ELR™ LINE REACTORS

– Line reactors reduce the harmonic currents and current peaks generated and fed back into the mains by converters. Further, they limit the mains current to about 110% of the converter output current. This way, they allow for more economical layout of mains-side components such as fuses, motor protection relays, contactors, and cables.

Another advantage of line reactors is the damping of mains glitches, protecting both motors and converters. Line reactors are required to protect against transient pulses in accordance with DIN 0160. The rate of current rise during switching operations and the ripple current in the current converter are smoothened as well.

In addition to the above, a line reactor does also filter converter-generated voltage interference with frequencies of up to 10kHz. For complete radio interference elimination in compliance with EN 55011, however, it will not be sufficient to use line reactors alone.

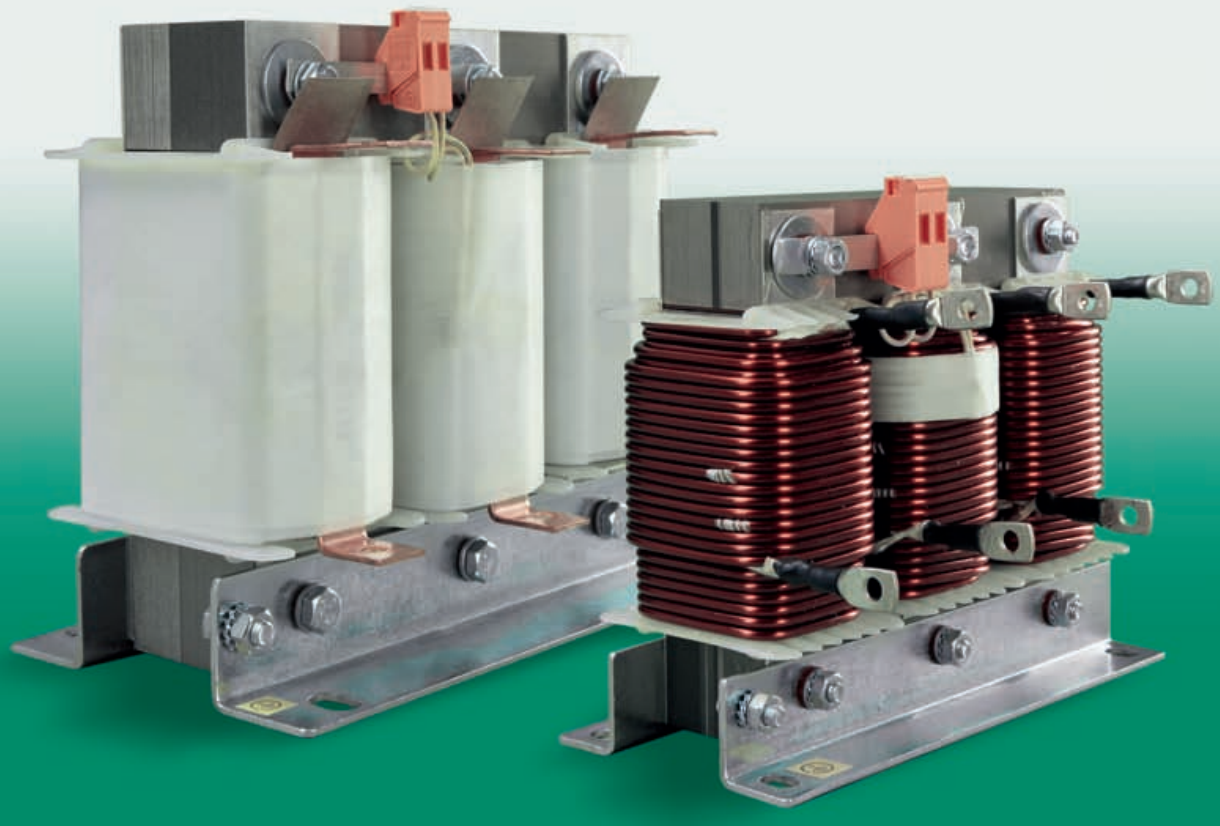
System perturbations are generally limited by the mains inductances. If these inductances are not sufficient by themselves, then the frequency converter must be connected to the mains through a line reactor increasing the overall mains inductance. As a rule, the mains inductance is considered sufficient if the short circuit power (SCP) of the mains rates 20 to 40 times the converter's nominal power output. This case, however, is very rare.

In mains with higher short-circuit capacity it is very common to install line reactors with 2% short circuit voltage (SCP ≦ 500 × power output of the converter), or 4% short circuit voltage (SCP > 500 × power output of the converter), whereas the short circuit voltage indicates the share of rated mains voltage at which - in the event of a short circuit in the converter - the rated current would flow through the reactor. If several converters are installed in parallel, then their total power output shall be considered. In reality, the genuine short circuit power of the converter's installation site may often be unknown. In such cases, we recommend the installation of 4% line reactors.

The design of power installations has to be in accordance with DIN VDE 0160 in Germany, EN 60555 in Europe, and IEEE 519 in Canada and the USA.

