



DEHNsecure protects
Direct Current Applications



Increased safety in direct current systems



DEHNsecure protects direct current applications

The use of direct current (d.c.) systems has considerably increased over the last years. Apart from conventional d.c. applications such as in the telecommunication and railway sectors, new fields of application, for example in the security sector, opened up. The latest electromobility projects also extend the scope of application of d.c. systems. In this context, requirements on surge protective devices for use in d.c. systems have also increased. The installation and product standards for surge protective devices in low-voltage applications, however, only include requirements on surge protective devices used in alternating current (a.c.) systems.

When selecting and dimensioning surge protective devices for direct current (d.c.) systems, not only lightning protection requirements, but also d.c.-specific system requirements must be met. As opposed to a.c. applications, there is no natural current zero in d.c. systems.

The coordinated DEHNsecure lightning current arrester is ideally suited for all d.c. applications. This type 1 arrester in voltage versions 60 V, 220 V and 242 V can be used in:

- Emergency power supply systems
- Safety lighting systems
- Direct current drives
- Power supply units for remote radio heads
- Aircraft warning lights



DEHNsecure: Lightning current arrester for d.c. applications

Featuring a functional design, the modular devices of the DEHNsecure product family are coordinated lightning current arresters with a discharge capacity of 25 kA (10/350 μ s). They are energy-coordinated with type 2 surge arresters of the DEHNguard® family without additional cable lengths. DEHNsecure devices are powerful and user-friendly. Their electrical parameters are rated for the most stringent requirements in a lightning and surge protection system.

The DEHNsecure spark gap is perfectly suited for use in d.c. circuits. The device concept prevents mains follow currents up to 2000 A d.c. at the early stages of development. This new arrester series allows to implement a consistent

lightning protection zone concept including the cross-boundary d.c. cables. Furthermore, the leakage-current-free version of the spark-gap-based arrester offers decisive advantages when used in insulation monitored systems or in applications where there are extreme requirements on the self-energy consumption.

DEHNsecure's operating-current-free status/fault indicator immediately provides information on the operating state of the device. Apart from the standard visual indication with red and green indicator flags, DEHNsecure ... FM devices feature an additional remote signalling output. With the floating changeover contact, the remote signal can be used as a break or make contact according to the particular circuit concept.

Benefits of the DEHNsecure product family

- Coordinated spark-gap-based lightning current arrester
- Spark gap for use in d.c. circuits
- Arrester consisting of a base part and plug-in protection module
- Discharge capacity up to 25 kA (10/350 μ s)
- Coordinated with DEHNguard surge protective devices
- Low voltage protection level
- Operating current-free state-and-fault indication in the inspection window
- Easy replacement of protection modules without tools



Remote radio heads in mobile communications

DEHNsecure M 1 60 (FM) and DEHNsecure M 2P 60 (FM) arresters are perfectly suited for remote radio head applications in the mobile communication sector. Designed for high load currents, they leave enough leeway for future developments in the field of mobile communication.

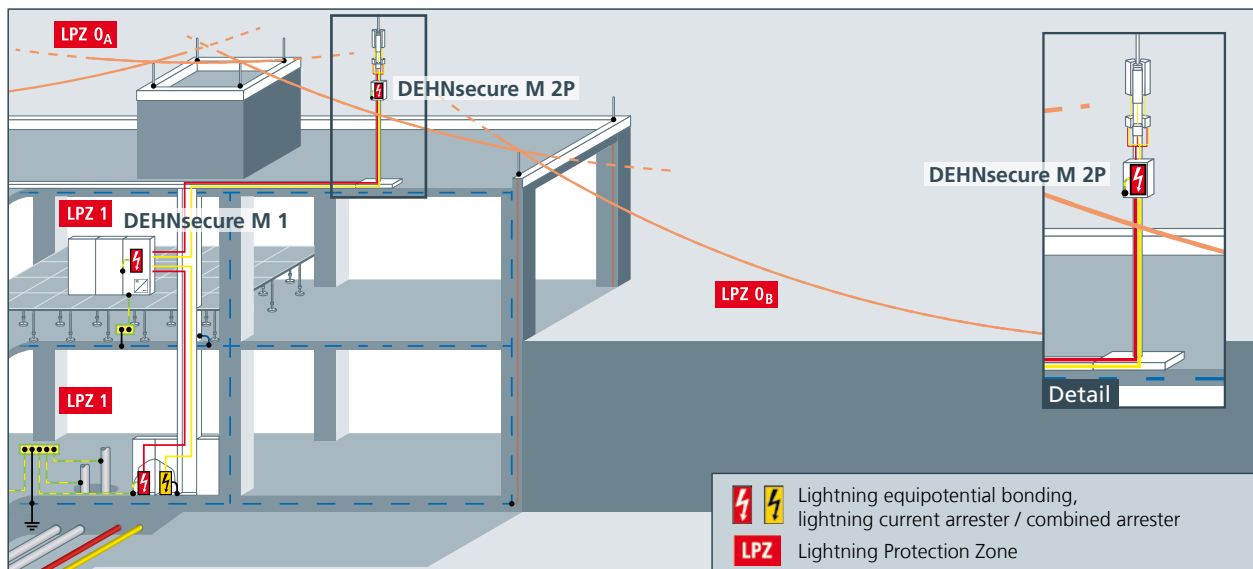
DEHNsecure M 1 60 (FM) DEHNsecure M 2P 60 (FM)

