

## **HSAF10**

- 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.

| Test class according to EN 61643-11:2012 (IEC 61643-11:2011)  System  TN-C-S, TN-S  Number of poles  2  Rated operating AC voltage  Maximum continuous operating voltage AC  Rated load current  U <sub>C</sub> Rated load current  U <sub>L</sub> 10 A  Open circuit voltage of the combination wave generator (L/N, L/PE)  U <sub>DC</sub> Den circuit voltage of the combination wave generator (N/PE)  U <sub>DC</sub> Den circuit voltage of the combination wave generator (N/PE)  Voltage protection level at U <sub>DC</sub> (L/N)  Voltage protection level at U <sub>DC</sub> (L/PE)  Voltage protection of filer at f = 0.15 k V  Nominal discharge current for class II test (8/20) L/N, L/PE  I <sub>n</sub> S kA  Nominal discharge current for class II test (8/20) L/N, L/PE  I <sub>n</sub> S kA  Nominal discharge current for class II test (8/20) L/N, L/PE  I <sub>n</sub> S kA  Nominal discharge current for class II test (8/20) L/N, L/PE  I <sub>n</sub> S kA  Nominal discharge current for class II test (8/20) L/N, L/PE  I <sub>n</sub> S kA  Nominal discharge current for class II test (8/20) L/N, L/PE  I <sub>n</sub> S kA  Nominal discharge current for class II test (8/20) L/N, L/PE  I <sub>n</sub> S kA  Nominal discharge current for class II test (8/20) L/N, L/PE  I <sub>n</sub> S kA  Nominal discharge current for class II test (8/20) L/N, L/PE  I <sub>n</sub> S kA  Nominal dischar | Туре   |                    | HSAF10                 |
|---|--|--------------------|------------------------|
| Number of poles $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$  | Test class according to EN 61643-11:2012 (IEC 61643-11:2011)         |                    | Т3                     |
| Rated operating AC voltage $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$   | System   |                    | TN-C-S, TN-S           |
| Maximum continuous operating voltage AC $U_{c}$ 275 V Rated load current $I_{L}$ 10 A Open circuit voltage of the combination wave generator (L/N, L/PE) $U_{OC}$ 6 kV Open circuit voltage of the combination wave generator (N/PE) $U_{OC}$ 10 kV 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 $U_{OC}$ (L/PE) $U_{p}$ < 1 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) L/N, L/PE $I_{n}$ 5 kA Total discharge current (8/20) L-N->PE $I_{n}$ 5 kA Nominal discharge current (8/20) L-N->PE $I_{n}$ 6 kA Asymmetrical attenuation of filter at $f = 4$ MHz $I_{n}$ 80 dB Asymmetrical attenuation of filter at $f = 0.15 \div 30$ MHz $I_{n}$ 337 V Temporary overvoltage test (TOV) for $I_{T} = 5$ s (L/N) $I_{T}$ 440 V Temporary overvoltage test (TOV) for $I_{T} = 0.2$ s (N/PE) $I_{T}$ 1 200 V Response time (L/N) $I_{T}$ 1 200 V Response time (L/N) $I_{T}$ 1 200 V Response time (L/N) $I_{T}$ 1 200 V Response time (L/PE) $I_{T}$ 2 1 800 $I_{T}$ 4 8 c 25 ns Response time (L/PE) $I_{T}$ 2 1 800 $I_{T}$ 4 8 c 25 ns Response time (L/PE) $I_{T}$ 2 1 800 $I_{T}$ 4 8 c 25 ns Response time (L/PE) $I_{T}$ 2 1 800 $I_{T}$ 4 8 c 25 ns Response time (L/PE) $I_{T}$ 3 8 c 2 8 c 8 Residual current $I_{T}$ 3 8 c 3 8 c 8 c 8 c 8 c 8 c 8 c 8 c 8 c  | Number of poles  |                    | 2                      |
| Rated load current $I_L$ 10 A Open circuit voltage of the combination wave generator (L/N, L/PE) $I_{OC}$ 6 kV Open circuit voltage of the combination wave generator (N/PE) $I_{OC}$ 10 kV Voltage protection level at $I_{OC}$ (L/N) $I_{OC}$ 10 kV Voltage protection level at $I_{OC}$ (L/N) $I_{OC}$ 10 kV Voltage protection level at $I_{OC}$ (L/PE) $I_{OC}$ $I_{O$  | Rated operating AC voltage   | $U_N$              | 230 V                  |
