

Industrial Motors

Commercial &
Appliance Motors

**Automation &
Systems**

Energy

Transmission &
Distribution

Coatings

SPW03 and SPW13

Complete protection
for your installation against
lightning surges and
power grid fluctuation.



Driving efficiency and sustainability



Surge protective devices

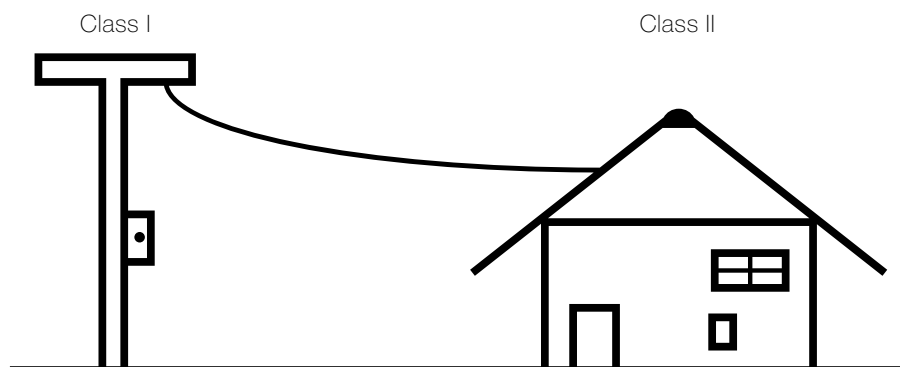
Advanced surge protection for your power infrastructure



Surge Protective Devices (SPDs), also known as surge protection devices, are designed to limit transient overvoltages in electrical networks and installations by diverting surge currents to the grounding system. These overvoltages may be caused by lightning strikes, switching operations in the power grid, or electrostatic discharges.

The SPW03 line is available in single-pole versions and in Class I and Class II configurations, being applied to the protection of electrical installations and ensuring the proper discharge of surge currents to the grounding system, contributing to the integrity of both equipment and installation. It is available with or without remote signaling contact and features a visual status indicator, enabling easy identification of the correct time to replace the protection module. The range consists of four models, defined according to the maximum discharge current (I_{max}), with an 8/20 μs waveform: 12, 20, 45, and 60 kA. The protection modules are replaceable and supplied as spare parts for all models.

The SPW13 line is designed for direct current (DC) applications and is particularly suitable for protecting photovoltaic systems against induced overvoltages. It delivers high reliability and performance, ensuring load protection and the operational continuity of distributed generation systems.



Class I SPD: Protection against direct and nearby lightning strikes

Class I Surge Protective Devices (SPD) are designed to discharge partial lightning currents, protecting low-voltage electrical installations against overvoltages caused by direct lightning strikes.

They are intended for applications exposed to lightning currents conducted through external Lightning Protection Systems (LPS) or overhead power-line infrastructures.

When a lightning strike hits the LPS, part of the current is transferred to the electrical installation through conductive and inductive coupling, generating high impulse currents and steep-front overvoltages that may exceed the dielectric withstand of equipment and conductors.

Technical characteristics

- Designed to withstand lightning impulse current I_{imp} (10/350 μ s)
- Compliant with IEC 62305
- Suitable for severe stress conditions associated with direct lightning

Typical applications

- Service entrance / main distribution board
- Installations with external LPS
- Systems supplied by overhead lines
- Regions with high lightning activity

Benefits

- Primary protection against lightning energy
- Prevention of catastrophic failures and thermal/electrodynamic damage
- Ensures insulation coordination
- Basis for a coordinated surge protection system (with Class II)

Class II SPD: Protection against switching overvoltages and indirect lightning

Class II Surge Protective (SPD) are designed to limit transient overvoltages caused by indirect lightning effects and switching operations in the electrical network. In these conditions, the lightning strike does not directly hit the installation but generates electromagnetic effects in nearby structures (within ~3 km), resulting in inductive, capacitive, and resistive coupling. These phenomena produce surges that can cause degradation, insulation failure, or damage to sensitive electronic equipment.

Technical characteristics

- Tested with nominal discharge current I_n (8/20 μ s)
- Compliant with IEC 61643-11
- Designed for coordinated operation with Class I SPDs

Typical applications

- Main and sub-distribution boards
- Protection of terminal circuits
- Installations with sensitive electronic equipment

Benefits

- Protection against induced lightning surges
- Mitigation of switching overvoltages (energization, reclosing, inrush)
- Reduction of thermal and dielectric stress (I^2t)
- Increased equipment lifetime

Coordinated protection concept

The combined use of Class I and Class II SPDs provides a coordinated surge protection system, ensuring:

- Proper surge energy distribution
- Adequate protection levels throughout the installation
- Enhanced reliability and operational continuity

