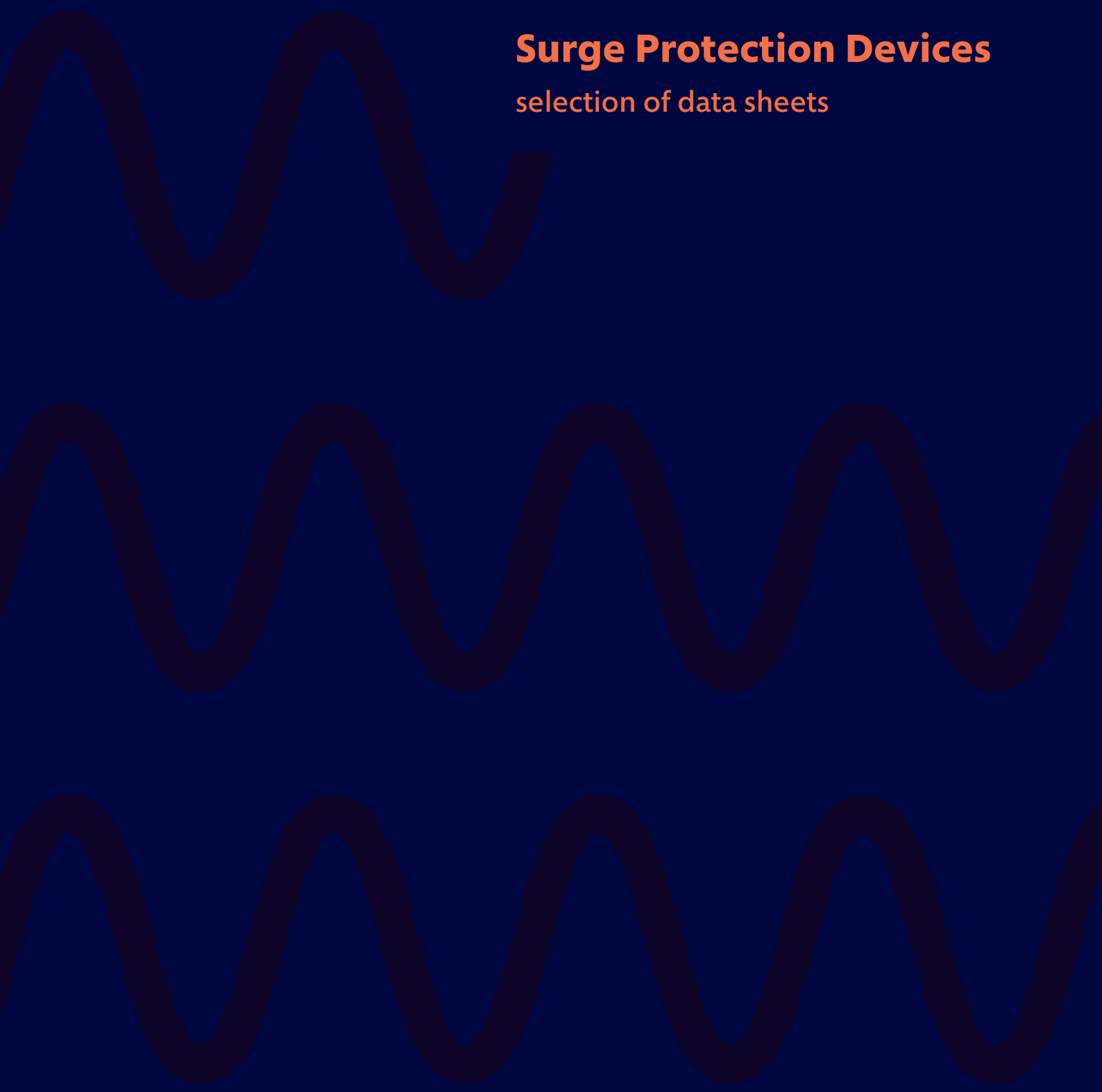


hakel[®]

Hz in Hearts

Surge Protection Devices

selection of data sheets



Assortment of Hakel products:

Surge protection devices (SPD)

Surge protection devices + EMI filters (SPD+EMI)

Surge protection devices for photovoltaic applications (SPD PV)

Surge protection devices for IT power supply systems (SPD IT)

Voltage limiting devices (VLD)

Gas discharge tubes for equipotential bonding (GDT)

Insulation monitoring devices (IMD)

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www.hakel.com

HAKEL spol. s r.o. – company profile

HAKEL spol. s r.o. was founded by Ing. Jaroslav Hudec, Ph.D., on October 18, 1994, in Hradec Kralove. From the very beginning, it has been a purely Czech company, which ranks among the leading manufacturers of surge protection devices and insulation monitoring devices.

We produce surge protection devices not only for residential construction, but they are also used in industry (oil and gas pipelines, photovoltaics, power plants and railways). Our products protect various technologies, machines, appliances and equipment worldwide against overvoltage.

At the same time, we develop and manufacture insulation monitoring devices for isolated IT power supply systems. We provide complete A to Z solutions for insulation monitoring in hospitals, industry and special applications, helping to protect not only equipment, but more importantly human lives.

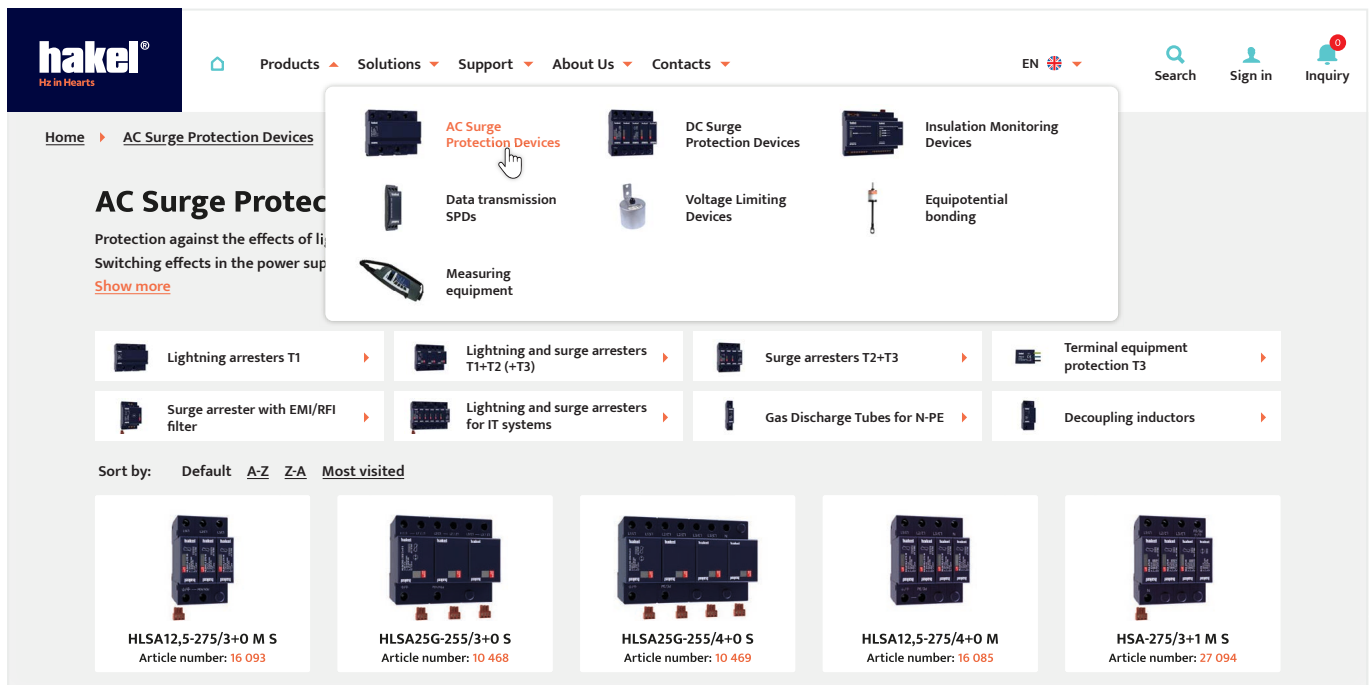
In addition to its manufacturing and business activities, HAKEL spol. s r.o. supports individuals, foundations, schools, nurseries, theatres and other organisations. Today the company is managed by Bc. Pavel Hudec, son of the founder, as the sole owner.

Website introduction

The current edition of the surge protection devices selection mainly serves as a support material for those of you who prefer a brief paper form of technical specifications of individual products.

However, if you want a complete overview of all technical data, product variants, relevant diagrams, installation instructions, certificates and other accompanying materials, please visit our website www.hakel.com.

On the website, you will find not only a complete product portfolio, but you can also easily search by parameters or select according to the specific solution. This will allow you to quickly find products fully suitable for your project or construction. The product data sheets are generated in real-time from the database, which is managed by the Development Department of HAKEL company. This means that you always have the latest materials at your disposal.



Contents

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SPD selection according to power supply system and installation location	04 – 07
Lightning arresters – type T1	08 – 11
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Surge arresters – type T2+T3	32 – 37
Surge arresters – type T3	38 – 53
Decoupling inductors	54 – 58
Measuring equipment	59 – 60

List of products according to categories

Type T1	Art. No.	Page
HLA50-255	10 970	8
HLA50-255 LED	10 979	8
HLA50-255 S	10 975	8
HLA50-440	10 950	8
HLA50-440 S LED	10 962	8
HLA50-440 S	10 956	8
HLA50-255/2+0	10 971	9
HLA50-255/2+0 LED	10 980	9
HLA50-255/2+0 S	10 976	9
HLA50-440/2+0	10 952	9
HLA50-440/2+0 LED	10 963	9
HLA50-440/2+0 S	10 958	9
HLA50-255/3+0	10 972	10
HLA50-255/3+0 LED	10 981	10
HLA50-255/3+0 S	10 977	10
HLA50-440/3+0	10 953	10
HLA50-440/3+0 LED	10 964	10
HLA50-440/3+0 S	10 959	10
HLA50-255/4+0	10 973	11
HLA50-255/4+0 LED	10 982	11
HLA50-255/4+0 S	10 978	11
HLA50-440/4+0	10 955	11
HLA50-440/4+0 LED	10 965	11
HLA50-440/4+0 S	10 961	11



Type T1+T2+T3	Art. No.	Page
HLSA25G-255	10 462	12
HLSA25G-255 S	10 466	12
HLSA25G-255/2+0	10 463	13
HLSA25G-255/2+0 S	10 467	13
HLSA25G-255/3+0	10 464	14
HLSA25G-255/3+0 S	10 468	14
HLSA25G-255/4+0	10 465	15
HLSA25G-255/4+0 S	10 469	15

HLSA25-275	10 450	16
HLSA25-275 S	10 456	16
HLSA25-275/1+1	10 451	17
HLSA25-275/1+1 S	10 457	17
HLSA25-275/2+0	10 452	18
HLSA25-275/2+0 S	10 458	18
HLSA25-275/3+0	10 453	19
HLSA25-275/3+0 S	10 459	19
HLSA25-275/3+1	10 454	20
HLSA25-275/3+1 S	10 460	20
HLSA25-275/4+0	10 455	21
HLSA25-275/4+0 S	10 461	21

HLSA12,5G-255	10 246	22
HLSA12,5G-255 S	10 247	22
HLSA12,5G-255/2+0	10 249	23
HLSA12,5G-255/2+0 S	10 250	23
HLSA12,5G-255/3+0	10 269	24
HLSA12,5G-255/3+0 S	10 270	24
HLSA12,5G-255/4+0	10 267	25
HLSA12,5G-255/4+0 S	10 268	25

HLSA12,5-275 M	16 080	26
HLSA12,5-275 M S	16 090	26
HLSA12,5-275/1+1 M	16 081	27
HLSA12,5-275/1+1 M S	16 091	27
HLSA12,5-275/2+0 M	16 082	28
HLSA12,5-275/2+0 M S	16 092	28
HLSA12,5-275/3+0 M	16 083	29
HLSA12,5-275/3+0 M S	16 093	29
HLSA12,5-275/3+1 M	16 084	30
HLSA12,5-275/3+1 M S	16 094	30
HLSA12,5-275/4+0 M	16 085	31
HLSA12,5-275/4+0 M S	16 095	31

Type T2+T3	Art. No.	Page
HSA-275 M	27 080	32
HSA-275 M S	27 090	32
HSA-275/1+1 M	27 081	33
HSA-275/1+1 M S	27 091	33
HSA-275/2+0 M	27 082	34
HSA-275/2+0 M S	27 092	34
HSA-275/3+0 M	27 083	35
HSA-275/3+0 M S	27 093	35
HSA-275/3+1 M	27 084	36
HSA-275/3+1 M S	27 094	36
HSA-275/4+0 M	27 085	37
HSA-275/4+0 M S	27 095	37

Product types HSA-* we supply both the modular versions (M) and solid designs in voltage levels *75, 150, 275, 320, 385, 440 and 600 V AC. In addition, the U_c 720 and 850 V AC can be offered in solid versions.



Product types HLSA12,5-* we also supply in a solid design (the product name then excludes „M“). Here the U_c is not limited to 275 V AC, as we offer voltage levels *75, 150, 275, 320, 385, 440 and 600 V AC.



Type T3	Art. No.	Page
HSAF10	30 160	38
HSAF10 S	30 170	38
HSAF16	30 161	38
HSAF16 S	30 171	38
HSAF25	30 196	39
HSAF25 S	30 197	39
HSAF32	30 198	39
HSAF32 S	30 199	39

HSAF10/6VDC	30 149	40
HSAF10/12VDC	30 150	40
HSAF10/24VDC	30 157	40
HSAF10/48VDC	30 158	40
HSAF10/60VDC	30 159	40
HSAF10/120VDC	30 162	40
HSAF10/220VDC	30 163	40
HSAF10/6VDC S	30 267	41
HSAF10/12VDC S	30 268	41
HSAF10/24VDC S	30 269	41
HSAF10/48VDC S	30 270	41
HSAF10/60VDC S	30 271	41
HSAF10/120VDC S	30 272	41
HSAF10/220VDC S	30 273	41
HSAF16/6VDC	30 142	42
HSAF16/12VDC	30 143	42
HSAF16/24VDC	30 144	42
HSAF16/48VDC	30 145	42
HSAF16/60VDC	30 146	42
HSAF16/120VDC	30 147	42
HSAF16/220VDC	30 148	42
HSAF16/6VDC S	30 260	43
HSAF16/12VDC S	30 261	43
HSAF16/24VDC S	30 262	43
HSAF16/48VDC S	30 263	43
HSAF16/60VDC S	30 264	43
HSAF16/120VDC S	30 265	43
HSAF16/220VDC S	30 266	43

HSAF40 S	30 172	44
HSAF50 S	30 173	44
HSAF63 S	30 174	44
HSAF80 S	30 175	45
HSAF125 S	30 176	45
HSAF160 S	30 177	45

Type T3	Art. No.	Page
HSAF3/40 S	30 190	46
HSAF3/50 S	30 191	46
HSAF3/63 S	30 192	46
HSAF3/80 S	30 193	47
HSAF3/125 S	30 194	47
HSAF3/160 S	30 195	47
HSAF3/250 S	30 309	48
HSAF3/400 S	30 308	48



HSAD-S M S	30 370	49
HSAD-P M S	30 380	49

HSAD16	30 360	50
HSAD16 S	30 361	50
HSAD16/110VAC	30 362	50
HSAD16/110VAC S	30 363	50

HSAD16/6VDC	30 250	51
HSAD16/12VDC	30 251	51
HSAD16/24VDC	30 252	51
HSAD16/48VDC	30 253	51
HSAD16/60VDC	30 254	51
HSAD16/120VDC	30 255	51
HSAD16/220VDC	30 256	51
HSAD16/6VDC S	30 283	51
HSAD16/12VDC S	30 284	51
HSAD16/24VDC S	30 285	51
HSAD16/48VDC S	30 286	51
HSAD16/60VDC S	30 287	51
HSAD16/120VDC S	30 288	51
HSAD16/220VDC S	30 289	51

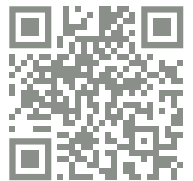
HSAA-1P	32 007	52
HSAA-2 NPE LED S	32 010	53



Decoupling inductors	Art. No.	Page
HI16	30 400	54-55
HI16/15	30 401	54-55
HI32	30 402	54-55
HI32/15	30 403	54-55
HI50/15	30 405	56-57
HI63	30 404	56-57
HI80	30 406	56-57
HI120	30 120	58



Measuring eqpt.	Art. No.	Page
GIGATEST PRO	70 002	59
PBI-7	70 047	60



Objects with lightning protection level I and II

MAIN SWITCHBOARD

T1 LPZ 0-1 / T1+T2 LPZ 0-1 and higher

SUBSIDIARY SWITCHBOARD

Lightning arrester T1
Lightning and surge arrester T1+T2

INSTALLATION

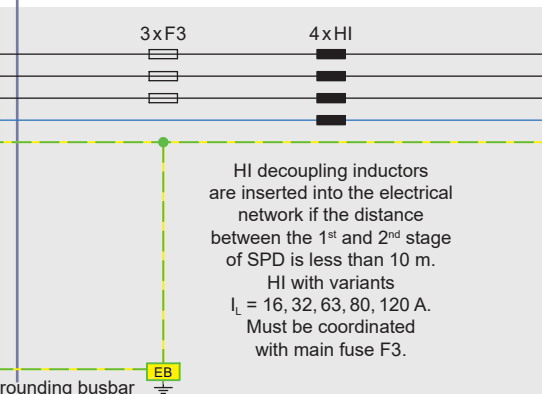
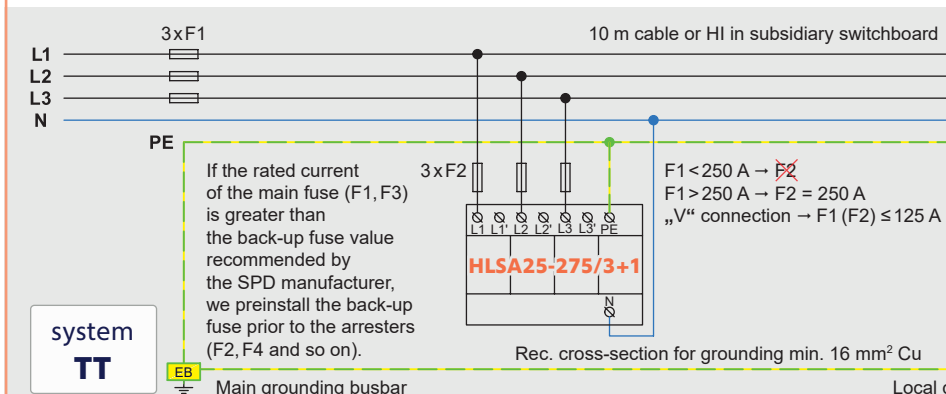
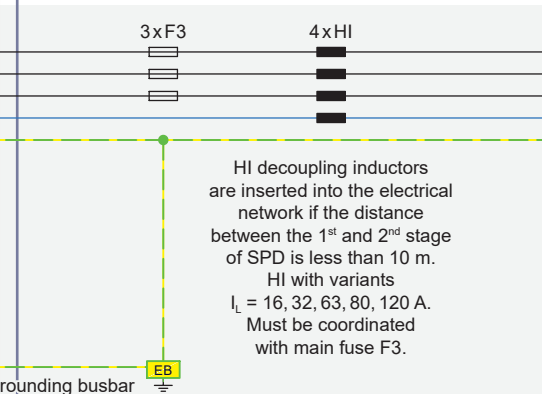
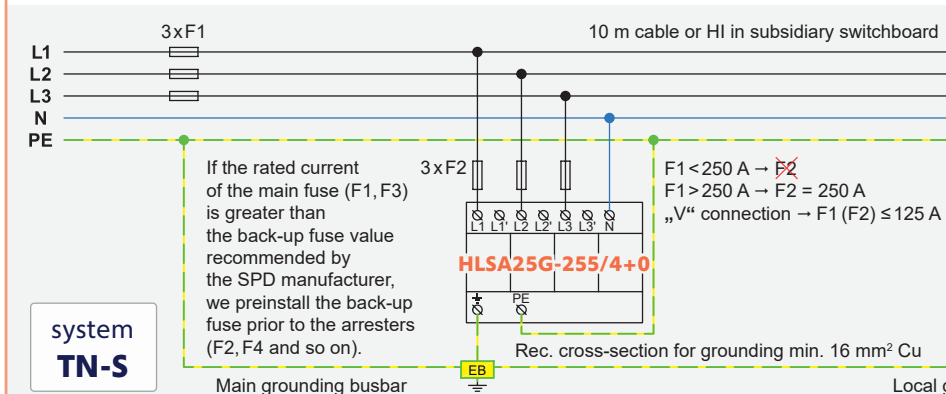
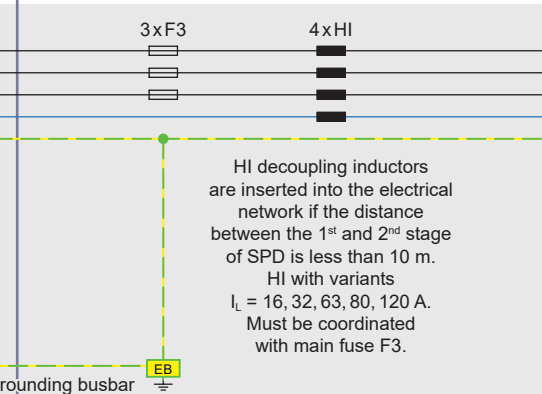
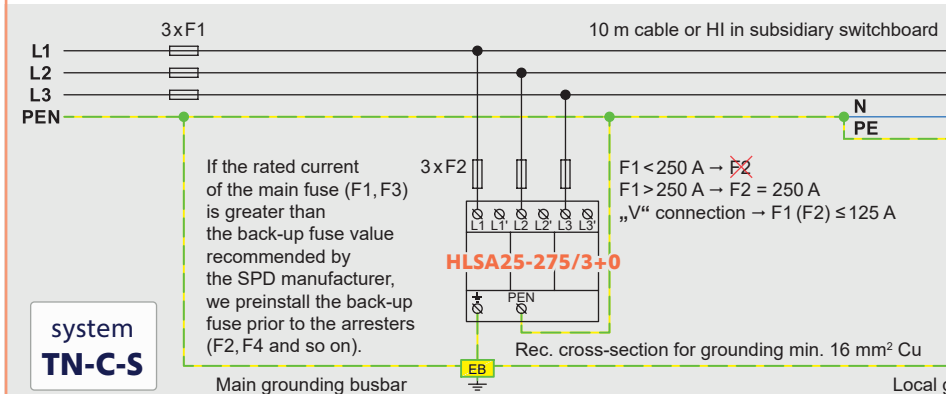
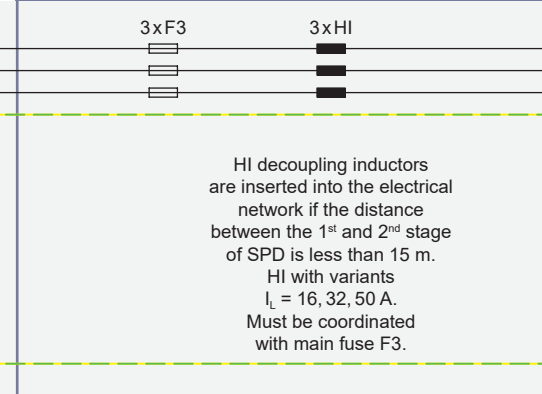
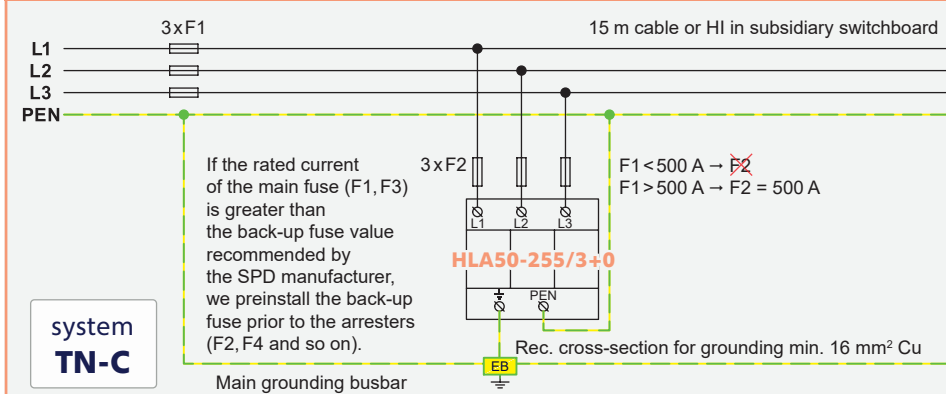
Transformer stations, substations, electricity meter switchboard, main switchboard.

Hospitals, banks, transmission points of GSM & BTS, water stations, power plants, airport control towers, buildings with danger of explosion, bigger industrial buildings, buildings with particular importance, bigger administrative buildings, schools, supermarkets, cathedrals etc.

