



Harmonic Filter Reactors

Basic and Standard Harmonic Filter Reactors

- Power range: 3.13 to 200 kvar
- Voltage range: 230 V to 690 V, 50/60 Hz
- Detuning factor $p = 5.67 \dots 14 \%$
- Low-loss design

// Application Recommendations

Used together with LKT type Power Factor Correction Capacitors, Harmonic Filter Reactors make it possible to install detuned versions of fixed capacitor banks and Power Factor Correction Systems. This enables switchgear manufacturers to plan and manufacture customer-specific systems.

// Type Overview

Type series		Basic	Standard
Type		FDK / FDKT	FKD / FDR
Rated voltage		400...525 V	230...690 V
Rated stage power		6.25...200 kvar	3.13...50 kvar
Rated frequency	50 / 60 Hz	• / -	• / •
Series resonance frequency	p = 5.67 %	210 / 252 Hz	- / -
	p = 7 %	189 / 227 Hz	• / -
	p = 8 %	177 / 212 Hz	• / •
	p = 14 %	134 / 160 Hz	- / -
Temperature range		-10 ... +60 °C	
Winding material		Al	Al /Cu
Insulation class		H (180 °C)	F (155 °C)
Temperature switch	pre-assembled	only FDKT	•
	Switching temperature	130...150 °C	140 °C
	Switching capacity	6.3A / 250 V AC	2.5A / 250 V AC
Ingress protection		IP00 according to IEC 60529	
Power loss max.		10 W/kvar	6 W/kvar
Connection		Terminal strip ≤ 25 kvar Ring terminal ≥ 50 kvar	Connecting cable
Catalogue page		Page 27 ff.	Page 33 ff.

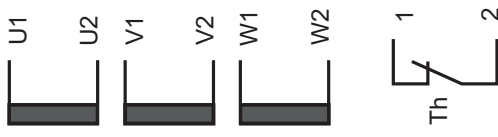
// Series Resonance Frequency

Version	Series resonance frequency (50 Hz Mains)	Detuning factor	For mains with utility audio frequency ¹⁾
P1	134 Hz	P = 14 %	≥ 166 Hz
P8	177 Hz	P = 8 %	≥ 217 Hz
P7	189 Hz	P = 7 %	≥ 228 Hz
P5	210 Hz	P = 5.67 %	≥ 270 Hz

1) Utility company specifications inconsistent with the above must be taken into account. Please also refer to the design notes given in our manual of Power Factor Correction. Further series resonance frequencies are available on request.

// Connection

Coil input: U1, V1, W1
Coil output: U2, V2, W2



// Important Note

Please only use the correct number of the appropriate power capacitors as specified in our "Selection Aid: Harmonic Filter Reactors → Capacitors" in our Technical Annex. Apart from possibly overloading the installed components, the utility company's remote control systems could also be adversely affected.



FDK / FDKT

Basic Harmonic Filter Reactors

- Power Range: 6.25 to 200 kvar
- Voltage range: 400 to 525 V, 50 Hz
- Detuning factor $p = 7 \dots 14 \%$
- Low-loss design

// Application Recommendations

Used together with LKT type Power Factor Correction Capacitors, Harmonic Filter Reactors make it possible to install detuned versions of fixed capacitor banks and Power Factor Correction Systems. This enables switchgear manufacturers to plan and manufacture customer-specific systems.

// Technical Data

Version: P7 (Detuning factor $p = 7\%$)

$I_{5_{max}} = 33.8\%$, $I_{7_{max}} = 12.2\%$, Linearity = $1.75 \times I_N$

Article-No.	Type	Q [kvar]	I_N [A]	L [mH]	C [μF]	Connection		Winding material		Weight approx. [kg]
						Cable lug [mm ²]	Terminal [mm ²]	Cu [kg]	Al [kg]	

Basic Harmonic Filter Reactor - FDK - $V_N = 400\text{ V} / 50\text{ Hz} - p = 7\%$ - fres = 189 Hz

88-02102	FDK 6,25-400-P7	6.3	9.9	6.139	3 x 38.5		10		0.6	5.5
88-02044	FDK 12,5-400-P7	12.5	19.8	3.067	3 x 77.6		10		1.1	8.0
88-02042	FDK 25-400-P7	25.0	39.7	1.533	3 x 155.2	M6			1.6	17.0
88-02043	FDK 50-400-P7	50.0	79.4	0.767	3 x 310.4	M8			2.2	29.0
88-02083	FDK 75-400-P7	75.0	119.1	0.511	3 x 465.6	M8			3.1	40.0
88-02084	FDK 100-400-P7	100.0	158.9	0.384	3 x 620.8	M8			5.1	47.0

Basic Harmonic Filter Reactor - FDK - $V_N = 415\text{ V} / 50\text{ Hz} - p = 7\%$ - fres = 189 Hz

88-02088	FDK 12,5-415-P7	12.5	19.1	3.304	3 x 71.4		10		0.9	8.0
88-02089	FDK 25-415-P7	25.0	38.3	1.652	3 x 142.8	M6			1.3	17.0
88-02090	FDK 50-415-P7	50.0	76.6	0.826	3 x 285.6	M8			3.0	29.0
88-02091	FDK 75-415-P7	75.0	114.8	0.521	3 x 428.4	M8			3.1	39.0
88-02191	FDK 100-415-P7	100.0	139.3	0.413	3 x 572.3	M8		on request		48.0

Basic Harmonic Filter Reactor - FDK - $V_N = 525\text{ V} / 50\text{ Hz} - p = 7\%$ - fres = 189 Hz

88-02066	FDK 12,5-525-P7	12.5	15.1	5.228	3 x 44.7	M8		on request		9.0
88-02067	FDK 25-525-P7	25.0	30.3	2.644	3 x 89.4	M8		on request		16.0
88-02068	FDK 50-525-P7	50.0	60.5	1.322	3 x 178.8	M10		on request		30.0
88-02069	FDK 75-525-P7	75.0	90.8	0.881	3 x 268.2	M10		on request		43.0
88-02070	FDK 100-525-P7	100.0	121.0	0.661	3 x 357.6	M10		on request		51.0
88-02071	FDK 150-525-P7	150.0	181.6	0.441	3 x 536.4	M10		on request		87.0
88-02072	FDK 200-525-P7	200.0	242.1	0.330	3 x 715.2	M10		on request		102.0