Technical characteristics

Technical characteristics		SPW03-275-12	SPW03-275-20	SPW03-275-45	SPW03-275-60/12,5	SPW13-600-40	SPW13-1100-40
Technology		Varistor	Varistor	Varistor	Varistor	Varistor	Varistor
Standard		IEC 61643-11	IEC 61643-11	IEC 61643-11	IEC 61643-11	IEC 61643-31	IEC 61643-31
Application		Low voltage V _{AC}	Low voltage V _{AC}	Low voltage V _{AC}	Low voltage V _{AC}	Photovoltaic V _{DC}	Photovoltaic V _{DC}
Type class		II (T2)	II (T2)	II (T2)	I/II (T1/T2)	II (T2)	II (T2)
Poles		1	1	1	1	3	3
Protected lines		1	1	1	1	1+1 DC	1+1 DC
System protection type		TT-TNS-TNC	TT-TNS-TNC	TT-TNS-TNC	TT (L-N) - TNS - TNC	Photovoltaic	Photovoltaic
Current		AC	AC	AC	AC	DC	DC
Frequency	Hz	50-60	50-60	50-60	50-60	-	-
Nominal rated voltage U _n	V	230	230	230	230	600	1,100
Maximum continuous operating voltage U _c U _{CPV}	V	U _c 275	U _c 275	U _c 275	U _c 275	U _{CPV} 600	U _{CPV} 1,100
Maximum discharge current I _{max} (8/20 μs wave)	kA	12	20	45	60	40	40
Nominal discharge current I _n (8/20 μs wave)	kA	5	10	20	30	20	20
Maximum impulse current I _{imp} (10/350 μs wave)	kA	-	-	-	12.5	-	-
Protection level U _p	kV	1.2	1.2	1.5	1.4	2.7	5
Reference test voltage U _{REF}	V	255	255	255	255	-	-
Temporary overvoltage supported for 5s (TOV) U _T	V	337	337	337	337	-	-
Temporary overvoltage supported or safe failure mode for 120min (TOV) U _T	V	442	442	442	442	-	-
Response time	ns	≤ 25	≤ 25	≤ 25	≤ 25	≤ 25	≤ 25
Residual current I _{PE} for U _{REF}	μA	≤ 320	≤ 320	≤ 450	≤ 700	-	-
Residual current I _{PE} para U _{CPV}	μA	-	-	-	-	≤ 5	≤ 10
Maximum AC short-circuit current I _{scrr} without backlog protection	kA	3	3	3	4	-	-
Maximum AC short-circuit current I _{scrr} with backlog protection	kA	50	50	50	50	-	-
Maximum DC short-circuit current I _{SCPV}	kA	-	-	-	-	0.3	10
Backup protection - fuse gL/gG	A	50	80	125	160	-	-
Integrated thermal disconnection		Yes	Yes	Yes	Yes	Yes	Yes
Signaling visual indicator		Yes	Yes	Yes	Yes	Yes	Yes
Signaling contact		Yes (model -C)	Yes (model -C)	Yes (model -C)	Yes (model -C)	No	No
Storage and operating temperature	°C	-25...+70	-25...+70	-25...+70	-25...+70	-25...+70	-25...+70
IP degree		IP20	IP20	IP20	IP20	IP20	IP20
Dimensions (height x width x depth)	mm	83 x 17.8 x 67	83 x 17.8 x 67	83 x 17.8 x 67	83 x 17.8 x 67.1	83.5 x 53.4 x 67	83.5 x 53.4 x 67
Dimension of signaling type model (-C) (height x width x depth)	mm	89.7 x 17.8 x 67	89.7 x 17.8 x 67	89.7 x 17.8 x 67	89.7 x 17.8 x 67.1	-	-
Removable protection module		Yes	Yes	Yes	No	Yes	Yes
Removable protection module name		SPW03-275-12-M	SPW03-275-20-M	SPW03-275-45-M	-	-	-
Installation ¹⁾							
Rigid cable cross-section	mm²	4 - 25	4 - 25	4 - 25	6 - 35	4 - 35	4 - 35
Flexible cable cross-section	mm²	4 - 25	4 - 25	4 - 25	6 - 25	4 - 25	4 - 25
Cable stripped length	mm	14.3	14.3	14.3	13.5	14.5	14.5
Torque	N.m	2.5	2.5	2.5	2.5	2.5	2.5
Assembly		DIN rail 35 mm					
Signaling contact							
Contact type		1 NOC	1 NOC	1 NOC	1 NOC	-	-
Maximum load		125 V _{AC} – 1 A	125 V _{AC} – 1 A	125 V _{AC} – 1 A	125 V _{AC} – 1 A	-	-
Flexible cable cross-section	mm²	1.5	1.5	1.5	1.5	-	-
Torque	N.m	0.25	0.25	0.25	0.25	-	-
Storage and operating temperature	°C	-25...+70	-25...+70	-25...+70	-25...+70	-25...+70	-25...+70
IP degree		IP20	IP20	IP20	IP20	IP20	IP20

Note 1) The phase cable can be installed from either the top or bottom.

Reference and codes SPW03

Surge protective devices for AC applications

Reference	Type	Maximum discharge current, wave 8/20 μ s I_{max} (kA)	Rated discharge current, wave 8/20 μ s I_n (kA)	Maximum impulse current, wave 10/350 μ s I_{imp} (kA)	Protection level (kV)	Maximum continuous operating voltage U_c (V)	Units per package	Code
SPW03-275-12 ¹⁾	II	12	5	-	1.2	275	12	17568718
SPW03-275-20 ¹⁾	II	20	10	-	1.2	275	12	17568723
SPW03-275-45 ¹⁾	II	45	20	-	1.5	275	12	17568725
SPW03-275-60/12.5	I / II	60	30	12.5	1.5	275	12	17568777

Note: 1) For Class II AC models, the protection module can be replaced by a removable module.