| Open circuit voltage of the combination wave generator (L/N, L/PE) $U_{OC}$ 6 kV Open circuit voltage of the combination wave generator (N/PE) $U_{OC}$ 10 kV Voltage protection level at $U_{OC}$ (L/N) $U_{D}$ < 0.75 kV Voltage protection level at $U_{OC}$ (L/PE) $U_{D}$ < 1 kV Voltage protection level at $U_{OC}$ (L/PE) $U_{D}$ < 1.5 kV Nominal discharge current for class II test (8/20) L/N, L/PE $I_{D}$ 3 kA Nominal discharge current for class II test (8/20) N/PE $I_{D}$ 5 kA Total discharge current (8/20) L+N->PE $I_{D}$ 6 kA Asymmetrical attenuation of filter at $f = 4$ MHz > 80 dB Asymmetrical attenuation of filter at $f = 0.15 \div 30$ MHz > 35 dB Temporary overvoltage test (TOV) for $I_{T} = 5$ s (L/N) $I_{T}$ 33.7 V Temporary overvoltage test (TOV) for $I_{T} = 120$ min (L/N) $I_{T}$ 440 V Temporary overvoltage test (TOV) for $I_{T} = 0.2$ s (N/PE) $I_{T}$ 1 200 V Response time (L/PE, N/PE) $I_{T}$ 4. < 100 ns Power dissipation $I_{T}$ 2. 2 W Maximal back-up fuse $I_{T}$ 3 that $I_{T}$ 4. Short-circuit current rating at maximum back-up fuse $I_{T}$ 2. Polyamid PA6, UL94 V-0 Housing material  | Maximum continuous operating voltage AC                              | U <sub>c</sub>     | 275 V                  |
| Open circuit voltage of the combination wave generator (N/PE) $ \begin{array}{c} U_{OC} \\ Voltage protection level at  U_{OC}  (L/N) \\ Voltage protection level at  U_{OC}  (L/PE) \\ Voltage protection level at  U_{OC}  (L/PE) \\ Voltage protection level at  U_{OC}  (N/PE) \\ V_{OC}  $   | Rated load current   | IL                 | 10 A                   |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$  | Open circuit voltage of the combination wave generator (L/N, L/PE)   | U <sub>oc</sub>    | 6 kV                   |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$  | Open circuit voltage of the combination wave generator (N/PE)        | U <sub>oc</sub>    | 10 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 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 ÷ 30 MHz > 35 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 Response time (L/N) $t_A$ < 25 ns Response time (L/PE, N/PE) $t_A$ < 100 ns Power dissipation Pz < 2.2 W Maximal back-up fuse $I_{PE}$   | Voltage protection level at U <sub>OC</sub> (L/N)                    | $U_p$              | < 0.75 kV              |
| Nominal discharge current for class II test (8/20) L/N, L/PE  | Voltage protection level at U <sub>OC</sub> (L/PE)                   | $U_p$              | < 1 kV                 |
| 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 ÷ 30 MHz > 35 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 Response time (L/N) $t_A$ < 25 ns Response time (L/PE, N/PE) $t_A$ < 100 ns Power dissipation Pz < 2.2 W Maximal back-up fuse  | Voltage protection level at U <sub>OC</sub> (N/PE)                   | $U_p$              | < 1.5 kV               |
| Total discharge current (8/20) L+N->PE  | Nominal discharge current for class II test (8/20) L/N, L/PE         | I <sub>n</sub>     | 3 kA                   |
| Asymmetrical attenuation of filter at $f = 4$ MHz $> 80$ dB Asymmetrical attenuation of filter at $f = 0.15 \div 30$ MHz $> 35$ 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 $t_T = 120$ min (L/N) $U_T$ 1 200 V Response time (L/N) $t_A$ $< 25$ ns Response time (L/PE, N/PE) $t_A$ $< 100$ ns Power dissipation $t_A$ $< 100$ ns Power dissipation $t_A$ $< 100$ ns Residual current $t_A$ $t_$   | Nominal discharge current for class II test (8/20) N/PE              | I <sub>n</sub>     | 5 kA                   |
| Asymmetrical attenuation of filter at $f = 0.15 \div 30 \text{ MHz}$ $> 35 \text{ dB}$ Temporary overvoltage test (TOV) for $t_T = 5 \text{ s}$ (L/N) $U_T$ $337 \text{ V}$ Temporary overvoltage test (TOV) for $t_T = 120 \text{ min}$ (L/N) $U_T$ $440 \text{ V}$ Temporary overvoltage test (TOV) for $t_T = 0.2 \text{ s}$ (N/PE) $U_T$ $1 200 \text{ V}$ Response time (L/N) $t_A$ $< 25 \text{ ns}$ Response time (L/PE, N/PE) $t_A$ $< 100 \text{ ns}$ Power dissipation $t_A$ $< 100 \text{ ns}$ Power dissipation $t_A$   | Total discharge current (8/20) L+N->PE                               | I <sub>Total</sub> | 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 Response time (L/N) $t_A$ < 25 ns Response time (L/PE, N/PE) $t_A$ < 100 ns Power dissipation $t_A$ < 100 ns Power dissipation $t_A$ < 100 A gL/gG Residual current $t_A$ $t_A$ = 1 800 $t_A$ Short-circuit current rating at maximum back-up fuse   | Asymmetrical attenuation of filter at f = 4 MHz                      |                    | > 80 dB                |
| Temporary overvoltage test (TOV) for $t_T$ = 120 min (L/N)  | Asymmetrical attenuation of filter at $f = 0.15 \div 30 \text{ MHz}$ |                    | > 35 dB                |
