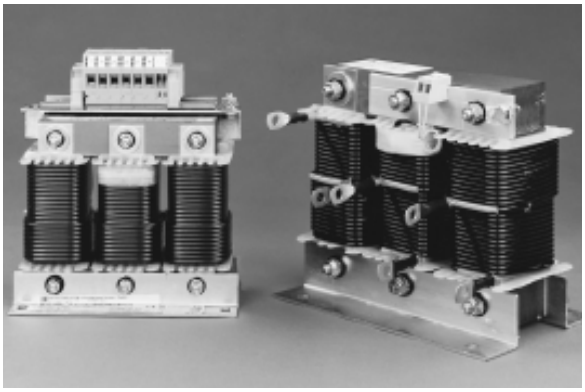
Reactors

Reactors for Detuned Capacitor Banks

A consumer whose load includes a high proportion of variable speed motor drives and/or other harmonic generating loads may require a detuned capacitor system. This would perform the function of power factor improvement whilst preventing any amplification of harmonic currents and voltages caused by resonance between capacitors and inductances in the mains.



ELECTRONICON offers single and three phase filter reactors for this purpose. The low-loss reactors are made of specially selected transformer sheets and manufactured in flat or round copper wire technology. They are dried and impregnated in a vacuum which ensures they can withstand high voltages and maintain a long operating life. Depending on their rated power, the reactors are provided with either terminal blocks or terminal lugs/cables.

If the operating temperature of 120°C is exceeded, the reactor circuit is disconnected by a thermal switch (included as standard).

Adjusted rating

The adjusted reactor is designed to create exactly the required output of reactive power, allowing for the internal voltage rise inside the resonating circuit formed together with the capacitor connected in the circuit. Note that exact sizing of the capacitor is necessary.

Example:
25kvar 400V 50Hz, detuned to 189Hz (p = 7%)*

capacitor:

current for PFC 25kvar 400V 50Hz: $I = \frac{P}{U} = 62.5A$

voltage at capacitor terminations: $U_C = \frac{U}{1 - p} = 430\,V$

adjustment of the capacitance: $C = \frac{I}{U_C \cdot 2\pi \cdot f} = 462\mu F$

(3 x 154µF) → 275.186-615400 (pg. 30)

reactor:

reactance of the capacitor $X_C = \frac{1}{2\pi f \cdot C} = 6.88\Omega$

required reactance of the reactor

$X_L = X_C \cdot p = 6.88\Omega \cdot 0.07 = 0.48\ \Omega$

required inductance $L = \frac{X_L}{2\pi f} = 1.53mH$

→ 444.116-40320 (pg. 50)

Non-adjusted rating

The non-adjusted reactor is matched to a power capacitor with standard rating at mains voltage.
This allows for additional installation of detuning reactors in existing non-detuned systems, however, it will lead to increased output of kvar due to voltage rise inside the resonance circuit.

Example:
25kvar 400V 50Hz, detuned to 189Hz (p = 7%)*

capacitor:

capacitance of standard capacitor: 498 µF (3 x 166 µF)

→ 275.186-516600 (pg. 24)

reactor:

reactance of the capacitor $X_C = \frac{1}{2\pi f \cdot C} = 6.39\Omega$

required reactance of the reactor

$X_L = X_C \cdot p = 6.39\Omega \cdot 0.07 = 0.45\ \Omega$

required inductance $L = \frac{X_L}{2\pi f} = 1.432\,mH$

→ 444.116-40D20 (pg. 51)

resulting PFC current: $X_{total} = X_C - X_L = 5.94\ \Omega$

$I = \frac{U}{X_{total}} = \frac{400\,V}{6\Omega} = 67.34A$

$Q = U \cdot I =$ **26.9 kvar**

*simplified calculation (single phase)

General Data

Basic Calculations

1. Harmonic Load (continuous operation)

$U_3 = 0.5\%U_R$
$U_5 = 5.0\%U_R$
$U_7 = 5.0\%U_R$

2. Fundamental Harmonic Load

$I_1 = 1.06 \cdot I_R$
(I_R = current of the fundamental harmonic in the detuned capacitor)

3. Thermal Rating

$I_{th} = 1.05 \cdot I_{rms}$

4. Magnetic Rating

$I_{lin} = 1.6 ... 2.0 \cdot I_R$ with L (L_{lin}) $\geq 0.95 \cdot L_R$

5. Tolerance

Tolerance of the rated inductance (mean value) across three phases: ± 3%

Construction

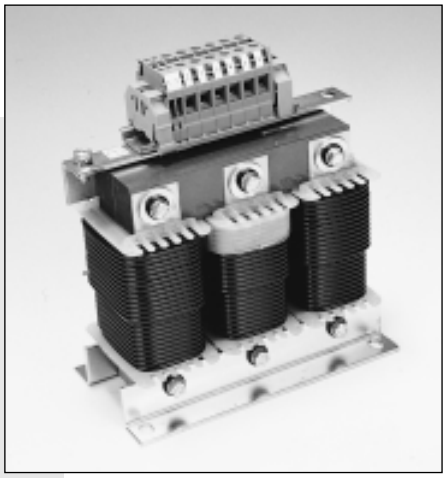
Design	three phase, iron core, double air gap
Protection class	IP00, indoor mounting
Insulation class	T40/B
Cooling	natural cooling
Winding material	copper
Impregnation	polyester resin, class F
Terminals	terminal blocks, cable lags, or temperature-proof flexible cables
Insulation	winding to core 3 kV
Temperature monitoring	temperature switch, response temperature 120 °C
Adjustment accuracy	L=±3%
Standards	VDE 0570 Part 2/IEC 96/104/CD

