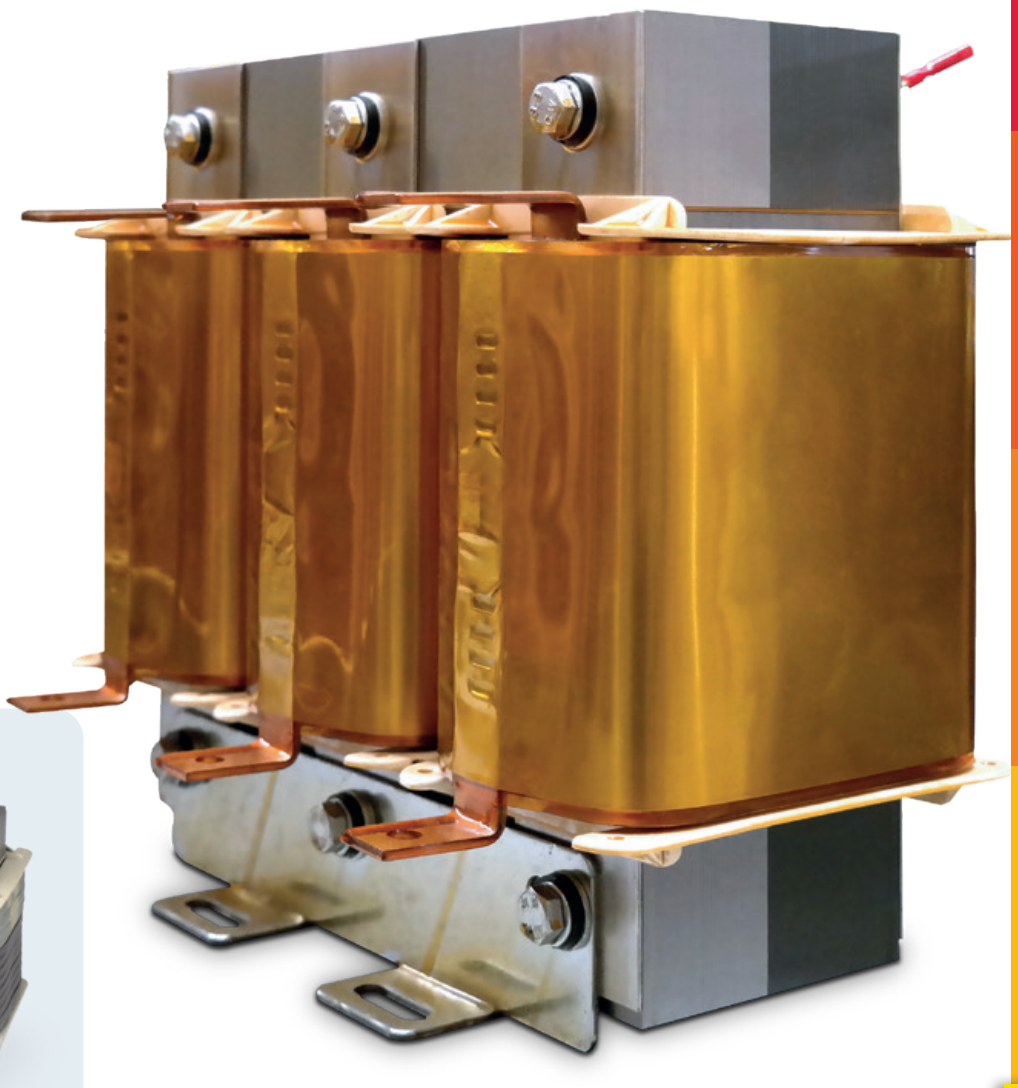
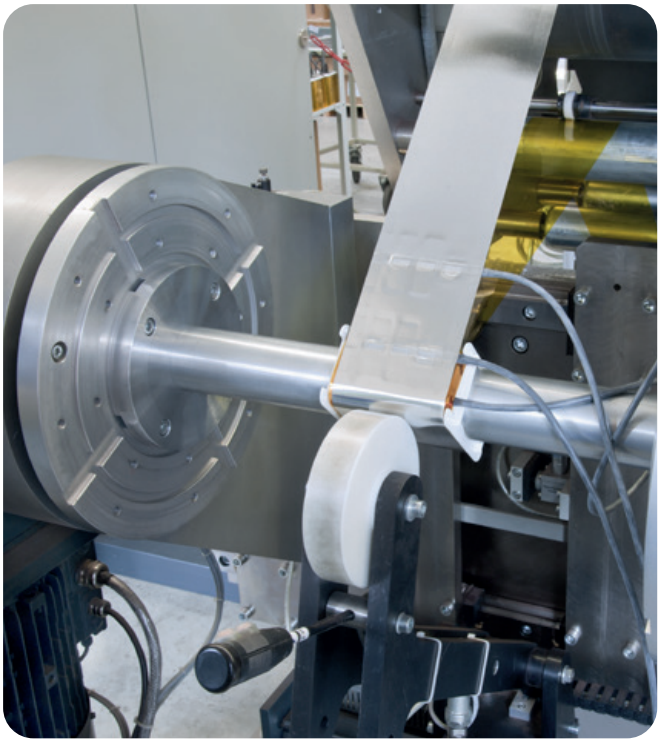
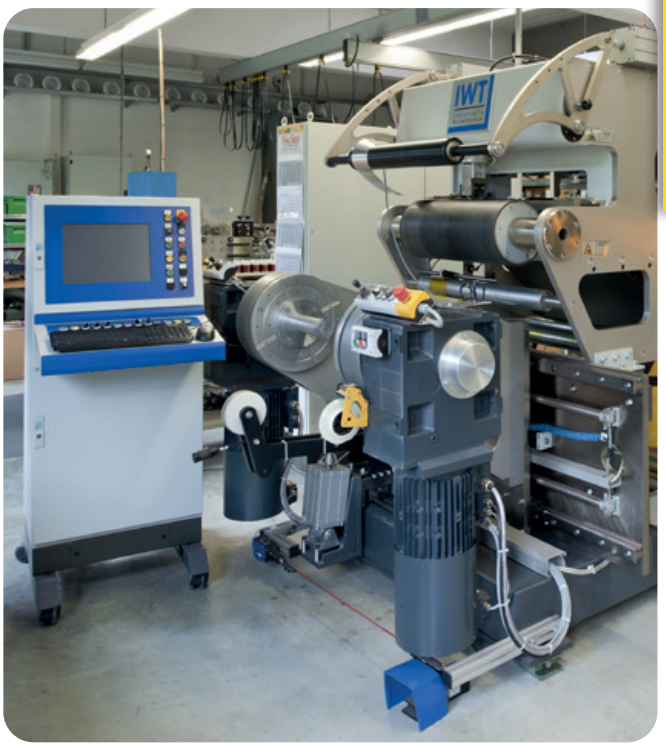
Filter circuit reactors

