



DETUNED REACTORS

MKP Cylindrical -

Metallized Polypropylene
Film Technology



Harmonic Control

Optimized for harmonic mitigation



Thermal Stability

Built for continuous performance



DETUNED REACTORS

Harmonic Filter Reactors — 5.67% | 7% | 14%



Available Types:
5.67% (210 Hz) | 7% (189 Hz) | 14% (134 Hz)

Influence of Harmonics & The Need for Harmonic Filters

Development in modern semiconductor technology has led to a significant increase in the number of thyristor- and inverter-fed loads. The growing use of power electronic devices is causing an increasing level of harmonic distortion in electrical systems, which often leads to problems with capacitor installations. This can be controlled with the installation of Detuned Harmonic Reactors along with Capacitors, forming a Harmonic Filter.

Installation of Detuned Harmonic Filters is recommended if your harmonic-generating load is more than 10% of the transformer power.

Benefits of Detuned System

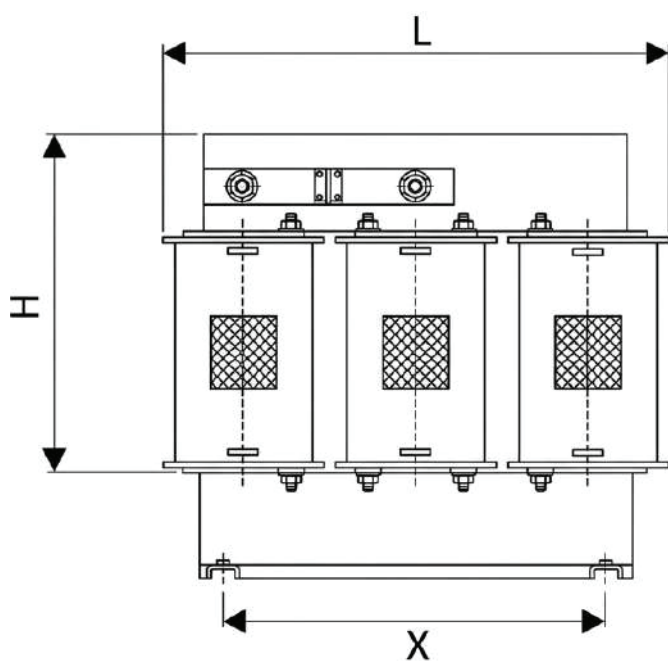
- Protects capacitor bank
- Increases capacitor life
- Reduces overheating
- Avoids resonance
- Improves overall power quality

Features

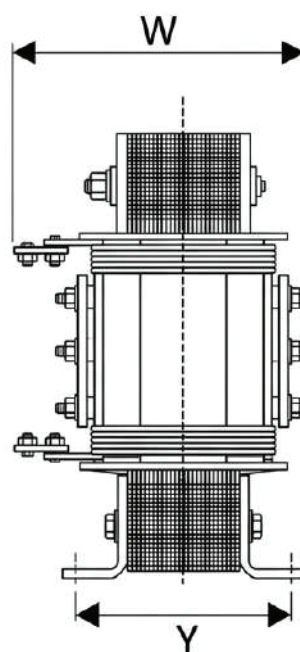
- Three phase, high permeable CRGO iron core, air cooled
- High conductive Copper or Aluminium Windings
- High harmonic loading capability
- Designed for very low power losses
- Stud type terminals for easy termination up to 20 kVAR & above
- Thermal switch for overload protection
- Vacuum impregnated varnish – silent and moisture-immune operation
- Wide range: 5 kVAR to 100 kVAR, Aluminium & Copper

Technical Specifications

Parameter	Specification
Rated Voltage	400 – 440V
Frequency	50/60 Hz
Insulation Class	H (180°C)
Temperature Rise	≤ 100K
Overload Capacity	1.3 In
Cooling	Natural Air (AN)
Standard	IEC 60289
Design	3 Phase Iron Cored
Noise Level	65 dB
Separate Coil Test Voltage (HV Test)	3 kV
Tolerance of Inductance	+5%