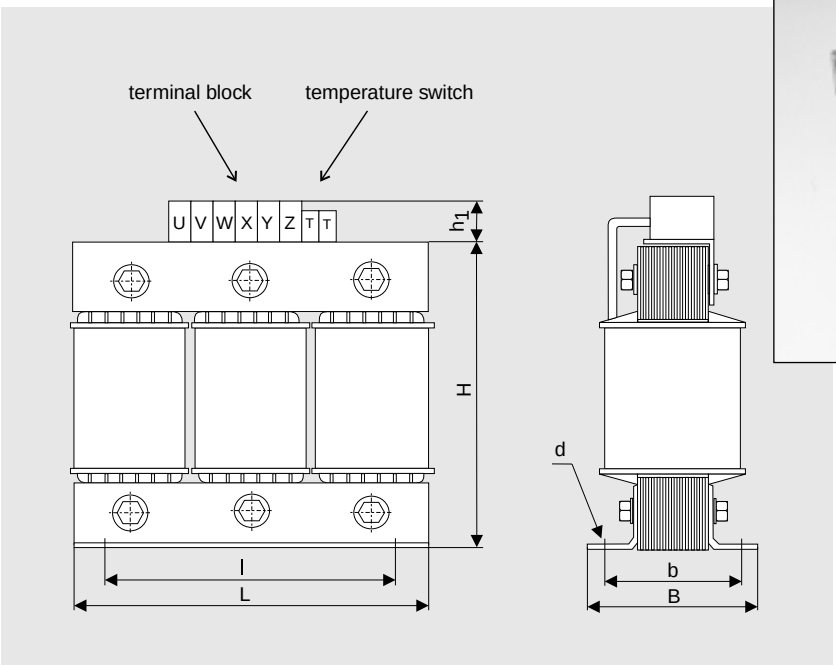
FK-Dr

Designs

Option 1

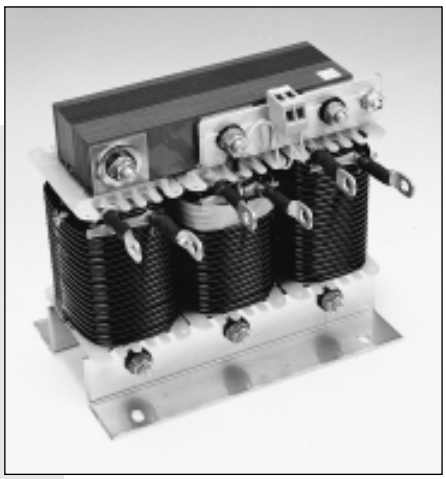
Screw terminals, terminal block

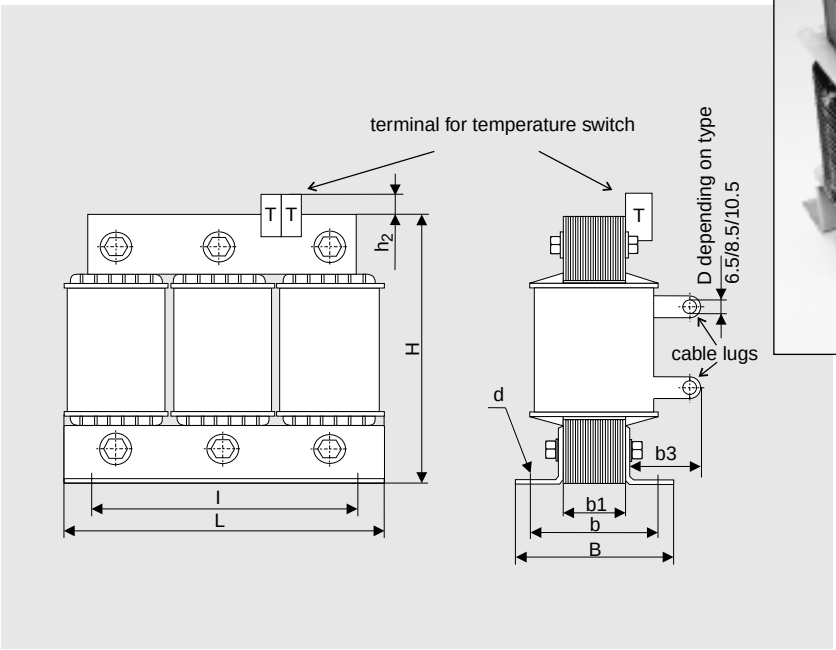




Option 2

Screw connection with cable lug





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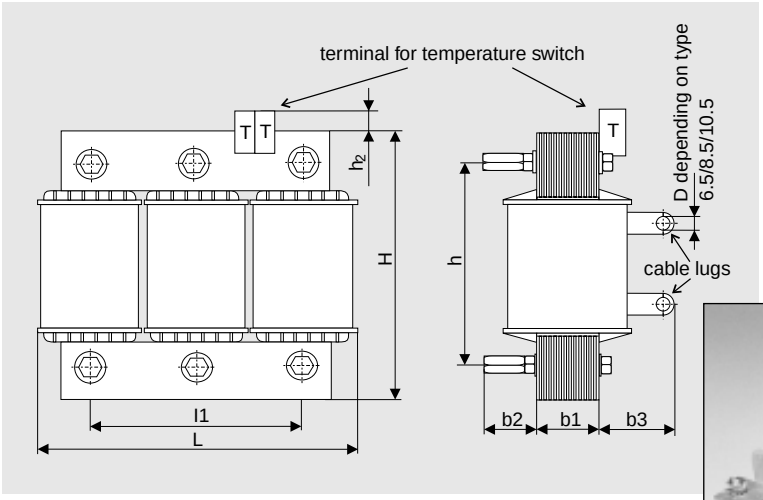
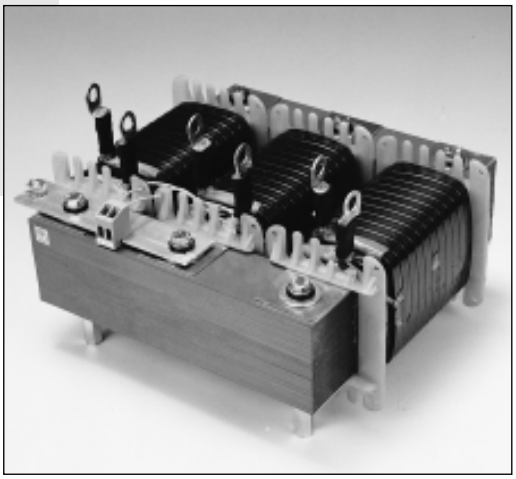
Option 3