To prevent resonance phenomena caused by harmonic content in the power supply system, filter circuit reactors are required to set up detuned compensation systems. Here, high linearities guarantee the necessary functional stability even in the overload range.

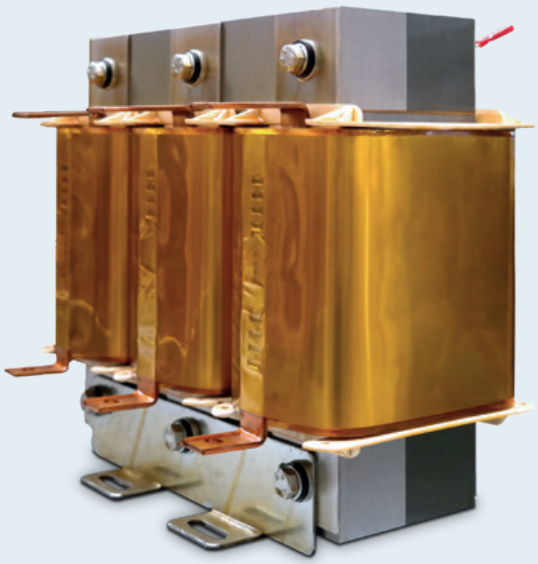






multiind 50Hz

Power	**2.5 – 75 kvar**
Detuning factors	**5.5, 7 or 8 %** **12.5 or 14 %**



Filter circuit reactors for reactive current compensation

Highlights

- → Power from 2.5 to 75 kvar
- → High linearity, low power dissipation
- → Overload protection through temperature switch
- → Low-noise through impregnation
- → Long operating life
- → Improved impedance behavior

