

## HSAF160 S

- 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 LV power supply systems.
- Contains an improved thermal fuse, which ensures timely disconnection of HSAF\* S and HSAF3\*S from the power grid during the MOV's overheating and thus prevents damage to the HSAF\* S and HSAF3\*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\* S and HSAF3\*S must be installed a lightning current and surge arrester T1 and T2 from HAKEL company.
- Mounted on the main board of a switchboard using four screws.
- **S** indication specifies a version with remote monitoring.

Type		HSAF160 S
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T3
System		TN-C-S, TN-S
Number of poles		2
Rated operating AC voltage	$U_N$	230 V
Maximum continuous operating voltage AC	$U_C$	275 V
Rated load current	$I_L$	160 A
Open circuit voltage of the combination wave generator (L/N, L/PE)	$U_{OC}$	6 kV
Open circuit voltage of the combination wave generator (N/PE)	$U_{OC}$	10 kV
Voltage protection level at $U_{OC}$ (L/N)	$U_p$	< 0.85 kV
Voltage protection level at $U_{OC}$ (L/PE)	$U_p$	< 1.5 kV
Voltage protection level at $U_{OC}$ (N/PE)	$U_p$	< 1.2 kV
Nominal discharge current for class II test (8/20) L/N, L/PE	$I_n$	3 kA
Nominal discharge current for class II test (8/20) N/PE	$I_n$	5 kA
Total discharge current (8/20) L+N->PE	$I_{Total}$	6 kA
Asymmetrical attenuation of filter at $f = 4$ MHz		> 80 dB
Asymmetrical attenuation of filter at $f = 0.15 \div 30$ MHz		> 35 dB
Temporary overvoltage test (TOV) for $t_T = 5$ s (L/N)	$U_T$	337 V
Temporary overvoltage test (TOV) for $t_T = 120$ min (L/N)	$U_T$	440 V
Temporary overvoltage test (TOV) for $t_T = 0.2$ s (N/PE)	$U_T$	1 200 V
Response time (L/N)	$t_A$	< 25 ns
Response time (L/PE, N/PE)	$t_A$	< 100 ns
Power dissipation	PZ	< 20 W
Maximal back-up fuse		160 A gL/gG
Residual current	$I_{PE}$	$\leq 5 \mu A$
Lightning protection zone		LPZ 2-3
Housing material		Steel plate 1 mm
Degree of protection		IP20
Operating temperature	$\theta$	$-40 \div 55$ °C

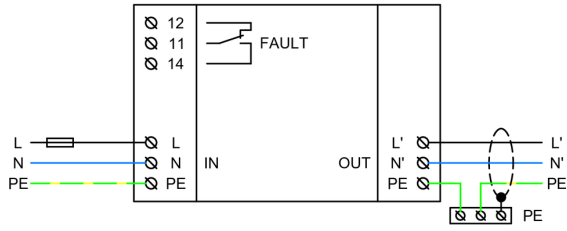
Type		HSAF160 S
Humidity range	RH	5 ÷ 95 %
Recommended cross-section of connected conductors	S	50 mm <sup>2</sup>
Clamp fastening range (solid conductor)		1.5 ÷ 50 mm <sup>2</sup>
Clamp fastening range (stranded conductor)		1.5 ÷ 35 mm <sup>2</sup>
Tightening moment		10 Nm
Installation		Using the M4 screws on the chassis
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		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
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
<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	1.83 kg
Mass (including the packaging)	m	1.912 kg
Packaging dimensions (H x W x D)		87 x 260 x 154 mm
Packaging value	V	3.48 dm <sup>3</sup>
ETIM group		EG000021
ETIM class		EC000942
Customs tariff no.		85363090
EAN code		8590681116968
<b>Art. number</b>		<b>30 177</b>



The link in the QR code leads to the online presentation of the **HSAF160 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

