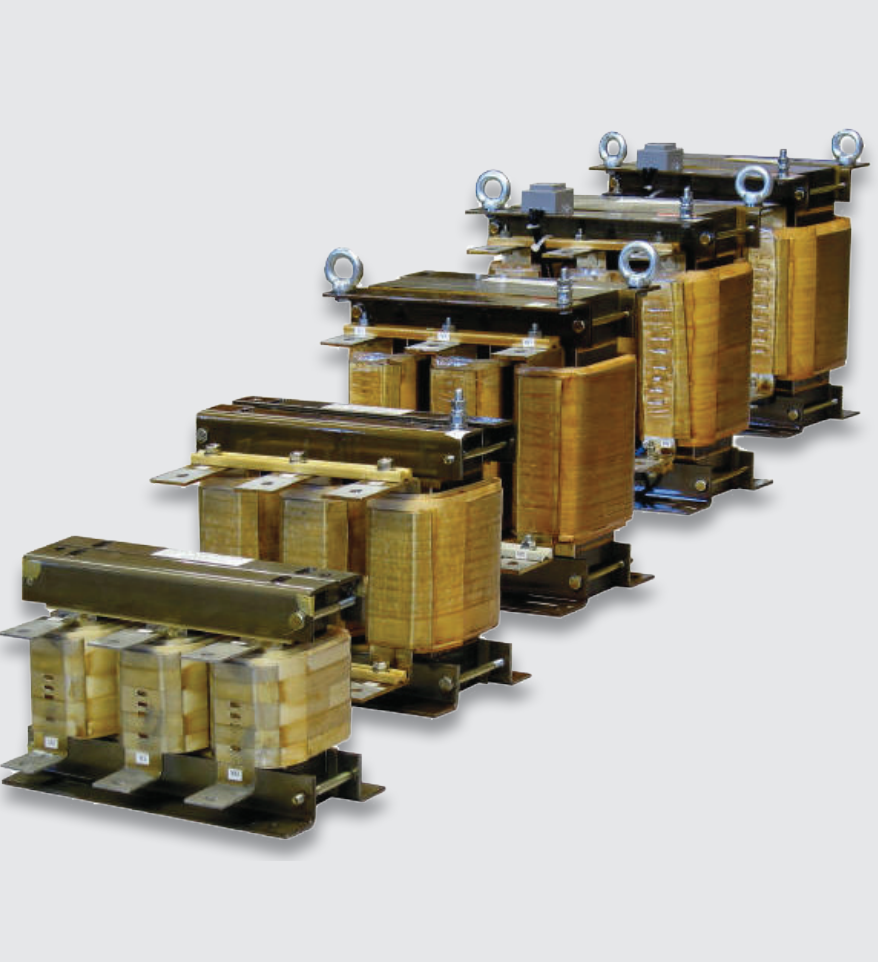
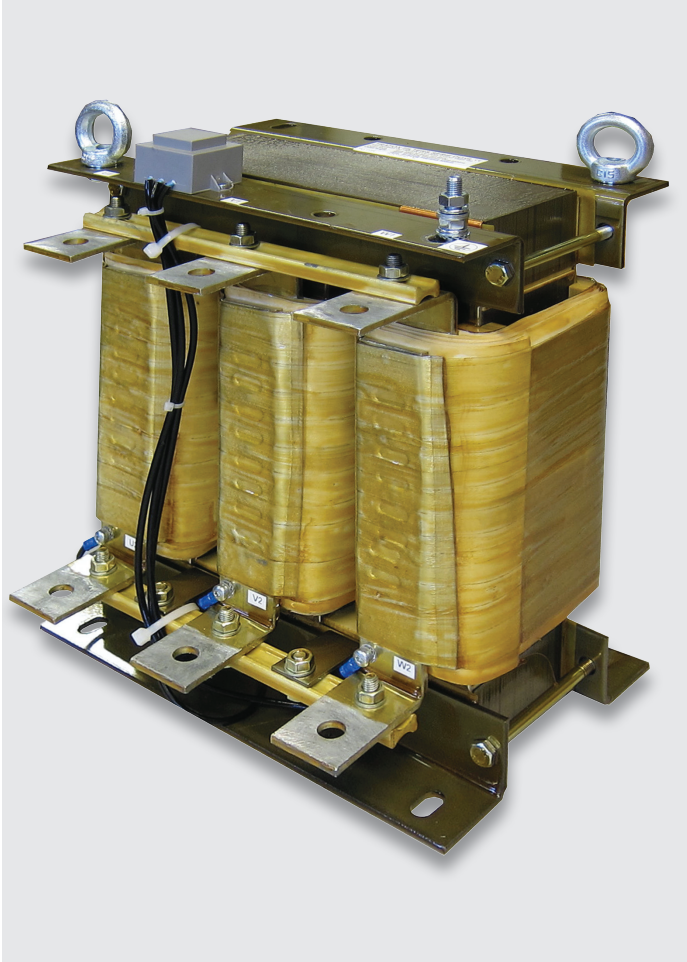
Trafox