Basic Harmonic Filter Reactor - FDKT - $V_N = 400\text{ V} / 50\text{ Hz} - p = 7\%$ - fres = 189 Hz

88-02103	FDKT 6,25-400-P7	6.3	9.9	6.139	3 x 38.5		10		0.6	5.5
88-02045	FDKT 12,5-400-P7	12.5	19.8	3.067	3 x 77.6		10		1.1	8.0
88-02046	FDKT 25-400-P7	25.0	39.7	1.533	3 x 155.2	M6			1.6	17.0
88-02047	FDKT 50-400-P7	50.0	79.4	0.767	3 x 310.4	M8			2.2	29.0
88-02093	FDKT 75-400-P7	75.0	119.1	0.511	3 x 465.6	M8			3.1	40.0
88-02094	FDKT 100-400-P7	100.0	158.9	0.384	3 x 620.8	M8			5.1	47.0

Basic Harmonic Filter Reactor - FDKT - $V_N = 415\text{ V} / 50\text{ Hz} - p = 7\%$ - fres = 189 Hz

88-02098	FDKT 12,5-415-P7	12.5	19.1	3.304	3 x 71.4		10		0.9	8.0
88-02099	FDKT 25-415-P7	25.0	38.3	1.652	3 x 142.8	M6			1.3	17.0
88-02100	FDKT 50-415-P7	50.0	76.6	0.826	3 x 285.6	M8			3.0	29.0
88-02101	FDKT 75-415-P7	75.0	114.8	0.521	3 x 428.4	M8		on request		39.0
88-02190	FDKT 100-415-P7	100.0	139.3	0.413	3 x 572.3	M8		on request		48.0

Basic Harmonic Filter Reactor - FDKT - $V_N = 525\text{ V} / 50\text{ Hz} - p = 7\%$ - fres = 189 Hz

88-02146	FDKT 12,5-525-P7	12.5	15.1	5.228	3 x 44.7	M8		on request		9.0
88-02147	FDKT 25-525-P7	25.0	30.3	2.644	3 x 89.4	M8		on request		16.0
88-02148	FDKT 50-525-P7	50.0	60.5	1.322	3 x 178.8	M10		on request		30.0
88-02149	FDKT 75-525-P7	75.0	90.8	0.881	3 x 268.2	M10		on request		43.0
88-02150	FDKT 100-525-P7	100.0	121.0	0.661	3 x 357.6	M10		on request		51.0
88-02151	FDKT 150-525-P7	150.0	181.6	0.441	3 x 536.4	M10		on request		87.0
88-02152	FDKT 200-525-P7	200.0	242.1	0.330	3 x 715.2	M10		on request		102.0

Components

Harmonic Filter Reactors



Version: P7 (Detuning factor $p = 7\%$)

$I_{5_{max}} = 33.8\%$, $I_{7_{max}} = 12.2\%$, Linearity = $1.75 \times I_N$

Article-No.	Type	Dimensions [mm]							
		A	B	C	D	E	F	G	H

Basic Harmonic Filter Reactor - FDK - $V_N = 400\text{ V} / 50\text{ Hz} - p = 7\%$ - $f_{res} = 189\text{ Hz}$

88-02102	FDK 6,25-400-P7	150	93	130		106	77	6 x 15	155
88-02044	FDK 12,5-400-P7	180	112	155		120	90	10 x 13	190
88-02042	FDK 25-400-P7	225	124	177	150	175	101	10 x 13	220
88-02043	FDK 50-400-P7	283	148	215	188	200	110	11 x 20	255
88-02083	FDK 75-400-P7	309	166	268	200	224	126	11 x 20	315
88-02084	FDK 100-400-P7	315	166	302	210	224	126	11 x 20	360

Basic Harmonic Filter Reactor - FDK - $V_N = 415\text{ V} / 50\text{ Hz} - p = 7\%$ - $f_{res} = 189\text{ Hz}$

88-02088	FDK 12,5-415-P7	180	112	155		120	90	10 x 13	190
88-02089	FDK 25-415-P7	124	124	177	150	175	101	10 x 13	220
88-02090	FDK 50-415-P7	283	148	215	188	200	110	11 x 20	255
88-02091	FDK 75-415-P7	309	166	268	200	224	126	11 x 20	315
88-02191	FDK 100-415-P7	315	166	322	210	224	126	11 x 20	370

Basic Harmonic Filter Reactor - FDK - $V_N = 525\text{ V} / 50\text{ Hz} - p = 7\%$ - $f_{res} = 189\text{ Hz}$

88-02066	FDK 12,5-525-P7	180	112	156		120	90	11 x 13	190
88-02067	FDK 25-525-P7	225	125	190		175	103	11 x 20	220
88-02068	FDK 50-525-P7	283	145	260	188	200	116	11 x 20	300
88-02069	FDK 75-525-P7	283	166	300	188	224	126	11 x 20	360
88-02070	FDK 100-525-P7	283	166	362	188	224	126	11 x 20	362
88-02071	FDK 150-525-P7	390	200	380	240	310	130	11 x 20	390
88-02072	FDK 200-525-P7	414	220	400	259	334	130	11 x 20	414

Basic Harmonic Filter Reactor - FDKT - $V_N = 400\text{ V} / 50\text{ Hz} - p = 7\%$ - $f_{res} = 189\text{ Hz}$

88-02103	FDKT 6,25-400-P7	150	93	130		106	77	6 x 15	155
88-02045	FDKT 12,5-400-P7	180	112	155		120	90	10 x 13	190
88-02046	FDKT 25-400-P7	225	124	177	150	175	101	10 x 13	220
88-02047	FDKT 50-400-P7	283	148	215	188	200	110	11 x 20	255
88-02093	FDKT 75-400-P7	309	166	268	200	224	126	11 x 20	315
88-02094	FDKT 100-400-P7	315	166	302	210	224	126	11 x 20	360