Type	Part No.
DSE M 1 60 (FM)	971 121 (971 126)
DSE M 2P 60 (FM)	971 221 (971 226)



Technical data

SPD classification according to EN 61643-11	type 1
Max. continuous operating voltage (d.c.) U_c	60 V
Lightning impulse current (10/350 μ s) I_{imp}	25 kA
Voltage protection level U_p	< 1.5 kV
Maximum direct current	2000 A





Direct current systems

DEHNsecure M 1 220 (FM) arresters are used, for instance, in d.c. systems for directly supplying d.c. drives, control circuits and all kind of battery-operated supply systems.

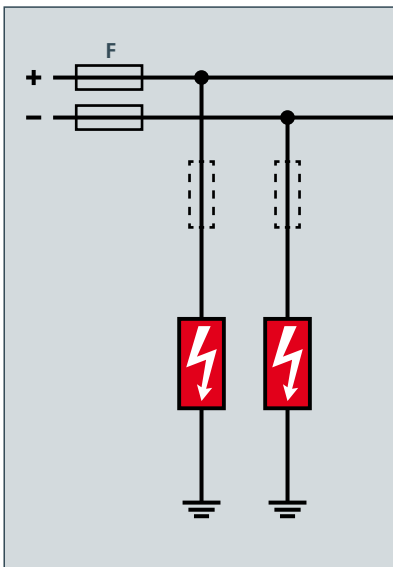
DEHNsecure M 1 220 (FM)

Type	Part No.
DSE M 1 220 (FM)	971 120 (971 125)

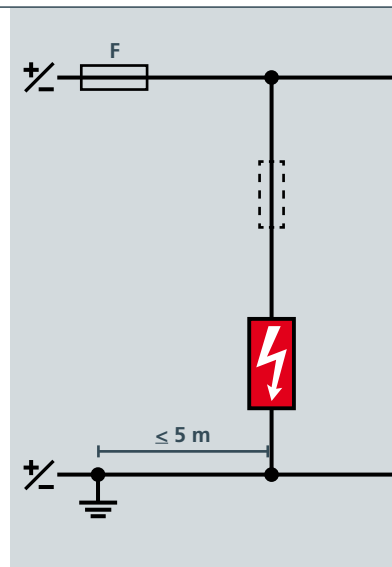


Technical data

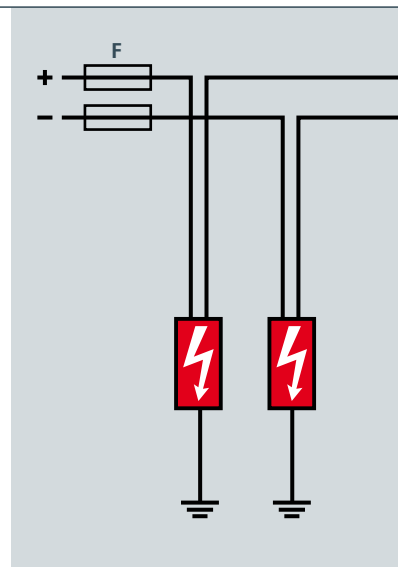
SPD classification according to EN 61643-11	type 1
Max. continuous operating voltage (d.c.) U_c	220 V
Lightning impulse current (10/350 μ s) I_{imp}	25 kA
Voltage protection level U_p	< 2.5 kV
Maximum direct current	2000 A



