

HLSA7-850/3+1

- Lightning impulse current and surge arresters type T1+T2 ensure the equipotential bonding, eliminate the effects of lightning current and reduce switching, induced and residual overvoltage in single-phase and three-phase power supply systems.
- Suitable for objects and halls without the incidence of persons and indoor equipment.
- Installed at the boundaries of LPZ 0 LPZ 1 and higher zones, closest to where overhead line enters the building i.e. in the main distribution boards.
- The products consist of varistors with big discharge ability.
- Configurations 1+1 and 3+1 are additionally combined with a gas discharge tube which ensures zero leakage current through the PE conductor.
- If the product contains two PE (or PEN) terminals, it must not be used as a PE (PEN) bridge.
- **S** indication specifies a version with remote monitoring.

Туре		HLSA7-850/3+1
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T1, T2
System		TN-S, TT
Number of poles		4
Rated operating AC voltage	U_N	720 V
Maximum continuous operating voltage AC	U_{c}	850 V
Maximum discharge current (8/20)	I _{max}	50 kA
Impulse discharge current for class I test (10/350) L/N	I _{imp}	7 kA
Charge (L/N)	Q	3.5 As
Specific energy for class I test (L/N)	W/R	12.25 kJ/Ω
Impulse discharge current for class I test (10/350) N/PE	l _{imp}	50 kA
Charge (N/PE)	Q	25 As
Specific energy for class I test (N/PE)	W/R	625 kJ/Ω
Total discharge current (10/350) L1+L2+L3+N->PE	I _{Total}	28 kA
Total discharge current (8/20) L1+L2+L3+N->PE	I _{Total}	100 kA
Nominal discharge current for class II test (8/20) L/N	In	25 kA
Nominal discharge current for class II test (8/20) N/PE	I _n	50 kA
Open circuit voltage of the combination wave generator	U _{oc}	6 kV
Voltage protection level at I _n (L/N)	U_p	< 3.3 kV
Voltage protection level at I _n (N/PE)	U_p	< 1.3 kV
Temporary overvoltage test (TOV) for $t_T = 5 \text{ s (L/N)}$	U_T	1 045 V
Temporary overvoltage test (TOV) for t_T = 120 min (L/N)	U_T	1 372 V
Temporary overvoltage test (TOV) for $t_T = 0.2 \text{ s}$ (N/PE)	U_T	1 200 V
Response time (L/N)	t _A	< 25 ns
Response time (N/PE)	t _A	< 100 ns
Maximal back-up fuse		160 A gL/gG
Residual current	I _{PE}	≤ 5 μA
Follow current interrupt rating (N/PE)	l _{fi}	0.1 kA _{rms}
Short-circuit current rating at maximum back-up fuse	I _{SCCR}	60 kA _{rms}

