

## Dynamic Voltage Restorer

Furnish floor standing IP20, Dynamic Voltage Restorer or Regulator (DVR) for mitigating Voltage Sags and providing continuous Voltage regulation. The DVR shall be sized as per the analysis done with available Power Quality data.

### Technology

Dynamic Voltage Restorer or Regulator (DVR) Should be 100% IGBT driven power electronic Equipment with no moving parts (there is fans inside DVR so it s moving parts). Voltage regulation has to be achieved through the IGBT driven voltage injection.

### Voltage Regulation and Sag Management

DVR must provide Continuous voltage regulation up to 20% for Over voltage and  $\geq 20\%$  for Under Voltage condition and up to 100% of loading. DVR has to provide balanced sinusoidal output voltage continuously up to +/- 20% Phase unbalances.

**Sag Restoration:** For 3Phase Sags, DVR should be able to take 100% of the load at least to 30 Seconds for 60% of remaining Network Voltage and at least up to 1 Sec for 30% of remaining Network Voltage. DVR should be able to support Single phase interruptions up to 100ms by providing an average of the 3Phase output voltage  $\geq 80\%$ .

### Bypass system for continuity of Operation

DVR has to be provided with an inbuilt static bypass system which allows DVR to bypass itself during events above its operational limits. DVR should have a self-reset mechanism to come operational when voltage or other event disappears. This has to allow the DVR to re-transfers the load from the static bypass to the normal mode . The speed of transfer to the static bypass has to be within 500 $\mu$ Sec to ensure fast switching to mains during events above operational limits.

DVR also should have a provision of connecting through a Manual bypass which need to be used while DVR is in maintenance mode to ensure continuity of supply to the load from the mains. The Supplier of DVR has to ensure the supply of Manual bypass and its selection and co-ordination with DVR main unit.

### HMI

The DVR shall have a panel mounted HMI with touch screen control rated IP65, dust tight and liquid resistant. The HMI shall provide performance trend and al other electrical parameters including load total current, Voltage and Drawn power. HMI shall show the unregulated DVR input voltage as well as regulated output voltage. HMI also should be able to show alarms and event logs for user to access the information such as Sag duration, sag depth, date and time of the day.

### Service conditions

The DVR shall be suitable to operate in an ambient room temperature 0°C to +40°C, continuously at full performance without derating. The DVR shall have in-built protection against thermal overload.

### Certification & Standards

The DVR shall have a built-in EMC filter, be CE certified and designed as per the following standards.

Design reference: EC 62477-1, IEC 61439-1, EN 61000-6-2, EN 61000-6-4 Class A, ISO 9001

EMC compliance: EN 61000-6-4 Class A (Emissions), EN 61000-6-2 (Immunity)

Product certification: CE, EAC, Ctick ,CCC

Environmental Compliance : ROHS, REACH

The proposed Dynamic Voltage Restorer shall be Schneider Electric PowerLogic™ or approved equal for usage in the project.