Surge protective devices for AC applications with electrical signaling contact²⁾

Reference	Type	Maximum discharge current, wave 8/20 μ s I_{max} (kA)	Rated discharge current, wave 8/20 μ s I_n (kA)	Maximum impulse current, wave 10/350 μ s I_{imp} (kA)	Protection level (kV)	Maximum continuous operating voltage U_c (V)	Units per package	Code
SPW03-275-12 ¹⁾	II	12	5	-	1.2	275	12	17568770
SPW03-275-20 ¹⁾	II	20	10	-	1.2	275	12	17568771
SPW03-275-45 ¹⁾	II	45	20	-	1.5	275	12	17568774
SPW03-275-60/12.5	I / II	60	30	12.5	1.5	275	12	17568795

Notes: 1) For Class II AC models, the protection module can be replaced by a removable module.

2) NOC contact ratings of 125 Vac / 1 A and 30 Vdc / 0.5 A.



AC removable protection module

Reference	Type	Maximum discharge current, wave 8/20 μ s I_{max} (kA)	Rated discharge current, wave 8/20 μ s I_n (kA)	Protection level (kV)	Maximum continuous operating voltage U_c (V)	Units per package	Code
SPW03-275-12-M	II	12	5	1.2	275	24	17568879
SPW03-275-20-M	II	20	10	1.2	275	24	17568880
SPW03-275-45-M	II	45	20	1.5	275	24	17568882

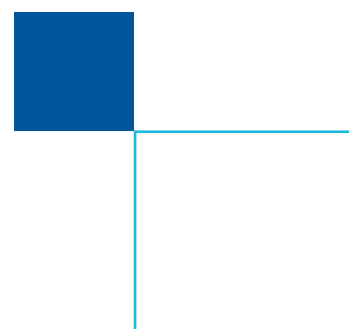
Note: the removable modules are suitable for protection class II AC models, with and without signaling contact.



References and codes SPW13

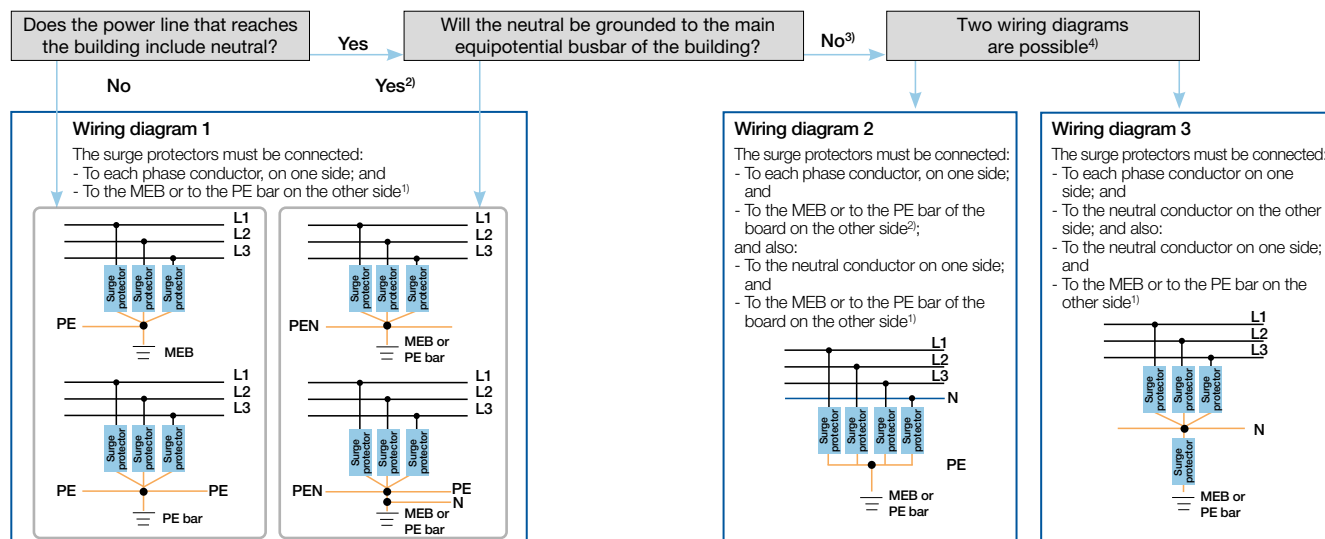
Surge protective devices for DC and photovoltaic applications

Reference	Type	Maximum discharge current, wave 8/20 μ s I_{max} (kA)	Rated discharge current, wave 8/20 μ s I_n (kA)	Protection level (kV)	Maximum continuous operating voltage U_c (V)	Units per package	Code
SPW13-600-40	II	40	20	2.5	600	4	17568796
SPW13-1100-40	II	40	20	5	1,100	4	17568797



Wiring diagrams

SPW03 wiring diagram



Notes: 1) The connection to the MEB or PE bar depends on where exactly the surge protectors will be installed and how the MEB is actually implemented. Therefore, the connection will be to the MEB when:

- The MEB is located upstream the main distribution board (with the MEB located, as it should be, in the immediate surroundings of the input point of the power line in the building), and the surge protectors are installed onto the MEB and not on the board; or
- The surge protectors are installed on the main distribution board of the building, and the PE bar of the board accumulates the MEB function. As a result, the connection will be done to the PE bar itself when the surge protectors are installed on the distribution board, and the PE bar of the board does not accumulate the MEB function.