Elevation



R.H. Side View

400V, 50HZ, 5.67% REACTOR SPECIFICATIONS

fr = 210 Hz | Linearity: $L \times 0.95$, for current up to $2.08 \times I1$

Reactor Rating	5 kVAr	10 kVAr	12.5 kVAr	15 kVAr	20 kVAr	25 kVAr	50 kVAr	100 kVAr
Rated Inductance mH	6.12	3.06	2.45	2.04	1.53	1.22	0.61	0.31
RMS Current A	9.2	18.4	23.0	27.6	36.9	46.1	92.1	184.3
Terminal	STUD	STUD	STUD	STUD	STUD	BUSBAR	BUSBAR	BUSBAR
COPPER REACTOR								
Weight (kg)	6	9	11	12	14	16	28	50
Length mm (L)	180	180	180	180	210	210	240	270
Depth mm (W)	70	85	95	100	80	90	100	120
Height mm (H)	165	165	165	165	215	215	265	315
Mounting X	136	136	136	136	136	175	175	175
Mounting Y	60	75	85	90	80	90	110	140
ALUMINIUM REACTOR								
Weight (kg)	6	8	12	11	12	12	29	46
Length mm (L)	180	180	210	180	210	210	240	270
Depth mm (W)	71	86	80	100	80	80	110	120
Height mm (H)	165	165	215	165	215	215	265	315
Mounting X	136	136	136	136	136	175	175	175
Mounting Y	61	76	80	90	80	80	120	140

400V, 50HZ, 7% REACTOR SPECIFICATIONS

fr = 189 Hz | Linearity: $L \times 0.95$, for current up to $2.08 \times I1$

Reactor Rating	5 kVAr	10 kVAr	12.5 kVAr	15 kVAr	20 kVAr	25 kVAr	50 kVAr	100 kVAr
Rated Inductance mH	7.67	3.83	3.07	2.56	1.92	1.53	0.77	0.38
RMS Current A	8.2	16.4	20.5	24.6	32.8	41.0	81.9	163.9
Terminal	STUD	STUD	STUD	STUD	STUD	BUSBAR	BUSBAR	BUSBAR
COPPER REACTOR								
Weight (kg)	6	9	10	12	14	13	23	40
Length mm (L)	180	180	180	180	210	210	210	240
Depth mm (W)	73	90	95	102	90	80	110	125
Height mm (H)	150	150	150	165	195	195	215	265
Mounting X	136	136	136	136	136	175	175	175
Mounting Y	60	80	85	92	90	80	110	130
ALUMINIUM REACTOR								
Weight (kg)	7	9	9	12	12	15	27	44
Length mm (L)	180	180	180	210	210	210	240	240
Depth mm (W)	80	95	95	81	81	90	105	150
Height mm (H)	150	150	150	215	215	215	265	265
Mounting X	136	136	136	136	136	175	175	175
Mounting Y	70	85	85	81	81	90	115	160

400V, 50HZ, 14% REACTOR SPECIFICATIONS

$f_r = 135 \text{ Hz}$ | Linearity: $L \times 0.95$, for current up to $1.37 \times I_1$

Parameter	5 kVAr	10 kVAr	12.5 kVAr	15 kVAr	20 kVAr	25 kVAr	50 kVAr	100 kVAr
Rated Inductance mH	16.58	8.29	6.63	5.53	4.15	3.32	1.66	0.83
RMS Current A	7.7	15.5	19.3	23.2	30.9	38.6	77.3	154.5
Terminal	STUD	STUD	STUD	STUD	STUD	BUSBAR	BUSBAR	BUSBAR
COPPER REACTOR								
Weight (kg)	8	10	12	14	17	20	37	54
Length mm (L)	180	180	180	180	210	210	240	240
Depth mm (W)	80	90	102	110	95	105	125	160
Height mm (H)	175	175	175	175	225	225	275	275
Mounting X	136	136	136	136	136	175	175	175
Mounting Y	70	80	92	100	95	105	135	170
ALUMINIUM REACTOR								
Weight (kg)	8	11	12	16	15	18	35	65
Length mm (L)	180	180	210	210	210	210	240	270
Depth mm (W)	83	105	80	95	95	105	125	155
Height mm (H)	175	175	225	225	225	225	275	325
Mounting X	136	136	136	136	136	175	175	175
Mounting Y	73	95	80	95	95	105	135	175

