

## Three-phase harmonic filters

### Technical data

Compliance standard	IEC-60289;IEC-076
Tolerance "L"	3%
Permissible overload	1,07 x In
Linearity Inductance	1,60 x In
Heat insulation	F (155°C)
Thermal protection	90°C
Room temperature	45°C
Proof stress	4KV
Protection degree	IP00
Detuning factor (p%)	7% - 14%

Constructive Characteristics - Three phase harmonic filters are made of low losses magnetic plates, permanent regime class F (155°C) copper conductor and thermal protection relay.

With the purpose of increasing filters ventilation, windings are separated among them, improving thermal dissipation.

Available factor p is 7% and 14% with resonance frequency 189 Hz and 134 Hz for 50 Hz networks.

With this standard values in three phase networks and balanced loads, the 5th (250 Hz) harmonic and higher resonant phenomenons are eliminated avoiding resonance between inductive impedance and three phase capacitors for power factor correction and preventing network capacitors and capacitor banks for overloads, caused by harmonics.

### Table selection of three-phase harmonic filters for capacitor banks

#### 400V-50Hz-7%-189Hz Copper

Type	Reactive power (kVAR)	Code No.	Power loss (W)	Inductance (mH)	Suggested Capacitance $\mu$ F	Rated current (A) $I_{eff}$	Weight (kg)	Capacitors
HFL 7/5 Cu	5	004656800	30	7,66	3x 30,84	7,2	7,5	2x LPC 3 kVAR, 460V, 50HZ
HFL 7/10 Cu	10	004656801	60	3,83	3x 61,67	14,4	8,5	LPC 12.5 kVAR, 460V, 50HZ
HFL 7/12,5 Cu	12,5	004656802	70	3,07	3x 77,09	18	9	LPC 15 kVAR, 460V, 50HZ
HFL 7/15 Cu	15	004656803	80	2,56	3x 92,51	21,7	9,5	LPC 20 kVAR, 480V, 50HZ
HFL 7/20 Cu	20	004656804	100	1,92	3x 123,35	28,9	16	LPC 25 kVAR, 460V, 50HZ
HFL 7/25 Cu	25	004656805	110	1,53	3x 154,18	36,1	16,5	LPC 30 kVAR, 460V, 50HZ
HFL 7/30 Cu	30	004656806	120	1,28	3x 185,02	43,3	17,5	LPC 40 kVAR, 480V, 50HZ
HFL 7/40 Cu	40	004656807	150	0,96	3x 246,69	57,7	28,5	LPC 50 kVAR, 460V, 50HZ
HFL 7/50 Cu	50	004656808	180	0,77	3x 308,36	72,2	30	2x LPC 30.8 kVAR, 460V, 50HZ
HFL 7/100 Cu	100	004656809	350	0,38	3x 616,73	144	43	4x LPC 30.8 kVAR, 460V, 50HZ

#### 400V-50Hz-14%-134Hz Copper

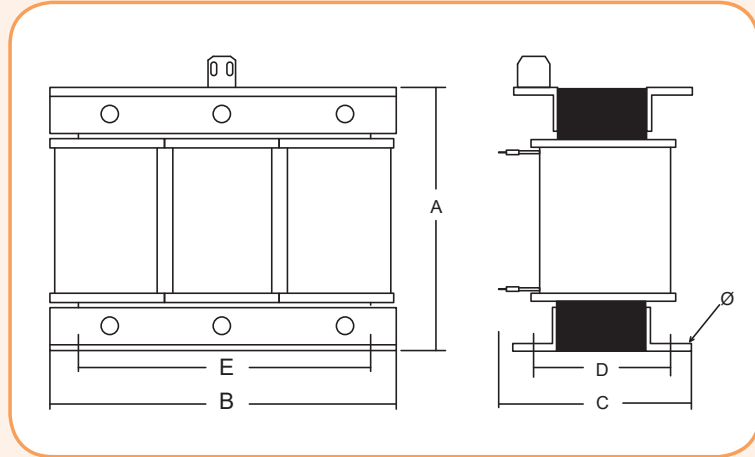
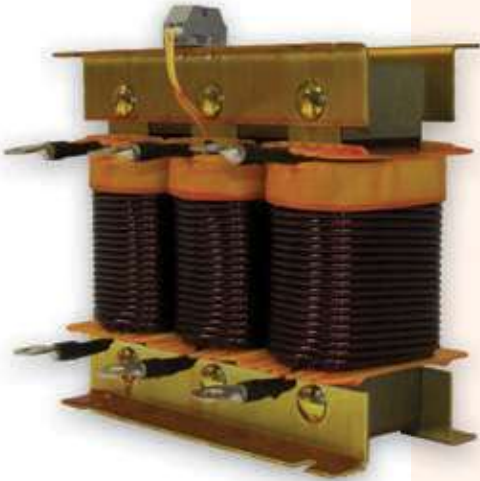
Type	Reactive power (kVAR)	Code No.	Power loss (W)	Inductance (mH)	Suggested Capacitance $\mu$ F	Rated current (A) $I_{eff}$	Weight (kg)	Capacitors
HFL 14/5 Cu	5	004656810	60	16,58	3x 28,52	7,2	15	2x LPC 3 kVAR, 480V, 50HZ
HFL 14/10 Cu	10	004656811	90	8,29	3x 57,03	14,4	15	LPC 15 kVAR, 525V, 50HZ
HFL 14/12,5 Cu	12,5	004656812	120	6,63	3x 71,29	18	16	LPC 15 kVAR, 480V, 50HZ
HFL 14/15 Cu	15	004656813	150	5,53	3x 85,55	21,7	16	LPC 20 kVAR, 480V, 50HZ
HFL 14/20 Cu	20	004656814	150	4,15	3x 114,06	28,9	19,5	LPC 25 kVAR, 480V, 50HZ
HFL 14/25 Cu	25	004656815	190	3,32	3x 142,58	36,1	20,5	LPC 30 kVAR, 480V, 50HZ
HFL 14/30 Cu	30	004656816	220	2,76	3x 171,09	43,3	31	LPC 40 kVAR, 480V, 50HZ
HFL 14/40 Cu	40	004656817	290	2,07	3x 228,12	57,7	34,5	LPC 50 kVAR, 480V, 50HZ
HFL 14/50 Cu	50	004656818	330	1,66	3x 285,15	72,2	37	2x LPC 30 kVAR, 480V, 50HZ

