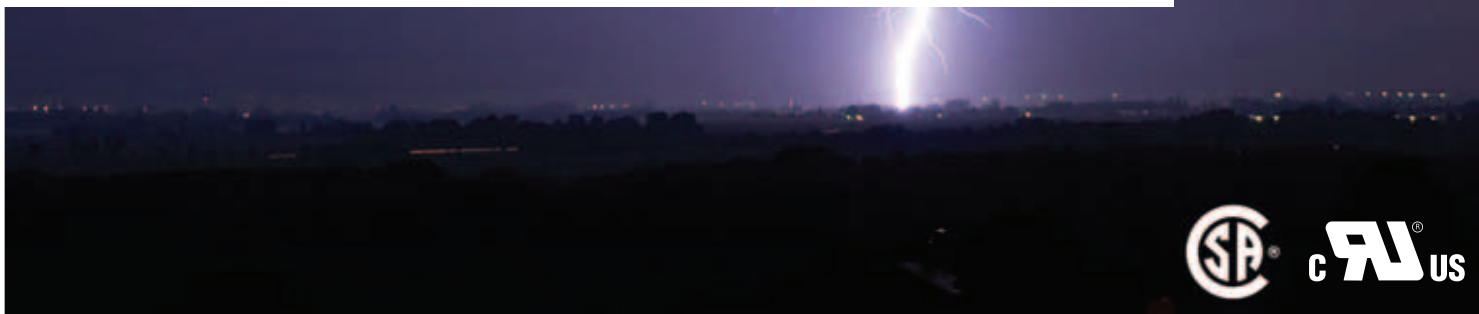




DEHN protects with the  
DEHNGuard® for North America





# Surge Protection for Maximum System Availability



# DEHN protects with the DEHNgard® MU & SU

DEHN's key objectives are to protect people's lives and material assets. For more than 100 years, our pioneering spirit and innovative engineering have defined and established DEHN as worldwide market leaders in the field of lightning and surge protection. Our economically and technically reliable lightning and surge protection products maximize system availability while protecting your investments and process yields for many years.

For North American electrical systems and industry standards, the DEHNgard® models MU (multi-pole) and SU (single-pole) surge protective devices (SPD) are perfect examples of the efficiency, quality and safety of our products.

## DEHNgard® is a strong, modular SPD (TVSS)

With its unique characteristics, the DEHNgard® is able to be installed in various locations throughout the electrical system. Having advantages like never needing additional overcurrent protection (fusing) and an SCCR\* rating of 200 kA, the DEHNgard® is truly a strong, modular SPD for applications in control panels, electrical disconnects, MCC's and other electrical equipment. With an ANSI/UL 1449  $I_n$  rating of 20 kA and a maximum surge current rating of 50 kA, the DEHNgard® is a strong SPD.

## DEHNgard® is high-performing

Each DEHNgard® SPD module has a surge-current (8x20  $\mu$ s impulse) rating of 50 kA per module. The ANSI/IEEE C62.41 standard indicates that only about 30% of a distant lightning discharge will enter into an electrical system (Category C location); therefore, the DEHNgard® surge arrester module rating of 50 kA is considerably higher - meaning a long product service-life even in high lightning prone areas. This equates to long, reliable surge protection service.

