Reliable and Advanced Power Quality Equipment

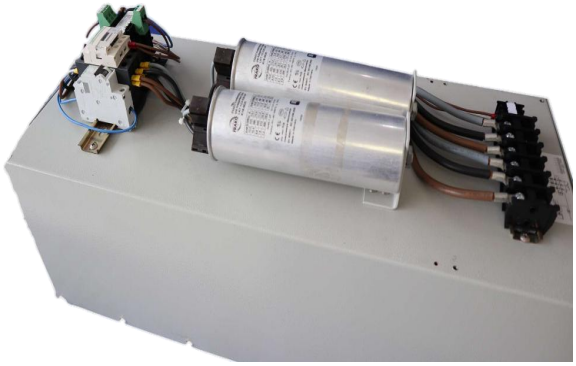
Meet International Power Quality Standards（IEEE519）

Company Introduction

TPQ Company is a Hong Kong and Singapore based company. The Filter design is originated from USA. The filter's main component-reactor, is swiss designed. In addition to China Hong Kong and Great China Market, we also exported to South East markets.

The horizontal product mixes are Active Filters, Passive Filters, Capacitance Bank, dv/dt Sinewave Filters, Regenerate Units and Ride-Through Units which comply with international standards such as IEEE, IEC, AS, EN, GB etc.

We also specialized in providing harmonic mitigation solutions with site measurement andtrouble-shooting for all kinds of power quality related issues.



Line reactor

TPQ 3-phase line reactors improve the reliability of motor drives and other power electronics equipment. They protect electronic equipment from voltage transients while reducing input current harmonics. Use them on the output of your variable frequency drives to protect motors against the effects of fast dv/dt due to long cable runs.

TPQ line reactors can solve the problem of nuisance over-voltage tripping of motor drives. When voltage transients occur, an unprotected voltage source may trip the inverter. In some cases, the input diodes may fail. TPQ line reactors are designed to provide optimum impedance under both steady state and transient conditions. They absorb a significant portion of the transient voltage, preventing nuisance tripping of the drive and delivering maximum protection against diode failure.

Just to name a few advantages of using line reactors:

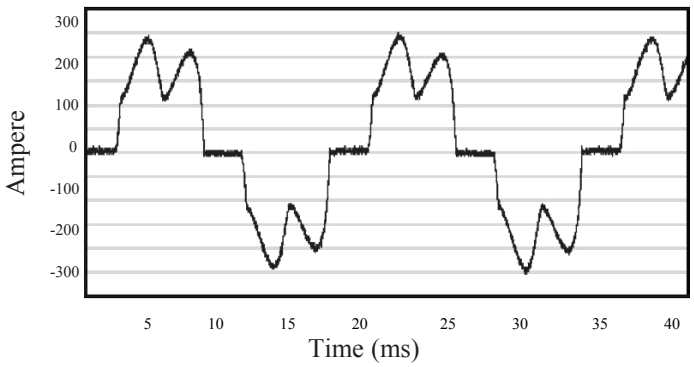
— Reduce rms current & KVA demand
— Reduce transformer loading
— Absorb voltage transients
— Prevent VFD nuisance tripping
— Solve circuit breaker nuisance tripping and nuisance fuse blowing
— Protect power supply input rectifiers
— Reduce SCR voltage notching
— Reduce harmonic current distortion
— Improve electrical system reliability

3% effective impedance reactors are typically sufficient to absorb input power line spikes and motor current surges. They prevent nuisance tripping of drives or circuit breakers in most applications.

5% effective impedance reactors are best at output of VSD to protect motors against the effects of fast dv/dt due to long cable runs.Voltage wave reflection is a function of dv/dt. It allows the installation distance between VSD and motor to be within 680 meters.

$$\% \text{ Impedance} = \frac{I_{(50/60\text{ Hz actual})} \cdot 2\pi f \cdot L \cdot \sqrt{3}}{V_{(L\text{-}L)}} \cdot 100$$

Harmonic Current Distortion without line reactor



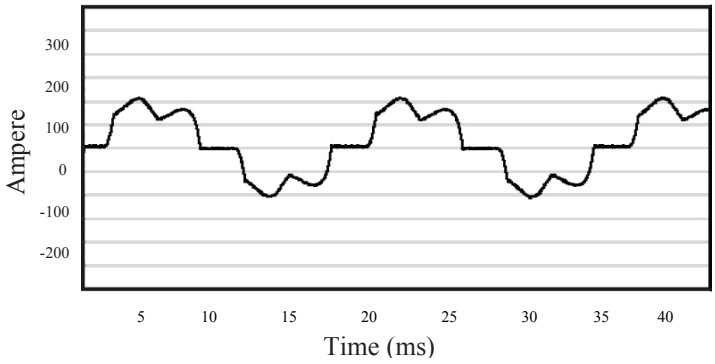
Line reactors are the first defense against harmonics. Since line reactors are the most cost-effective means of reducing harmonics. They'll help save money on the cost of the harmonic filter.

Planning to use a harmonic filter?

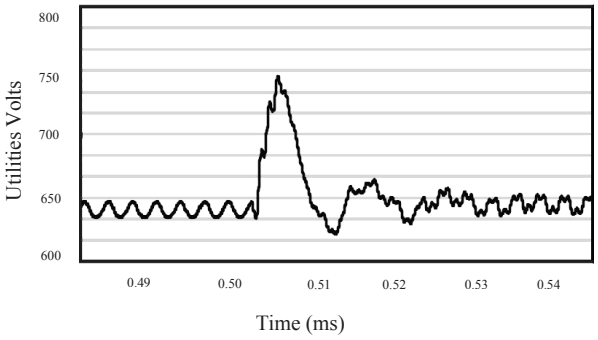
Install a 3% impedance reactor on each non-linear load first. This will reduce the full load harmonics down to 35% THID or less

Line reactors are designed to provide optimum impedance under both steady state and transient conditions. They absorb a significant portion of the transient voltage, preventing nuisance tripping of the drive and delivering maximum protection against diode failure.