| Temporary overvoltage test (TOV) for $t_T = 0.2 \text{ s}$ (N/PE)  Response time (L/N)  Response time (L/PE, N/PE) $t_A$ $< 25 \text{ ns}$ Response time (L/PE, N/PE) $t_A$ $< 100 \text{ ns}$ Power dissipation  Pz $< 2.2 \text{ W}$ Maximal back-up fuse $t_A$   | Temporary overvoltage test (TOV) for $t_T = 5 \text{ s (L/N)}$       | U <sub>T</sub>     | 337 V                  |
| Response time (L/N) $t_{A} < 25 \text{ ns}$ Response time (L/PE, N/PE) $t_{A} < 100 \text{ ns}$ Power dissipation $Pz < 2.2 \text{ W}$ Maximal back-up fuse $10 \text{ A gL/gG}$ Residual current $I_{PE} \leq 1800 \text{ µA}$ Short-circuit current rating at maximum back-up fuse $I_{SCCR} \qquad 6 \text{ kA}_{rms}$ Lightning protection zone $I_{PZ} = 3$ Housing material $I_{PZ} = 3$ Polyamid PA6, UL94 V-0   | Temporary overvoltage test (TOV) for $t_T = 120 \text{ min (L/N)}$   | U <sub>T</sub>     | 440 V                  |
| Response time (L/PE, N/PE) $t_{A} < 100 \text{ ns}$ Power dissipation $Pz < 2.2 \text{ W}$ Maximal back-up fuse $10 \text{ A gL/gG}$ Residual current $I_{PE} \leq 1800 \text{ µA}$ Short-circuit current rating at maximum back-up fuse $I_{SCCR} \qquad 6 \text{ kA}_{rms}$ Lightning protection zone $LPZ 2-3$ Housing material $Polyamid PA6, UL94 V-0$   | Temporary overvoltage test (TOV) for $t_T = 0.2 s (N/PE)$            | U <sub>T</sub>     | 1 200 V                |
| Power dissipation Pz < 2.2 W  Maximal back-up fuse 10 A gL/gG  Residual current I I PE $\leq$ 1 800 $\mu$ A  Short-circuit current rating at maximum back-up fuse I SCCR $\leq$ 6 kA <sub>rms</sub> Lightning protection zone LPZ 2-3  Housing material Polyamid PA6, UL94 V-0  | Response time (L/N)  | t <sub>A</sub>     | < 25 ns                |
| Maximal back-up fuse10 A gL/gGResidual current $I_{PE}$ ≤ 1 800 μAShort-circuit current rating at maximum back-up fuse $I_{SCCR}$ 6 kA <sub>rms</sub> Lightning protection zoneLPZ 2-3Housing materialPolyamid PA6, UL94 V-0  | Response time (L/PE, N/PE)   | t <sub>A</sub>     | < 100 ns               |
| Residual current I $I_{PE}$ $\leq$ 1 800 $\mu$ A Short-circuit current rating at maximum back-up fuse $I_{SCCR}$ $6$ kA $_{rms}$ Lightning protection zone LPZ 2-3 Polyamid PA6, UL94 V-0   | Power dissipation  | Pz                 | < 2.2 W                |
| Short-circuit current rating at maximum back-up fuse I <sub>SCCR</sub> 6 kA <sub>rms</sub> Lightning protection zone LPZ 2-3 Housing material Polyamid PA6, UL94 V-0  | Maximal back-up fuse   |                    | 10 A gL/gG             |
| Lightning protection zone LPZ 2-3 Housing material Polyamid PA6, UL94 V-0   | Residual current   | I <sub>PE</sub>    | ≤ 1 800 μA             |
| Housing material Polyamid PA6, UL94 V-0   | Short-circuit current rating at maximum back-up fuse                 | I <sub>SCCR</sub>  | 6 kA <sub>rms</sub>    |
| ·   | Lightning protection zone  |                    | LPZ 2-3                |
| Degree of protection IP20   | Housing material   |                    | Polyamid PA6, UL94 V-0 |
|   | Degree of protection   |                    | IP20                   |

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



| Operating temperature         9         4.0 + 5.5 ° C           Humidity range         RH         5 ÷ 9.5 %           Recommended cross-section of connected conductors         S         1.5 mm²           Clamp fastening range (solid conductor)         0.2 ÷ 6 mm²           Clamp fastening range (stranded conductor)         0.2 ÷ 6 mm²           Clamp fastening range (stranded conductor)         0.2 ÷ 4 mm²           Installation         On DIN rail 35 mm           Modular width         3 TE           Operating position         Any           Product placement environment         Internal           Signalling at the device         Optic           Importance of local signalling         No           Remote signalling         No           Includes EMI / EMC filter         Yes           Modular design         No           Includes EMI / EMC filter         Yes           Methods of measurement of the suppression characteristics of passive EMC filtering         EN 55017:2011 / CISPR 17:2011           Methods of measurement of the suppression characteristics of passive EMC filtering         EN 55017:2011 / CISPR 17:2011           Methods of measurement of the suppression characteristics of passive EMC filtering         EN 55017:2011 / CISPR 17:2011           Methods of reasurement of the suppression characteristics of p  | Туре   |    | HSAF10                        |