2) The hypothesis configures a scheme that enters TN-C and the installation continues TN-C, or that enters TN-C and then turns into TN-S. The input neutral, necessarily PEN, must be grounded to the MEB direct or indirectly. The passage from the TN-C to TN-S scheme, with the separation of the incoming PEN conductor into neutral conductor and PE conductor, would be done on the main distribution board (globally, the scheme is TN-C-S).

3) The hypothesis configures three possible grounding schemes: TT (with neutral), IT with neutral and line that enters the building already in TN-S scheme.

4) There are situations in which one of the two schemes becomes mandatory, like in the case mentioned in item b of 6.3.5.2.6 (ABNT NBR 5410:2004).

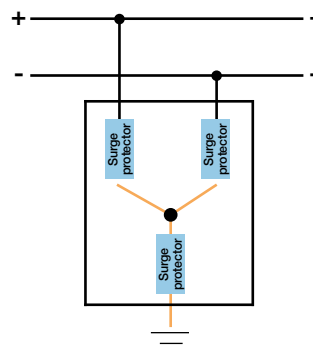
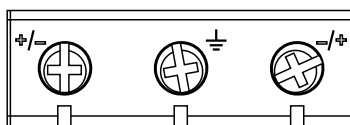
- MEB - Main Equipotential Busbar

SPW13 wiring diagram

The DC surge suppressor comes in a three-pole configuration, in which its poles must be connected:

- To the Positive conductor of the photovoltaic string on one side
- To the Negative conductor of the photovoltaic string on the other side
- To the MEB or to the PE bar or to the grounding system or central pole

Connection indications are on the device:



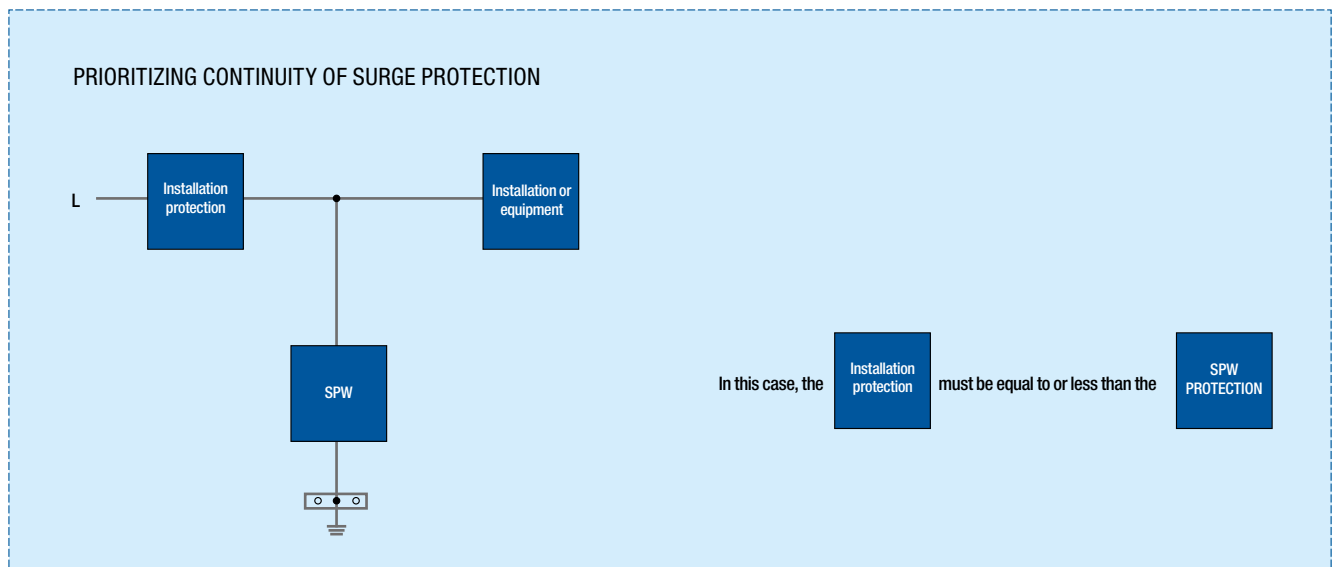
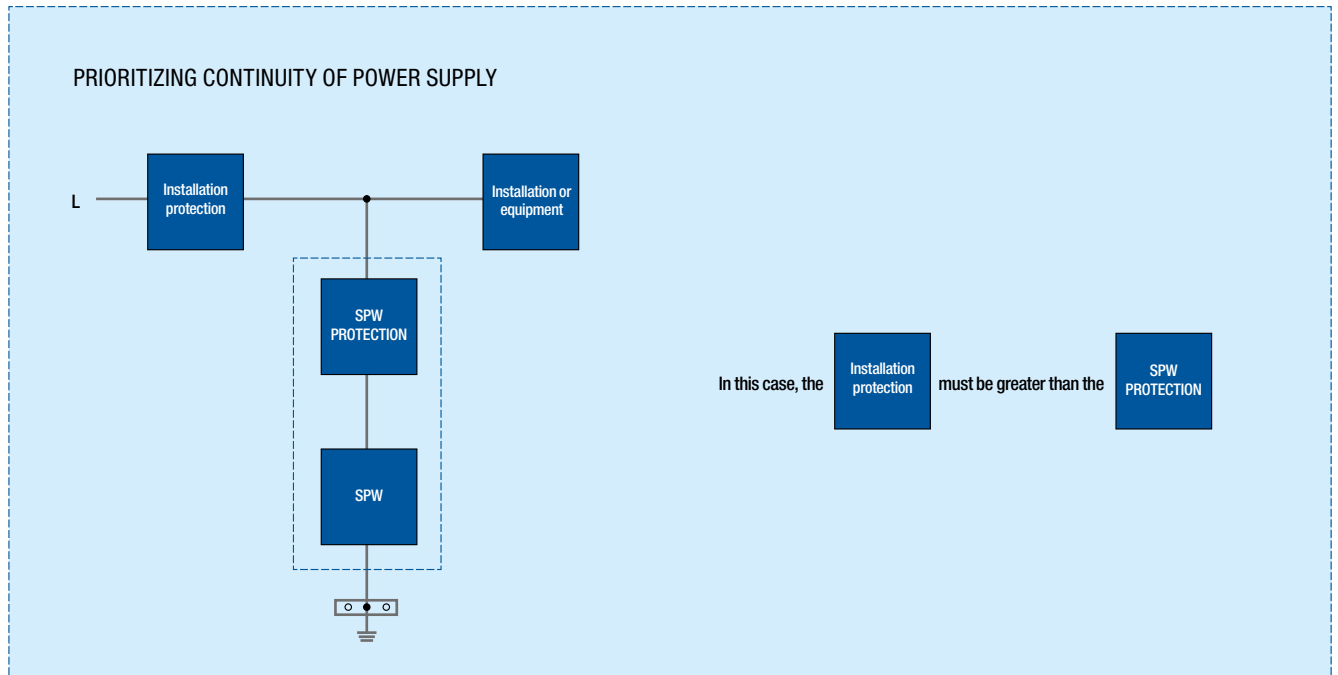
Additional protection needed for the SPW protector line