Surge arrester T2+T3

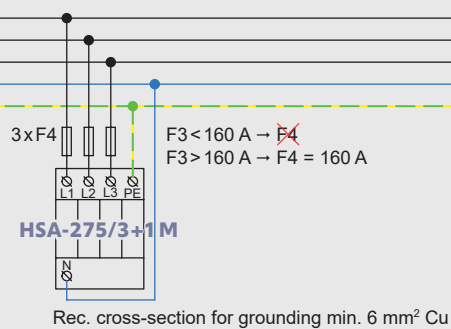
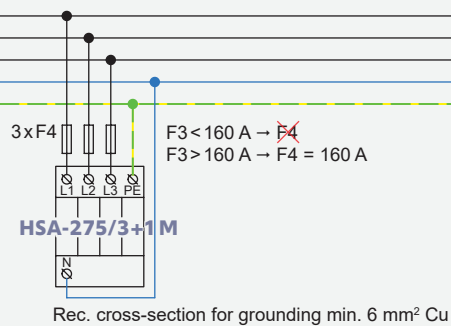
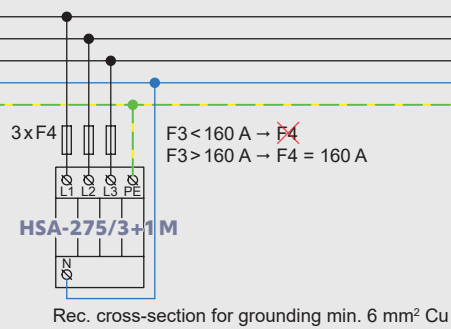
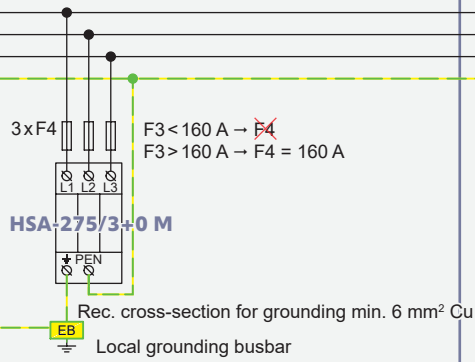
INSTALLATION

Subsidiary switchboard, technical rooms, subsidiary technological switchboards, data centers or control cabinets.



T2+T3 LPZ 0-3

The same object types as in the case of the main switchboard.



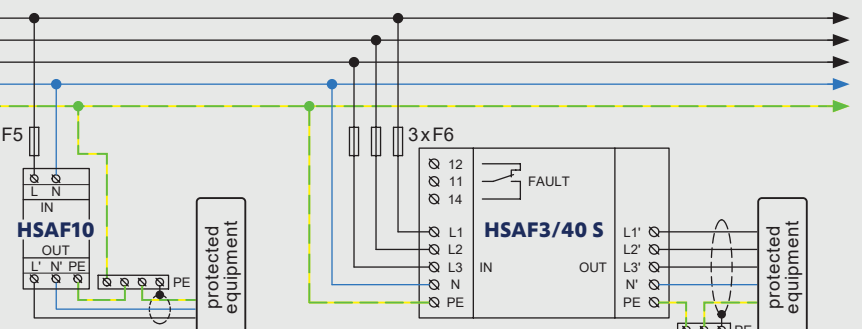
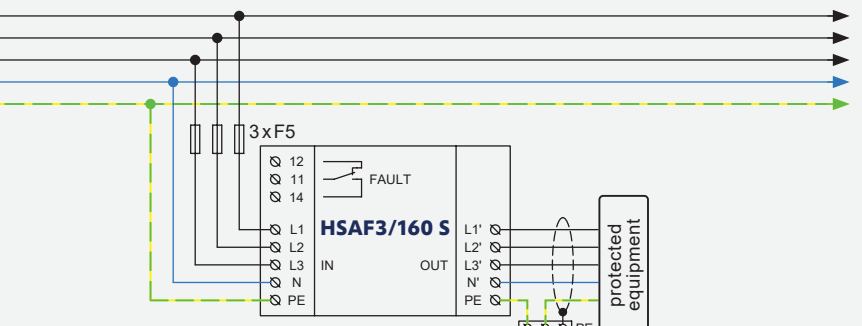
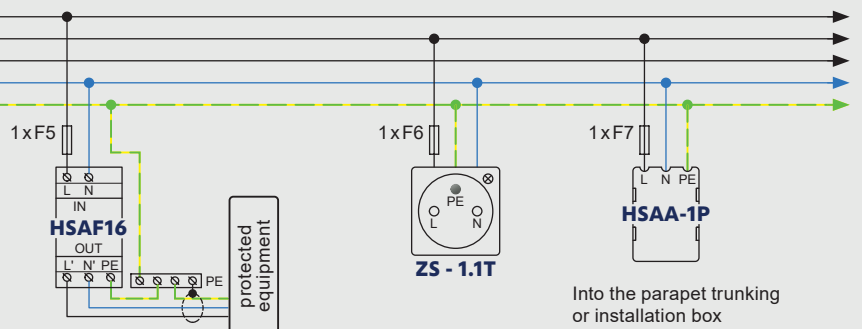
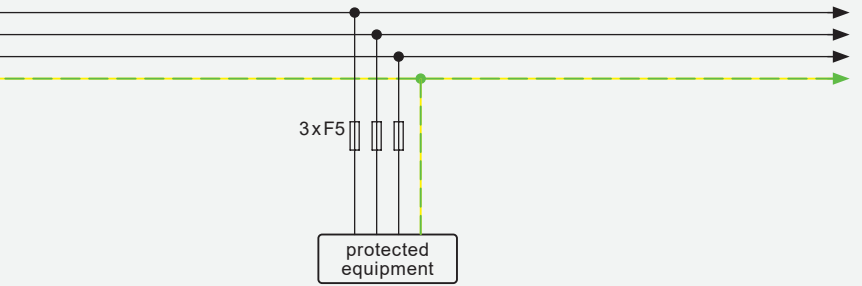
END DEVICE

Surge arrester + EMI filter T3

INSTALLATION to the switchboard, which is closest to the protected equipment.
In case of electronic control protection, the installation is directly to the appliance.

T3 LPZ 2-3

Outlet circuits which are longer than 20 m. Flush-mounted sockets and cable ducts. It is recommended to install SPD into the outlet circuit to every fourth socket or to the point of supply. This installation eliminates induced overvoltage which is ending into the object's service cables.



Objects with lightning protection level III and IV

MAIN SWITCHBOARD

T1+T2 LPZ 0-1 and higher

SUBSIDIARY SWITCHBOARD

Lightning and surge arrester T1+T2

Smaller industrial buildings, administrative buildings, residential buildings, agricultural buildings, family houses, common storehouses etc.

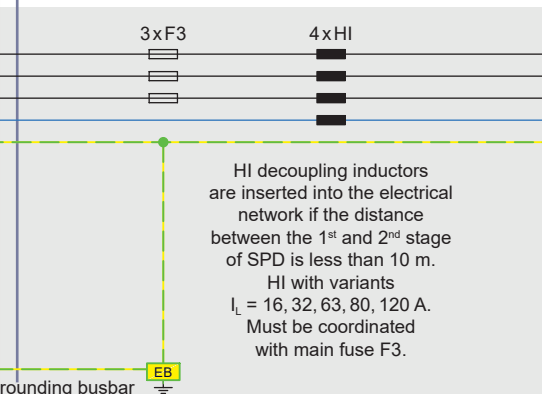
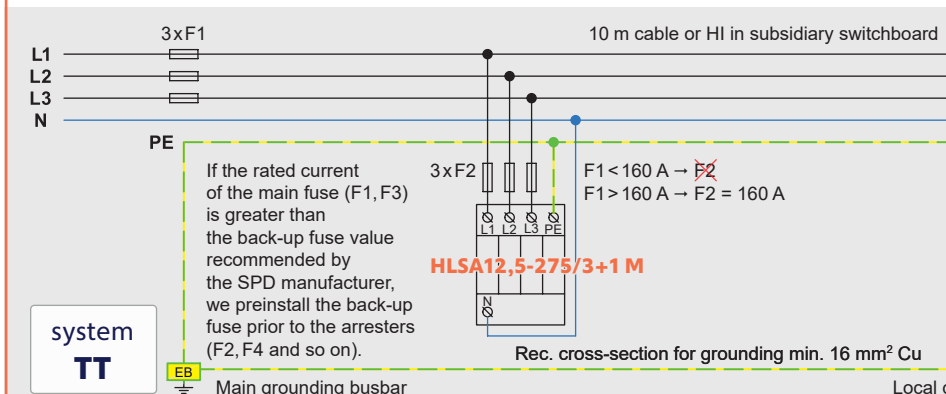
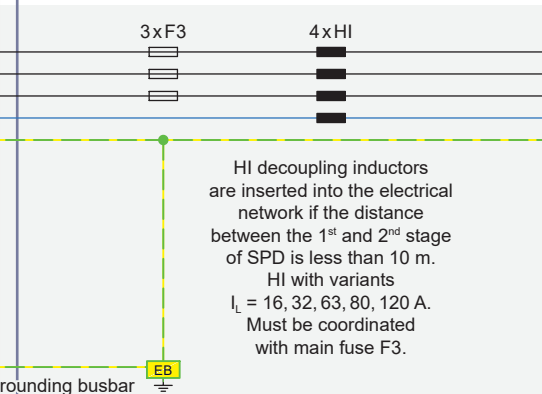
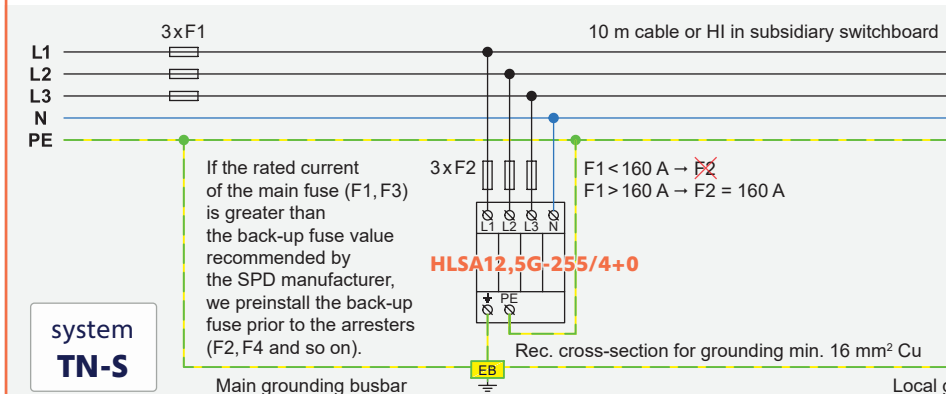
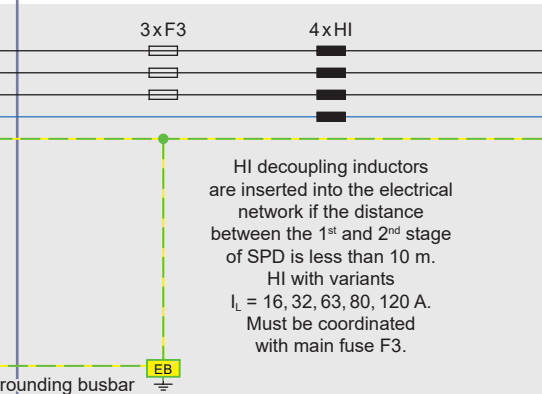
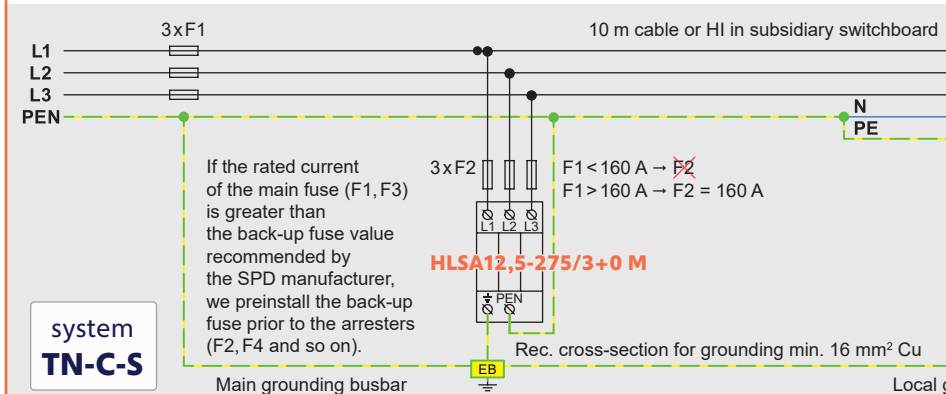
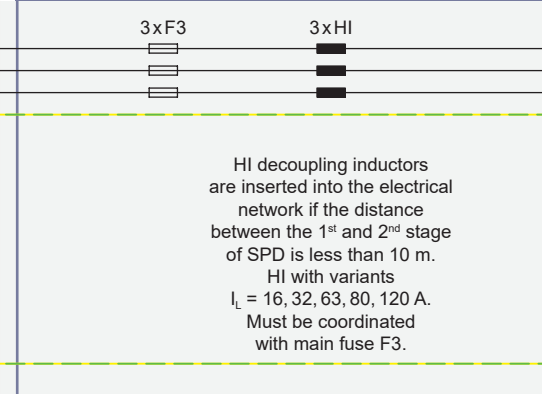
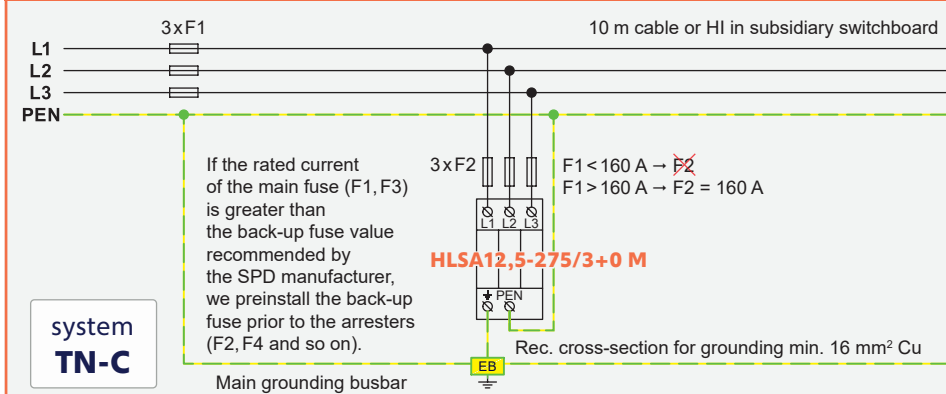
Surge arrester T2+T3

INSTALLATION

Transformer stations, substations, electricity meter switchboard, main switchboard.

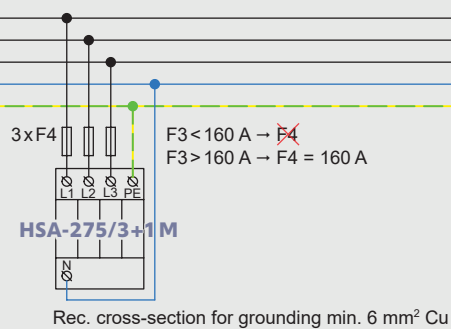
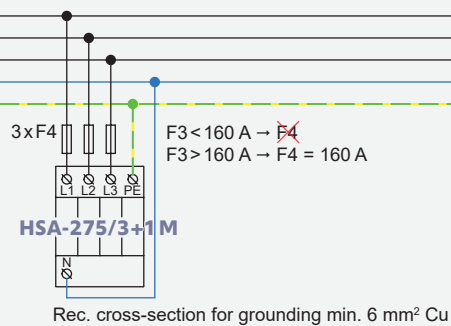
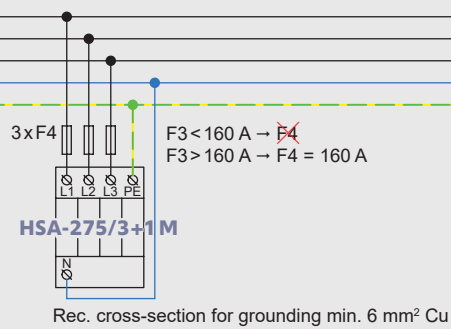
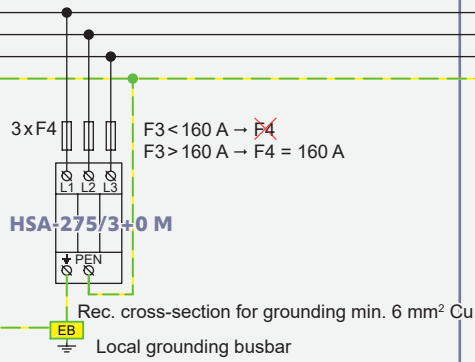
INSTALLATION

Subsidiary switchboard, technical rooms, subsidiary technological switchboards, data centers or control cabinets.



T2+T3 LPZ 1-3

The same object types as in the case of the main switchboard.



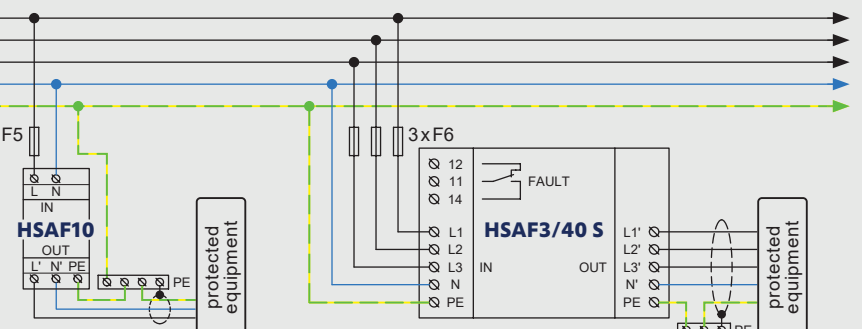
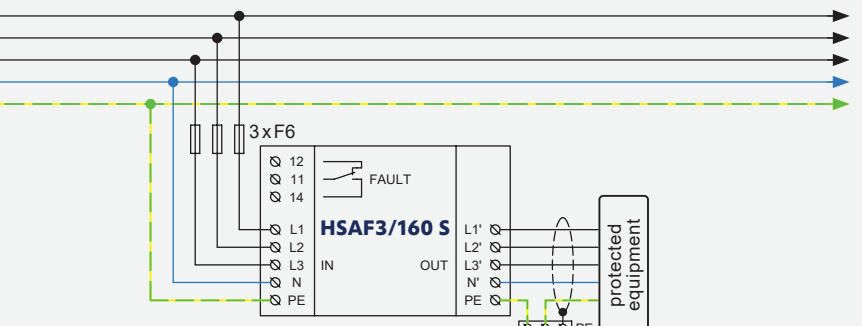
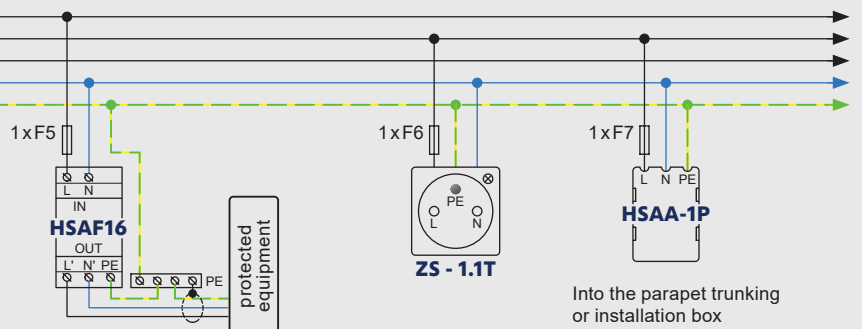
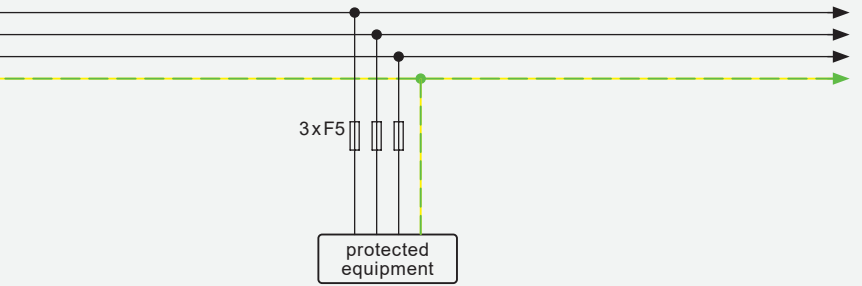
END DEVICE

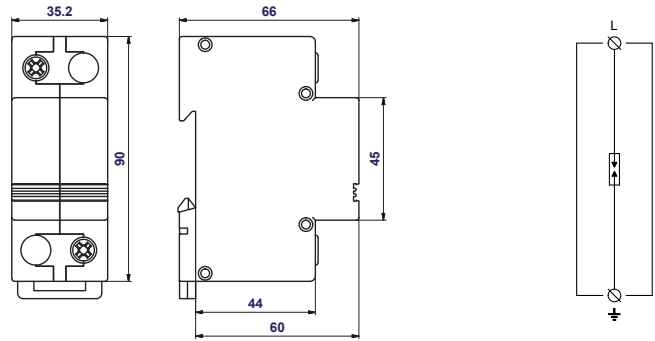
Surge arrester + EMI filter T3

INSTALLATION to the switchboard, which is closest to the protected equipment.
In case of electronic control protection, the installation is directly to the appliance.

T3 LPZ 2-3

Outlet circuits which are longer than 20 m. Flush-mounted sockets and cable ducts. It is recommended to install SPD into the outlet circuit to every fourth socket or to the point of supply. This installation eliminates induced overvoltage which is ending into the object's service cables.





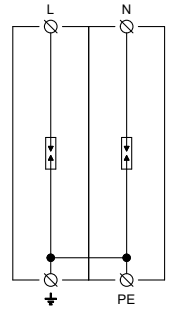
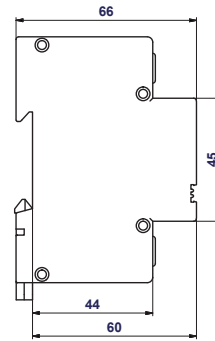
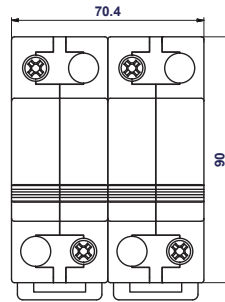
HLA50-255 (LED) (S), HLA50-440 (LED) (S)

- Lightning impulse current arresters type T1 ensure the equipotential bonding and eliminate the effects of lightning current in single-phase and three-phase power supply systems.
- Products contain multiple non-exhausting spark gaps, thanks to which they are able to discharge the highest lightning impulse current.
- Suitable for objects with considerable levels of protection LPL I and LPL II, such as big industrial complexes and properties of particular importance – hospitals, banks, power plants.
- Installed as close as possible the overhead line enters the building

i.e. the electric power substation, electrometer or the main distribution boards.

- If the product contains two PE (or PEN) terminals, it must not be used as a PE (PEN) bridge.
- **LED** indication specifies a version with LED fault signalisation.
- **S** indication specifies a version with remote monitoring and LED fault signalisation.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

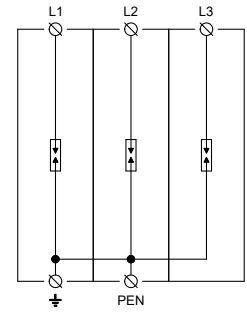
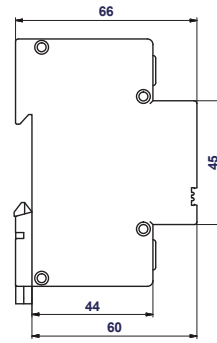
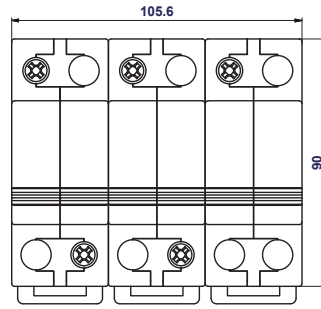
Type		HLA50-255, HLA50-255 LED, HLA50-255 S	HLA50-440, HLA50-440 LED, HLA50-440 S
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)			T1
System			TN
Number of poles			1
Rated operating AC voltage	U_N		230 V
Maximum continuous operating voltage AC	U_C		255 V
Impulse discharge current for class I test (10/350)	I_{imp}		50 kA
Charge	Q		25 As
Specific energy for class I test	W/R		625 kJ/Ω
Nominal discharge current for class II test (8/20)	I_n		50 kA
Voltage protection level at I_{imp}	U_p	< 2 kV	< 2.5 kV
Temporary overvoltage test (TOV) for $t_T = 5$ s	U_T	337 V	581 V
Temporary overvoltage test (TOV) for $t_T = 120$ min	U_T	440 V	762 V
Maximal back-up fuse		500 A gL/gG	
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	25 kA _{rms}	3 kA _{rms}
Follow current interrupt rating	I_{fi}	25 kA _{rms}	3 kA _{rms}
Housing material		Polyamid PA6, UL94 V-0	
Degree of protection		IP20	
Operating temperature	ϑ	-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 mm ² (L, N) 16 mm ² (PE, PEN)	
Clamp fastening range (stranded conductor)		2.5 ÷ 16 mm ²	
Operating position		Any	
Importance of local signaling – LED version		OK – green light on, FAULT – green light off	
Importance of local signaling – S version		OK – green light on, FAULT – red light on	
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 0.5 A, DC: 250 V / 0.1 A	
Article number	HLA50-*	10 970	10 950
	HLA50-* LED	10 979	10 962
	HLA50-* S	10 975	10 956



HLA50-255/2+0 (LED) (S), HLA50-440/2+0 (LED) (S)

- Lightning impulse current arresters type T1 ensure the equipotential bonding and eliminate the effects of lightning current in single-phase and three-phase power supply systems.
- Products contain multiple non-exhausting spark gaps, thanks to which they are able to discharge the highest lightning impulse current.
- Suitable for objects with considerable levels of protection LPL I and LPL II, such as big industrial complexes and properties of particular importance – hospitals, banks, power plants.
- Installed as close as possible the overhead line enters the building
- i.e. the electric power substation, electrometer or the main distribution boards.
- If the product contains two PE (or PEN) terminals, it must not be used as a PE (PEN) bridge.
- **LED** indication specifies a version with LED fault signalisation.
- **S** indication specifies a version with remote monitoring and LED fault signalisation.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

Type		HLA50-255/2+0, HLA50-255/2+0 LED, HLA50-255/2+0 S	HLA50-440/2+0, HLA50-440/2+0 LED, HLA50-440/2+0 S
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)			T1
System			TN-S
Number of poles			2
Rated operating AC voltage	U_N		230 V
Maximum continuous operating voltage AC	U_C		255 V
Impulse discharge current for class I test (10/350)	I_{imp}		50 kA
Charge	Q		25 As
Specific energy for class I test	W/R		625 kJ/Ω
Total discharge current (10/350) L+N->PE	I_{Total}		100 kA
Nominal discharge current for class II test (8/20)	I_n		50 kA
Voltage protection level at I_{imp}	U_p	< 2 kV	< 2.5 kV
Temporary overvoltage test (TOV) for $t_T = 5$ s	U_T	337 V	581 V
Temporary overvoltage test (TOV) for $t_T = 120$ min	U_T	440 V	762 V
Maximal back-up fuse			500 A gL/gG
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	25 kA _{rms}	3 kA _{rms}
Follow current interrupt rating	I_{fi}	25 kA _{rms}	3 kA _{rms}
Housing material		Polyamid PA6, UL94 V-0	
Degree of protection		IP20	
Operating temperature	ϑ	-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 mm ² (L, N) 16 mm ² (PE, PEN)	
Clamp fastening range (stranded conductor)		2.5 ÷ 16 mm ²	
Operating position		Any	
Importance of local signaling – LED version		OK – green light on, FAULT – green light off	
Importance of local signaling – S version		OK – green light on, FAULT – red light on	
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 0.5 A, DC: 250 V / 0.1 A	
Article number	HLA50-*/2+0	10 971	10 952
	HLA50-*/2+0 LED	10 980	10 963
	HLA50-*/2+0 S	10 976	10 958



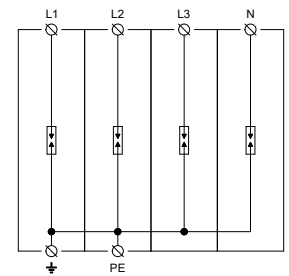
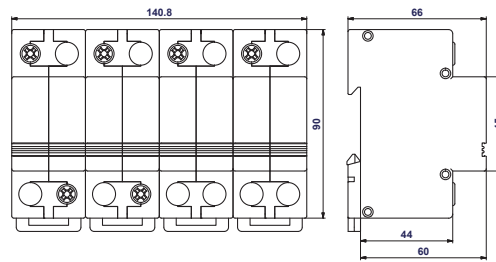
HLA50-255/3+0 (LED) (S), HLA50-440/3+0 (LED) (S)

- Lightning impulse current arresters type T1 ensure the equipotential bonding and eliminate the effects of lightning current in single-phase and three-phase power supply systems.
- Products contain multiple non-exhausting spark gaps, thanks to which they are able to discharge the highest lightning impulse current.
- Suitable for objects with considerable levels of protection LPL I and LPL II, such as big industrial complexes and properties of particular importance – hospitals, banks, power plants.
- Installed as close as possible the overhead line enters the building

i.e. the electric power substation, electrometer or the main distribution boards.