|--|--|----|-------------------------------|
| Recommended cross-section of connected conductors  | Operating temperature  | Э  | -40 ÷ 55 °C                   |
| Clamp fastening range (solid conductor)         0.2 ÷ 6 mm²           Clamp fastening range (stranded conductor)         0.2 ÷ 4 mm²           Tightening moment         0.5 Nm           Installation         On DIN rail 35 mm           Modular width         3 TE           Operating position         Any           Product placement environment         Internal           Signalling at the device         Optic           Importance of local signaling         OK – red light off           Remote signalling         No           Includes EMI / EMC filter         Yes           Modular design         No           Lifetime         > 1000 000 h           Designed according to standards         IEC 61643-11:2011           Requirements and test methods for SPDs connected to low-voltage power systems         IEC 61643-11:2011           Methods of measurement of the suppression characteristics of passive EMC filtering devices         EN 55017:2011 / CISPR 17:2011           Safety of Flammability of Plastic Materials         UL 94           Application standards           Protection against lightning         IEC 62305:2010           Selection and erection of electrical equipment – Switchgear and controlgear         CLC/TS 61643-12:2009           Selection and application principles for SPDs connected to low-voltage po   | Humidity range   | RH | 5 ÷ 95 %                      |
| Clamp fastening range (stranded conductor)         0.2 ÷ 4 mm²           Tightening moment         0.5 Nm           Installation         On DIN rail 35 mm           Modular width         3 TE           Operating position         Any           Product placement environment         Internal           Signalling at the device         Optic           Importance of local signaling         OK - red light of           Remote signalling         No           Includes EMI / EMC filter         Yes           Modular design         No           Lifetime         > 100 000 h           Designed according to standards         IEC 61643-11:2011           Requirements and test methods for SPDs connected to low-voltage power systems         IEC 61643-11:2011           Methods of measurement of the suppression characteristics of passive EMC filtering devices         EN 55017:2011 / CISPR 17:2011           Safety of Flammability of Plastic Materials         UL 94           Application standards         IEC 62305:2010           Protection against lightning         IEC 62305:2010           Selection and erection of electrical equipment – Switchgear and controlgear         HD 60364-5-53:2022           Selection and application principles for SPDs connected to low-voltage power systems         CLC/TS 61643-12:2009           Ord  | Recommended cross-section of connected conductors                                    | S  | 1.5 mm <sup>2</sup>           |
| Tightening moment   0,5 Nm     Installation   On DIN rail 35 mm     Modular width   3 TE     Operating position   Any     Product placement environment   Internal     Signalling at the device   Optic     Importance of local signaling   OK - red light off     FAULT - red light on     No     Includes EMI / EMC filter   Yes     No     Lifetime   > 1000 000 h     Designed according to standards     Requirements and test methods for SPDs connected to low-voltage power systems   IEC 61643-11:2011     Methods of measurement of the suppression characteristics of passive EMC filtering     Safety of Flammability of Plastic Materials   UL 94     Application standards     Protection against lightning   IEC 62305:2010     Selection and erection of electrical equipment - Switchgear and controlgear   HD 60364-5-53:2022     Selection and application principles for SPDs connected to low-voltage power systems   CLC/TS 61643-12:2009     Ordering, packaging and additional data     Mass   (mass (including the packaging)   mass (including the packaging)   mass (including the packaging)   mass (including the packaging)   Go x 113 x 73 mm     Packaging dimensions (H x W x D)   60 x 113 x 73 mm     Packaging dimensions (H x W x D)   60 x 113 x 73 mm     Packaging value   V 0.5 dm³     ETIM class   EC0000021     EXPRESSIONED   EC0000021       | Clamp fastening range (solid conductor)  |    | $0.2 \div 6 \text{ mm}^2$     |