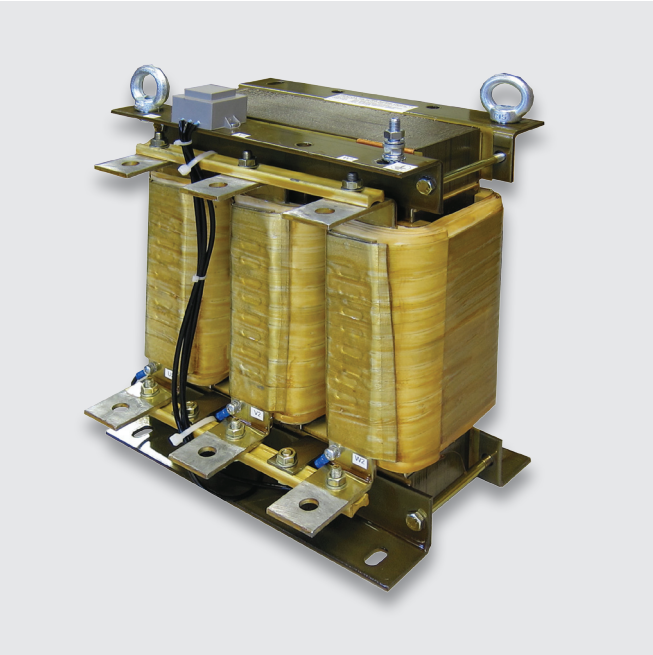




DU/dt Filters

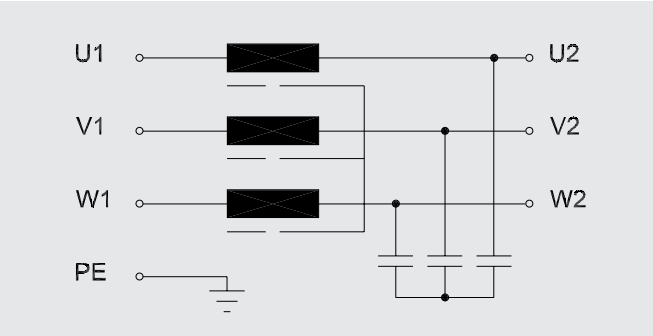
DU/dt Filters

FILTERS



- Protects the motor-reducing dU/dt value of the drive output voltage
- Reduction of motor temperature
- Increases the lifetime of the motor
- Open frame design
- UL listed materials used
- Cable length up to 300m

Schematic diagram



Choose a filter with a rated current greater than the rated current of the motor. If the working frequency of the motor is greater than 70 Hz, use the derating curve to determine the maximum current allowed for the filter.

Motor winding insulation experiences higher voltage stresses when used with a variable speed drive than when connected directly to the mains supply. The higher stresses depend on the motor cable length. The stresses are caused by the fast-rising voltage pulses of the drive and transmission line effects in the cable.

DU/dt filters reduce the insulation stress of the motors by lowering the dU/dt- value of the variable speed drive output voltage. The reduced stress increases the lifetime of the motor windings.

DU/dt filters can be used with cable lengths up to 100-300m, depending on the model.

