







HSA-850/3+1 S IT

- Surge arresters type T2 ensure the equipotential bonding and reduce switching, induced and residual overvoltage in single-phase and three-phase IT power supply systems.
- The products consist of varistors with big discharge ability with gas discharge tube, which ensures zero leakage current in the PE conductor.
- Installed at the boundaries of zones LPZ 1 LPZ 2 into subsiduary switchboards and control panels.
- **S** indication specifies a version with remote monitoring.

System	Туре		HSA-850/3+1 S IT
Aumber of poles $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T2
Advisimant line voltage Maximum continuous operating voltage AC Maximum continuous operating voltage AC Maximum discharge current (8/20) L/CP Maximum discharge current (8/20) L/CP Imax 40 KA Mominal discharge current for class II test (8/20) L/CP In 15 KA Dopen circuit voltage of the combination wave generator Voltage of the combination wave generator Voltage protection level at In Voltage protection level at In (CP/PE) Up 4.5 kV Voltage protection level at In (L/CP) Voltage protection level at In (L/CP) Voltage protection level at Upc (L/CP) Up 4.3.3 kV Voltage protection level at Upc (L/CP) Up 4.3.3 kV Voltage protection level at Upc (L/CP) Up 4.2.5 kV Temporary overvoltage test (TOV) for In = 5 s (L/CP) Up 4.0 compary overvoltage test (TOV) for In = 0.2 s (L/PE) Response time (L/CP) That 4.2 compary overvoltage test (TOV) for In = 0.2 s (L/PE) Response time (CP/PE) That That is the voltage of the combination wave generator That is the voltage of the combination wave generator That is the voltage of the combination wave generator That is the voltage of the combination wave generator That is the voltage of the combination wave generator That is the voltage of the combination wave generator That is the voltage of the combination wave generator That is the voltage of the combination wave generator That is the voltage of the combination wave generator That is the voltage of the combination wave generator That is the voltage of the combination wave generator That is the voltage of the combination wave generator That is the voltage of the combination wave generator That is the voltage of the combination wave generator That is the voltage of the combination wave generator That is the voltage of the combination of the voltage of the combination of the voltage of the volt	System		IT
Maximum continuous operating voltage AC U_C 850 V Maximum discharge current (8/20) L/CP I_{max} 40 kA Mominal discharge current for class II test (8/20) L/CP I_{n} 15 kA Open circuit voltage of the combination wave generator I_{n} 15 kA Open circuit voltage of the combination wave generator I_{n} 50 kA Moditacharge current (8/20) L1+L2+L3+CP->PE I_{n} 50 kA Moditacharge current (8/20) L1+L2+L3+CP->PE I_{n} 50 kA Moditacharge current (8/20) L1+L2+L3+CP->PE I_{n} 50 kA Moditacharge protection level at I_{n} (L/CP) I_{n} < 1.5 kV Moditage protection level at I_{n} (L/CP) I_{n} < 2.5 kV Moditage protection level at I_{n} (L/CP) I_{n} < 2.5 kV Moditage protection level at I_{n} (L/CP) I_{n} < 2.5 kV Moditage protection level at I_{n} (L/CP) I_{n} < 2.5 kV Moditage protection level at I_{n} (L/CP) I_{n} < 2.5 kV Moditage protection level at I_{n} (L/CP) I_{n} < 2.5 kV Moditage protection level at I_{n} (L/CP) I_{n} < 2.5 kV Moditage protection level at I_{n} (L/CP) I_{n} < 2.5 kV Moditage protection level at I_{n} (L/CP) I_{n} < 2.5 kV Moditage protection level at I_{n} (L/CP) I_{n} < 2.5 kV Moditage protection level at I_{n} (L/CP) I_{n} < 2.5 kV Moditage protection level at I_{n} (L/CP) I_{n} < 2.5 kV Moditage protection	Number of poles		4