Basic Harmonic Filter Reactor - FDKT - $V_N = 415\text{ V} / 50\text{ Hz} - p = 7\%$ - $f_{res} = 189\text{ Hz}$

88-02098	FDKT 12,5-415-P7	180	112	155		120	90	10 x 13	190
88-02099	FDKT 25-415-P7	124	124	177	150	175	101	10 x 13	220
88-02100	FDKT 50-415-P7	283	148	215	188	200	110	11 x 20	255
88-02101	FDKT 75-415-P7	309	166	268	200	224	126	11 x 20	315
88-02190	FDKT 100-415-P7	315	166	322	210	224	126	11 x 20	370

Basic Harmonic Filter Reactor - FDKT - $V_N = 525\text{ V} / 50\text{ Hz} - p = 7\%$ - $f_{res} = 189\text{ Hz}$

88-02146	FDKT 12,5-525-P7	180	112	156		120	90	11 x 13	190
88-02147	FDKT 25-525-P7	225	125	190		175	103	11 x 20	220
88-02148	FDKT 50-525-P7	283	145	260	188	200	116	11 x 20	300
88-02149	FDKT 75-525-P7	283	166	300	188	224	126	11 x 20	360
88-02150	FDKT 100-525-P7	283	166	362	188	224	126	11 x 20	362
88-02151	FDKT 150-525-P7	390	200	380	240	310	130	11 x 20	390
88-02152	FDKT 200-525-P7	414	220	400	259	334	130	11 x 20	414

Version: P1 (Detuning factor $p = 14\%$)

$I_{5_{max}} = 9.6\%$, $I_{7_{max}} = 4.7\%$, Linearity = $1.75 \times I_N$

Article-No.	Type	Q [kvar]	I_N [A]	L [mH]	C [μ F]	Connection		Winding material		Weight approx. [kg]
						Cable lug [mm ²]	Terminal [mm ²]	Cu [kg]	Al [kg]	

Basic Harmonic Filter Reactor - FDK - $V_N = 400\text{ V} / 50\text{ Hz} - p = 14\%$ - fres = 134 Hz

88-02085	FDK 12,5-400-P1	12.5	19.9	6.598	3 x 71.4	M8			1.1	16.0
88-02086	FDK 25-400-P1	25.0	39.7	3.299	3 x 142.8	M8			2.4	27.0
88-02087	FDK 50-400-P1	50.0	79.4	1.649	3 x 285.6	M10			5.3	42.0

Basic Harmonic Filter Reactor - FDK - $V_N = 525\text{ V} / 50\text{ Hz} - p = 14\%$ - fres = 134 Hz

88-02073	FDK 12,5-525-P1	12.5	15.1	11.445	3 x 41.1	M8		on request		15.0
88-02074	FDK 25-525-P1	25.0	30.3	5.723	3 x 82.2	M8		on request		26.0
88-02075	FDK 50-525-P1	50.0	60.5	2.861	3 x 164.4	M10		on request		44.0
88-02076	FDK 75-525-P1	75.0	90.8	1.908	3 x 246.6	M10		on request		56.0
88-02077	FDK 100-525-P1	100.0	121.0	1.431	3 x 328.8	M10		on request		98.0
88-02078	FDK 150-525-P1	150.0	181.6	0.954	3 x 439.2	M10		on request		125.0
88-02079	FDK 200-525-P1	200.0	242.1	0.715	3 x 657.6	M10		on request		144.0

Basic Harmonic Filter Reactor - FDKT - $V_N = 400\text{ V} / 50\text{ Hz} - p = 14\%$ - fres = 134 Hz

88-02095	FDKT 12,5-400-P1	12.5	19.9	6.598	3 x 71.4	M8			1.1	16.0
88-02096	FDKT 25-400-P1	25.0	39.7	3.299	3 x 142.8	M8			2.4	27.0
88-02097	FDKT 50-400-P1	50.0	79.4	1.649	3 x 285.6	M10			5.3	42.0

Basic Harmonic Filter Reactor - FDKT - $V_N = 525\text{ V} / 50\text{ Hz} - p = 14\%$ - fres = 134 Hz

88-02153	FDKT 12,5-525-P1	12.5	15.1	11.445	3 x 41.1	M8		on request		15.0
88-02154	FDKT 25-525-P1	25.0	30.3	5.723	3 x 82.2	M8		on request		26.0
88-02155	FDKT 50-525-P1	50.0	60.5	2.861	3 x 164.4	M10		on request		44.0
88-02156	FDKT 75-525-P1	75.0	90.8	1.908	3 x 246.6	M10		on request		56.0
88-02157	FDKT 100-525-P1	100.0	121.0	1.431	3 x 328.8	M10		on request		98.0
88-02158	FDKT 150-525-P1	150.0	181.6	0.954	3 x 439.2	M10		on request		125.0
88-02159	FDKT 200-525-P1	200.0	242.1	0.715	3 x 657.6	M10		on request		144.0

Components

Harmonic Filter Reactors



Version: P1 (Detuning factor $p = 14\%$)

$I_{5_{max}} = 9.6\%$, $I_{7_{max}} = 4.7\%$, Linearity = $1.75 \times I_N$

Article-No.	Type	Dimensions [mm]							
		A	B	C	D	E	F	G	H

Basic Harmonic Filter Reactor - FDK - $V_N = 400\text{ V} / 50\text{ Hz} - p = 14\%$ - fres = 134 Hz

88-02085	FDK 12,5-400-P1	225	125	160		175	103	11 x 20	192
88-02086	FDK 25-400-P1	250	148	215		200	114	11 x 20	266
88-02087	FDK 50-400-P1	283	170	260	210	200	141	11 x 20	310

Basic Harmonic Filter Reactor - FDK - $V_N = 525\text{ V} / 50\text{ Hz} - p = 14\%$ - fres = 134 Hz