- If the product contains two PE (or PEN) terminals, it must not be used as a PE (PEN) bridge.
- **LED** indication specifies a version with LED fault signalisation.
- **S** indication specifies a version with remote monitoring and LED fault signalisation.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

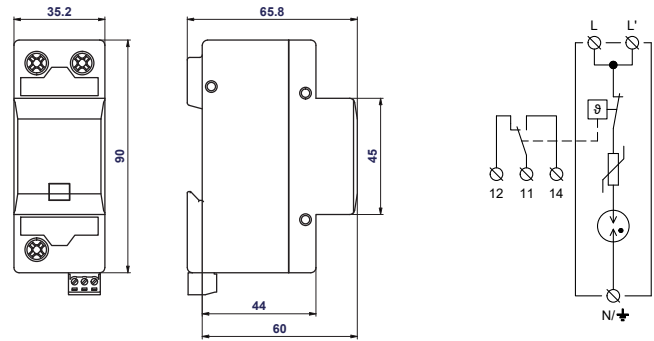
Type		HLA50-255/3+0, HLA50-255/3+0 LED, HLA50-255/3+0 S	HLA50-440/3+0, HLA50-440/3+0 LED, HLA50-440/3+0 S
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)			T1
System			TN-C
Number of poles			3
Rated operating AC voltage	U_N		230 V
Maximum continuous operating voltage AC	U_C		255 V
Impulse discharge current for class I test (10/350)	I_{imp}		50 kA
Charge	Q		25 As
Specific energy for class I test	W/R		625 kJ/Ω
Total discharge current (10/350) L1+L2+L3->PEN	I_{Total}		150 kA
Nominal discharge current for class II test (8/20)	I_n		50 kA
Voltage protection level at I_{imp}	U_p	< 2 kV	< 2.5 kV
Temporary overvoltage test (TOV) for $t_T = 5$ s	U_T	337 V	581 V
Temporary overvoltage test (TOV) for $t_T = 120$ min	U_T	440 V	762 V
Maximal back-up fuse			500 A gL/gG
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	25 kA _{rms}	3 kA _{rms}
Follow current interrupt rating	I_{fi}	25 kA _{rms}	3 kA _{rms}
Housing material		Polyamid PA6, UL94 V-0	
Degree of protection		IP20	
Operating temperature	ϑ	-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 mm ² (L, N) 16 mm ² (PE, PEN)	
Clamp fastening range (stranded conductor)		2.5 ÷ 16 mm ²	
Operating position		Any	
Importance of local signaling – LED version		OK – green light on, FAULT – green light off	
Importance of local signaling – S version		OK – green light on, FAULT – red light on	
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 0.5 A, DC: 250 V / 0.1 A	
Article number	HLA50-*/3+0	10 972	10 953
	HLA50-*/3+0 LED	10 981	10 964
	HLA50-*/3+0 S	10 977	10 959



HLA50-255/4+0 (LED) (S), HLA50-440/4+0 (LED) (S)

- Lightning impulse current arresters type T1 ensure the equipotential bonding and eliminate the effects of lightning current in single-phase and three-phase power supply systems.
- Products contain multiple non-exhausting spark gaps, thanks to which they are able to discharge the highest lightning impulse current.
- Suitable for objects with considerable levels of protection LPL I and LPL II, such as big industrial complexes and properties of particular importance – hospitals, banks, power plants.
- Installed as close as possible the overhead line enters the building
- i.e. the electric power substation, electrometer or the main distribution boards.
- If the product contains two PE (or PEN) terminals, it must not be used as a PE (PEN) bridge.
- **LED** indication specifies a version with LED fault signalisation.
- **S** indication specifies a version with remote monitoring and LED fault signalisation.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

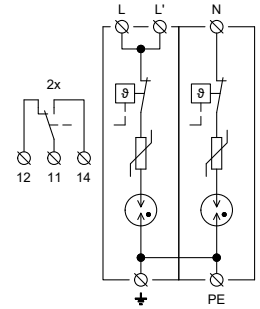
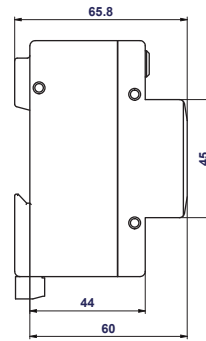
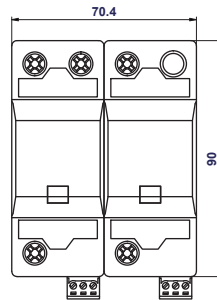
Type		HLA50-255/4+0, HLA50-255/4+0 LED, HLA50-255/4+0 S	HLA50-440/4+0, HLA50-440/4+0 LED, HLA50-440+0 S
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)			T1
System			TN-S
Number of poles			4
Rated operating AC voltage	U_N		230 V
Maximum continuous operating voltage AC	U_C		255 V
Impulse discharge current for class I test (10/350)	I_{imp}		50 kA
Charge	Q		25 As
Specific energy for class I test	W/R		625 kJ/Ω
Total discharge current (10/350) L1+L2+L3+N->PE	I_{Total}		200 kA
Nominal discharge current for class II test (8/20)	I_n		50 kA
Voltage protection level at I_{imp}	U_p	< 2 kV	< 2.5 kV
Temporary overvoltage test (TOV) for $t_T = 5$ s	U_T	337 V	581 V
Temporary overvoltage test (TOV) for $t_T = 120$ min	U_T	440 V	762 V
Maximal back-up fuse			500 A gL/gG
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	25 kA _{rms}	3 kA _{rms}
Follow current interrupt rating	I_{fi}	25 kA _{rms}	3 kA _{rms}
Housing material		Polyamid PA6, UL94 V-0	
Degree of protection		IP20	
Operating temperature	ϑ	-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 mm ² (L, N) 16 mm ² (PE, PEN)	
Clamp fastening range (stranded conductor)		2.5 ÷ 16 mm ²	
Operating position		Any	
Importance of local signaling – LED version		OK – green light on, FAULT – green light off	
Importance of local signaling – S version		OK – green light on, FAULT – red light on	
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 0.5 A, DC: 250 V / 0.1 A	
Article number	HLA50-*/4+0	10 973	10 955
	HLA50-*/4+0 LED	10 982	10 965
	HLA50-*/4+0 S	10 978	10 961



HLSA25G-255 (S)

- Lightning impulse current and surge arresters type T1+T2+T3.
- The products consist of varistors with big discharge ability.
- HLSA25 in configurations 1+1, 3+1 and HLSA25G are additionally combined with a gas discharge tube which ensures zero leakage current through the PE conductor.
- Suitable for objects with considerable levels of protection LPL I and LPL II.
- 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.
- In case of the installation of a type T1+T2+T3 in the main switchboard, it is also necessary to install type 2 and 3 in any additional distribution boards in the electrical installation.
- 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.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

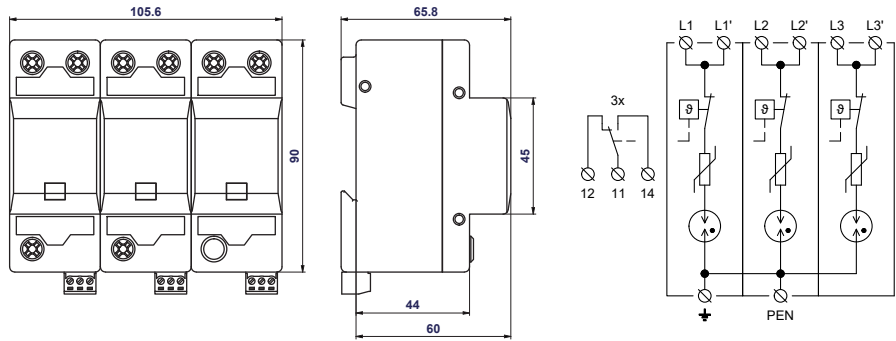
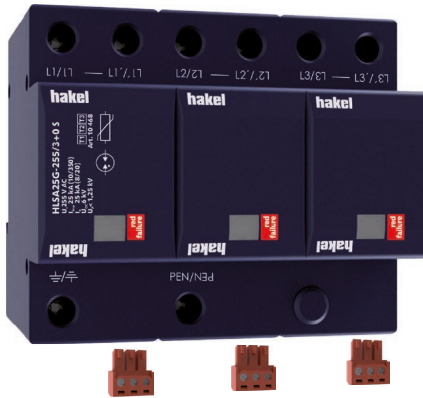
Type	HLSA25G-255, HLSA25G-255 S	
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)	T1, T2, T3	
System	TN	
Number of poles	1	
Rated operating AC voltage	U_N	230 V
Maximum continuous operating voltage AC	U_C	255 V
Maximum discharge current (8/20)	I_{max}	50 kA
Impulse discharge current for class I test (10/350)	I_{imp}	25 kA
Charge	Q	12.5 As
Specific energy for class I test	W/R	156 kJ/Ω
Nominal discharge current for class II test (8/20)	I_n	25 kA
Open circuit voltage of the combination wave generator	U_{OC}	6 kV
Voltage protection level at I_n	U_p	< 1.25 kV
Temporary overvoltage test (TOV) for $t_T = 5$ s	U_T	337 V
Temporary overvoltage test (TOV) for $t_T = 120$ min	U_T	440 V
Maximal back-up fuse	250 A gL/gG	
Maximal back-up fuse („V“ connection)	125 A gL/gG	
Residual current	I_{PE}	≤ 5 μA
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	80 kA _{rms}
Housing material	Polyamid PA6, UL94 V-0	
Degree of protection	IP20	
Operating temperature	ϑ	-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 mm ² (L, N) 16 mm ² (PE, PEN)
Clamp fastening range (stranded conductor)	2.5 ÷ 25 mm ²	
Operating position	Any	
Importance of local signaling	OK – clear target, FAULT – red target	
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)	AC: 250 V / 1.5 A, DC: 250 V / 0.1 A	
Article number	HLSA25G-255	10 462
	HLSA25G-255 S	10 466



HLSA25G-255/2+0 (S)

- Lightning impulse current and surge arresters type T1+T2+T3.
- The products consist of varistors with big discharge ability.
- HLSA25 in configurations 1+1, 3+1 and HLSA25G are additionally combined with a gas discharge tube which ensures zero leakage current through the PE conductor.
- Suitable for objects with considerable levels of protection LPL I and LPL II.
- 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.
- In case of the installation of a type T1+T2+T3 in the main switchboard, it is also necessary to install type 2 and 3 in any additional distribution boards in the electrical installation.
- 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.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

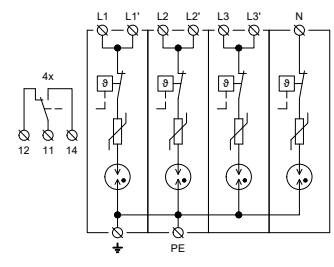
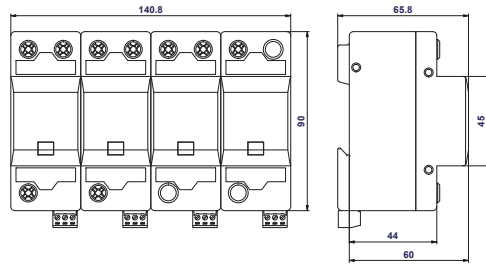
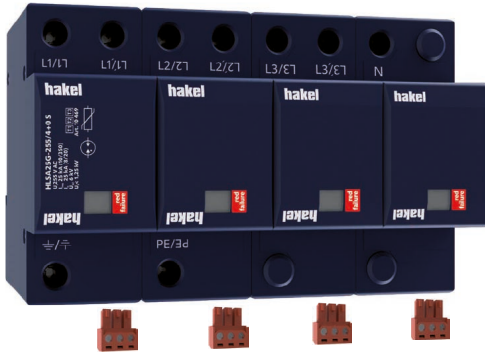
Type		HLSA25G-255/2+0, HLSA25G-255/2+0 S
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T1, T2, T3
System		TN-S, TT
Number of poles		2
Rated operating AC voltage	U_N	230 V
Maximum continuous operating voltage AC	U_C	255 V
Maximum discharge current (8/20)	I_{max}	50 kA
Impulse discharge current for class I test (10/350)	I_{imp}	25 kA
Charge	Q	12.5 As
Specific energy for class I test	W/R	156 kJ/Ω
Total discharge current (10/350) L+N->PE	I_{Total}	50 kA
Total discharge current (8/20) L+N->PE	I_{Total}	100 kA
Nominal discharge current for class II test (8/20)	I_n	25 kA
Open circuit voltage of the combination wave generator	U_{OC}	6 kV
Voltage protection level at I_n	U_p	< 1.25 kV
Temporary overvoltage test (TOV) for $t_T = 5$ s	U_T	337 V
Temporary overvoltage test (TOV) for $t_T = 120$ min	U_T	440 V
Maximal back-up fuse		250 A gL/gG
Maximal back-up fuse („V“ connection)		125 A gL/gG
Residual current	I_{PE}	≤ 5 μA
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	80 kA _{rms}
Housing material		Polyamid PA6, UL94 V-0
Degree of protection		IP20
Operating temperature	θ	-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 mm ² (L, N) 16 mm ² (PE, PEN)
Clamp fastening range (stranded conductor)		2.5 ÷ 25 mm ²
Operating position		Any
Importance of local signaling		OK – clear target, FAULT – red target
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A
Article number	HLSA25G-255/2+0	10 463
	HLSA25G-255/2+0 S	10 467



HLSA25G-255/3+0 (S)

- Lightning impulse current and surge arresters type T1+T2+T3.
- The products consist of varistors with big discharge ability.
- HLSA25 in configurations 1+1, 3+1 and HLSA25G are additionally combined with a gas discharge tube which ensures zero leakage current through the PE conductor.
- Suitable for objects with considerable levels of protection LPL I and LPL II.
- 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.
- In case of the installation of a type T1+T2+T3 in the main switchboard, it is also necessary to install type 2 and 3 in any additional distribution boards in the electrical installation.
- 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.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

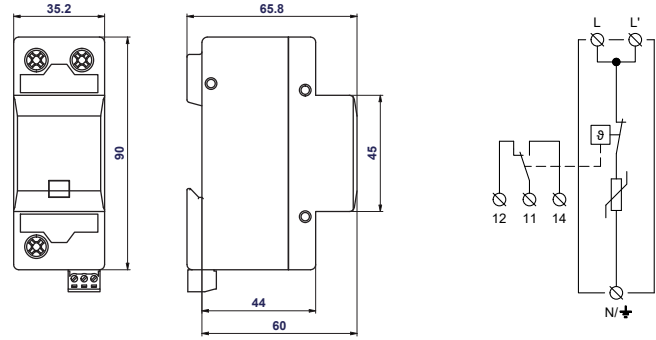
Type	HLSA25G-255/3+0, HLSA25G-255/3+0 S	
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)	T1, T2, T3	
System	TN-C	
Number of poles	3	
Rated operating AC voltage	U_N	230 V
Maximum continuous operating voltage AC	U_C	255 V
Maximum discharge current (8/20)	I_{max}	50 kA
Impulse discharge current for class I test (10/350)	I_{imp}	25 kA
Charge	Q	12.5 As
Specific energy for class I test	W/R	156 kJ/Ω
Total discharge current (10/350) L1+L2+L3->PEN	I_{Total}	75 kA
Total discharge current (8/20) L1+L2+L3->PEN	I_{Total}	150 kA
Nominal discharge current for class II test (8/20)	I_n	25 kA
Open circuit voltage of the combination wave generator	U_{OC}	6 kV
Voltage protection level at I_n	U_p	< 1.25 kV
Temporary overvoltage test (TOV) for $t_T = 5$ s	U_T	337 V
Temporary overvoltage test (TOV) for $t_T = 120$ min	U_T	440 V
Maximal back-up fuse	250 A gL/gG	
Maximal back-up fuse („V“ connection)	125 A gL/gG	
Residual current	I_{PE}	≤ 5 μA
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	80 kA _{rms}
Housing material	Polyamid PA6, UL94 V-0	
Degree of protection	IP20	
Operating temperature	ϑ	-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 mm ² (L, N) 16 mm ² (PE, PEN)
Clamp fastening range (stranded conductor)	2.5 ÷ 25 mm ²	
Operating position	Any	
Importance of local signaling	OK – clear target, FAULT – red target	
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)	AC: 250 V / 1.5 A, DC: 250 V / 0.1 A	
Article number	HLSA25G-255/3+0	10 464
	HLSA25G-255/3+0 S	10 468



HLSA25G-255/4+0 (S)

- Lightning impulse current and surge arresters type T1+T2+T3.
- The products consist of varistors with big discharge ability.
- HLSA25 in configurations 1+1, 3+1 and HLSA25G are additionally combined with a gas discharge tube which ensures zero leakage current through the PE conductor.
- Suitable for objects with considerable levels of protection LPL I and LPL II.
- 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.
- In case of the installation of a type T1+T2+T3 in the main switchboard, it is also necessary to install type 2 and 3 in any additional distribution boards in the electrical installation.
- 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.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

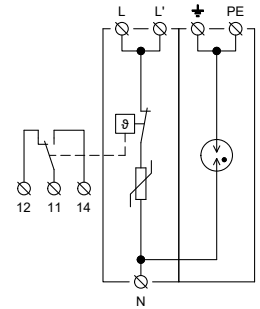
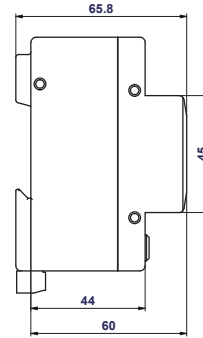
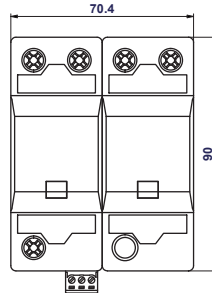
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Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T1, T2, T3
System		TN
Number of poles		1
Rated operating AC voltage	U_N	230 V
Maximum continuous operating voltage AC	U_C	275 V
Maximum discharge current (8/20)	I_{max}	50 kA
Impulse discharge current for class I test (10/350)	I_{imp}	25 kA
Charge	Q	12.5 As
Specific energy for class I test	W/R	156 kJ/Ω
Nominal discharge current for class II test (8/20)	I_n	25 kA
Open circuit voltage of the combination wave generator	U_{OC}	6 kV
Voltage protection level at I_n	U_p	< 1.25 kV
Temporary overvoltage test (TOV) for $t_T = 5$ s	U_T	337 V
Temporary overvoltage test (TOV) for $t_T = 120$ min	U_T	440 V
Maximal back-up fuse		250 A gL/gG
Maximal back-up fuse („V“ connection)		125 A gL/gG
Residual current	I_{PE}	≤ 1 400 μA
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	80 kA _{rms}
Housing material		Polyamid PA6, UL94 V-0
Degree of protection		IP20
Operating temperature	ϑ	-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 mm ² (L, N) 16 mm ² (PE, PEN)
Clamp fastening range (stranded conductor)		2.5 ÷ 25 mm ²
Operating position		Any
Importance of local signaling		OK – clear target, FAULT – red target
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A
Article number	HLSA25G-255/4+0	10 465
	HLSA25G-255/4+0 S	10 469



HLSA25-275 (S)

- Lightning impulse current and surge arresters type T1+T2+T3.
- The products consist of varistors with big discharge ability.
- HLSA25 in configurations 1+1, 3+1 and HLSA25G are additionally combined with a gas discharge tube which ensures zero leakage current through the PE conductor.
- Suitable for objects with considerable levels of protection LPL I and LPL II.
- 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.
- In case of the installation of a type T1+T2+T3 in the main switchboard, it is also necessary to install type 2 and 3 in any additional distribution boards in the electrical installation.
- 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.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

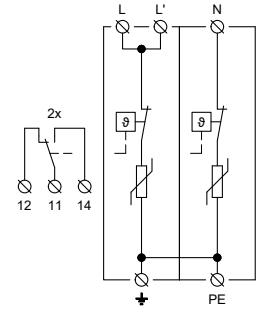
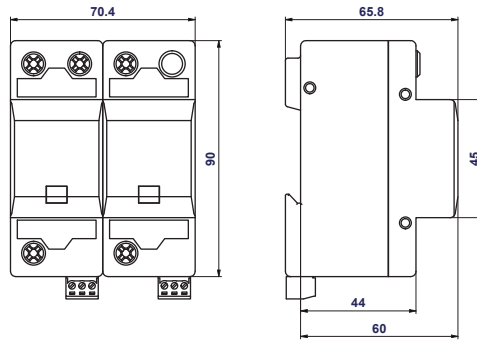
Type	HLSA25-275, HLSA25-275 S	
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)	T1, T2, T3	
System	TN	
Number of poles	1	
Rated operating AC voltage	U_N	230 V
Maximum continuous operating voltage AC	U_C	275 V
Maximum discharge current (8/20)	I_{max}	50 kA
Impulse discharge current for class I test (10/350)	I_{imp}	25 kA
Charge	Q	12.5 As
Specific energy for class I test	W/R	156 kJ/Ω
Nominal discharge current for class II test (8/20)	I_n	25 kA
Open circuit voltage of the combination wave generator	U_{OC}	6 kV
Voltage protection level at I_n	U_p	< 1.2 kV
Temporary overvoltage test (TOV) for $t_T = 5$ s	U_T	337 V
Temporary overvoltage test (TOV) for $t_T = 120$ min	U_T	440 V
Maximal back-up fuse	250 A gL/gG	
Maximal back-up fuse („V“ connection)	125 A gL/gG	
Residual current	I_{PE}	≤ 5 μA
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	80 kA _{rms}
Housing material	Polyamid PA6, UL94 V-0	
Degree of protection	IP20	
Operating temperature	ϑ	-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 mm ² (L, N) 16 mm ² (PE, PEN)
Clamp fastening range (stranded conductor)	2.5 ÷ 25 mm ²	
Operating position	Any	
Importance of local signaling	OK – clear target, FAULT – red target	
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)	AC: 250 V / 1.5 A, DC: 250 V / 0.1 A	
Article number	HLSA25-275	10 450
	HLSA25-275 S	10 456



HLSA25-275/1+1 (S)

- Lightning impulse current and surge arresters type T1+T2+T3.
- The products consist of varistors with big discharge ability.
- HLSA25 in configurations 1+1, 3+1 and HLSA25G are additionally combined with a gas discharge tube which ensures zero leakage current through the PE conductor.
- Suitable for objects with considerable levels of protection LPL I and LPL II.
- 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.
- In case of the installation of a type T1+T2+T3 in the main switchboard, it is also necessary to install type 2 and 3 in any additional distribution boards in the electrical installation.
- 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.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