440V, 50Hz, 5.67% REACTOR SPECIFICATIONS

$f_r = 210 \text{ Hz}$ | Linearity: $L \times 0.95$, L , for current up to $2.08 \times I_1$

Reactor Rating	5 kVAr	10 kVAr	12.5 kVAr	15 kVAr	20 kVAr	25 kVAr	50 kVAr	100 kVAr
Rated Inductance mH	7.41	3.7	2.96	2.47	1.85	1.48	0.74	0.37
RMS Current A	8.4	16.8	21	25.2	33.7	42.1	84.1	168.3
Terminal	STUD	STUD	STUD	STUD	STUD	BUSBAR	BUSBAR	BUSBAR
COPPER REACTOR								
Weight (kg)	7	9	11	13	13	14	24	42
Length mm (L)	180	180	180	180	180	180	240	240
Depth mm (W)	76	90	100	105	100	110	90	130
Height mm (H)	150	150	150	165	165	165	265	265
Mounting X	136	136	136	136	136	175	175	175
Mounting Y	66	80	90	95	90	100	100	100
ALUMINIUM REACTOR								
Weight (kg)	7	9	10	11	13	16	24	51
Length mm (L)	180	180	210	180	210	210	240	240
Depth mm (W)	80	95	100	105	85	95	95	165
Height mm (H)	150	150	165	165	215	215	265	265
Mounting X	136	136	136	136	136	175	175	175
Mounting Y	70	85	90	95	85	95	105	175

440V, 50Hz, 7% REACTOR

$f_r = 189 \text{ Hz}$, Linearity: $L \cdot 0.95$, L , for current up to $2.08 \cdot 11$

Reactor Rating	5 kVAr	10 kVAr	12.5 kVAr	15 kVAr	20 kVAr	25 kVAr	50 kVAr	100 kVAr
Rated Inductance mH	89.2	4.64	3.71	3.09	2.32	1.86	0.93	0.46
RMS Current A	7.4	14.9	18.6	22.3	29.8	37.2	74.5	149.0
Terminal	STUD	STUD	STUD	STUD	STUD	BUSBAR	BUSBAR	BUSBAR
COPPER REACTOR								
Weight (kg)	7	8	10	10	13	14	25	42
Length mm (L)	180	180	180	180	180	180	240	240
Depth mm (W)	80	85	95	90	105	110	90	130
Height mm (H)	150	150	150	165	165	165	265	265
Mounting X	136	136	136	136	136	175	175	175
Mounting Y	70	75	85	80	95	100	100	140
ALUMINIUM REACTOR								
Weight (kg)	7	10	10	13	11	14	25	45
Length mm (L)	180	180	180	210	210	210	240	240
Depth mm (W)	80	100	95	86	77	86	100	150
Height mm (H)	150	150	165	215	215	215	265	265
Mounting X	136	136	136	136	136	175	175	175
Mounting Y	70	90	85	86	77	86	110	160

440V, 50Hz, 14% REACTOR

$f_r = 135 \text{ Hz}$, Linearity: $L \cdot 0.95$, L for current up to $1.37 \cdot 11$