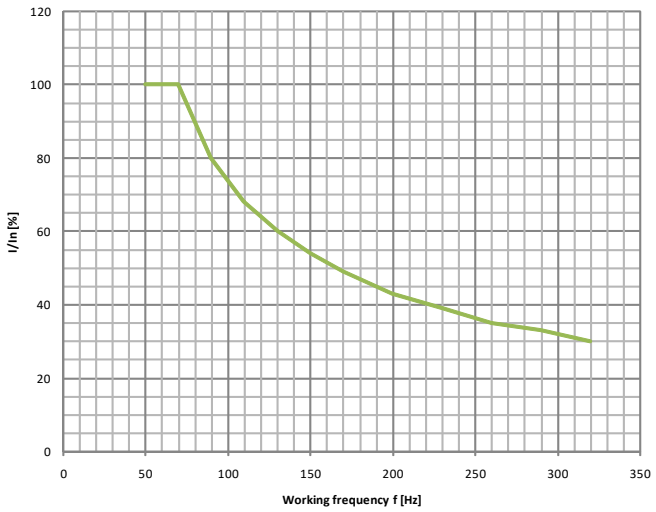
DU/dt-filters are designed for a maximum switching frequency of 4,0 kHz. The filters generate less heat with lower switching frequencies, so it is possible to use lower switching frequencies.

DU/dt- filters can also be used in retrofit applications, where the motor is not designed for use with a variable speed drive.

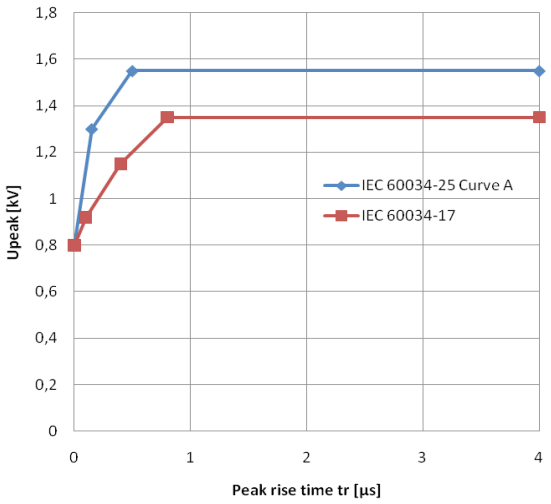
According to IEC TS 60034-17, for motors rated at voltages up to 500Vac, the insulation system should typically have a satisfactory life time when subjected to peak voltages shown in the figure.

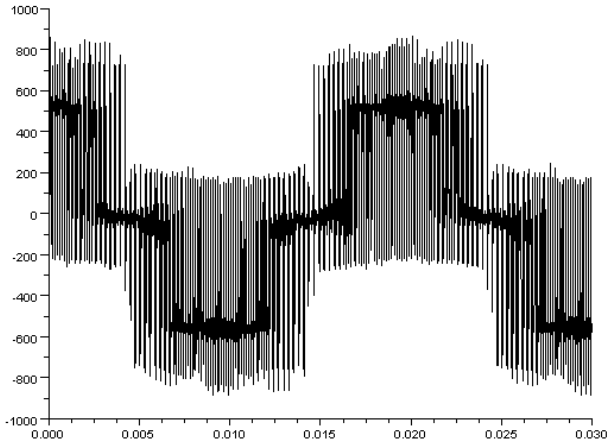
For more information about other dU/dt limits, please read Gambica / Rema technical report No. 1, third edition, Variable speed drives and motors, Motor insulation voltage stresses under PWM inverter operation.

