP20
Operating temperature	$\theta$	-40 $\div$ 55 °C
Humidity range	RH	5 $\div$ 95 %
Recommended cross-section of connected conductors	S	2.5 mm <sup>2</sup>
Clamp fastening range (solid conductor)		0.2 $\div$ 6 mm <sup>2</sup>
Clamp fastening range (stranded conductor)		0.2 $\div$ 4 mm <sup>2</sup>
Tightening moment		0,5 Nm
Installation		On DIN rail 35 mm

Type		HSAF16/60VDC
Modular width		3 TE
Operating position		Any
Product placement environment		Internal
Signalling at the device		Optic
Importance of local signaling		OK – red light off FAULT – red light on
Remote signalling		No
Includes EMI / EMC filter		Yes
Modular design		No
Lifetime		> 100 000 h
<b>Designed according to standards</b>		
Requirements and test methods for SPDs connected to low-voltage power systems		IEC 61643-11:2011
Methods of measurement of the suppression characteristics of passive EMC filtering devices		EN 55017:2011 / CISPR 17:2011
Safety of Flammability of Plastic Materials		UL 94
<b>Application standards</b>		
Protection against lightning		IEC 62305:2010
Selection and erection of electrical equipment – Switchgear and controlgear		HD 60364-5-53:2022
Selection and application principles for SPDs connected to low-voltage power systems		CLC/TS 61643-12:2009
<b>Ordering, packaging and additional data</b>		
Mass	m	180 g
Mass (including the packaging)	m	204 g
Packaging dimensions (H x W x D)		60 x 113 x 73 mm
Packaging value	V	0.5 dm <sup>3</sup>
ETIM group		EG000021
ETIM class		EC000942
Customs tariff no.		85363010
EAN code		8590681163726
<b>Art. number</b>		<b>30 146</b>



The link in the QR code leads to the online presentation of the **HSAF16/60VDC**. 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

