Product Leaflet

ZVC Reactor Starter
Designed To Order, Metal Enclosed, Arc-proof, Air-insulated, Modular, Compact Reduced Voltage Starter

- ✓ Control voltage drop in the supply network when starting motor
- ✓ Control load torque during start
- ✓ Control starting time to keep thermal stresses in the rotor reasonable

With ease of operation, increased reliability and compact footprint, ZVC will provide your Power Process System installations with significantly lower Total Cost of Ownership.

Reactor starting is another form of reduced voltage motor starter. The reactor starter employs high voltage devices to control the current flow and therefore the voltage applied to the motor.

Motor Starting Technology

If the voltage drop has to be reduced, a reactor can be connected in the series with the motor windings during the start.

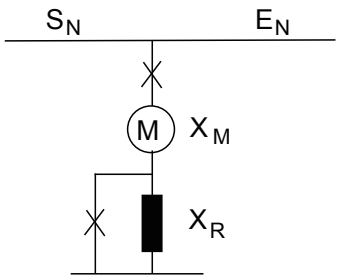
During starting the reactor limits the starting current and the starting torque of the motor. Current decrease directly proportional to the voltage and torque as square of the voltage.

Reactor can be connected either on the supply line side or at the neutral point. In latter case all six winding ends must be brought out to the terminals.

The size of the reactor will be chosen based on line voltage, starting power and starting current.

Simplified voltage drop calculations based on reactances:

E_N = rated net voltage
S_N = busbar fault level
X_M = short circuit reactance of the motor
X_N = net reactance
I_{st} = starting current in DOL starting
X_R = reactor reactance
T_{st} = starting torque in DOL starting



Starting current with reactor,
$I_{stR} = E_N / (\sqrt{3}\,(X_N + X_R + X_M))$
$\approx X_M\, I_{st} / (X_M + X_R)$

Starting torque with reactor,
$T_{stR} = T_{st}\,(I_{stR}/I_{st})^2$

Voltage drop,
$\triangle E = X_N / (X_N + X_R + X_M)\ 100\%$

Technical data

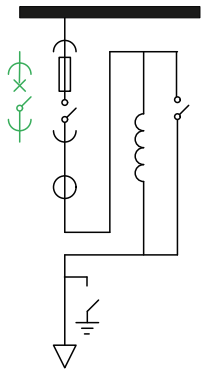
ZVC-REA		7.2kV	12kV
Interface with switchgear platforms		UniGear, OE–ZVC, BC, Compact	
Type of construction		Metal enclosed with withdrawable contactor or breaker	
Compartmented to IEC 62271–200		Partition class PM	
Loss of service continuity		Category LSC2A	
Internal arc classification		AFL (or AFLR with arc gas duct)	
Insulation level		7.2/20/60 kV	12/28/75 kV
Rated main busbar current (40°C)		Up to 4000A	
Rated normal current		Up to 630A	
Motor Soft Starter		Up to 6000kW	Up to 11000kW
		Up to 8000HP	Up to 14000HP
Rated short time current		Up to 50kA	
Arc fault withstand current		Up to 50kA	
Tested according to		IEC standards	
Overall dimensions	H [mm]	1800 / 2200 / 2400 / 2595	
	W [mm]	1325 / 1650	
	D [mm]	1340 / 1800	
Reactor		Dry type, Integrated or External mounted	
Marine Approval		Lloyd's Register	

The above data are not limiting values.

Design Features

- Integrated starting reactor, switching line/bypass devices and timer coordination
- Direct connection to UniGear switchgear panels.
- Wall standing. Front power cable access.
- Safe, all operations behind closed doors.
- Earth switch viewing window.
- Integral interlock fault make earth switch.
- Full range of type test to AS and IEC standards.
- Can be designed for Indoor or Outdoor installations
- Can be equipped with motor racking mechanism.
- Racking mechanism proven for 10000 operations.
- Built-in control logic between reactor, earth switch and line/bypass devices status
- Minimise site work by maximising factory installation, power cabling and test

Single Line Diagram



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