



DATASHEET

Three Phase Sine Wave Filter-TPQS3113

These filters are designed to reduce or eliminate undesirable harmonic distortions, which can adversely affect equipment performance, efficiency, and lifespan. Harmonics in the electrical grid typically arise from non-linear loads such as variable speed drives, computers, and power converters, which introduce distortions in the supply voltage and current waveforms

Technical Specifications:

Nominal Operating Voltage	:3x480 VAC
Maximum Continuous Operating Voltage	: 3x530 VAC
Motor Frequency	: 0-60Hz (up to 200Hz with derating)
Switching Frequency fPWM	: Min.2 or 4kHz, Max.16kHz
Impedance	: 6% @ 400VAC, 50Hz and rated Current
Residual ripple voltage	: <5%
Motor cable length	: 2000m (Max)
Pollution degree	: PD3
High potential test voltage	: P -> E : 2480 VAC, 1 Sec
Protection Category	: IP00
Overload Capability	: 1.5 x rated current for 1 minute / hr

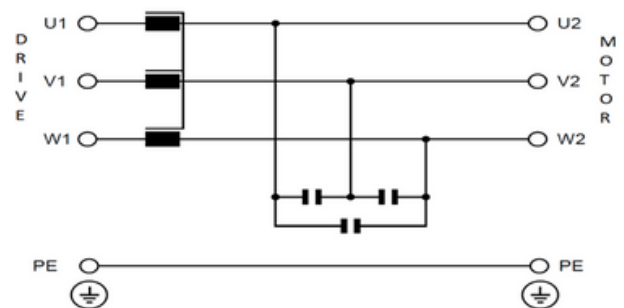
Features:

- Converts the rectangular PWM output voltage of motor drives into a smooth sine wave with low residual ripple.
- Elimination of premature motor damage caused by high DV/DT, overvoltages, cable ringing, and motor overheating.
- Improves bearing life time because of bearing currents caused by circulating currents.

Applications:

- HVAC Applications.
- Pumps,Conveyors,Compressors,Elevators&Cranes.
- Medium voltage applications, deployed in front of the step-up transformer.
- Motor drive with long motor cables.
- Motor drive with multiple motors in parallel.

Type Circuit Diagram:



Ambient temperature range	: -40°C to +45°C fully Operational
	: +45°C to +100°C (Up to 18A) or +70°C (26A & above)
	: derated operation*
	: -40°C to +70°C transport & storage

Design Corresponding to : EN 61558-2-20, EN 60076-6, UL508

Climatic Class : 45/100/21

Insulation Class : Class F

*Audible noise level at two meters for standard configuration: 90-95 dB (Approx.)

Ordering Information

Model Number	Part Number	Rated Current @ 45°C / 50Hz (A)	Typical motor drive power rating @400 V* (kW)	Typical motor drive power rating @480 V** (kW)	Nominal Inductance (mH)	Nominal Capacitance (μF)***	Min. switching frequency (kHz)	Termination	Min.Weight (Kg)
TPQS3113-2.3-2	E110371-1	2.3	0.75	0.9	19.2	3x0.47	4	Connector	3.5
TPQS3113-3.1-2	E110372-1	3.1	1.1	1.3	14.2	3x0.68	4	Connector	3.5
TPQS3113-5.9-2	E110373-1	5.9	2.2	2.6	7.48	3x1.5	4	Connector	4.7
TPQS3113-10-2	E110374-1	10.2	4	4.8	4.32	3x2.2	4	Connector	5.4
TPQS3113-13-2	E110375-1	13.2	5.5	6.6	3.34	3x4	4	Connector	5.4
TPQS3113-18-2	E110376-1	18	7.5	9	2.45	3x4	4	Connector	9.5
TPQS3113-26-6	E110377-1	26	11	13	1.7	3x6	4	Connector	10.5
TPQS3113-32-6	E110378-1	32	15	18	1.38	3x6	4	Connector	16
TPQS3113-38-6	E110379-1	38	19	22	1.16	3x8	4	Connector	16
TPQS3113-45-6	E110380-1	45	22	26	0.98	3x8	4	Connector	16
TPQS3113-60-6	E110381-1	60	30	36	0.735	3x12	4	Connector	16
TPQS3113-75-3	E110382-1	75	37	44	0.588	3x15	4	Connector	36
TPQS3113-90-3	E110383-1	90	45	54	0.49	3x20	4	Connector	36
TPQS3113-110-3	E110384-1	110	55	66	0.401	3x20	4	Connector	36
TPQS3113-145-3	E110385-1	145	75	90	0.304	3x100	2	Busbar	36
TPQS3113-180-3	E110386-1	180	90	108	0.245	3x150	2	Busbar	80
TPQS3113-200-3	E110387-1	200	110	132	0.221	3x150	2	Busbar	80
TPQS3113-250-3	E110388-1	250	132	158	0.176	3x200	2	Busbar	80
TPQS3113-300-3	E110389-1	302	160	192	0.146	3x250	2	Busbar	120
TPQS3113-400-3	E110390-1	400	200	240	0.11	3x300	2	Busbar	120
TPQS3113-480-3	E110391-1	477	250	300	0.092	3x350	2	Busbar	170
TPQS3113-630-3	E110392-1	630	315	378	0.07	3x500	2	Busbar	170
TPQS3113-710-3	E110393-1	710	355	426	0.062	3x550	2	Busbar	170
TPQS3113-800-3	E110394-1	800	400	480	0.055	3x600	2	Busbar	200
TPQS3113-1000-3	E110395-1	1000	500	600	0.044	3x750	2	Busbar	335