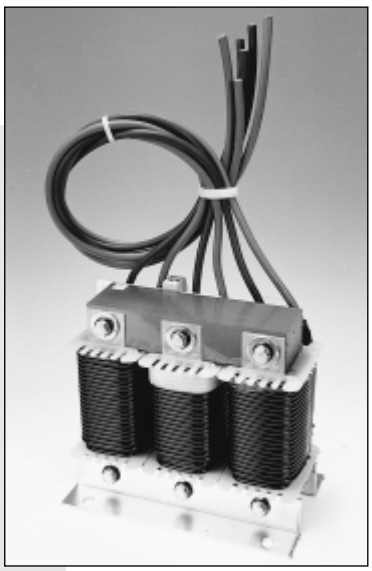
Screw connection with cable, for horizontal mounting

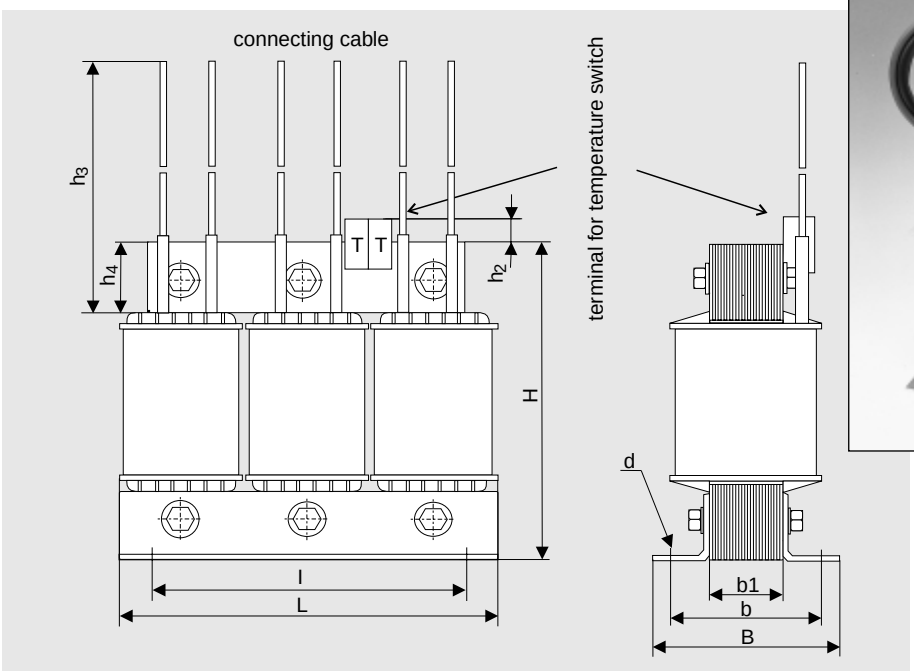




Option 4

Flexible temperature proof cable

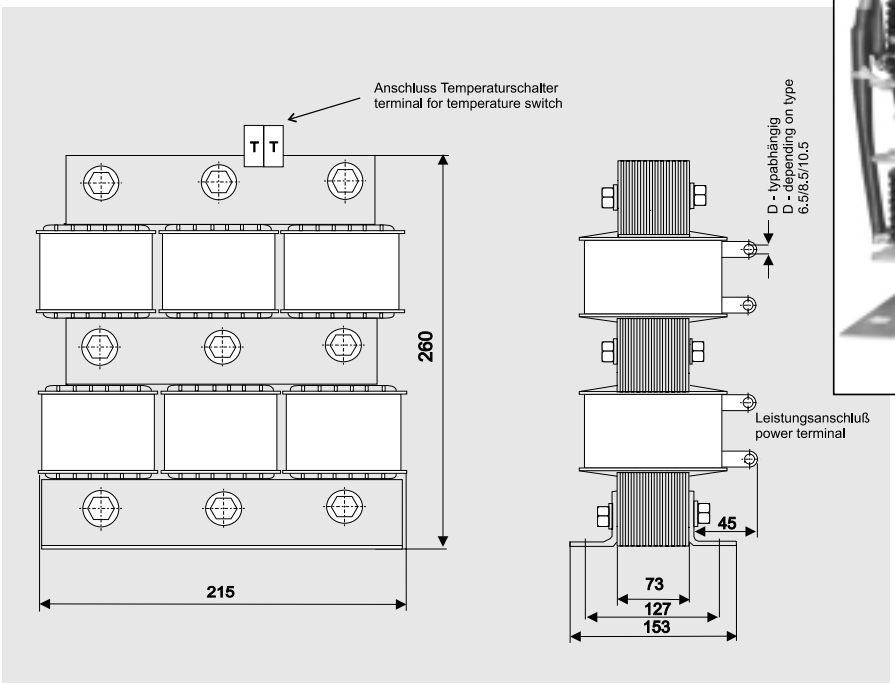




FK-Dr

Dual Power

Terminal versions available with cable lugs or cables
as shown under Type 2, 3, and 4.