88-02073	FDK 12,5-525-P1	225	125	171		175	103	11 x 13	202
88-02074	FDK 25-525-P1	283	148	238	170	200	117	11 x 20	268
88-02075	FDK 50-525-P1	309	166	310	188	224	126	11 x 20	360
88-02076	FDK 75-525-P1	309	166	402	188	224	126	11 x 20	380
88-02077	FDK 100-525-P1	470	220	380	250	410	126	11 x 20	402
88-02078	FDK 150-525-P1	470	220	400	300	410	126	11 x 20	400
88-02079	FDK 200-525-P1	520	270	420	320	440	126	11 x 20	420

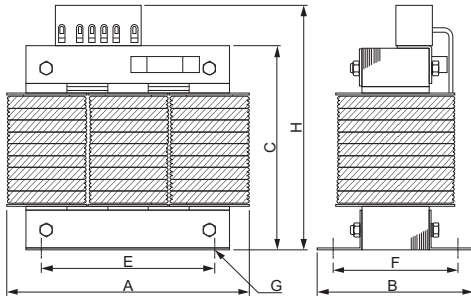
Basic Harmonic Filter Reactor - FDKT - $V_N = 400\text{ V} / 50\text{ Hz} - p = 14\%$ - fres = 134 Hz

88-02095	FDKT 12,5-400-P1	225	125	160		175	103	11 x 20	192
88-02096	FDKT 25-400-P1	250	148	215		200	114	11 x 20	266
88-02097	FDKT 50-400-P1	283	170	260	210	200	141	11 x 20	310

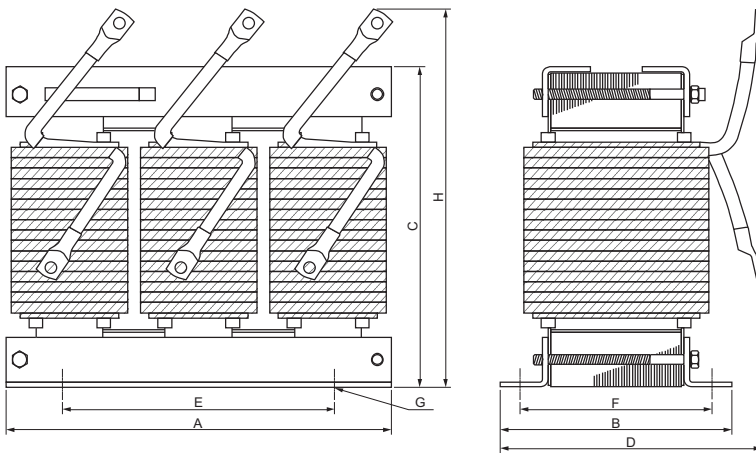
Basic Harmonic Filter Reactor - FDKT - $V_N = 525\text{ V} / 50\text{ Hz} - p = 14\%$ - fres = 134 Hz

88-02153	FDKT 12,5-525-P1	225	125	171		175	103	11 x 13	202
88-02154	FDKT 25-525-P1	283	148	238	170	200	117	11 x 20	268
88-02155	FDKT 50-525-P1	309	166	310	188	224	126	11 x 20	360
88-02156	FDKT 75-525-P1	309	166	402	188	224	126	11 x 20	380
88-02157	FDKT 100-525-P1	470	220	380	250	410	126	11 x 20	402
88-02158	FDKT 150-525-P1	470	220	400	300	410	126	11 x 20	400
88-02159	FDKT 200-525-P1	520	270	420	320	440	126	11 x 20	420

// Dimensions



6.25 - 25 kvar



50 - 100 kvar



FDR / FKD

Standard Harmonic Filter Reactors

- Power range: 3.13 to 50 kvar
- Voltage range: 230 to 690 V, 50/60 Hz
- Detuning factor $p = 5.67 \dots 14 \%$
- Low-loss design

// Application Recommendations

Used together with LKT type Power Factor Correction Capacitors, Harmonic Filter Reactors make it possible to install detuned versions of fixed capacitor banks and Power Factor Correction Systems. This enables switchgear manufacturers to plan and manufacture customer-specific systems.

// Technical Data

• Version: P5 (Detuning factor $p = 5.67\%$)

$I_{5_{max}} = 68\%$, $I_{7_{max}} = 19\%$, Linearity = $2.2 \times I_N$

Article-No.	Type	Q	I_N	L	C	Core type	Connection		Winding material		Weight approx.
		[kvar]	[A]	[mH]	[μ F]		Cable lug [mm ²]	Terminal [mm ²]	Cu [kg]	Al [kg]	

Standard Harmonic Filter Reactor - FDR/FKD - $V_N = 400\text{ V} / 50\text{ Hz}$ - $p = 5.67\%$ - $f_{res} = 210\text{ Hz}$

88-02141	FDR 25-400-P5	25.0	35.8	1.230	3 x 155.2	132/72	10			2.8	23.0
88-02142	FDR 50-400-P5	50.0	71.6	0.617	3 x 310.4	150/77	25			7.2	33.0

• Version: P7 (Detuning factor $p = 7\%$), 50 Hz

$I_{5_{max}} = 37\%$, $I_{7_{max}} = 13\%$, Linearity = $1.8 \times I_N$

Article-No.	Type	Q	I_N	L	C	Core type	Connection		Winding material		Weight approx.
		[kvar]	[A]	[mH]	[μ F]		Cable lug [mm ²]	Terminal [mm ²]	Cu [kg]	Al [kg]	

Standard Harmonic Filter Reactor - FDR/FKD - $V_N = 230\text{ V} / 50\text{ Hz}$ - $p = 7\%$ - $f_{res} = 189\text{ Hz}$

88-01980	FDR 5-230-P7	5.0	12.6	2.530	3 x 93.3	75/41	6			1.7	5.0
88-01575	FKD 10-230-P7	10.0	26.9	1.180	3 x 200.0	90/31	10			2.0	9.0
88-01974	FDR 12,5-230-P7	12.5	31.2	1.020	3 x 232.1	90/41	10			1.9	9.0
88-01583	FKD 16,7-230-P7	16.7	44.9	0.700	3 x 334.0	90/51	10/2x4			2.5	10.0
88-01576	FKD 20-230-P7	20.0	53.8	0.590	3 x 400.0	102/57	16/2x10			2.4	15.0
88-01943	FDR 25-230-P7	25.0	62.5	0.510	3 x 464.2	102/57	16			4.9	16.0
88-01568	FKD 33-230-P7	33.0	89.9	0.350	3 x 668.0	120/61	2x10/2x10			4.3	21.0