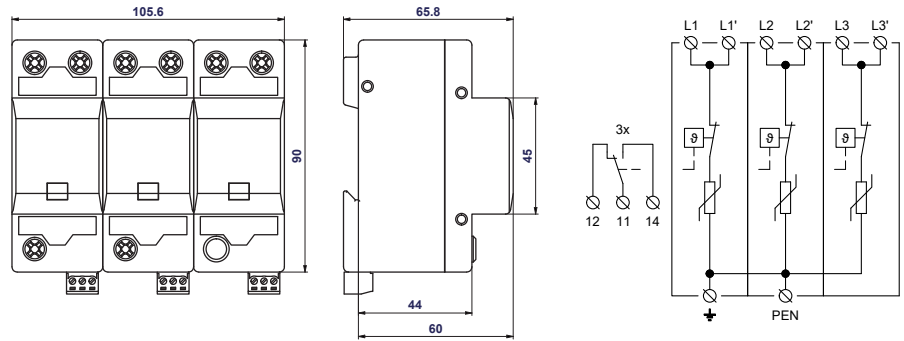
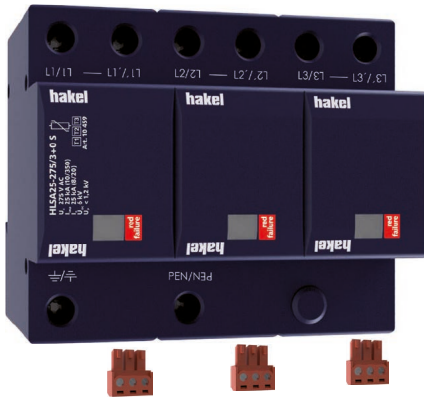
Type		HLSA25-275/1+1, HLSA25-275/1+1 S	
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T1, T2, T3	
System		TN-S, TT	
Number of poles		2	
Rated operating AC voltage	U_N	230 V	
Maximum continuous operating voltage AC	U_C	275 V	
Maximum discharge current (8/20)	I_{max}	50 kA	
Impulse discharge current for class I test (10/350)	I_{imp}	25 kA (L/N)	50 kA (N/PE)
Charge	Q	12.5 As (L/N)	25 As (N/PE)
Specific energy for class I test	W/R	156 kJ/Ω (L/N)	625 kJ/Ω (N/PE)
Total discharge current L+N->PE	I_{Total}	50 kA (10/350)	100 kA (8/20)
Nominal discharge current for class II test (8/20)	I_n	25 kA	
Open circuit voltage of the combination wave generator	U_{OC}	6 kV	
Voltage protection level at I_n	U_p	< 1.2 kV (L/N)	< 1.5 kV (N/PE)
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	
Maximal back-up fuse		250 A gL/gG	
Maximal back-up fuse („V“ connection)		125 A gL/gG	
Residual current	I_{PE}	≤ 5 μA	
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	80 kA _{rms}	
Follow current interrupt rating (N/PE)	I_{fi}	0.1 kA _{rms}	
Housing material		Polyamid PA6, UL94 V-0	
Degree of protection		IP20	
Operating temperature	ϑ	-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 mm ² (L, N) 16 mm ² (PE, PEN)	
Clamp fastening range (stranded conductor)		2.5 ÷ 25 mm ²	
Operating position		Any	
Importance of local signaling		OK – clear target, FAULT – red target	
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A	
Article number	HLSA25-275/1+1	10 451	
	HLSA25-275/1+1 S	10 457	



HLSA25-275/2+0 (S)

- Lightning impulse current and surge arresters type T1+T2+T3.
- The products consist of varistors with big discharge ability.
- HLSA25 in configurations 1+1, 3+1 and HLSA25G are additionally combined with a gas discharge tube which ensures zero leakage current through the PE conductor.
- Suitable for objects with considerable levels of protection LPL I and LPL II.
- 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.
- In case of the installation of a type T1+T2+T3 in the main switchboard, it is also necessary to install type 2 and 3 in any additional distribution boards in the electrical installation.
- 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.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

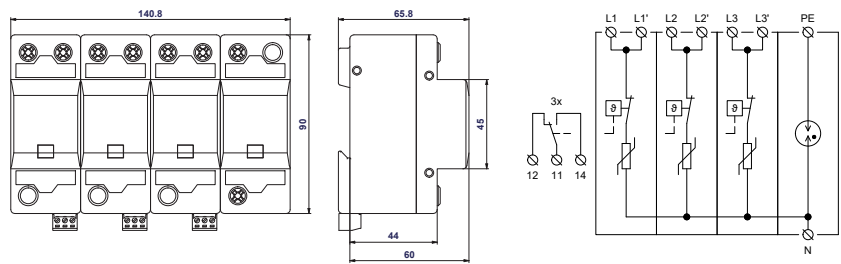
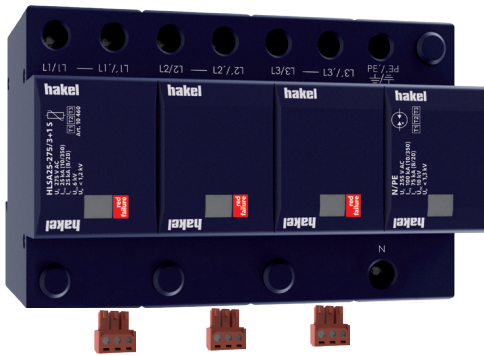
Type	HLSA25-275/2+0, HLSA25-275/2+0 S	
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T1, T2, T3
System		TN-C
Number of poles		3
Rated operating AC voltage	U_N	230 V
Maximum continuous operating voltage AC	U_C	275 V
Maximum discharge current (8/20)	I_{max}	50 kA
Impulse discharge current for class I test (10/350)	I_{imp}	25 kA
Charge	Q	12.5 As
Specific energy for class I test	W/R	156 kJ/Ω
Total discharge current (10/350) L1+L2+L3->PEN	I_{Total}	75 kA
Total discharge current (8/20) L1+L2+L3->PEN	I_{Total}	150 kA
Nominal discharge current for class II test (8/20)	I_n	25 kA
Open circuit voltage of the combination wave generator	U_{OC}	6 kV
Voltage protection level at I_n	U_p	< 1.2 kV
Temporary overvoltage test (TOV) for $t_T = 5$ s	U_T	337 V
Temporary overvoltage test (TOV) for $t_T = 120$ min	U_T	440 V
Maximal back-up fuse		250 A gL/gG
Maximal back-up fuse („V“ connection)		125 A gL/gG
Residual current	I_{PE}	≤ 300 μA
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	80 kA _{rms}
Housing material		Polyamid PA6, UL94 V-0
Degree of protection		IP20
Operating temperature	ϑ	-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 mm ² (L, N) 16 mm ² (PE, PEN)
Clamp fastening range (stranded conductor)		2.5 ÷ 25 mm ²
Operating position		Any
Importance of local signaling		OK – clear target, FAULT – red target
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A
Article number	HLSA25-275/2+0	10 452
	HLSA25-275/2+0 S	10 458



HLSA25-275/3+0 (S)

- Lightning impulse current and surge arresters type T1+T2+T3.
- The products consist of varistors with big discharge ability.
- HLSA25 in configurations 1+1, 3+1 and HLSA25G are additionally combined with a gas discharge tube which ensures zero leakage current through the PE conductor.
- Suitable for objects with considerable levels of protection LPL I and LPL II.
- 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.
- In case of the installation of a type T1+T2+T3 in the main switchboard, it is also necessary to install type 2 and 3 in any additional distribution boards in the electrical installation.
- 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.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

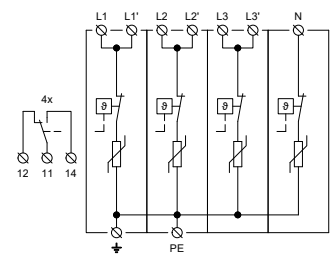
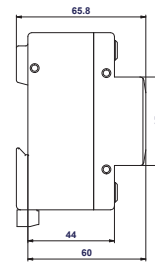
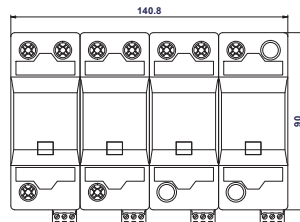
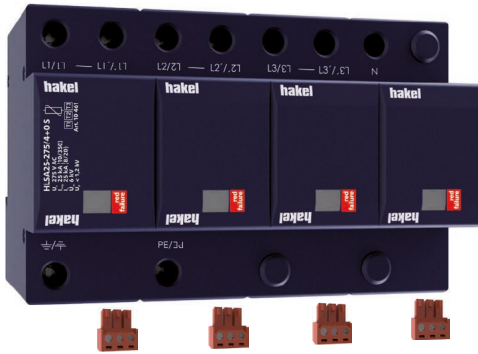
Type	HLSA25-275/3+0, HLSA25-275/3+0 S	
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T1, T2, T3
System		TN-C
Number of poles		3
Rated operating AC voltage	U_N	230 V
Maximum continuous operating voltage AC	U_C	275 V
Maximum discharge current (8/20)	I_{max}	50 kA
Impulse discharge current for class I test (10/350)	I_{imp}	25 kA
Charge	Q	12.5 As
Specific energy for class I test	W/R	156 kJ/Ω
Total discharge current (10/350) L1+L2+L3->PEN	I_{Total}	75 kA
Total discharge current (8/20) L1+L2+L3->PEN	I_{Total}	150 kA
Nominal discharge current for class II test (8/20)	I_n	25 kA
Open circuit voltage of the combination wave generator	U_{OC}	6 kV
Voltage protection level at I_n	U_p	< 1.2 kV
Temporary overvoltage test (TOV) for $t_T = 5$ s	U_T	337 V
Temporary overvoltage test (TOV) for $t_T = 120$ min	U_T	440 V
Maximal back-up fuse		250 A gL/gG
Maximal back-up fuse („V“ connection)		125 A gL/gG
Residual current	I_{PE}	≤ 300 μA
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	80 kA _{rms}
Housing material		Polyamid PA6, UL94 V-0
Degree of protection		IP20
Operating temperature	ϑ	-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 mm ² (L, N) 16 mm ² (PE, PEN)
Clamp fastening range (stranded conductor)		2.5 ÷ 25 mm ²
Operating position		Any
Importance of local signaling		OK – clear target, FAULT – red target
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A
Article number	HLSA25-275/3+0	10 453
	HLSA25-275/3+0 S	10 459



HLSA25-275/3+1 (S)

- Lightning impulse current and surge arresters type T1+T2+T3.
- The products consist of varistors with big discharge ability.
- HLSA25 in configurations 1+1, 3+1 and HLSA25G are additionally combined with a gas discharge tube which ensures zero leakage current through the PE conductor.
- Suitable for objects with considerable levels of protection LPL I and LPL II.
- 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.
- In case of the installation of a type T1+T2+T3 in the main switchboard, it is also necessary to install type 2 and 3 in any additional distribution boards in the electrical installation.
- 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.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

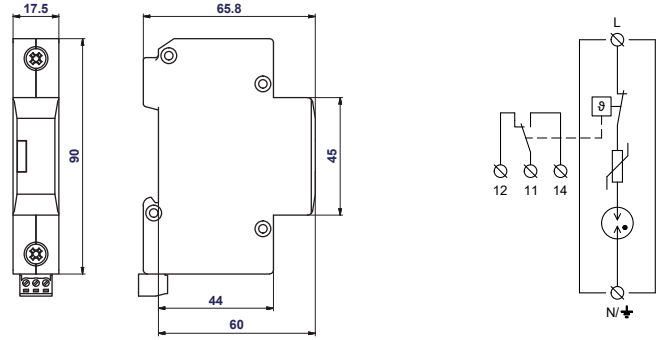
Type	HLSA25-275/3+1, HLSA25-275/3+1 S		
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)	T1, T2, T3		
System	TN-S, TT		
Number of poles	4		
Rated operating AC voltage	U_N	230 V	
Maximum continuous operating voltage AC	U_C	275 V	
Maximum discharge current (8/20)	I_{max}	50 kA	
Impulse discharge current for class I test (10/350)	I_{imp}	25 kA (L/N)	100 kA (N/PE)
Charge	Q	12.5 As (L/N)	50 As (N/PE)
Specific energy for class I test	W/R	156 kJ/Ω (L/N)	2 500 kJ/Ω (N/PE)
Total discharge current L1+L2+L3+N->PE	I_{Total}	100 kA (10/350)	150 kA (8/20)
Nominal discharge current for class II test (8/20)	I_n	25 kA	
Open circuit voltage of the combination wave generator	U_{OC}	6 kV	
Voltage protection level at I_n	U_p	< 1.2 kV (L/N)	< 1.5 kV (N/PE)
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	
Maximal back-up fuse	250 A gL/gG		
Maximal back-up fuse („V“ connection)	125 A gL/gG		
Residual current	I_{PE}	≤ 5 μA	
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	80 kA _{rms}	
Follow current interrupt rating (N/PE)	I_{fi}	0.1 kA _{rms}	
Housing material	Polyamid PA6, UL94 V-0		
Degree of protection	IP20		
Operating temperature	ϑ	-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 mm ² (L, N) 16 mm ² (PE, PEN)	
Clamp fastening range (stranded conductor)	2.5 ÷ 25 mm ²		
Operating position	Any		
Importance of local signaling	OK – clear target, FAULT – red target		
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)	AC: 250 V / 1.5 A, DC: 250 V / 0.1 A		
Article number	HLSA25-275/3+1	10 454	
	HLSA25-275/3+1 S	10 460	



HLSA25-275/4+0 (S)

- Lightning impulse current and surge arresters type T1+T2+T3.
- The products consist of varistors with big discharge ability.
- HLSA25 in configurations 1+1, 3+1 and HLSA25G are additionally combined with a gas discharge tube which ensures zero leakage current through the PE conductor.
- Suitable for objects with considerable levels of protection LPL I and LPL II.
- 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.
- In case of the installation of a type T1+T2+T3 in the main switchboard, it is also necessary to install type 2 and 3 in any additional distribution boards in the electrical installation.
- 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.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

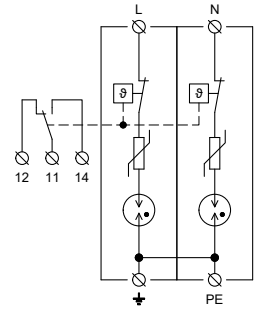
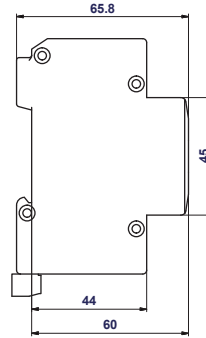
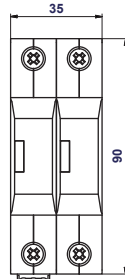
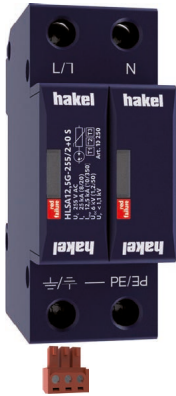
Type	HLSA25-275/4+0, HLSA25-275/4+0 S	
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T1, T2, T3
System		TN-S
Number of poles		4
Rated operating AC voltage	U_N	230 V
Maximum continuous operating voltage AC	U_C	275 V
Maximum discharge current (8/20)	I_{max}	50 kA
Impulse discharge current for class I test (10/350)	I_{imp}	25 kA
Charge	Q	12.5 As
Specific energy for class I test	W/R	156 kJ/Ω
Total discharge current (10/350) L1+L2+L3+N->PE	I_{Total}	100 kA
Total discharge current (8/20) L1+L2+L3+N->PE	I_{Total}	200 kA
Nominal discharge current for class II test (8/20)	I_n	25 kA
Open circuit voltage of the combination wave generator	U_{OC}	6 kV
Voltage protection level at I_n	U_p	< 1.2 kV
Temporary overvoltage test (TOV) for $t_T = 5$ s	U_T	337 V
Temporary overvoltage test (TOV) for $t_T = 120$ min	U_T	440 V
Maximal back-up fuse		250 A gL/gG
Maximal back-up fuse („V“ connection)		125 A gL/gG
Residual current	I_{PE}	≤ 300 μA
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	80 kA _{rms}
Housing material		Polyamid PA6, UL94 V-0
Degree of protection		IP20
Operating temperature	ϑ	-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 mm ² (L, N) 16 mm ² (PE, PEN)
Clamp fastening range (stranded conductor)		2.5 ÷ 25 mm ²
Operating position		Any
Importance of local signaling		OK – clear target, FAULT – red target
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A
Article number	HLSA25-275/4+0	10 455
	HLSA25-275/4+0 S	10 461



HLSA12,5G-255 (S)

- Lightning impulse current and surge arresters type T1+T2+T3.
- The products consist of varistors with big discharge ability.
- HLSA12,5 in configurations 1+1, 3+1 and HLSA12,5G are additionally combined with a gas discharge tube which ensures zero leakage current through the PE conductor.
- Suitable for objects with considerable levels of protection LPL III and LPL IV.
- 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.
- In case of the installation of a type T1+T2+T3 in the main switchboard, it is also necessary to install type T2 and T3 in any additional distribution boards in the electrical installation.
- 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.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

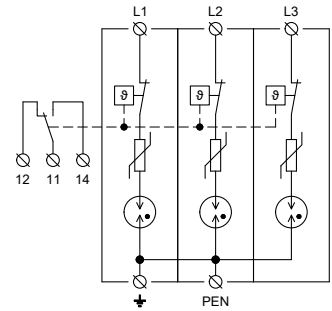
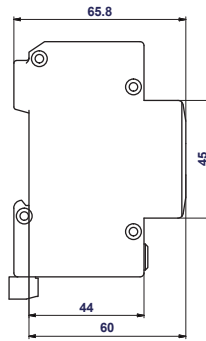
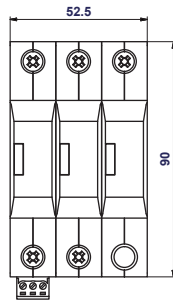
Type	HLSA12,5G-255, HLSA12,5G-255 S	
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T1, T2, T3
System		TN
Number of poles		1
Rated operating AC voltage	U_N	230 V
Maximum continuous operating voltage AC	U_C	255 V
Maximum discharge current (8/20)	I_{max}	50 kA
Impulse discharge current for class I test (10/350)	I_{imp}	12.5 kA
Charge	Q	6.25 As
Specific energy for class I test	W/R	39 kJ/Ω
Nominal discharge current for class II test (8/20)	I_n	25 kA
Open circuit voltage of the combination wave generator	U_{OC}	6 kV
Voltage protection level at I_n	U_p	< 1.1 kV
Temporary overvoltage test (TOV) for $t_r = 5$ s	U_T	337 V
Temporary overvoltage test (TOV) for $t_r = 120$ min	U_T	440 V
Maximal back-up fuse		160 A gL/gG
Residual current	I_{PE}	≤ 5 μA
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	60 kA _{rms}
Housing material		Polyamid PA6, UL94 V-0
Degree of protection		IP20
Operating temperature	ϑ	-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 mm ² (L, N) 16 mm ² (PE, PEN)
Clamp fastening range (stranded conductor)		1.5 ÷ 16 mm ²
Installation		On DIN rail 35 mm
Operating position		Any
Importance of local signaling		OK – clear target FAULT – red target
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A
Article number	HLSA12,5G-255	10 246
	HLSA12,5G-255 S	10 247



HLSA12,5G-255/2+0 (S)

- Lightning impulse current and surge arresters type T1+T2+T3.
- The products consist of varistors with big discharge ability.
- HLSA12,5 in configurations 1+1, 3+1 and HLSA12,5G are additionally combined with a gas discharge tube which ensures zero leakage current through the PE conductor.
- Suitable for objects with considerable levels of protection LPL III and LPL IV.
- 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.
- In case of the installation of a type T1+T2+T3 in the main switchboard, it is also necessary to install type T2 and T3 in any additional distribution boards in the electrical installation.
- 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.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

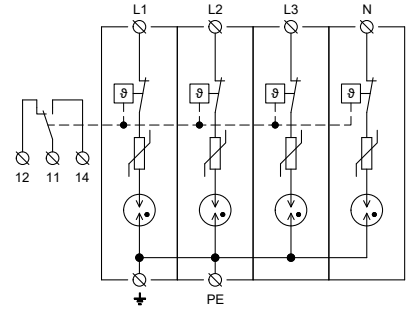
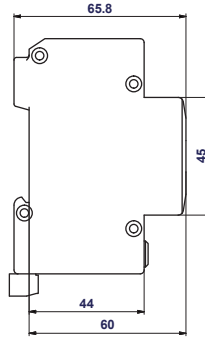
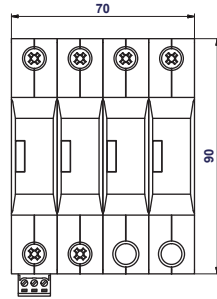
Type	HLSA12,5G-255/2+0, HLSA12,5G-255/2+0 S	
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)	T1, T2, T3	
System	TN-S	
Number of poles	2	
Rated operating AC voltage	U_N	230 V
Maximum continuous operating voltage AC	U_C	255 V
Maximum discharge current (8/20)	I_{max}	50 kA
Impulse discharge current for class I test (10/350)	I_{imp}	12.5 kA
Charge	Q	6.25 As
Specific energy for class I test	W/R	39 kJ/Ω
Total discharge current (10/350) L+N->PE	I_{Total}	25 kA
Total discharge current (8/20) L+N->PE	I_{Total}	100 kA
Nominal discharge current for class II test (8/20)	I_n	25 kA
Open circuit voltage of the combination wave generator	U_{OC}	6 kV
Voltage protection level at I_n	U_p	< 1.1 kV
Temporary overvoltage test (TOV) for $t_T = 5$ s	U_T	337 V
Temporary overvoltage test (TOV) for $t_T = 120$ min	U_T	440 V
Maximal back-up fuse	160 A gL/gG	
Residual current	I_{PE}	≤ 5 μA
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	60 kA _{rms}
Housing material	Polyamid PA6, UL94 V-0	
Degree of protection	IP20	
Operating temperature	ϑ	-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 mm ² (L, N) 16 mm ² (PE, PEN)
Clamp fastening range (stranded conductor)	1.5 ÷ 16 mm ²	
Installation	On DIN rail 35 mm	
Operating position	Any	
Importance of local signaling	OK – clear target FAULT – red target	
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)	AC: 250 V / 1.5 A, DC: 250 V / 0.1 A	
Article number	HLSA12,5G-255/2+0 S	10 249
	HLSA12,5G-255/2+0 S	10 250



HLSA12,5G-255/3+0 (S)

- Lightning impulse current and surge arresters type T1+T2+T3.
- The products consist of varistors with big discharge ability.
- HLSA12,5 in configurations 1+1, 3+1 and HLSA12,5G are additionally combined with a gas discharge tube which ensures zero leakage current through the PE conductor.
- Suitable for objects with considerable levels of protection LPL III and LPL IV.
- 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.
- In case of the installation of a type T1+T2+T3 in the main switchboard, it is also necessary to install type T2 and T3 in any additional distribution boards in the electrical installation.
- 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.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

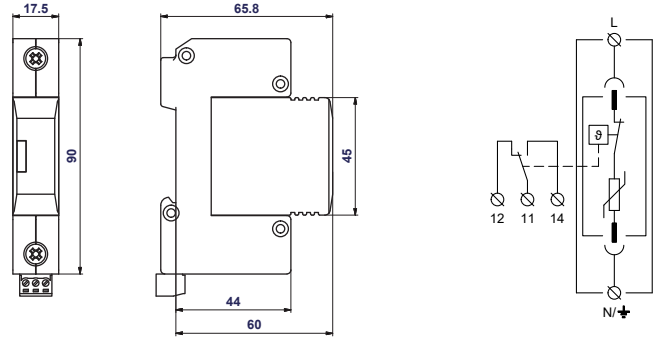
Type	HLSA12,5G-255/3+0, HLSA12,5G-255/3+0 S	
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T1, T2, T3
System		TN-C
Number of poles		3
Rated operating AC voltage	U_N	230 V
Maximum continuous operating voltage AC	U_C	255 V
Maximum discharge current (8/20)	I_{max}	50 kA
Impulse discharge current for class I test (10/350)	I_{imp}	12.5 kA
Charge	Q	6.25 As
Specific energy for class I test	W/R	39 kJ/Ω
Total discharge current (10/350) L1+L2+L3->PEN	I_{Total}	37.5 kA
Total discharge current (8/20) L1+L2+L3->PEN	I_{Total}	150 kA
Nominal discharge current for class II test (8/20)	I_n	25 kA
Open circuit voltage of the combination wave generator	U_{OC}	6 kV
Voltage protection level at I_n	U_p	< 1.1 kV
Temporary overvoltage test (TOV) for $t_T = 5$ s	U_T	337 V
Temporary overvoltage test (TOV) for $t_T = 120$ min	U_T	440 V
Maximal back-up fuse		160 A gL/gG
Residual current	I_{PE}	≤ 5 μA
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	60 kA _{rms}
Housing material		Polyamid PA6, UL94 V-0
Degree of protection		IP20
Operating temperature	θ	-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 mm ² (L, N) 16 mm ² (PE, PEN)
Clamp fastening range (stranded conductor)		1.5 ÷ 16 mm ²
Installation		On DIN rail 35 mm
Operating position		Any
Importance of local signaling		OK – clear target FAULT – red target
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A
Article number	HLSA12,5G-255/3+0	10 269
	HLSA12,5G-255/3+0 S	10 270



HLSA12,5G-255/4+0 (S)

- Lightning impulse current and surge arresters type T1+T2+T3.
- The products consist of varistors with big discharge ability.
- HLSA12,5 in configurations 1+1, 3+1 and HLSA12,5G are additionally combined with a gas discharge tube which ensures zero leakage current through the PE conductor.
- Suitable for objects with considerable levels of protection LPL III and LPL IV.
- 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.
- In case of the installation of a type T1+T2+T3 in the main switchboard, it is also necessary to install type T2 and T3 in any additional distribution boards in the electrical installation.
- 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.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