## DEHNgard® is robust

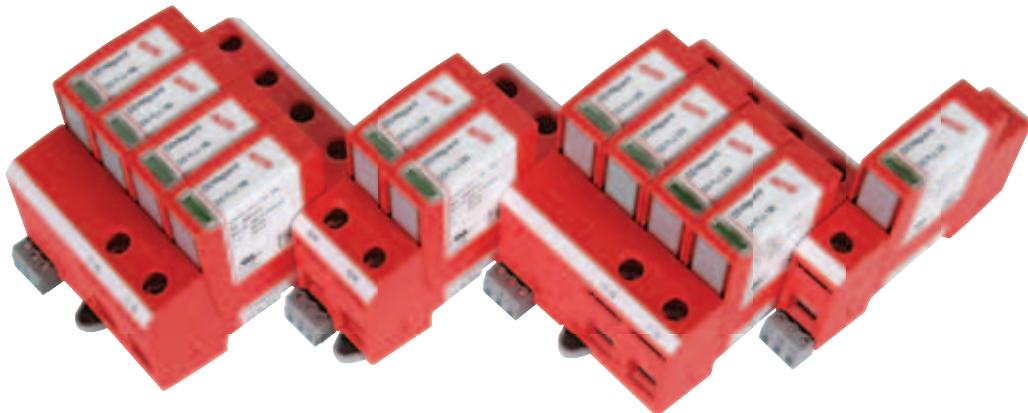
Thanks to the snap-in mechanism of the module to the base, the SPD provides protection against vibration effects and mechanical shock up to a 30-fold acceleration of gravity. The function-optimized design allows replacing the SPD module without problems. Though mechanically strong in its function, each SPD module can easily be removed by squeezing the side tabs to unlock the module. Insertion is easy and secure when the mechanical "click" is heard and felt.

## DEHNgard® is versatile

SPDs in the DEHNgard® MU & SU family have been tested by Underwriters Laboratories (UL) test laboratories according to the ANSI/UL 1449 3rd edition requirements. Their suitability for safe and effective use in USA and Canadian electrical systems at or below 600 Vac applications has been verified by UL and CSA. The DEHNgard® MU & SU products are UL certified under the VZCA2 (USA) and VZCA8 (Canadian) UL categories. All DEHNgard® MU & SU products are NEC® 285 Type 2 SPDs.

## DEHNgard® MU & SU

- protects against the adverse effects of indirect (nearby) lightning currents and surge voltages
- is capable of protecting end-user (terminal) equipment with its outstanding protection level
- allows easy replacement of modules, if ever needed
- takes up minimal space thanks to its small footprint design
- is shock and vibration-resistant, perfect for industrial environments
- never needs to be fused and has a 200 kA SCCR rating
- is coordinated with DEHN's Class 1 Lightning Current Arrester when heavy-duty arrester systems are needed
- allows for simple control panel dielectric testing without rewiring



\* = SCCR - Short Circuit Current Rating





## Strong & modular: Easy replacement, secure installation

The DEHNgard® with its modular design is ready for fast and easy service - if ever needed. The optional remote status indication along with the standard non-power consuming visual status indication allows the user to quickly assess the SPD status. The DEHNgard® base is keyed to insure that the correct SPD module is inserted preventing misapplication during servicing. A unique feature of the modular approach is that dielectric testing can be performed on control panels or other equipment without rewiring the SPD (the SPD must be removed during the dielectric test) – the technician simply has to remove the SPD module prior to the test and re-insert the modules after the test – no rewiring. Having a surge current rating of 50 kA per module and a 200 kA SCCR rating, the DEHNgard® products are strong even in the most severe electrical environments.

