

HSAF10/6VDC

- 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.

Test class according to EN 61643-11:2012 (IEC 61643-11:2011) T3 System DC Rated operating DC voltage UN 6V Maximum continuous operating voltage DC UC 7.2 V Rated load current IL 10 A Open circuit voltage of the combination wave generator (+/-, ±/PE) UOC 4 kV V Voltage protection level at U_{DC} (+/-) UP CO.35 kV V Voltage protection level at U_{DC} (±/PE) UP CO.36 kV Nominal discharge current for class II test (8/20) +/-, ±/PE IL 10 CO.36 kV Nominal discharge current for class II test (8/20) +/-, ±/PE IL 10 CO.36 kV Nominal discharge current for class II test (8/20) +/-, ±/PE IL 10 CO.36 kV Nominal discharge current for class II test (8/20) +/-, ±/PE IL 10 CO.36 kV Nominal discharge current for class II test (8/20) +/-, ±/PE IL 10 CO.36 kV Nominal discharge current for class II test (8/20) +/-, ±/PE IL 10 CO.36 kV Nominal discharge current for class II test (8/20) +/-, ±/PE IL 10 CO.36 kV Nominal discharge current for class II test (8/20) +/-, ±/PE IL 10 CO.36 kV Nominal discharge current for class II test (8/20) +/-, ±/PE IL 10 CO.36 kV Nominal discharge current for class II test (8/20) +/-, ±/PE IL 10 CO.36 kV Nominal discharge current for class II test (8/20) +/-, ±/PE IL 10 CO.36 kV Nominal discharge current for class II test (8/20) +/-, ±/PE IL 10 CO.36 kV Nominal discharge current for class II test (8/20) +/-, ±/PE IL 10 CO.36 kV Nominal discharge current for class II test (8/20) +/-, ±/PE IL 10 CO.36 kV Nominal discharge current for class II test (8/20) +/-, ±/PE IL 10 CO.36 kV Nominal discharge current for class II test (8/20) +/-, ±/PE IL 10 CO.36 kV Nominal discharge current for class II test (8/20) +/-, ±/PE IL 10 CO.36 kV Nominal discharge current for class II test (8/20) +/-, ±/PE IL 10 CO.36 kV Nominal discharge current for class II test (8/20) +/-, ±/PE IL 10 CO.36 kV Nominal discharge current for class II test (8/20) +/-, ±/PE IL 10 CO.36 kV Nominal discharge current for class II test (8/20) +/-, ±/PE IL 10 CO.36 kV Nominal discharge current for class II test (8/20) +/-, ±/PE IL 10 CO.36 kV	Туре		HSAF10/6VDC
Rated operating DC voltage U_N 6 V Maximum continuous operating voltage DC U_C 7.2 V Rated load current I_L 10 A Open circuit voltage of the combination wave generator (+/-, ±/PE) U_{OC} 4 kV Voltage protection level at U_{OC} (+/-) U_{DC} 0.35 kV Voltage protection level at U_{OC} (±/PE) U_{DC} 0.3 kV Nominal discharge current for class II lest (8/20) +/-, ±/PE I_D 1 2 kA Total discharge current (8/20) ±>PE I_D 1 4 kA Asymmetrical attenuation of filter at f = 4 MHz 8 symmetrical attenuation of filter at f = 0.15 ÷ 30 MHz 8 symmetrical attenuation of filter at f = 0.15 ÷ 30 MHz 8 symmetrical attenuation of filter at f = 0.15 ÷ 30 MHz 9 symmetrical attenuation of filter at f = 0.15 ÷ 30 MHz 10 symmetrical attenuation of filter at f = 0.15 ÷	Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		Т3
Maximum continuous operating voltage DC U_{c} 7.2 V Rated load current I_{L} 10 A Open circuit voltage of the combination wave generator (+/-, ±/PE) U_{DC} 4 kV Voltage protection level at U_{DC} (±/PE) U_{D} $< 0.35 \text{ kV}$ Voltage protection level at U_{DC} (±/PE) U_{D} $< 0.3 \text{ kV}$ Nominal discharge current for loss II test (8/20) +/-, ±/PE I_{n} 2 kA Total discharge current (8/20) ±->PE I_{n} 2 kA Total discharge current (8/20) ±->PE I_{n} 2 kA Total discharge current (8/20) ±->PE I_{n} 2 kA Total discharge current (8/20) ±->PE I_{n} 2 kA Asymmetrical attenuation of filter at $f = 4 \text{ MHz}$ > 80 dB Asymmetrical attenuation of filter at $f = 0.15 \div 30 \text{ MHz}$ $3 \times 6 \text{ BC}$ Response time (±/-) I_{n} I_{n} Response time	System		DC