Derating curve of dU/dt- filter

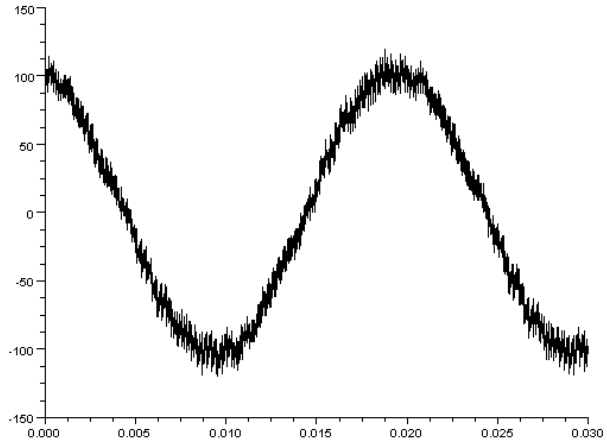


DU/dt limit curves

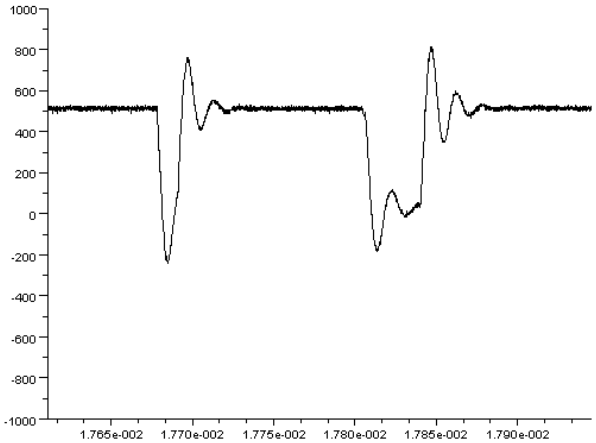




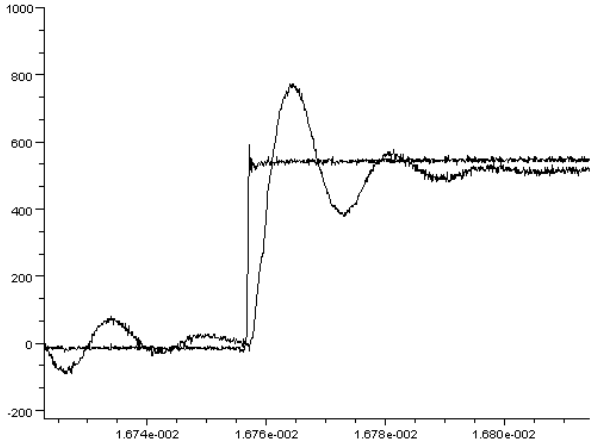
The waveform of the motor voltage without dU/dt- filter



The waveform of the motor current with dU/dt- filter



The typical voltage pulse shape in the terminals of the motor with dU/dt- filter



The typical voltage pulse of the inverter output and the voltage pulse of the motor input with dU/dt- filter.

Technical specifications

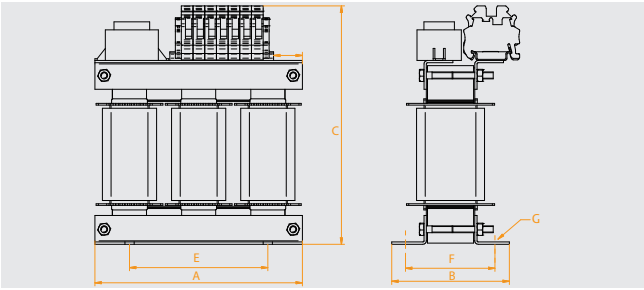
Standards	EN 61558-2-20, LVD 2006/95/EC, UL/Ur, RoHs, CE
Design	Open frame design
Operating voltage range	3x200-690 Vac ±10%
Motor frequency	0-70 Hz without derating 70-320 Hz with derating
Max switching frequency	4 kHz
Typical overshoot	50 % of DC link voltage

Voltage loss	< 5V at nominal current
Ambient temperature	- 20 ... +40 °C in operation
Storage temperature	- 20 ... +70 °C
Humidity	<95 % RH, no condensation
Overload capacity	1,5 rated current for 1min, once per 60min
Insulation temp. class	H 180 °C
Protection class	IP00

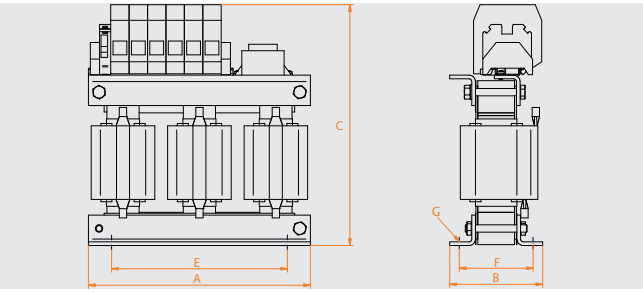
Rated current [A]	Inductance [uH]	Typical losses [W]	Max. cable length [m]	Cable type, max. cross section [mm²]
12	900	50	100	3x10+10 Cu
25	355	70	100	3x10+10 Cu
55	196	110	150	3x35+16 Cu
80	135	130	150	3x35+16 Cu
130	83,1	180	200	3x95+70 Cu
210	51,4	260	250	3x150+70 Cu
280	38,6	350	250	2x 3x120+70 Cu
350	30,9	480	300	2x 3x185 Al+57 Cu
420	25,7	510	300	2x 3x240 Al+72 Cu
600	18,0	690	300	4x 3x120 Al+41 Cu
820	13,2	950	300	4x 3x185mm² Al+57 Cu
1250	8,6	1080	300	6x 3x240mm² Al+72 Cu
1500	7,2	1329	300	6x 3x240mm² Al+72 Cu
2 x 1250	4,3	2210	300	6x 3x240mm² Al+72 Cu
2 x 1500	3,6	2708	300	6x 3x240mm² Al+72 Cu
Water cooled				
1250	8,6	1240	300	2x 6x 3x240mm² Al+72 Cu
1500	7,2	1440	300	2x 6x 3x240mm² Al+72 Cu