FK-Dr

Dimensions

core size	mm														
3UI...	L	B	H	b	b1	b2	b3	d	h	h1	h2	h3	h4	l	l1
75/26.5	155	78	140	58	27	25		8	102	55		x	25	125	100
75/41.5	155	92	140	72	44	25		8	102	55		x	25	125	100
90/31.5	190	82	165	58	34	35		8	123	55		x	30	150	120
90/41.5	190	92	165	68	44	35		8	123	55		x	30	150	120
90/51.5	190	102	165	78	54	35		8	123	55		x	30	150	120
102/57	210	117	185	97	60	35	64	8	139	55		x	34	170	136
105/55	210	115	185	95	58	35	65	8	139	55	10	x	35	175	140
114/64	230	148	205	122	67	45	77	8	155	55	10	x	38	190	152
120/41	240	121	215	95	44	45	75	11	163	55	5	x	40	200	160
120/51	240	131	215	105	54	45	75	11	163	55	5	x	40	200	160
120/61	240	141	215	115	64	45	75	11	163	55	5	x	40	200	160
120/66	240	146	215	120	69	45	75	11	163	55	5	x	40	200	160
120/71	240	151	215	125	74	45	75	11	163	55	5	x	40	200	160
120/75	240	155	215	129	78	45	75	11	163	55	5	x	40	200	160
132/72	265	152	235	126	75	45	75	11	179	55	5	x	44	215	176
150/52	300	152	265	120	55	45	85	11	205	55	2	x	50	250	200
150/65	300	165	265	133	67	45	85	11	205	55	2	x	50	250	200
150/77	300	177	265	145	80	45	85	11	205	55	2	x	50	250	200
150/92	300	192	265	160	95	45	85	11	205	55	2	x	50	250	200
150/103	300	203	265	171	106	45	85	11	205	55	2	x	50	250	200
120E/30.5	240	111	155	85	34	45	75	11	103	55	5	x	40	200	160
120E/41	240	121	155	95	44	45	75	11	103	55	5	x	40	200	160
120E/53.5	240	134	155	108	57	45	75	11	103	55	5	x	40	200	160
120E/61.8	240	142	155	116	65	45	75	11	103	55	5	x	40	200	160
120E/73	240	153	155	127	76	45	75	11	103	55	5	x	40	200	160
150E/40	300	140	190	108	43	45	85	11	130	55	2	x	50	250	200
150E/49	300	149	190	117	52	45	85	11	130	55	2	x	50	250	200
150E/66	300	166	190	134	69	45	85	11	130	55	2	x	50	250	200
150E/80	300	180	190	148	83	45	85	11	130	55	2	x	50	250	200
150E/92	300	191	190	159	94	45	85	11	130	55	2	x	50	250	200
2x120E/41	240	121	255	95	44	45	75	11	203	55	5	x	40	200	160
2x120E/73	240	153	255	127	76	45	75	11	203	55	5	x	40	200	160
2x150E/92	300	191	315	159	94	45	85	11	255	55	2	x	50	250	200

x Silicon cable - Standard length 500 and 800 mm

FK-Dr

List of terms and abbreviations used in the data charts

U_R (V)	rated voltage
f_R (Hz)	rated frequency
f_r (Hz)	resonance frequency
p (%)	detuning factor
N_c (kvar)	compensating power of the detuned system at U_R
C (µF)	capacitance in delta connection
L_R (mH)	rated inductance
I_1 (A)	fundamental current at permanent 6% overvoltage
I_{th} (A)	thermal current
L/B/H (mm)	length / width / height without terminations
l/b (mm)	dimensions of mounting holes
h_1 (mm)	height of terminal blocks
h_2 (mm)	height of terminations for thermal switch
c (mm)	dimensions of terminations
d (mm)	diameter of fixation holes
D (mm)	diameter of the hole for electrical screw connection

Resonance frequency f_0 : 227Hz (3.78H) p = 7%

linearity 2.0 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 250V$
FK-Dr 10/230/60/7/D	10.8	3 x 0.98	28.6	90/41.5	2,3,4	10	425.094-24D70	3 x 167
FK-Dr 12.5/230/60/7/D	13.4	3 x 0.79	35.8	90/51.5	2,3,4	12	428.095-24D70	3 x 209
FK-Dr 20/230/60/7/D	21.5	3 x 0.49	57.2	120/51	2,3	16	440.125-24D70	3 x 333
FK-Dr 25/230/60/7/D	26.9	3 x 0.39	71.5	120/61	2,3	18	444.126 24D70	3 x 418

linearity 1.8 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 250V$
FK-Dr 12.5/230/60/7/D	13.4	3x 0.79	35.8	90/41.5	2,3,4	8	428.094-24D7A	3x 209
FK-Dr 25/230/60/7/D	26.9	3x 0.39	71.5	120/51	2,3,4	16	444.125-24D7A	3x 418

Resonance frequency f_0 : 252Hz (4.2H) p = 5.67%

linearity 2.0 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 250V$
FK-Dr 10/230/60/5.67/D	10.6	3x 0.80	26.6	90/41.5	2,3,4	8,5	425.094-24B70	3x 167
FK-Dr 12.5/230/60/5.67/D	13.3	3x 0.64	33.4	90/51.5	2,3,4	10,5	428.095-24B70	3x 209
FK-Dr 20/230/60/5.67/D	21.2	3x 0.40	53.2	120/51	2,3	16	440.125-24B70	3x 333
FK-Dr 25/230/60/5.67/D	26.5	3x 0.32	66.5	120/61	2,3	19	444.126-24B70	3x 418

Other values available on request.
Single phase reactors available on request.

