

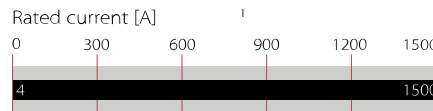
# 3-phase Line Reactor for Motor Drive & Power Quality Applications



- Provision of 4% impedance
- Reduction of mains harmonics
- Reduction of commutation notches
- Protection of motor drive electronics
- Limitation of inrush currents
- Improvement of true power factor



### Performance indicators



### Approvals



UL 508C up to 400 A. For use with AC or DC drives (power conversion equipment) only

### Features and benefits

- Ensure reliability, performance and a long service life of electrical consumers
- Reduction of mains harmonics and commutation notches
- Help to meet international power quality standards such as IEEE-519 or EN 61000-3-2
- Protection of motor drive electronics and dc link capacitors against mains transients
- Reduction of inrush and peak currents
- Reduction of conducted LF emission
- Improvement of conducted LF immunity
- Prevention from nuisance tripping caused by power line voltage spikes
- Improvement of true power factor

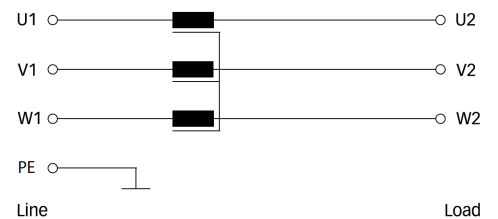
### Technical specifications

<b>Maximum continuous operating voltage</b>	3 x 500/288 VAC
<b>Design corresponding to</b>	EN 61558-2-20 (VDE 0570-2-20), UL 508C, CSA C22.2 NO.14
<b>Impedance</b>	4% @ 400 VAC, 50 Hz & rated current
<b>Typical harmonics reduction</b>	See table on next page
<b>High potential test voltage</b>	P -> E 3000 VAC for 3 sec P -> P 3000 VAC for 3 sec
<b>Insulation class</b>	T40/N (200°C) for ≤400 A types T40/F (155°C) for ≥500 A types T40/H (180°C) for 1500 A types
<b>Protection category</b>	IP 00 (KL types according to VBG 4)
<b>Rated currents</b>	4 to 1500 A @ 40°C
<b>Overload capability</b>	2 x rated current at switch on for 30 seconds 1.5 x rated current for 1 minute, once per hour
<b>Flammability corresponding to</b>	UL 94 V-2 or better
<b>Temperature range (operation and storage)</b>	-25°C to +100°C (25/100/21)
<b>MTBF @ 40°C/400 V (Mil-HB-217F)</b>	>500,000 hours

### Typical applications

- Motor drives and various adjustable speed drive systems, such as:
- Elevators
- Robots
- Machinery
- Process automation equipment

### Typical electrical schematic



## Reactor selection table

Reactor	Rated current @ 40°C [A]	Typical drive power rating* [kW]	Nominal inductance [mH]	Typical power loss** [W]	Input/Output connections		Weight Total [kg]	Earthing bolt
RWK 212-4-KL	4	1.5	7.3	23	KL		2.1	AMP 6,3 x 0,8
RWK 212-7-KL	7	3	4.2	36	KL		2.5	M4
RWK 212-11-KL	11	4	2.6	37	KL		2.5	M4
RWK 212-16-KL	16	7.5	1.8	59	KL		3.9	M5
RWK 212-21-KL	21	11	1.4	66	KL		5.4	M5
RWK 212-29-KL	29	15	1	69	KL		5.4	M5
RWK 212-35-KL	35	18.5	0.84	70	KL		5.9	M5
RWK 212-46-KL	46	22	0.64	99	KL		11	M6
RWK 212-60-KL	60	30	0.49	138	KL		15	M6
RWK 212-75-KL	75	37	0.39	133	KL		15	M6
RWK 212-95-KL	95	45	0.3	166	KL		22	M8
RWK 212-124-KS	124	55	0.23	172		KS	25	M8
RWK 212-156-KS	156	75	0.19	249		KS	25	M8
RWK 212-182-KS	182	90	0.16	245		KS	32	M10
RWK 212-230-KS	230	110/132	0.13	301		KS	35	M10
RWK 212-280-KS	280	160	0.1	335		KS	41	M10
RWK 212-330-KS	330	160	0.09	386		KS	56	M10
RWK 212-400-S	400	200	0.073	692		S	57	M10
RWK 212-500-S	500	250	0.058	761		S	67	M10
RWK 212-600-S	600	315	0.049	825		S	76	M10
RWK 212-680-S	680	355	0.043	876		S	80	M10
RWK 212-790-S	790	400	0.037	956		S	90	M10
RWK 212-910-S	910	450	0.032	1022		S	107	M10
RWK 212-1100-S	1100	630	0.026	1036		S	135	M10
RWK 212-1310-S	1310	725	0.023	1050		S	100	M10
RWK 212-1500-S	1500	830	0.020	1000		S	225	M10

Customized line reactors with different electrical and mechanical specifications are available on request.