Rated load current I_L 10 A Open circuit voltage of the combination wave generator (+/-, ±/PE) U_{OC} 4 kV Voltage protection level at U_{OC} (+/-) U_p < 0.35 kV Voltage protection level at U_{OC} (±/PE) U_p < 0.3 kV Nominal discharge current for class II test (8/20) +/-, ±/PE	Rated operating DC voltage	U_N	6 V
Open circuit voltage of the combination wave generator (+/-, \pm /PE) Uoc	Maximum continuous operating voltage DC	U _c	7.2 V
Voltage protection level at U_{OC} (+/-) U_{p} < 0.35 kV Voltage protection level at U_{OC} (±/PE) U_{p} < 0.3 kV Nominal discharge current for class II test (8/20) +/-, ±/PE I_{n} 2 kA Total discharge current (8/20) ±->PE I_{Total} 4 kA Asymmetrical attenuation of filter at f = 4 MHz > 80 dB Asymmetrical attenuation of filter at f = 0.15 ÷ 30 MHz > 35 dB Response time (+/-) I_{A} < 25 ns Response time (±/PE) I_{A} < 100 ns Power dissipation Pz < 2.2 W Maximal back-up fuse I_{PE} $I_$	Rated load current	I _L	10 A
Voltage protection level at U_{OC} (\pm /PE) U_{p} < 0.3 kV Nominal discharge current for class II test (8 /20) \pm /-, \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 \pm 30 MHz > 35 dB Response time (\pm /-) \pm 4 kA < 25 ns Response time (\pm /PE) \pm 4 kA < 100 ns Power dissipation Pz < 2.2 W Maximal back-up fuse \pm 10 A gL/gG Residual current rating at maximum back-up fuse \pm 10 A gL/gG Residual current rating at maximum back-up fuse \pm 10 A gL/gG Residual current rating at maximum back-up fuse \pm 1 Rocca \pm 6 kA _{rms} Lightning protection zone \pm 1 Polyamid PA6, UL94 V-0 Degree of protection \pm 1 Polyamid PA6, UL94 V-0 Degree of protection \pm 2 Polyamid PA6, UL94 V-0 Recommended cross-section of connected conductors \pm 3 \pm 40 \pm 55 °C Humidity range \pm 8 \pm 5 \pm 95 % Recommended cross-section of connected conductors \pm 5 \pm 1.5 mm² Clamp fastening range (solid conductor) \pm 0.2 \pm 4 mm² Tightening moment \pm 0.5 Nm	Open circuit voltage of the combination wave generator (+/-, ±/PE)	U _{oc}	4 kV
Nominal discharge current for class II test (8/20) $+/-$, \pm /PE In 2 kA Total discharge current (8/20) \pm ->PE II \pm 4 kA Asymmetrical attenuation of filter at f = 4 MHz Asymmetrical attenuation of filter at f = 0.15 \pm 30 MHz Response time (\pm /P) It A < 25 ns Response time (\pm /PE) Response time (\pm /PE) To A gL/gG Residual current rating at maximum back-up fuse In A gL/gG Residual current rating at maximum back-up fuse Lightning protection zone Lightning material Polyamid PA6, UL94 V-0 Degree of protection Operating temperature Pa 40 \pm 55 °C Humidity range Recommended cross-section of connected conductors Clamp fastening range (stranded conductor) Tightening moment In 2 kA A kA A kA A kA A kA A connected conductory A connected conductory In Connected conductory	Voltage protection level at U _{OC} (+/-)	U_p	< 0.35 kV
Total discharge current (8/20) \pm ->PE	Voltage protection level at U _{oc} (±/PE)	U_p	< 0.3 kV
