

## **HSAF10 S**

- Two-stage 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 generated in LV power supply systems.
- Contain an improved thermal fuse, which ensures timely disconnection of HSAF\* S from the power grid during the MOV's overheating and thus prevents damage to the HSAF\* 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 must be installed a lightning current and surge arrester T1 and T2 from HAKEL company.
- **S** indication specifies a version with remote monitoring.

Туре		HSAF10 S
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		Т3
System		TN-C-S, TN-S
Number of poles		2
Rated operating AC voltage	$U_N$	230 V
Maximum continuous operating voltage AC	U <sub>c</sub>	275 V
Rated load current	ار	10 A
Open circuit voltage of the combination wave generator (L/N, L/PE)	U <sub>oc</sub>	6 kV
Open circuit voltage of the combination wave generator (N/PE)	U <sub>oc</sub>	10 kV
Voltage protection level at U <sub>oc</sub> (L/N)	$U_p$	< 0.75 kV
Voltage protection level at U <sub>oc</sub> (L/PE)	$U_p$	< 1 kV
Voltage protection level at U <sub>oc</sub> (N/PE)	$U_p$	< 1.5 kV
Nominal discharge current for class II test (8/20) L/N, L/PE	I <sub>n</sub>	3 kA
Nominal discharge current for class II test (8/20) N/PE	I <sub>n</sub>	5 kA
Total discharge current (8/20) L+N->PE	I <sub>Total</sub>	6 kA
Asymmetrical attenuation of filter at f = 4 MHz		> 80 dB
Asymmetrical attenuation of filter at $f = 0.15 \div 30 \text{ MHz}$		> 35 dB
Temporary overvoltage test (TOV) for $t_T = 5 \text{ s (L/N)}$	U <sub>T</sub>	337 V
Temporary overvoltage test (TOV) for $t_T = 120 \text{ min (L/N)}$	U <sub>T</sub>	440 V
Temporary overvoltage test (TOV) for $t_T = 0.2 \text{ s (N/PE)}$	U <sub>T</sub>	1 200 V
Response time (L/N)	t <sub>A</sub>	< 25 ns
Response time (L/PE, N/PE)	t <sub>A</sub>	< 100 ns
Power dissipation	Pz	< 2.2 W
Maximal back-up fuse		10 A gL/gG
Residual current	I <sub>PE</sub>	≤ 1 800 μA
Short-circuit current rating at maximum back-up fuse	I <sub>sccr</sub>	6 kA <sub>rms</sub>
Lightning protection zone		LPZ 2-3
Housing material		Polyamid PA6, UL94 V-0
Degree of protection		IP20

