

# Three-phase dv/dt Reactor for Efficient Motor Protection



- Reduction of drive output voltage dv/dt
- Reduction of motor temperature
- Increase of motor service life
- Compact and economic open frame design
- Standard catalog reactors up to 1100 A
- UL rated materials used



### Performance indicators



### Approvals



UL 508C up to 182 A. For use with AC or DC drives (power conversion equipment) only

### Features and benefits

- Efficient reduction of high output voltage dv/dt from IGBT motor drives
- Protection of motor coil insulation from premature aging and destruction
- Significantly increased service life of electric motors
- High reliability and secured production up time for mission critical applications
- Reduced converter pulse load
- Less interference propagation towards neighboring equipment of lines
- „Output filter“ with low impedance, ideal for processes requiring exceptional precision and reproducibility of movements
- Vacuum impregnation for reduced humming noise and high durability

### Technical specifications

<b>Maximum continuous operating voltage</b>	3 x 500/288 VAC
<b>Motor frequency</b>	60 Hz
<b>Switching frequency</b>	2 to 16 kHz
<b>Rated currents</b>	4 to 1100 A @ 40°C
<b>Motor cable length</b>	30 m max. @ 16 kHz (derating curve next page)
<b>Impedance (uk)</b>	0.8% @ 400 VAC, 50 Hz & rated current
<b>Typical dv/dt reduction</b>	≥factor 5
<b>High potential test voltage</b>	P → E 3000 VAC for 3 sec P → P 3000 VAC for 3 sec
<b>Protection category</b>	IP 00 (KL types according to VBG 4)
<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>Temperature range (operation and storage)</b>	-25°C to +100°C (25/100/21)
<b>Insulation class</b>	T40/N (200°C) for ≤182 A types T40/F (155°C) for ≥230 A types
<b>Flammability corresponding to</b>	UL 94 V-2 or better
<b>Design corresponding to</b>	EN 61558-2-20 (VDE 0570-2-20), UL 508C, CSA C22.2 NO. 14
<b>MTBF @ 40°C/400 V (Mil-HB-217F)</b>	>500,000 hours

### Typical applications

- Servo drives
- Close loop vector drives
- Motor drive applications with short motor cables
- Machinery comprising servo or torque motors
- Robots
- Pick and place machines

### Typical electrical schematic



### Reactor selection table

Reactor	Rated current @ 40°C	Typical motor power rating*	Nominal inductance	Typical power loss**	Input/Output connections			Weight Total
	[A]	[kW]	[mH]	[W]				[kg]
RWK 305-4-KL	4	1.5	1.47	22	KL			1.2
RWK 305-7.8-KL	7.8	3	0.754	25	KL			1.2
RWK 305-10-KL	10	4	0.588	30	KL			1.8
RWK 305-14-KL	14	5.5	0.42	34	KL			2.2
RWK 305-17-KL	17	7.5	0.346	38	KL			2.5
RWK 305-24-KL	24	11	0.245	45	KL			2.5
RWK 305-32-KL	32	15	0.184	55	KL			3.9
RWK 305-45-KL	45	22	0.131	60	KL			6.1
RWK 305-60-KL	60	30	0.098	65	KL			6.1
RWK 305-72-KL	72	37	0.082	70	KL			6.1
RWK 305-90-KL	90	45	0.065	75	KL			7.4
RWK 305-110-KL	110	55	0.053	90	KL			8.2
RWK 305-124-KS	124	55	0.047	110		KS		8.2
RWK 305-143-KS	143	75	0.041	115		KS		10.7
RWK 305-156-KS	156	75	0.038	120		KS		10.7
RWK 305-170-KS	170	90	0.035	130		KS		10.7
RWK 305-182-KS	182	90	0.032	140		KS		16
RWK 305-230-KS	230	132	0.026	180		KS		22
RWK 305-280-KS	280	160	0.021	220		KS		29
RWK 305-330-KS	330	160	0.018	240		KS		32
RWK 305-400-S	400	200	0.015	330			S	34
RWK 305-500-S	500	250	0.012	340			S	35
RWK 305-600-S	600	355	0.01	380			S	37
RWK 305-680-S	680	400	0.009	410			S	38
RWK 305-790-S	790	450	0.007	590			S	43
RWK 305-910-S	910	500	0.006	740			S	49
RWK 305-1100-S	1100	630	0.005	760			S	66

\* General purpose four-pole (1500 r/min) AC induction motor rated 400 V/50 Hz.

\*\* Exact value depends upon the motor cable type and length, switching frequency, motor frequency and further stray parameters within the system.

### Reactor derating

The maximum admissible motor cable length depends mainly on the switching frequency and the drive output voltage. The applicable value for a given application can be found in the derating curve below.



**Mechanical data**



## Dimensions

	A	B	C	D	E	F	G
<b>4 and 7.8 A</b>	100	max. 60	max. 115	56	34	4.8 x 9	2.5 mm <sup>2</sup>
<b>10 A</b>	100	max. 70	max. 115	56	43	4.8 x 9	2.5 mm <sup>2</sup>
<b>14 A</b>	125	max. 70	max. 135	100	45	5 x 8	2.5 mm <sup>2</sup>
<b>17 A</b>	125	max. 75	max. 135	100	55	5 x 8	2.5 mm <sup>2</sup>
<b>24 A</b>	125	max. 75	max. 135	100	55	5 x 8	4 mm <sup>2</sup>
<b>32 A</b>	155	max. 95	max. 170	130	56	8 x 12	10 mm <sup>2</sup>
<b>45 A</b>	155	max. 110	max. 190	130	72	8 x 12	10 mm <sup>2</sup>
<b>60 and 72 A</b>	155	max. 125	max. 190	130	70	8 x 12	16 mm <sup>2</sup>
<b>90 A</b>	190	max. 115	max. 225	170	57	8 x 12	35 mm <sup>2</sup>
<b>110 A</b>	190	max. 130	max. 220	170	67	8 x 12	35 mm <sup>2</sup>
<b>124 A</b>	190	max. 180	max. 160	170	67	8 x 12	Ø 8
<b>143 A</b>	190	max. 180	max. 160	170	77	8 x 12	Ø 8
<b>156 AND 170 A</b>	190	max. 180	max. 160	170	77	8 x 12	Ø 10
<b>182 A</b>	210	max. 180	max. 185	175	95	8 x 12	Ø 10
<b>230 A</b>	240	220	220	190	119	11 x 15	Ø 12
<b>280 A</b>	240	235	220	190	133	11 x 15	Ø 12
<b>330 A</b>	240	240	220	190	135	11 x 15	Ø 12
<b>400 and 500 A</b>	240	220	325	190	119	11 x 15	Ø 11
<b>600 and 680 A</b>	240	230	325	190	128	11 x 15	Ø 14
<b>790 A</b>	300	218	355	240	136	11 x 15	2 x Ø 11
<b>910 A</b>	300	228	355	240	148	11 x 15	2 x Ø 11
<b>1100 A</b>	360	250	380	310	144	11 x 15	2 x Ø 11

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.



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