

PRODUCT DESCRIPTION

AC/DC converter are used to rectify the line supply voltage for the DC link, normally are used uncontrolled or controlled rectifier without or with regenerative feedback unit.

Line supply voltage for the DC link are often subject to

Spike over voltages generated by the commutation of thyristors or other semiconductors,

Switching over voltages, when a main circuit breaker is opened because the magnetizing energy in the inductors,

Induced overvoltage by magnetic or capacitive coupling between power supply line and other power cables,

Atmospheric over voltages, when a lighting discharge will happen, also quite far from the plant.

This surge voltage in main line can damage the semiconductors in the AC/DC converters.

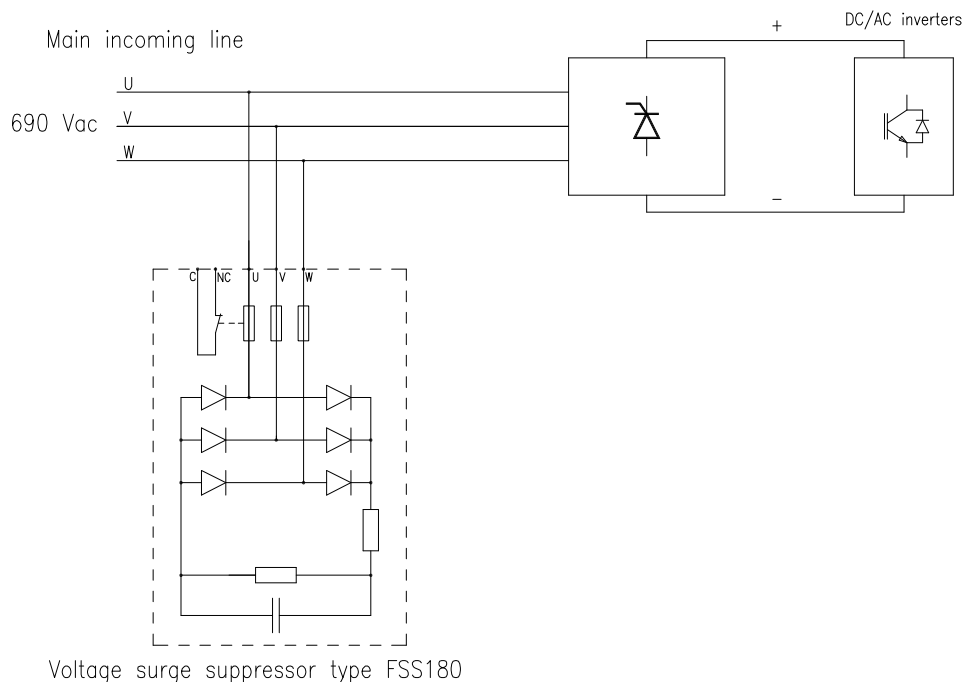
For protect the devices against surge voltage, a filter circuit is installed between the main incoming line and the AC/DC converter. The filter is composed by an uncontrolled AC-DC rectifier with an RC filter after the rectifier, this filter can absorb the magnetizing energy of the main transformers who is opened at the primary winding side. The RC filter in the main incoming line is also called voltage surge suppressor.

Depending the size of the input transformer power in the incoming line a different value of the capacitor filter is required in the voltage surge suppressor.