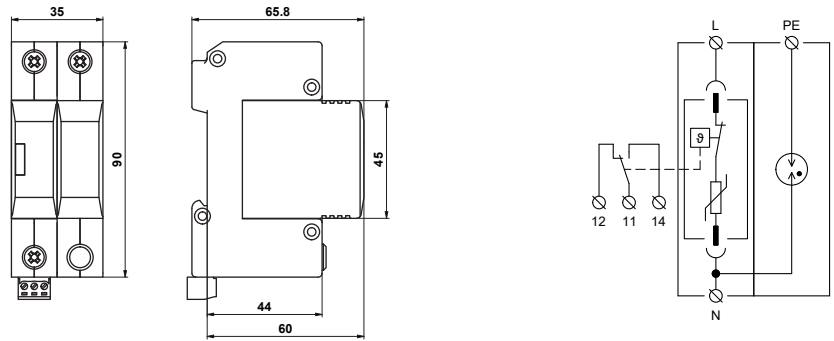
Type	HLSA12,5G-255/4+0, HLSA12,5G-255/4+0 S	
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)	T1, T2, T3	
System	TN-S, TT	
Number of poles	4	
Rated operating AC voltage	U_N	230 V
Maximum continuous operating voltage AC	U_C	255 V
Maximum discharge current (8/20)	I_{max}	50 kA
Impulse discharge current for class I test (10/350)	I_{imp}	12.5 kA
Charge	Q	6.25 As
Specific energy for class I test	W/R	39 kJ/Ω
Total discharge current (10/350) L1+L2+L3+N->PE	I_{Total}	50 kA
Total discharge current (8/20) L1+L2+L3+N->PE	I_{Total}	200 kA
Nominal discharge current for class II test (8/20)	I_n	25 kA
Open circuit voltage of the combination wave generator	U_{OC}	6 kV
Voltage protection level at I_n	U_p	< 1.1 kV
Temporary overvoltage test (TOV) for $t_T = 5$ s	U_T	337 V
Temporary overvoltage test (TOV) for $t_T = 120$ min	U_T	440 V
Maximal back-up fuse	160 A gL/gG	
Residual current	I_{PE}	≤ 5 μA
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	60 kA _{rms}
Housing material	Polyamid PA6, UL94 V-0	
Degree of protection	IP20	
Operating temperature	ϑ	-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 mm ² (L, N) 16 mm ² (PE, PEN)
Clamp fastening range (stranded conductor)	1.5 ÷ 16 mm ²	
Installation	On DIN rail 35 mm	
Operating position	Any	
Importance of local signaling	OK – clear target FAULT – red target	
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)	AC: 250 V / 1.5 A, DC: 250 V / 0.1 A	
Article number	HLSA12,5G-255/4+0	10 267
	HLSA12,5G-255/4+0 S	10 268



HLSA12,5-275 M (S)

- Lightning impulse current and surge arresters type T1+T2+T3.
- The products consist of varistors with big discharge ability.
- HLSA12,5 in configurations 1+1, 3+1 and HLSA12,5G are additionally combined with a gas discharge tube which ensures zero leakage current through the PE conductor.
- Suitable for objects with considerable levels of protection LPL III and LPL IV.
- 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.
- In case of the installation of a type T1+T2+T3 in the main switchboard, it is also necessary to install type T2 and T3 in any additional distribution boards in the electrical installation.
- If the product contains two PE (or PEN) terminals, it must not be used as a PE (PEN) bridge.
- **M** indication specifies a type of construction with removable module. **S** indication specifies a version with remote monitoring.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

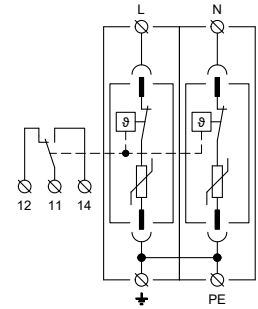
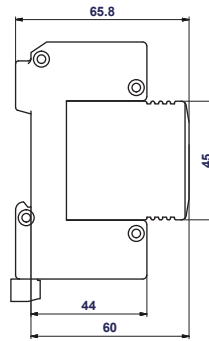
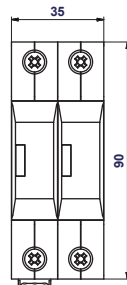
Type	HLSA12,5-275 M, HLSA12,5-275 M S	
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T1, T2, T3
System		TN
Number of poles		1
Rated operating AC voltage	U_N	230 V
Maximum continuous operating voltage AC	U_C	275 V
Maximum discharge current (8/20)	I_{max}	50 kA
Impulse discharge current for class I test (10/350)	I_{imp}	12.5 kA
Charge	Q	6.25 As
Specific energy for class I test	W/R	39 kJ/Ω
Nominal discharge current for class II test (8/20)	I_n	25 kA
Open circuit voltage of the combination wave generator	U_{OC}	6 kV
Voltage protection level at I_n	U_p	< 1.25 kV
Temporary overvoltage test (TOV) for $t_r = 5$ s	U_T	337 V
Temporary overvoltage test (TOV) for $t_r = 120$ min	U_T	440 V
Maximal back-up fuse		160 A gL/gG
Residual current	I_{PE}	≤ 700 μA
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	60 kA _{rms}
Housing material		Polyamid PA6, UL94 V-0
Degree of protection		IP20
Operating temperature	ϑ	-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 mm ² (L, N) 16 mm ² (PE, PEN)
Clamp fastening range (stranded conductor)		1.5 ÷ 16 mm ²
Installation		On DIN rail 35 mm
Operating position		Any
Importance of local signaling		OK – clear target, FAULT – red target
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A
Article number of spare module		16 086
Article number	HLSA12,5-275 M	16 080
	HLSA12,5-275 M S	16 090



HLSA12,5-275/1+1 M (S)

- Lightning impulse current and surge arresters type T1+T2+T3.
- The products consist of varistors with big discharge ability.
- HLSA12,5 in configurations 1+1, 3+1 and HLSA12,5G are additionally combined with a gas discharge tube which ensures zero leakage current through the PE conductor.
- Suitable for objects with considerable levels of protection LPL III and LPL IV.
- 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.
- In case of the installation of a type T1+T2+T3 in the main switchboard, it is also necessary to install type T2 and T3 in any additional distribution boards in the electrical installation.
- If the product contains two PE (or PEN) terminals, it must not be used as a PE (PEN) bridge.
- **M** indication specifies a type of construction with removable module. **S** indication specifies a version with remote monitoring.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

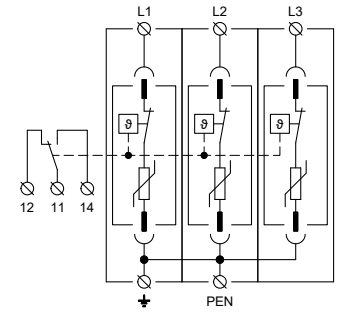
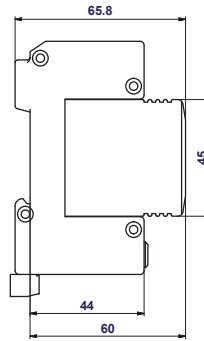
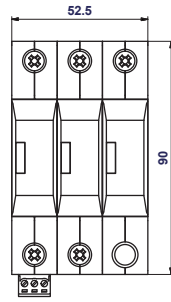
Type	HLSA12,5-275/1+1 M, HLSA12,5-275/1+1 M S		
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)	T1, T2, T3		
System	TN-S, TT		
Number of poles	2		
Rated operating AC voltage	U_N	230 V	
Maximum continuous operating voltage AC	U_C	275 V	
Maximum discharge current (8/20)	I_{max}	50 kA	
Impulse discharge current for class I test (10/350)	I_{imp}	12.5 kA	25 kA (N/PE)
Charge	Q	6.25 As	12.5 As (N/PE)
Specific energy for class I test	W/R	39 kJ/Ω	156 kJ/Ω (N/PE)
Total discharge current L+N->PE	I_{Total}	50 kA	50 kA (8/20)
Nominal discharge current for class II test (8/20)	I_n	25 kA	30 kA (N/PE)
Open circuit voltage of the combination wave generator	U_{OC}	6 kV	
Voltage protection level at I_n (L/N)	U_p	< 1.25 kV	< 1.4 kV (N/PE)
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	
Maximal back-up fuse	160 A gL/gG		
Residual current	I_{PE}	≤ 5 μA	
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	60 kA _{rms}	
Follow current interrupt rating (N/PE)	I_{fi}	0.1 kA _{rms}	
Housing material	Polyamid PA6, UL94 V-0		
Degree of protection	IP20		
Operating temperature	ϑ	-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 mm ² (L, N) 16 mm ² (PE, PEN)	
Clamp fastening range (stranded conductor)	1.5 ÷ 16 mm ²		
Installation	On DIN rail 35 mm		
Operating position	Any		
Importance of local signaling	OK – clear target, FAULT – red target		
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)	AC: 250 V / 1.5 A, DC: 250 V / 0.1 A		
Article number of spare module	16 086		
Article number	HLSA12,5-275/1+1 M	16 081	
	HLSA12,5-275/1+1 M S	16 091	



HLSA12,5-275/2+0 M (S)

- Lightning impulse current and surge arresters type T1+T2+T3.
- The products consist of varistors with big discharge ability.
- HLSA12,5 in configurations 1+1, 3+1 and HLSA12,5G are additionally combined with a gas discharge tube which ensures zero leakage current through the PE conductor.
- Suitable for objects with considerable levels of protection LPL III and LPL IV.
- 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.
- In case of the installation of a type T1+T2+T3 in the main switchboard, it is also necessary to install type T2 and T3 in any additional distribution boards in the electrical installation.
- If the product contains two PE (or PEN) terminals, it must not be used as a PE (PEN) bridge.
- **M** indication specifies a type of construction with removable module. **S** indication specifies a version with remote monitoring.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

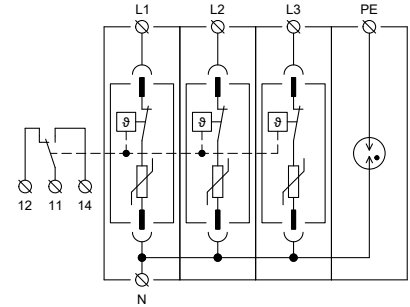
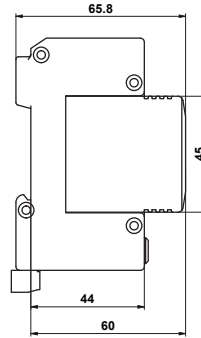
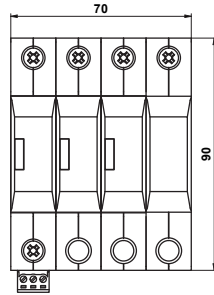
Type	HLSA12,5-275/2+0 M, HLSA12,5-275/2+0 M S	
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T1, T2, T3
System		TN-S
Number of poles		2
Rated operating AC voltage	U_N	230 V
Maximum continuous operating voltage AC	U_C	275 V
Maximum discharge current (8/20)	I_{max}	50 kA
Impulse discharge current for class I test (10/350)	I_{imp}	12.5 kA
Charge	Q	6.25 As
Specific energy for class I test	W/R	39 kJ/Ω
Total discharge current (10/350) L+N->PE	I_{Total}	25 kA
Total discharge current (8/20) L+N->PE	I_{Total}	100 kA
Nominal discharge current for class II test (8/20)	I_n	25 kA
Open circuit voltage of the combination wave generator	U_{OC}	6 kV
Voltage protection level at I_n	U_p	< 1.25 kV
Temporary overvoltage test (TOV) for $t_T = 5$ s	U_T	337 V
Temporary overvoltage test (TOV) for $t_T = 120$ min	U_T	440 V
Maximal back-up fuse		160 A gL/gG
Residual current	I_{PE}	≤ 700 μA
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	60 kA _{rms}
Housing material		Polyamid PA6, UL94 V-0
Degree of protection		IP20
Operating temperature	θ	-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 mm ² (L, N) 16 mm ² (PE, PEN)
Clamp fastening range (stranded conductor)		1.5 ÷ 16 mm ²
Installation		On DIN rail 35 mm
Operating position		Any
Importance of local signaling		OK – clear target, FAULT – red target
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A
Article number of spare module		16 086
Article number	HLSA12,5-275/2+0 M	16 082
	HLSA12,5-275/2+0 M S	16 092



HLSA12,5-275/3+0 M (S)

- Lightning impulse current and surge arresters type T1+T2+T3.
- The products consist of varistors with big discharge ability.
- HLSA12,5 in configurations 1+1, 3+1 and HLSA12,5G are additionally combined with a gas discharge tube which ensures zero leakage current through the PE conductor.
- Suitable for objects with considerable levels of protection LPL III and LPL IV.
- 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.
- In case of the installation of a type T1+T2+T3 in the main switchboard, it is also necessary to install type T2 and T3 in any additional distribution boards in the electrical installation.
- If the product contains two PE (or PEN) terminals, it must not be used as a PE (PEN) bridge.
- **M** indication specifies a type of construction with removable module. **S** indication specifies a version with remote monitoring.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

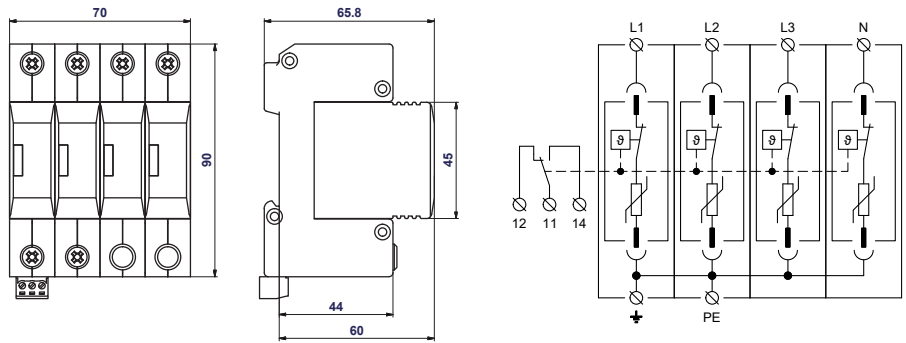
Type	HLSA12,5-275/3+0 M, HLSA12,5-275/3+0 M S	
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)	T1, T2, T3	
System	TN-C	
Number of poles	3	
Rated operating AC voltage	U_N	230 V
Maximum continuous operating voltage AC	U_C	275 V
Maximum discharge current (8/20)	I_{max}	50 kA
Impulse discharge current for class I test (10/350)	I_{imp}	12.5 kA
Charge	Q	6.25 As
Specific energy for class I test	W/R	39 kJ/Ω
Total discharge current (10/350) L1+L2+L3->PEN	I_{Total}	37.5 kA
Total discharge current (8/20) L1+L2+L3->PEN	I_{Total}	150 kA
Nominal discharge current for class II test (8/20)	I_n	25 kA
Open circuit voltage of the combination wave generator	U_{OC}	6 kV
Voltage protection level at I_n	U_p	< 1.25 kV
Temporary overvoltage test (TOV) for $t_T = 5$ s	U_T	337 V
Temporary overvoltage test (TOV) for $t_T = 120$ min	U_T	440 V
Maximal back-up fuse	160 A gL/gG	
Residual current	I_{PE}	≤ 300 μA
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	60 kA _{rms}
Housing material	Polyamid PA6, UL94 V-0	
Degree of protection	IP20	
Operating temperature	ϑ	-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 mm ² (L, N) 16 mm ² (PE, PEN)
Clamp fastening range (stranded conductor)	1.5 ÷ 16 mm ²	
Installation	On DIN rail 35 mm	
Operating position	Any	
Importance of local signaling	OK – clear target, FAULT – red target	
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)	AC: 250 V / 1.5 A, DC: 250 V / 0.1 A	
Article number of spare module	16 086	
Article number	HLSA12,5-275/3+0 M	16 083
	HLSA12,5-275/3+0 M S	16 093



HLSA12,5-275/3+1 M (S)

- Lightning impulse current and surge arresters type T1+T2+T3.
- The products consist of varistors with big discharge ability.
- HLSA12,5 in configurations 1+1, 3+1 and HLSA12,5G are additionally combined with a gas discharge tube which ensures zero leakage current through the PE conductor.
- Suitable for objects with considerable levels of protection LPL III and LPL IV.
- 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.
- In case of the installation of a type T1+T2+T3 in the main switchboard, it is also necessary to install type T2 and T3 in any additional distribution boards in the electrical installation.
- If the product contains two PE (or PEN) terminals, it must not be used as a PE (PEN) bridge.
- **M** indication specifies a type of construction with removable module. **S** indication specifies a version with remote monitoring.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

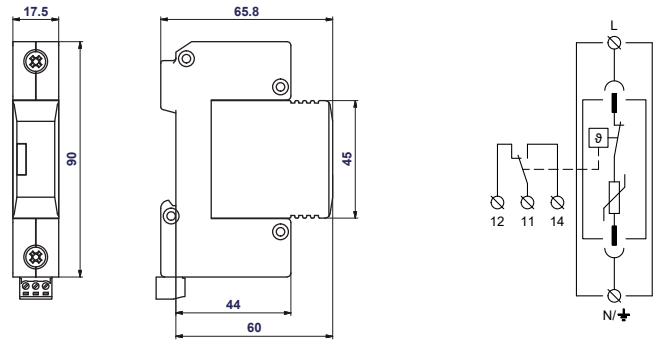
Type	HLSA12,5-275/3+1 M, HLSA12,5-275/3+1 M S		
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T1, T2, T3	
System		TN-S, TT	
Number of poles		4	
Rated operating AC voltage	U_N	230 V	
Maximum continuous operating voltage AC	U_C	275 V	
Maximum discharge current (8/20)	I_{max}	50 kA	
Impulse discharge current for class I test (10/350)	I_{imp}	12,5 kA (L/N)	50 kA (N/PE)
Charge	Q	6.25 As (L/N)	25 As (N/PE)
Specific energy for class I test	W/R	39 kJ/Ω (L/N)	625 kJ/Ω (N/PE)
Total discharge current L1+L2+L3+N->PE	I_{Total}	50 kA (10/350)	100 kA (8/20)
Nominal discharge current for class II test (8/20)	I_n	25 kA (L/N)	50 kA (N/PE)
Open circuit voltage of the combination wave generator	U_{OC}	6 kV	
Voltage protection level at I_n	U_p	< 1.25 kV (L/N)	< 1.5 kV (N/PE)
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	
Maximal back-up fuse		160 A gL/gG	
Residual current	I_{PE}	≤ 5 μA	
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	60 kA _{rms}	
Follow current interrupt rating (N/PE)	I_{fi}	0.1 kA _{rms}	
Housing material		Polyamid PA6, UL94 V-0	
Degree of protection		IP20	
Operating temperature	ϑ	-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 mm ² (L, N) 16 mm ² (PE, PEN)	
Clamp fastening range (stranded conductor)		1.5 ÷ 16 mm ²	
Installation		On DIN rail 35 mm	
Operating position		Any	
Importance of local signaling		OK – clear target, FAULT – red target	
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A	
Article number of spare module		16 086	
Article number	HLSA12,5-275/3+1 M	16 084	
	HLSA12,5-275/3+1 M S	16 094	



HLSA12,5-275/4+0 M (S)

- Lightning impulse current and surge arresters type T1+T2+T3.
- The products consist of varistors with big discharge ability.
- HLSA12,5 in configurations 1+1, 3+1 and HLSA12,5G are additionally combined with a gas discharge tube which ensures zero leakage current through the PE conductor.
- Suitable for objects with considerable levels of protection LPL III and LPL IV.
- 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.
- In case of the installation of a type T1+T2+T3 in the main switchboard, it is also necessary to install type T2 and T3 in any additional distribution boards in the electrical installation.
- If the product contains two PE (or PEN) terminals, it must not be used as a PE (PEN) bridge.
- **M** indication specifies a type of construction with removable module. **S** indication specifies a version with remote monitoring.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

Type	HLSA12,5-275/4+0 M, HLSA12,5-275/4+0 M S	
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T1, T2, T3
System		TN-S
Number of poles		4
Rated operating AC voltage	U_N	230 V
Maximum continuous operating voltage AC	U_C	275 V
Maximum discharge current (8/20)	I_{max}	50 kA
Impulse discharge current for class I test (10/350)	I_{imp}	12.5 kA
Charge	Q	6.25 As
Specific energy for class I test	W/R	39 kJ/Ω
Total discharge current (10/350) L1+L2+L3+N->PE	I_{Total}	50 kA
Total discharge current (8/20) L1+L2+L3+N->PE	I_{Total}	200 kA
Nominal discharge current for class II test (8/20)	I_n	25 kA
Open circuit voltage of the combination wave generator	U_{OC}	6 kV
Voltage protection level at I_n	U_p	< 1.25 kV
Temporary overvoltage test (TOV) for $t_T = 5$ s	U_T	337 V
Temporary overvoltage test (TOV) for $t_T = 120$ min	U_T	440 V
Maximal back-up fuse		160 A gL/gG
Residual current	I_{PE}	≤ 300 μA
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	60 kA _{rms}
Housing material		Polyamid PA6, UL94 V-0
Degree of protection		IP20
Operating temperature	ϑ	-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 mm ² (L, N) 16 mm ² (PE, PEN)
Clamp fastening range (stranded conductor)		1.5 ÷ 16 mm ²
Installation		On DIN rail 35 mm
Operating position		Any
Importance of local signaling		OK – clear target, FAULT – red target
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A
Article number of spare module		16 086
Article number	HLSA12,5-275/4+0 M	16 085
	HLSA12,5-275/4+0 M S	16 095

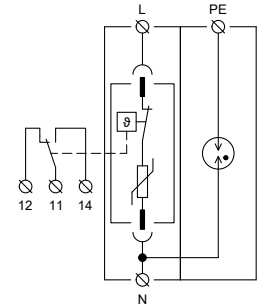
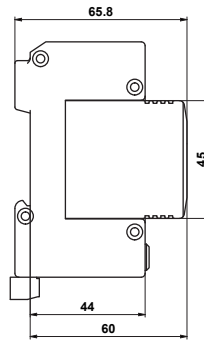
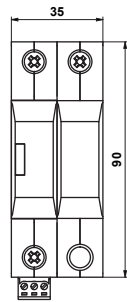


HSA-275 M (S)

- Surge arresters type T2+T3 ensure the equipotential bonding and reduce switching, induced and residual overvoltage in LV power supply systems.
- 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.
- Installed at the boundaries of LPZ 1 – LPZ 3 into subsidiary switchboards and control panels.

- If the product contains two PE (or PEN) terminals, it must not be used as a PE (PEN) bridge.
- **M** indication specifies a type of construction with removable module. **S** indication specifies a version with remote monitoring.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

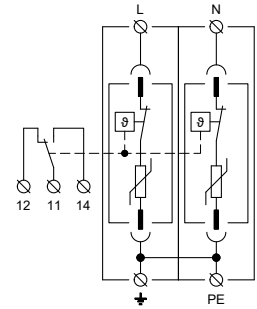
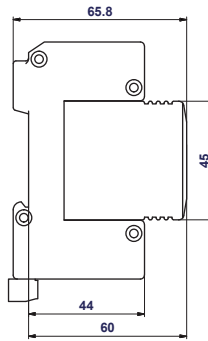
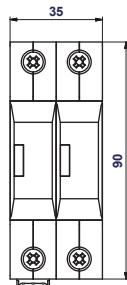
Type		HSA-275 M, HSA-275 M S
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T2, T3
System		TN
Number of poles		1
Rated operating AC voltage	U_N	230 V
Maximum continuous operating voltage AC	U_C	275 V
Maximum discharge current (8/20)	I_{max}	50 kA
Nominal discharge current for class II test (8/20)	I_n	20 kA
Open circuit voltage of the combination wave generator	U_{OC}	6 kV
Voltage protection level at I_n	U_p	< 1.25 kV
Voltage protection level at U_{OC}	U_p	< 0.85 kV
Temporary overvoltage test (TOV) for $t_T = 5$ s	U_T	337 V
Temporary overvoltage test (TOV) for $t_T = 120$ min	U_T	440 V
Maximal back-up fuse		160 A gL/gG
Residual current	I_{PE}	≤ 450 μA
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	60 kA _{rms}
Housing material		Polyamid PA6, UL94 V-0
Degree of protection		IP20
Operating temperature	ϑ	-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 T2	S	2.5 mm ² (L, N) 6 mm ² (PE, PEN)
Clamp fastening range (stranded conductor)		1.5 ÷ 16 mm ²
Operating position		Any
Importance of local signaling		OK – clear target, FAULT – red target
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A
Article number of spare module		27 086
Article number	HSA-275 M	27 080
	HSA-275 M S	27 090



HSA-275/1+1 M (S)

- Surge arresters type T2+T3 ensure the equipotential bonding and reduce switching, induced and residual overvoltage in LV power supply systems.
- 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.
- Installed at the boundaries of LPZ 1 – LPZ 3 into subsidiary switchboards and control panels.
- If the product contains two PE (or PEN) terminals, it must not be used as a PE (PEN) bridge.
- **M** indication specifies a type of construction with removable module.
- **S** indication specifies a version with remote monitoring.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

Type	HSA-275/1+1 M, HSA-275/1+1 M S	
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T2, T3
System		TN-S, TT
Number of poles		2
Rated operating AC voltage	U_N	230 V
Maximum continuous operating voltage AC	U_C	275 V
Maximum discharge current (8/20)	I_{max}	50 kA
Nominal discharge current for class II test (8/20)	I_n	20 kA
Open circuit voltage of the combination wave generator	U_{OC}	6 kV
Total discharge current (8/20) L+N->PE	I_{Total}	50 kA
Voltage protection level at I_n (L/N)	U_p	< 1.25 kV
Voltage protection level at I_n (L/PE)	U_p	< 1.5 kV
Voltage protection level at I_n (N/PE)	U_p	< 1.4 kV
Voltage protection level at U_{OC} (L/N)	U_p	< 0.85 kV
Impulse discharge current for class I test (10/350) N/PE	I_{imp}	20 kA
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
Maximal back-up fuse		160 A gL/gG
Residual current	I_{PE}	$\leq 5 \mu A$
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	60 kA _{rms}
Follow current interrupt rating (N/PE)	I_{fi}	0.1 kA _{rms}
Housing material		Polyamid PA6, UL94 V-0
Degree of protection		IP20
Operating temperature	ϑ	-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 T2	S	2.5 mm ² (L, N) 6 mm ² (PE, PEN)
Clamp fastening range (stranded conductor)		1.5 ÷ 16 mm ²
Operating position		Any
Importance of local signaling		OK – clear target, FAULT – red target
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A
Article number of spare module		27 086
Article number	HSA-275/1+1 M	27 081
	HSA-275/1+1 M S	27 091

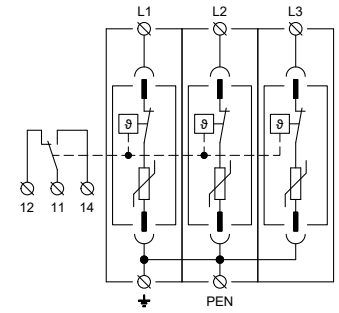
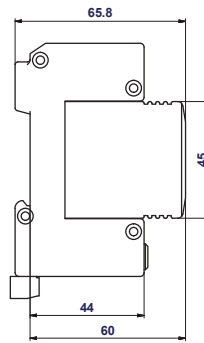
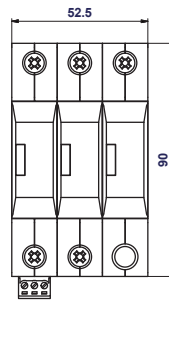


HSA-275/2+0 M (S)

- Surge arresters type T2+T3 ensure the equipotential bonding and reduce switching, induced and residual overvoltage in LV power supply systems.
- 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.
- Installed at the boundaries of LPZ 1 – LPZ 3 into subsidiary switchboards and control panels.