#### 400V-50Hz-7%-189Hz Aluminium

Type	Reactive power (kVAR)	Code No.	Power loss (W)	Inductance (mH)	Suggested Capacitance $\mu$ F	Rated current (A) $I_{eff}$	Weight (kg)	Capacitors
HFL 7/20 Al	20	004656820	100	1,92	3x 123,35	28,9	14,5	LPC 25 kVAR, 460V, 50HZ
HFL 7/25 Al	25	004656821	120	1,53	3x 154,18	36,1	17	LPC 30 kVAR, 460V, 50HZ
HFL 7/30 Al	30	004656822	130	1,28	3x 185,02	43,3	26	LPC 40 kVAR, 480V, 50HZ
HFL 7/40 Al	40	004656823	160	0,96	3x 246,69	57,7	26,5	LPC 50 kVAR, 460V, 50HZ
HFL 7/50 Al	50	004656824	200	0,77	3x 308,36	72,2	27	2x LPC 30.8 kVAR, 460V, 50HZ

**400V-50Hz-14%-134Hz Aluminium**

Type	Reactive power (kVAr)	Code No.	Power loss (W)	Inductance (mH)	Suggested Capacitance $\mu$ F	Rated current (A) $I_{eff}$	Weight (kg)	Capacitors
HFL 14/20 Al	20	004656830	170	4,15	3x 114,06	28,9	27	LPC 25 kVAr, 480V, 50HZ
HFL 14/25 Al	25	004656831	200	3,32	3x 142,58	36,1	27	LPC 30 kVAr, 480V, 50HZ
HFL 14/30 Al	30	004656832	240	2,76	3x 171,09	43,3	44	LPC 40 kVAr, 480V, 50HZ
HFL 14/40 Al	40	004656833	290	2,07	3x 228,12	57,7	44,5	LPC 50 kVAr, 480V, 50HZ
HFL 14/50 Al	50	004656834	370	1,66	3x 285,15	72,2	45	2x LPC 30 kVAr, 480V, 50HZ



**Copper Wire Reactors – Mechanical Dimensions**

Type	Dimensions mm					
Cu	A	B	C	D	E	$\Phi$
HFL 7/5 Cu	170	180	80	70	140	9
HFL 7/10 Cu	170	180	90	80	140	9
HFL 7/12,5 Cu	170	180	90	80	140	9
HFL 7/15 Cu	170	180	90	80	140	9
HFL 7/20 Cu	220	240	100	90	200	9
HFL 7/25 Cu	220	240	100	90	200	9
HFL 7/30 Cu	220	240	100	90	200	9
HFL 7/40 Cu	270	300	120	100	200	9
HFL 7/50 Cu	270	300	120	100	200	9
HFL 7/100 Cu	320	360	150	125	300	9

**Copper Wire Reactors – Mechanical Dimensions**

Type	Dimensions mm					
Cu	A	B	C	D	E	$\Phi$
HFL 14/5 Cu	220	240	100	90	200	9
HFL 14/10 Cu	220	240	100	90	200	9
HFL 14/12,5 Cu	220	240	100	90	200	9
HFL 14/15 Cu	220	240	100	90	200	9
HFL 14/20 Cu	220	240	110	100	200	9
HFL 14/25 Cu	220	240	110	100	200	9
HFL 14/30 Cu	270	300	120	100	200	9
HFL 14/40 Cu	270	300	130	110	200	9
HFL 14/50 Cu	270	300	130	110	200	9

**Aluminum Wire Reactors – Mechanical Dimensions**

Type	Dimensions mm					
Al	A	B	C	D	E	$\Phi$
HFL 7/20 Al	220	240	100	90	200	9
HFL 7/25 Al	220	240	110	100	200	9
HFL 7/30 Al	270	300	120	100	200	9
HFL 7/40 Al	270	300	120	100	200	9
HFL 7/50 Al	270	300	120	100	200	9

**Aluminum Wire Reactors – Mechanical Dimensions**

Type	Dimensions mm					
Al	A	B	C	D	E	$\Phi$
HFL 14/20 Al	270	300	120	100	200	9
HFL 14/25 Al	270	300	120	100	200	9
HFL 14/30 Al	320	360	160	135	300	9
HFL 14/40 Al	320	360	160	135	300	9
HFL 14/50 Al	320	360	160	135	300	9