

CARLO GAVAZZI
Automation Components



DSF

**Surge Arresters for Photovoltaic
Installations**



Control

Control

Protect your PV installation: protect your investment

A photovoltaic installation is a long-term investment which needs to be protected, by means of SPDs (surge protective devices), from any damage due to overvoltages. This protection is vital, in terms of preserving the quality and lifespan of any system component, while avoiding energy production stops, thus saving costs.



**Application
Durability**



**Cost
Saving**



**User
Friendly**



**Diagnostic
Warning**

Total protection

Thanks to the DSF innovative technology, it is now possible to further protect the internal varistor (the main component of any SPD). At the end of the varistor's life, this special technology, involving an internal backup protection, enables DSF to be safe if a short circuit should occur.

The safest solution

DSF is the safest solution for any type of combiner box in PV systems, due to its built-in backup protection.

This is a cost-effective solution, as it saves cost and space for backup fuses. Our solution needs no backup fuse as this function is already performed by the DSF itself.

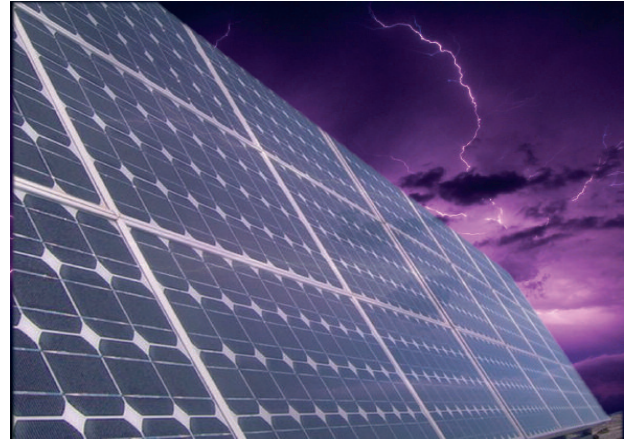
Ready for the new standards

DSF is one of the first product on the market to be ready for the future standard EN50539-11 and already conforms to the new French standard UTEC 6-740-5, both specifically addressed to PV systems. These norms indicate that the SPD must include backup protection and prohibit the use of fuses for this purpose.

Market Application

PV installations

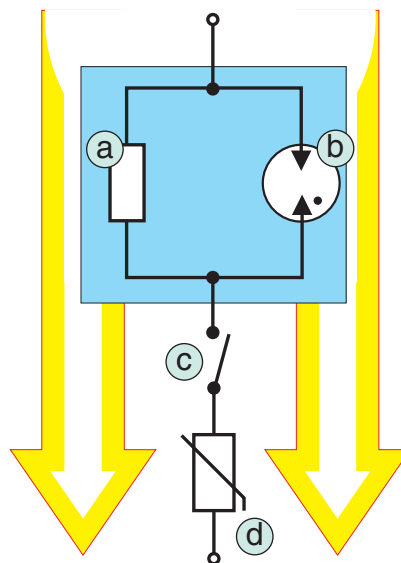
Voltage surges are peaks in the electrical grid caused by either low-voltage system switching or lightning. The former is due to load switching and can reach 2 or 3 times the nominal voltage of the system, while inductive or galvanic coupling can give rise to a surge of more than 2 km around a lightning impact point, reaching up to 20 times the nominal voltage (indirect lightning). This can cause immediate damage to the panels, the structure, the building or any electrical device connected to the system where the surge took place, or long-term damage even if the surge values are not very high.



No backup-fuse technology

Long-duration overvoltage (TOV) path

The arrester is activated in the event of temporary overvoltage. This voltage is much lower than transient voltages but substantially more destructive. The system is composed of a current limiter and a varistor. In the event of increased voltage, the current limiter circuit limits the current through the varistor. When normal conditions are re-established (rated voltage), the surge arrester continues to perform its normal function.



a) Current limiter b) Gas tube c) Thermal disconnecter d) Varistor

Transient overvoltage path

The arrester is activated in the case of instantaneous high voltage surges lasting only a few microseconds. Surges can be experienced during switching operations and atmospheric discharges. The system is composed of a gas tube surge arrester and a varistor. Both components have a very short response time which is reflected in a low protective residual voltage level. This provides efficient protection of sensitive electronic devices.



DSF arresters are based on easily removable cartridges, have a red optical indication, while voltage free contacts are included for remote status monitoring. Therefore, the exhausted cartridges can be replaced without leaving the installation unprotected.

**The available nominal voltages are:
600VDC, 1000VDC, 1200VDC**



OUR SALES NETWORK IN EUROPE

AUSTRIA - Carlo Gavazzi GmbH
Ketzergrasse 374, A-1230 Wien
Tel: +43 1 888 4112
Fax: +43 1 889 10 53
office@carlogavazzi.at

BELGIUM - Carlo Gavazzi NV/SA
Schaarbeeklei 213/3, B-1800 Vilvoorde
Tel: +32 2 257 4120
Fax: +32 2 257 41 25
sales@carlogavazzi.be

DENMARK - Carlo Gavazzi Handel A/S
Over Hadstenevej 40, DK-8370 Hadsten
Tel: +45 89 60 6100
Fax: +45 86 98 15 30
handel@gavazzi.dk

FINLAND - Carlo Gavazzi OY AB
Petaksentie 2-4, FI-00661 Helsinki
Tel: +358 9 756 2000
Fax: +358 9 756 20010
myynti@carlogavazzi.fi