It is necessary to use additional protection when the SPW installation busbar has a short circuit level above 5 kA. For those cases, the additional protection must be provided by means of one of the following alternatives:

Surge protection rating	Maximum continuous operating voltage U_c	Maximum discharge current, wave 8/20 μs I_{max} (kA)	Fuse gL/gG (A)	Mini circuit breaker (A)
	275 V _{AC}	12	50	Curve C 20
		20	80	Curve C 50
		45	125	Curve C 80
	600 V _{DC}	40	-	-
I/II	1,100 V _{DC}	40	-	-
	275 V _{AC}	60	160	Curve C 100

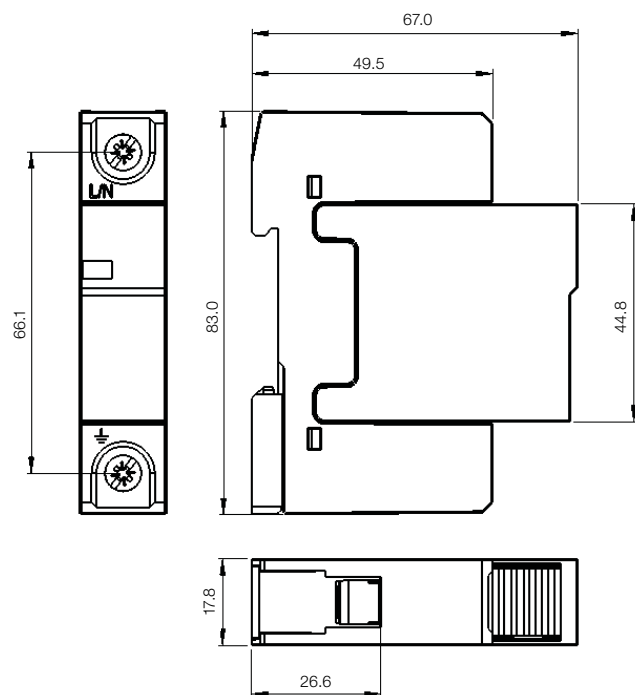
- The additional protection must be the same or bigger than the circuit breaking capacity where the surge protection is installed considering:
- Provide the continuous energy supply to the installation. In this case, the additional protection will protect the surge protector and maintain the energy supply to the installation. It is necessary to replace the additional protection in order to keep the installed protect against new overvoltages discharges. We suggest to use auxiliary contacts in order to indicate the occurrence of a discharge.
 - Continuity of surge protection: in this case, the additional protection of the surge protector is the same protection of the installation. When protecting the surge protector, the protection will also cut of the energy of the installation.

