



Relax. It is ACI technology from DEHN.

Surge protection with no
external backup fuse.



New grid realities – new challenges for surge protection?

The increasing share of renewable energies is significantly changing short-circuit behaviour in the grid: with lower short-circuit currents, new feed-in directions and shifted dynamics, the usual high short-circuit current contributions are no longer present in many places. For planning engineers and installers, that means

"Selecting the right surge protection is becoming increasingly complex due to new network parameters, digitalisation and the energy revolution."

Short circuits can cause serious economic damage, particularly in industrial applications, due to production downtimes, data loss and operational interruptions. Planning is made even more difficult when external backup fuses are used. Large cable cross-sections hinder cable routing, and selecting the right fuse involves risks: if it is too small, there is a risk of nuisance tripping, and if it is too large, there is an increased risk of explosion or fire in the event of a defective surge protective device. For safe operation, precise selectivity between the arrester backup fuse and the system fuse is also required – a typical source of uncertainty in planning.

Choose ACI technology, which makes planning and installation easier and provides maximum protection for your systems.



Benefits of ACI technology



Selectivity guaranteed – even with the smallest system fuses

Even if the SPD malfunctions, there will be no nuisance tripping. ACI technology ensures reliable selectivity for all fault current magnitudes.



Simplified planning

The fact that no external backup fuse is required simplifies planning and reduces installation complexity.



Optimised cross-sectional areas

With 6 mm² (Type 2) and 16 mm² (Type 1), the cross-sections are dimensioned for practical use – for easy cable routing and short cable runs.



Galvanic isolation for maximum safety

It prevents leakage currents from varistors, increases TOV resistance and also protects against power-frequency surges such as neutral conductor failure.



Comprehensive protection without any gaps

ACI technology covers the entire spectrum – from the smallest leakage currents to high short-circuit currents – and closes the dangerous gap between thermal disconnection and fusing.



Easy installation

The small cross-sectional area enables simple cable routing with tight bending radii.

Technology that simplifies planning and maximises safety

ACI technology combines technical precision with practicality – for reliable protection, simple installation and maximum system availability. A clear advantage for anyone who wants to plan for the future and comply with standards.

ACI – Safety at the highest level

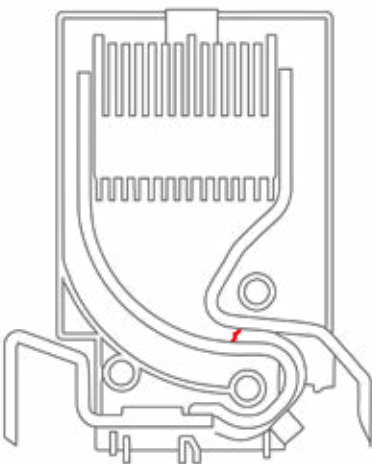
Extreme short-circuit conditions occur in industrial plants, switchgear assemblies, or power stations. This is precisely where ACI technology demonstrates its strength. It reliably disconnects the smallest and very large fault currents.

The integrated switch/spark gap combination with arcing chamber prevents uncontrolled electric arcs inside the arrester and replaces the external backup fuse. This makes installation easier and allows smaller conductor cross-sections (up to 16 mm² for type 1 and 6 mm² for type 2).

How it works:

In the event of a surge impulse, the current is deliberately dissipated in the ignition area of the electrode. In the event of a fault, the electric arc ignites between the electrodes and is guided into the arcing chamber, where it is split into several partial electric arcs and safely quenched within < 1 ms.

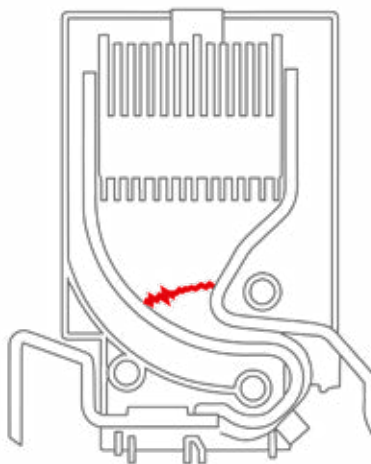
Phase 1:



Normal operating state

A lightning or surge event reliably triggers the ignition of the arc in the main spark gap to assume the interference impulse at lightning speed.

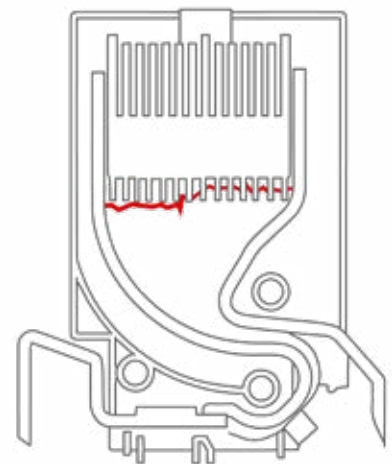
Phase 2:



Counter-voltage generation

The resulting electric arc travels towards the arcing chamber and generates the required counter-voltage. This occurs at the end of the life of the downstream surge protection device.