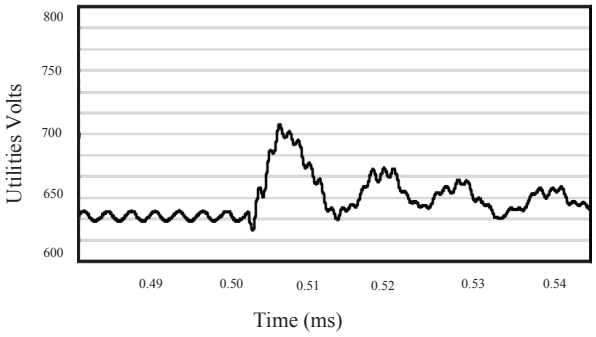
Harmonic Current Distortion with line reactor



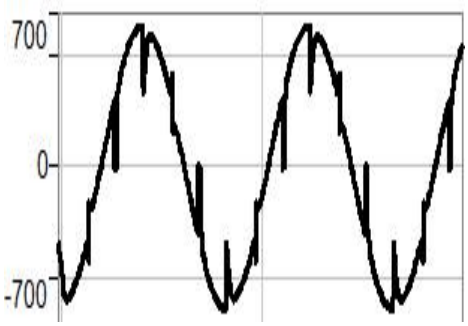
Transient Voltage without line reactor



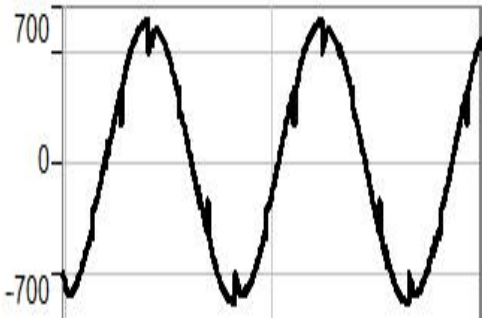
Transient Voltage with line reactor



Soft Starter Input without line reactor



Soft Starter Output with line reactor



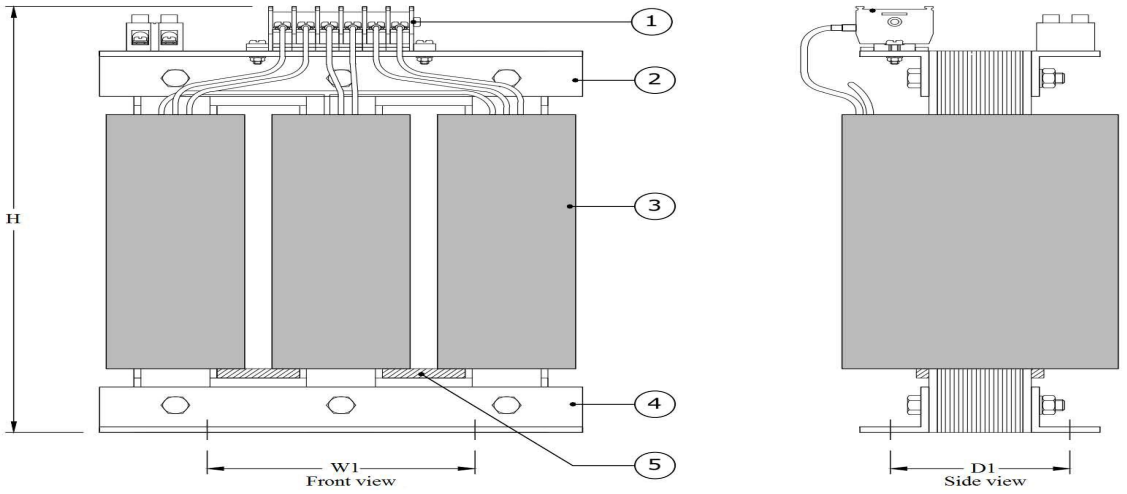
SCR Rectifier causes voltage notches that distort voltage and create false zero crossings which can damage zero cross sensitive equipment.

Use TIR reactors to reduce the SCR voltage notching and minimize false zero crosses.

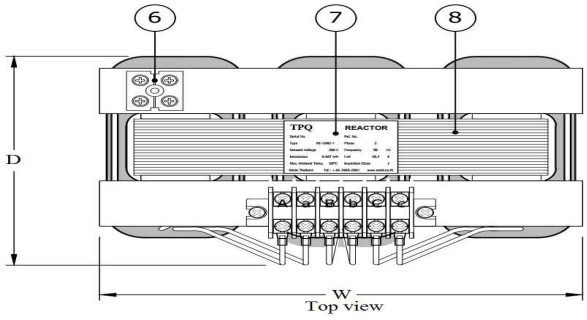
Input reactor

3% Input Reactor 380-415V., 50Hz., In.H			Dimension (mm)				
Model Number	Motor Size (KW)	Inductance (mH)	W	H	D	Weight (kg)	Drawing
TIR0001LX00L	1.5	6.63	145	155	125	4.2	Fig.1
TIR0002LX00L	2.2	4.52	145	155	128	4.7	Fig.1
TIR0004LX00L	4	2.51	145	155	130	5.2	Fig.1
TIR0005LX00L	5.5	1.85	145	155	133	5.9	Fig.1
TIR0007LX00L	7.5	1.35	145	155	135	6.5	Fig.1
TIR0011LX00L	11	0.93	180	180	149	6.9	Fig.2
TIR0015LX00L	15	0.68	180	180	160	7.4	Fig.2
TIR0018LX00L	18.5	0.55	180	180	170	9.6	Fig.2
TIR0022LX00L	22	0.47	180	180	180	11.5	Fig.2
TIR0030LX00L	30	0.34	240	220	170	14	Fig.2
TIR0037LX00L	37	0.28	240	220	185	16	Fig.2
TIR0045LX00L	45	0.23	240	220	195	18	Fig.2
TIR0055LX00L	55	0.19	240	220	210	21	Fig.2
TIR0075LX00L	75	0.14	240	220	220	24	Fig.2
TIR0090LX00L	90	0.11	240	220	235	28	Fig.2
TIR0110LX00L	110	0.09	300	260	225	31	Fig.2
TIR0132LX00L	132	0.07	300	260	245	40	Fig.2
TIR0160LX00L	160	0.05	300	260	260	46	Fig.2
TIR0200LX00L	200	0.046	360	340	310	53	Fig.2
TIR0250LX00L	250	0.04	360	340	335	58	Fig.2
TIR0312LX00L	312	0.031	460	410	300	84	Fig.2

