



**ZEONICS SYSTECH**  
DEFENCE & AEROSPACE ENGINEERS (P) LTD.



# HEMP/EMP & LIGHTNING PROTECTOR FOR HIGH VALUE ASSETS

(PATENT PENDING - App no: 201641033099)



Proudly Made in INDIA





### Introduction:

A critical high Voltage electrical isolator has been designed using unique materials, process and combined together with the state of art technology in Pulse Power High Voltage and fast nano-second electronics and electrical engineering.

The entire system is so built that it is durable for high energy shocks, mechanical shocks, due to its capability of standing on its vibration shock mounts.

### Applications:

Whenever there is a Nuclear Explosion or Geo Magnetic Storm, large amounts of electromagnetic energy gets coupled into cables, which are finally received at the user end of the receiving station or at the load area.

Critical infrastructure needs to be protected from these kind of damages as regular metal clad switch gear or circuit breakers, are not geared up for taking large voltage swings and pulses which are in the region of 120kV or 220 kV.

Fast rise time pulses which are generated with sufficient coupling and power transfer can do tremendous damage once they enter the premises and the electronics gets attacked, resulting in fire outbreaks. Hence the system is designed using total isolation and it is operative with a small duration of 5 seconds. This duration can also be reduced to 1 second in case of insurgency, or any kind of activity, the system operates through dry air and offers total isolation which can be checked with a wire burn in 10 J test.

A 11kV circuit breaker or metal clad switch gear cannot survive a 220kV incoming pulse. In event of any Nuclear strike the entire 3 phase Delta or star connection can be disconnected from the outside source and using another switch can be reconnected to its captive generators.



During scenario of War or any kind of major issue, it is very important that the power received at critical infrastructure is very clean power without any conducted interferences for which this systems are designed.

#### Advantages:

Machine can be operated remotely from 200m away, unattended operation possible, for situations where:

)The system is OFF for short duration.

)In case of any insurgency

)In case any advance intimation is received it can disconnect coupled electromagnetic pulse.

)Can be installed above ground or below ground

)Can be installed in bunkers

If the system is used, it disconnects the asset from the grid within a short duration of 1 or 5 seconds, which otherwise physically has to be done through metal clad switch gears and human man-power.

Metal clad switch gear can never work for this kind of applications because the voltage difference between the operating voltage and the pulse voltage is very high, i.e. 11kV & 220kV pulse.

#### Specifications:

- 1.) Number of poles : 4
- 2.) Working Voltage : 440V, 11kV, AC 3 phase Star
- 3.) Working current : 132A, 1100 A and 1300A
- 4.) Approximate dimension : H - 1850mm, W - 1450mm, D - 1300mm
- 5.) Approximate weight :  $\leq 300\text{kg}$
- 6.) Cable : 400sqmm x 4 nos.
- 7.) Temperature :  $-20^{\circ}\text{C}$  to  $85^{\circ}\text{C}$
- 8.) RH : Max 80% RH at  $40^{\circ}\text{C}$
- 9.) Current Operating Temp : Max  $95^{\circ}\text{C}$



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### Installation:

∫ Can be installed above ground or below ground, with sufficient dry clearance area around it

∫ System should be installed between 2 vacuum/air circuit breakers, as the system can only be used for isolation

∫ Ensure incoming & outgoing cables are available at installation site (R, Y, B and neutral)

### Types of Air Disconnecter switches available:

At this moment we have 3 commonly used Air Disconnecter switches,

1. Z/33/ 28 - Vertical type - 11kV / 132A design
2. Z/35/134 - Drop type - 11kV / 135A design
3. Z/35/144 - Drop type - 440V / 1100A & 1300A design
4. AMJI - Drop type - 11kV / 600A design
5. AMJI - Drop type - 440V / 2200A design

Power : 1.0MVA, 2.5MVA, 4.0MVA versions available

Switches with higher current and voltages are also available on request with slight modification in the structural parts.

### Testing:

The systems are thoroughly tested at the required voltage & current and every piece is tested for impulse test between line and line and Pole to pole test. The tests are done using very large voltage impulse generators which are in the voltage region of 200 kV and pulses less than 100n sec. Our machines go through severe and rigorous testing, including Visual Examination, Line to Line Voltage Test, 200kV Impulse Test (Wire Burn Test), Contact Resistance, High Current Load Test, Travel Speed Test, Maximum Pressure Test, High Current 20kA Pulse Generation Test, High Current 20kA Test.

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