| Installation         On DIN rail 35 mm           Modular width         3 TE           Operating position         Any           Product placement environment         Internal           Signalling at the device         Optic           Importance of local signaling         OK - red light off FAULT - red light on FAULT - red light on PAULT - red ligh  | Clamp fastening range (stranded conductor)   |    | 0.2 ÷ 4 mm <sup>2</sup>       |
| Modular width     3 TE       Operating position     Any       Product placement environment     Internal       Signalling at the device     Optic       Importance of local signaling     OK - red light off FAULT - red light on       Remote signalling     No       Includes EMI / EMC filter     Yes       Modular design     No       Lifetime     > 100 000 h       Designed according to standards       Requirements and test methods for SPDs connected to low-voltage power systems     IEC 61643-11:2011       Methods of measurement of the suppression characteristics of passive EMC filtering devices     UL 94       Safety of Flammability of Plastic Materials     UL 94       Application standards     UL 94       Protection against lightning     IEC 62305:2010       Selection and erection of electrical equipment – Switchgear and controlgear     HD 60364-5-53:2022       Selection and application principles for SPDs connected to low-voltage power systems     CLC/TS 61643-12:2009       Ordering, packaging and additional data     Wass       Mass     m     180 g       Mass (including the packaging)     m     204 g       Packaging dimensions (H x W x D)     60 x 113 x 73 mm       Packaging value     V     0.5 dm³       ETIM class     EC000042       Customs tariff no.     859  | Tightening moment  |    | 0,5 Nm                        |
| Operating position       Any         Product placement environment       Internal         Signalling at the device       Optic         Importance of local signalling       OK - red light off FAULT - red light on Paul FAULT - red li  | Installation   |    | On DIN rail 35 mm             |
| Product placement environment Signalling at the device Importance of local signaling Importance of local signaling Remote signalling Remot | Modular width  |    | 3 TE                          |
| Signalling at the device       Optic         Importance of local signaling       OK - red light off FAULT - red light on FAULT - red light on PAULT - red light on PAULT - red light on No Includes EMI / EMC filter       No         Includes EMI / EMC filter       Yes         Modular design       No         Lifetime       > 100 000 h         Designed according to standards         Requirements and test methods for SPDs connected to low-voltage power systems       IEC 61643-11:2011         Methods of measurement of the suppression characteristics of passive EMC filtering devices       EN 55017:2011 / CISPR 17:2011         Safety of Flammability of Plastic Materials       UL 94         Application standards       IEC 62305:2010         Selection and application principles for SPDs connected to low-voltage power systems       IEC 62305:2010         Selection and application principles for SPDs connected to low-voltage power systems       CLC/TS 61643-12:2009         Ordering, packaging and additional data         Mass       m       180 g         Mass (including the packaging)       m       204 g         Packaging value       V       0.5 dm³         ETIM group       EG0000021       ETIM group         ETIM group       EG0000021       ETIM class         Customs tariff no.       85363010   | Operating position   |    | Any                           |