Wiring diagrams

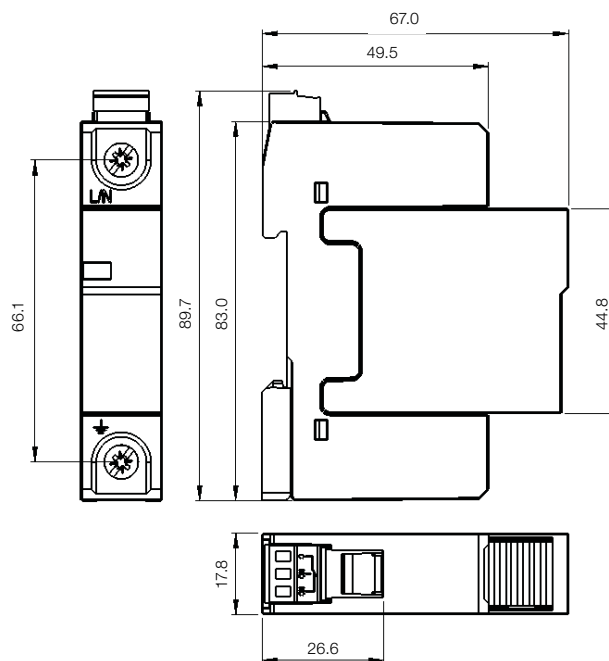


Dimensions

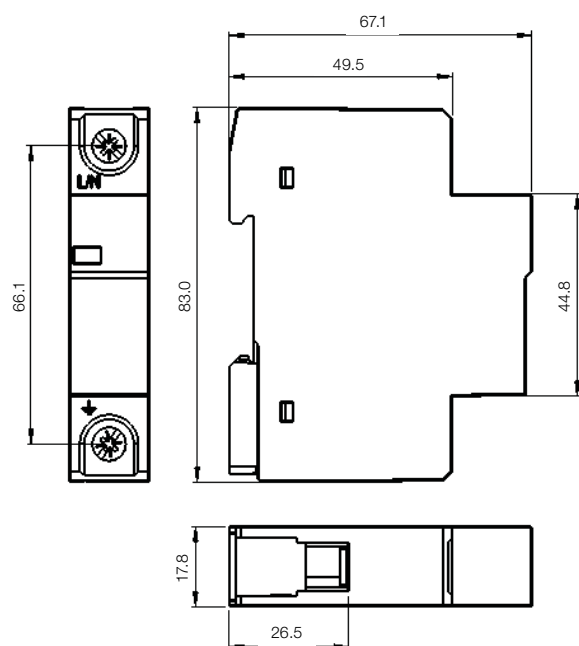
SPW03-275-12, SPW03-275-20 and SPW03-275-45



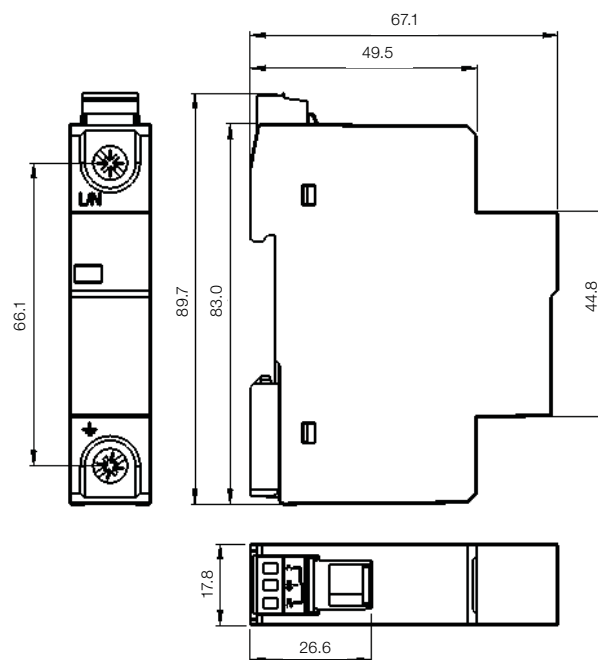
SPW03-275-12-C, SPW03-275-20-C and SPW03-275-45-C



SPW03-275-60/12,5



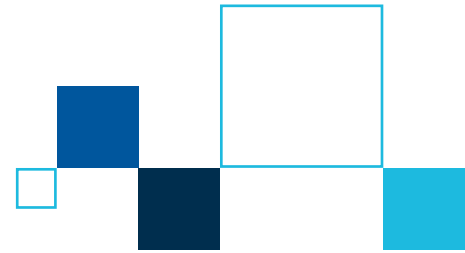
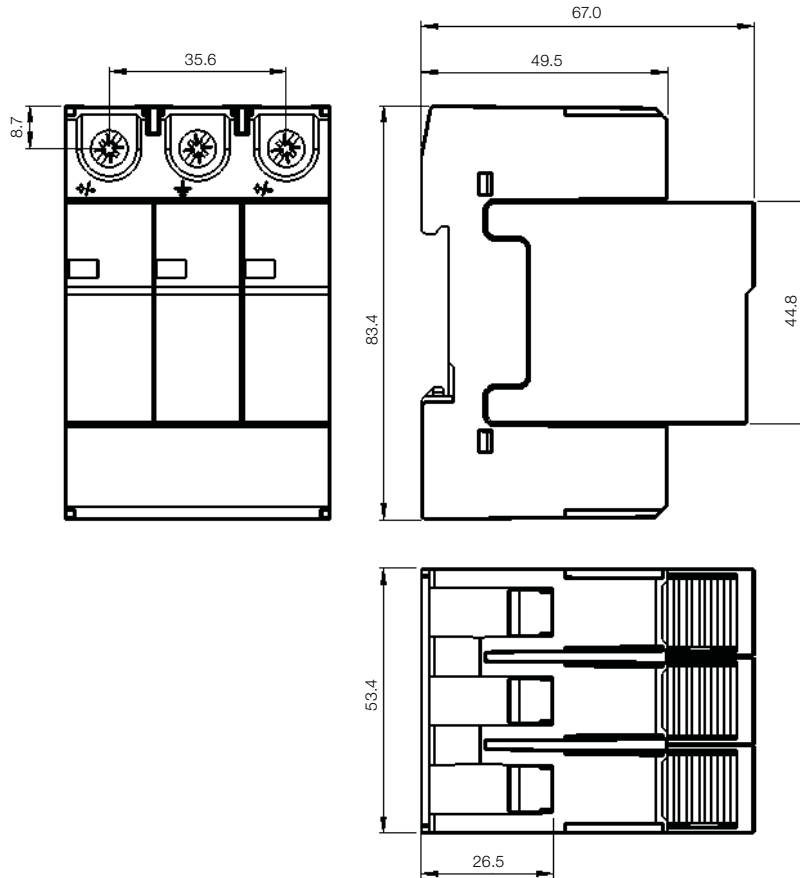
SPW03-275-60/12,5-C