Lightning and surge arresters T1+T2



Lightning protection zone	Туре		HLSA7-850/3+1
Degree of protection IP20 Operating temperature \$ 40.270 °C Humidity range RH 5 ± 95 % Minimum cross-section of connected Cu conductors accord. to HD 60364-5-53:2022 S 6 mm² (L, N) (doesn't apply to ,V* connection) for T1 5 mm² (L, N) 6 mm² (E, PEN) Minimum cross-section of connected Cu conductors accord. to HD 60364-5-53:2022 S 6 mm² (E, PEN) Clamp fastering range (solid conductor) 1.5 ± 25 mm² 1.5 m² Clamp fastering range (stranded conductor) 1.5 ± 16 mm² 1.5 ± 16 mm² Tightening moment 3 Nm 10 TE Installation On DIN rail 35 sm Modular width 10 TE Operating position Any Product placement environment Internal Signalling at the device Optic Importance of local signaling OK - clear target Remote signalling No 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	Lightning protection zone		LPZ 0-1, LPZ 1-2, LPZ 2-3
Operating temperature 9 -40 ÷ 70 °C Humidity range RH 5 ÷ 95 % Minimum cross-section of connected Cu conductors accord. to HD 60364-5-53:2022 (doesn't apply to "V" connection") for T1 S 6 mm² (L, N) (doesn't apply to "V" connection") for T2 5 6 mm² (L, N) (doesn't apply to "V" connection") for T2 5 2.5 mm² (L, N) (m² (E, PEN)) Minimum cross-section of connected Cu conductors accord. to HD 60364-5-53:2022 (doesn't apply to "V" connection") for T2 \$ 2.5 mm² (L, N) (m² (E, PEN)) Clamp fastening range (solid conductor) 1.5 ÷ 25 mm² 1.5 ÷ 25 mm² Clamp fastening range (solid conductor) 1.5 ÷ 16 mm² 3 Nm Installation On DIN rail 35 mm Modular width 10 TE Operating position Any Product placement environment Internal Signalling at the device Optic Optic Importance of local signalling No No Modular design No No Modular design No No Modular design No No Lifetime > 100 00 h No Designed according to standards I	Housing material		Polyamid PA6, UL94 V-0
Humidity range RH 5 ÷ 95 % Minimum cross-section of connected Cu conductors accord. to HD 60364-5-53:2022 (doesn't apply to .V" connection) for T1 \$ 6 mm² (PE, PEN) Minimum cross-section of connected Cu conductors accord. to HD 60364-5-53:2022 (doesn't apply to .V" connection) for T2 \$ 2.5 mm² (L, N) 6 mm² (PE, PEN) Clamp fastering range (solid conductor) 1.5 ÷ 25 mm² 1.5 ÷ 16 mm² Clamp fastering range (solid conductor) 1.5 ÷ 16 mm² 1.5 ÷ 16 mm² Tightening moment On DIN rail 35 mm 1.0 TE Installation On DIN rail 35 mm Modular width 10 TE Operating position Any Product placement environment Internal Signalling at the device Optic Optic Importance of local signaling OK - clear target FAULT - red target FAULT - red target Remote signalling No No Modular design No 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 Safety of Flammability of Plastic Materials UL 94<	Degree of protection		IP20
Minimum cross-section of connected Cu conductors accord. to HD 60364-5-33:2022 (doesn't apply to .V' connection) for T1 S 6 mm² (L, N) 16 mm² (L, N) Minimum cross-section of connected Cu conductors accord. to HD 60364-5-33:2022 (doesn't apply to .V' connection) for T2 \$ 2.5 mm² (L, N) Clamp fastening range (solid conductor) 1.5 × 16 mm² Clamp fastening range (stranded conductor) 1.5 × 16 mm² Tightening moment 3 Nm Installation On DIN rail 35 mm Modular width 10 TE Operating position Any Product placement environment Internal Signalling at the device Optic Importance of local signaling No Modular design No Utility No Utility No Utility No Designed according to standards IEC 61643-11:2011 Requirements and test methods for SPDs connected to low-voltage power systems IEC 61643-11:2011 Safety of Flammability of Plastic Materials U. 94 Protection against lightning IEC 62305:2010 Selection and erection of electrical equipment – Switchgear and controlgear HD 60364-5-53:2022<	Operating temperature	Э	-40 ÷ 70 °C
Minimum cross-section of connected Cu conductors accord. to HD 60364-5-33:2022 (doesn't apply to .V' connection) for T1 S 6 mm² (L, N) 16 mm² (L, N) Minimum cross-section of connected Cu conductors accord. to HD 60364-5-33:2022 (doesn't apply to .V' connection) for T2 \$ 2.5 mm² (L, N) Clamp fastening range (solid conductor) 1.5 × 16 mm² Clamp fastening range (stranded conductor) 1.5 × 16 mm² Tightening moment 3 Nm Installation On DIN rail 35 mm Modular width 10 TE Operating position Any Product placement environment Internal Signalling at the device Optic Importance of local signaling No Modular design No Utility No Utility No Utility No Designed according to standards IEC 61643-11:2011 Requirements and test methods for SPDs connected to low-voltage power systems IEC 61643-11:2011 Safety of Flammability of Plastic Materials U. 94 Protection against lightning IEC 62305:2010 Selection and erection of electrical equipment – Switchgear and controlgear HD 60364-5-53:2022<	Humidity range	RH	5 ÷ 95 %