| Importance of local signaling  Remote signalling  Remote signalling  Robert EAULT – red light off FAULT – red light on No Includes EMI / EMC filter  No Includes EMI / EMC filter  No Lifetime  Pesigned according to standards  Requirements and test methods for SPDs connected to low-voltage power systems  Requirements and test methods for SPDs connected to low-voltage power systems  Rethods of measurement of the suppression characteristics of passive EMC filtering devices  Safety of Flammability of Plastic Materials  UL 94  Application standards  Protection against lightning  Selection and erection of electrical equipment – Switchgear and controlgear  HD 60364-5-53:2022  Selection and application principles for SPDs connected to low-voltage power systems  CLC/TS 61643-12:2009  Ordering, packaging and additional data  Mass  m 180 g  Mass (including the packaging)  m 204 g  Packaging dimensions (H x W x D)  60 x 113 x 73 mm  Packaging value  V 0.5 dm³  ETIM group  ETIM class  EC000021  ETIM class  EC000942  Customs tariff no.  85363010  EAN code   | Product placement environment  |    | Internal                      |
| Remote signalling Resignate signalling Reduirements and tesign Requirements and test methods for SPDs connected to low-voltage power systems Requirements and test methods for SPDs connected to low-voltage power systems Rethods of measurement of the suppression characteristics of passive EMC filtering devices Safety of Flammability of Plastic Materials Repolication standards Protection against lightning Record signalling Re | Signalling at the device   |    | Optic                         |
| Includes EMI / EMC filter  Modular design  No Lifetime  Designed according to standards  Requirements and test methods for SPDs connected to low-voltage power systems  Methods of measurement of the suppression characteristics of passive EMC filtering devices  Safety of Flammability of Plastic Materials  UL 94  Application standards  Protection against lightning  Selection and erection of electrical equipment – Switchgear and controlgear  Selection and application principles for SPDs connected to low-voltage power systems  Ordering, packaging and additional data  Mass  m  180 g  Mass (including the packaging)  Packaging dimensions (H x W x D)  Packaging value  V  0.5 dm³  ETIM group  EG000021  ETIM class  Cucyte 61643-12:2009  EAN code  8590681116876  | Importance of local signaling  |    |                               |
| Modular design       No         Lifetime       > 100 000 h         Designed according to standards         Requirements and test methods for SPDs connected to low-voltage power systems       IEC 61643-11:2011         Methods of measurement of the suppression characteristics of passive EMC filtering devices       EN 55017:2011 / CISPR 17:2011         Safety of Flammability of Plastic Materials       UL 94         Application standards       IEC 62305:2010         Protection against lightning       IEC 62305:2010         Selection and erection of electrical equipment – Switchgear and controlgear       HD 60364-5-53:2022         Selection and application principles for SPDs connected to low-voltage power systems       CLC/TS 61643-12:2009         Ordering, packaging and additional data       m         Mass (including the packaging)       m       204 g         Packaging dimensions (H x W x D)       60 x 113 x 73 mm       Packaging value       V       0.5 dm³         ETIM class       EG000021       ETIM class       EC000942         Customs tariff no.       859681116876   | Remote signalling  |    | No                            |
| Lifetime > 100 000 h  Designed according to standards  Requirements and test methods for SPDs connected to low-voltage power systems   EC 61643-11:2011    Methods of measurement of the suppression characteristics of passive EMC filtering devices  Safety of Flammability of Plastic Materials   UL 94    Application standards  Protection against lightning   IEC 62305:2010    Selection and erection of electrical equipment – Switchgear and controlgear   HD 60364-5-53:2022    Selection and application principles for SPDs connected to low-voltage power systems   CLC/TS 61643-12:2009    Ordering, packaging and additional data    Mass   m   180 g    Mass (including the packaging)   m   204 g    Packaging dimensions (H x W x D)   60 x 113 x 73 mm    Packaging value   V   0.5 dm³    ETIM group   EG000021    ETIM class   EC000942    Customs tariff no.   85363010    EAN code   8590681116876  | Includes EMI / EMC filter  |    | Yes                           |