An overview of the **technical details** is provided on pages 44-45.
Construction diagrams are provided on page 43.

Note on the temperature switch

For smooth operation and a long operating life, the integrated temperature sensor must interrupt the main circuit of the filter circuit reactor in case of overload.

Notes on installation

- → Observe the applicable DIN / VDE regulations.
- → Power supply connection, setup and device operation must be performed by qualified personnel only.
- → Maintain maximum current, voltage and temperature ranges.
- → Ensure sufficient ventilation.
- → Tighten connections with the right torque.

Specifications multiind-light ... 7 %

Detuning factor: **7 %** Resonance frequency: **189 Hz**

POWER	TYPE multiind-basic... 7 %			INDUC-TIVITY	RATED CURRENT	DIMENSIONS IN MM in mm								DIAGRAM	WEIGHT	CAPACI-TANCE	CAPACITOR multicond
kvar		CU	AL	mH	A	H	W	D	W1	D1	LL	AW	RK		kg	µF	UHPC ... -440-3P
12,5	multiind-light 400-50-12.5-7-Cu-RK-S	x		2.848	18	215	210	92	95	67,5	9		x	B	12.6	249	15,1
25	multiind-light 400-50-25.0-7-Cu-RK-S	x		1.535	36	250	240	105	95	82	9		x	B	16.0	462	28,1
50	multiind-light 400-50-50.0-7-Cu-RK-S	x		0.767	72,1	250	240	145	95	101	9		x	B	25.0	924	28,1+28,1

Specifications multiind-basic ... 7 %

Detuning factor: **7 %** Resonance frequency: **189 Hz**

POWER	TYPE multiind-basic... 7 %			INDUC-TIVITY	RATED CURRENT	DIMENSIONS IN MM in mm								DIAGRAM	WEIGHT	CAPACI-TANCE	CAPACITOR multicond
kvar		CU	AL	mH	A	H	W	D	W1	D1	LL	AW	RK		kg	µF	UHPC ... -440-3P
2,5	multiind-basic 400-50-02.5-7-Cu-RK-S	x		15.42	3,6	185	180	86	95	62,5	9		x	B	5,2	46	UHPC 4,0 -525-3P
5	multiind-basic 400-50-05.0-7-Cu-RK-S	x		7.709	7,2	185	180	106	95	62,5	9		x	B	6,4	92	UHPC 8,0-525-3P
7,5	multiind-basic400-50-07.5-7-Cu-RK-S	x		4.760	11,6	185	180	96	95	72,5	9		x	B	8,1	150	UHPC 13,0 -525-3P
10	multiind-basic400-50-10.0-7-Cu-RK-S	x		3.564	15,5	185	180	126	95	82,5	9		x	B	9,2	199	12,1
12,5	multiind-basic 400-50-12.5-7-CU-RK-S	x		2.849	19,4	215	210	109	95	85	9		x	B	12,6	249	15,1
15	multiind-basic 400-50-15.0-7-CU-RK-S	x		2.524	21,9	215	210	109	95	85	9		x	B	13,0	281	17,1
20	multiind-basic 400-50-20.0-7-CU-RK-S	x		1.782	31,1	215	210	109	95	85	9		x	B	14,0	398	24,2
25	multiind-basic-400-50-25.0-7-AL-AW-S		x	1.535	36,0	220	240	145	95	92	9	x		C	17,1	462	28,1
25	multiind-basic 400-50-25.0-7-CU-RK-S	x		1.535	36,0	250	240	115	95	92	9		x	B	20,0	462	28,1
30	multiind-basic 400-50-30.0-7-AL-AW-S		x	1.262	43,8	220	240	145	95	92	9	x		C	17,8	562	17,1+17,1
30	multiind-basic 400-50-30.0-7-CU-RK-S	x		1.262	43,8	250	240	135	95	92	9		x	B	20,3	562	17,1+17,1
40	multiind-basic 400-50-40.0-7-AL-AW-S		x	0.951	58,2	240	260	167	95	112	9	x		C	26,0	746	21,2+24,2
50	multiind-basic 400-50-50.0-7-AL-AW-S		x	0.767	72,1	240	260	167	95	112	9	x		C	25,0	924	28,1+28,1
50	multiind-basic 400-50-50.0-7-CU-RK-S	x		0.767	72,1	305	300	145	95	105	9		x	B	32,0	924	28,1+28,1
60	multiind-basic 400-50-60.0-7-AL-AW-S		x	0.638	86,8	270	300	180	95	117	9	x		C	35,0	1112	10,0(525)+30,3+30,3
75	multiind-basic 400-50-75.0-7-AL-AW-S		x	0.512	108,0	270	300	180	95	117	9	x		C	37,5	1386	28,1+28,1+28,1

