

Novaris®

PART OF THE POWERCOM GROUP

Hybrid Spark Gap Installation Instructions



IMPORTANT: Please read these instructions carefully. Whilst straightforward, the installation of these devices is critical to their performance. Installation should only be carried out by a suitably qualified person in accordance with all relevant standards.

1. Introduction

- 1.1 These installation instructions apply to Novaris hybrid spark gaps with the following catalogue numbers:

Cat No: **HSGx-25-275-y**

x	Number or phases	1,3
y	Options	-N Neutral - Earth protection -E Metal enclosure -P Polycarbonate enclosure

- 1.2 These products are surge diverters, generally installed at main switchboards and distribution boards.



Figure 1: HSG1-25-275

2. Before Installation

- 2.1 The appropriate model and installation method depend on the wiring system and the point of installation. If you have any queries about the installation, please contact Novaris.
- 2.2 Ensure that the phase-to-phase, phase-to-neutral and phase-to-earth (L-N & L-E) supply voltages are within the working range of the unit:

HSG1-25-275:	200 → 280 V _{AC} RMS (Line-to-Neutral)
HSG3-25-275:	380 → 440 V _{AC} RMS (Line-to-Line)

- 2.3 Ensure that the neutral-to-earth voltage is less than 10V_{RMS}.
- 2.4 Turn the power off before beginning the installation.

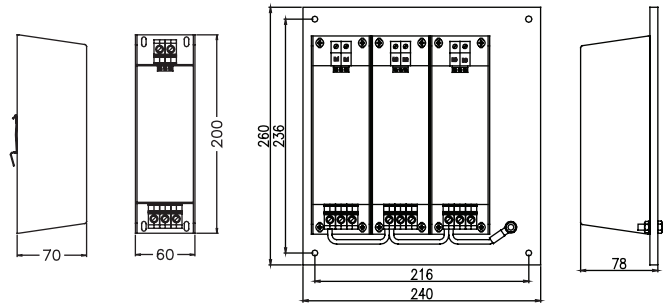


Figure 2: Dimensions of HSG1-25-275 and HSG3-25-275

3. Installation

- 3.1 **Wiring:** Hybrid spark gaps may be shunt or series connected.

Shunt connection (Figure 2) may be used regardless of the load current of the installation. However, the inductance of shunt-connected leads affects the level of protection. In order to minimise this effect leads should be kept together (in a cable for example) for as much of their length as possible. Most importantly, **all lead lengths must be kept as short as possible.**

Shunt connected leads may be eliminated all together by wiring the units in series. This achieves optimal performance, however is limited to load currents of 32A or less per phase.

- 3.2 **Point of Connection:** The unit should be connected on the load side of the incoming isolator.

Units should be installed on the **line side of earth leakage protective devices**, failure to do so may cause nuisance tripping.

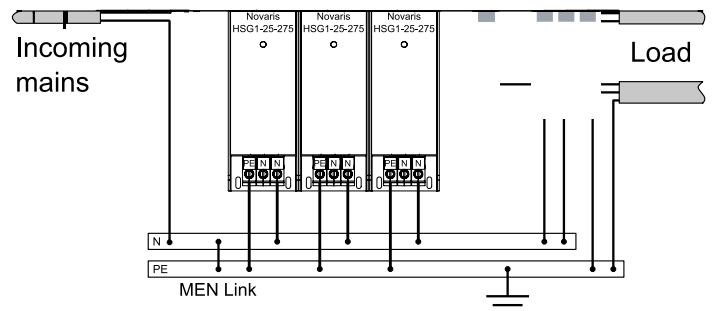


Figure 3: Shunt connected installation

3.3 Mounting: When shunt connected, the unit should be positioned such that connecting leads can be made as short as possible. This means mounting the unit as close to the point of connection as possible.

If the unit is to be positioned external to the switchboard it should be mounted in an enclosure (i.e. /E or /P models).

Single-phase hybrid spark gaps can be either panel mounted by the existing M4 screw slots or DIN rail mounted using their integral clips. Three-phase units may be panel mounted or wall mounted.

3.4 Isolation: The unit must be isolated by a circuit breaker or HRC fuses. Novaris recommend 63A HRC fuses. Lower current ratings may be used, however this introduces the chance of nuisance tripping in the event of a large surge.

3.5 Connecting Leads: The terminals of the surge diverters have a capacity of 16mm². Multistranded conductor of at least 10mm² should be used. Ensure that the leads are capable of handling the rated current of the installation or HRC fuse or circuit breaker where present.

3.6 External Alarm: All hybrid spark gaps are fitted with external alarms (voltage free changeover contacts) for remote monitoring of unit status. The terminals have a capacity of 2.5mm² and are configured as follows (refer to Figure 5):

NC = Normally Closed: Closed under fault conditions or when power is off, otherwise open

NO = Normally Open: Open under fault conditions or when power is off, otherwise closed

C = Common

3.7 LED display: The LED display indicates that power is supplied to the hybrid spark gap.

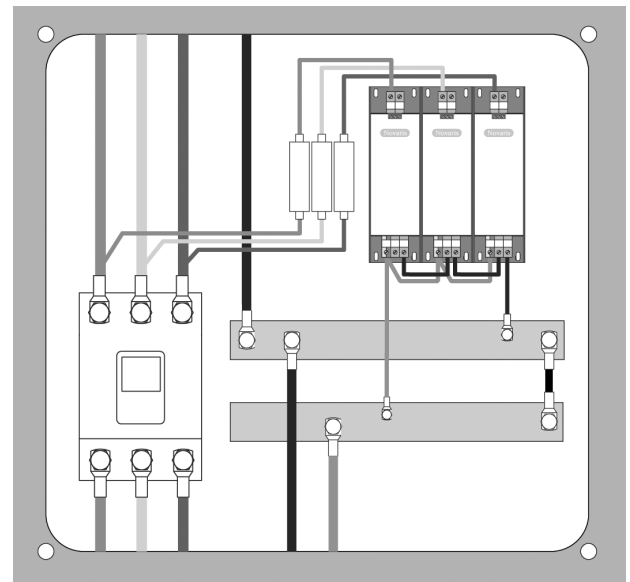


Figure 4: Typical 3-phase installation



Figure 5: Alarm contacts:

(a) when power is on and unit is okay

(b) under fault conditions OR when power is off

4. After Installation

- 4.1 Check the installation by switching the power on and observing the LED display. If the LED illuminates then the installation has been successful.
- 4.2 Novaris hybrid spark gaps are very robust and require very little maintenance, however Novaris hybrid spark gaps should be inspected periodically.
- 4.3 If the Novaris hybrid spark gap appears damaged or defective in any way, please contact Novaris about a replacement.



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