Standard Harmonic Filter Reactor - FDR/FKD - $V_N = 400\text{ V} / 50\text{ Hz}$ - $p = 7\%$ - $f_{res} = 189\text{ Hz}$

88-01640	FKD 2,5-400-P7	2.5	3.9	14.200	3 x 16.6	60/31	4			0.4	5.0
88-01719	FKD 3,13-400-P7	3.1	4.7	11.900	3 x 19.9	60/31	4			1.0	5.0
88-01481	FKD 5-400-P7	5.0	7.8	7.120	3 x 33.2	75/41	6			1.1	7.0
88-01410	FKD 6,25-400-P7	6.3	9.7	5.700	3 x 41.5	75/41	6			1.6	7.0
88-01482	FKD 7,5-400-P7	7.5	11.6	4.760	3 x 49.7	75/41	6			1.6	7.0
88-01479	FKD 10-400-P7	10.0	15.5	3.550	3 x 66.3	90/51	6			1.5	10.0
88-01767	FDR 12,5-400-P7	12.5	18.0	3.070	3 x 77.1	90/51	6			1.8	10.0
88-01362	FKD 15-400-P7	15.0	23.3	2.370	3 x 99.5	102/57	6			2.2	15.0
88-01922	FDR 16,7-400-P7	16.7	24.1	2.300	3 x 102.9	102/57	6			1.7	13.0
88-01363	FKD 20-400-P7	20.0	31.0	1.780	3 x 132.6	102/57	10			2.6	19.0
88-01768	FDR 25-400-P7	25.0	36.1	1.530	3 x 154.2	102/57	10			3.3	21.0
88-01484	FKD 30-400-P7	30.0	46.6	1.180	3 x 198.9	132/46	10			4.2	21.0
88-01923	FDR 33,3-400-P7	33.3	48.2	1.150	3 x 205.8	132/46	16			4.3	18.0
88-02053	FDR 37,5-400-P7	37.5	54.3	1.020	3 x 213.9	132/46	16		on request		31.0
88-01782	FDR 40-400-P7	40.0	58.2	0.950	3 x 248.8	132/46	16			6.3	21.0
88-01769	FDR 50-400-P7	50.0	72.2	0.770	3 x 308.4	132/72	16			5.1	27.0

Standard Harmonic Filter Reactor - FDR/FKD - $V_N = 415\text{ V} / 50\text{ Hz}$ - $p = 7\%$ - $f_{res} = 189\text{ Hz}$

88-02034	FDR 6,25-415-P7	6.3	8.7	6.580	3 x 35.9	75/41	4			1.5	5.1
88-01937	FDR 12,5-415-P7	12.5	17.3	3.310	3 x 71.4	90/51	6			1.8	10.0
88-01938	FDR 25-415-P7	25.0	34.7	1.660	3 x 142.8	102/57	10			3.7	15.0
88-01930	FDR 50-415-P7	50.0	69.3	0.830	3 x 285.6	132/72	16			5.3	27.0

Standard Harmonic Filter Reactor - FDR/FKD - $V_N = 440\text{ V} / 50\text{ Hz}$ - $p = 7\%$ - $f_{res} = 189\text{ Hz}$

88-02160	FDR 6,25-440-P7	6.3	8.3	7.360	3 x 32.1	90/31	4			1.4	6.0
88-02161	FDR 12,5-440-P7	12.5	16.5	3.680	3 x 64.2	90/51	4			2.5	9.5
88-01008	FKD 25-440-P7	25.0	34.2	1.780	3 x 132.8	114/64	10			3.4	21.0
88-01124	FKD 50-440-P7	50.0	68.4	0.890	3 x 265.6	132/72	16 / 2x10			7.9	28.0

Components

Harmonic Filter Reactors



• Version: P7 (Detuning factor $p = 7\%$), 50 Hz

$I_{5_{max}} = 37\%$, $I_{7_{max}} = 13\%$, Linearity = $1.8 \times I_N$

Article-No.	Type	Q	I_N	L	C	Core type	Connection		Winding material		Weight approx.
		[kvar]	[A]	[mH]	[μ F]		Cable lug [mm ²]	Terminal [mm ²]	Cu [kg]	Al [kg]	

Standard Harmonic Filter Reactor - FDR/FKD - $V_N = 525\text{ V} / 50\text{ Hz}$ - $p = 7\%$ - $f_{res} = 189\text{ Hz}$

88-01801	FDR 6,25-525-P7	6.3	7.0	10.320	3 x 22.9	75/41	6		1.4		7.0
88-01802	FDR 12,5-525-P7	12.5	14.1	5.160	3 x 45.8	90/51	6		1.8		10.0
88-01080	FKD 20-525-P7	20.0	24.7	2.940	3 x 80.5	114/40	6		3.7		19.0
88-01838	FDR 25-525-P7	25.0	27.5	2.640	3 x 89.5	114/64	10		3.2		21.0
88-01837	FDR 50-525-P7	50.0	55.0	1.320	3 x 179.0	132/72	16 / 2x10		on request		29.0
88-01872	FDR 50-525-P7	50.0	55.0	1.320	3 x 179.0	132/72	16 / 16		4.5		29.0

Standard Harmonic Filter Reactor - FDR/FKD - $V_N = 690\text{ V} / 50\text{ Hz}$ - $p = 7\%$ - $f_{res} = 189\text{ Hz}$

88-01825	FKD 10-690-P7	10.0	8.9	10.700	3 x 22.1	90/51	4		0.0		10.0
88-01932	FDR 25-690-P7	25.0	20.8	4.590	3 x 51.5	102/57	4		3.7		19.0
88-01933	FDR 50-690-P7	50.0	41.6	2.290	3 x 103.1	132/72	10		4.3		27.0