Phase 3:



Quenching process

When the maximum counter-voltage is reached, the electric arc enters the arcing chamber and interrupts the mains follow current. The device disconnects and the status signal changes from green to red.

Reliable protection for demanding applications

ACI technology ensures maximum safety and efficiency in compact switchgear, sensitive automation systems, PV and energy systems, and building technology where maximum availability is required. This gives you maintenance-free surge protection, reduces thermal loads and ensures long-term stability under demanding operating conditions.

Increased operational safety

The thermal load on adjacent cables and components is reduced, as the energy input during the disconnection process is minimal. This significantly reduces insulation ageing and conductor heating – a decisive factor for the service life of the entire installation.

Minimal maintenance and maximum system availability

Cost-effectiveness is increased thanks to the integrated disconnection function in Type 1 arresters, which is activated in the event of a fault, and the improved TOV withstand of Type 2 arresters: The increased service life saves costs as it reduces the need for maintenance. This minimises downtimes and maximises system availability.

Thermal and electrical stability

The stable spark gap geometry prevents material migration or contact welding, which can occur with conventional systems. This ensures that the protection value remains constant over the long term – regardless of ambient temperature or fluctuations in the grid.



We are your full-service provider

We have developed a comprehensive range of services: from project discussions to the planning of protection concepts and calculations through to the finished protection solution. Engage our engineers worldwide – we develop plans customised to your location in accordance with IEC, UL, EN or DIN standards. We ensure that your planning is precise, economical and sustainable.

**All DEHN services at a glance.
Discover them online now:**

<http://de.hn/7ZpAH>



Type 1 + 2 + 3 combined arrester

DEHNventil ACI

The ability to extinguish high follow currents of 100 kA_{rms} qualifies the arrester for safe installation at the supply point of the low-voltage main distribution board. Thanks to the protective effect of a Type 1 + 2 + 3, the arrester also protects terminal devices within a cable length of 10 metres. With a lightning current discharge capacity of 100 kA (10/350 µs), the arrester is suitable for use in LPS class I.



Maximum system availability



Simple planning



Easy installation



Installation points for surge protective devices are often located behind the main fuse. As a result, the safety elements are not included in the protected volume and remain exposed to lightning currents without protection. The solution is to position arresters in front of the main fuse. However, that means the power has to be switched off completely when the module needs to be replaced, with an obvious negative impact on system availability.

The solution: maintenance-friendly module replacement without shutdown

ACI technology uses an arrester that automatically disconnects the module to be replaced from the power supply. That means the replacement can be carried out safely and without shutdown – a decisive advantage for operators who depend on maximum availability and minimum downtimes.

→ Versatile installation options:
DIN rail mounting, busbar mounting
using two M8 screws

Go to DEHNventil ACI in the product database:



DE: <http://de.hn/3Fww7>



INT: <http://de.hn/2wnyG>

Product features at a glance



- Safe electrical isolation with disconnection indication
- Integrated ACI overcurrent protection module (monoblock)
- Visual status indication for triggering the protection module
- Status report via remote signalling

Technical data

DV ACI M TNC 264 FM	Part no. 961 305
DV ACI M TNS 264 FM	Part no. 961 405
SPD as per EN 61643-11	Type 1 + Type 2 + Type 3
Max. continuous operating voltage (U_C)	264 V (50 / 60 Hz)
Lightning impulse current (10/350 μ s) per pole (I_{imp})	25 kA
Total current [TNC/TNS] (I_{total})	75 kA / 100 kA
Protection level [L-N]/[N-PE] (U_P)	≤ 1.5 kV
Integrated overcurrent protection	Yes, ACI technology
Follow current extinguishing capability	100 kA _{rms}
Width	11 standard DIN modules
TOV (U_T) – characteristic	440 V / 120 min. – withstand

- 1 Remote signalling contact: For easy remote monitoring
- 2 Connecting cable: 16 mm² of copper always sufficient
- 3 High performance parameters: 25 kA / 100 kA (10/350 μ s) lightning current carrying capability with a low protection level $U_P \leq 1.5$ kV
- 4 Maximum prospective AC short-circuit current 100 kA_{rms} (50 Hz)
- 5 Status indication
- 6 Visual disconnection indicator: Visible from all sides
- 7 ACI technology eliminates the need for backup fuses
- 8 Flexible connection: neutral conductor left or right
- 9 Single module: One module for the entire connection of the arrester
- 10 PE connection: mounting on an earthed DIN rail or busbar
- 11 Secure fixing of the module: Screwed to base part
- 12 Stop: for module removal from the side and front
- 13 Digital Product Passport

Make sustainable products the norm – we also have Digital Product Passports!