※ **5% reactors are available upon request.**



For motor size 1.5-7.5KW



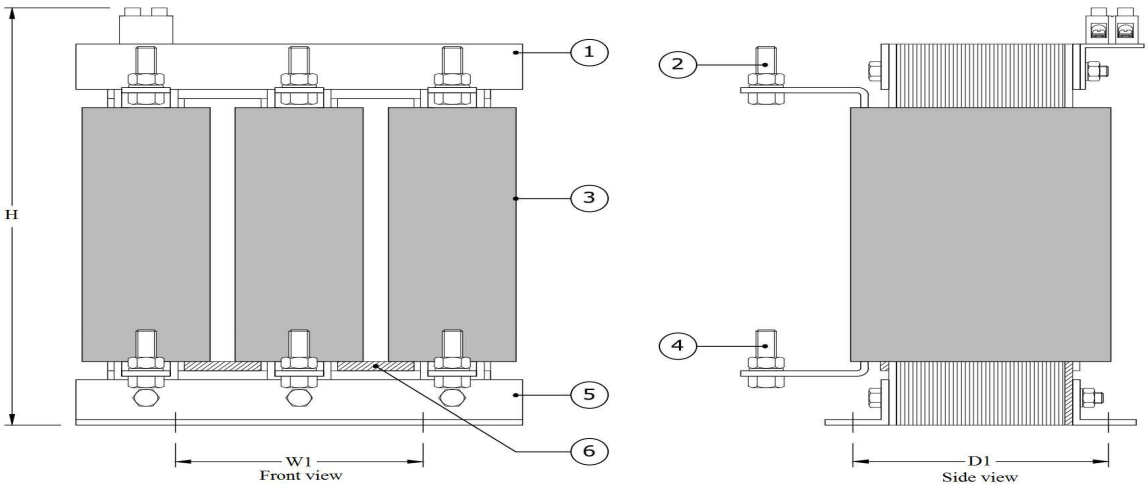
Legends

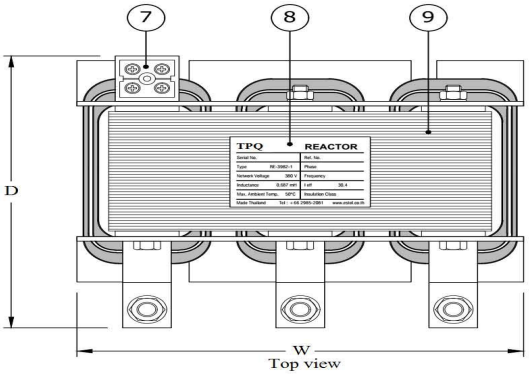
No.	Description
1	Terminal connector
2	Upper clamp
3	Coil winding (Aluminum)
4	Lower clamp

Legends

No.	Description
5	Coil spacer
6	Terminal of thermal relay
7	Name plate
8	Silicon steel core

Fig.1





For motor size 11-312KW

Legends

No.	Description
1	Upper clamp
2	Terminal connector
3	Coil winding (Aluminum)
4	Terminal connector
5	Lower clamp

Legends

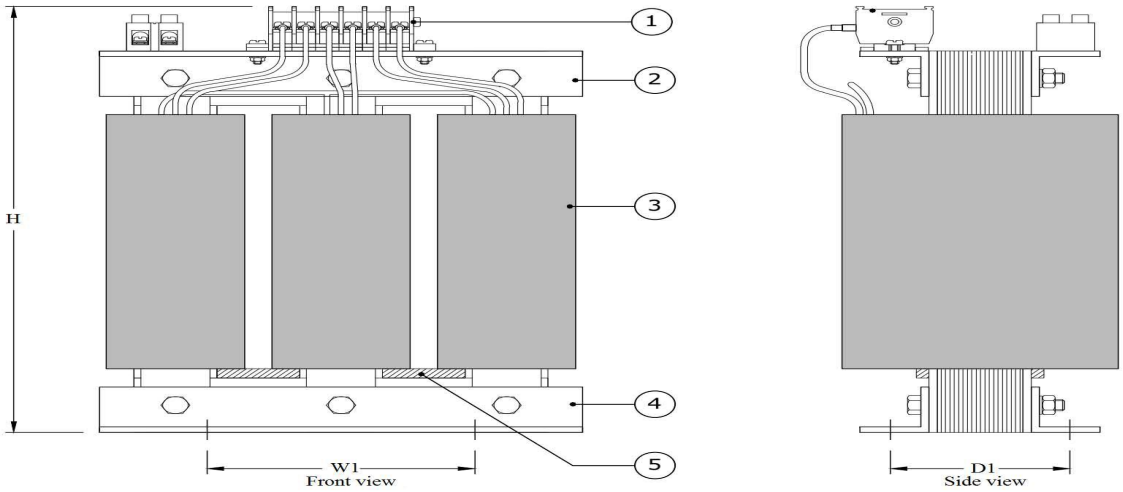
No.	Description
6	Coil spacer
7	Terminal of thermal relay
8	Name plate
9	Silicon steel core

Fig.2

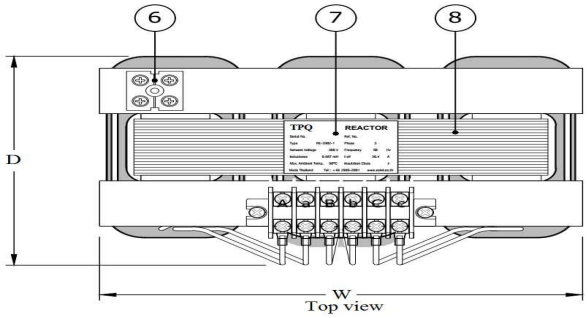
Input reactor

3% Input Reactor 690V., 50Hz., In.H			Dimension (mm)				
Model Number	Motor Size (KW)	Inductance (mH)	W	H	D	Weight (kg)	Drawing
TIR0004DX00L	4	8.3	147	154	105	3.2	Fig.3
TIR0005DX00L	5.5	6.11	147	154	110	3.5	Fig.3
TIR0007DX00L	7.5	4.53	147	154	120	4.6	Fig.3
TIR0011DX00L	11	3.09	175	180	150	5.9	Fig.4
TIR0015DX00L	15	2.26	175	180	160	7.5	Fig.4
TIR0018DX00L	18.5	1.84	175	180	170	8.7	Fig.4
TIR0022DX00L	22	1.56	240	230	185	11.2	Fig.4
TIR0030DX00L	30	1.15	240	230	195	13.1	Fig.4
TIR0037DX00L	37	0.93	240	230	200	16.4	Fig.4
TIR0045DX00L	45	0.77	240	230	210	18.8	Fig.4
TIR0055DX00L	55	0.63	240	230	220	21.5	Fig.4
TIR0075DX00L	75	0.46	300	290	220	27.3	Fig.4
TIR0090DX00L	90	0.39	300	290	230	35.2	Fig.4
TIR0110DX00L	110	0.32	300	290	250	37.6	Fig.4
TIR0132DX00L	132	0.26	300	290	275	51.7	Fig.4
TIR0160DX00L	160	0.22	360	340	270	63.5	Fig.4
TIR0200DX00L	200	0.16	360	340	275	69.6	Fig.4
TIR0250DX00L	250	0.14	360	340	300	76.7	Fig.4
TIR0312DX00L	312	0.11	420	390	390	89.6	Fig.4