Asymmetrical attenuation of filter at f = 4 MHz $> 80 \text{ dB}$ Asymmetrical attenuation of filter at f = 0.15 ÷ 30 MHz $> 35 \text{ dB}$ Response time (+/-) $t_A < 25 \text{ ns}$ Response time (±/PE) $t_A < 100 \text{ ns}$ Power dissipation $P_C < 2.2 \text{ W}$ Maximal back-up fuse $t_C < 100 \text{ ms}$ Residual current $t_C < 100 \text{ ms}$ Short-circuit current rating at maximum back-up fuse $t_C < 100 \text{ ms}$ Housing material $t_C < 100 \text{ ms}$ Degree of protection $t_C < 100 \text{ ms}$ Degree of protection $t_C < 100 \text{ ms}$ Recommended cross-section of connected conductors $t_C < 100 \text{ ms}$ Recommended cross-section of connected conductors $t_C < 100 \text{ ms}$ Clamp fastening range (stranded conductor) $t_C < 100 \text{ ms}^2$ Tightening moment $t_C < 100 \text{ ms}^2$	Nominal discharge current for class II test (8/20) +/-, ±/PE	l _n	2 kA
Asymmetrical attenuation of filter at f = 0.15 ÷ 30 MHz $> 35 \text{ dB}$ Response time (+/-) $t_A < 25 \text{ ns}$ Response time (±/PE) $t_A < 100 \text{ ns}$ Power dissipation $t_A < 2.2 \text{ W}$ Maximal back-up fuse $t_A < 0.2 \text{ W}$ Maximal back-up f	Total discharge current (8/20) ±->PE	I _{Total}	4 kA
Response time (+/-) $ t_{A} < 25 \text{ns} $ Response time (±/PE) $ t_{A} < 100 \text{ns} $ Power dissipation $ Pz < 2.2 \text{W} $ Maximal back-up fuse $ 10 \text{A gL/gG} $ Residual current $ I_{PE} $	Asymmetrical attenuation of filter at f = 4 MHz		> 80 dB
Response time (\pm /PE)	Asymmetrical attenuation of filter at f = 0.15 ÷ 30 MHz		> 35 dB
Power dissipation Pz < 2.2 W Maximal back-up fuse Pz 10 A gL/gG Residual current Pz 1800 μA Short-circuit current rating at maximum back-up fuse Pz 1800 μA Short-circuit current rating at maximum back-up fuse Pz 1800 μA Short-circuit current rating at maximum back-up fuse Pz 1800 μA Short-circuit current rating at maximum back-up fuse Pz 1800 μA Short-circuit current rating at maximum back-up fuse Pz 6 kA _{rms} LPZ 2-3 LPZ 2-3 Polyamid PA6, UL94 V-0 Degree of protection Pz 1800 μP20 Polyamid PA6, UL94 V-0 Degree of protection Pz 1800 μP20 Polyamid PA6, UL94 V-0 Polyamid pack-up fuse Pz 1800 μP20 Polyamid PA6, UL94 V-0 Polyamid PA6, UL	Response time (+/-)	t _A	< 25 ns
Maximal back-up fuse10 A gL/gGResidual current I_{PE} ≤ 1 800 μAShort-circuit current rating at maximum back-up fuse I_{SCCR} 6 kA _{rms} Lightning protection zoneLPZ 2-3Housing materialPolyamid PA6, UL94 V-0Degree of protectionIP20Operating temperature θ -40 ÷ 55 °CHumidity rangeRH $5 \div 95$ %Recommended cross-section of connected conductorsS 1.5 mm²Clamp fastening range (solid conductor) $0.2 \div 6$ mm²Clamp fastening range (stranded conductor) $0.2 \div 4$ mm²Tightening moment 0.5 Nm	Response time (±/PE)	t _A	< 100 ns
Residual current I_{PE} ≤ 1 800 μAShort-circuit current rating at maximum back-up fuse I_{SCCR} 6 kA _{rms} Lightning protection zoneLPZ 2-3Housing materialPolyamid PA6, UL94 V-0Degree of protectionIP20Operating temperature θ -40 ÷ 55 °CHumidity rangeRH $5 \div 95$ %Recommended cross-section of connected conductorsS1.5 mm²Clamp fastening range (solid conductor)0.2 ÷ 6 mm²Clamp fastening range (stranded conductor)0.2 ÷ 4 mm²Tightening moment0,5 Nm	Power dissipation	Pz	< 2.2 W
Short-circuit current rating at maximum back-up fuse Lightning protection zone Housing material Degree of protection Operating temperature Humidity range Recommended cross-section of connected conductors Clamp fastening range (solid conductor) Clamp fastening range (stranded conductor) Tightening moment O kA _{rms} 6 kA _{rms} 8 columned patering ratering patering paterin	Maximal back-up fuse		10 A gL/gG