| Designed according to standards Requirements and test methods for SPDs connected to low-voltage power systems  Methods of measurement of the suppression characteristics of passive EMC filtering devices  Safety of Flammability of Plastic Materials  UL 94  Application standards  Protection against lightning  Selection and erection of electrical equipment – Switchgear and controlgear  Selection and application principles for SPDs connected to low-voltage power systems  Ordering, packaging and additional data  Mass  m  180 g  Mass (including the packaging)  Mass (including the packaging)  Packaging dimensions (H x W x D)  Packaging value  V  0.5 dm³  ETIM group  EG000021  ETIM class  EC000942  Customs tariff no.  85363010  EAN code  | Modular design   |    | No                            |
| Requirements and test methods for SPDs connected to low-voltage power systems  Methods of measurement of the suppression characteristics of passive EMC filtering devices  Safety of Flammability of Plastic Materials  UL 94  Application standards  Protection against lightning  Selection and erection of electrical equipment – Switchgear and controlgear  Selection and application principles for SPDs connected to low-voltage power systems  Ordering, packaging and additional data  Mass  m  180 g  Mass (including the packaging)  Packaging dimensions (H x W x D)  Packaging value  The Good of the American Standard St | Lifetime   |    | > 100 000 h                   |
| Methods of measurement of the suppression characteristics of passive EMC filtering devices  Safety of Flammability of Plastic Materials  UL 94  Application standards  Protection against lightning  Selection and erection of electrical equipment – Switchgear and controlgear  Selection and application principles for SPDs connected to low-voltage power systems  Ordering, packaging and additional data  Mass  m  180 g  Mass (including the packaging)  Packaging dimensions (H x W x D)  Packaging value  V  0.5 dm³  ETIM group  EG000021  ETIM class  EC000942  Customs tariff no.  8590681116876  | Designed according to standards  |    |                               |
| devices  Safety of Flammability of Plastic Materials  UL 94  Application standards  Protection against lightning  Selection and erection of electrical equipment – Switchgear and controlgear  Selection and application principles for SPDs connected to low-voltage power systems  CLC/TS 61643-12:2009  Ordering, packaging and additional data  Mass  m  180 g  Mass (including the packaging)  m  204 g  Packaging dimensions (H x W x D)  Packaging value  V  0.5 dm³  ETIM group  ETIM group  ETIM class  EC000942  Customs tariff no.  85363010  EAN code  | Requirements and test methods for SPDs connected to low-voltage power systems        |    | IEC 61643-11:2011             |
| Application standards Protection against lightning Selection and erection of electrical equipment – Switchgear and controlgear Selection and application principles for SPDs connected to low-voltage power systems  Ordering, packaging and additional data  Mass m 180 g Mass (including the packaging) m 204 g Packaging dimensions (H x W x D) Packaging value  V 0.5 dm³  ETIM group  ETIM class Customs tariff no. 85363010  EAN code  | ···  |    | EN 55017:2011 / CISPR 17:2011 |
| Protection against lightning  Selection and erection of electrical equipment – Switchgear and controlgear  Selection and application principles for SPDs connected to low-voltage power systems  Ordering, packaging and additional data  Mass  Mass (including the packaging)  Packaging dimensions (H x W x D)  Packaging value  ETIM group  ETIM class  Customs tariff no.  EAN code  IEC 62305:2010  HD 60364-5-53:2022  CLC/TS 61643-12:2009  To 000064  ECCOMPAGE  HD 60364-5-53:2022  CLC/TS 61643-12:2009  CLC/TS 61643-12:2009  CLC/TS 61643-12:2009  To 000064  ECCOMPAGE  ECCOMPA | Safety of Flammability of Plastic Materials  |    | UL 94                         |