※ **5% reactors are available upon request.**



For motor size 4-7.5KW



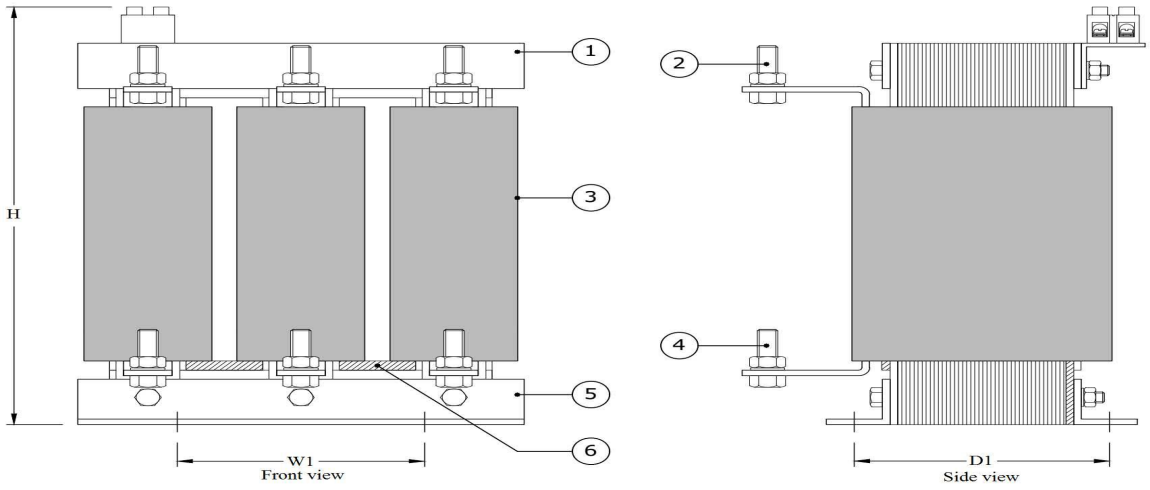
Legends

No.	Description
1	Terminal connector
2	Upper clamp
3	Coil winding (Aluminum)
4	Lower clamp

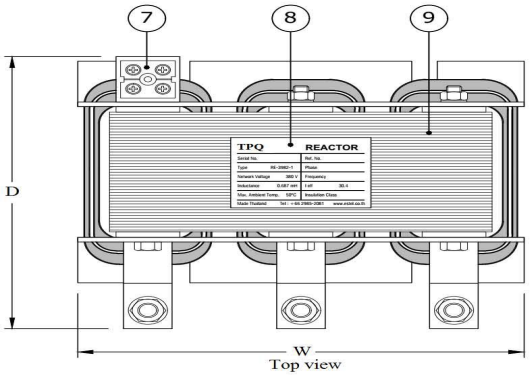
Legends

No.	Description
5	Coil spacer
6	Terminal of thermal relay
7	Name plate
8	Silicon steel core

Fig.3



For motor size 11-312KW



Legends

No.	Description
1	Upper clamp
2	Terminal connector
3	Coil winding (Aluminum)
4	Terminal connector
5	Lower clamp

Legends

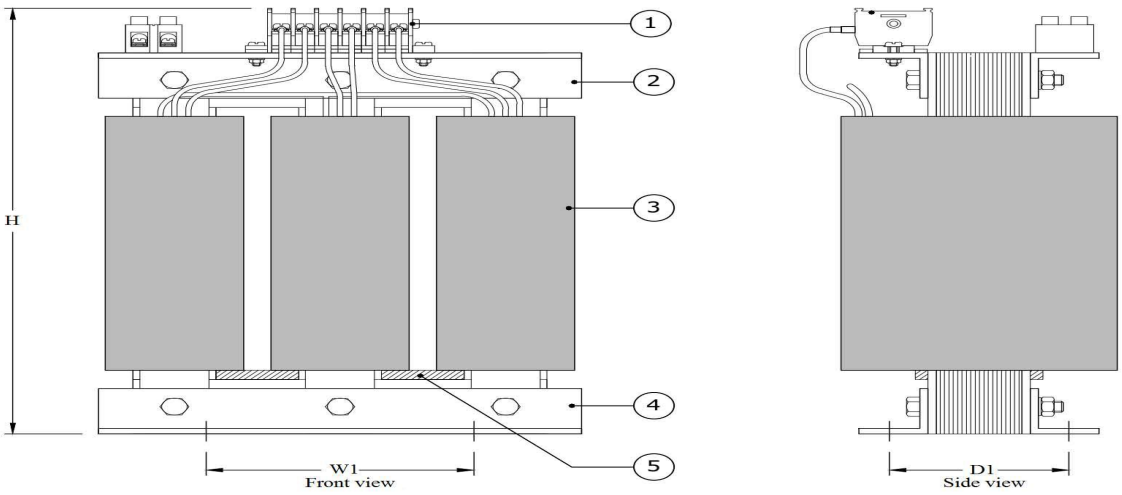
No.	Description
6	Coil spacer
7	Terminal of thermal relay
8	Name plate
9	Silicon steel core

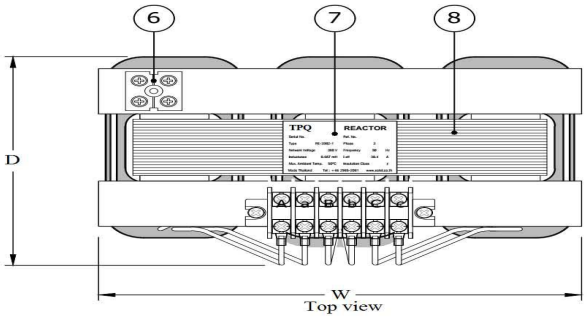
Fig.4

Output reactor

3% Output Reactor 380-415V., 50Hz., In.H			Dimension (mm)				
Model Numer	Motor Size (KW)	Inductance (mH)	W	H	D	Weight (kg)	Drawing
TOR0001LX00L	1.5	6.63	145	155	125	4.2	Fig.5
TOR0002LX00L	2.2	4.52	145	155	128	4.7	Fig.5
TOR0004LX00L	4	2.51	145	155	130	5.2	Fig.5
TOR0005LX00L	5.5	1.85	145	155	133	5.9	Fig.5
TOR0007LX00L	7.5	1.35	145	155	135	6.5	Fig.5
TOR0011LX00L	11	0.93	180	180	149	6.9	Fig.6
TOR0015LX00L	15	0.68	180	180	160	7.4	Fig.6
TOR0018LX00L	18.5	0.55	180	180	170	9.6	Fig.6
TOR0022LX00L	22	0.47	180	180	180	11.5	Fig.6
TOR0030LX00L	30	0.34	240	220	170	14	Fig.6
TOR0037LX00L	37	0.28	240	220	185	16	Fig.6
TOR0045LX00L	45	0.23	240	220	195	18	Fig.6
TOR0055LX00L	55	0.19	240	220	210	21	Fig.6
TOR0075LX00L	75	0.14	240	220	220	24	Fig.6
TOR0090LX00L	90	0.11	240	220	235	28	Fig.6
TOR0110LX00L	110	0.09	300	260	225	31	Fig.6
TOR0132LX00L	132	0.07	300	260	245	40	Fig.6
TOR0160LX00L	160	0.05	300	260	260	46	Fig.6
TOR0200LX00L	200	0.046	360	340	310	53	Fig.6
TOR0250LX00L	250	0.04	360	340	335	58	Fig.6
TOR0312LX00L	312	0.031	460	410	300	84	Fig.6