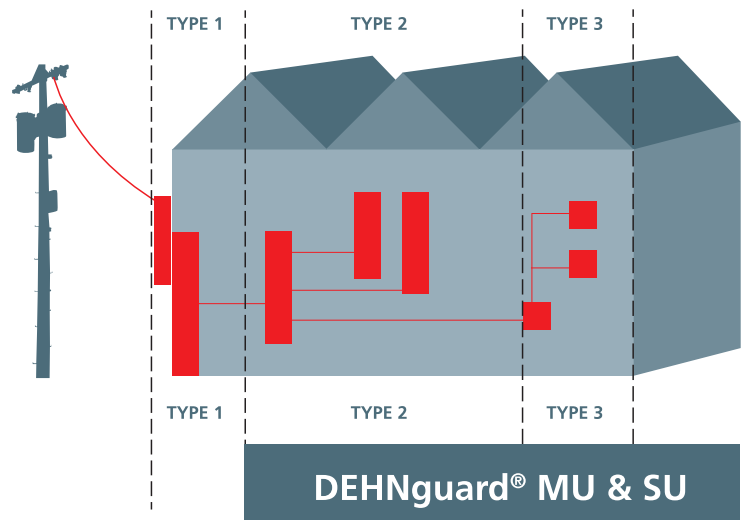
## Robust: Vibration & shock-resistant

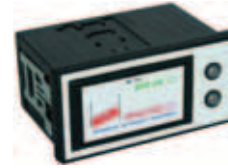
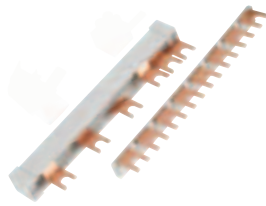
The function-optimized arrester design allows to safely plug the protection module into the base part and to remove it without problems. The module is secured in the base part by snapping it in (audible click). Tested by a third-party test laboratory to the EN 60068 standard, this snap-in mechanism ensures safe operation even in case of vibration effects and mechanical shock up to a 30 times the acceleration of gravity. A module release spring and laminated spring contacts in the base part allows for easy removal of the module by pressing the side-mounted grey module release buttons. A mechanical reverse polarity protection ensures that a module is always installed in the correct position.

## Reliable & versatile: Ready for the most harsh installations

As a UL 1449 recognized Type 2 component assembly SPD, the DEHNgard® falls under the NEC® 285 Section 285 Type 2 installation locations. This means that the arrester must be installed on the “load side” of a main service disconnect (service entrance). See the drawing below:

## NEC® 285 SPD Location Guide





## Accessories for DEHNguard® MU & SU

### 1 STAK 25 Pin-Terminal (p/n - 952 589)

The best method to install SPDs is to eliminate as much wire length to the arrester elements. Allowing for “EMC-optimized” wiring called out for in the IEC 60364-5-53 standard, the STAK 25 terminal aids in that effort by enabling a series wiring methodology, making the wiring length to the arrester element only a few millimeters. This accessory is able to handle wire gauges up to 4 AWG and 100 amps of current, making it a perfect accessory to install the DEHNguard® to provide maximum SPD performance.

- snap-fit into the DEHNguard® connection point in the base part
- rated at  $\leq 100$  Amps, 600 Vac
- withstands lightning currents up to 25 kA (10x350  $\mu$ s waveshape)
- withstands surge currents up to 100 kA (8x20  $\mu$ s waveshape)
- aids with compliance to the IEC 60364-5-53 and the NEC® 285.12 standards for wiring SPDs

### 2 STAK 2X16 (p/n - 900 589)

Similar to the STAK 25 above but with some different application usage, the STAK 2X16 wiring adapter accommodates two (2) 6 AWG wires, allowing for a series wiring methodology mentioned in the above 952 589 description.

- rated at  $\leq 65$  Amps, 480 Vac
- withstands lightning currents up to 25 kA (10x350  $\mu$ s waveshape)
- withstands surge currents up to 50 kA (8x20  $\mu$ s waveshape)
- aids with compliance to the IEC 60364-5-53 and the NEC® 285.12 standards for wiring SPDs

### 3 Busbar Wiring Accessories

Sometimes it is necessary to gang multiple arresters together to create a stronger SPD system. These busbars are wiring aids that make it easier to install these systems. Typically used when combining the DEHNbloc® triggered gap style lightning current (IEC Class 1) arresters with the DEHNguard® SU to form an IEC Class 1+2 Lightning Current and Surge Arrester SPD system.

- copper busbars rated up to 125 Amps
- single-phase and multi-phase systems available

### 4 DEHNpanel (p/n - 910 200)

An ideal way to use the DEHNguard® optional remote status contacts, the DEHNpanel brings the SPD status indication to the front panel of MCC's and Control Panels as an example. Having the same size as a DIN panel meter, the DEHNpanel is easy to install.