2-0 circuit in insulated systems



1-0 circuit in earthed systems




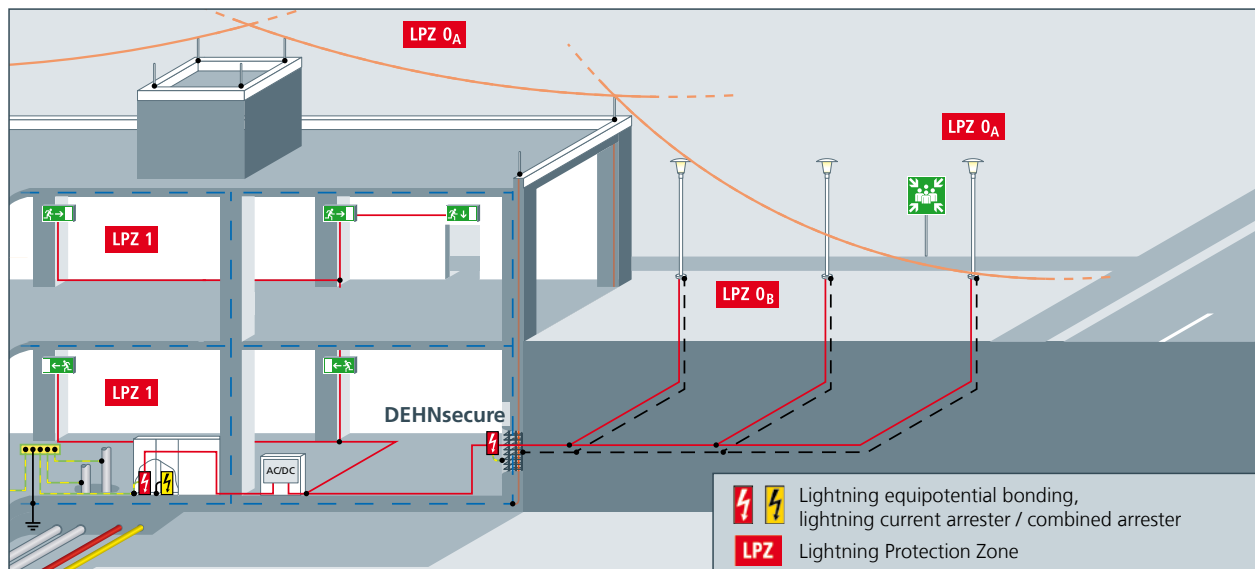
Feed-through wiring with $F \leq 125$ A gG



Safety lighting systems

In safety lighting systems, loads are supplied with a.c. voltage during normal operation and with battery-operated d.c. voltage during emergency operation. Since surges may occur during both operating states, DEHNsecure M 1 242 (FM) arresters are suited for direct and alternating currents.

DEHNsecure M 1 242 (FM)			Technical data	
Type	Part No.		SPD classification according to EN 61643-11	type 1
DSE M 1 242 (FM)	971 122 (971 127)	Max. continuous operating voltage (d.c.) U_c	242 V	
		Lightning impulse current (10/350 μ s) I_{imp}	25 kA	
		Voltage protection level U_p	< 2.5 kV	
		Maximum direct current	2000 A	
		For d.c. and a.c. operation	yes	
		Max. continuous operating voltage (a.c.) U_c	253 V	
		Maximum backup fuse (a.c.)	10 A gL/gG	





Our promise

DEHN protects.

Our key objective is to protect workers and material assets. It was our pioneering spirit and innovative ideas that have defined our company for more than 100 years and made us a market leader with more than 1,500 employees. New products and safety concepts reflect our market feasibility, commitment and ideas.

As early as in 1923 our founder Hans Dehn started production of external lightning protection and earthing components to optimise the protection of buildings and installations. In 1954, we launched the world's first series of surge protective devices. Constant further development of these devices ensures safe operation and permanent availability of electrical and electronic installations. Also in the 1950s, our third sector, safety equipment, was added to our portfolio.

Neumarkt in der Oberpfalz is the heart of our activities where product managers and developers advance our protection technologies. Here we manufacture our high-quality safety products.

We offer the best solution

Our concern is to be a reliable and fair partner for our industrial, commercial and technical customers all over the world. To this end, we always focus on the best solution to protection problems. Our sales teams in Germany and our global network of 11 subsidiaries as well as more than 70 partners are committed to competent and customer-oriented distribution of our products. Proximity and close contact with our customers is of utmost importance to us, be it on-site support by our experienced field staff team, our telephone hotline or personal contact at trade fairs.

In hundreds of seminar, workshops and conferences held every year throughout the world we impart practical knowledge on our products and solutions. Our specialised book "Lightning Protection Guide" and our brochures will broaden your practical knowledge. Visit us at www.dehn.de.



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Surge Protection
Lightning Protection
Safety Equipment
DEHN protects.

DEHN + SÖHNE
GmbH + Co.KG.

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