※ **5% reactors are available upon request.**





For motor size 1.5-7.5KW

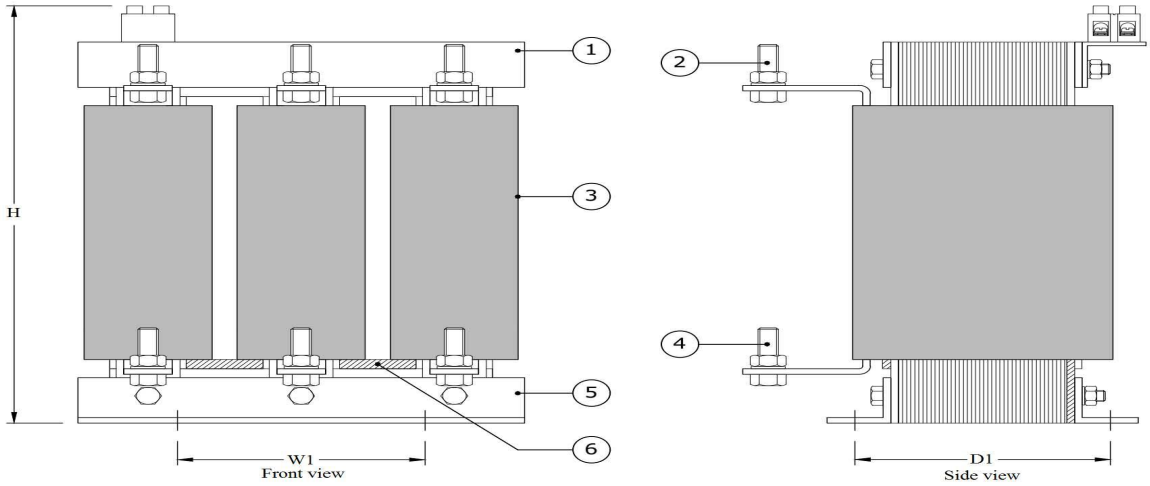
Legends

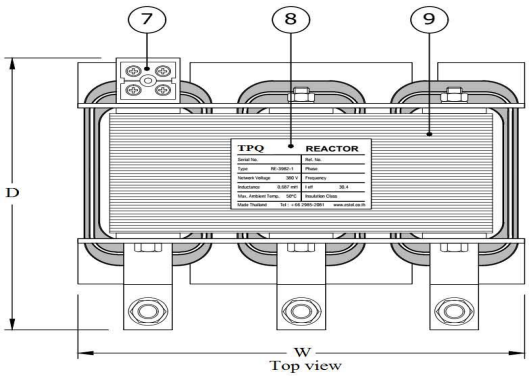
No.	Description
1	Terminal connector
2	Upper clamp
3	Coil winding (Aluminum)
4	Lower clamp

Legends

No.	Description
5	Coil spacer
6	Terminal of thermal relay
7	Name plate
8	Silicon steel core

Fig.5





For motor size 11-312KW

Legends

No.	Description
1	Upper clamp
2	Terminal connector
3	Coil winding (Aluminum)
4	Terminal connector
5	Lower clamp

Legends

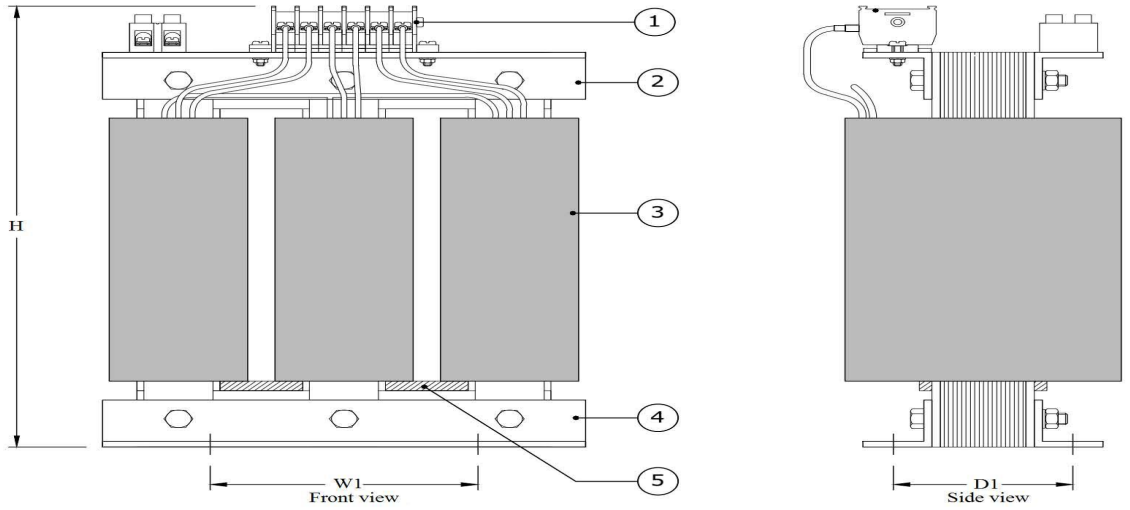
No.	Description
6	Coil spacer
7	Terminal of thermal relay
8	Name plate
9	Silicon steel core

Fig.6

Output reactor

3% Output Reactor 690V., 50Hz., Ins.H			Dimension (mm)				
Model Number	Motor Size (KW)	Inductance (mH)	W	H	D	Weight (kg)	Drawing
TOR0004DX00L	4	8.3	147	154	110	3.9	Fig.7
TOR0005DX00L	5.5	6.11	147	154	115	4.1	Fig.7
TOR0007DX00L	7.5	4.53	147	154	125	5.1	Fig.7
TOR0011DX00L	11	3.09	175	180	155	6.3	Fig.8
TOR0015DX00L	15	2.26	175	180	165	8.2	Fig.8
TOR0018DX00L	18.5	1.84	175	180	175	9.4	Fig.8
TOR0022DX00L	22	1.56	240	230	190	12.1	Fig.8
TOR0030DX00L	30	1.15	240	230	200	14.3	Fig.8
TOR0037DX00L	37	0.93	240	230	205	17.8	Fig.8
TOR0045DX00L	45	0.77	240	230	215	19.8	Fig.8
TOR0055DX00L	55	0.63	240	230	225	22.4	Fig.8
TOR0075DX00L	75	0.46	300	290	225	28.6	Fig.8
TOR0090DX00L	90	0.39	300	290	235	37.1	Fig.8
TOR0110DX00L	110	0.32	300	290	255	38.6	Fig.8
TOR0132DX00L	132	0.26	300	290	280	53.1	Fig.8
TOR0160DX00L	160	0.22	360	340	275	65.2	Fig.8
TOR0200DX00L	200	0.16	360	340	280	72.4	Fig.8
TOR0250DX00L	250	0.14	360	340	305	78.6	Fig.8
TOR0312DX00L	312	0.11	420	390	395	91.2	Fig.8