| Selection and erection of electrical equipment – Switchgear and controlgear  Selection and application principles for SPDs connected to low-voltage power systems  CLC/TS 61643-12:2009  Ordering, packaging and additional data  Mass  m 180 g  Mass (including the packaging)  Packaging dimensions (H x W x D)  Packaging value  V 0.5 dm³  ETIM group  ETIM class  EC000942  Customs tariff no.  EAN code  HD 60364-5-53:2022  CLC/TS 61643-12:2009  | Application standards  |    |                               |
| Selection and application principles for SPDs connected to low-voltage power systems  Ordering, packaging and additional data  Mass  Mass (including the packaging)  Packaging dimensions (H x W x D)  Packaging value  V  0.5 dm³  ETIM group  ETIM class  CLC/TS 61643-12:2009  M  180 g  60 x 113 x 73 mm  V  0.5 dm³  EC000021  EC000021  ETIM class  Customs tariff no.  85363010  8590681116876  | Protection against lightning   |    | IEC 62305:2010                |
| Ordering, packaging and additional data           Mass         m         180 g           Mass (including the packaging)         m         204 g           Packaging dimensions (H x W x D)         60 x 113 x 73 mm           Packaging value         V         0.5 dm³           ETIM group         EG000021           ETIM class         EC000942           Customs tariff no.         85363010           EAN code         8590681116876   | Selection and erection of electrical equipment – Switchgear and controlgear          |    | HD 60364-5-53:2022            |
| Mass         m         180 g           Mass (including the packaging)         m         204 g           Packaging dimensions (H x W x D)         60 x 113 x 73 mm           Packaging value         V         0.5 dm³           ETIM group         EG000021           ETIM class         EC000942           Customs tariff no.         85363010           EAN code         8590681116876   | Selection and application principles for SPDs connected to low-voltage power systems |    | CLC/TS 61643-12:2009          |
| Mass (including the packaging)         m         204 g           Packaging dimensions (H x W x D)         60 x 113 x 73 mm           Packaging value         V         0.5 dm³           ETIM group         EG000021           ETIM class         EC000942           Customs tariff no.         85363010           EAN code         8590681116876  | Ordering, packaging and additional data  |    |                               |
| Packaging dimensions (H x W x D)       60 x 113 x 73 mm         Packaging value       V       0.5 dm³         ETIM group       EG000021         ETIM class       EC000942         Customs tariff no.       85363010         EAN code       8590681116876   | Mass   | m  | 180 g                         |
| Packaging value         V         0.5 dm³           ETIM group         EG000021           ETIM class         EC000942           Customs tariff no.         85363010           EAN code         8590681116876   | Mass (including the packaging)   | m  | 204 g                         |
| ETIM group         EG000021           ETIM class         EC000942           Customs tariff no.         85363010           EAN code         8590681116876   | Packaging dimensions (H x W x D)   |    | 60 x 113 x 73 mm              |
| ETIM class         EC000942           Customs tariff no.         85363010           EAN code         8590681116876   | Packaging value  | V  | 0.5 dm <sup>3</sup>           |
| Customs tariff no.         85363010           EAN code         8590681116876   | ETIM group   |    | EG000021                      |
| EAN code 8590681116876   | ETIM class   |    | EC000942                      |
|  | Customs tariff no.   |    | 85363010                      |
| Art. number 30 160   | EAN code   |    | 8590681116876                 |
|  | Art. number  |    | 30 160                        |

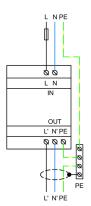


**The link in the QR code** leads to the online presentation of the **HSAF10**. There, in addition to the always up-to-date data sheet, you will also find all diagrams and drawings, declarations of conformity, or 2D or 3D models and other necessary materials. For more information, visit **www.hakel.com** 





## Application wiring diagram (installation)



## Internal diagram

