Reactors - Antiresonance Harmonic Filter

General

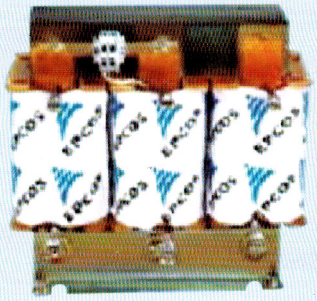
The increasing use of modern power electronic apparatus (drives, uninterruptible power supplies, etc) produces nonlinear current and thus influences and loads the network with harmonics (line pollution).

The power factor correction or capacitance of the power capacitor forms a resonant circuit in conjunction with the feeding transformer. Experience shows that the self-resonant frequency of this circuit is typically between 250 and 500 Hz, i.e. in the region of the 5th and 7 th harmonics.

Such a resonance althought an lead to the following undesiable effects.

- overloading of capations,
- overloading of transformers and transmission equipment.
- interference with metering and control syterms, computers and electrical gear.
- resonance elevation, i.e. amplification of harmonics.
- voltage distorstion.

These resonance phenomena can be avoided by connecting capacitors in series with fillter reactors in the PFC system. These so called "detuned" PFC systems are scaled in a way that the self-resonant frequency is below the lowert line harmonic. The detuned PFC system is purely inductive seen by harmonics above this frequenccy.For the base line frequency (50 or 60 Hz usually). the detuned system on the other hand acts purely capacitive, thus correcting the reative power.



Applications

- Avoidance of resonance conditions
- Tuned and detuned harmonic filters
- Reduction of harmonic distortion (network clearning)
- Reduction of power losses

Features

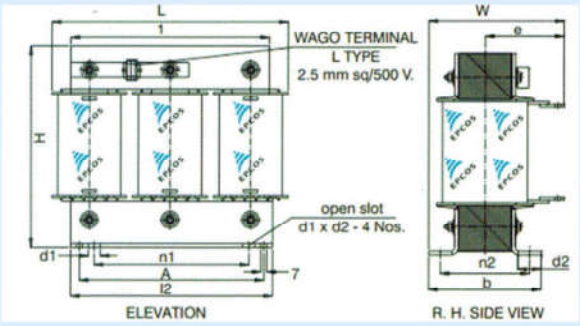
- Hight harmonic loading capability
- Very low losses
- High linearity to avoid choke tilt
- Low noise
- Convenient mounting
- Long expected life time
- Temperature protection (NC contact)

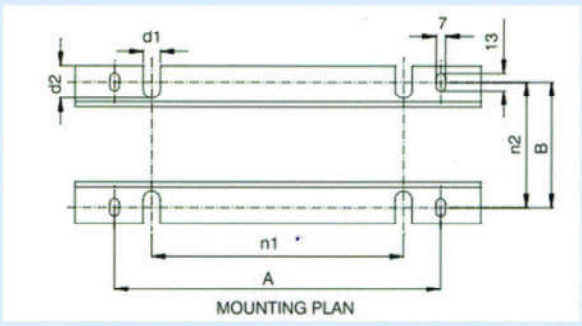
Technical data and limit values	
Filter reactors	
Harmonics*	V3 = 0,5% V_R (duty cycle = 100%) V5 = 6.0% V_R (duty cycle=100%) V7 = 5.0% V_R (duty cycle=100%) V11 = 3.5% V_R (duty cycle=100%) V13 = 3.0% V_R (duty cycle=100%)
Effective current	$I_{rms} = \sqrt{(I1^2 + I3^2 ... I13^2)}$
Fundamental current	$I1 = 1.06 \cdot I_R$ (50Hz or 60 Hz current of capacitor)
Temperature protection	microswitch (NC)
Dimensional drawings and terminals	see specific datasheets
Three-phase filter reactors to VDE 0532/EN 60289	
Frequency	50 Hz or 60 Hz
Voltage	400, 440
Output	10 ... 100 kvar
Detuning	5.67%, 7%, 14%
Cooling	natural
Ambient temperature	40°C
Class of protection	I
Enclosure	IP00

Harmonic Filter Reactor

Characteristics

Power kVAr	Odering code	Inductance mH	I_{rms}	Dimensions (mm) L	H	W	n1	n2	Weight kg	Capacitor /volt	Terminal
Rated voltage V=400V, f=50Hz, p=5.67%											
10	B44066D5010M400	3.06	18.5	225	165	145	150	95	15		busbars
12.5	B44066D5012M400	2.45	23	220	162	136	150	95	15		busbars
20	B44066D5020M400	1.53	36.9	225	200	140	150	95	18		busbars
25	B44066D5025M400	1.23	46.1	240	210	135	150	90	19		busbars
40	B44066D5040M400	0.77	73.7	260	235	155	150	102	28		busbars
50	B44066D5050M400	0.61	92.1	300	235	165	150	120	34		busbars
75	B44066D5075M400	0.41	138.2	300	265	185	150	135	45		busbars
100	B44066D5100M400	0.31	183.8	300	325	185	150	135	54		busbars
Rated voltage V=400V, f=50Hz, p=7%											
8.9	B44066D7009K400N1	4.31	14.6	175	225	120	100	78	15	10/440	10 mm^2 Kl
12.5	B44066D7012K400N1	3.01	20.5	220	162	136	150	95	15		10 mm^2 Kl
20	B44066D7020K400N1	1.92	32.7	225	200	136	150	95	17		busbars
27	B44066D7027E400	1.435	43.73	240	205	140	150	97	17	30/440	busbars
35	B44066D7035E400	1.079	58.15	260	240	190	150	165	26	40/440	busbars
44.4	B44066D7044E400N1	0.863	72.73	285	210	190	150	165	26	50/440	busbars
53	B44066D7053E400N1	0.719	87.3	285	235	190	150	165	26	60/440	busbars
89	B44066D7089E400N1	0.431	145.8	335	270	185	150	136	51	100/440	busbars
Rated voltage V=400V, f=50Hz, p=14%											
10	B44066D1410M400	8.29	15.4	225	205	110	150	70	13		busbars
12.5	B44066D1412M400	6.64	19.2	260	180	150	150	100	22		busbars
20	B44066D1420M400	4.15	30.8	260	180	150	150	100	22		busbars
25	B44066D1425M400	3.32	38.5	260	235	150	150	100	28		busbars
40	B44066D1440M400	2.07	61.6	300	235	185	150	135	38		busbars
50	B44066D1450M400	1.66	77	300	235	185	150	135	40		busbars
75	B44066D1475M400	1.11	115.5	360	280	210	265	155	58		busbars
100	B44066D1499M400	0.83	153.9	360	315	210	265	155	66		busbars





Distributor in Viet Nam
LTPTech .Co., LTD
Add : 237/19 Nguyen Van Dau St, Ward 11, Binh Thanh Dist, HCM city
Tel : (84.8) 35158960 - Fax: 8(4.8) 35158966
Email: info@ltptech.vn - Website:www.ltptech.vn