Resonance frequency f_0: 189Hz (3.78H) p = 7%

linearity 2.0 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 440V$
FK-Dr 5/400/50/7/D	5.4	3x 7.13	8.2	75/41.5	1,4	5.5	407.074-40D10	3x 33
FK-Dr 6.25/400/50/7/D	6.7	3x 5.70	10.3	90/31.5	1,4	6.5	412.093-40D10	3x 42
FK-Dr 10/400/50/7/D	10.8	3x 3.57	16.5	90/51.5	1,2,3,4	9.5	425.095-40D10	3x 68
FK-Dr 12.5/400/50/7/D	13.4	3x 2.85	20.6	90/51.5	1,2,3,4	10	428.095-40D10	3x 82
FK-Dr 20/400/50/7/D	21.5	3x 1.78	32.9	114/64	2,3,4	21	440.116-40D20	3x 137
FK-Dr 25/400/50/7/D	26.9	3x 1.43	41.1	114/64	2,3,4	22.5	444.116-40D20	3x 166
FK-Dr 50/400/50/7/D	53.8	3x 0.71	82.3	150/77	2,3	39	458.157-40D20	3x 332

linearity 1.6 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 440V$
FK-Dr 12.5/400/50/7/D	13.4	3x 2.85	20.6	90/31.5	1,2,3,4	7.5	428.093-40D2L	3x 82
FK-Dr 25/400/50/7/D	26.9	3x 1.43	41.1	120/41	2,3,4	14.5	444.124-40D2L	3x 166
FK-Dr 50/400/50/7/D	53.8	3x 0.71	82.3	150EI80	2,3	27.5	458.258-40D2L	3x 332

Resonance frequency f_0 : 210Hz (4.2H) p = 5.67%

linearity 2.0 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 440V$
FK-Dr 5/400/50/5.67/D	5.3	3x 5.78	8.1	75/41.5	1,4	6	407.074-40B10	3x 33
FK-Dr 6.25/400/50/5.67/D	6.6	3x 4.62	10.1	90/31.5	1,4	9	412.093-40B10	3x 42
FK-Dr 10/400/50/5.67/D	10.6	3x 2.89	16.2	90/51.5	1,2,3,4	10.5	425.095-40B10	3x 68
FK-Dr 12.5/400/50/5.67/D	13.3	3x 2.31	20.3	90/51.5	1,2,3,4	11.5	428.095-40B10	3x 82
FK-Dr 20/400/50/5.67/D	21.2	3x 1.44	32.4	114/64	2,3,4	19.5	440.116-40B20	3x 137
FK-Dr 25/400/50/5.67/D	26.5	3x 1.15	40.5	114/64	2,3,4	22	444.116-40B20	3x 166
FK-Dr 50/400/50/5.67/D	53	3x 0.58	81.1	150/77	2,3	44	458.157-40B20	3x 332

Resonance frequency f_0 : 134Hz (2.68 H) p = 14%

linearity 2.0 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 480V$
FK-Dr5/400/50/14/D	5.8	3x 14.26	8.9	90/51.5	1,4	9.5	407.095-40F10	3x 33
FK-Dr 6.25/400/50/14/D	7.3	3x 14.41	11.1	90/51.5	1,4	10.5	415.095-40F10	3x 42
FK-Dr 10/400/50/14/D	11.6	3x 7.13	17.8	120/41	1,2,3,4	17	425.124-40F10	3x 66
FK-Dr 12.5/400/50/14/D	14.5	3x 5.70	22.2	114/64	1,2,3,4	22	428.116-40F10	3x 84
FK-Dr 20/400/50/14/D	23.3	3x 3.57	35.6	150/52	2,3,4	32	440.155-40F20	3x 132
FK-Dr 25/400/50/14/D	29.1	3x 2.85	44.5	150/77	2,3,4	35	444.157-40F20	3x 166
FK-Dr 50/400/50/14/D	58.1	3x 1.43	97.8	150/103	2,3	65	458.160-40F20	3x 332

linearity 1.6 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 480V$
FK-Dr 12.5/400/50/14/D	14.5	3x 5.70	22.2	120/41	1,2,3,4	18	428.124-40F2L	3x 84
FK-Dr 25/400/50/14/D	29.1	3x 2.85	44.5	120/71	2,3,4	27	444.127-40F2L	3x 166
FK-Dr 50/400/50/14/D	58.1	3x 1.43	97.8	150/77	2,3	40.5	458.157-40F2L	3x 332

Other values available on request.
Single phase reactors available on request.

Resonance frequency f_0: 189Hz (3.78H) p = 7%

linearity 2.0 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 440V$
FK-Dr 6.25/400/50/7/Dla	6.25	3x 6	9.6	90/31,5	1,4	6.5	412.093-40310	3x 39
FK-Dr 10/400/50/7/Dla	10	3x 3.83	15.3	90/51,5	1,2,3,4	9.5	425.095-40310	3x 62
FK-Dr 12.5/400/50/7/Dla	12,5	3x 3.07	19.1	90/51,5	1,2,3,4	10	428.095-40310	3x 77
FK-Dr 20/400/50/7/Dla	20	3x 1.92	30.6	114/64	2,3,4	21	440.116-40320	3x 123
FK-Dr 25/400/50/7/Dla	25	3x 1.53	38.2	114/64	2,3,4	22.5	444.116-40320	3x 154
FK-Dr 50/400/50/7/Dla	50	3x 0.77	76.5	150/77	2,3	39	458.157-40320	3x 308

linearity 1.8 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 440V$
FK-Dr 12.5/400/50/7/Dla	12.5	3x 3.07	19.1	90/41.5	1,2,3,4	8	428.094-4032A	3x 77
FK-Dr 25/400/50/7/Dla	25	3x 1.53	38.2	120/51	2,3,4	17	444.125-4032A	3x 154
FK-Dr 50/400/50/7/Dla	50	3x 0.77	76,5	EI150/80	2,3,4	29	458.258-4032A	3x 308

linearity 1.6 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 440V$
FK-Dr 6.25/400/50/7/Dla	6.25	3x 6	9.6	75/26.5	1,4	4.5	412.072-4031L	3x 39
FK-Dr 12.5/400/50/7/Dla	12.5	3x 3.07	19.1	90/31.5	2,3,4	7.1	428.093-4032L	3x 77
FK-Dr 25/400/50/7/Dla	25	3x 1.53	38.2	120/41	2,3,4	14	444.124-4032L	3x 154
FK-Dr 50/400/50/7/Dla	50	3x 0.77	76.5	150EI80	2,3	27	458.258-4032L	3x 308