## Surge arresters T3 with EMI/RFI filter for AC systems



Operating temperature         9         -40 + 55 °C           Humidity range         RH         5 + 95 %           Recommended cross-section of connected conductors         S         1.5 mm²           Clamp fastering range (solid conductor)         0.2 + 6 mm²           Clamp fastering range (stranded conductor)         0.2 + 4 mm²           Lightering moment         0.5 Nm           Installation         On DIN rail 35 mm           Modular width         3 TE           Operating position         Any           Product placement environment         Internal           Signalling at the device         Optic           Importance of local signalling         Ke red light off           Remote signalling         Yes           Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm²)         Yes           Includes EMI / EMC filter         Yes           Modular resign         No           Lifetine         > 100 000 h           Designed according to standards         IEC 61643-11:2011           Requirements and test methods for SPDs connected to low-voltage power systems         IEC 61643-11:2011           Methods of measurement of the supprression characteristics of passive EMC filtering devices         EN 55017:2011 / CISPR 17:2011           Salety of	Туре		HSAF10 S
Recommended cross-section of connected conductors   S	Operating temperature	9	-40 ÷ 55 °C
Clamp fastening range (solid conductor)         0.2 + 6 mm²           Clamp fastening range (stranded conductor)         0.2 + 4 mm²           Tightening moment         0,5 Nm           Installation         On DIN rail 35 mm           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 FAULT - red light on FAULT - red light on PAULT - red light o	Humidity range	RH	5 ÷ 95 %
Clamp fastening range (stranded conductor)         0.2 ÷ 4 mm²           Tightening moment         0,5 Nm           Installation         On DIN rail 35 mm           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 off PAULT - red light off	Recommended cross-section of connected conductors	S	1.5 mm <sup>2</sup>
Tightening moment   0.5 Nm	Clamp fastening range (solid conductor)		$0.2 \div 6 \text{ mm}^2$
Installation         On DIN rail 35 mm           Modular width         3 TE           Operating position         Any           Product placement environment         Internal           Signalling at the device         Optic           Importance of local signaling         OK - read light off FAULT - red light off FAULT - red light on FAULT - red light on FAULT - red light off FAULT - red light on FAULT - red l	Clamp fastening range (stranded conductor)		0.2 ÷ 4 mm <sup>2</sup>
Modular width         3 TE           Operating position         Any           Product placement environment         Internal           Signalling at the device         Optic           Importance of local signaling         OK - red light off           Remote signalling         Yes           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 A           Includes EMI / EMC filter         Yes           Modular design         No           Lifetime         > 100 000 h           Designed according to standards         IEC 61643-11:2011           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         UL 94           Safety of Flammability of Plastic Materials         UL 94           Application standards         IEC 62305:2010           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           Ordering, packaging and additional data         m         185 g	Tightening moment		0,5 Nm
Operating position         Any           Product placement environment         Internal           Signalling at the device         Optic           Importance of local signaling         OK - red light off FAULT - red light on PAULT - red light on FAULT - red light on PAULT - red light on PAUL	Installation		On DIN rail 35 mm
Product placement environment   Internal   Optic   Importance of local signalling at the device   Optic   Importance of local signalling   OK - red light of   FAULT - red light on	Modular width		3 TE
Signalling at the device         Optic           Importance of local signaling         OK - red light off FAULT - red light of FAULT - red light off FAULT - red light of FAULT - r	Operating position		Any
Importance of local signalling       OK - red light off FAULT - red light on FAULT - red light on Yes         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 A         Includes EMI / EMC filter       Yes         Modular design       No         Lifetime       > 100 000 h         Designed according to standards       ERC 61643-11:2011         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         Application standards       IEC 62305:2010         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         Ordering, packaging and additional data       m         Mass (including the packaging)       m       165 g         Mass (including the packaging)       m       189 g         Packaging value       V       0.5 dm³         ETIM group       EG0000021         ETIM group	Product placement environment		Internal
Remote signalling Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm²) Includes EMI / EMC filter Yes Modular design Lifetime Yes Modular design Lifetime Solonous h  Designed according to standards Requirements and test methods for SPDs connected to low-voltage power systems Rethods of measurement of the suppression characteristics of passive EMC filtering devices Safety of Flammability of Plastic Materials UL 94  Application standards Protection against lightning Selection and erection of electrical equipment - Switchgear and controlgear Selection and application principles for SPDs connected to low-voltage power systems Ordering, packaging and additional data  Mass m 166 g Mass (including the packaging) m 166 g Mass (including the packaging) m 189 g Packaging dimensions (H x W x D) 80 consecution of Selection Selecti	Signalling at the device		Optic