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

** General purpose four-pole (1500 r/min) AC induction motor rated 480 V/50 Hz.

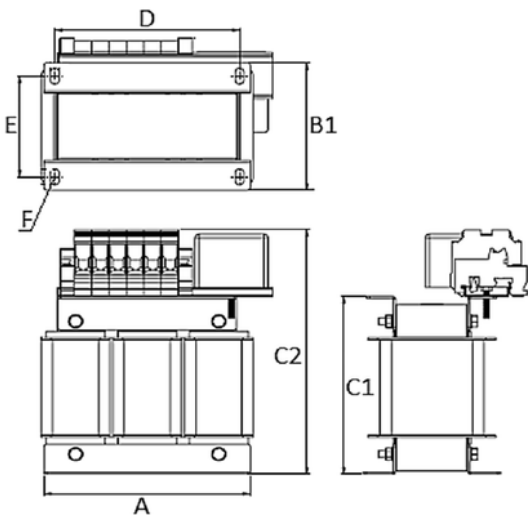
*** Total capacitance value. Capacitor connection in delta (Δ) for all versions.

Required drive settings

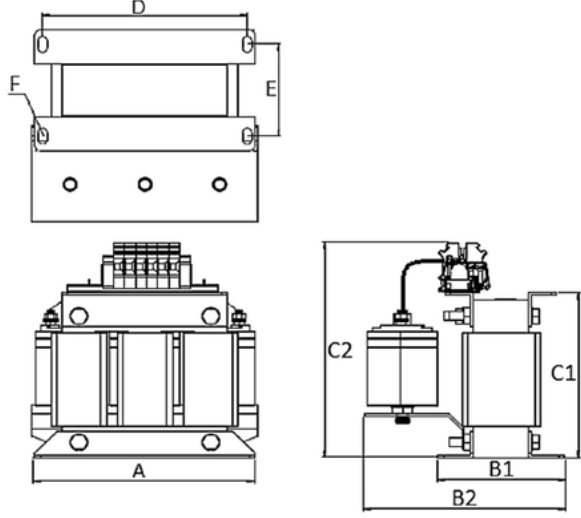
Ensure the drive's switching frequency is set to the minimum or a greater switching frequency. The mode of operation, for both motor- and regenerative load, must be "scalar" (V/Hz) with a fixed switching frequency. Check the drives manufacturer manual whether special settings are necessary. In any doubt contact the drives manufacturer.

CAUTION: If the motor drives settings are not correct the filter may be damaged.