※ **5% reactors are available upon request.**



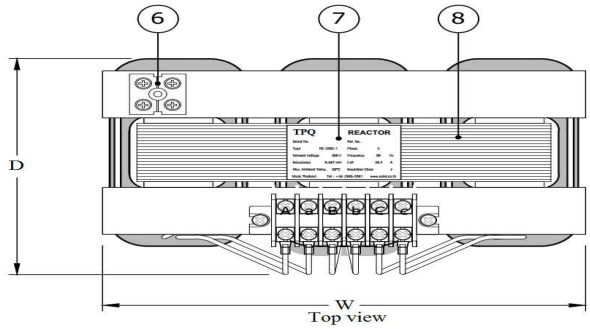


Fig.7

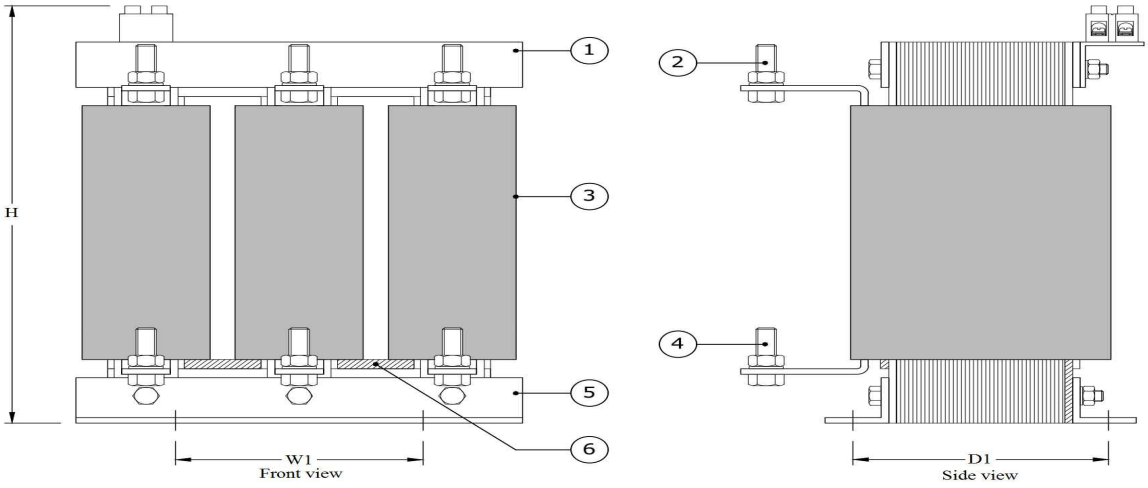
For motor size 4-7.5KW

Legends

No.	Description
1	Terminal connector
2	Upper clamp
3	Coil winding (Aluminum)
4	Lower clamp

Legends

No.	Description
5	Coil spacer
6	Terminal of thermal relay
7	Name plate
8	Silicon steel core



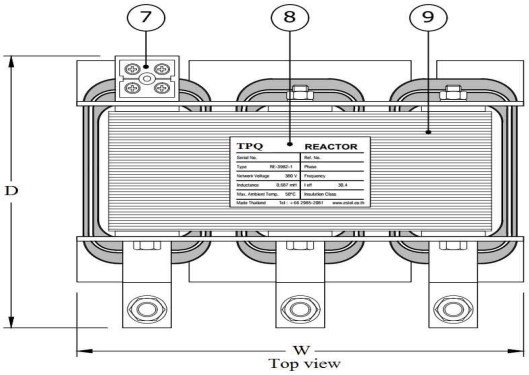


Fig.8

For motor size 11-312KW

Legends

No.	Description
1	Upper clamp
2	Terminal connector
3	Coil winding (Aluminum)
4	Terminal connector
5	Lower clamp

Legends

No.	Description
6	Coil spacer
7	Terminal of thermal relay
8	Name plate
9	Silicon steel core

Specification of Input/Output reactor

Inductance Tolerance	+3%/-3% (balanced in all three phases)
Maximum Voltage	600V (Except 690V filters)
Maximum Current	125% of rated AC current in one minute
Dielectric Strength	
Coil to coil	3000V AC for one second
Coil to core	3000V AC for one second
Core construction	Silicon Steel
Impregnation	Vacuum, overpressure varnish impregnation
Operating Temperature	-40 degrees C to +50℃
Over tempreature Protection	Thermal sensor installed at Phase B
Life Expectancy	Over 20 years at 40℃ operation
	(subject to other external factor such as ventilation, harmonics level, and type of usage)
Terminals	Aluminum Bar with bi-metal plate

Passive Harmonic Filter

Introduction

Three-phase harmonic filter

TPQ passive harmonic filters reduce voltage and current harmonic distortion and improve the power factor at input source, so maximum reliability and energy efficiency of the electrical network.

Load performance from 0% to 100%

TPQ harmonic filters minimize harmonics throughout the 0% to 100% load condition, and it may serve either a single load or multiple loads. They are perfect for both constant and variable torque drive applications, such as fans and pumps.

Energy saving!

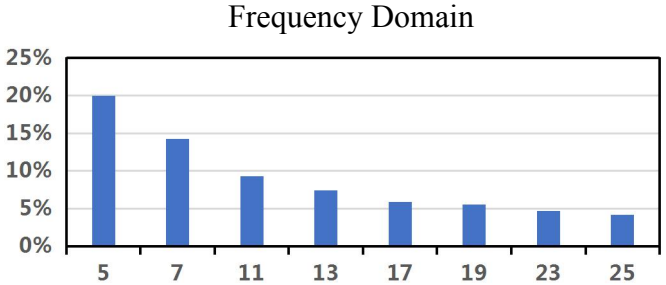
TPQ harmonic filters reduce most of the energy wasted associated with harmonics and improve power factor, reduce the apparent power.

Solution of power system problems

TPQ harmonic filters are excellent solution for power system problems such as variable frequency drive over voltage tripping, nuisance fuse blowing, circuit breaker tripping, transformer overheating, and equipment interference problems. The filters extend the life of upstream electrical equipment.

International power quality standards

TPQ Passive Harmonic Filter complies to IEEE-519 standards for application on all six-pulse rectifiers.



With TPQ series passive Harmonic Filter, the facility power system will be cleaner, more reliable and capacity will be freed up to handle additional loads.

Meet international standards such as IEEE-519, BSG5 / 4 , AS2279, EN61000, GB-T14549-33.