- If the product contains two PE (or PEN) terminals, it must not be used as a PE (PEN) bridge.
- **M** indication specifies a type of construction with removable module. **S** indication specifies a version with remote monitoring.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

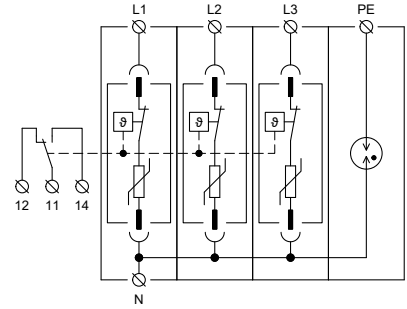
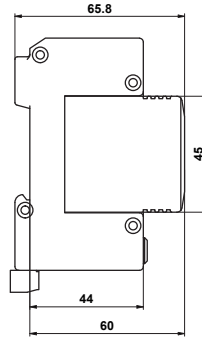
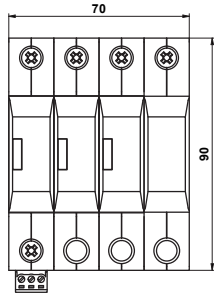
Type		HSA-275/2+0 M, HSA-275/2+0 M S
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T2, T3
System		TN-S
Number of poles		2
Rated operating AC voltage	U_N	230 V
Maximum continuous operating voltage AC	U_C	275 V
Maximum discharge current (8/20)	I_{max}	50 kA
Nominal discharge current for class II test (8/20)	I_n	20 kA
Open circuit voltage of the combination wave generator	U_{OC}	6 kV
Total discharge current (8/20) L+N->PE	I_{Total}	100 kA
Voltage protection level at I_n	U_p	< 1.25 kV
Voltage protection level at U_{OC}	U_p	< 0.85 kV
Temporary overvoltage test (TOV) for $t_T = 5$ s	U_T	337 V
Temporary overvoltage test (TOV) for $t_T = 120$ min	U_T	440 V
Maximal back-up fuse		160 A gL/gG
Residual current	I_{PE}	≤ 600 μA
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	60 kA _{rms}
Housing material		Polyamid PA6, UL94 V-0
Degree of protection		IP20
Operating temperature	ϑ	-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 T2	S	2.5 mm ² (L, N) 6 mm ² (PE, PEN)
Clamp fastening range (stranded conductor)		1.5 ÷ 16 mm ²
Operating position		Any
Importance of local signaling		OK – clear target, FAULT – red target
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A
Article number of spare module		27 086
Article number	HSA-275/2+0 M	27 082
	HSA-275/2+0 M S	27 092



HSA-275/3+0 M (S)

- Surge arresters type T2+T3 ensure the equipotential bonding and reduce switching, induced and residual overvoltage in LV power supply systems.
- 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.
- Installed at the boundaries of LPZ 1 – LPZ 3 into subsidiary switchboards and control panels.
- If the product contains two PE (or PEN) terminals, it must not be used as a PE (PEN) bridge.
- **M** indication specifies a type of construction with removable module. **S** indication specifies a version with remote monitoring.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

Type		HSA-275/3+0 M, HSA-275/3+0 M S
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T2, T3
System		TN-C
Number of poles		3
Rated operating AC voltage	U_N	230 V
Maximum continuous operating voltage AC	U_C	275 V
Maximum discharge current (8/20)	I_{max}	50 kA
Nominal discharge current for class II test (8/20)	I_n	20 kA
Open circuit voltage of the combination wave generator	U_{OC}	6 kV
Total discharge current (8/20) L1+L2+L3->PEN	I_{Total}	150 kA
Voltage protection level at I_n	U_p	< 1.25 kV
Voltage protection level at U_{OC}	U_p	< 0.85 kV
Temporary overvoltage test (TOV) for $t_T = 5$ s	U_T	337 V
Temporary overvoltage test (TOV) for $t_T = 120$ min	U_T	440 V
Maximal back-up fuse		160 A gL/gG
Residual current	I_{PE}	$\leq 200 \mu A$
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	60 kA _{rms}
Housing material		Polyamid PA6, UL94 V-0
Degree of protection		IP20
Operating temperature	ϑ	-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 T2	S	2.5 mm ² (L, N) 6 mm ² (PE, PEN)
Clamp fastening range (stranded conductor)		1.5 ÷ 16 mm ²
Operating position		Any
Importance of local signaling		OK – clear target, FAULT – red target
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A
Article number of spare module		27 086
Article number	HSA-275/3+0 M	27 083
	HSA-275/3+0 M S	27 093

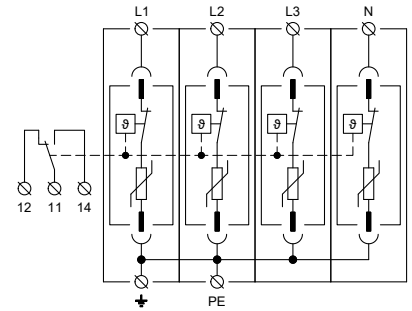
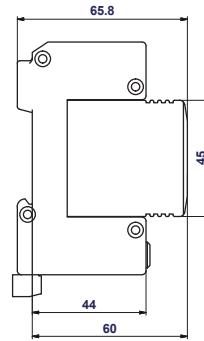
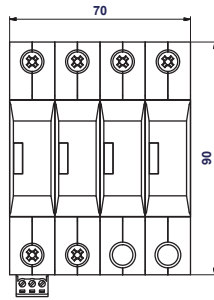


HSA-275/3+1 M (S)

- Surge arresters type T2+T3 ensure the equipotential bonding and reduce switching, induced and residual overvoltage in LV power supply systems.
- 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.
- Installed at the boundaries of LPZ 1 – LPZ 3 into subsidiary switchboards and control panels.

- If the product contains two PE (or PEN) terminals, it must not be used as a PE (PEN) bridge.
- **M** indication specifies a type of construction with removable module. **S** indication specifies a version with remote monitoring.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

Type		HSA-275/3+1 M, HSA-275/3+1 M S
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T2, T3
System		TN-S, TT
Number of poles		4
Rated operating AC voltage	U_N	230 V
Maximum continuous operating voltage AC	U_C	275 V
Maximum discharge current (8/20)	I_{max}	50 kA
Nominal discharge current for class II test (8/20)	I_n	20 kA
Open circuit voltage of the combination wave generator	U_{OC}	6 kV
Total discharge current (8/20) L1+L2+L3+N->PE	I_{Total}	50 kA
Voltage protection level at I_n (L/N)	U_p	< 1.25 kV
Voltage protection level at I_n (L/PE)	U_p	< 1.5 kV
Voltage protection level at I_n (N/PE)	U_p	< 1.4 kV
Voltage protection level at U_{OC} (L/N)	U_p	< 0.85 kV
Impulse discharge current for class I test (10/350) N/PE	I_{imp}	20 kA
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
Maximal back-up fuse		160 A gL/gG
Residual current	I_{PE}	$\leq 5 \mu A$
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	60 kA _{rms}
Follow current interrupt rating (N/PE)	I_{fi}	0.1 kA _{rms}
Housing material		Polyamid PA6, UL94 V-0
Degree of protection		IP20
Operating temperature	ϑ	-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 T2	S	2.5 mm ² (L, N) 6 mm ² (PE, PEN)
Clamp fastening range (stranded conductor)		1.5 ÷ 16 mm ²
Operating position		Any
Importance of local signaling		OK – clear target, FAULT – red target
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A
Article number of spare module		27 086
Article number	HSA-275/3+1 M	27 084
	HSA-275/3+1 M S	27 094

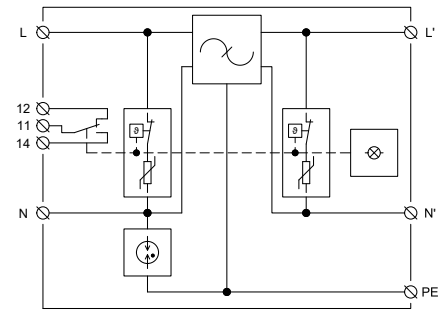
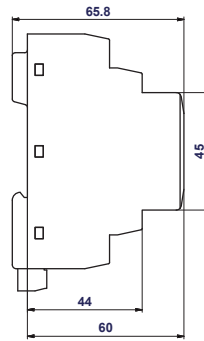
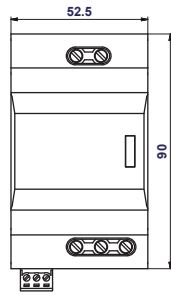


HSA-275/4+0 M (S)

- Surge arresters type T2+T3 ensure the equipotential bonding and reduce switching, induced and residual overvoltage in LV power supply systems.
- 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.
- Installed at the boundaries of LPZ 1 – LPZ 3 into subsidiary switchboards and control panels.

- If the product contains two PE (or PEN) terminals, it must not be used as a PE (PEN) bridge.
- **M** indication specifies a type of construction with removable module. **S** indication specifies a version with remote monitoring.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

Type		HSA-275/4+0 M, HSA-275/4+0 M S
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T2, T3
System		TN-S
Number of poles		4
Rated operating AC voltage	U_N	230 V
Maximum continuous operating voltage AC	U_C	275 V
Maximum discharge current (8/20)	I_{max}	50 kA
Nominal discharge current for class II test (8/20)	I_n	20 kA
Open circuit voltage of the combination wave generator	U_{OC}	6 kV
Total discharge current (8/20) L1+L2+L3+N->PE	I_{Total}	200 kA
Voltage protection level at I_n	U_p	< 1.25 kV
Voltage protection level at U_{OC}	U_p	< 0.85 kV
Temporary overvoltage test (TOV) for $t_T = 5$ s	U_T	337 V
Temporary overvoltage test (TOV) for $t_T = 120$ min	U_T	440 V
Maximal back-up fuse		160 A gL/gG
Residual current	I_{PE}	$\leq 200 \mu A$
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	60 kA _{rms}
Housing material		Polyamid PA6, UL94 V-0
Degree of protection		IP20
Operating temperature	ϑ	-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 T2	S	2.5 mm ² (L, N) 6 mm ² (PE, PEN)
Clamp fastening range (stranded conductor)		1.5 ÷ 16 mm ²
Operating position		Any
Importance of local signaling		OK – clear target, FAULT – red target
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A
Article number of spare module		27 086
Article number	HSA-275/4+0 M	27 085
	HSA-275/4+0 M S	27 095

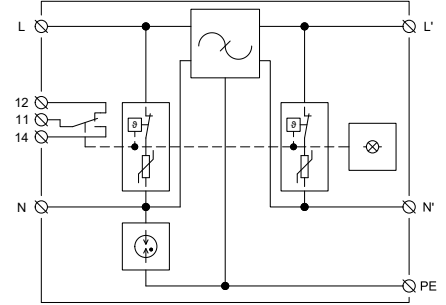
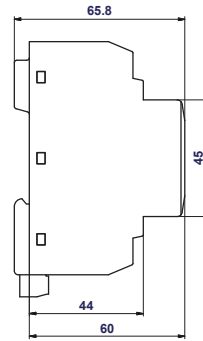
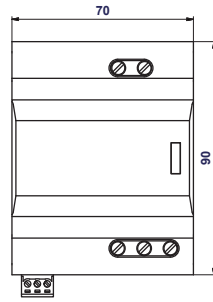


HSAF10 (S), HSAF16 (S)

- 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.
- **Designed according to standards** IEC 61643-11:2011; EN 55017:2011 / CISPR 17:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

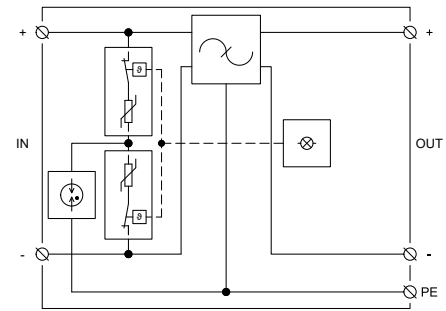
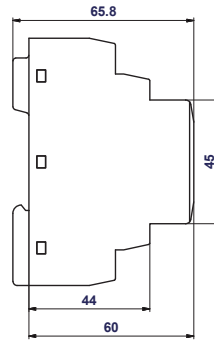
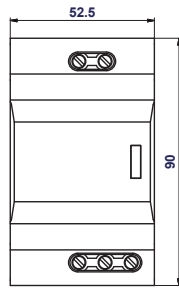
Type		HSAF10, HSAF10 S	HSAF16, HSAF16 S
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T3	
System		TN-C-S, TN-S	
Number of poles		2	
Rated operating AC voltage	U_N	230 V	
Maximum continuous operating voltage AC	U_C	275 V	
Rated load current	I_L	10 A	16 A
Open circuit voltage of the combination wave generator	U_{OC}	6 kV (L/N, L/PE), 10 kV (N/PE)	
Voltage protection level at U_{OC} (L/N)	U_p	< 0.75 kV	
Voltage protection level at U_{OC} (L/PE)	U_p	< 1 kV	
Voltage protection level at U_{OC} (N/PE)	U_p	< 1.5 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		> 40 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	
Power dissipation at 20 °C	P_z	< 2.2 W	< 3.5 W
Maximal back-up fuse		10 A gL/gG	16 A gL/gG
Residual current	I_{PE}	$\leq 5 \mu A$	
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	6 kA _{rms}	
Housing material		Polyamid PA6, UL94 V-0	
Degree of protection		IP20	
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 (stranded conductor)		0.2 ÷ 4 mm ²	
Operating position		Any	
Importance of local signaling		OK – red light off, FAULT – red light on	
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A	
Article number	HSAF*	30 160	30 161
	HSAF* S	30 170	30 171



HSAF25 (S), HSAF32 (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.
- **Designed according to standards** IEC 61643-11:2011; EN 55017:2011 / CISPR 17:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

Type		HSAF25, HSAF25 S	HSAF32, HSAF32 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	25 A	32 A
Open circuit voltage of the combination wave generator	U_{OC}	6 kV (L/N, L/PE), 10 kV (N/PE)	
Voltage protection level at U_{OC} (L/N)	U_p	< 0.8 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		> 40 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	
Power dissipation at 20 °C	Pz	< 3 W	< 4 W
Maximal back-up fuse		25 A gL/gG	32 A gL/gG
Residual current	I_{PE}	$\leq 5 \mu A$	
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	6 kA _{rms}	
Housing material		Polyamid PA6, UL94 V-0	
Degree of protection		IP20	
Operating temperature	ϑ	-40 ÷ 55 °C	
Humidity range	RH	5 ÷ 95 %	
Recommended cross-section of connected conductors	S	4 mm ²	6 mm ²
Clamp fastening range (stranded conductor)		2.5 ÷ 10 mm ²	
Operating position		Any	
Importance of local signaling		OK – red light off, FAULT – red light on	
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A	
Article number	HSAF*	30 196	30 198
	HSAF* S	30 197	30 199

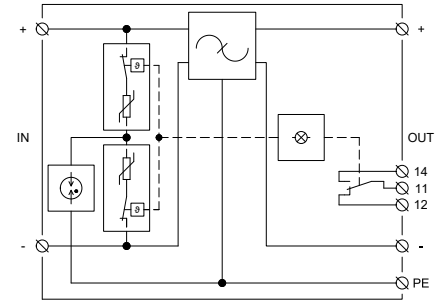
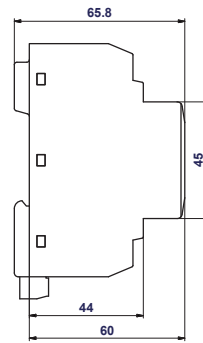
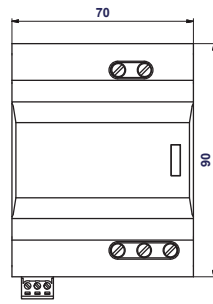


HSAF10/*VDC

- 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.
- **Designed according to standards** IEC 61643-11:2011; EN 55017:2011 / CISPR 17:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

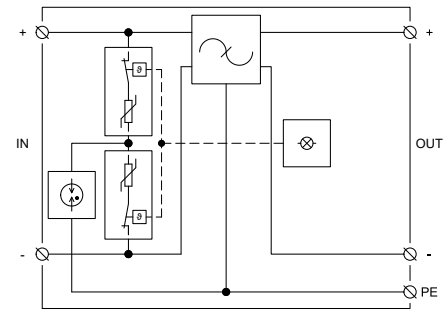
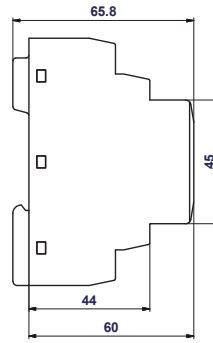
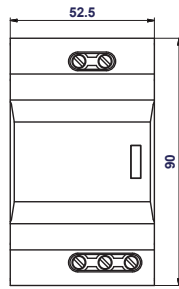
Type		HSAF10/ 6VDC	HSAF10/ 12VDC	HSAF10/ 24VDC	HSAF10/ 48VDC	HSAF10/ 60VDC	HSAF10/ 120VDC	HSAF10/ 220VDC
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T3						
System		DC						
Rated operating DC voltage	U_N	6 V	12 V	24 V	48 V	60 V	120 V	220 V
Maximum continuous operating voltage DC	U_C	7.2 V	14.4 V	28.8 V	57.6 V	72 V	144 V	264 V
Rated load current	I_L	10 A						
Open circuit voltage of the combination wave generator (+/-, ±/PE)	U_{OC}	4 kV					6 kV	
Voltage protection level at U_{OC} (+/-)	U_p	< 0.35 kV	< 0.4 kV	< 0.5 kV	< 0.55 kV	< 0.9 kV	< 1.3 kV	
Voltage protection level at U_{OC} (±/PE)	U_p	< 0.3 kV				< 0.4 kV	< 0.6 kV	< 0.8 kV
Nominal discharge current for class II test (8/20) +/-, ±/PE	I_n	2 kA					3 kA	
Total discharge current (8/20) ±->PE	I_{Total}	4 kA					6 kA	
Asymmetrical attenuation of filter at f = 4 MHz		> 80 dB						
Asymmetrical attenuation of filter at f = 0.15 ÷ 30 MHz		> 40 dB						
Power dissipation at 20 °C	P_z	< 2.2 W						
Maximal back-up fuse		10 A gL/gG						
Residual current	I_{PE}	≤ 5 µA						
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	6 kA _{rms}						
Housing material		Polyamid PA6, UL94 V-0						
Degree of protection		IP20						
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 (stranded conductor)		0.2 ÷ 4 mm ²						
Operating position		Any						
Importance of local signaling		OK – red light off, FAULT – red light on						
Article number		30 149	30 150	30 157	30 158	30 159	30 162	30 163



HSAF10/*VDC 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 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.
- **Designed according to standards** IEC 61643-11:2011; EN 55017:2011 / CISPR 17:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

Type		HSAF10/ 6VDC S	HSAF10/ 12VDC S	HSAF10/ 24VDC S	HSAF10/ 48VDC S	HSAF10/ 60VDC S	HSAF10/ 120VDC S	HSAF10/ 220VDC S
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T3						
System		DC						
Rated operating DC voltage	U_N	6 V	12 V	24 V	48 V	60 V	120 V	220 V
Maximum continuous operating voltage DC	U_C	7.2 V	14.4 V	28.8 V	57.6 V	72 V	144 V	264 V
Rated load current	I_L	10 A						
Open circuit voltage of the combination wave generator (+/-, ±/PE)	U_{OC}	4 kV					6 kV	
Voltage protection level at U_{OC} (+/-)	U_p	< 0.35 kV		< 0.4 kV	< 0.5 kV	< 0.55 kV	< 0.9 kV	< 1.3 kV
Voltage protection level at U_{OC} (±/PE)	U_p	< 0.3 kV				< 0.4 kV	< 0.6 kV	< 0.8 kV
Nominal discharge current for class II test (8/20) +/-, ±/PE	I_n	2 kA					3 kA	
Total discharge current (8/20) ±->PE	I_{Total}	4 kA					6 kA	
Asymmetrical attenuation of filter at f = 4 MHz		> 80 dB						
Asymmetrical attenuation of filter at f = 0.15 ÷ 30 MHz		> 40 dB						
Power dissipation at 20 °C	P_z	< 2.2 W						
Maximal back-up fuse		10 A gL/gG						
Residual current	I_{PE}	≤ 5 µA						
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	6 kA _{rms}						
Housing material		Polyamid PA6, UL94 V-0						
Degree of protection		IP20						
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 (stranded conductor)		0.2 ÷ 4 mm ²						
Operating position		Any						
Importance of local signaling		OK – red light off, FAULT – red light on						
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A						
Article number		30 267	30 268	30 269	30 270	30 271	30 272	30 273

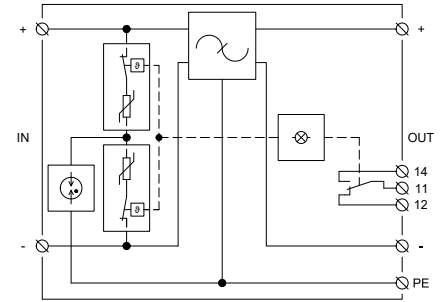
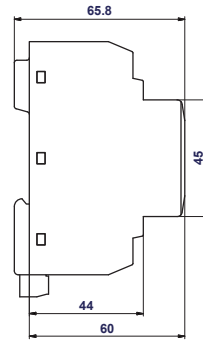
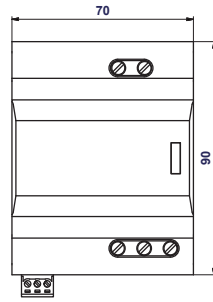


HSAF16/*VDC

- 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.
- **Designed according to standards** IEC 61643-11:2011; EN 55017:2011 / CISPR 17:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

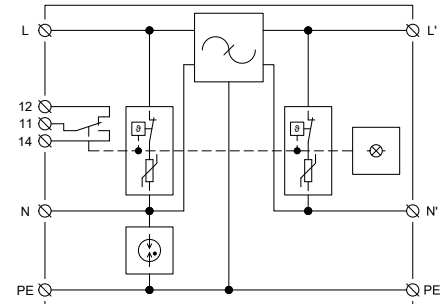
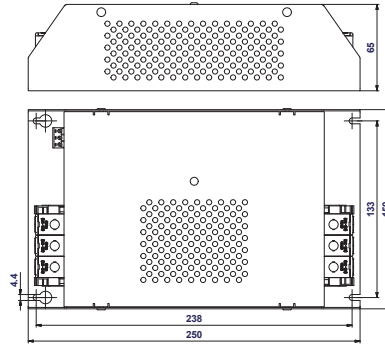
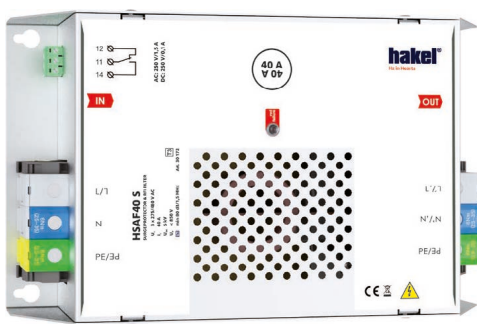
Type		HSAF16/ 6VDC	HSAF16/ 12VDC	HSAF16/ 24VDC	HSAF16/ 48VDC	HSAF16/ 60VDC	HSAF16/ 120VDC	HSAF16/ 220VDC
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T3						
System		DC						
Rated operating DC voltage	U_N	6 V	12 V	24 V	48 V	60 V	120 V	220 V
Maximum continuous operating voltage DC	U_C	7.2 V	14.4 V	28.8 V	57.6 V	72 V	144 V	264 V
Rated load current	I_L	16 A						
Open circuit voltage of the combination wave generator (+/-, ±/PE)	U_{OC}	4 kV					6 kV	
Voltage protection level at U_{OC} (+/-)	U_p	< 0.35 kV	< 0.4 kV	< 0.5 kV	< 0.55 kV	< 0.9 kV	< 1.3 kV	
Voltage protection level at U_{OC} (±/PE)	U_p	< 0.3 kV				< 0.4 kV	< 0.6 kV	< 0.8 kV
Nominal discharge current for class II test (8/20) +/-, ±/PE	I_n	2 kA					3 kA	
Total discharge current (8/20) ±->PE	I_{Total}	4 kA					6 kA	
Asymmetrical attenuation of filter at f = 4 MHz		> 80 dB						
Asymmetrical attenuation of filter at f = 0.15 ÷ 30 MHz		> 40 dB						
Power dissipation at 20 °C	P_z	< 3.5 W						
Maximal back-up fuse		16 A gL/gG						
Residual current	I_{PE}	≤ 5 µA						
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	6 kA _{rms}						
Housing material		Polyamid PA6, UL94 V-0						
Degree of protection		IP20						
Operating temperature	ϑ	-40 ÷ 55 °C						
Humidity range	RH	5 ÷ 95 %						
Recommended cross-section of connected conductors	S	2.5 mm ²						
Clamp fastening range (stranded conductor)		0.2 ÷ 4 mm ²						
Operating position		Any						
Importance of local signaling		OK – red light off, FAULT – red light on						
Article number		30 142	30 143	30 144	30 145	30 146	30 147	30 148