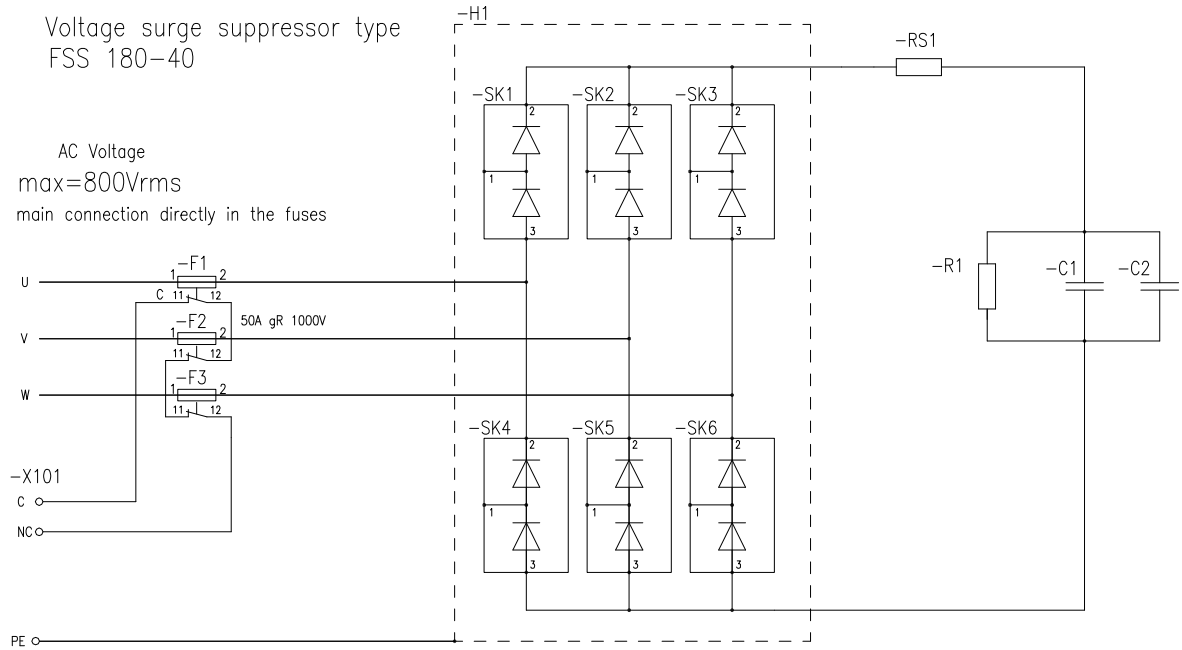
For main incoming line voltage up to 500Vac the FSS150xx type voltage surge suppressor has to be used. For main incoming line voltage up to 800Vac the FSS180xx type voltage surge suppressor has to be used, in this case, two bridge rectifier are series connected inside the voltage surge suppressor. Each type of FFS surge suppressor unit can be delivered with or without cover, in the first case the degree of protection is IP20, in the second case is IP00. Each type of FFS surge suppressor unit can be delivered with a different value of capacitor load, depending on the main incoming line nominal current.

The larger the main incoming voltage bigger is the maximum allowable instantaneous value of reverse voltage inside the AC/DC rectifier of voltage surge suppressor.

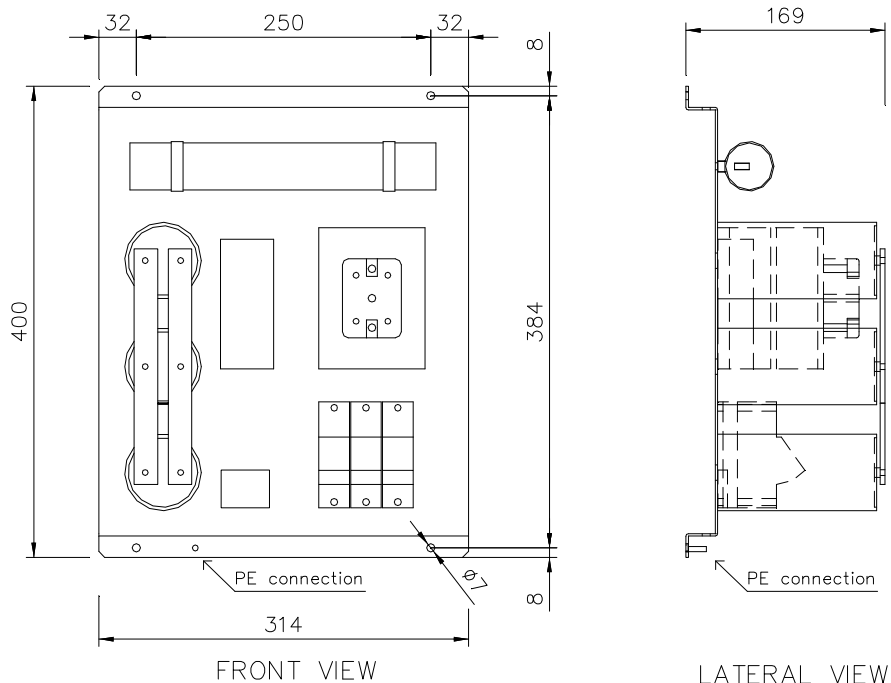
The internal circuit of the voltage surge suppressor is composed by 3 fast fuses for the diode protection, a 3 phase AC/DC uncontrolled rectifier, a series resistor from the diode and the capacitor load, the resistor and capacitor load, finally a terminal strip for fuse intervention detection is present at the output, normally this free contact signal is used from the AC/DC converter control unit for detect an alarm condition.