„Dual Power" linearity 1.8 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 440V$
FK-DR 2x12.5/400/50/7/Dla	2x12.5	2x3x 3,07	19.1	2x120EI41	2,3,4	18	428.241-4032A	2x3x 77
FK-DR 2x 25/400/50/7/Dla	2x25	2x3x 1.53	38.2	2x120EI73	2,3,4	31.5	444.273-4032A	2x3x 154

Other values available on request.
Single phase reactors available on request.

Resonance frequency f_0: 210Hz (4.2H) p = 5.67%

linearity 2.0 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 440V$
FK-Dr 6.25/400/50/5.67/Dla	6.25	3x 4.89	9.6	90/31.5	1,4	6.5	412.093-40110	3x 39
FK-Dr 10/400/50/5.67/Dla	10	3x 3.06	15.3	90/51.5	1,2,3,4	10	425.095-40110	3x 62
FK-Dr 12.5/400/50/5.67/Dla	12.5	3x 2.45	19.1	90/51.5	1,2,3,4	10.5	428.095-40110	3x 77
FK-Dr 20/400/50/5.67/Dla	20	3x 1.53	30.6	114/64	2,3,4	19.5	440.116-40120	3x 123
FK-Dr 25/400/50/5.67/Dla	25	3x 1.23	38.2	114/64	2,3,4	22	444.116-40120	3x 154
FK-Dr 50/400/50/5.67/Dla	50	3x 0.61	76.5	150/77	2,3	44	458.157-40120	3x 308

„Dual Power" linearity 2.0 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 440V$
FK-DR 2x12.5/400/50/5.67/Dla	2x12.5	2x3x 2.45	19.1	2x120EI41	2,3,4	17	428.241-40120	2x3x 77
FK-DR 2x 25/400/50/5.67/Dla	2x25	2x3x 1.23	38.2	2x120EI73	2,3,4	31	444.273-40120	2x3x 154

Resonance frequency f_0: 134Hz (2.68 H) p = 14%

linearity 2.0 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 480V$
FK-Dr5/400/50/14/Dla	5	3x 16.58	7.6	90/51.5	1,4	9.5	407.095-40510	3x 29
FK-Dr 6.25/400/50/14/Dla	6.25	3x 13.26	9.6	90/51.5	1,4	10	412.095-40510	3x 36
FK-Dr 10/400/50/14/Dla	10	3x 8.29	15.3	120/41	1,2,3,4	15	425.124-40510	3x 58
FK-Dr 12.5/400/50/14/Dla	12.5	3x 6.66	19.1	114/64	1,2,3,4	19	428.116-40510	3x 72
FK-Dr 20/400/50/14/Dla	20	3x 4.14	30.6	120/71	2,3,4	27	440.127-40520	3x 115
FK-Dr 25/400/50/14/Dla	25	3x 3.31	38.2	150/65	2,3,4	35	444.156-40520	3x 144
FK-Dr 50/400/50/14/Dla	50	3x 1.65	76.5	150/92	2,3	63	458.159-40520	3x 288

linearity 1.8 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 480V$
FK-Dr 12.5/400/50/14/Dla	12.5	3x 6.67	19.1	120/51	1,2,3,4	16	428.125-4052A	3x 72
FK-Dr 25/400/50/14/Dla	25	3x 3.32	38.2	120/75	2,3,4	27	444.327-4052A	3x 144
FK-Dr 50/400/50/14/Dla	50	3x 1.66	76.5	150/92	2,3	47	458.159-4052A	3x 288

linearity 1.6 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 480V$
FK-Dr 6.25/400/50/14/Dla	6.25	3x 13.26	9.6	90/41,5	1,4	8,5	412.094-4051L	3x 36
FK-Dr 12.5/400/50/14/Dla	12.5	3x 6.66	19.1	120/41	1,2,3,4	16	428.124-4052L	3x 72
FK-Dr 25/400/50/14/Dla	25	3x 3.32	38.2	120/71	1,2,3,4	26,5	444.127-4052L	3x 144
FK-Dr 50/400/50/14/Dla	50	3x 1.66	76.5	150/77	2,3	40,5	458.157-4052L	3x 288

„Dual Power" linearity 1.8 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 480V$
FK-DR 2x 12.5/400/50/14/Dla	2x12,5	2x3x 6,66	19,1	2x120EI73	2,3,4	31	428.273-4052A	2x3x 72
FK-DR 2x 25/400/50/14/Dla	2x25	2x3x 3,32	38,2	2x150EI92	2,3,4	48	444.292-4052A	2x3x 144

Other values available on request.
Single phase reactors available on request.