- Battery operated, battery life in excess of 3 years with lithium AA  $\geq 3000$  mA/hr batteries
- Green = good LED and Red = SPD service required – both flashing to save battery power
- High luminosity LEDs for quick recognition
- 1-DIN panel meter space
- Easy battery replacement in the front, no need to open the cabinet

### 5 Grounding Conductor Terminal (910 099)

This terminal block is designed to earth/ground the DIN rail. The screw down terminal will securely bond the terminal block to the DIN rail allowing for an earthing/grounding conductor to be installed. This terminal also serves as an end cap to a string of DIN rail components preventing the shifting of the DIN rail components over time – especially useful in a vertical mounting arrangement.

- Capable of carrying lightning currents (10 kA - 10/350  $\mu$ s)
- For wires sizes of 6 mm<sup>2</sup> (10 AWG) to 16 mm<sup>2</sup> (6 AWG) high strand count wire
- 12 mm wide, wire terminals on both sides

## DEHNgard® for North America

All DEHNgard® MU & SU products are ANSI/UL 1449 3rd Ed. recognized as a Type 2 Component Assembly. These SPDs require no fusing for UL approved installations and carry an SCCR rating of 200 kA. The DEHNgard® MU & SU SPDs have an  $I_n$  rating of 20 kA and an  $I_{max}$  of 50 kA.

Standard Models		Common Specifications by Model			Remote Status Option Models	
Order Number	Model	Electrical System	UL 1449 VPR (L-G/L-N/L-L/N-G)	Replacement Module	Model	Order Number
908 070	DG SU 1P 120	120 Vac Single Phase	700 V	908 012	DG SU 1P 120 R	908 090
908 074	DG SU 1P 240	208 to 277 Vac Single Phase	1200 V	908 014	DG SU 1P 240 R	908 094
908 076	DG SU 1P 347	300 to 347 Vac Single Phase	1500 V	908 076	DG SU 1P 347 R	908 096
908 190	DG MU SP 240 3W+G	120/240 Vac Split Phase	700/1200 V	908 012	DG MU SP 240 3W+G R	908 195
908 192	DG MU SP 480 3W+G	240/480 Vac Split Phase	1200/2500 V	908 014	DG MU SP 480 3W+G R	908 197
908 203	DG MU CGD 240 3W+G	120/240 Vac Corner Ground Delta	800/1500 V	908 010	DG MU CGD 240 3W+G R	908 208
908 204	DG MU CGD 480 3W+G	240/480 Vac Corner Ground Delta	1800/3000 V	908 015	DG MU CGD 480 3W+G R	908 209
908 300	DG MU 3PY 208 3W+G	120/208 Vac Three Phase Wye	600/1200 V	908 011	DG MU 3PY 208 3W+G R	908 305
908 314	DG MU 3PY 480 3W+G	120/208 Vac Three Phase Wye	1200/2500 V	908 014	DG MU 3PY 480 3W+G R	908 319
908 301	DG MU 3PY 600 3W+G	347/600 Vac Three Phase Wye	1500/3000 V	908 013	DG MU 3PY 600 3W+G R	908 306
908 351	DG MU 3PD 240 3W+G	240 Vac Three Phase Delta	800/1500 V	908 010	DG MU 3PD 240 3W+G R	908 356
908 350	DG MU 3PD 480 3W+G	480 Vac Three Phase Delta	1800/3000 V	908 015	DG MU 3PD 480 3W+G R	908 355
908 340	DG MU 3PY 208 4W+G	120/208 Vac Three Phase Wye	600/1200 V	4x - 908 011	DG MU 3PY 208 4W+G R	908 345
908 341	DG MU 3PY 480 4W+G	277/480 Vac Three Phase Wye	1200 / 1800 / 2500 / 600 V	3x - 908 014, 1x-908 011	DG MU 3PY 480 4W+G R	908 346
908 342	DG MU 3PY 600 4W+G	347/600 Vac Three Phase Wye	1500 / 2000 / 3000 / 600 V	3x - 908 013, 1x-908 011	DG MU 3PY 600 4W+G R	908 347
908 343	DG MU 3PH 240 4W+G	120/240 Three Phase High-Leg Delta	700 / 800 / 1200 / 1500 / 1500 / 600 V	2x- 908 012, 1x- 908 010, 1x- 908 011	DG MU 3PH 240 4W+G R	908 348
908 344	DG MU 3PH 480 4W+G	240/480 Three Phase High-Leg Delta	1200 / 1500 / 1800 / 2000 / 2500 / 2500 / 600 V	2x- 908 014, 1x- 908 013, 1x- 908 011	DG MU 3PH 480 4W+G R	908 349