• Version: P7 (Detuning factor $p = 7\%$), 60 Hz

$I_{5_{max}} = 37\%$, $I_{7_{max}} = 13\%$, Linearity = $1.8 \times I_N$

Article-No.	Type	Q	I_N	L	C	Core type	Connection		Winding material		Weight approx.
		[kvar]	[A]	[mH]	[μ F]		Cable lug [mm ²]	Terminal [mm ²]	Cu [kg]	Al [kg]	

Standard Harmonic Filter Reactor - FDR/FKD - $V_N = 230\text{ V} / 60\text{ Hz}$ - $p = 7\%$ - $f_{res} = 227\text{ Hz}$

88-01996	FDR 2,5-230-P7-60	2.5	6.2	4.260	3 x 38.5	60/31	4		on request		4.0
88-01997	FDR 5-230-P7-60	5.0	12.5	2.120	3 x 77.3	75/45	6		on request		6.0
88-01998	FDR 10-230-P7-60	10.0	25.0	1.060	3 x 154.6	75/41	6		on request		7.0
88-02140	FDR 12,5-230-P7-60	12.5	31.4	0.840	3 x 194.3	90/51	10		1.8		10.0
88-02001	FDR 20-230-P7-60	20.0	49.9	0.530	3 x 309.2	90/51	16		0.0		12.0
88-01892	FDR 25-230-P7-60	25.0	62.2	0.430	3 x 385.5	102/57	16		2.3		21.0

Standard Harmonic Filter Reactor - FDR/FKD - $V_N = 380\text{ V} / 60\text{ Hz}$ - $p = 7\%$ - $f_{res} = 227\text{ Hz}$

88-02179	FDR 12,5-380-P7-60	12.5	19.0	2.290	3 x 71.4	90/51	4		1.7		10.0
88-02180	FDR 25-380-P7-60	25.0	38.1	1.150	3 x 142.8	114/64	10		2.9		17.0
88-02181	FDR 50-380-P7-60	50.0	76.2	0.574	3 x 285.6	132/72	25			3.9	25.0

Standard Harmonic Filter Reactor - FDR/FKD - $V_N = 400\text{ V} / 60\text{ Hz}$ - $p = 7\%$ - $f_{res} = 227\text{ Hz}$

88-01963	FDR 12,5-400-P7-60	12.5	18.0	2.560	3 x 64.2	90/31	6		2.2		8.5
88-01964	FDR 25-400-P7-60	25.0	36.0	1.280	3 x 128.1	102/57	10		3.0		13.0
88-01965	FDR 50-400-P7-60	50.0	72.1	0.640	3 x 256.9	132/72	16		4.5		24.0

Standard Harmonic Filter Reactor - FDR/FKD - $V_N = 440\text{ V} / 60\text{ Hz}$ - $p = 7\%$ - $f_{res} = 227\text{ Hz}$

88-01914	FKD 6,25-440-P7-60	6.3	9.2	5.480	3 x 29.9	70/41	6		1.3		6.0
88-01795	FDR 7,5-440-P7-60	7.5	9.9	5.120	3 x 32.0	70/41	6		1.9		6.0
88-01883	FDR 12,5-440-P7-60	12.5	16.9	2.990	3 x 54.8	90/31	6		1.9		21.0
88-01796	FDR 15-440-P7-60	15.0	19.8	2.560	3 x 64.0	90/51	6		2.5		10.0
88-01884	FDR 25-440-P7-60	25.0	33.1	1.530	3 x 107.2	102/57	10		3.2		11.0
88-01875	FDR 50-440-P7-60	50.0	66.2	0.760	3 x 214.2	132/46	16		9.0		29.0

Standard Harmonic Filter Reactor - FDR/FKD - $V_N = 460\text{ V} / 60\text{ Hz}$ - $p = 7\%$ - $f_{res} = 227\text{ Hz}$

88-02123	FKD 2,5-460-P7-60	2.5	3.6	14.760	3 x 11.1	60/31	4		on request		3.0
88-02124	FKD 5-460-P7-60	5.0	6.7	7.910	3 x 20.7	75/41	4		on request		4.5
88-02125	FDR 10-460-P7-60	10.0	12.4	4.250	3 x 38.5	75/41	4		on request		5.0
88-01854	FDR 12,5-460-P7-60	12.5	15.5	3.410	3 x 48.1	90/51	6		1.2		10.0
88-01855	FDR 25-460-P7-60	25.0	31.1	1.700	3 x 96.2	102/57	10		3.7		21.0
88-01856	FDR 50-460-P7-60	50.0	62.1	0.850	3 x 192.4	132/72	16		4.5		27.0

● Version: P7 (Detuning factor $p = 7\%$), 60 Hz

$I_{5_{max}} = 37\%$, $I_{7_{max}} = 13\%$, Linearity = $1.8 \times I_N$

Article-No.	Type	Q	I_N	L	C	Core type	Connection		Winding material		Weight approx.
		[kvar]	[A]	[mH]	[μ F]		Cable lug [mm ²]	Terminal [mm ²]	Cu [kg]	Al [kg]	

Standard Harmonic Filter Reactor - FDR/FKD - $V_N = 480\text{ V} / 60\text{ Hz}$ - $p = 7\%$ - $f_{res} = 227\text{ Hz}$

88-01962	FDR 12,5-480-P7-60	12.5	15.4	3.590	3 x 45.6	90/41	6		1.9		9.0
88-02056	FDR 25-480-P7-60	25.0	30.2	1.830	3 x 89.7	102/57	6		3.1		15.0
88-01732	FKD 50-480-P7-60	50.0	64.7	0.850	3 x 192.0	132/72	16 / 2x10		on request		27.0

● Version: P8 (Detuning factor $p = 8\%$)

$I_{5_{max}} = 28\%$, $I_{7_{max}} = 11\%$, Linearity = $1.7 \times I_N$

Article-No.	Type	Q	I_N	L	C	Core type	Connection		Winding material		Weight approx.
		[kvar]	[A]	[mH]	[μ F]		Cable lug [mm ²]	Terminal [mm ²]	Cu [kg]	Al [kg]	