Reactor Rating	5 kVAr	10 kVAr	12.5 kVAr	15 kVAr	20 kVAr	25 kVAr	50 kVAr	100 kVAr
Rated Inductance mH	20.06	10.03	8.03	6.69	5.02	4.01	2.01	1.00
RMS Current A	7.0	14.0	17.6	21.1	28.1	35.1	70.02	140.5
Terminal	STUD	STUD	STUD	STUD	STUD	BUSBAR	BUSBAR	BUSBAR
COPPER REACTOR								
Weight (kg)	8	11	13	15	19	23	39	57
Length mm (L)	180	180	180	180	210	210	240	240
Depth mm (W)	83	95	110	115	100	115	130	165
Height mm (H)	165	165	165	165	215	215	265	265
Mounting X	136	136	136	136	136	175	175	175
Mounting Y	73	85	100	105	100	115	140	175
ALUMINIUM REACTOR								
Weight (kg)	9	12	13	17	17	21	37	67
Length mm (L)	180	180	210	210	210	210	240	270
Depth mm (W)	90	110	85	100	100	115	130	160
Height mm (H)	165	165	215	215	215	215	265	315
Mounting X	136	136	136	136	136	175	175	175
Mounting Y	80	100	85	100	100	115	140	180

REACTOR SELECTION TABLE — PART NUMBERS

Power (KVA _r)	Voltage (Volt)	Frequency (Hz)	Detuning Factor (%)	Resonance Freq.(Hz)	Current (Amp)	Inductance (mH)	Part Number
5	400	50	7	189	8.2	7.67	CDR-005-400-50-07
10	400	50	7	189	16.4	3.83	CDR-010-400-50-07
12.5	400	50	7	189	20.5	3.07	CDR-012-400-50-07
20	400	50	7	189	32.8	1.92	CDR-D20-400-50-07
25	400	50	7	189	41.0	1.53	CDR-025-400-50-07
50	400	50	7	189	81.9	0.77	CDR-050-400-50-07
5	400	50	5.67	210	9.2	6.12	CDR-005-400-50-5.67
10	400	50	5.67	210	18.4	3.06	CDR-010-400-50-5.67
12.5	400	50	5.67	210	23	2.45	CDR-012-400-50-5.67
20	400	50	5.67	210	36.9	1.53	CDR-D20-400-50-5.67
25	400	50	5.67	210	46.1	1.22	CDR-025-400-50-5.67
50	400	50	5.67	210	92.1	0.61	CDR-050-400-50-5.67
5	400	60	5.67	210	9.2	5.15	CDR-005-400-60-5.67
10	400	60	5.67	210	18.4	2.58	CDR-010-400-60-5.67
12.5	400	60	5.67	210	23	2.06	CDR-012-400-60-5.67
5	400	60	7	189	8.2	6.4	CDR-005-400-60-07
10	400	60	7	189	16.4	3.2	CDR-010-400-60-07
12.5	400	60	7	189	20.5	2.55	CDR-012-400-60-07
20	400	60	7	189	32.8	1.6	CDR-020-400-60-07
25	400	60	7	189	41.0	1.28	CDR-025-400-60-07
50	400	60	7	189	81.9	0.64	CDR-050-400-60-07

Power (KVA _r)	Voltage (Volt)	Frequency (Hz)	Detuning Factor (%)	Resonance Freq.(Hz)	Current (Amp)	Inductance (mH)	Part Number
20	400	60	5.67	210	36.9	1.3	CDR-020-400-60-5.67
25	400	60	5.67	210	46.1	1.03	CDR-025-400-60-5.67
50	400	60	5.67	210	92.1	0.52	CDR-050-400-60-5.67
5	400	50	14	135	7.7	16.58	CDR-005-400-50-14
10	400	50	14	135	15.5	8.29	CDR-010-400-50-14
12.5	400	50	14	135	19.3	6.63	CDR-012-400-50-14
20	400	50	14	135	30.9	4.15	CDR-D20-400-50-14
25	400	50	14	135	38.6	3.32	CDR-025-400-50-14
50	400	50	14	135	77.3	1.66	CDR-050-400-50-14