IEEE-519 Voltage Distortion Limit:	
Special Applications (Hospital, Airport)	**3%**
General System Application	**5%**
Professional system (100% converter load)	**10%**

IEEE-519 Current Distortion Limit:	
Isc/IL	**TDD (Total Demand) Distortion)**
<20	**5%**
20<50	**8%**
50<100	**12%**

TDD % is defined as THID x (actual motor current /filter current)

Application

TPQ harmonic filters apply to the following area.

Adjustable Speed Drive	Uninterruptible Power Equipment
Elevators &Escalators	Blowers and Pumps
Cold and Hot Air Conditioning	Water-pump
Electronic Converter / Inverter	Printing Equipment
Wastewater Treatment	Papermaking
Wood and Pulp Processing	Machine Tool
Packaging Equipment	Electronic Welding Machine
Motor Control Center	Program Control
SCR Rectifier Control	Battery Charger
Factory Automation	Spray Paint

TPQ harmonic filters can be used on virtually all types of 6 pulse rectifiers including 6 diodes, 6 SCRs or 3 diodes with 3 SCRs. They are suitable for use with both SCR pre-charge and full phase control front ends. With or without AC reactor or DC link choke.

Part Numbering System

THGP 0008 L X 20

Code	Enclosure
00	IP00
20	IP20
54	IP54
Code	**Frequency**
X	50HZ
Code	**Voltage Rating**
L	380V-415V
D	600V-690V
Code	**Current Rating**
8	8A
15	15A
…	…A
Code	**Series**
THGP	Harmonic ≤ 5%
THG	Harmonic ≤ 10%

Dimensions and Weight

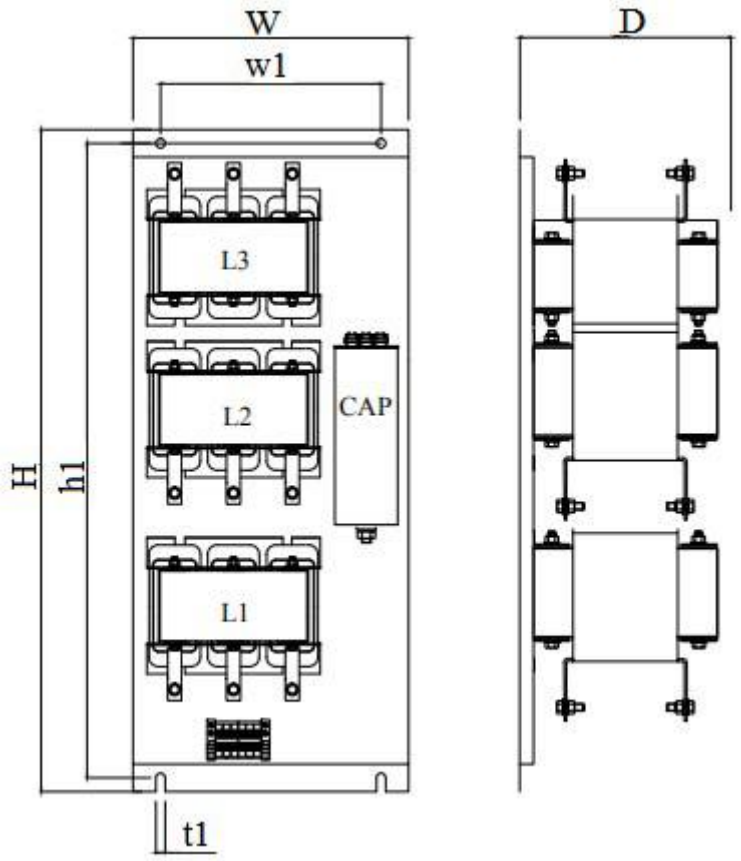


Fig.1

THGP Series Three-phase Harmonic Filter 8-312A,380~415V/50Hz,IP00,THID≤5% at rated load.

Model Number	Filter power (KW)	Current (A)	Structure	External mounting dimension(mm)						Weight (kg)	Heat Loss (W)
				H	W	D	h1	w1	t1		
THGP0008LX00C	4	8	Fig.1	750	300	200	720	270	10	27	88
THGP0015LX00C	7.5	15	Fig.1	750	300	200	720	270	10	38	145
THGP0026LX00C	11	26	Fig.1	800	400	240	770	370	10	49	205
THGP0035LX00C	15	35	Fig.1	800	400	240	770	370	10	53	243
THGP0046LX00C	22	46	Fig.1	900	400	240	870	370	10	58	279
THGP0059LX00C	30	59	Fig.1	900	400	240	870	370	12	73	322
THGP0078LX00C	37	78	Fig.1	900	450	320	870	420	12	99	365
THGP0098LX00C	45	98	Fig.1	950	450	320	920	420	12	117	448
THGP0117LX00C	55	117	Fig.1	950	450	320	920	420	12	126	529
THGP0156LX00C	75	156	Fig.1	1050	450	320	1020	420	12	173	622
THGP0176LX00C	90	176	Fig.1	1050	550	380	1020	520	14	204	697
THGP0215LX00C	110	215	Fig.1	1100	550	380	1070	520	14	235	771
THGP0273LX00C	132	273	Fig.1	1200	550	380	1170	520	14	247	926
THGP0312LX00C	160	312	Fig.1	1200	550	380	1170	520	14	322	1049

※ **Customized dimension is available upon request.**

Dimensions and Weight

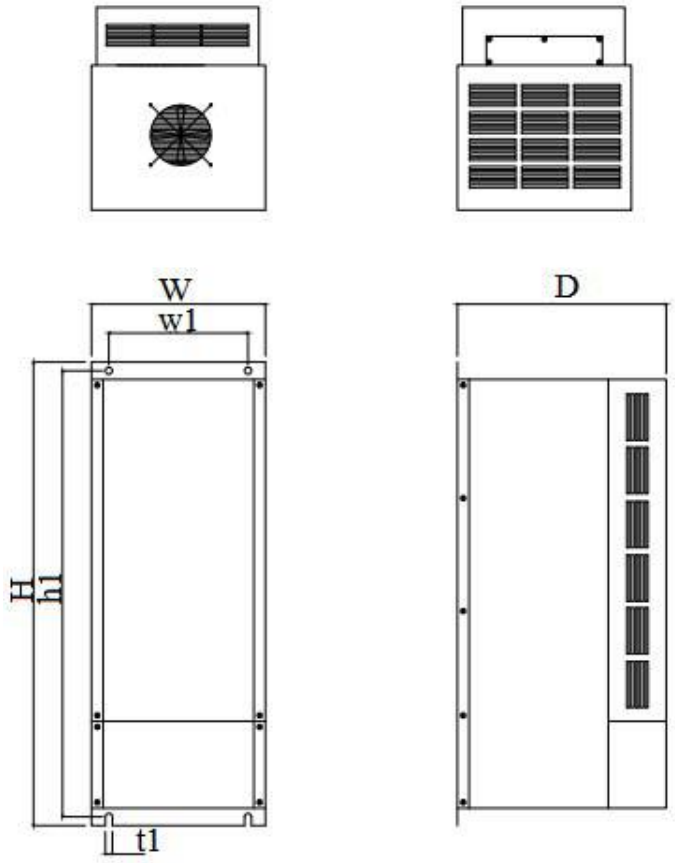


Fig.2

THGP Series Three-phase Harmonic Filter 8-312A,380~415V/50Hz,IP20,THID≤5% at rated load.

