

# ZVC Block Transformer Starter

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

- ✓ Manage voltage drop in the supply network when starting motor
- ✓ Manage load torque during start
- ✓ Manage 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.

Block Transformer starting is another form of reduced voltage motor starter. The block transformer starter employs high voltage devices to control the current flow and therefore the voltage applied to the motor.

### Motor Starting Technology

It is also possible to use conventional block transformer as a starting device. It is often utilised for larger machines as it more expensive and is also connected (power losses) after the starting.

$E_N$  = rated net voltage

$S_N$  = busbar fault level

$X_M$  = motor short circuit reactance

$X_N$  = net reactance

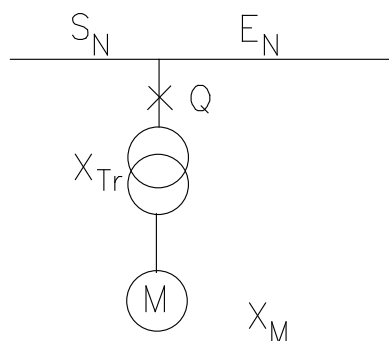
$I_{st}$  = starting current in DOL starting

$X_{Tr}$  = transformer reactance

$T_{st}$  = starting torque in DOL starting

$\mu$  = transformer voltage ratio

$\mu_{sc}$  = transformer short circuit ratio



$$\mu = E_N / E_M$$

$$X_{Tr} = \mu_{sc} E_M^2 / S_T$$


$$X_N = E_M^2 / S_N$$

Starting current with block transformer,  $I_{stB} = \mu^2 I_{st}$

Starting torque with block transformer,  $T_{stB} = \mu^2 T_{st} = T_{st} (I_{stB} / I_{st})$

Voltage drop,  $\Delta E = \mu X_N / (X_M + X_N + X_{Tr})$

## Technical data

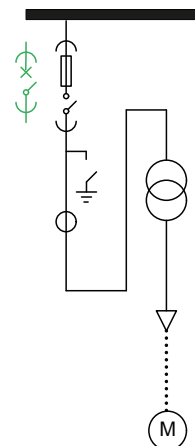
ZVC-BT	7.2kV	12kV
Interface with switchgear platforms	UniGear, OE-ZVC, BC, Compact	
Type of construction	Metal enclosed with withdrawable contactor or breaker	
Compartmented to IEC 62271-200	Partition class PM	
Loss of service continuity	Category LSC2A	
Internal arc classification	AFL (or AFLR with arc 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 / 2000
Transformer	Dry type, Integrated or External mounted	
Marine Approval	Lloyd's Register	

The above data are not limiting values.

## Design Features

- Integrated starting transformer and switching line device
- 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.
- Can be equipped with capacitor bank for reactive power compensation, or for network with very low short circuit capacity.
- Built-in control logic between transformer, earth switch and line devices status
- Minimise site work by maximising factory installation, power cabling and test

## Single Line Diagram



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The data and illustrations are not binding. We reserve the right to make changes in the course of technical development of the product.

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