(doesn't apply to , \(\)" connection) for T2 6 mm² (PE, PEN) Clamp fastening range (solid conductor) 1.5 ÷ 26 mm² Clamp fastening range (stranded conductor) 1.5 ÷ 16 mm² Tightening moment 3 Nm Installation On DIN rail 35 mm Modular width 10 TE Operating position Any Product placement environment Internal Signalling at the device Optic Importance of local signalling No 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 Safety of Flammability of Plastic Materials UL 94 Application standards Protection against lightning IEC 6205:2010 Selection and erection of electrical equipment - Switchgear and controlgear IHC 6364-5-53:2022 Selection and application principles for SPDs connected to low-voltage power systems CLC/TS 61643-12:2009 Ordering, packaging and additional data Mass (including the packaging) m	Minimum cross-section of connected Cu conductors accord. to HD 60364-5-53:2022	S	
Clamp fastening range (stranded conductor) 1.5 ÷ 16 mm² Tightening moment 3 Nm Installation On DIN rail 35 mm Modular width 10 TE Operating position Any Product placement environment Internal Signalling at the device Optic Importance of local signaling No Modular design No 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 1.349 kg Mass (including the packaging) m 1.349 kg Packaging dimensions (H x W x D) <td></td> <td>S</td> <td></td>		S	
Tightening moment 3 Nm Installation On DIN rail 35 mm Modular width 10 TE Operating position Any Product placement environment Internal Signalling at the device Optic Importance of local signalling OK - clear target FAULT - red target Remote signalling No 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 1.349 kg Mass (including the packaging) m 1.398 kg Packaging dimensions (H x W x D) 70 x 228 x 95 mm Pac	Clamp fastening range (solid conductor)		$1.5 \div 25 \text{ mm}^2$
Installation On DIN rail 35 mm Modular width 10 TE Operating position Any Product placement environment Internal Signalling at the device Optic Importance of local signaling OK - clear target FAULT - red target Remote signalling No 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 CLCT8 61643-12:2009 Ordering, packaging and additional data m 1.349 kg Mass (including the packaging) m 1.349 kg Mass (including the packaging) m 1.398 kg Packaging value V 1.52 clm³ ETIM group <t< td=""><td>Clamp fastening range (stranded conductor)</td><td></td><td>$1.5 \div 16 \text{ mm}^2$</td></t<>	Clamp fastening range (stranded conductor)		$1.5 \div 16 \text{ mm}^2$
Modular width 10 TE Operating position Any Product placement environment Internal Signalling at the device Optic Importance of local signalling OK - clear target FAULT - red target Remote signalling No 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 1.349 kg Mass (including the packaging) m 1.349 kg Packaging dimensions (H x W x D) 70 x 228 x 95 mm Packaging value V 1.52 dm³ ETIM group EG0000021	Tightening moment		3 Nm
Operating position Any Product placement environment Internal Signalling at the device Optic Importance of local signalling OK - clear target FAULT - red target Remote signalling No 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 (including the packaging) m 1.349 kg Mass (including the packaging) m 1.398 kg Packaging dimensions (H x W x D) 70 x 228 x 95 mm Packaging value V 1.52 dm³ ETIM group EG0000021 ETIM group EG0001457 </td <td>Installation</td> <td></td> <td>On DIN rail 35 mm</td>	Installation		On DIN rail 35 mm
Product placement environment Internal Signalling at the device Optic Importance of local signalling OK - clear target FAULT - red target Remote signalling No 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 1.349 kg Mass (including the packaging) m 1.349 kg Mass (including the packaging) m 1.398 kg Packaging value V 1.52 dm³ ETIM group EG000021 ETIM class EC001457 Customs tariff no. 85363010	Modular width		10 TE
Signalling at the device Optic Importance of local signaling OK - clear target FAULT - red target Remote signalling No 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 1.349 kg Mass (including the packaging) m 1.349 kg Mass (including the packaging) m 1.328 kg Packaging value V 1.52 dm³ ETIM group EG000021 ETIM class EC001457 Customs tariff no. 85363010 EAN code 8590681169629	Operating position		Any
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Remote signalling No Modular design No Modular design No Lifetime Solution 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 Ordering, packaging and additional data Mass m 1.349 kg Mass (including the packaging) m 1.398 kg Packaging dimensions (H x W x D) 70 x 228 x 95 mm Packaging value V 1.52 dm³ ETIM group EG000021 ETIM class EC001457 Customs tariff no. 85363010 EAN code 859681169629	Signalling at the device		Optic
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 m 1.349 kg Mass (including the packaging) m 1.398 kg Packaging dimensions (H x W x D) 70 x 228 x 95 mm Packaging value V 1.52 dm³ ETIM group EG000021 ETIM class EC001457 Customs tariff no. 85363010 EAN code 8590681169629	Importance of local signaling		
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 1.349 kg Mass (including the packaging) m 1.349 kg Packaging dimensions (H x W x D) 70 x 228 x 95 mm Packaging value V 1.52 dm³ ETIM group EG0000021 ETIM class EC001457 Customs tariff no. 85363010 EAN code 8596681169629	Remote signalling		No