Standard Harmonic Filter Reactor - FDR/FKD - $V_N = 400\text{ V} / 50\text{ Hz}$ - $p = 8\%$ - $f_{res} = 189\text{ Hz}$

88-01678	FKD 2,5-400-P8	2.5	3.9	16.200	3 x 16.6	60/31	4		0.8		5.0
88-01941	FKD 3,13-400-P8	3.1	4.7	13.540	3 x 19.9	60/31	4		0.8		5.0
88-01518	FKD 5-400-P8	5.0	7.9	8.150	3 x 33.2	75/41	6		0.5		7.0
88-01492	FKD 6,25-400-P8	6.3	9.8	6.520	3 x 41.5	75/41	6		1.4		7.0
88-01519	FKD 7,5-400-P8	7.5	11.8	4.750	3 x 49.7	75/41	6		1.5		7.0
88-01520	FKD 10-400-P8	10.0	15.7	4.080	3 x 66.3	90/51	6		1.4		10.0
88-01770	FDR 12,5-400-P8	12.5	18.2	3.500	3 x 77.1	90/51	6		2.0		10.0
88-01381	FKD 15-400-P8	15.0	23.5	2.720	3 x 99.5	102/57	6		1.8		15.0
88-01926	FDR 16,7-400-P8	16.7	24.3	2.620	3 x 102.9	102/57	6		on request		13.0
88-01382	FKD 20-400-P8	20.0	31.4	2.040	3 x 132.6	102/57	10		4.0		19.0
88-01771	FDR 25-400-P8	25.0	36.5	1.750	3 x 154.2	102/57	10		3.7		19.0
88-01387	FKD 30-400-P8	30.0	47.1	1.360	3 x 198.9	132/46	10		4.2		21.0
88-01927	FDR 33,3-400-P8	33.3	48.7	1.310	3 x 205.9	132/46	16		5.5		18.0
88-02054	FDR 37,5-400-P8	37.5	54.9	1.160	3 x 231.9	132/72	16		5.1		25.0
88-01781	FDR 40-400-P8	40.0	58.8	1.080	3 x 248.8	132/46	16		7.1		21.0
88-01772	FDR 50-400-P8	50.0	72.9	0.870	3 x 308.4	132/72	16		6.8		31.0

Standard Harmonic Filter Reactor - FDR/FKD - $V_N = 480\text{ V} / 50\text{ Hz}$ - $p = 8\%$ - $f_{res} = 189\text{ Hz}$

88-01985	FDR 25-480-P8	25.0	30.5	2.510	3 x 107.4	102/57	10		on request		16.0
88-01986	FDR 50-480-P8	50.0	61.0	1.250	3 x 214.8	132/72	16		on request		27.0

Standard Harmonic Filter Reactor - FDR/FKD - $V_N = 525\text{ V} / 50\text{ Hz}$ - $p = 8\%$ - $f_{res} = 189\text{ Hz}$

88-01845	FKD 20-525-P8	20.0	25.0	3.350	3 x 80.5	102/57	6		on request		15.0
88-01840	FDR 25-525-P8	25.0	27.8	3.010	3 x 89.5	114/64	10		on request		21.0
88-01846	FDR 30-525-P8	30.0	35.0	2.390	3 x 112.7	114/64	10		on request		21.0
88-01839	FDR 50-525-P8	50.0	55.6	1.510	3 x 179.0	132/72	16 / 2x10		on request		29.0
88-01871	FDR 50-525-P8	50.0	55.6	1.510	3 x 179.0	132/72	16 / 16		8.3		29.0

Standard Harmonic Filter Reactor - FDR/FKD - $V_N = 690\text{ V} / 50\text{ Hz}$ - $p = 8\%$ - $f_{res} = 189\text{ Hz}$

88-01807	FKD 25-690-P8	25.0	22.6	4.870	3 x 55.3	114/64	4		3.7		18.0
88-01912	FDR 50-690-P8	50.0	42.1	2.610	3 x 103.1	132/72	10		6.1		27.0