\* Calculated at rated current, 400 VAC and  $\cos \phi=0.8$ . The exact value depends upon the efficiency of the drive, the motor and the entire application.

\*\* Power loss at 25°C/50 Hz, considering a typical harmonic spectrum of a motor drive with B6U rectifier bridge.

## Harmonics reduction

Line reactors are a cost-effective way for the limitation of mains harmonics. The harmonics reduction capability is related to the reactor impedance. A higher impedance translates directly into lower harmonic currents, but of course also into a larger component with a higher voltage drop – and vice versa.

4% impedance reactors like RWK 212 provide an excellent cost/benefit ratio and are particularly beneficiary in the most diverse motor drive applications.

The table below shows various reactor impedance values and their calculated effect in terms of harmonics reduction.

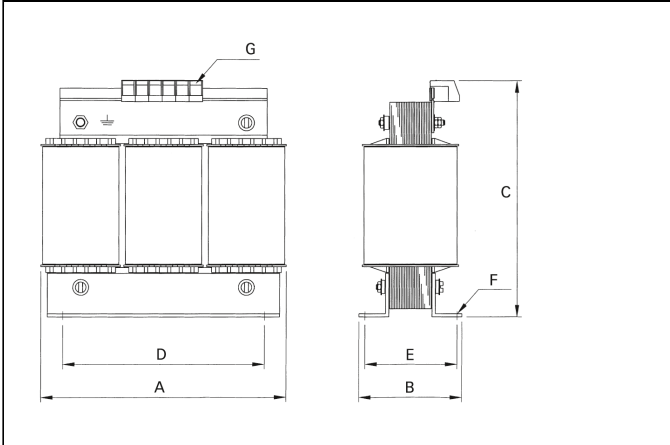
## Harmonic number/Input impedance (uk) vs. remaining harmonics [%]

	0.5%	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
5th	80	60	46	40	34	32	30	28	26	24	23
7th	60	37	22	16	13	12	11	10	9	8.3	7.5
11th	18	12	9	7.3	6.3	5.8	5.2	5	4.3	4.2	4
13th	10	7.5	5.8	4.9	4.2	3.9	3.6	3.3	3.15	3	2.8
17th	7.3	5.2	3.6	3	2.4	2.2	2.1	0.9	0.7	0.5	0.4
19th	6	4.2	2.8	2.2	2	0.8	0.7	0.4	0.3	0.25	0.2
%THID	102.5	72.2	52.3	44.13	37.31	34.96	32.65	30.35	28.04	25.92	24.68

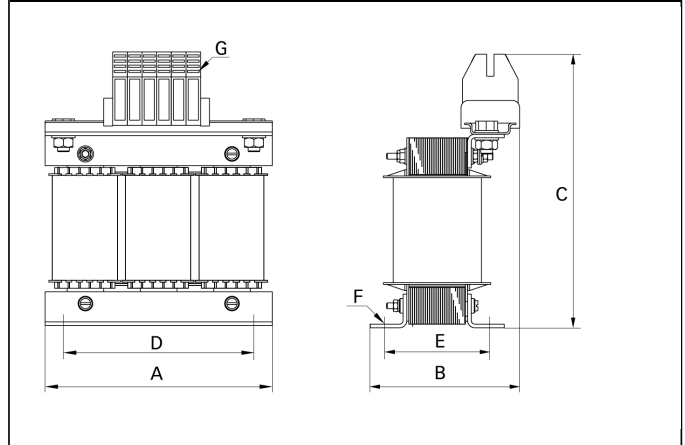
Reading example: a 4% impedance reactor typically reduces the THID to ~37% of the fundamental.