HSAF16/*VDC 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 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.
- **Designed according to standards** IEC 61643-11:2011; EN 55017:2011 / CISPR 17:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

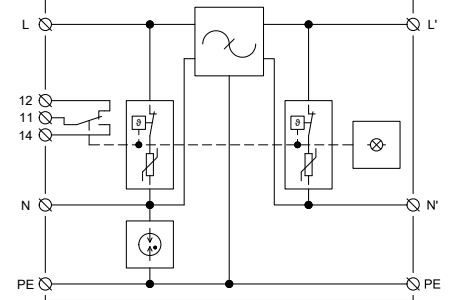
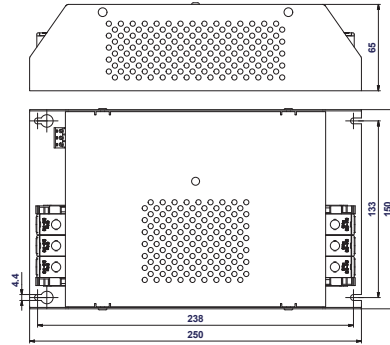
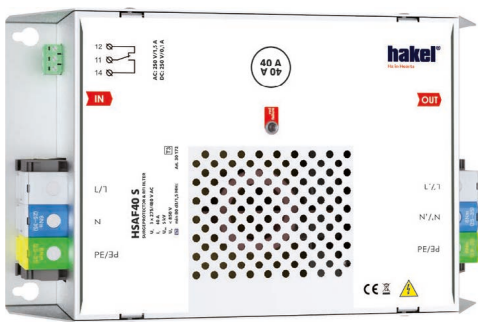
Type		HSAF16/ 6VDC S	HSAF16/ 12VDC S	HSAF16/ 24VDC S	HSAF16/ 48VDC S	HSAF16/ 60VDC S	HSAF16/ 120VDC S	HSAF16/ 220VDC S
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T3						
System		DC						
Rated operating DC voltage	U_N	6 V	12 V	24 V	48 V	60 V	120 V	220 V
Maximum continuous operating voltage DC	U_C	7.2 V	14.4 V	28.8 V	57.6 V	72 V	144 V	264 V
Rated load current	I_L	16 A						
Open circuit voltage of the combination wave generator (+/-, ±/PE)	U_{OC}	4 kV					6 kV	
Voltage protection level at U_{OC} (+/-)	U_p	< 0.35 kV		< 0.4 kV	< 0.5 kV	< 0.55 kV	< 0.9 kV	< 1.3 kV
Voltage protection level at U_{OC} (±/PE)	U_p	< 0.3 kV				< 0.4 kV	< 0.6 kV	< 0.8 kV
Nominal discharge current for class II test (8/20) +/-, ±/PE	I_n	2 kA					3 kA	
Total discharge current (8/20) ±->PE	I_{Total}	4 kA					6 kA	
Asymmetrical attenuation of filter at f = 4 MHz		> 80 dB						
Asymmetrical attenuation of filter at f = 0.15 ÷ 30 MHz		> 40 dB						
Power dissipation at 20 °C	P_z	< 3.5 W						
Maximal back-up fuse		16 A gL/gG						
Residual current	I_{PE}	≤ 5 µA						
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	6 kA _{rms}						
Housing material		Polyamid PA6, UL94 V-0						
Degree of protection		IP20						
Operating temperature	ϑ	-40 ÷ 55 °C						
Humidity range	RH	5 ÷ 95 %						
Recommended cross-section of connected conductors	S	2.5 mm ²						
Clamp fastening range (stranded conductor)		0.2 ÷ 4 mm ²						
Operating position		Any						
Importance of local signaling		OK – red light off, FAULT – red light on						
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A						
Article number		30 260	30 261	30 262	30 263	30 264	30 265	30 266



HSAF40 S, HSAF50 S, HSAF63 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.
- **Designed according to standards** IEC 61643-11:2011; EN 55017:2011 / CISPR 17:2011
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

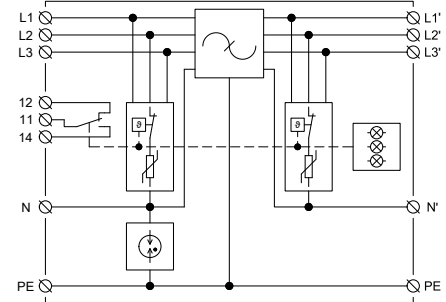
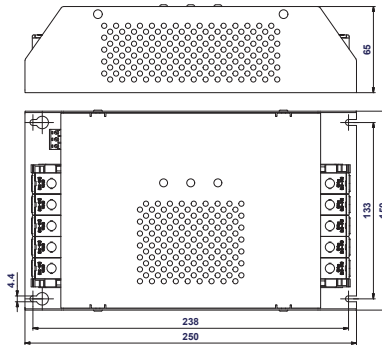
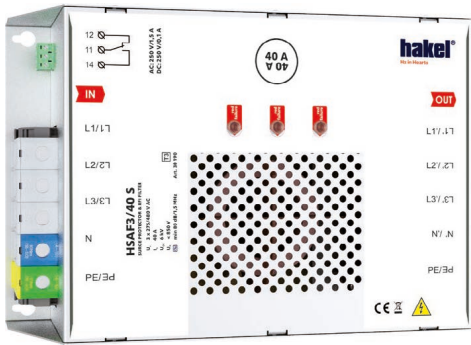
Type		HSAF40 S	HSAF50 S	HSAF63 S
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)			T3	
System			TN-C-S, TN-S	
Number of poles			2	
Rated operating AC voltage	U_N		230 V	
Maximum continuous operating voltage AC	U_C		275 V	
Rated load current	I_L	40 A	50 A	63 A
Open circuit voltage of the combination wave generator	U_{OC}		6 kV (L/N, L/PE), 10 kV (N/PE)	
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)	I_n		3 kA (L/N, L/PE), 5 kA (N/PE)	
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			> 40 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	
Power dissipation at 20 °C	P_z	< 4 W	< 7 W	< 9 W
Maximal back-up fuse		40 A gL/gG	50 A gL/gG	63 A gL/gG
Residual current	I_{PE}		$\leq 5 \mu A$	
Housing material			Steel plate 1 mm	
Degree of protection			IP20	
Operating temperature	ϑ		-40 ÷ 55 °C	
Humidity range	RH		5 ÷ 95 %	
Recommended cross-section of connected conductors	S		10 mm ²	16 mm ²
Clamp fastening range (stranded conductor)			2.5 ÷ 25 mm ²	
Installation			Using the M4 screws on the chassis	
Operating position			Any	
Importance of local signaling			OK – red light off, FAULT – red light on	
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)			AC: 250 V / 1.5 A, DC: 250 V / 0.1 A	
Article number		30 172	30 173	30 174



HSAF80 S, HSAF125 S, 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.
- **Designed according to standards** IEC 61643-11:2011; EN 55017:2011 / CISPR 17:2011
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

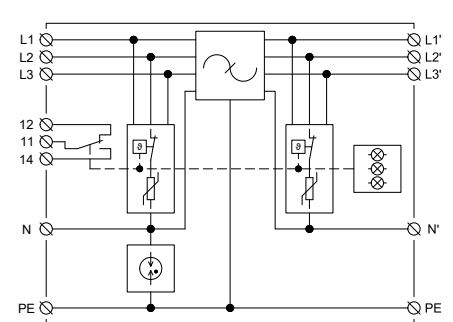
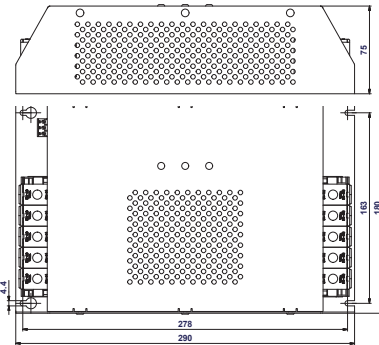
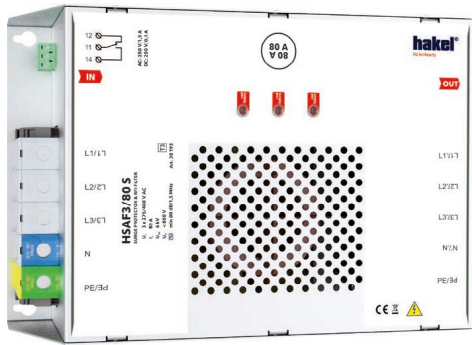
Type		HSAF80 S	HSAF125 S	HSAF160 S
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)			T3	
System			TN-C-S, TN-S	
Number of poles			2	
Rated operating AC voltage	U_N		230 V	
Maximum continuous operating voltage AC	U_C		275 V	
Rated load current	I_L	80 A	125 A	160 A
Open circuit voltage of the combination wave generator	U_{OC}	6 kV (L/N, L/PE), 10 kV (N/PE)		
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)	I_n	3 kA (L/N, L/PE), 5 kA (N/PE)		
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		> 40 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		
Power dissipation at 20 °C	P_Z	< 12 W	< 20 W	< 20 W
Maximal back-up fuse		80 A gL/gG	125 A gL/gG	160 A gL/gG
Residual current	I_{PE}	$\leq 5 \mu A$		
Housing material		Steel plate 1 mm		
Degree of protection		IP20		
Operating temperature	ϑ	-40 ÷ 55 °C		
Humidity range	RH	5 ÷ 95 %		
Recommended cross-section of connected conductors	S	25 mm ²	35 mm ²	50 mm ²
Clamp fastening range (stranded conductor)		1.5 ÷ 35 mm ²		
Installation		Using the M4 screws on the chassis		
Operating position		Any		
Importance of local signaling		OK – red light off, FAULT – red light on		
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A		
Article number		30 175	30 176	30 177



HSAF3/40 S, HSAF3/50 S, HSAF3/63 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.
- **Designed according to standards** IEC 61643-11:2011; EN 55017:2011 / CISPR 17:2011
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

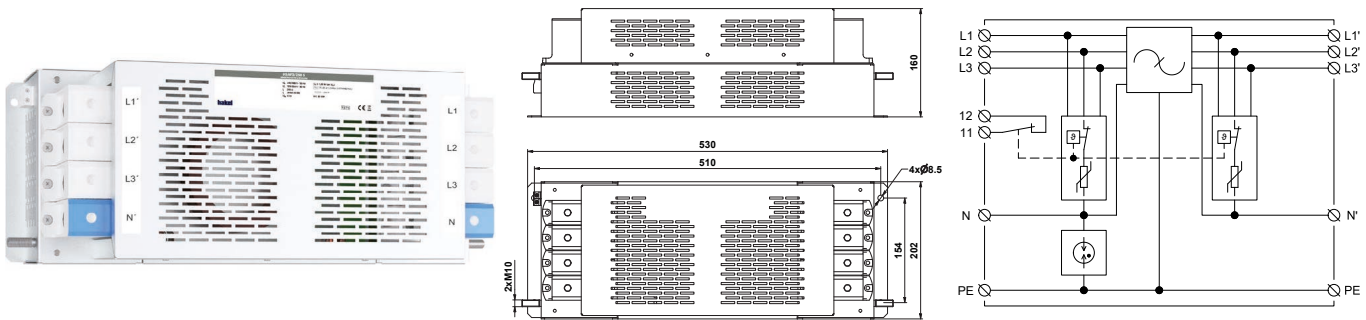
Type		HSAF3/40 S	HSAF3/50 S	HSAF3/63 S
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)			T3	
System			TN-C-S, TN-S	
Number of poles			4	
Rated operating AC voltage	U_N		230 V	
Maximum continuous operating voltage AC	U_C		275 V	
Rated load current	I_L	40 A	50 A	63 A
Open circuit voltage of the combination wave generator	U_{OC}	6 kV (L/N, L/PE), 10 kV (N/PE)		
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) L1+L2+L3+N->PE	I_{Total}	12 kA		
Asymmetrical attenuation of filter at $f = 4$ MHz		> 80 dB		
Asymmetrical attenuation of filter at $f = 0.15 \div 30$ MHz		> 40 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		
Power dissipation at 20 °C	P_z	< 8 W	< 9 W	< 12 W
Maximal back-up fuse		40 A gL/gG	50 A gL/gG	63 A gL/gG
Residual current	I_{PE}	$\leq 5 \mu A$		
Housing material		Steel plate 1 mm		
Degree of protection		IP20		
Operating temperature	ϑ	$-40 \div 55$ °C		
Humidity range	RH	$5 \div 95$ %		
Recommended cross-section of connected conductors	S	10 mm ²		16 mm ²
Clamp fastening range (stranded conductor)		2.5 ÷ 25 mm ²		
Installation		Using the M4 screws on the chassis		
Operating position		Any		
Importance of local signaling		OK – red light off, FAULT – red light on		
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A		
Article number		30 190	30 191	30 192



HSAF3/80 S, HSAF3/125 S, HSAF3/160 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.
- **Designed according to standards** IEC 61643-11:2011; EN 55017:2011 / CISPR 17:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

Type		HSAF3/80 S	HSAF3/125 S	HSAF3/160 S
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)			T3	
System			TN-C-S, TN-S	
Number of poles			4	
Rated operating AC voltage	U_N		230 V	
Maximum continuous operating voltage AC	U_C		275 V	
Rated load current	I_L	80 A	125 A	160 A
Open circuit voltage of the combination wave generator	U_{OC}	6 kV (L/N, L/PE), 10 kV (N/PE)		
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) L1+L2+L3+N->PE	I_{Total}	12 kA		
Asymmetrical attenuation of filter at $f = 4$ MHz		> 80 dB		
Asymmetrical attenuation of filter at $f = 0.15 \div 30$ MHz		> 40 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		
Power dissipation at 20 °C	P_z	< 15 W	< 20 W	< 25 W
Maximal back-up fuse		80 A gL/gG	125 A gL/gG	160 A gL/gG
Residual current	I_{PE}	$\leq 5 \mu A$		
Housing material		Steel plate 1 mm		
Degree of protection		IP20		
Operating temperature	ϑ	$-40 \div 55$ °C		
Humidity range	RH	5 ÷ 95 %		
Recommended cross-section of connected conductors	S	25 mm ²	35 mm ²	50 mm ²
Clamp fastening range (stranded conductor)		1.5 ÷ 35 mm ²		
Installation		Using the M4 screws on the chassis		
Operating position		Any		
Importance of local signaling		OK – red light off, FAULT – red light on		
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A		
Article number		30 193	30 194	30 195

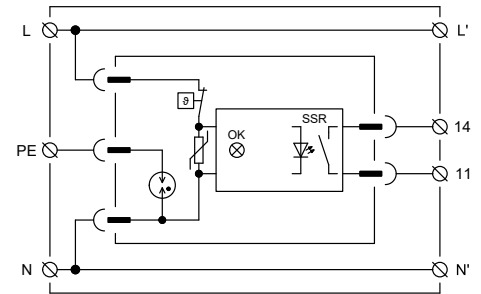
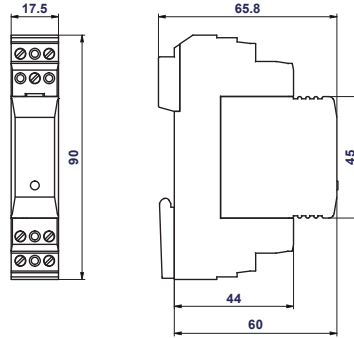


HSAF3/250 S, HSAF3/400 S

- Three-phase, two-stage surge arresters type T2+T3 equipped 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.
- Remote monitoring is solved on the basis of a potential-free switching contact.
- Any installation position without affecting function and parameters.
- Produced in basic version for mounting straight onto the switchboard's construction by screws M8.

- **S** indication specifies a version with remote monitoring.
- **Designed according to standards** IEC 61643-11:2011; EN 55017:2011 / CISPR 17:2011
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

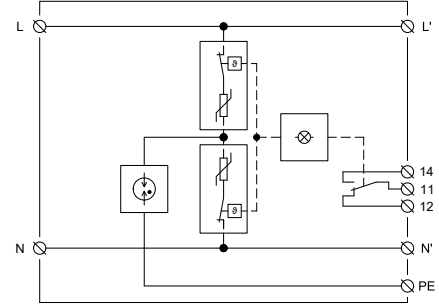
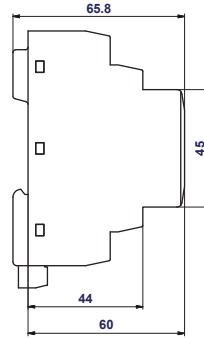
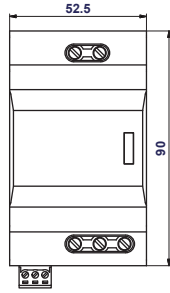
Type		HSAF3/250 S	HSAF3/400 S
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)			T2, T3
System			TN-C-S, TN-S
Number of poles			4
Rated operating AC voltage	U_N		230 V
Maximum continuous operating voltage AC	U_C		320 V
Rated load current	I_L	250 A	400 A
Open circuit voltage of the combination wave generator	U_{OC}	6 kV (L/N, L/PE), 10 kV (N/PE)	
Voltage protection level at U_{OC} (L/N)	U_p	< 1.25 kV	
Nominal discharge current for class II test (8/20) L/N, L/PE	I_n	20 kA	
Nominal discharge current for class II test (8/20) N/PE	I_n	50 kA	
Maximum discharge current (8/20)	I_{max}	40 kA	
Impulse discharge current for class I test (10/350) N/PE	I_{imp}	50 kA	
Total discharge current (8/20) L1+L2+L3+N->PE	I_{Total}	50 kA	
Asymmetrical attenuation of filter at $f = 1.5$ MHz		> 70 dB	
Asymmetrical attenuation of filter at $f = 0.15 \div 30$ MHz		> 30 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	
Power dissipation at 20 °C	P_z	< 70 W	< 125 W
Maximal back-up fuse		250 A gL/gG	400 A gL/gG
Residual current	I_{PE}	$\leq 5 \mu A$	
Follow current interrupt rating (N/PE)	I_{fi}	0.1 kA _{rms}	
Housing material		Steel plate 0.8 mm	
Degree of protection		IP20	
Operating temperature	ϑ	-40 ÷ 55 °C	
Humidity range	RH	5 ÷ 95 %	
Recommended cross-section of connected conductors	S	120 mm ²	240 mm ²
Clamp fastening range (stranded conductor)		35 ÷ 240 mm ²	
Installation		Using the M8 screws on the chassis	
Operating position		Any	
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 0.5 A, DC: 250 V / 0.1 A	
Article number		30 309	30 308



HSAD-S M S, HSAD-P M S

- Surge arresters type T3 for serial (HSAD-S M S) or parallel (HSAD-P M S) connection.
- Intended for protection of one-phase electronic appliances against the effects of switching, induced and residual overvoltage generated in LV power supply systems.
- 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 HSAD-S M S/HSAD-P M S must be installed a lightning current and surge arrester T1 and T2 from HAKEL company.
- Compact dimensions with a constructional modular width of 1 TE.
- A type of construction with a removable module.
- **S** indication specifies a version with remote monitoring.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

Type		HSAD-S M S	HSAD-P M 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	10 A	N/A
Open circuit voltage of the combination wave generator	U_{OC}	6 kV (L/N, L/PE), 10 kV (N/PE)	
Voltage protection level at U_{OC} (L/N)	U_p	< 1 kV	
Voltage protection level at U_{OC} (L/PE, N/PE)	U_p	< 1.5 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	
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	
Maximal back-up fuse		10 A gL/gG	
Residual current	I_{PE}	$\leq 5 \mu A$	
Housing material		Polyamid PA6, UL94 V-0	
Degree of protection		IP20	
Operating temperature	ϑ	$-40 \div 55$ °C	
Humidity range	RH	$5 \div 95$ %	
Recommended cross-section of connected conductors	S	1.5 mm ²	
Clamp fastening range (stranded conductor)		0.2 ÷ 2.5 mm ²	
Operating position		Any	
Importance of local signaling		OK – green light on, FAULT – green light off	
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A	
Article number of spare module		30 390	
Article number		30 370	30 380

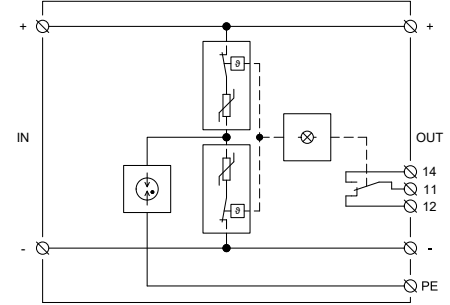
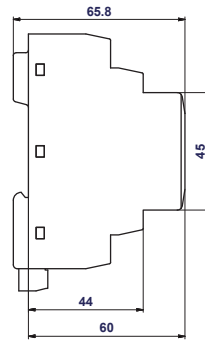
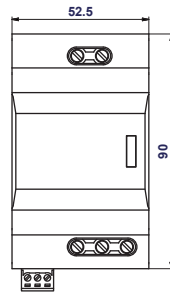


HSAD16 (S), HSAD16/110VAC (S)

- Two-port surge arresters type T3 for serial connection.
- Intended for protection of one-phase electronic appliances against the effects of switching, induced and residual overvoltage generated in LV power supply systems.
- Contains an improved thermal fuse, which ensures timely disconnection of HSAD* S from the power grid during the MOV's overheating and thus prevents damage to the HSAD* 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 HSAD* S must be installed a lightning current and surge arrester T1 and T2 from HAKEL company.
- **S** indication specifies a version with remote monitoring.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

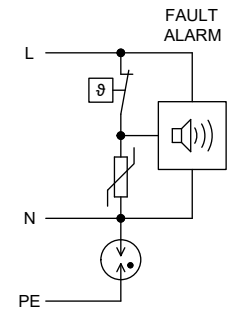
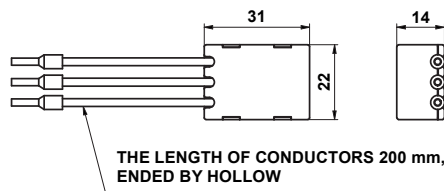
Type		HSAD16 (S)	HSAD16/110VAC (S)
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T3	
System		TN-C-S, TN-S	
Number of poles		2	
Rated operating AC voltage	U_N	230 V	110 V
Maximum continuous operating voltage AC	U_C	275 V	132 V
Rated load current	I_L	16 A	
Open circuit voltage of the combination wave generator	U_{OC}	6 kV (L/N, L/PE), 10 kV (N/PE)	
Voltage protection level at U_{OC} (L/N)	U_p	< 0.95 kV	< 0.6 kV
Voltage protection level at U_{OC} (L/PE, N/PE)	U_p	< 1.4 kV	< 0.7 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	
Temporary overvoltage test (TOV) for $t_T = 5$ s (L/N)	U_T	337 V	160 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	
Maximal back-up fuse		16 A gL/gG	
Residual current	I_{PE}	$\leq 5 \mu A$	
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	6 kA _{rms}	
Housing material		Polyamid PA6, UL94 V-0	
Degree of protection		IP20	
Operating temperature	ϑ	-40 ÷ 55 °C	
Humidity range	RH	5 ÷ 95 %	
Recommended cross-section of connected conductors	S	2.5 mm ²	
Clamp fastening range (stranded conductor)		0.2 ÷ 4 mm ²	
Operating position		Any	
Importance of local signaling		OK – red light off, FAULT – red light on	
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A	
Article number	HSAD16, HSAD16/110VAC	30 360	30 362
	HSAD16 S, HSAD16/110VAC S	30 361	30 363



HSAD16/*VDC (S)

- Two-port surge arresters type T3 for serial connection.
- Intended for protection of electronic appliances against the effects of switching, induced and residual overvoltage in DC power supply systems.
- Contains an improved thermal fuse which ensures timely disconnection of the device from the power grid during overheating and thus prevents damage.
- Activation of the thermal fuse is signalled by an integral indicator light.
- Installed at the boundaries of LPZ 2 – LPZ 3, as close as possible to the protected device (no further than 5 m).
- In front of HSAD16/*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.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