Note! The maximum cable length is limited. When the cable length is over the maximum value the filter will overheat. If the cable length is not sufficient use a filter one size larger.

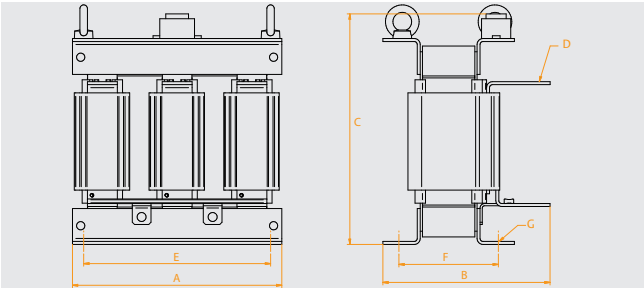
Mechanical data 12A - 25A



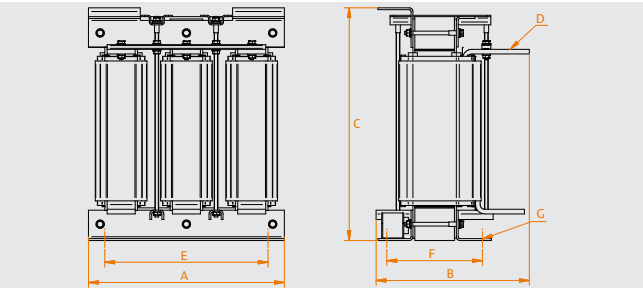
Mechanical data 55A - 80A



Mechanical data 130A - 600A



Mechanical data 820A - 1500A



Rated current [A]	A [mm]	B [mm]	C [mm]	D [mm²]	E [mm]	F [mm]	G [mm]	Weight [kg]	Cu / Al weight [kg]
Order code									
DUDT12	120	80	155	-	78	63		2,50	Cu 0,26
DUDT25	180	102	210	-	120	80		9,00	Al 0,28
DUDT55	205	98	215	-	156	78		9,00	Al 0,88
DUDT80	241	101	265	-	170	80		13,50	Al 1,60
DUDT130	240	131	250	Busbar 7x11	190	102	11x18	17,50	Al 2,19
DUDT210	240	153	254	Busbar Ø11	190	123	11x18	27,00	Al 3,13
DUDT280	300	225	300	Busbar Ø14	250	130	11x20	38,00	Al 3,29
DUDT350	300	236	358	Busbar Ø14	250	145	11x20	46,00	Al 5,60
DUDT420	300	230	350	Busbar 14x24	250	143	11x20	55,00	Al 6,29
DUDT600	300	243	450	Busbar Ø14	250	158	11x20	64,00	Al 12,29
DUDT820	300	260	500	Busbar 2xØ14	250	156	11x20	80,00	Al 12,81
DUDT1250	420	315	500	Busbar 2xØ14	350	205	11x20	106,00	Al 10,39
DUDT1500	420	433	621	Busbar 4xØ14	144	393	13x18	166,00	Al 17,30
DUDT2x1250	886	377	556	Busbar 4xØ14	153	377	13x18	279,00	Al 20,78
DUDT2x1500	904	433	670	Busbar 4xØ14	143	393	13x18	347,00	Al 34,60
Water cooled									
DUDT1250W	390	370	546	Busbar 4xØ14	108	330	13x18	85,00	Al 17,12
DUDT1500W	390	375	573	Busbar 4xØ14	108	335	13x18	105,00	Al 18,39

Muuntosähkö

Trafox is a brand of Muuntosähkö Oy. We develop, manufacture and customise high-quality transformers, chokes, filters and Trafox Superintend® monitoring devices for a large number of applications.

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