Designed according to standardsRequirements and test methods for SPDs connected to low-voltage power systemsIEC 61643-11:2011Safety of Flammability of Plastic MaterialsUL 94Application standardsProtection against lightningIEC 62305:2010Selection and erection of electrical equipment - Switchgear and controlgearHD 60364-5-53:2022Selection and application principles for SPDs connected to low-voltage power systemsCLC/TS 61643-12:2009Ordering, packaging and additional dataMassm1.349 kgMass (including the packaging)m1.398 kgPackaging dimensions (H x W x D)70 x 228 x 95 mmPackaging valueV1.52 dm³ETIM groupEG000021ETIM classEC001457Customs tariff no.85363010EAN code8590681169629	Modular design		No
Requirements and test methods for SPDs connected to low-voltage power systems Safety of Flammability of Plastic Materials 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 1.349 kg Mass (including the packaging) m 1.398 kg Packaging dimensions (H x W x D) Packaging value V 1.52 dm³ ETIM group ETIM group ETIM class EC001457 Customs tariff no. 8590681169629	Lifetime		> 100 000 h
Safety of Flammability of Plastic Materials 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 CLC/TS 61643-12:2009 Ordering, packaging and additional data Mass m 1.349 kg Mass (including the packaging) m 1.398 kg Packaging dimensions (H x W x D) Packaging value V 1.52 dm³ ETIM group ETIM class EC001457 Customs tariff no. EAN code	Designed according to standards		
Safety of Flammability of Plastic Materials 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 CLC/TS 61643-12:2009 Ordering, packaging and additional data Mass m 1.349 kg Mass (including the packaging) m 1.398 kg Packaging dimensions (H x W x D) Packaging value V 1.52 dm³ ETIM group ETIM class EC001457 Customs tariff no. EAN code	Requirements and test methods for SPDs connected to low-voltage power systems		IEC 61643-11:2011
Protection against lightning Selection and erection of electrical equipment – Switchgear and controlgear Selection and application principles for SPDs connected to low-voltage power systems CLC/TS 61643-12:2009 Ordering, packaging and additional data Mass m 1.349 kg Mass (including the packaging) Packaging dimensions (H x W x D) Packaging value V 1.52 dm³ ETIM group EG000021 ETIM class Customs tariff no. 85363010 8590681169629			UL 94
Selection and erection of electrical equipment – Switchgear and controlgear Selection and application principles for SPDs connected to low-voltage power systems CLC/TS 61643-12:2009 Ordering, packaging and additional data Mass m 1.349 kg Mass (including the packaging) m 1.398 kg Packaging dimensions (H x W x D) 70 x 228 x 95 mm Packaging value V 1.52 dm³ ETIM group EG000021 ETIM class EC001457 Customs tariff no. 85363010 EAN code 8590681169629	Application standards		
Selection and application principles for SPDs connected to low-voltage power systems Ordering, packaging and additional data Mass Mass (including the packaging) Packaging dimensions (H x W x D) Packaging value FIIM group ETIM class CLC/TS 61643-12:2009 The packaging was additional data The packaging was additional data	Protection against lightning		IEC 62305:2010
Ordering, packaging and additional data Mass m 1.349 kg Mass (including the packaging) m 1.398 kg Packaging dimensions (H x W x D) 70 x 228 x 95 mm Packaging value V 1.52 dm³ ETIM group EG000021 ETIM class EC001457 Customs tariff no. 85363010 EAN code 8590681169629	Selection and erection of electrical equipment - Switchgear and controlgear		HD 60364-5-53:2022
Mass m 1.349 kg Mass (including the packaging) m 1.398 kg Packaging dimensions (H x W x D) 70 x 228 x 95 mm Packaging value V 1.52 dm³ ETIM group EG000021 ETIM class EC001457 Customs tariff no. 85363010 EAN code 8590681169629	Selection and application principles for SPDs connected to low-voltage power systems		CLC/TS 61643-12:2009
Mass (including the packaging) m 1.398 kg Packaging dimensions (H x W x D) 70 x 228 x 95 mm Packaging value V 1.52 dm³ ETIM group EG000021 ETIM class EC001457 Customs tariff no. 85363010 EAN code 8590681169629	Ordering, packaging and additional data		
Packaging dimensions (H x W x D) 70 x 228 x 95 mm Packaging value V 1.52 dm³ ETIM group EG000021 ETIM class EC001457 Customs tariff no. 85363010 EAN code 8590681169629	Mass	m	1.349 kg
Packaging value V 1.52 dm³ ETIM group EG000021 ETIM class EC001457 Customs tariff no. 85363010 EAN code 8590681169629	Mass (including the packaging)	m	1.398 kg
ETIM group EG000021 ETIM class EC001457 Customs tariff no. 85363010 EAN code 8590681169629	Packaging dimensions (H x W x D)		70 x 228 x 95 mm
ETIM class EC001457 Customs tariff no. 85363010 EAN code 8590681169629	Packaging value	V	1.52 dm ³
Customs tariff no. 85363010 EAN code 8590681169629	ETIM group		EG000021
EAN code 8590681169629	ETIM class		EC001457
	Customs tariff no.		85363010
Art. number 10 616	EAN code		8590681169629
	Art. number		10 616

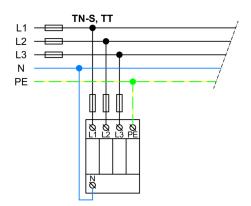


The link in the QR code leads to the online presentation of the **HLSA7-850/3+1**. There, in addition to the always up-to-date data sheet, you will also find all diagrams and drawings, declarations of conformity, or 2D or 3D models and other necessary materials. For more information, visit **www.hakel.com**





Application wiring diagram (installation)



Internal diagram

