

LEAFLET

Thyristor switching module Dynaswitch-L

Ultra-fast capacitor switching solution for dynamic power factor compensation



As a technology leader, Hitachi ABB Power Grids offers a wide range of products, systems and services that improve power quality including capacitors and filters, power electronics-based compensators and software solutions, across the power value chain for low, medium and high voltage applications.

In modern electrical networks, many loads have a highly fluctuating reactive power demand. Such loads, like welding equipment, cranes or lifts, contribute to voltage fluctuations, high stress on electrical network and increased energy losses. Hitachi ABB Power Grid's Dynaswitch-L helps mitigate these issues.

Dynaswitch-L enables high-speed switching of low voltage capacitors through thyristors. Because of a fast, transient-free switching, the reactive power demand can be compensated quickly and accurately. For capacitor banks installed in networks with highly dynamic loads, Dynaswitch-L can be a key component.

Dynaswitch-L can be operated through an automatic power factor controller, a solid-state relay or a PLC. It is also possible to trigger multiple Dynaswitch-L modules to achieve a larger reactive power step capacity. Dynaswitch-L is easy to install, needs minimum maintenance, and is compliant with RoHS.

Good power quality is key to improving grid availability and reliability. It enables the optimization of operating costs and secures grid code compliance. Power quality supports the integration of renewables into the grid and enhances energy efficiency, leading to lower carbon emissions and minimizing environmental impact.

Benefits:

- High speed switching at zero differential voltage
- Self-cooled units with option of forced cooling
- Suitable for capacitors with or without detuning reactor
- Monitoring of supply voltage, input trigger and thermal fault
- Robust connection through copper busbars with safety cover, also suitable for direct busbar termination
- Extreme climate condition compliant
- No eddy current heating of cables
- Least maintenance

Applications:

Dynaswitch-L can be used as a switching device in power quality solutions for networks connected to:

- Large number of welding loads
- Elevators and cranes
- Wind turbines
- Machines with high switching frequency, e.g. sawmills or tunnel drills
- Other dynamic or fast switching loads

Technical data

Parameter	Value		
Rated supply voltage (AC)	415 V		
Operating voltage range (AC)	415 V to 440 V		
Operating frequency	50 Hz		
Trigger current ¹	~ 10 mA (12 V DC)	~ 20 mA (24 V DC)	
Switching time	~ 5 ms		
Connection time	Less than 1 cycle		
Reconnection time	20 ms to 40 ms, depending upon discharge resistor used ²		
Rated output handling capacity	10 kvar	25 kvar	50 kvar
Maximum current (non-continuous)	20 A	50 A	100 A
Maximum power dissipation (typical value)	30 W	75 W	150 W
Connection			
Copper cable size required	10 mm ²	16 mm ²	35 mm ²
Recommended lug size	M6	M8	M8
Dimensions (W x H x D) ³	156mm x (200 + 50) mm x 236mm (in mounted condition)		
Mounting base (W x H)	157 mm x 200 mm		
Weight ³	~ 5 kg		
Mounting position	Vertical, with heat sink duct facing upwards, in naturally ventilated environment		
Clearance required (minimum)	150 mm on top and bottom. 80 mm on sides		
Ambient temperature	-10 °C to 55 °C		
Thermal tripping	Trip at ~ 80 °C. Self-restart on cooling		
Earthing	M6 screw (available on both sides)		
Optional accessories			
Extension annunciation unit	External annunciation unit for extending potential free contact		
Fan	Trigger controlled fan (on/off)		
LED indications			
Green LED	Power supply available. Module ready to operate		
Yellow LED	Module triggered		
Red LED	Trip due to overtemperature		

1. Power factor controller or other triggering mechanism for Dynaswitch must have capability to deliver up to 20 mA trigger current

2. ABB CDR22 discharge resistor is recommended to be used with Dynaswitch-L

3. Dimensions and weight for 10 kvar unit is normally less than this data