### Common Specification for All Above Products:

Electrical System Frequency: 50/60 Hz  
 ANSI/UL 1449 3rd Edition Type: Type 2 Component Assembly  
 Nominal Discharge Current ( $I_n$ ): 20 kA  
 Maximum Discharge Current ( $I_{max}$ ): 50 kA  
 Short Circuit Current Rating (SCCR): 200 kA  
 Temperature Range: -40° - +80° C  
 Visual SPD Status Indication: Green = Good; Red = Replace

Minimum Wire Size: 14 AWG/ 2.5 mm<sup>2</sup>  
 Maximum Wire Size: 4 AWG/ 25 mm<sup>2</sup>  
 Terminal Torque Ratings: 35-45 lbf-in (3 lbf-ft)  
 Mounting: 35 mm DIN rails acc. to EN 60715  
 Degree of Protection: IP 20  
 Approvals: UL 1449 3rd Edition (VZCA2) and (VZCA8) and CSA (215727)

## Product Selector Guide

1. Please identify the power system supply transformer configuration of the installation location.
2. Match your system to one of the transformer wiring diagrams below.
3. Chose which order number (#) is required based on the System Voltage and if the remote status option is desired or not.

Single Phase (Dim. A)			
	Voltages	Standard Order #	Remote Status Order #
	120 V (USA & Canada) 127 V (Mexico)	908 070	908 090
	240 V (USA & Canada) 254 V (Mexico) 277 V (USA & Canada)	908 074	908 094
	347 V (USA & Canada)	908 076	908 096

Split Phase (common USA home) (Dim. B)			
	Voltages	Standard Order #	Remote Status Order #
	120/240 V (USA & Canada) 127/254 V (Mexico)	908 190	908 195
	240/480 V (USA & Canada)	908 192	908 197

3-Phase WYE (3W+G) (Dim. C)			
	Voltages	Standard Order #	Remote Status Order #
	208Y/120V	908 300	908 305
	480Y/277V	908 314	908 319
	600Y/347V	908 301	908 306

3-Phase DELTA (3W+G) (Dim. C)			
	Voltages	Standard Order #	Remote Status Order #
	480 V	908 350	908 355
	240 V	908 351	908 356

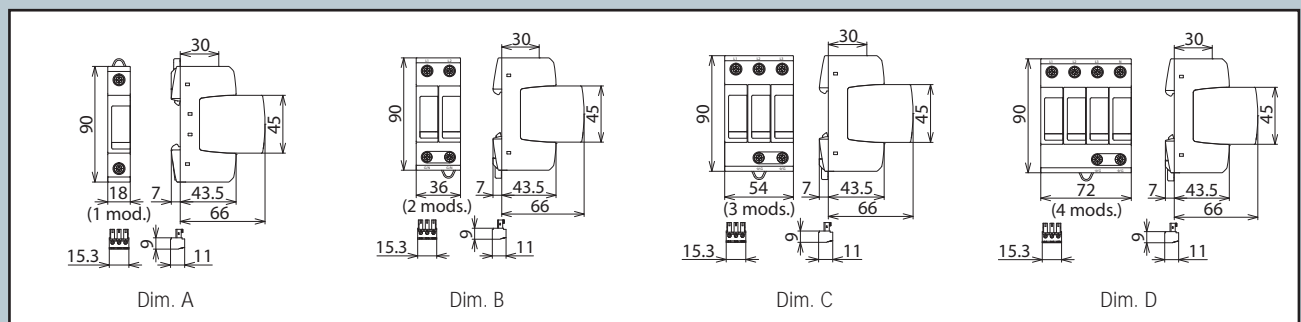
3-Phase WYE (4W+G) (Dim D)			
	Voltages	Standard Order #	Remote Status Order #
	208Y/120V	908 340	908 345
	480Y/277V	908 341	908 346
	600Y/347V	908 342	908 347