Maximum discharge current (8/20) L/CP I_{max} 40 kA dominal discharge current for class II test (8/20) L/CP I_{n} 15 kA dominal discharge current for class II test (8/20) L/CP I_{n} 15 kA dominal discharge current for class II test (8/20) L/CP I_{n} 15 kA dominal discharge current (8/20) L/L2+L2+L2+CP->PE I_{total} 50 kA doltascharge current (8/20) L/CP) I_{total} 50 kA doltascharge current (8/20) L/CP) I_{total} 60 kG doltascharge protection level at I_{total} 60 kG doltascharge current (8/20) L/CP) I_{total} 61 kG doltascharge current doltasch	Nominal line voltage	U_N	720 V
Nominal discharge current for class II test (8/20) L/CP In 15 kA Depen circuit voltage of the combination wave generator U_{OC} 6 kV Total discharge current (8/20) L1+L2+L3+CP->PE I_{Total} 50 kA Voltage protection level at I_{I_1} (L/CP) U_{I_2} < 1.5 kV Voltage protection level at I_{I_2} (L/CP) U_{I_2} < 2.5 kV Voltage protection level at I_{I_3} (L/CP) U_{I_2} < 2.5 kV Voltage protection level at U_{I_2} (L/CP) U_{I_3} < 2.5 kV Voltage protection level at U_{I_3} (L/CP) U_{I_4} = 5 s (L/CP) U_{I_5} 1.045 V Temporary overvoltage test (TOV) for I_{I_7} = 0.2 s (L/CP) I_{I_7} 1.045 V Temporary overvoltage test (TOV) for I_{I_7} = 0.2 s (L/PE) I_{I_7} 2.000 V Response time (L/CP) I_{I_7} 2.000 V Response time (L/CP) I_{I_8} < 2.25 ns Response time (CP/PE) I_{I_8} < 100 ns Response time (CP/PE) I_{I_8} < 160 A gL/gG Response time (DP/PE) I_{I_8} < 160 A gL/gG Response time (TP/PE) I_{I_8} < 160 kA _{Ims} Response time (TP/PE) I_{I_8} < 160 kA _{Ims} Response time (TP/PE) I_{I_8} < 170 c Response time (TP/PE) I_{I_8} < 180 c Response time (TP/PE) I_{I_8} <	Maximum continuous operating voltage AC	U _c	850 V
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Maximum discharge current (8/20) L/CP	I _{max}	40 kA
Fotal discharge current (8/20) L1+L2+L3+CP->PE	Nominal discharge current for class II test (8/20) L/CP	l _n	15 kA
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Open circuit voltage of the combination wave generator	U_{oc}	6 kV
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Total discharge current (8/20) L1+L2+L3+CP->PE	I _{Total}	50 kA
Voltage protection level at U_{oc} (L/CP) Femporary overvoltage test (TOV) for $t_T = 5$ s (L/CP) Femporary overvoltage test (TOV) for $t_T = 0.2$ s (L/PE) Femporary overvoltage test (TOV) for $t_T = 0.2$ s (L/PE) Femporary overvoltage test (TOV) for $t_T = 0.2$ s (L/PE) Femporary overvoltage test (TOV) for $t_T = 0.2$ s (L/PE) The seponse time (L/CP) The sep	Voltage protection level at I _n (CP/PE)	U_p	< 1.5 kV
Voltage protection level at U_{oc} (L/CP) Femporary overvoltage test (TOV) for $t_T = 5$ s (L/CP) Femporary overvoltage test (TOV) for $t_T = 0.2$ s (L/PE) Femporary overvoltage test (TOV) for $t_T = 0.2$ s (L/PE) Femporary overvoltage test (TOV) for $t_T = 0.2$ s (L/PE) Femporary overvoltage test (TOV) for $t_T = 0.2$ s (L/PE) The seponse time (L/CP) The sep	Voltage protection level at I _n (L/CP)	Up	< 3.3 kV
Temporary overvoltage test (TOV) for $t_T = 0.2 \text{ s}$ (L/PE) Response time (L/CP) t_A	Voltage protection level at U _{OC} (L/CP)		< 2.5 kV
Response time (L/CP) Response time (CP/PE) Lacca	Temporary overvoltage test (TOV) for $t_T = 5 \text{ s} (L/CP)$	U _T	1 045 V
Response time (CP/PE) t _A Aximal back-up fuse 160 A gL/gG Short-circuit current rating at maximum back-up fuse I _{SCCR} 160 kA _{rms} LPZ 1-2, LPZ 2-3 Housing material Polyamid PA6, UL94 V-0 Degree of protection IP20 Operating temperature Poperating temperature Ainimum cross-section of connected Cu conductors accord. to HD 60364-5-53:2022 Adoesn't apply to "V" connection) for T2 Clamp fastening range (solid conductor) Clamp fastening range (stranded conductor) Clamp fastening moment Dightening moment Di	Temporary overvoltage test (TOV) for $t_T = 0.2 \text{ s}$ (L/PE)	U_{T}	2 000 V
