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## HSAF16/60VDC

- 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.

| Туре  |                    | HSAF16/60VDC              |
|---|--------------------|---------------------------|
| Test class according to EN 61643-11:2012 (IEC 61643-11:2011)            |                    | Т3                        |
| System  |                    | DC                        |
| Rated operating DC voltage  | U <sub>N</sub>     | 60 V                      |
| Maximum continuous operating voltage DC                                 | U <sub>c</sub>     | 72 V                      |
| Rated load current  | ١ <sub>L</sub>     | 16 A                      |
| Open circuit voltage of the combination wave generator (+/-, $\pm$ /PE) | U <sub>oc</sub>    | 4 kV                      |
| Voltage protection level at U <sub>OC</sub> (+/-)                       | Up                 | < 0.55 kV                 |
| Voltage protection level at $U_{OC}$ (±/PE)                             | Up                 | < 0.4 kV                  |
| Nominal discharge current for class II test (8/20) +/-, ±/PE            | I <sub>n</sub>     | 2 kA                      |
| Total discharge current (8/20) ±->PE                                    | I <sub>Total</sub> | 4 kA                      |
| Asymmetrical attenuation of filter at f = 4 MHz                         |                    | > 80 dB                   |
| Asymmetrical attenuation of filter at f = $0.15 \div 30 \text{ MHz}$    |                    | > 35 dB                   |
| Response time (+/-)   | t <sub>A</sub>     | < 25 ns                   |
| Response time (±/PE)  | t <sub>A</sub>     | < 100 ns                  |
| Power dissipation   | Pz                 | < 3.5 W                   |
| Maximal back-up fuse  |                    | 16 A gL/gG                |
| Residual current  | I <sub>PE</sub>    | ≤ 1 800 μA                |
| 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    |
| 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 <sup>2</sup>       |
| Clamp fastening range (solid conductor)                                 |                    | $0.2 \div 6 \text{ mm}^2$ |
| Clamp fastening range (stranded conductor)                              |                    | $0.2 \div 4 \text{ mm}^2$ |
| Tightening moment   |                    | 0,5 Nm                    |
| Installation  |                    | On DIN rail 35 mm         |

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



| Туре   |   | HSAF16/60VDC                               |
|--|---|--|
| Modular width  |   | 3 TE                                       |
| Operating position   |   | Any  |
| Product placement environment  |   | Internal                                   |
| Signalling at the device   |   | Optic                                      |
| Importance of local signaling  |   | OK – red light off<br>FAULT – red light on |
| Remote signalling  |   | No   |
| Includes EMI / EMC filter  |   | Yes  |
| Modular design   |   | No   |
| Lifetime   |   | > 100 000 h                                |
| Designed according to standards  |   |  |
| Requirements and test methods for SPDs connected to low-voltage power systems              |   | IEC 61643-11:2011                          |
| Methods of measurement of the suppression characteristics of passive EMC filtering devices |   | EN 55017:2011 / CISPR 17:2011              |
| Safety of Flammability of Plastic Materials  |   | UL 94                                      |
| Application standards  |   |  |
| Protection against lightning   |   | IEC 62305:2010                             |
| Selection and erection of electrical equipment – Switchgear and controlgear                |   | HD 60364-5-53:2022                         |
| Selection and application principles for SPDs connected to low-voltage power systems       |   | CLC/TS 61643-12:2009                       |
| Ordering, packaging and additional data  |   |  |
| Mass   | m | 180 g                                      |
| Mass (including the packaging)   | m | 204 g                                      |
| Packaging dimensions (H x W x D)   |   | 60 x 113 x 73 mm                           |
| Packaging value  | V | 0.5 dm <sup>3</sup>                        |
| ETIM group   |   | EG000021                                   |
| ETIM class   |   | EC000942                                   |
| Customs tariff no.   |   | 85363010                                   |
| EAN code   |   | 8590681163726                              |
|  |   |  |



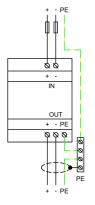
**The link in the QR code** leads to the online presentation of the **HSAF16/60VDC**. There, in addition to the always up-to-date data sheet, you will also find all diagrams

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

