

Detuning Reactor

For capacitors up to 690 V system voltage, indoor use



Powerful features

Description

In harmonics polluted electrical system, installing capacitors for reactive power compensation can cause resonance between capacitors and electrical network which leads to considerable increase of harmonic level. Detuned filter consists of capacitor connected in series with Detuning reactors avoids such resonance and absorbs some of the particular harmonic current from electrical system. ABB Detuning reactors are designed and manufactures for their safety and reliable application in Detuned filter.

High precision laminated core

High precision punching laminated iron core eliminates inductance's tolerances between three phases and enable accurate reactor tuning. Moreover, sufficient core linearity is obtained to withstand the switching of capacitors steps without causing saturation problems in networks of high harmonic distortion.

High temperature class

Thermo-setting impregnation resin of temperature class H. maximum operating temperature is 50°C and maximum storage temperature is 75°C.

Vacuum and over-pressure impregnation

Completed units of reactors are vacuumly impregnated by thermosetting resin then cured in over-pressure. This vacuum over-pressure impregnation ensures that reactor winding and core are securely structured. This leads to outstanding low noise, low vibration and better heat dissipation.

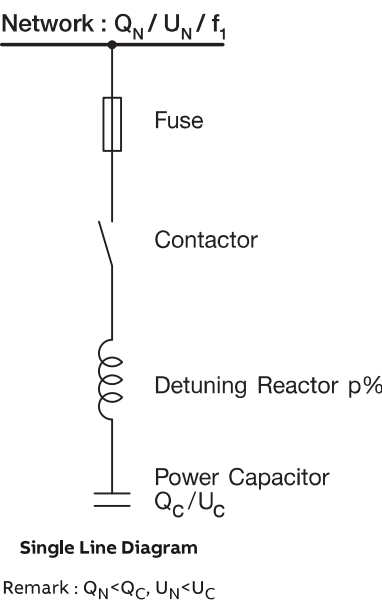
Computer control design and test equipment

The designing software optimize reactor design to provide customers with a tailor made product, in which their requirements with regard to losses, dimensions and environmental conditions. Database controlled test equipment is used for routinely completed reactor testing at nominal current. For typetesting, a unique 3-phase harmonic generator rated at 0.9 Mvar, enabling to test reactors in a realistic environment, i.e. simultaneous fundamental and harmonic current loading. Thus, heat-run and noise dissipation tests are available, as well as induced overvoltage tests for product reliability testing.

Technical specifications

Rated voltage	3-phase, up to 690 V
Protection degree	IP00
Core	Laminated sheet iron
Wiring	Aluminum or copper
Terminal	Copper-Bar
Ground terminal	Fixation holes
Impregnation	Completed unit impregnated under vacuum and overpressure in impregnation thermosetting resin temperature class H
Tolerance of inductance	$\pm 3\%$ when measured at 20°C ($\pm 5^{\circ}\text{C}$) at f_1 and I_N
Operation	The reactor is designed to operate continually at a network voltage equals to U_N with a current load of I_{th} at T_{max} and maintain sufficient safety margin to hot spot temperatures of its insulation while dissipating losses not exceeding P_{max}
Insulation test	Between winding and core of 3 kV at 1 minute according to IEC 76
Applicable standard	IEC 60076-6, VDE 0532, IEC 76
Operating temperature	Minimum -25°C , maximum 50°C
Storage temperature	Minimum -40°C , maximum 75°C
Thermal current	<p>I_{th} is defined as the root mean square of ($I_1, I_3, I_5, I_7, I_{11}, I_{13}$) where I_1 is calculated from network voltage of $1.1 \times U_N$</p> <p>$I_1, I_3, I_5, I_7, I_{11}, I_{13}$ are calculated from network Voltage spectrum of maximum</p> <p>$U_3/U_1 = 0.5\%$</p> <p>$U_5/U_1 = 6.0\%$</p> <p>$U_7/U_1 = 5.0\%$</p> <p>$U_{11}/U_1 = 3.5\%$</p> <p>$U_{13}/U_1 = 3.0\%$</p> <p>but not exceeding a total THDU of 8%</p>
Linearity current	$I_{Lin} = 1.9 I_N$
Rated current	I_N = normal fundamental current of one phase of the capacitor-reactor combination in detuned filter
Maximum losses	P_{max}
Inductance	L_N = nominal inductance of one phase of reactor
Net reactive power	Q_{net} = net output reactive power of 3-phase capacitor-reactor combination in detuned filter at U_N

Connection diagram



Reactor data

$U_N = 400\text{ V} / f_1 = 50\text{ Hz}$

P (%)	Q_N (kvar)	L_N (mH)	I_N (A)	I_{th} (A)	I_{Lin} (A)	P_{max} (W)	Weight (kg)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	FixØ (mm)	ConnØ (mm)	Coil Al/Cu	Class
7	25	1.533	36.1	42.3	68.6	175	18	228	205	140	150	95	114	11	9	Al	T50/H
7	50	0.767	72.2	84.5	137.1	275	28	264	235	155	150	102	132	11	9	Al	T50/H

Dimensions