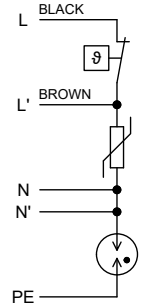
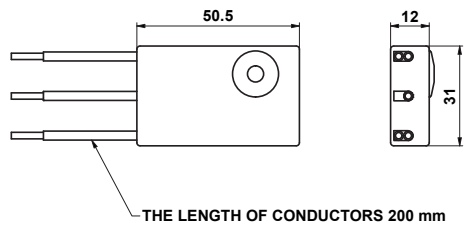
Type		HSAD16/ 6VDC (S)	HSAD16/ 12VDC (S)	HSAD16/ 24VDC (S)	HSAD16/ 48VDC (S)	HSAD16/ 60VDC (S)	HSAD16/ 120VDC (S)	HSAD16/ 220VDC (S)
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T3						
System		DC						
Rated operating DC voltage	U_N	6 V	12 V	24 V	48 V	60 V	120 V	220 V
Maximum continuous operating voltage DC	U_C	7.2 V	14.4 V	28.8 V	57.6 V	72 V	144 V	264 V
Rated load current	I_L	16 A						
Open circuit voltage of the combination wave generator	U_{OC}	4 kV					6 kV	
Voltage protection level at U_{OC} (+/-)	U_p	< 0.2 kV		< 0.25 kV	< 0.3 kV	< 0.35 kV	< 0.5 kV	< 0.8 kV
Voltage protection level at U_{OC} (\pm /PE)	U_p	< 0.6 kV					< 0.8 kV	< 1.5 kV
Nominal discharge current for class II test (8/20)	I_n	2 kA					3 kA	
Total discharge current (8/20) \pm ->PE	I_{Total}	4 kA					6 kA	
Maximal back-up fuse		16 A						
Residual current	I_{PE}	$\leq 5 \mu A$						
Short-circuit current rating at maximum back-up fuse	I_{SCCR}	6 kA _{rms}						
Housing material		Polyamid PA6. UL94 V-0						
Degree of protection		IP20						
Operating temperature	ϑ	-40 ÷ 55 °C						
Humidity range	RH	5 ÷ 95 %						
Recommended cross-section of connected conductors	S	2.5 mm ²						
Clamp fastening range (stranded conductor)		0.2 ÷ 4 mm ²						
Operating position		Any						
Importance of local signaling		OK – red light off, FAULT – red light on						
Potential free signal contact (S) (recommended cross-section of remote monitoring max. 1 mm ²)		AC: 250 V / 1.5 A, DC: 250 V / 0.1 A						
Article number	HSAD16/*	30 250	30 251	30 252	30 253	30 254	30 255	30 256
	HSAD16/* S	30 283	30 284	30 285	30 286	30 287	30 288	30 289



HSA A-1P

- Surge arresters type T3 intended for use in installation and floor boxes and cable trays.
- Additional protection of socket circuits, which are treated with surge protection and high-frequency filters (HSAF, HSAF3).
- Can be used to protect LED lights.
- Installed at the boundaries of LPZ 2 – LPZ 3, as close as possible to the protected device (no further than 5 m).
- In front of HSA A-1P must be installed a lightning current and surge arrester T1 and T2 from HAKEL company.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

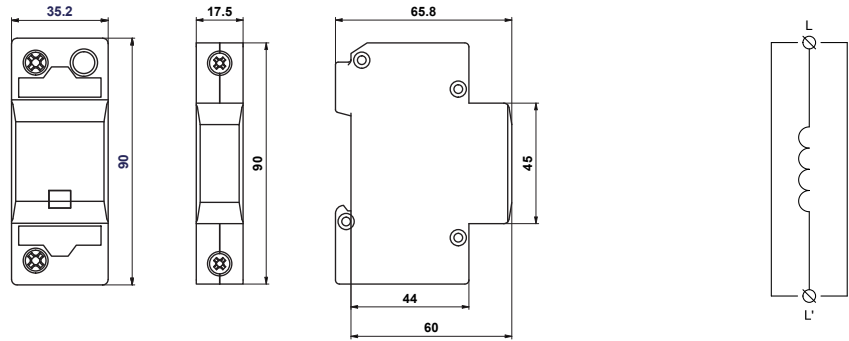
Type		HSA A-1P
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T3
Number of poles		2
Rated operating AC voltage	U_N	230 V
Maximum continuous operating voltage AC	U_C	275 V
Open circuit voltage of the combination wave generator	U_{OC}	6 kV (L/N, L/PE), 10 kV (N/PE)
Voltage protection level at U_{OC} (L/N)	U_p	< 1 kV
Voltage protection level at U_{OC} (L/PE, N/PE)	U_p	< 1.3 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
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
Maximal back-up fuse		16 A gL/gG
Residual current	I_{PE}	$\leq 5 \mu A$
Housing material		Polyamid PA6, UL94 V-0
Degree of protection		IP20
Operating temperature	ϑ	-40 ÷ 70 °C
Humidity range	RH	5 ÷ 95 %
Recommended cross-section of connected conductors	S	2.5 mm ²
Installation		For window sill gutter 45 x 45 mm, In the installation box
Operating position		Any
Importance of local signaling		OK – no piezo siren, FAULT – piezo siren sound
Article number		32 007



HSA A-2 NPE LED S

- Surge arresters type T3 specially adapted for the protection of LED lights.
- Intended for mounting directly to the lights.
- Installed at the boundaries of LPZ 2 – LPZ 3, as close as possible to the protected device (no further than 5 m).
- A lightning and surge arrester T1 and T2 from HAKEL company must be installed in front of the HSA A-2 NPE LED S.
- **S** indication specifies a version with remote monitoring.
- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; HD 60364-5-53:2022; CLC/TS 61643-12:2009

Type		HSA A-2 NPE LED S
Test class according to EN 61643-11:2012 (IEC 61643-11:2011)		T3
Number of poles		2
Rated operating AC voltage	U_N	230 V
Maximum continuous operating voltage AC	U_C	320 V
Rated load current	I_L	10 A
Open circuit voltage of the combination wave generator	U_{OC}	6 kV
Voltage protection level at UOC (L/N)	U_p	< 1.3 kV
Voltage protection level at UOC (L/PE, N/PE)	U_p	< 1.5 kV
Nominal discharge current for class II test (8/20)	I_n	3 kA
Maximum discharge current (8/20)	I_{max}	8 kA
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
Maximal back-up fuse		10 A
Residual current	I_{PE}	$\leq 5 \mu A$
Housing material		Polyamid PA6, UL94 V-0
Degree of protection		IP20
Operating temperature	ϑ	$-40 \div 70$ °C
Humidity range	RH	$5 \div 95$ %
Recommended cross-section of connected conductors	S	1.5 mm ²
Installation		Built-in installation, In the installation box, Wiring cable duct
Signalling at the device		None
Importance of remote signalling		Potential opening contact (voltage loss)
Article number		32 010



HI32/15; HI16, HI16/15, HI32

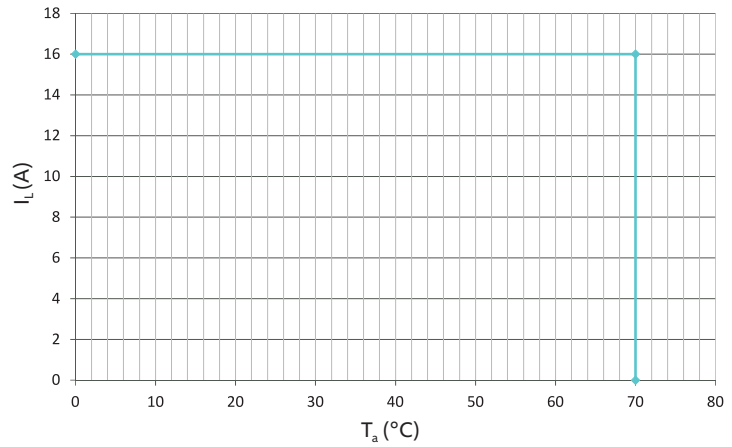
- Ensure the energy coordination between the arresters type T1 and T2 or the arresters type T2 and T3, especially in the places where there is no adequate distance between the arresters.
- If the energy coordination of surge protection is not observed, the excessive energy of passing impulse may cause a damage to the subsequent stage of the protective cascade.
- If there is at least 5 m distance between two successive arrester types (in case of two successive arrester types in two different switchboards), it is possible to omit the decoupling element.

- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; CLC/TS 61643-12:2009

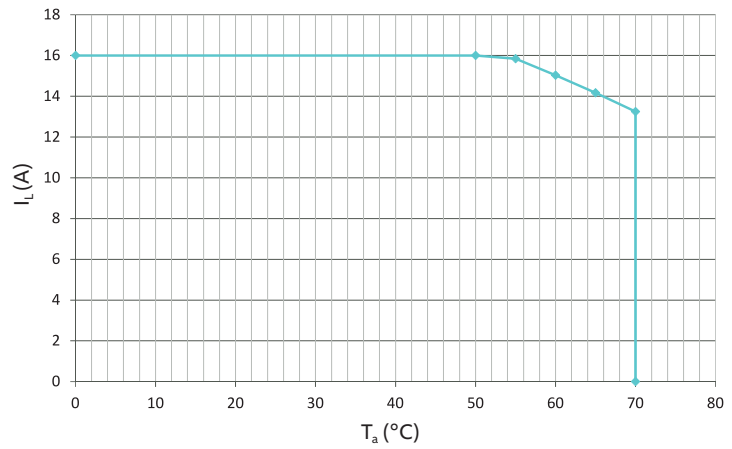
Type		HI16	HI16/15	HI32	HI32/15
Rated operating AC voltage	U_N	500 V			
Rated load current	I_L	16 A		32 A	
Inductance $\pm 10\%$	L	6 μH	15 μH	6 μH	15 μH
DC resistance	R	< 0.01 Ω			
Maximal back-up fuse		16 A gL/gG		32 A gL/gG	
Thermal class of insulation		A (105 °C)			
Housing material		Polyamid PA6, UL94 V-0			
Degree of protection		IP20			
Operating temperature	ϑ	-40 ÷ 70 °C			
Humidity range	RH	5 ÷ 95 %			
Recommended cross-section of connected conductors	S	6 mm ²		10 mm ²	
Clamp fastening range (stranded conductor)		1.5 ÷ 16 mm ²			2.5 ÷ 25 mm ²
Installation		On DIN rail 35 mm			
Operating position		Any			
Article number		30 400	30 401	30 402	30 403

Charts of dependence of nominal current on ambient temperature

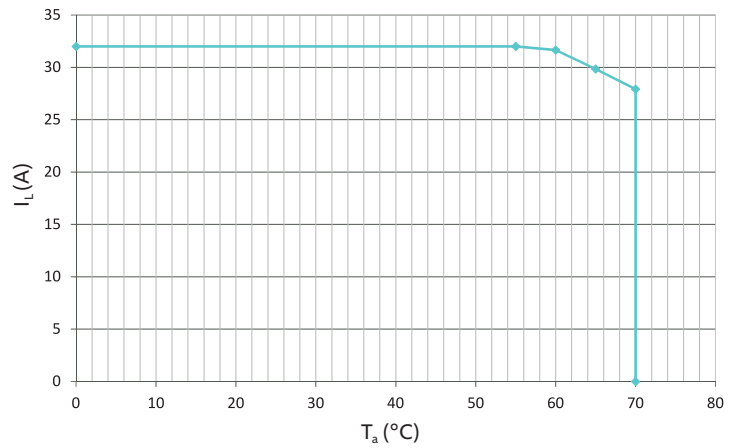
HI16 – Thermal insulation class A



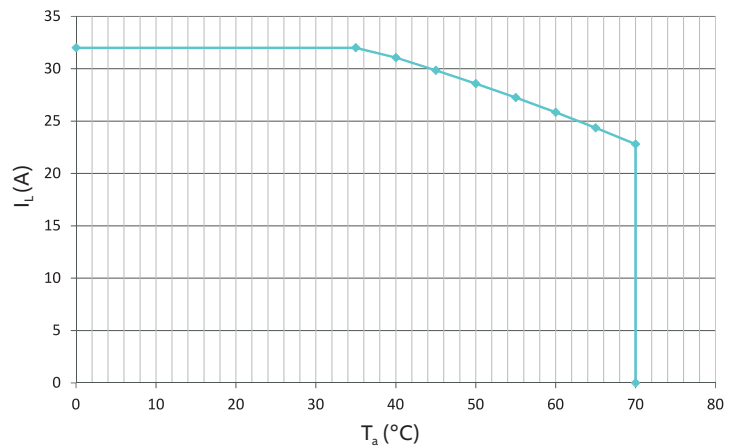
HI16/15 – Thermal insulation class A

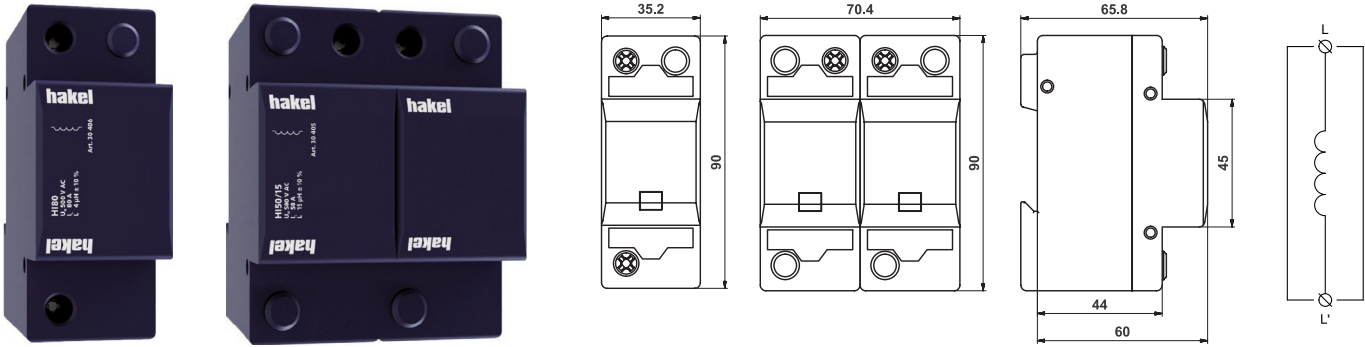


HI32 – Thermal insulation class A



HI32/15 – Thermal insulation class A





HI63, HI80; HI50/15

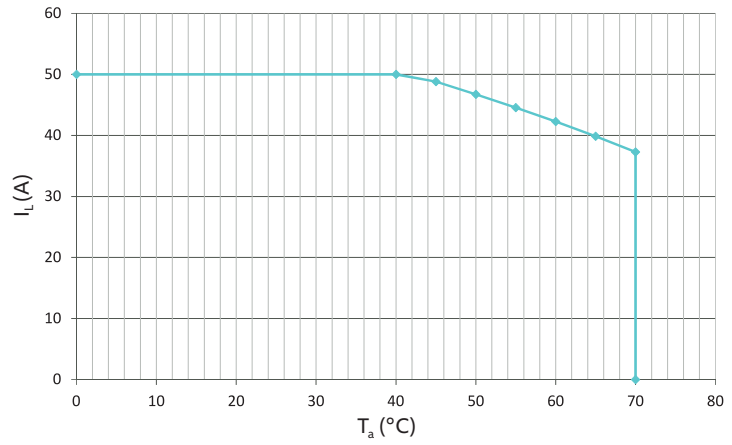
- Ensure the energy coordination between the arresters type T1 and T2 or the arresters type T2 and T3, especially in the places where there is no adequate distance between the arresters.
- If the energy coordination of surge protection is not observed, the excessive energy of passing impulse may cause a damage to the subsequent stage of the protective cascade.
- If there is at least 5 m distance between two successive arrester types (in case of two successive arrester types in two different switchboards), it is possible to omit the decoupling element.

- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; CLC/TS 61643-12:2009

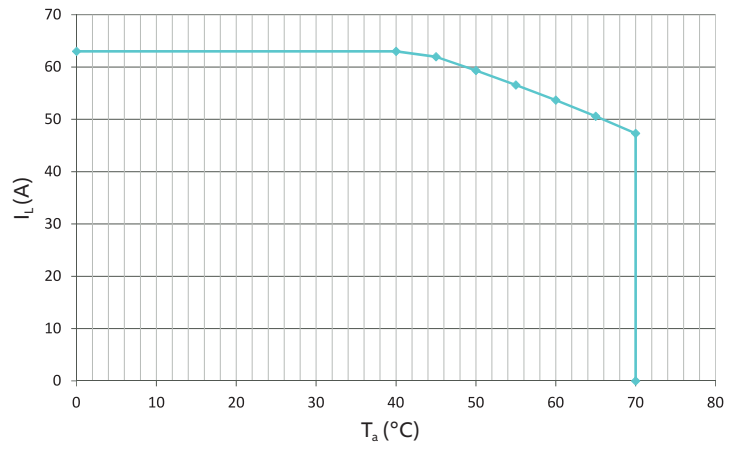
Type		HI50/15	HI63	HI80
Rated operating AC voltage	U_N		500 V	
Rated load current	I_L	50 A	63 A	80 A
Inductance $\pm 10\%$	L	15 μ H	6 μ H	4 μ H
DC resistance	R		< 0.01 Ω	
Maximal back-up fuse		50 A gL/gG	63 A gL/gG	80 A gL/gG
Thermal class of insulation		A (105 °C)		F (155 °C)
Housing material		Polyamid PA6, UL94 V-0		
Degree of protection		IP20		
Operating temperature	ϑ	-40 ÷ 70 °C		
Humidity range	RH	5 ÷ 95 %		
Recommended cross-section of connected conductors	S	16 mm ²		25 mm ²
Clamp fastening range (stranded conductor)		2.5 ÷ 25 mm ²		
Installation		On DIN rail 35 mm		
Operating position		Any		
Article number		30 405	30 404	30 406

Charts of dependence of nominal current on ambient temperature

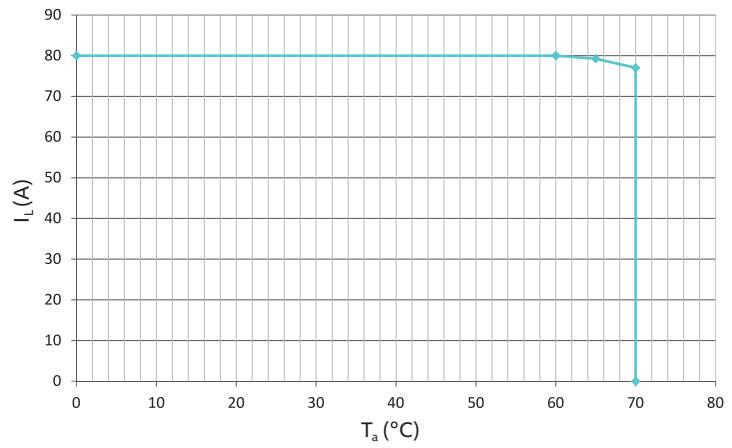
HI50/15 – Thermal insulation class A

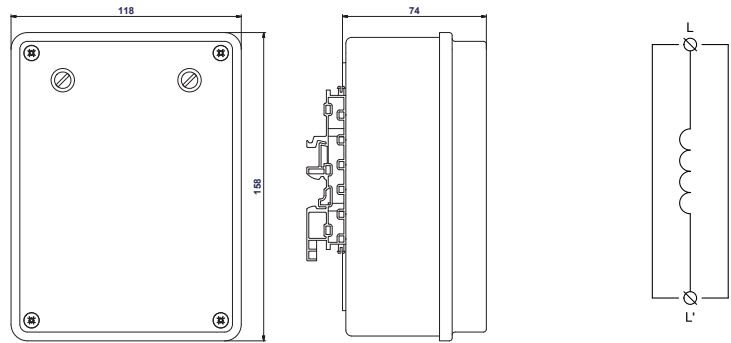


HI63 – Thermal insulation class A



HI80 – Thermal insulation class F





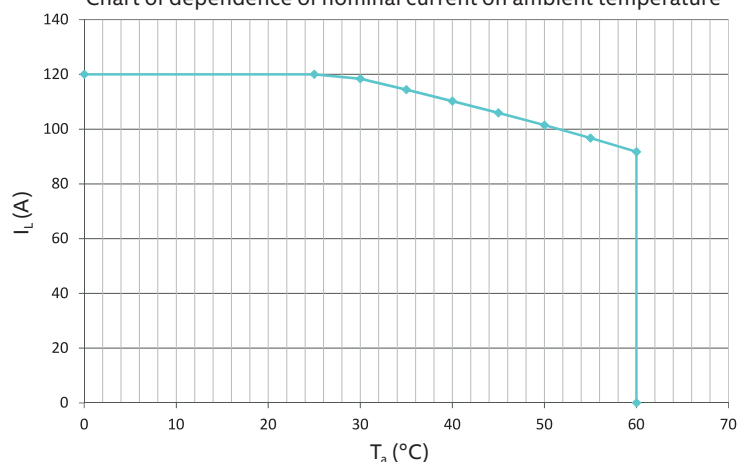
HI120

- Ensure the energy coordination between the arresters type T1 and T2 or the arresters type T2 and T3, especially in the places where there is no adequate distance between the arresters.
- If the energy coordination of surge protection is not observed, the excessive energy of passing impulse may cause a damage to the subsequent stage of the protective cascade.
- If there is at least 5 m distance between two successive arrester types (in case of two successive arrester types in two different switchboards), it is possible to omit the decoupling element.

- **Designed according to standards** IEC 61643-11:2011; UL 94
- **Application standards** IEC 62305:2010; CLC/TS 61643-12:2009

Type		HI120
Rated operating AC voltage	U_N	500 V
Rated load current	I_L	120 A
Inductance $\pm 10\%$	L	6 μ H
DC resistance	R	< 0.01 Ω
Maximal back-up fuse		120 A gL/gG
Thermal class of insulation		A (105 °C)
Housing material		ABS
Degree of protection		IP20
Operating temperature	ϑ	-40 ÷ 60 °C
Humidity range	RH	5 ÷ 95 %
Recommended cross-section of connected conductors	S	35 mm ²
Clamp fastening range (stranded conductor)		1.5 ÷ 35 mm ²
Installation		On DIN rail 35 mm
Operating position		Any
Article number		30 120

HI120 – Thermal insulation class A with ventilation holes
Chart of dependence of nominal current on ambient temperature



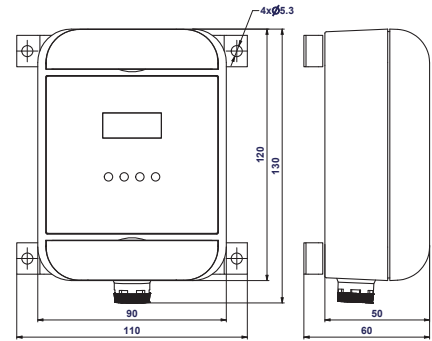


Scope of delivery: measuring instrument, twisted test lead with measuring tip, pouch, calibration certificate, warranty document, user's manual, cardboard shipping case.

GIGATEST PRO

- Digital measuring instruments of insulation resistance, voltage (AC and DC) and status of surge protection devices.
- Simple control with several multifunction buttons.
- The principle of measuring the status of surge protection devices consists in a linear voltage increase with the measurement of the so-called milliampere point at varistors and ignition voltage at gas discharge tubes.
- Evaluates the type of the measured element (varistor or gas discharge tube).
- The internal memory contains an extended database of surge protection devices, not only for HAKEL products.
- Multicolored graphic OLED display with excellent readability, patented system for storing the test pins.
- Possibility to illuminate the measured object by a bright LED light and charge the battery right in the instrument.
- Small dimensions and low weight.
- Complete technical parameters and operating information are contained in the user manual, which is available for download on our product web pages.

Type		GIGATEST PRO	
Protection class according to IEC 61140		II	
Surge category		CAT III / 300 V, CAT II / 600 V	
Insulation resistance measuring range	R_i	0.1 ÷ 9 999 M Ω	
Rated measuring voltage R_i	U_m	40 ÷ 1 000 V	
Measurement resolution R_i		According to the partial range	
Surge protection measuring range	U_{SPD}	40 ÷ 1 050 V	
Measurement resolution U_{SPD}		1 V	
DC and AC voltage measuring range (for $f = 45 \text{ Hz} \div 65 \text{ Hz}$)	U	0 ÷ 600 V	
Voltage measurement resolution		1 V	
Power supply		4 x AAA alkaline battery 1.5 V, NiMH accumulator 1.2 V	
Equipped with display		Yes (OLED technology)	
Degree of protection		IP40	
Dimensions of the measuring instrument		260 x 70 x 40 mm	
Article number		70 002	



PBI-7

- Digital counter of current pulses caused by lightning strikes to the object's air-termination network.
- Mounted directly on the lightning down conductor.
- By connecting the counter to the down lead of the air-termination network it is possible to get a detailed overview of the number of discharges and their time.
- Powered by an independent battery pack, the average battery lifetime is 5 years.
- The counter meets the requirements of Type I and Type II, thus responds to the course of lightning and switching overvoltage.
- **Designed according to standards IEC 62561-6:2018**

Type		PBI-7
Type according to IEC 62561-6:2018		Type I, Type II
Recordable current (10/350)	I_{imp}	1 ÷ 100 kA
Recordable current (8/20)	I_{in}	1 ÷ 100 kA
Number of recorded discharges		0 ÷ 999
Degree of protection		IP65
Operating temperature	ϑ	-20 ÷ 60 °C
Storage temperature		-40 ÷ 80 °C
Battery type		2 x CR123A, 2 x CR17335SE
Average battery lifetime		5 years
Product placement environment		External
Installation		For overhead line ø 8 mm, Flat 30 x 4 mm down conductor
Operating position		Any
Operation type		Permanent
Article number		70 047

Together we make the world a safer place

Surge protection device HAKEL



Insulation monitoring devices



HIG99 + HIG99 KM CAN

Lightning arresters

Type T1



HLA50-255/3+0

Lightning and surge arresters

Type T1+T2+T3



HLSA25G-255/4+0



HLSA12,5-275/4+0 M

Surge arresters

Type T2+T3



HSA-275/3+1 M

Surge arresters for LED lights

Type T3



HSAA-2 NPE LED S

Surge arresters under the socket

Type T3



HSAA-1P

Photovoltaic systems

PVE



HLSA6,5 PV 1000 M

Surge protection for the transmission of data and information signals

Data/Signal protection



HDT2/24B

HT-NET PoE+ 6cat

Coaxial protection



KO-4GN

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