FRANCE - Carlo Gavazzi Sarl
Zac de Paris Nord II, 69, rue de la Belle
Etoile, F-95956 Roissy CDG Cedex
Tel: +33 1 49 38 98 60
Fax: +33 1 48 63 27 43
french.team@carlogavazzi.fr

GERMANY - Carlo Gavazzi GmbH
Pfnorstr. 10-14
D-64293 Darmstadt
Tel: +49 61 51 81 00 0
Fax: +49 61 51 81 00 41
info@gavazzi.de

GREAT BRITAIN - Carlo Gavazzi UK Ltd
7 Springlakes Industrial Estate,
Deadbrook Lane, Hants GU12 4UH,
GB-Aldershot
Tel: +44 1 252 339600
Fax: +44 1 252 326 799
sales@carlogavazzi.co.uk

ITALY - Carlo Gavazzi SpA
Via Milano 13, I-20020 Lainate
Tel: +39 02 931 761
Fax: +39 02 931 763 01
info@gavazziacbu.it

NETHERLANDS - Carlo Gavazzi BV
Wijkmeerweg 23,
NL-1948 NT Beverwijk
Tel: +31 251 22 9345
Fax: +31 251 22 60 55
info@carlogavazzi.nl

NORWAY - Carlo Gavazzi AS
Melkeveien 13, N-3919 Porsgrunn
Tel: +47 35 93 0800
Fax: +47 35 93 08 01
gavazzi@carlogavazzi.no

PORTUGAL - Carlo Gavazzi Lda
Rua dos Jerónimos 38-B,
P-1400-212 Lisboa
Tel: +351 21 361 7060
Fax: +351 21 362 13 73
carlogavazzi@carlogavazzi.pt

SPAIN - Carlo Gavazzi SA
Avda. Iparraguirre, 80-82,
E-48940 Leioa (Bizkaia)
Tel: +34 94 480 4037
Fax: +34 94 480 10 61
gavazzi@gavazzi.es

SWEDEN - Carlo Gavazzi AB
Via Kyrkogatan 1,
S-652 24 Karlstad
Tel: +46 54 85 1125
Fax: +46 54 85 11 77
info@carlogavazzi.se

SWITZERLAND - Carlo Gavazzi AG
Verkauf Schweiz/Vente Suisse
Sumpfstrasse 32,
CH-632 Steinhausen
Tel: +41 41 747 4535
Fax: +41 41 740 45 40
info@carlogavazzi.ch

OUR SALES NETWORK IN NORTH AMERICA

USA - Carlo Gavazzi Inc.
750 Hastings Lane,
USA-Buffalo Grove, IL 60089,
Tel: +1 847 465 6100
Fax: +1 847 465 7373
sales@carlogavazzi.com

CANADA - Carlo Gavazzi Inc.
2660 Meadowvale Boulevard,
CDN-Mississauga Ontario L5N 6M6,
Tel: +1 905 542 0979
Fax: +1 905 542 22 48
gavazzi@carlogavazzi.com

MEXICO - Carlo Gavazzi Mexico S.A. de C.V.
Calle La Montaña no. 28, Fracc. Los Pastores
Naucalpan de Juárez, EDOMEX CP 53340
Tel & Fax: +52.55.5373.7042
mexicosales@carlogavazzi.com

OUR SALES NETWORK IN ASIA AND PACIFIC

SINGAPORE - Carlo Gavazzi Automation
Singapore Pte. Ltd.
61 Tai Seng Avenue #05-06
UE Print Media Hub
Singapore 534167
Tel: +65 67 466 990
Fax: +65 67 461 980

MALAYSIA - Carlo Gavazzi Automation
(M) SDN. BHD.
D12-06-G, Block D12,
Pusat Perdagangan Dana 1,
Jalan PJU 1A/46, 47301 Petaling Jaya,
Selangor, Malaysia.
Tel: +60 3 7842 7299
Fax: +60 3 7842 7399

CHINA - Carlo Gavazzi Automation
(China) Co. Ltd.
Rm. 2308 - 2310, 23/F.,
News Building, Block 1,
1002 Shennan Zhong Road,
Shenzhen, China
Tel: +86 755 83699500
Fax: +86 755 83699300

HONG KONG - Carlo Gavazzi
Automation Hong Kong Ltd.
Unit 3 12/F Crown Industrial Bldg.,
106 How Ming St., Kowloon,
Hong Kong
Tel: +852 23041228
Fax: +852 23443689

OUR COMPETENCE CENTRES & PRODUCTION SITES

Carlo Gavazzi Industri A/S
Hadsten - **DENMARK**

Carlo Gavazzi Ltd
Zejtun - **MALTA**

Carlo Gavazzi Controls SpA
Belluno - **ITALY**

Uab Carlo Gavazzi Industri Kaunas
Kaunas - **LITHUANIA**

Carlo Gavazzi Automation
(Kunshan) Co., Ltd.
Kunshan - **CHINA**

HEADQUARTERS

Carlo Gavazzi Automation SpA
Via Milano, 13 - I-20020
Lainate (MI) - **ITALY**
Tel: +39 02 931 761
info@gavazzi-automation.com

Sense Switch Control Fieldbus EcoEnergy
equipment

CARLO GAVAZZI
Automation Components

Further information on
www.gavazziautomation.com - www.carlogavazzi.com

CARLO GAVAZZI