multiind 50Hz

Specifications multiind-basic ... 14 %

Detuning factor: **14 %** Resonance frequency: **134 Hz**

POWER	TYPE multiind-light... 14 %			INDUC-TIVITY	RATED CURRENT	DIMENSIONS						CONNEC-TION		DIAGRAM	WEIGHT	CAPACI-TANCE	CAPACITOR multicond
kvar		CU	AL	mH	A	H	W	D	W1	D1	LL	AW	RK		kg	µF	UHPC ... -525-3P
5	multiind-basic 400-50-05.0-14-CU-RK-S	x		15.42	7,8	185	180	96	95	72,5	9		x	B	8,3	92	8,0
7,5	multiind-basic 400-50-07.5-14-CU-RK-S	x		11,00	10,9	215	230	109	95	85	9		x	B	12,5	129	11,2
10	multiind-basic 400-50-10.0-14-CU-RK-S	x		8.2	14,6	215	210	109	95	85	9		x	B	14,4	173	15,0
12,5	multiind-basic 400-50-12.5-14-CU-RK-S	x		6.82	17,6	250	240	105	95	82	9		x	B	17,9	208	18,0
15	multiind-basic 400-50-15.0-14-CU-RK-S	x		5.862	20,4	250	240	105	95	82	9		x	B	17,9	242	21,0
20	multiind-basic 400-50-20.0-14-AL-AW-S		x	4.088	29,3	240	260	167	95	112	9		x	B	24,2	347	30,0
25	multiind-basic 400-50-25.0-14-CU-RK-S	x		3.322	36	250	240	145	95	101	9	x		C	23,4	427	37,0
25	multiind-basic 400-50-25.0-14-AL-AW-S		x	3.322	36	240	260	167	95	112	9	x		C	24,9	427	37,0
30	multiind-basic 400-50-30.0-14-AL-AW-S		x	2.728	43,9	270	300	180	95	117	9	x		C	33,0	520	15,0+30,0
40	multiind-basic 400-50-40.0-14-AL-AW-S		x	2.047	58,5	270	300	180	95	117	9	x		C	36,2	693	30,0+30,0
50	multiind-basic 400-50-50.0-14-AL-AW-S		x	1.661	72	270	300	210	95	132	9	x		C	44,0	854	37,0+37,0
50	multiind-basic 400-50-50.0-14-CU-RK-S	x		1.661	72,1	305	300	180	95	117	9		x	B	45,5	854	37,0+37,0
60	multiind-basic 400-50-60.0-14-AL-AW-S		x	1.364	87,7	270	300	210	95	132	9	x		C	40,0	1040	30,0+30,0+30,0
60	multiind-basic 400-50-60.0-14-CU-RK-S	x		1.364	87,7	305	300	210	95	132	9		x	B	47,6	1040	30,0+30,0+30,0