With a QR code on the product:

Access to all current technical data, installation instructions, PCF values and relevant documents.

Type 2 arrester

DEHNGuard ACI – So that your system runs reliably

DEHNGuard ACI is the safe and reliable Type 2 surge protection for current and future requirements. The elimination of the backup fuse enables a simple design. Sensitive systems and devices remain available at all times.

- **Fully integrated switch/spark gap combination replaces external backup fuse**, simplifies planning and installation, minimises sources of error and thus increases operational safety and system availability
- **Easy cable routing** due to 6 mm² cross-section and elimination of backup fuse
- **Zero leakage current and the elimination of an additional backup fuse** combined in one device
- **Galvanic isolation** of the varistor through the ACI element prevents its ageing

Double screw clamp

parallel connection up to 1 x 35 mm² or feed-through wiring up to 2 x 16 mm²

ACI technology

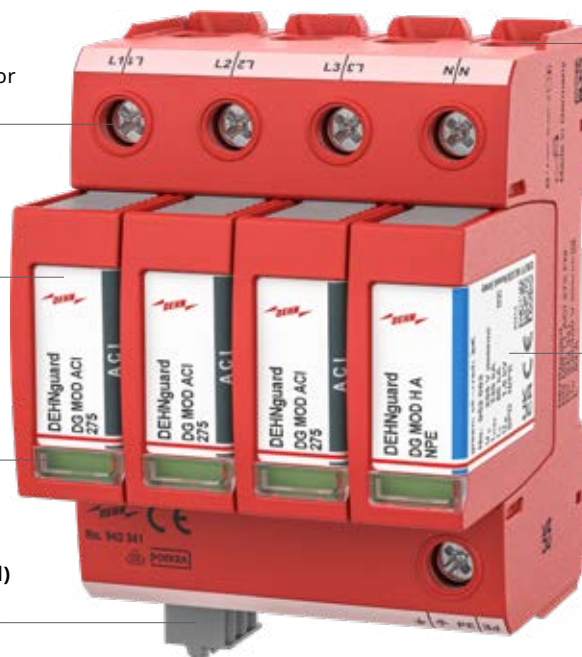
with integrated switch/spark gap combination

Status indication

Remote signalling contact (optional)
for easy remote monitoring

EMC-optimised feed-through wiring

Certification
to DEKRA as type 2 + 3 with integrated protection of terminal equipment



- Base parts with flexible connection options
- Optimum use of space
- Lower costs
- Space for new components

Go to DEHNGuard ACI in the product database:



DE: <http://de.hn/8kGVr>








INT: <http://de.hn/7MG2p>







A wide range of versions for tailored surge protection

The DEHNguard ACI product range offers versions to suit different system configurations and requirements – modular, compact and powerful.




Push-in connection

	DG MP TT ACI ... FM DEHNguard modular with Advanced Circuit Interruption for reliable dimensioning. Voltage protection level: ≤ 1.5 kV	275 V 385 V	942 341 942 342
	DG MP TNS ACI 275 FM DEHNguard modular with Advanced Circuit Interruption for reliable dimensioning. Voltage protection level: ≤ 1.5 kV	275 V	942 440
	DG MP TNC ACI 275 FM Modular surge arrester with Advanced Circuit Interruption (ACI) for TN-C systems. Voltage protection level: ≤ 1.5 kV	275 V	942 330
	DG MP TN ACI 275 FM Modular surge arrester with Advanced Circuit Interruption (ACI) for single-phase 230 V TN systems. Voltage protection level: ≤ 1.5 kV	275 V	942 220
	DG MP TT 2P ACI ... FM Modular surge arrester with Advanced Circuit Interruption (ACI) for TT and TN systems (1+1 configuration). Voltage protection level: ≤ 1.5 kV	275 V 385 V	942 121 942 122

Standard screw connection

	M TT ACI ... FM Modular surge arrester with Advanced Circuit Interruption (ACI) for TT and TN-S systems (3+1 configuration). Voltage protection level: ≤ 1.5 kV	275 V 385 V	952 341 952 342
	M TNS ACI 275 FM Modular surge arrester with Advanced Circuit Interruption (ACI) for TN-S systems. Voltage protection level: ≤ 1.5 kV	275 V	952 440
	M TNC ACI 275 FM Modular surge arrester with Advanced Circuit Interruption (ACI) for TN-C systems. Voltage protection level: ≤ 1.5 kV	275 V	952 330
	M TN ACI 275 FM Modular surge arrester with Advanced Circuit Interruption (ACI) for single-phase 230 V TN systems. Voltage protection level: ≤ 1.5 kV	275 V	952 220
	M TT 2P ACI ... FM Modular surge arrester with Advanced Circuit Interruption (ACI) for single-phase 230 V TT and TN systems (1+1 configuration). Voltage protection level: ≤ 1.5 kV	275 V 385 V	952 121 952 122
	S ACI ... FM Pluggable, single-pole surge arrester with Advanced Circuit Interruption (ACI) consisting of a base part and plug-in protection module. Voltage protection level: ≤ 1.5 kV	275 V 385 V	952 100 952 113