**Mechanical data**

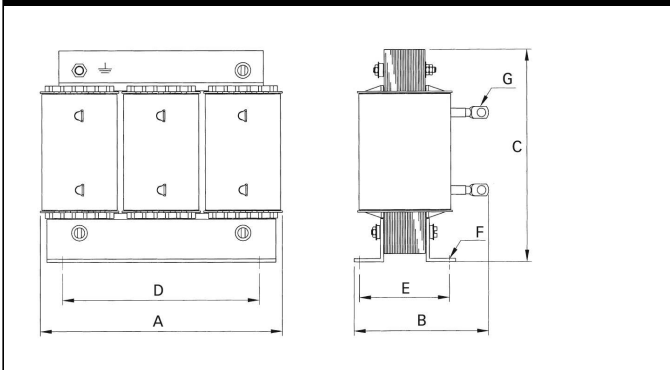
4 to 46 A types



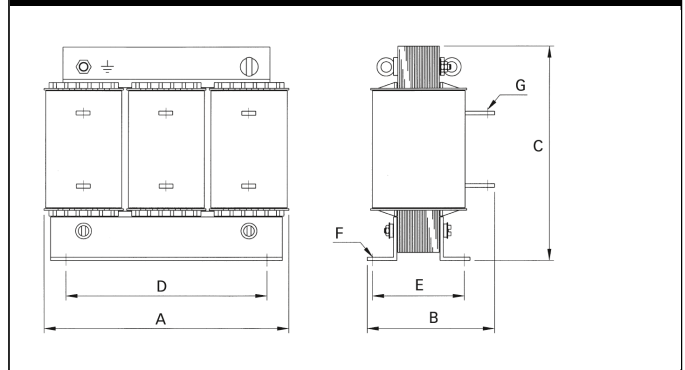
60 to 95 A types



124 to 330 A types



400 to 1500 A types



## Dimensions

	A	B	C	D	E	F	G
<b>4 A</b>	100	max. 70	max. 115	56	43	4.8 x 9	2.5 mm <sup>2</sup>
<b>7 and 11 A</b>	125	max. 80	max. 130	100	55	5 x 8	2.5 mm <sup>2</sup>
<b>16 A</b>	155	max. 80	max. 155	130	56.5	8 x 12	4 mm <sup>2</sup>
<b>21 A</b>	155	max. 95	max. 155	130	70.5	8 x 12	4 mm <sup>2</sup>
<b>29 A</b>	155	max. 95	max. 155	130	71.5	8 x 12	4 mm <sup>2</sup>
<b>35 A</b>	155	max. 105	max. 170	130	70	8 x 12	10 mm <sup>2</sup>
<b>46 A</b>	190	max. 120	max. 195	170	77.5	8 x 12	10 mm <sup>2</sup>
<b>60 A</b>	210	max. 155	max. 240	175	97	8 x 12	16 mm <sup>2</sup>
<b>75 A</b>	210	max. 160	max. 249	175	97	8 x 12	35 mm <sup>2</sup>
<b>95 A</b>	230	max. 185	max. 275	180	122	8 x 12	35 mm <sup>2</sup>
<b>124 and 156 A</b>	240	max. 210	max. 210	190	129	11 x 15	Ø10
<b>182 A</b>	265	max. 210	max. 230	215	114	11 x 15	Ø10
<b>230 A</b>	300	210	270	240	131	11 x 15	Ø12
<b>280 A</b>	300	218	270	240	139	11 x 15	Ø12
<b>330 A</b>	300	255	270	240	166	11 x 15	Ø12
<b>400 A</b>	420	205	390	370	133	11 x 15	Ø11
<b>500 A</b>	420	215	390	370	140	11 x 15	Ø14
<b>600 A</b>	420	225	390	370	149	11 x 15	Ø14
<b>680 A</b>	420	225	390	370	150	11 x 15	Ø14
<b>790 A</b>	420	240	390	370	162	11 x 15	Ø18
<b>910 A</b>	420	255	390	370	177	11 x 15	2 x Ø11
<b>1100 A</b>	420	290	390	370	200	11 x 15	2 x Ø11
<b>1310 A</b>	420	255	490	370	172	11 x 15	2 x Ø14
<b>1500 A</b>	551	400	613	490	266	13 x 18	4 x Ø13

All dimensions in mm; 1 inch = 25.4 mm  
Tolerances according: ISO 2768-m/EN 22768-m

Please visit [www.schaffner.com](http://www.schaffner.com) to find more details on filter connectors.



## Headquarters, global innovation and development

### Switzerland

#### Schaffner Group

Nordstrasse 11  
4542 Luterbach  
T +41 32 681 66 26  
[info@schaffner.com](mailto:info@schaffner.com)  
[www.schaffner.com](http://www.schaffner.com)



## Sales and application centers

### China

#### Schaffner EMC Ltd. Shanghai

T20-3 C, No 565 Chuangye Road,  
Pudong district  
201201 Shanghai  
T +86 21 3813 9500  
[cschina@schaffner.com](mailto:cschina@schaffner.com)  
[www.schaffner.com.cn](http://www.schaffner.com.cn)

### Finland

#### Schaffner Oy

Sauvonrinne 19 H  
08500 Lohja  
T +358 50 468 7284  
[finlandsales@schaffner.com](mailto:finlandsales@schaffner.com)

### France

#### Schaffner EMC S.A.S.

16-20 Rue Louis Rameau  
95875 Bezons  
T +33 1 34 34 30 60  
F +33 1 39 47 02 28  
[francesales@schaffner.com](mailto:francesales@schaffner.com)