FK-Dr 415V/50Hz 3 phase Non-adjusted (fixed) Rating

Resonance frequency f_0: 189Hz (3.78H) p = 7%

linearity 2.0 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 465V$
FK-Dr 10/415/50/7/D	10.8	3x 3.82	15.9	90/41.5	1,2,3,4	8.5	425.094-42D10	3x 62
FK-Dr 12.5/415/50/7/D	13.4	3x 3.08	19.7	90/51.5	1,2,3,4	10	428.095-42D10	3x 77
FK-Dr 20/415/50/7/D	21.5	3x 1.92	31.7	105/55	2,3,4	16.5	440.108-42D20	3x 123
FK-Dr 25/415/50/7/D	26.9	3x 1.53	39.6	114/64	2,3,4	18	444.116-42D20	3x 154
FK-Dr 50/415/50/7/D	53.8	3x 0.77	79.3	150/77	2,3	40	458.157-42D20	3x 308

linearity 1.8 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 465V$
FK-Dr 12.5/415/50/7/D	13.4	3x 3.08	19.7	90/41.5	1,2,3,4	8	428.094-4232A	3x 77
FK-Dr 25/415/50/7/D	26.9	3x 1.53	39.6	120/51	2,3,4	16	444.125-4232A	3x 154
FK-Dr 50/415/50/7/D	53.8	3x 0.77	79.3	150EI80	2,3,4	29	458.258-4232A	3x 308

Resonance frequency f_0: 210Hz (4.2H) p = 5.67%

linearity 2.0 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 465V$
FK-Dr 10/415/50/5.67/D	10.6	3x 3.11	15.64	90/41.5	1,2,3,4	8.5	425.094-42B10	3x 62
FK-Dr 12.5/415/50/5.67/D	13.3	3x 2.49	1.6	90/51.5	1,2,3,4	10	428.095-42B10	3x 77
FK-Dr 20/415/50/5.67/D	21.2	3x 1.55	31.2	105/55	2,3,4	16.5	440.108-42B20	3x 123
FK-Dr 25/415/50/5.67/D	26.5	3x 1.24	39	114/64	2,3,4	18	444.116-42B20	3x 154
FK-Dr 50/415/50/5.67/D	53	3x 0.62	78.1	150/77	2,3	40	458.157-42B20	3x 308

FK-Dr 380V/60Hz 3 phase Non-adjusted (fixed) Rating

Resonance frequency f_0: 227Hz p = 7%

linearity 1.8 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 465V$
FK-Dr 12.5/380/60/7/D	13.4	3x 2.15	20.4	90/41.5	1,2,3,4	8.5	428.094-38D7A	3x 77
FK-Dr 25/380/60/7/D	26.9	3x 1.07	40.8	120/41	2,3,4	14	444.124-38D7A	3x 154
FK-Dr 50/380/60/7/D	53.8	3x 0.54	81.7	EI150/80	2,3,4	27	458.258-38D7A	3x 308

Resonance frequency f_0: 245Hz p = 6%

linearity 1.8 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 465V$
FK-Dr 12.5/380/60/6/D	13.3	3x 1.84	20.2	90/31.5	1,2,3,4	7	428.093-38C7A	3x 77
FK-Dr 25/380/60/6/D	26.6	3x 0.92	40.4	120/41	2,3,4	13	444.124-38C7A	3x 154
FK-Dr 50/380/60/6/D	53.2	3x 0.46	80.8	EI150/80	2,3,4	26	458.258-38C7A	3x 308

Other values available on request.
Single phase reactors available on request.

Resonance frequency f_0: 227Hz (3.78H) p = 7%

linearity 2.0 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 480V$
FK-Dr 10/440/60/7/D	10.8	3x 3.60	15	90/41.5	1,2,3,4	9.5	425.094-44D60	3x 46
FK-Dr 12.5/440/60/7/D	13.4	3x 2.88	18.7	90/51.5	1,2,3,4	10.5	428.095-44D60	3x 57
FK-Dr 20/440/60/7/D	21.5	3x 1.80	29.9	120/41	2,3,4	15.5	440.124-44D70	3x 92
FK-Dr 25/440/60/7/D	26.9	3x 1.44	37.4	120/51	2,3,4	17	444.125-44D70	3x 115
FK-Dr 50/440/60/7/D	53.8	3x 0.72	74.8	150/65	2,3	31	458.156-44D70	3x 230

linearity 1.8 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 480V$
FK-Dr 12.5/440/60/7/D	13.4	3x 2.88	18.7	90/41.5	1,2,3,4	8	428.094-44D7A	3x 57
FK-Dr 25/440/60/7/D	26.9	3x 1.44	37.4	120/51	2,3,4	15	444.125-44D7A	3x 115
FK-Dr 50/440/60/7/D	53.8	3x 0.72	74.8	150EI80	2,3,4	25	458.258-44D7A	3x 230

Resonance frequency f_0: 252Hz (4.2H) p = 5.67%

linearity 2.0 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 480V$
FK-Dr 10/440/60/5.67/D	10.6	3x 2.91	14.75	90/41.5	1,2,3,4	9	425.094-44B60	3x 46
FK-Dr 12.5/440/60/5.67/D	13.3	3x 2.33	18.4	90/51.5	1,2,3,4	10	428.095-44B60	3x 57
FK-Dr 20/440/60/5.67/D	21.2	3x 1.46	29.5	120/41	2,3,4	15	440.124-44B70	3x 92
FK-Dr 25/440/60/5.67/D	26.5	3x 1.17	36.9	120/51	2,3,4	18	444.125-44B70	3x 115
FK-Dr 50/440/60/5.67/D	53	3x 0.58	73.7	132/72	2,3	28	458.137-44B70	3x 230

Other values available on request.
Single phase reactors available on request.