Components

Harmonic Filter Reactors

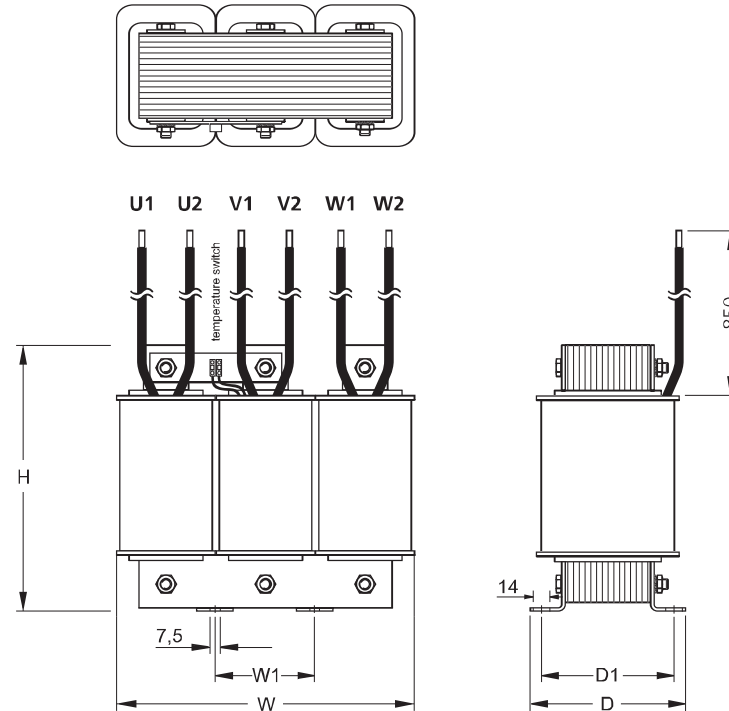


● Version: P1 (Detuning factor $p = 14\%$), 50 Hz

$I_{5\max} = 10\%$, $I_{7\max} = 5\%$, Linearity = $1.4 \times I_N$

Article-No.	Type	Q	I_N	L	C	Core type	Connection		Winding material		Weight approx.
		[kvar]	[A]	[mH]	[μ F]		Cable lug [mm ²]	Terminal [mm ²]	Cu [kg]	Al [kg]	
Standard Harmonic Filter Reactor - FDR/FKD - $V_N = 230\text{ V} / 50\text{ Hz}$ - $p = 14\%$ - $f_{res} = 134\text{ Hz}$											
88-02020	FDR 15-230-P1	15.0	37.7	1.750	3 x 260.3	114/64	10		2.6		17.0
88-01868	FDR 30-230-P1	30.0	75.2	0.880	3 x 519.9	132/72	16		7.9		34.0
Standard Harmonic Filter Reactor - FDR/FKD - $V_N = 400\text{ V} / 50\text{ Hz}$ - $p = 14\%$ - $f_{res} = 134\text{ Hz}$											
88-01834	FDR 3,13-400-P1	3.1	4.2	28.300	3 x 16.6	75/41	4		0.9		5.0
88-02186	FDR 6,25-400-P1	6.3	9.1	13.100	3 x 35.9	90/41	4		1.4		7.0
88-01979	FDR 7,5-400-P1	7.5	11.0	10.800	3 x 43.4	90/51	4		2.1		10.0
88-01695	FDR 10-400-P1	10.0	15.1	7.860	3 x 59.8	90/51	4		3.2		11.0
88-01168	FDR 12,5-400-P1	12.5	18.1	6.590	3 x 71.4	102/57	4		2.5		13.0
88-02187	FDR 15-400-P1	15.0	22.7	5.250	3 x 89.6	102/57	4		4.0		15.0
88-02177	FDR 16,7-400-P1	16.7	24.2	4.910	3 x 95.8	102/57	4		4.0		15.0
88-01038	FDR 20-400-P1	20.0	28.6	4.160	3 x 113.1	114/64	6		5.7		21.0
88-01171	FDR 25-400-P1	25.0	36.1	3,290	3 x 142.8	132/72	10			4.5	25.0
88-01039	FDR 30-400-P1	30.0	44.1	2.700	3 x 174.3	132/72	10			4.3	26.0
88-01925	FDR 33,3-400-P1	33.3	48.2	2.470	3 x 190.7	132/72	16		4.5		25.0
88-02176	FDR 37,5-400-P1	37.5	54.2	2.200	3 x 214.2	150/77	10			5.3	32.0
88-02175	FDR 40-400-P1	40.0	58.8	2.020	3 x 232.4	150/77	16			5.3	32.0
88-02174	FDR 50-400-P1	50.0	71.9	1.600	3 x 285.6	150/77	16			5.5	33.0
Standard Harmonic Filter Reactor - FDR/FKD - $V_N = 415\text{ V} / 50\text{ Hz}$ - $p = 14\%$ - $f_{res} = 134\text{ Hz}$											
88-01956	FDR 25-415-P1	25.0	34.6	3.440	3 x 132.6	132/46	10		8.9		24.0
88-01957	FDR 50-415-P1	50.0	69.2	1.720	3 x 265.2	150/92	16		11.7		44.0
Standard Harmonic Filter Reactor - FDR/FKD - $V_N = 440\text{ V} / 50\text{ Hz}$ - $p = 14\%$ - $f_{res} = 134\text{ Hz}$											
88-02041	FDR 25-440-P1	25.0	33.0	3.960	3 x 118.0	132/72	6		5.7		25.0
88-02007	FDR 50-440-P1	50.0	66.6	1.900	3 x 240.5	150/92	16		11.5		45.0
Standard Harmonic Filter Reactor - FDR/FKD - $V_N = 480\text{ V} / 50\text{ Hz}$ - $p = 14\%$ - $f_{res} = 134\text{ Hz}$											
88-02143	FDR 25-480-P1	25.0	30.4	4.690	3 x 100.2	132/72	6			4.5	25.0
88-02144	FDR 50-480-P1	50.0	60.5	2.360	3 x 199.3	150/92	16			7.4	40.0
Standard Harmonic Filter Reactor - FDR/FKD - $V_N = 525\text{ V} / 50\text{ Hz}$ - $p = 14\%$ - $f_{res} = 134\text{ Hz}$											
88-02039	FDR 12,5-525-P1	12.5	15.1	10.360	3 x 45.4	102/57	4		3.7		14.0
88-01960	FDR 25-525-P1	25.0	27.9	5.410	3 x 84.4	132/72	10		5.4		25.0
88-01900	FDR 50-525-P1	50.0	55.8	2.700	3 x 168.8	150/92	16		9.9		52.0
Standard Harmonic Filter Reactor - FDR/FKD - $V_N = 690\text{ V} / 50\text{ Hz}$ - $p = 14\%$ - $f_{res} = 134\text{ Hz}$											
88-02122	FDR 12,5-690-P1	12.5	9.6	21.280	3 x 22.1	102/57	4		on request		19.0
88-02120	FDR 20-690-P1	20,0	16.9	12.150	3 x 38.7	114/64	4		on request		18.0
88-01842	FDR 25-690-P1	25.0	21.7	9.130	3 x 50.0	132/72	4		5.1		27.0
88-01843	FDR 50-690-P1	50.0	43.4	4.570	3 x 99.9	150/92	10 / 2x4		10.5		33.0

// Dimensions



Core 3UI	Dimensions [mm]				
	W_{max}	W1	D_{max}	D1	$H_{\pm 0.0}$
60/31	120	40	83	63	110
75/41	150	50	97	77	132
90/31	180	60	91	71	156
90/41	180	60	101	81	156
90/51	180	60	111	91	156
102/57	204	68	121	101	177
114/40	228	76	104	84	197
114/64	228	76	128	108	197
120/61	240	80	125	105	197
132/46	264	88	114	94	229
132/72	264	88	140	120	230
150/77	300	100	150	129	265
150/92	300	100	165	144	265