Technical data	**multiind 7.0**		
DEVICE TYPE	**light** p = 7 %	**basic** p = 7 %	**basic** p = 14 %
Rated voltage | frequency	U_n = 400 V | 50Hz	U_n = 400 V | 50Hz	U_n = 400 V | 50 Hz
Maximum permissible operating voltage	U_n = 400 V ± 10 %	U_n = 400 V ± 10 %	U_n = 400 V ± 10 %
Power	2.5 – 75 kvar	2.5 – 75 kvar	2.5 – 50 kvar
Inductive stability | Inductive tolerance	$L (I_{Lin}) \geq 0.95 L_N$ | ± 3 %	$L (I_{Lin}) \geq 0.95 L_N$ | ± 3 %	$L (I_{Lin}) \geq 0.95 L_N$ | ± 3 %
Overtemperature protection	Break contact at 125 °C (250 V – 50 Hz – 2.5 A), temperature class B		
Protection type	IP 00	IP 00	IP 00
Protection class	I	I	I
Ambient temperature	maximum 40 °C	maximum 40 °C	maximum 40 °C
Cooling type	Natural cooling	Natural cooling	Natural cooling
Impregnation	vacuum-impregnated	vacuum-impregnated	vacuum-impregnated
Detuning factor | Resonance frequency	7 % | 189 Hz	7 % | 189 Hz	14 % | 134 Hz
Linearity	1.6 x I_{rated}	1.85 x I_{rated}	1.5 x I_{rated}
Standards	DIN EN 60076-6 (VDE 0532-76-6) DIN EN 61558-1-A1 (VDE 0570-1-A1) DIN EN 61558-2-20 (VDE 0570-2-20)		
Designs	Cu = copper Al = aluminum L = cable connection AW = connection angle RK = tubular cable lug		

Not suitable for measurement purposes.

Version: January 2022. Subject to change.