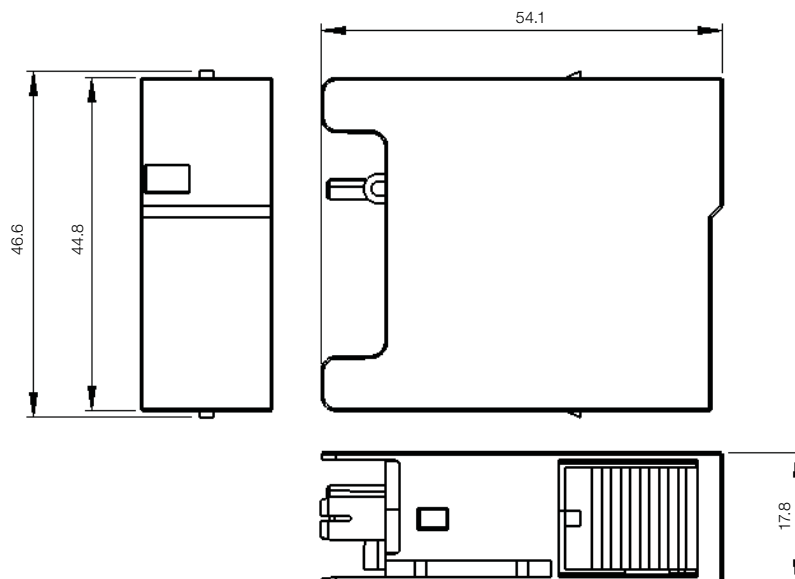
Note: all the dimensions are in millimeters (mm).

Dimensions

SPW13-600-40 and SPW13-1100-40



SPW03-275-12-M, SPW03-275-20-M and SPW03-275-45-M



Note: all the dimensions are in millimeters (mm).

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

[illegible]

[illegible]

[illegible]

Global presence

is essential, as much
as understanding
your needs.



Global Presence

With more than 49,000 employees worldwide, WEG is one of the largest electric motors, electronic equipments and systems manufacturers. We are constantly expanding our portfolio of products and services with expertise and market knowledge. We create integrated and customized solutions ranging from innovative products to complete after-sales service.

WEG's know-how guarantees our **SPW03** and **SPW13** are the right choice for your application and business, assuring safety, efficiency and reliability.



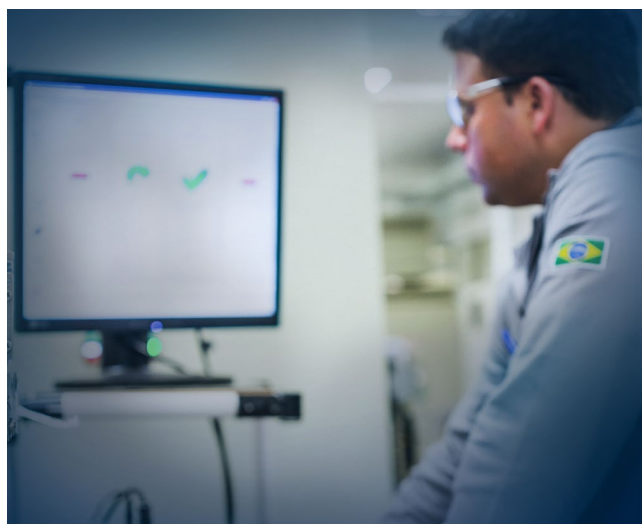
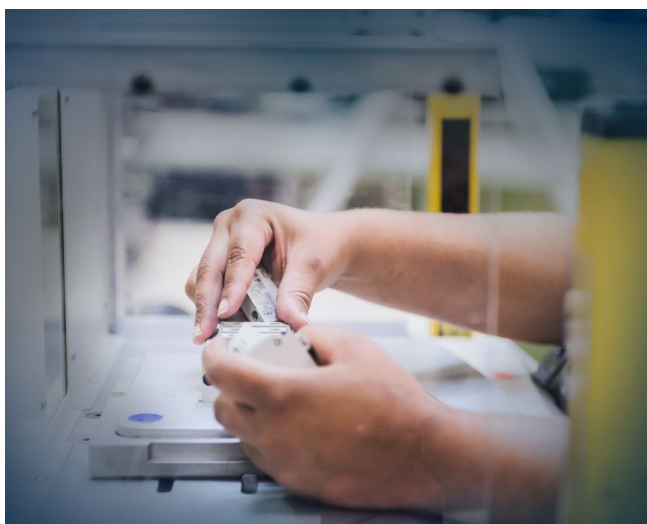
Availability is to have a global support network