Power (KVA _r)	Voltage (Volt)	Frequency (Hz)	Detuning Factor (%)	Resonance Freq.(Hz)	Current (Amp)	Inductance (mH)	Part Number
5	415	50	7	189	7.48	8.75	CDR-005-415-50-07
10	415	50	7	189	14.96	4.37	CDR-010-415-50-07
12.5	415	50	7	189	19.82	3.3	CDR-012-415-50-07
20	415	50	7	189	37.72	2.05	CDR-020-415-50-07
25	415	50	7	189	39.65	1.64	CDR-025-415-50-07
50	415	50	7	189	79.29	0.82	CDR-050-415-50-07
5	415	50	5.67	210	7.94	6.68	CDR-005-415-50-5.67
10	415	50	5.67	210	15.88	3.35	CDR-010-415-50-5.67
12.5	415	50	5.67	210	19.82	2.68	CDR-012-415-50-5.67
20	415	50	5.67	210	31.71	1.67	CDR-020-415-50-5.67
25	415	50	5.67	210	39.64	1.34	CDR-025-415-50-5.67

Power (KVAR)	Voltage (Volt)	Frequency (Hz)	Detuning Factor(%)	Resonance Freq.(Hz)	Current (Amp)	Inductance (mH)	Part Number
50	415	50	5.67	210	79.29	0.67	CDR-050-415-50-5.67
5	415	50	14	135	7.1	16.51	CDR-005-415-50-14
10	415	50	14	135	14.2	8.28	CDR-010-415-50-14
12.5	415	50	14	135	17.6	6.63	CDR-012-415-50-14
20	415	50	14	135	28.2	4.15	CDR-020-415-50-14
25	415	50	14	135	35.3	3.3	CDR-025-415-50-14
50	415	50	14	135	70.6	1.65	CDR-050-415-50-14
5	415	60	14	135	7.1	13.76	CDR-005-415-60-14
10	415	60	14	135	14.2	6.88	CDR-010-415-60-14
12.5	415	60	14	135	17.6	5.5	CDR-012-415-60-14
20	415	60	14	135	28.2	3.44	CDR-020-415-60-14
25	415	60	14	135	35.3	2.75	CDR-025-415-60-14
50	415	60	14	135	70.6	1.38	CDR-050-415-60-14

Power (KVAR)	Voltage (Volt)	Frequency (Hz)	Detuning Factor(%)	Resonance Freq.(Hz)	Current (Amp)	Inductance (mH)	Part Number
5	440	50	5.67	210	8.4	7.41	CDR-005-440-50-5.67
10	440	50	5.67	210	16.8	3.7	CDR-010-440-50-5.67
12.5	440	50	5.67	210	21	2.96	CDR-012-440-50-5.67
20	440	50	5.67	210	33.7	1.85	CDR-020-440-50-5.67
25	440	50	5.67	210	42.1	1.48	CDR-025-440-50-5.67
50	440	50	5.67	210	84.1	0.74	CDR-050-440-50-5.67
5	440	50	7	189	7.4	9.28	CDR-005-440-50-07

Power (KVA _r)	Voltage (Volt)	Frequency (Hz)	Detuning Factor (%)	Resonance Freq.(Hz)	Current (Amp)	Inductance (mH)	Part Number
10	440	50	7	189	14.9	4.64	CDR-010-440-50-07
12.5	440	50	7	189	18.6	3.71	CDR-012-440-50-07
20	440	50	7	189	29.8	2.32	CDR-020-440-50-07
25	440	50	7	189	37.2	1.86	CDR-025-440-50-07
50	440	50	7	189	74.5	0.93	CDR-050-440-50-07
5	440	50	14	135	14.0	20.06	CDR-005-440-50-14
10	440	50	14	135	28.1	20.06	CDR-010-440-50-14
12.5	440	50	14	135	17.6	8.03	CDR-012-440-50-14
20	440	50	14	135	7.0	20.06	CDR-010-440-50-14
25	440	50	14	135	35.1	4.01	CDR-025-440-50-14
50	440	50	14	135	70.02	2.01	CDR-050-440-50-14