Construction diagrams

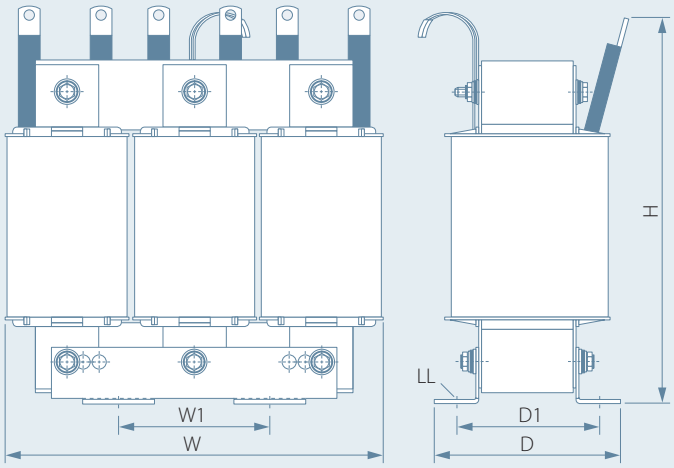


Diagram B

Design with tubular cable lug
Type RK

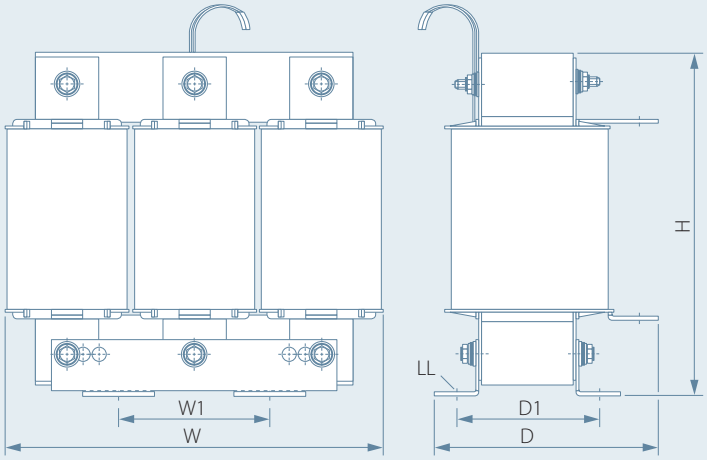


Diagram C

Design with connection angle
Type AW

multiind 60Hz

Specifications multiind-basic ... 6%

Detuning: **6%** Resonance frequency: **245 Hz**

VOLTAGE	POWER	TYPE multiind-basic ... 6 %			INDUCTIVITY	RATED CURRENT	DIMENSIONS						CONNECTION			DIAGRAM	WEIGHT	CAPACITANCE	CAPACITOR multicond UHPC
V	kvar		Cu	Al	mH	A	H	W	D	W1	D1	LL	L	AW	RK		kg	µF	
380V/60Hz	12.5	multiind-basic 380-60-12.5-6-CU-RK-S	x		1.8280	20.3	215	210	109	95	85	9			x	B	13.5	231	1x 20.0-525-3P
380V/60Hz	13.4	multiind-basic 380-60-13.4-6-CU-RK-S	x		1.8250	20.3	215	210	109	95	85	9			x	B	13.5	231	1x 16.7-480-3P
380V/60Hz	25	multiind-basic 380-60-25.0-6-AL-AW-S		x	0.9490	39.2	240	260	167	95	112	9		x		C	24.5	445	1x 17.9-480-3P 1x 14.3-480-3P
380V/60Hz	26.7	multiind-basic 380-60-26.7-6-CU-RK-S	x		0.9160	40.6	250	240	115	95	92	9			x	B	21	461	1x 33.4-480-3P
380V/60Hz	50	multiind-basic 380-60-50.0-6-CU-RK-S	x		0.4840	76.8	305	300	150	95	117	9			x	B	34.1	873	1x 29.8-480-3P 2x 33.4-480-3P
440V/60Hz	12.5	multiind-basic 440-60-12.5-6-CU-RK-S	x		2.4403	17.6	215	210	109	95	85	9			x	B	11.8	173	1x 15.0-525-3P
440V/60Hz	25	multiind-basic 440-60-25.0-6-AL-AW-S		x	1.2166	35.4	220	240	145	95	92	9		x		C	17.6	347	1x 30.0-525-3P
440V/60Hz	50	multiind-basic 440-60-50.0-6-AL-AW-S		x	0.6416	67	270	300	180	95	117	9		x		C	33	658	1x 20.0-525-3P 1x 37.0-525-3P

Specifications multiind-basic ... 7%

Detuning: **7%** Resonance frequency: **227Hz**

VOLTAGE	POWER	TYPE multiind-basic ... 7 %			INDUCTIVITY	RATED CURRENT	DIMENSIONS						CONNECTION			DIAGRAM	WEIGHT	CAPACITANCE	CAPACITOR multicond UHPC
V	kvar		Cu	Al	mH	A	H	W	D	W1	D1	LL	L	AW	RK		kg	µF	
230V/60Hz	10	multiind-basic 230-60-10-7-CU-RK-S	x		1.0661	24.9	215	210	109	95	85	9			x	B	13.8	462	1x 28.1-440-3P
230V/60Hz	20	multiind-basic 230-60-20-7-CU-RK-S	x		0.5319	49.9	250	240	129	95	105	9			x	B	22.2	925.5	1x 20.0-440-3P 1x 36.3-440-3P
480V/60Hz	25	multiind-basic 480-60-25.0-7-AL-AW-S		x	1.7043	32.5	220	240	145	95	92	9		x		C	17.3	289	1x 25.0-525-3P
480V/60Hz	50	multiind-basic 480-60-50.0-7-AL-AW-S		x	0.9276	59.7	240	260	167	95	112	9		x		C	27.0	531	1x 21.0-525-3P 1x 25.0-525-3P