Maximal back-up fuse Short-circuit current rating at maximum back-up fuse Lightning protection zone LPZ 1-2, LPZ 2-3 Housing material Polyamid PA6, UL94 V-0 Degree of protection Pegree of protection Departing temperature Polyamid PA6, UL94 V-0 Pol	Response time (L/CP)	t _A	< 25 ns
Short-circuit current rating at maximum back-up fuse Lightning protection zone LPZ 1-2, LPZ 2-3 Housing material Polyamid PA6, UL94 V-0 Degree of protection IP20 Deparating temperature Minimum cross-section of connected Cu conductors accord. to HD 60364-5-53:2022 doesn't apply to "V" connection) for T2 Clamp fastening range (solid conductor) Clamp fastening range (stranded conductor) Clamp fastening moment Installation Modular width Installation On DIN rail 35 mm Modular width	Response time (CP/PE)	t_A	< 100 ns
LPZ 1-2, LPZ 2-3 Housing material Polyamid PA6, UL94 V-0 Degree of protection Poperating temperature Poperating te	Maximal back-up fuse		160 A gL/gG
Housing material Polyamid PA6, UL94 V-0 Degree of protection Pegree of p	Short-circuit current rating at maximum back-up fuse	I _{sccr}	60 kA _{rms}
Degree of protection Degreating temperature Minimum cross-section of connected Cu conductors accord. to HD 60364-5-53:2022 Moesn't apply to "V" connection) for T2 Clamp fastening range (solid conductor) Clamp fastening range (stranded conductor) Tightening moment IP20 2.5 mm² (L, N) 6 mm² (PE, PEN) 1.5 ÷ 25 mm² 1.5 ÷ 16 mm² 3 Nm On DIN rail 35 mm Modular width 4 TE	Lightning protection zone		LPZ 1-2, LPZ 2-3
Operating temperature ### Ad ÷ 70 °C ### Ad	Housing material		Polyamid PA6, UL94 V-0
Minimum cross-section of connected Cu conductors accord. to HD 60364-5-53:2022 doesn't apply to "V" connection) for T2 Clamp fastening range (solid conductor) Clamp fastening range (stranded conductor) Clamp fastening moment Tightening moment Installation Modular width Solid conductor (L, N) 6 mm² (L, N) 6 mm² (PE, PEN) 1.5 ÷ 25 mm² 1.5 ÷ 16 mm² 3 Nm On DIN rail 35 mm 4 TE	Degree of protection		IP20
doesn't apply to "V" connection) for T2 6 mm² (PE, PEN) Clamp fastening range (solid conductor) 1.5 ÷ 25 mm² Clamp fastening range (stranded conductor) 1.5 ÷ 16 mm² Tightening moment 3 Nm Installation On DIN rail 35 mm Modular width 4 TE	Operating temperature	9	-40 ÷ 70 °C
Clamp fastening range (stranded conductor) 1.5 ÷ 16 mm² 3 Nm nstallation Modular width 1.5 ÷ 16 mm² 3 Nm A TE	Minimum cross-section of connected Cu conductors accord. to HD 60364-5-53:2022 (doesn't apply to "V" connection) for T2	S	
Tightening moment 3 Nm Installation On DIN rail 35 mm Indodular width 4 TE	Clamp fastening range (solid conductor)		1.5 ÷ 25 mm ²
On DIN rail 35 mm Modular width 4 TE	Clamp fastening range (stranded conductor)		1.5 ÷ 16 mm ²
Modular width 4 TE	Tightening moment		3 Nm
	Installation		On DIN rail 35 mm
Operating position Any	Modular width		4 TE
	Operating position		Any

Surge arresters T2 for IT systems



Туре		HSA-850/3+1 S IT
Signalling at the device		Optic
Importance of local signaling		OK – clear target FAULT – red target
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
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
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	482 g
Mass (including the packaging)	m	510 g
Packaging dimensions (H x W x D)		74 x 112 x 73 mm
Packaging value	V	0.61 dm ³
ETIM group		EG000021
ETIM class		EC000941
Customs tariff no.		85363010
EAN code		8590681169346
Art. number		27 690



The link in the QR code leads to the online presentation of the **HSA-850/3+1 S IT**. 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)