ELECTRONICON's filter reactors are made of high-class transformer sheets and copper wire or aluminium band. They are dried and impregnated in a vacuum with environmentally friendly, low-styrole resin which ensures they can withstand high voltages, have low noise levels, and offer a long operating life. The reactors are provided with terminal lugs as standard, but can also be supplied with terminal blocks or cables on request. The connection of the aluminium reactors is made through copper terminals as well, which are reliably connected with the aluminium band by a special, well-proven welding method.

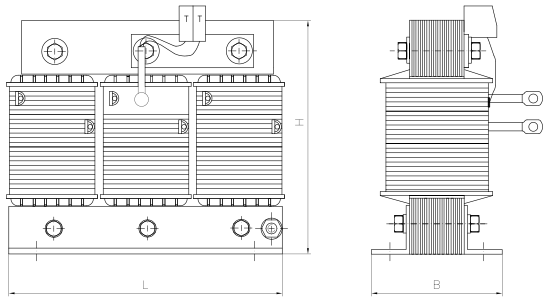
An integrated thermal switch (reversible) allows for external monitoring and/or disconnection of the reactor in the event of impermissible buildup of heat. Our design principles, as well as specially selected materials focus on minimized power losses and maximum durability of our reactors, optimizing the total lifecycle cost of our products.



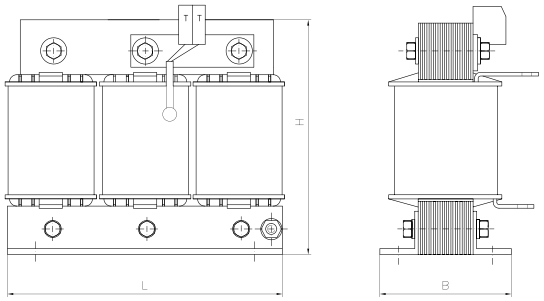
ELECTRONICON®
always in charge

DESIGN DRAWINGS

Terminal type 2 (Copper windings)



Terminal type 2 (Aluminium windings)



TECHNICAL DATA

Standards	EN 61558-2-20:2000, VDE 0570-2
tolerance of inductance (mean value across three phases)	±3%
linearity	I_{lin} = 1.4 × I_N
insulation (winding-to-core)	3 kV
insulation class	B
protection class	IP00 indoor mounting
temperature class	T40
humidity	95%
cooling	natural cooling
altitude abv.s.l.	4000m
design	3 phase, iron core multiple air gap
winding material	Copper/Aluminium
impregnation	Polyester resin, class F

I_N (A/phase)	type designation	L_N (mH/phase)	W_N (Ws)	winding	terminal type	optional terminals	weight (kg)	L × W × H (mm)	order code
2% U_K	**U_N 400V 50Hz 3phase**								
55	ELR 55/400/50/2/Cu	0.267	0.4	Cu	2	1. 3	5.5	155 × 92 × 140	40N.074-271055/001
80	ELR 80/400/50/2/Cu	0.184	0.59	Cu	2	1. 3	8	190 × 92 × 165	40N.094-181080/001
120	ELR 120/400/50/2/Cu	0.123	0.88	Cu	2	1. 3	11.9	190 × 126 × 165	40N.097-121120/001
160	ELR 160/400/50/2/Cu	0.0919	1.18	Alu	2	3	13.7	240 × 131 × 215	40N.125+920160/001
200	ELR 200/400/50/2/Cu	0.0735	1.47	Alu	2	3	18.6	240 × 155 × 215	40N.327+740200/001
250	ELR 250/400/50/2/Cu	0.0588	1.84	Alu	2	3	25	300 × 165 × 265	40N.156+590250/001
300	ELR 300/400/50/2/Cu	0.049	2.21	Alu	2	3	39	300 × 203 × 265	40N.160+490300/001
4% U_K	**U_N 400V 50Hz 3phase**								
30	ELR 30/400/50/4/Cu	0.98	0.44	Cu	2	1.3	5.5	155 × 92 × 140	40N.074-981030/001
55	ELR 55/400/50/4/Cu	0.535	0.81	Cu	2	1.3	9.4	190 × 92 × 165	40N.094-541055/001
80	ELR 80/400/50/4/Cu	0.368	1.18	Cu	2	1.3	12.9	190 × 126 × 165	40N.097-371080/001
100	ELR 100/400/50/4/Cu	0.294	1.47	Alu	2	3	14.7	240 × 131 × 215	40N.125+291100/001
160	ELR 160/400/50/4/Cu	0.184	2.35	Alu	2	3	21	240 × 155 × 215	40N.327+181160/001
200	ELR 200/400/50/4/Cu	0.147	2.94	Alu	2	3	27.9	300 × 165 × 265	40N.156+151200/001
250	ELR 250/400/50/4/Cu	0.118	3.68	Alu	2	3	40.4	300 × 203 × 265	40N.160+121250/001
300	ELR 300/400/50/4/Cu	0.098	4.41	Alu	2	3	63.3	420 × 188 × 370	40N.218+980300/001

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