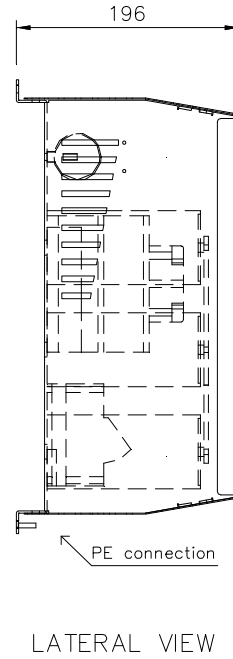
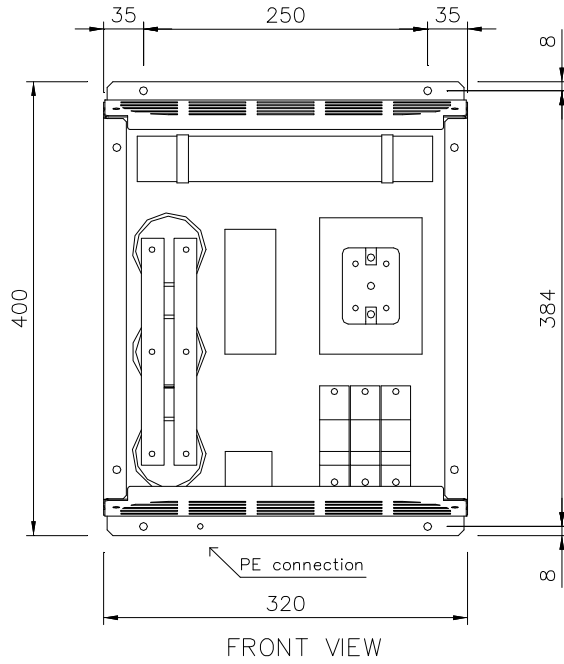
Voltage surge suppressor external connection



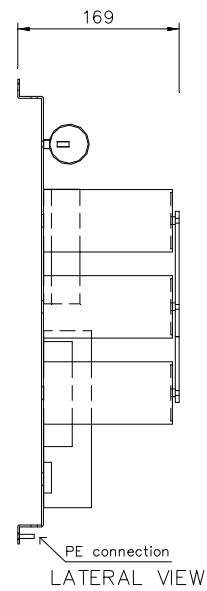
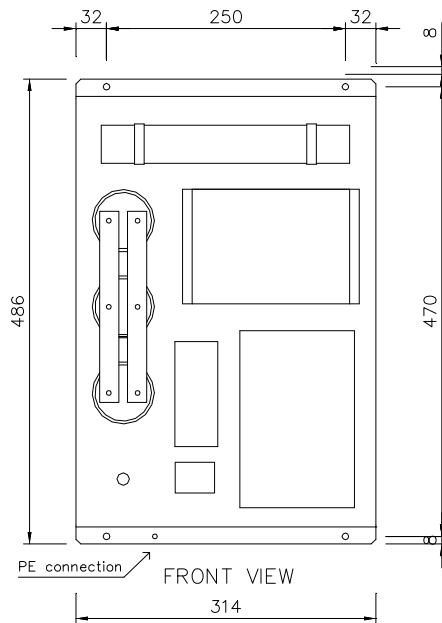
Voltage surge suppressor FSS internal connection



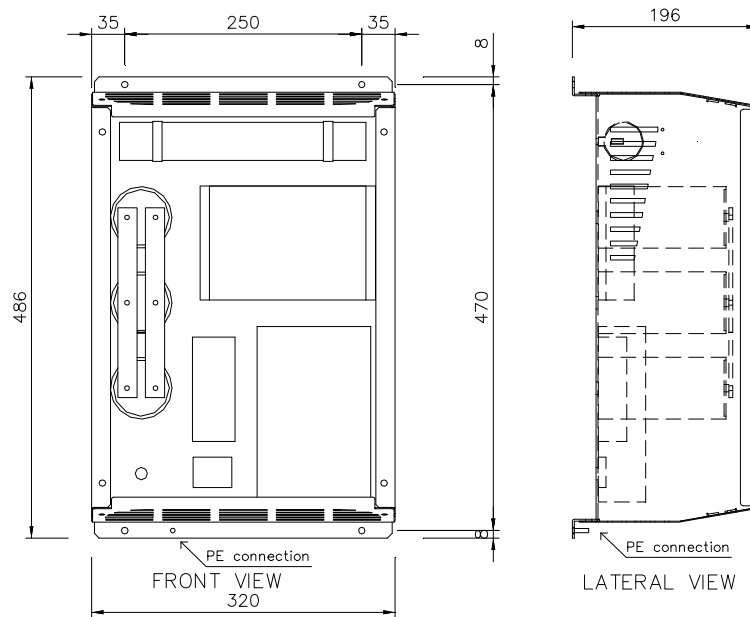
Voltage surge suppressor FSS150-IP00 dimension