Partnership is to create solutions that suits your needs

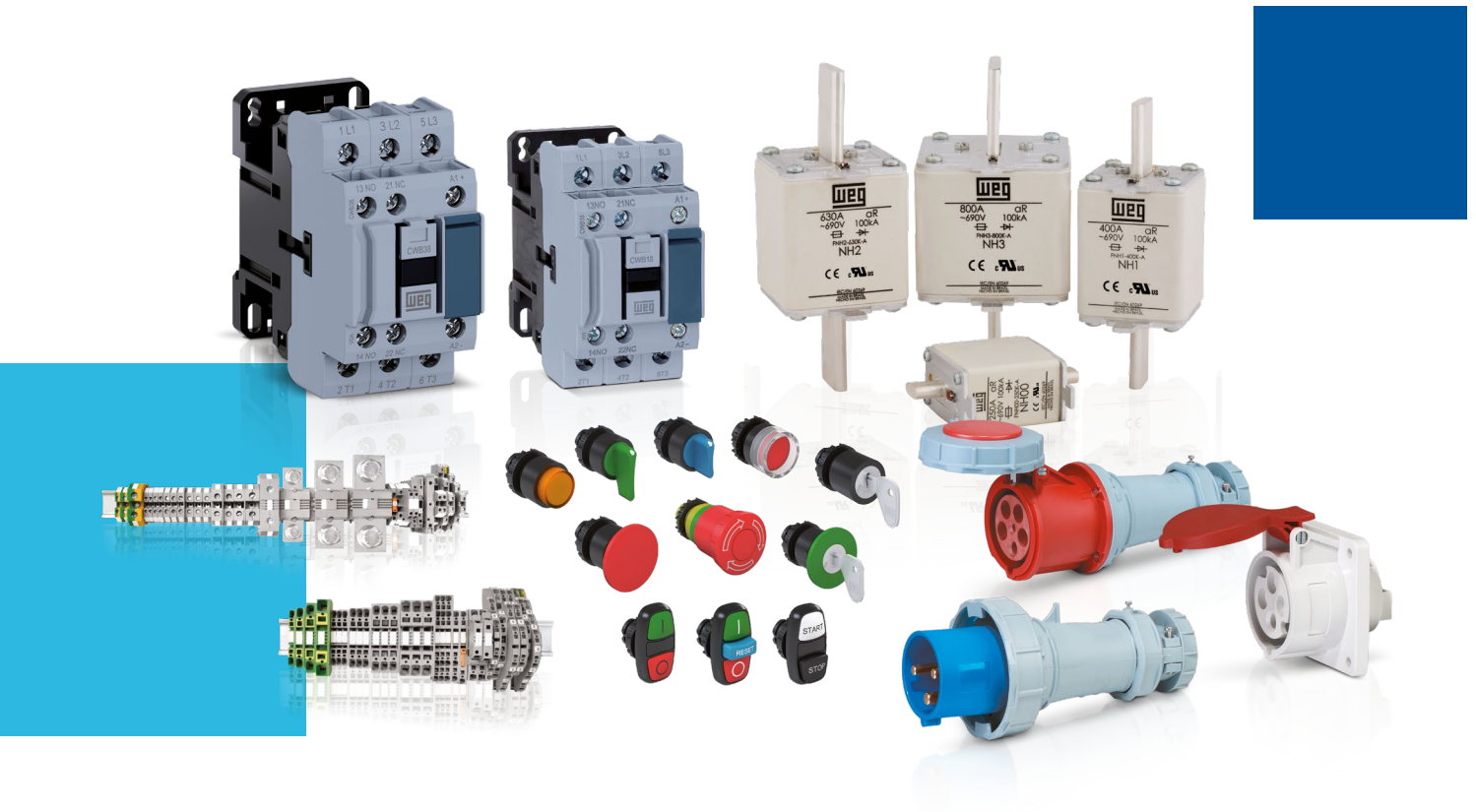


Competitive edge is to unite technology and innovation



Learn More

High performance and reliable products to improve your production process.



Excellence is to provide a whole solution in industrial automation that improves our customers productivity.

Visit: www.weg.net

 youtube.com/wegvideos

The scope of WEG Group solutions
is not limited to products and solutions
presented in this catalogue.
To see our portfolio, contact us.

**For WEG's worldwide
operations visit our website**



www.weg.net



+55 47 3276.4000



automacao@weg.net



Jaraguá do Sul - SC - Brazil

Cod: 50161037 | Rev: 01 | Date (m/y): 06/2026.

The values shown are subject to change without prior notice.
The information contained is reference values.