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm²)  Includes EMI / EMC filter  Modular design  Lifetime  Posigned according to standards  Requirements and test methods for SPDs connected to low-voltage power systems  Methods of measurement of the suppression characteristics of passive EMC filtering devices  Safety of Flammability of Plastic Materials  UL 94  Application standards  Protection against lightning  Selection and erection of electrical equipment – Switchgear and controlgear Selection and application principles for SPDs connected to low-voltage power systems  Ordering, packaging and additional data  Mass	Importance of local signaling		
max. 1 mm²) Includes EMI / EMC filter  Modular design  No Lifetime  Pesigned according to standards Requirements and test methods for SPDs connected to low-voltage power systems Methods of measurement of the suppression characteristics of passive EMC filtering devices Safety of Flammability of Plastic Materials  UL 94  Application standards Protection against lightning  Elec 62305:2010 Selection and erection of electrical equipment – Switchgear and controlgear Selection and application principles for SPDs connected to low-voltage power systems  Ordering, packaging and additional data  Mass  m 165 g Mass (including the packaging) m 189 g Packaging dimensions (H x W x D) 60 x 113 x 73 mm Packaging value  V 0.5 dm³  ETIM group EG000021 ETIM class EC000942 Customs tariff no. 859681116890	Remote signalling		Yes
Modular design       No         Lifetime       > 100 000 h         Designed according to standards         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         Application standards       IEC 62305:2010         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         Ordering, packaging and additional data       m       165 g         Mass (including the packaging)       m       189 g         Packaging dimensions (H x W x D)       60 x 113 x 73 mm       60 x 113 x 73 mm         Packaging value       V       0.5 dm³         ETIM class       EC0000942         Customs tariff no.       85363010         EAN code       8590681116890			AC: 250 V / 1.5 A, DC: 250 V / 0.1 A
Lifetime > 100 000 h  Designed according to standards  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  Safety of Flammability of Plastic Materials   UL 94    Application standards  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    Ordering, packaging and additional data  Mass   m   165 g   Mass (including the packaging)   m   189 g   Packaging dimensions (H x W x D)   60 x 113 x 73 mm   Packaging value   V   0.5 dm³    ETIM group   EG000021   ETIM class   EC000942   Customs tariff no.   85363010   EAN code   8590681116890	Includes EMI / EMC filter		Yes
Designed according to standards         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         Application standards       UEC 62305:2010         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         Ordering, packaging and additional data       m       165 g         Mass (including the packaging)       m       189 g         Packaging dimensions (H x W x D)       60 x 113 x 73 mm         Packaging value       V       0.5 dm³         ETIM group       EG000021         ETIM class       EC000942         Customs tariff no.       85363010         EAN code       8590681116890	Modular design		No
Requirements and test methods for SPDs connected to low-voltage power systems  Methods of measurement of the suppression characteristics of passive EMC filtering devices  Safety of Flammability of Plastic Materials  UL 94  Application standards  Protection against lightning  Selection and erection of electrical equipment – Switchgear and controlgear  Selection and application principles for SPDs connected to low-voltage power systems  Ordering, packaging and additional data  Mass  m  165 g  Mass (including the packaging)  Packaging dimensions (H x W x D)  Packaging value  V  0.5 dm³  ETIM group  EG000021  ETIM class  EC000942  Customs tariff no.  8590681116890	Lifetime		> 100 000 h
Methods of measurement of the suppression characteristics of passive EMC filtering devices  Safety of Flammability of Plastic Materials  UL 94  Application standards  Protection against lightning  Selection and erection of electrical equipment – Switchgear and controlgear  Selection and application principles for SPDs connected to low-voltage power systems  Ordering, packaging and additional data  Mass  m  165 g  Mass (including the packaging)  Packaging dimensions (H x W x D)  Packaging value  V  0.5 dm³  ETIM group  EG000021  ETIM class  EC000942  Customs tariff no.  8590681116890	Designed according to standards		
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ETIM class         EC000942           Customs tariff no.         85363010           EAN code         8590681116890	Packaging value	V	0.5 dm <sup>3</sup>
Customs tariff no.         85363010           EAN code         8590681116890	ETIM every		EC000031
EAN code 8590681116890	ETIM group		EG000021
Art. number 30 170	ETIM class		EC000942
	ETIM class Customs tariff no.		EC000942 85363010

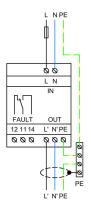


**The link in the QR code** leads to the online presentation of the **HSAF10 S**. There, in addition to the always up-to-date data sheet, you will also find all diagrams and drawings, declarations of conformity, or 2D or 3D models and other necessary materials. For more information, visit **www.hakel.com** 





## Application wiring diagram (installation)



## Internal diagram