### Germany

#### Schaffner Deutschland GmbH

Schoemperlenstrasse 12B  
76185 Karlsruhe  
T +49 721 56910  
F +49 721 569110  
[germanysales@schaffner.com](mailto:germanysales@schaffner.com)

### India

#### Schaffner India Pvt. Ltd

REGUS WORLD TRADE CENTRE  
WTC, 22nd Floor Unit No 2238, Brigade  
Gateway Campus, 26/1, Dr. Rajkumar Road  
Malleswaram (W)  
560055 Bangalore  
T +91 80 67935355  
[indiasales@schaffner.com](mailto:indiasales@schaffner.com)

### Italy

#### Schaffner EMC S.r.l.

Via Ticino, 30  
20900 Monza (MB)  
T +39 039 21 41 070  
[italysales@schaffner.com](mailto:italysales@schaffner.com)

### Japan

#### Schaffner EMC K.K.

1-32-12, Kamiyama, Setagaya-ku  
7F Mitsui-seimei Sangenjaya Bldg.  
154-0011 Tokyo  
T +81 3 5712 3650  
F +81 3 5712 3651  
[japansales@schaffner.com](mailto:japansales@schaffner.com)  
[www.schaffner.jp](http://www.schaffner.jp)

### Singapore

#### Schaffner EMC Pte Ltd.

#05-09, Kg Ubi Ind. Estate  
408705 Singapore  
T +65 6377 3283  
F +65 6377 3281  
[singaporesales@schaffner.com](mailto:singaporesales@schaffner.com)

### Spain

#### Schaffner EMC España

Calle Caléndula 93, Miniparc III, Edificio E  
El Soto de Moraleja, Alcobendas  
28109 Madrid  
T +34 917 912 900  
F +34 917 912 901  
[spainsales@schaffner.com](mailto:spainsales@schaffner.com)

### Sweden

#### Schaffner EMC AB

Tegeluddsvägen 76, 2tr  
115 28 Stockholm  
T +46 8 5050 2425  
[swedensales@schaffner.com](mailto:swedensales@schaffner.com)  
[www.schaffner.com](http://www.schaffner.com)

### Switzerland

#### Schaffner EMV AG

Nordstrasse 11  
4542 Luterbach  
T +41 32 681 66 26  
[switzerlandsales@schaffner.com](mailto:switzerlandsales@schaffner.com)

### Taiwan R.O.C.

#### Schaffner EMV Ltd.

20 Floor-2, No 97, Section 1, XinTai 5th Road  
22175 XiZhi District New Taipei City 22175  
T +886 2 2697 5500  
F +886 2 2697 5533  
[taiwansales@schaffner.com](mailto:taiwansales@schaffner.com)  
[www.schaffner.com.tw](http://www.schaffner.com.tw)

### Thailand

#### Schaffner EMC Co. Ltd.

Northern Region Industrial Estate  
67 Moo 4 Tambon Ban Klang  
Amphur Muangng P.O. Box 14  
51000 Lamphun  
T +66 53 58 11 04  
F +66 53 58 10 19  
[thailandsales@schaffner.com](mailto:thailandsales@schaffner.com)

### United Kingdom

#### Schaffner Ltd.

5 Ashville Way, Molly Millars Lane  
Wokingham  
RG41 2PL Berkshire  
T +44 118 9770070  
F +44 118 9792969  
[uksales@schaffner.com](mailto:uksales@schaffner.com)

### USA

#### Schaffner EMC Inc.

52 Mayfield Avenue  
08837 Edison, New Jersey  
T +1 800 367 5566  
T +1 732 225 9533  
F +1 732 225 4789  
[usasales@schaffner.com](mailto:usasales@schaffner.com)  
[www.schaffnerusa.com](http://www.schaffnerusa.com)

#### Schaffner North America

6722 Thirlane Road  
24019 Roanoke, Virginia  
T +1 276 228 7943  
F +1 276 228 7953

#### Schaffner North America

823 Fairview Road  
24382 Wytheville, Virginia  
T +1 276 228 7943  
F +1 276 228 7258

To find your local partner within Schaffner's global network: [www.schaffner.com](http://www.schaffner.com)

© 2018 Schaffner Group

The content of this document has been carefully checked and understood. However, neither Schaffner nor its subsidiaries assume any liability whatsoever for any errors or inaccuracies of this document and the consequences thereof. Published specifications are subject to change without notice. Product suitability for any area of application must ultimately be determined by the customer. In all cases, products must never be operated outside their published specifications. Schaffner does not guarantee the availability of all published products. This disclaimer shall be governed by substantive Swiss law and resulting disputes shall be settled by the courts at the place of business of Schaffner Holding AG. Latest publications and a complete disclaimer can be downloaded from the Schaffner website. All trademarks recognized.



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.