3-Phase High-Leg DELTA (4W+G) (Dim. D)			
	Voltages	Standard Order #	Remote Status Order #
	120/240 V Hi-Leg Δ	908 343	908 348
	240/480 V Hi-Leg Δ	908 344	908 349

3-Phase Corner Ground DELTA (Dim. B)			
	Voltages	Standard Order #	Remote Status Order #
	480 V CGD	908 204	908 209
	240 V CGD	908 203	908 208



## Dimensional Drawings with Optional Remote Status Terminal





## DEHNguard® protects ...

### ... water production and wastewater treatment plants

Water, a most precious resource, arrives in our homes and businesses without much thought to the process and infrastructure required. This infrastructure and associated processes are large investments to communities and governments. This equipment must be protected, as we have come to depend upon consistent delivery of clean drinking water and treatment of wastewater. These systems have become more complex, requiring more power equipment to run these facilities. This power equipment has become more sensitive to damaging transient voltages. We all rely on these systems for our daily lives, and the tremendous investment made in these systems must last many years. The DEHNguard® MU and SU products are the best SPD products to protect the AC power systems including VFD's, Soft Starts and submersible pumps. From water well pump sites to large water treatment facilities, the AC and DC power systems can be protected from the effects of lightning and surge activity.

**DEHN protects the water production and wastewater treatment industry.**

### ... transportation control systems

DEHN has products designed and tested specifically for application in traffic control systems. Automobile, rail and air traffic all have complex control systems. The reliability and stability of these systems is obvious as human safety and equipment protection are paramount. These systems are highly susceptible to damage from nearby or distant lightning events as well as the direct lightning stroke. The DEHNguard® product line is the best SPD products to protect the power systems required for various transportation equipment. Many complementary protection products are required for these systems; DEHN also has a line of instrumentation and control signal protection products for the transportation industry. These additional SPD products include: PoE & BNC cameras, RF antenna feeders, Ethernet, and sensor loops.

**DEHN protects the transportation industry.**

### ... security systems

Our world is changing and the advances needed to provide a secure society is becoming more complex. These systems are highly susceptible to lightning damage; therefore, SPDs are needed. The DEHNguard® MU and SU products offer state of the art protection for these systems. DEHN provides many products to fit these systems unique and demanding requirements. Not only do the DEHNguard® MU and SU products protect the power supplies, many other DEHN SPD products are available, such as the DEHNpatch, DEHNgate, and DEHNlink, to protect the computer and control systems. See the following page for examples of these other DEHN SPD products.

**DEHN protects security systems.**

### ... control panel power

With its ANSI/UL 1449 3rd edition recognition (VZCA2 & VZCA8), the DEHNguard® MU and SU products are perfect for protecting the incoming and outgoing power protection terminals within control panels. The DEHNguard® MU & SU have an SCCR rating of 200 kA which lowers material and labor costs, saves space and simplifies design. The 50 kA surge current strength of the DEHNguard® makes it an ideal product for use within control panels destined for any location, including the more lightning-active Southeast USA. In addition, most control panels contain several to many pairs or wires of instrumentation and control signals. DEHN products are available to protect these signal lines which often travel to areas of facilities where transient voltage activity is high or to the outside where these same lines are susceptible to lightning-induced transient voltages. DEHN offers a complete portfolio of protection products for use in control panels. Please contact your local DEHN representative or the main office for help to design a complete system protection package.