Specifications multiind-basic ... 13%

Detuning: **13%** Resonance frequency: **167 Hz**

VOLTAGE	POWER	TYPE multiind-basic ... 13 %			INDUCTIVITY	RATED CURRENT	DIMENSIONS						CONNECTION			DIAGRAM	WEIGHT	CAPACITANCE	CAPACITOR multicond UHPC
V	kvar		Cu	Al	mH	A	H	W	D	W1	D1	LL	L	AW	RK		kg	µF	
380V/60Hz	12.5	multiind-basic 380-60-12.5-13-CU-RK-S	x		4.3976	19.8	250	240	105	95	82	9			x	B	16	207.9	1x 18.0-525-3P
380V/60Hz	25	multiind-basic 380-60-25.0-13-AL-AW-S		x	2.1988	39.5	270	300	180	95	117	9		x		C	32	416	2x 18.0-525-3P
380V/60Hz	50	multiind-basic 380-60-50.0-13-AL-AW-S		x	1.0698	81.3	270	300	180	95	117	9		x		C	33	855	2x 37.0-525-3P
440V/60Hz	12.5	multiind-basic 440-60-12.5-13-CU-RK-S	x		6.0980	16.5	215	210	109	95	85	9			x	B	15	150	1x 13.0-525-3P
440V/60Hz	25	multiind-basic 440-60-25.0-13-AL-AW-S		x	3.0490	33	240	260	167	95	112	9		x		C	24	300	2x 13.0-525-3P
440V/60Hz	50	multiind-basic 440-60-50.0-13-AL-AW-S		x	1.5250	66	270	300	180	95	117	9		x		C	33	600	1x 15.0-525-3P 1x 37.0-525-3P

multiind 60Hz technical details

DEVICE TYPE	multiind 6 %		multiind 7 %		multiind 13 %	
	basic p = 6 %	**basic** p = 6 %	**basic** p = 7 %	**basic** p = 7 %	**basic** p = 13 %	**basic** p = 13 %
Rated voltage	U_n = 380 V	U_n = 440 V	U_n = 230 V	U_n = 480 V	U_n = 380 V	U_n = 440 V
Frequency	60 Hz	60 Hz	60 Hz	60 Hz	60 Hz	60 Hz
Maximum permissible operating voltage	U_n = 380 V ± 10 %	U_n = 440 V ± 10 %	U_n = 230 V ± 10 %	U_n = 480 V ± 10 %	U_n = 380 V ± 10 %	U_n = 440 V ± 10 %
Power	12.5 x 13.4, 25; 26.7; x 50 kvar	12.5 x 25; 50 kvar	10; 20 kvar	25; 50 kvar	12.5 x 25; 50 kvar	12.5 x 25; 50 kvar
Inductive stability	L (I_{Lin}) ≥ 0.95 L_N		L (I_{Lin}) ≥ 0.95 L_N		L (I_{Lin}) ≥ 0.95 L_N	
Inductive tolerance	± 3 %		± 3 %		± 3 %	
Overtemperature protection	Break contact at 125 °C (250 V – 50 Hz – 2.5 A)		Break contact at 125 °C (250 V – 50 Hz – 2.5 A)		Break contact at 125 °C (250 V – 50 Hz – 2.5 A)	
Protection type	IP 00		IP 00		IP 00	
Protection class	I		I		I	
Ambient temperature	Maximum 40 °C		Maximum 40 °C		Maximum 40 °C	
Cooling type	Natural cooling		Natural cooling		Natural cooling	
Impregnation	Vacuum-impregnated		Vacuum-impregnated		Vacuum-impregnated	
Detuning	6 %	6 %	7 %	7 %	13 %	13 %
Resonance frequency	245 Hz	245 Hz	227 Hz	227 Hz	167 Hz	167 Hz
Linearity	1.85 x I_{rated}	1.85 x I_{rated}	1.85 x I_{rated}	1.85 x I_{rated}	1.5 x I_{rated}	1.5 x I_{rated}
Standards	DIN EN 60289 (VDE 0532-289)		DIN EN 60289 (VDE 0532-289)		DIN EN 60289 (VDE 0532-289)	
Designs	Cu = copper Al = aluminum L = cable connection AW = connection angle RK = tubular cable lug					

Version: January 2022. Subject to change.