Double screw connection

	DG MD TNS ACI 275 FM DEHNguard modular with Advanced Circuit Interruption for reliable dimensioning. Voltage protection level: ≤ 1.5 kV	275 V	943 440
	DG MD TT ACI 275 FM DEHNguard modular with Advanced Circuit Interruption for reliable dimensioning. Voltage protection level: ≤ 1.5 kV	275 V	943 341
	DG MD TT ACI ... FM DEHNguard modular with Advanced Circuit Interruption for reliable dimensioning. Voltage protection level: ≤ 1.5 kV	385 V	943 342

Type 2 arrester

DEHNguard M DC ACI

You save money with the DEHNguard M DC ACI. The integrated ACI technology completely replaces the external backup fuse that would otherwise be necessary, which means no additional components, no complex dimensioning and no installation costs for each individual backup fuse. These savings quickly add up, especially in charging parks with multiple charging points.

- **These savings quickly add up, especially in charging parks with multiple charging points.** The DEHNguard M DC ACI is the innovative solution for high-power charging and battery storage.
- **The DEHNguard M DC ACI** meets the requirements of IEC 61643-41. With a maximum continuous operating

voltage U_C of 1,250 V and a short-circuit current I_k of 100 kA, it is ideally suited for demanding applications in electromobility.

- **For battery storage systems**, the DEHNguard M DC ACI 1500 FM is available.



ACI technology
with integrated switch/
spark gap combination

"+", "-" and "PE" connection:
up to 25 mm² (flexible) and
up to 35 mm² (stranded, rigid)

Used without a backup fuse

Status indication

Short-circuit current:
100 kA

Remote signalling contact
for easy remote monitoring

- Easy installation
- Optimum use of space
- Lower costs
- Space for new components

DEHNguard M DC ACI 1250 FM and DEHNguard M DC ACI 1500 FM

SPD as per EN 61643-41 / ... IEC 61643-41	Type 2 / class II
Maximum continuous DC operating voltage [DC+ > DC-] (U_C)	1250 V for DEHNguard M DC ACI 1250 FM 1500 V for DEHNguard M DC ACI 1500 FM
Maximum continuous DC operating voltage [(DC+/DC-) > PE] (U_C)	625 V for DEHNguard M DC ACI 1250 FM 750 V for DEHNguard M DC ACI 1500 FM
Nominal impulse discharge current (8/20 μ s) (I_n)	10 kA
Max. nominal impulse discharge current (8/20 μ s) (I_{max})	20 kA
Voltage protection level [DC+ > DC-] (U_P)	< 5 kV
Voltage protection level [(DC+/DC-) > PE] (U_P)	< 2.5 kV
Can be used in DC systems up to I_k	100 kA
Remote signalling contacts / type of contact	Changeover contact

Sustainability at DEHN means taking responsibility – for people, planet and reliable technologies.

<http://de.hn/7LUXr>



Maximum safety for maximum charging power

To reliably protect the charging infrastructure for electric mobility from surge damage, DEHN offers the DEHN-guard M DC ACI 1250 FM, a space-saving solution for fast charging stations. The plug-in modules enable easy maintenance, while a floating remote signalling contact ensures reliable remote monitoring – a decisive contribution to the availability and operational reliability of modern charging infrastructure.

The external backup fuse normally required for the surge arrester of each charging point is no longer necessary.

The more charging points your HPC park has, the more you save.



Maximum availability for battery storage systems

Direct and indirect lightning strikes pose the greatest danger to the sensitive electronics required for charging and discharging processes within a battery storage system. Overvoltages caused by lightning discharges can exceed the dielectric strength of electronic components many times over, causing serious damage. Just one defective component can impair the functionality of the entire storage system. In this case, operators must switch to alternative systems in order to continue fulfilling their contractual obligations – a potentially very costly undertaking.

Ensure the availability of battery storage systems and reduce the need for expensive maintenance and repairs.

The DEHNguard M DC ACI 1250 FM is used in DC battery storage systems up to the maximum short-circuit strength.





<http://de.hn/81bTx>

**Surge Protection
Lightning Protection / Earthing
Safety Equipment**

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