Resonance frequency f_0: 227Hz (3.78H) p = 7%

linearity 2.0 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 525V$
FK-Dr 10/480/60/7/D	10.8	3x 4.28	13.7	90/41.5	1,2,3,4	9	425.094-48D60	3x 38
FK-Dr 12.5/480/60/7/D	13.4	3x 3.42	17.1	90/51.5	1,2,3,4	10.5	428.095-48D60	3x 48
FK-Dr 20/480/60/7/D	21.5	3x 2.14	27.4	120/41	2,3,4	15	440.124-48D70	3x 77
FK-Dr 25/480/60/7/D	26.9	3x 1.71	34.3	120/51	2,3,4	17	444.125-48D70	3x 96
FK-Dr 50/480/60/7/D	53.8	3x 0.86	68.6	150/65	2,3	31	458.156-48D70	3x 192

linearity 1.8 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 525V$
FK-Dr 12.5/480/60/7/D	13.4	3x 3.42	17.1	90/41.5	1,2,3,4	9	428.094-48D7A	3x 48
FK-Dr 25/480/60/7/D	26.9	3x 1.71	34.3	120/51	2,3,4	16	444.125-48D7A	3x 96
FK-Dr 50/480/60/7/D	53.8	3x 0.96	68.6	150EI80	2,3,4	28	458.258-48D7A	3x 192

Resonance frequency f_0: 252Hz (4.2H) p = 5.67%

linearity 2.0 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 525V$
FK-Dr 10/480/60/5.67/D	10.6	3x 3.47	13.5	90/41,5	1,2,3,4	8.5	425.094-48B60	3x 38
FK-Dr 12.5/480/60/5.67/D	13.3	3x 2.77	16.9	90/41,5	1,2,3,4	10	428.094-48B60	3x 48
FK-Dr 20/480/60/5.67/D	21.2	3x 1.73	27	120/41	2,3,4	14	440.124-48B70	3x 77
FK-Dr 25/480/60/5.67/D	26.5	3x 1.39	33.8	120/51	2,3,4	16	444.125-48B70	3x 96
FK-Dr 50/480/60/5.67/D	53	3x 0.69	67.5	132/72	2,3	25	458.137-48B70	3x 192

Other values available on request.
Single phase reactors available on request.

Resonance frequency f_0: 227Hz (3.78H) p = 7%

linearity 2.0 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 690V$
FK-Dr 10/600/60/7/D	10.8	3x 6.69	11	90/51.5	1,4	10	425.095-60D60	3x 25
FK-Dr 12.5/600/60/7/D	13.4	3x 5.35	13.7	90/51.5	1,4	11	428.095-60D60	3x 31
FK-Dr 20/600/60/7/D	21.5	3x 3.34	21.9	120/41	1,2,3,4	15	440.124-60D70	3x 49
FK-Dr 25/600/60/7/D	26.9	3x 2.67	27.4	120/51	1,2,3,4	17	444.125-60D70	3x 62
FK-Dr 50/600/60/7/D	53.8	3x 1.34	54.8	150/65	2,3,4	31	458.156-60D70	3x 124

linearity 1.8 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 690V$
FK-Dr 12.5/600/60/7/D	13.4	3x 5.35	13.7	90/51.5	1,4	10	428.095-60D7A	3x 31
FK-Dr 25/600/60/7/D	26.9	3x 2.67	27.4	120/51	1,2,3,4	17	444.125-60D7A	3x 62
FK-Dr 50/600/60/7/D	53.8	3x 1.34	54.8	150EI80	2,3,4	30	458.258-60D7A	3x 123

Resonance frequency f_0: 252Hz (4.2H) p = 5.67%

linearity 2.0 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 690V$
FK-Dr 10/600/60/5.67/D	10.6	3x 5.41	10.8	90/41.5	1,4	8	425.094-60B60	3x 25
FK-Dr 12.5/600/60/5.67/D	13.3	3x 4.33	13.5	90/51.5	1,4	10	428.095-60B60	3x 31
FK-Dr 20/600/60/5.67/D	21.2	3x 2.71	21.6	120/41	1,2,3,4	13	440.124-60B70	3x 49
FK-Dr 25/600/60/5.67/D	26.5	3x 2.17	27	120/51	1,2,3,4	16	444.125-60B70	3x 62
FK-Dr 50/600/60/5.67/D	53	3x 1.08	54	132/72	2,3,4	27	458.137-60B70	3x 124

Other values available on request.
Single phase reactors available on request.

Resonance frequency f_0: 189Hz (3.78H) p = 7%

linearity 2.0 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 760V$
FK-Dr 12.5/690/50/7/Dla	12.5	3x 9.13	11.1	120/41	1,4	12	428.124-69310	3x 26
FK-Dr 25/690/50/7/Dla	25	3x 4.56	22.2	120/51	1,2,3,4	18	444.125-69320	3x 52
FK-Dr 50/690/50/7/Dla	50	3x 2.28	44.3	150/77	2,3,4	40	458.157-69320	3x 104

Resonance frequency f_0: 210Hz (4.2H) p = 5.67%

linearity 2.0 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 760V$
FK-Dr 12.5/690/50/5.67/Dla	12.5	3x 7.29	11.1	120/41	1,4	11	428.124-69110	3x 26
FK-Dr 25/690/50/5.67/Dla	25	3x 3.64	22.2	120/51	2,3,4	16	444.125-69120	3x 53
FK-Dr 50/690/50/5.67/Dla	50	3x 1.82	44.3	150/77	2,3	43	458.157-69120	3x 105

Resonance frequency f_0: 134Hz (2.68H) p = 14%

linearity 2.0 I_R

Type designation	N_c (kvar)	L_R (mH)	I_1 (A)	core size 3UI...	terminal option	Weight (kg)	order code standard version	C (µF) $U_R \geq 800V$
FK-Dr 12.5/690/50/14/Dla	12.5	3x 19.70	11.1	120/51	1,4	18	428.125-69510	3x 24
FK-Dr 25/690/50/14/Dla	25	3x 9.87	22.2	150/65	1,2,3,4	34	444.156-69520	3x 48
FK-Dr 50/690/50/14/Dla	50	3x 4.93	44.3	150/103	2,3,4	54	458.160-69520	3x 96

Other values available on request.
Single phase reactors available on request.