Lightning protection zoneLPZ 2-3Housing materialPolyamid PA6, UL94 V-0Degree of protectionIP20Operating temperature θ -40 ÷ 55 °CHumidity rangeRH $5 \div 95 \%$ Recommended cross-section of connected conductorsS 1.5 mm^2 Clamp fastening range (solid conductor) $0.2 \div 6 \text{ mm}^2$ Clamp fastening range (stranded conductor) $0.2 \div 4 \text{ mm}^2$ Tightening moment 0.5 Nm	Residual current	I _{PE}	≤ 1 800 μA
Housing material Polyamid PA6, UL94 V-0 Degree of protection IP20 Operating temperature θ -40 ÷ 55 °C Humidity range Recommended cross-section of connected conductors S 1.5 mm² Clamp fastening range (solid conductor) 0.2 ÷ 6 mm² Clamp fastening range (stranded conductor) 0.2 ÷ 4 mm² Tightening moment 0,5 Nm	Short-circuit current rating at maximum back-up fuse	I _{SCCR}	6 kA _{rms}
Degree of protectionIP20Operating temperature ϑ $-40 \div 55$ °CHumidity rangeRH $5 \div 95$ %Recommended cross-section of connected conductorsS 1.5 mm^2 Clamp fastening range (solid conductor) $0.2 \div 6 \text{ mm}^2$ Clamp fastening range (stranded conductor) $0.2 \div 4 \text{ mm}^2$ Tightening moment 0.5 Nm	Lightning protection zone		LPZ 2-3
Operating temperature θ -40 ÷ 55 °C Humidity range RH 5 ÷ 95 % Recommended cross-section of connected conductors S 1.5 mm ² Clamp fastening range (solid conductor) 0.2 ÷ 6 mm ² Clamp fastening range (stranded conductor) 0.2 ÷ 4 mm ² Tightening moment 0,5 Nm	Housing material		Polyamid PA6, UL94 V-0
Humidity range RH $5 \div 95 \%$ Recommended cross-section of connected conductors S 1.5 mm^2 Clamp fastening range (solid conductor) $0.2 \div 6 \text{ mm}^2$ Clamp fastening range (stranded conductor) $0.2 \div 4 \text{ mm}^2$ Tightening moment 0.5 Nm	Degree of protection		IP20
Recommended cross-section of connected conductors S 1.5 mm² Clamp fastening range (solid conductor) Clamp fastening range (stranded conductor) Clamp fastening moment 0,5 Nm	Operating temperature	9	-40 ÷ 55 °C
Clamp fastening range (solid conductor) Clamp fastening range (stranded conductor) Clamp fastening range (stranded conductor) 10.2 ÷ 6 mm² 0.2 ÷ 4 mm² 0,5 Nm	Humidity range	RH	5 ÷ 95 %
Clamp fastening range (stranded conductor) Tightening moment 0.2 ÷ 4 mm² 0,5 Nm	Recommended cross-section of connected conductors	S	1.5 mm ²
Tightening moment 0,5 Nm	Clamp fastening range (solid conductor)		0.2 ÷ 6 mm ²
	Clamp fastening range (stranded conductor)		0.2 ÷ 4 mm ²
Installation On DIN rail 35 mm	Tightening moment		0,5 Nm
	Installation		On DIN rail 35 mm

Surge arresters T3 with EMI/RFI filter for DC systems



Туре		HSAF10/6VDC
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
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		
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	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 ³
ETIM group		EG000021
ETIM class		EC000942
Customs tariff no.		85363010
EAN code		8590681163672
Art. number		30 149

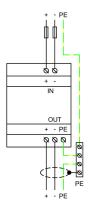


The link in the QR code leads to the online presentation of the **HSAF10/6VDC**. There, in addition to the always up-to-date data sheet, you will also find all diagrams and drawings, declarations of conformity, or 2D or 3D models and other necessary materials. For more information, visit **www.hakel.com**





Application wiring diagram (installation)



Internal diagram