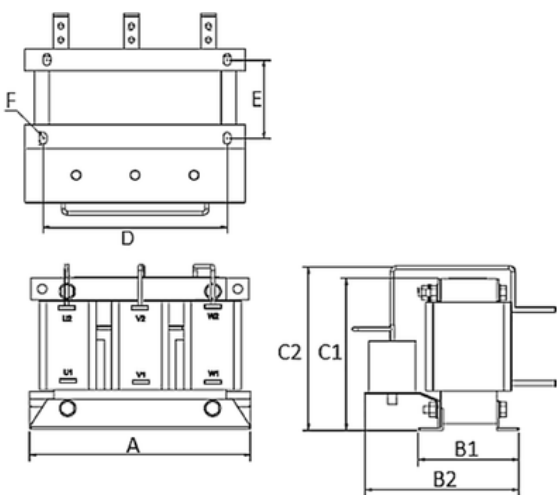
2.3A to 10.2A



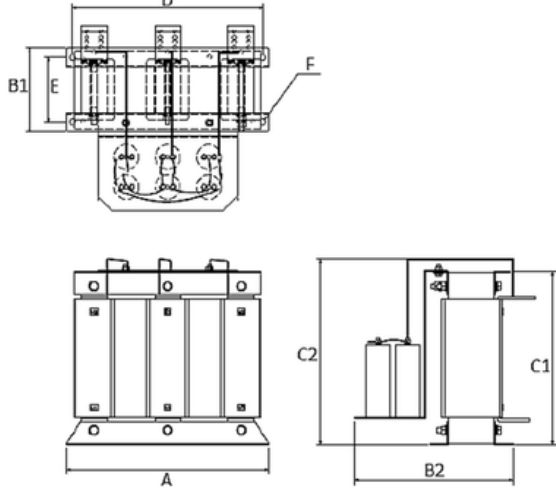
13.2A to 110A



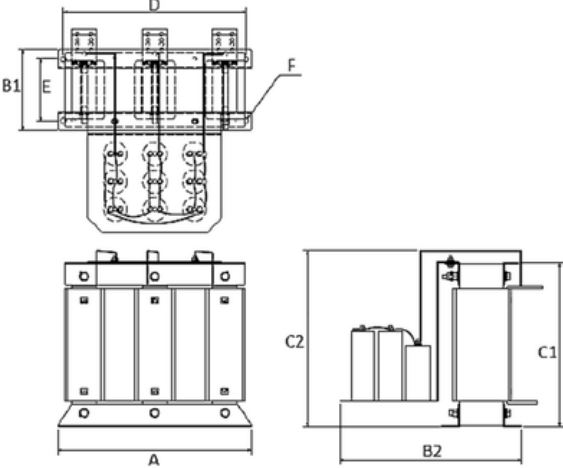
145A to 302A



400A to 630A



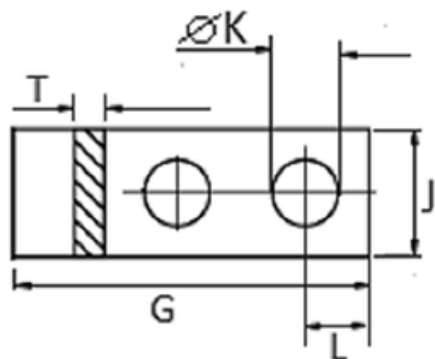
710A to 1000A



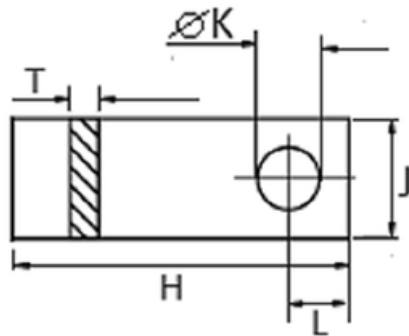
Busbar Drawings

145A to 630A

Top Busbar

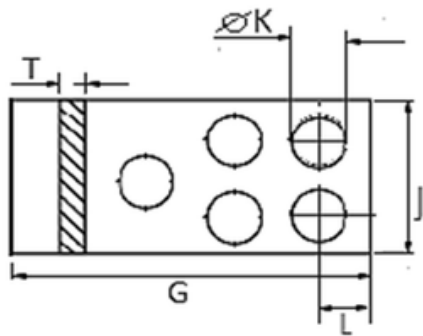


Bottom Busbar

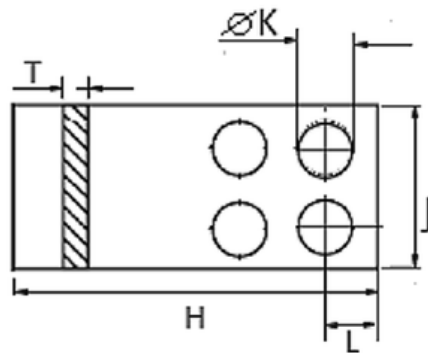


710A to 1000A

Top Busbar



Bottom Busbar



Mechanical dimensions:

Model Number	Part Number	A±5	B1±5	B2 (Max)±5	C1±5	C2 (Max)±5	D±5	E±5	F
TPQS3113-2.3-2	E110371-1	139	88	-	115	170	124	68	6x12
TPQS3113-3.1-2	E110372-1	139	88	-	115	170	124	68	6x12
TPQS3113-5.9-2	E110373-1	144	83	-	135	190	129	63	6x12
TPQS3113-10-2	E110374-1	144	83	-	135	190	129	63	6x12
TPQS3113-13-2	E110375-1	144	83	160	135	190	129	63	6x12
TPQS3113-18-2	E110376-1	200	100	170	165	220	186	80	8.5x15
TPQS3113-26-6	E110377-1	200	100	170	165	220	186	80	8.5x15
TPQS3113-32-6	E110378-1	250	110	180	210	280	220	80	10x16
TPQS3113-38-6	E110379-1	250	110	180	210	280	220	80	10x16
TPQS3113-45-6	E110380-1	250	110	180	210	280	220	80	10x16
TPQS3113-60-6	E110381-1	250	110	180	210	280	220	80	10x16
TPQS3113-75-3	E110382-1	320	176	270	265	330	275	140	15x20
TPQS3113-90-3	E110383-1	320	176	270	265	330	275	140	15x20
TPQS3113-110-3	E110384-1	320	176	270	265	330	275	140	15x20
TPQS3113-145-3	E110385-1	500	222	330	370	390	460	162	15x20
TPQS3113-180-3	E110386-1	500	222	330	370	390	460	162	15x20
TPQS3113-200-3	E110387-1	500	222	330	370	390	460	162	15x20
TPQS3113-250-3	E110388-1	550	226	330	430	460	510	166	15x20
TPQS3113-300-3	E110389-1	550	226	330	430	460	510	166	15x20
TPQS3113-400-3	E110390-1	550	240	500	452	490	510	180	15x20
TPQS3113-480-3	E110391-1	550	240	500	452	490	510	180	15x20
TPQS3113-630-3	E110392-1	550	240	500	452	490	510	180	15x20
TPQS3113-710-3	E110393-1	550	240	620	452	490	510	180	15x20
TPQS3113-800-3	E110394-1	700	280	670	592	640	660	221	15x20
TPQS3113-1000-3	E110395-1	700	280	670	592	640	660	221	15x20

Note:

1) All dimensions are in mm. Tolerances are applicable (±5mm).

2) Above dimensions are provided are approximate and for reference only and subject to change without notice.

Busbar (145A to 630A)						
Model Number	G	H	J	T	L	ØK
TPQS3113-145-3	130	100	50	4	15	13
TPQS3113-180-3	130	100	50	4	15	13
TPQS3113-200-3	130	100	50	4	15	13
TPQS3113-250-3	130	100	60	5	15	13
TPQS3113-300-3	130	100	60	5	15	13
TPQS3113-400-3	130	100	70	8	20	13
TPQS3113-480-3	130	100	70	8	20	13
TPQS3113-630-3	130	100	70	8	20	13
Busbar (710A to 1000A)						
Model Number	G	H	J	T	L	ØK
TPQS3113-710-3	130	100	70	10	20	13
TPQS3113-800-3	130	100	90	10	20	13
TPQS3113-1000-3	130	100	90	12	20	13

Termination Details

Connector				
Rated Current (A)	mm²	Wire Range	Stripping Length (mm)	Tightening Torque (Nm)
2.3A & 3.1A	4	22-10 AWG	8	0.5
5.9A & 10.2A	6	22-8 AWG	9	0.8
13.2A to 26A	10	16-6 AWG	12	1.2
32A to 110A	35	12-1/0 AWG	15	2.5

Earth terminals		
Filter size	Screw thread	Screw torque value [Nm]
2.3A to 13.2A	M5	1.7
18A & 60A	M8	4
75A to 710A	M12	9
800A &1000A	M16	12

Note:
* To fulfill creepage/clearance acc. UL 61800-5-1 without additional protection (insulation). Creepage/clearance can vary depending on applicable standard and must be reviewed by customer. Creepage/clearance may be reduced when additional protection (insulation) is provided.

Inlet air flow required for cooling

Rated Current (A)	Minimum air Volume (m³/h)
2.3A to 18A	250
26A to 45A	480
60A to 200A	650
250A to 1000A	830

Filter installation

In order to ensure sufficient air flow, keep a clearance between the device, wall and other components of minimum150mm above, 100mm on the side and for floor mounted ones 150mm below the filter. Additional work to access the device, caused by not respected clearance distances, will be accounted separately. It must be ensured that the environmental temperature is kept below the maximum allowed temperature with appropriate thermal management (e.g. cabinet cooling).