**DEHN protects the process control industry.**





## Supplemental Products



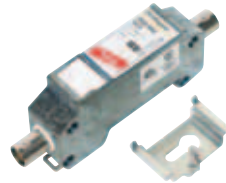
### DEHNgate - UGKF

UL 497B listed for BNC composite video systems protection, in-line



### DEHNgate - DGA G

N, BNC and SMA connector for transceivers frequencies up to 5.8 GHz



### DEHNgate - BNC VCD

UL 497B listed for BNC composite video systems protection in-line



### DEHNgate - DGA L & L4

Coaxial protection for mobile radio systems, using 7/16 connections, including 1/4 wave stubs



### DEHNRapid® LSA

Multi-pole lightning & surge arrester system for use in dense areas and mixed technology



### DEHNpatch - DPA

UL 497B listed for power over ethernet (PoE) systems, RJ 45 all pins protected, includes electrical noise filter



### DEHNpipe - DPI

UL 497B listed for mA loop transmitter protection, in-line, 24 Vdc



### BLITZDUCTOR® SP

UL 497B listed various automation & control signals like Profibus, MODbus, RS485, RS 422 as example, 2, 3 or 4 wire systems



Our Promise



## DEHN protects.

Our mission 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 DEHN a market leader with about 1,600 employees. Our products and developments 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 optimize the protection of buildings and installations. In 1954, we launched the first series of surge protective devices (SPD). Consistent development of these devices ensures safe operation and availability of electrical and electronic installations. Also in the 1950s, our third sector, safety equipment, was added to our portfolio.

The Bavarian town of Neumarkt is the heart of our activities where product managers, engineers and developers advance our protection technologies. Here we manufacture our high quality safety and protection products.

## We offer the best solution.

Our goal 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 and economical solution to protection problems. Our sales teams in Germany and our global network of 17 subsidiaries as well

as more than 70 international sales 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 seminars, workshops and conferences held every year throughout the world we impart practical knowledge on products and solutions. Our specialized book "Lightning Protection Guide" and our brochures will broaden your practical knowledge. Please visit us at [www.dehn-usa.com](http://www.dehn-usa.com) for information around the clock.

Our UL-approved and internationally recognized test laboratory is equipped with a variety of state-of-the-art and customized test equipment. Customers contract our laboratory to test their products and systems, such as, the lightning current carrying capability of PV mounting systems and wind turbines. We also perform impulse current tests on inverters and various other equipment for our customers. Please take advantage of our knowledge to optimize your protection solutions for your systems.



Neumarkt Germany Campus



New Muehlhausen Campus



Surge Protection  
Lightning Protection  
Safety Equipment  
DEHN protects.

DEHN, Inc.  
USA Subsidiary

851 S. Kings Highway  
Fort Pierce, FL 34945  
USA

Tel. 1-772-460-9315  
Fax 1-772-460-9316  
info@dehn-usa.com  
www.dehn-usa.com

DEHN Protection  
MÉXICO, S.A. de C.V.  
MÉXICO Subsidiary

Homero No. 1425, Despacho 903-A  
Col. Palmas Polanco  
Del. Miguel Hidalgo  
11560 México, D.F.

Tel. +52 555 395 18 13  
admin@dehn.mx  
www.dehn.mx

DEHN Canada  
R3&A Limited

450 Campbell Street, Unit 7A  
Cobourg, Ontario  
Canada K9A 4C4

Tel. 1-905-377-8577  
Fax 1-905-377-8578  
info@r3alimited.com  
www.dehn.ca

DEHN + SÖHNE  
GmbH + Co.KG.

Hans-Dehn-Str. 1  
Postfach 1640  
92306 Neumarkt  
Germany

Tel. +49 9181 906-0  
Fax +49 9181 906-1100  
info@dehn.de  
www.dehn.de

DEHN, DEHN logo, DEHNguard, DEHNbloc, BLITZDUCTOR, LifeCheck, DEHNrapid, Red/Line are protected by German Trademark, by Community Trademark (EU), and/or are registered trademarks in other countries.

NEC is a registered trademark by the National Fire Protection Agency for its National Electric Code.

We accept no liability for technical modifications, misprints and errors. Illustrations are not binding.