Voltage surge suppressor FSS150-IP20 dimension

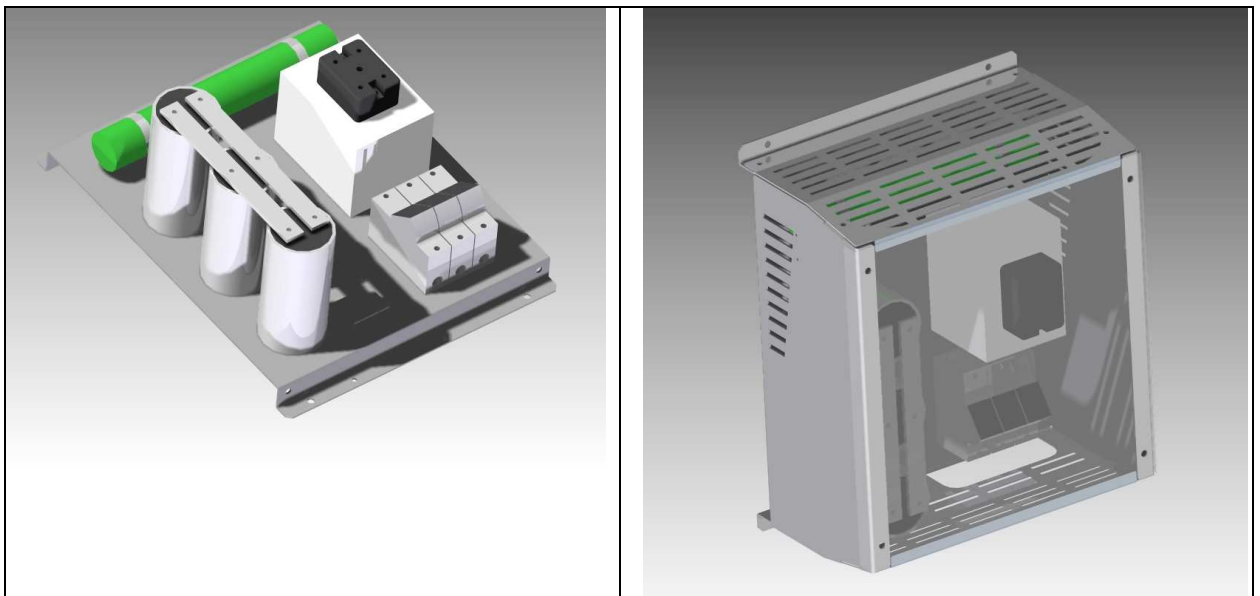


Voltage surge suppressor FSS180-IP00 dimension



Voltage surge suppressor FSS180-IP20 dimension

As is possible to see in the previous figure, the FSS filter has to be installed with the main resistor in the upper part of the switchboard, the main input cable and output contact has to be wired in the lower part of the device.



Voltage surge suppressor FSS150 layout (IP00 left- IP20 right)



Voltage surge suppressor FSS180 layout (IP00 left- IP20 right)

TECHNICAL FEATURES

The following technical features are valid for voltage surge suppressor FSS type

MODEL	Max ac voltage	Internal Capacitor (uF)	Vrrm of internal bridge rectifier	Converter Rated dc current	Dimension WxHxD (mm)	Weight (kg)	Degree of protection
FSS150-40-IP00	500	40	2200	1400 A to 2300 A	314x400x169	9	IP 00
FSS150-60-IP00	500	60	2200	2300 A to 3500 A	314x400x169	10	IP 00
FSS150-40-IP20	500	40	2200	1400 A to 2300 A	320x400x196	12	IP 20
FSS150-60-IP20	500	60	2200	2300 A to 3500 A	320x400x196	13	IP 20
FSS180-40-IP00	800	40	3600	1400 A to 2300 A	314x486x169	11	IP 00
FSS180-60-IP00	800	60	3600	2300 A to 3500 A	314x486x169	12	IP 00
FSS180-80-IP00	800	80	3600	3500 A to 5000 A	314x486x169	13	IP 00
FSS180-40-IP20	800	40	3600	1400 A to 2300 A	320x486x196	14	IP 20
FSS180-60-IP20	800	60	3600	2300 A to 3500 A	320x486x196	15	IP 20
FSS180-80-IP20	800	80	3600	3500 A to 5000 A	320x486x196	16	IP 20