Model Number	Filter power (KW)	Current (A)	Structure	External mounting dimension(mm)						Weight (kg)	Heat Loss (W)
				H	W	D	h1	w1	t1		
THGP0008LX20C	4	8	Fig.2	690	250	320	660	190	10	37	88
THGP0015LX20C	7.5	15	Fig.2	760	250	320	730	190	10	48	145
THGP0026LX20C	11	26	Fig.2	760	300	360	730	240	10	59	205
THGP0035LX20C	15	35	Fig.2	760	300	360	730	240	10	63	243
THGP0046LX20C	22	46	Fig.2	760	300	360	730	240	10	68	279
THGP0059LX20C	30	59	Fig.2	800	300	360	770	240	12	83	322
THGP0078LX20C	37	78	Fig.2	870	400	440	840	340	12	109	365
THGP0098LX20C	45	98	Fig.2	910	400	440	880	340	12	127	448
THGP0117LX20C	55	117	Fig.2	930	400	440	900	340	12	136	529
THGP0156LX20C	75	156	Fig.2	1010	400	440	980	340	12	183	622
THGP0176LX20C	90	176	Fig.2	1010	450	500	980	390	14	214	697
THGP0215LX20C	110	215	Fig.2	1040	450	500	1010	390	14	245	771
THGP0273LX20C	132	273	Fig.2	1090	450	500	1060	390	14	257	926
THGP0312LX20C	160	312	Fig.2	1120	450	500	1090	390	14	332	1049

※ **Customized dimension is available upon request.**

Dimensions and Weight

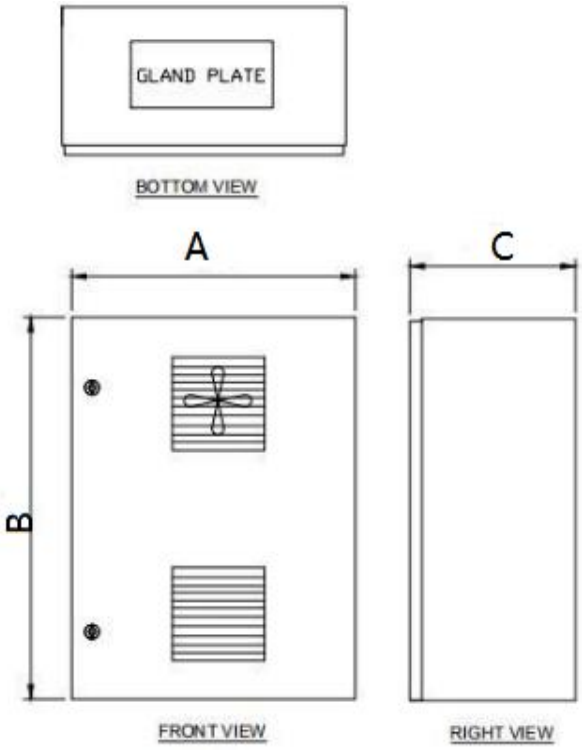


Fig.3

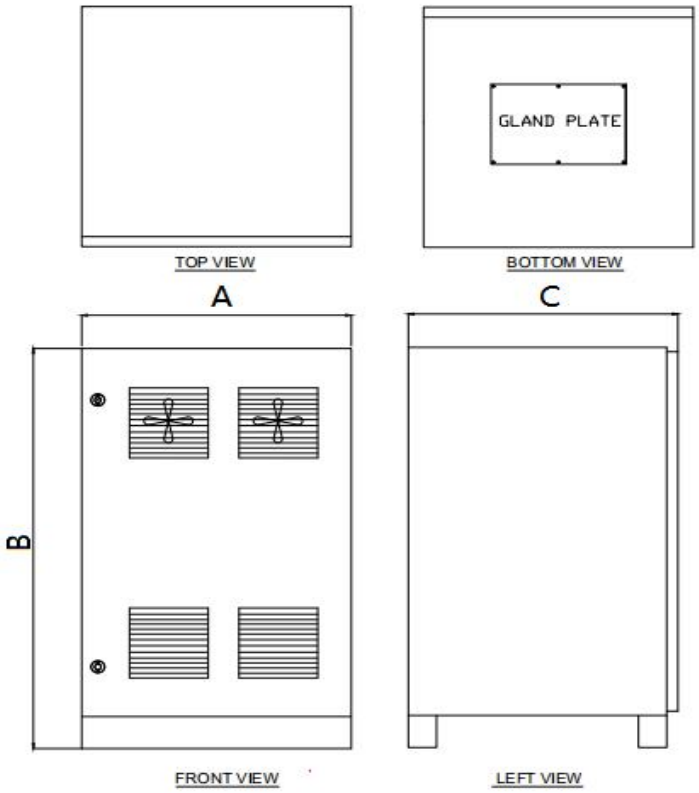


Fig.4

THGP Series Three-phase Harmonic Filter 8-312A,380~415V/50Hz,IP54,THID≤5% at rated load.

Model Number	Filter power (KW)	Current (A)	Structure	External mounting dimension(mm)			Weight (kg)	Heat Loss (W)
				H	W	D		
THGP0008LX54C	4	8	Fig.3	900	400	320	42	88
THGP0015LX54C	7.5	15	Fig.3	900	400	320	53	145
THGP0026LX54C	11	26	Fig.3	1100	500	350	69	205
THGP0035LX54C	15	35	Fig.3	1100	500	350	73	243
THGP0046LX54C	22	46	Fig.3	1100	500	350	78	279
THGP0059LX54C	30	59	Fig.3	1100	500	350	93	322
THGP0078LX54C	37	78	Fig.3	1300	600	450	124	365
THGP0098LX54C	45	98	Fig.3	1300	600	450	142	448
THGP0117LX54C	55	117	Fig.3	1300	600	450	151	529
THGP0156LX54C	75	156	Fig.4	1600	600	600	203	622
THGP0176LX54C	90	176	Fig.4	1600	600	600	234	697
THGP0215LX54C	110	215	Fig.4	1600	600	600	265	771
THGP0273LX54C	132	273	Fig.4	2000	800	700	282	926
THGP0312LX54C	160	312	Fig.4	2000	800	700	357	1049

※ **Customized dimension is available upon request.**

Dimensions and Weight

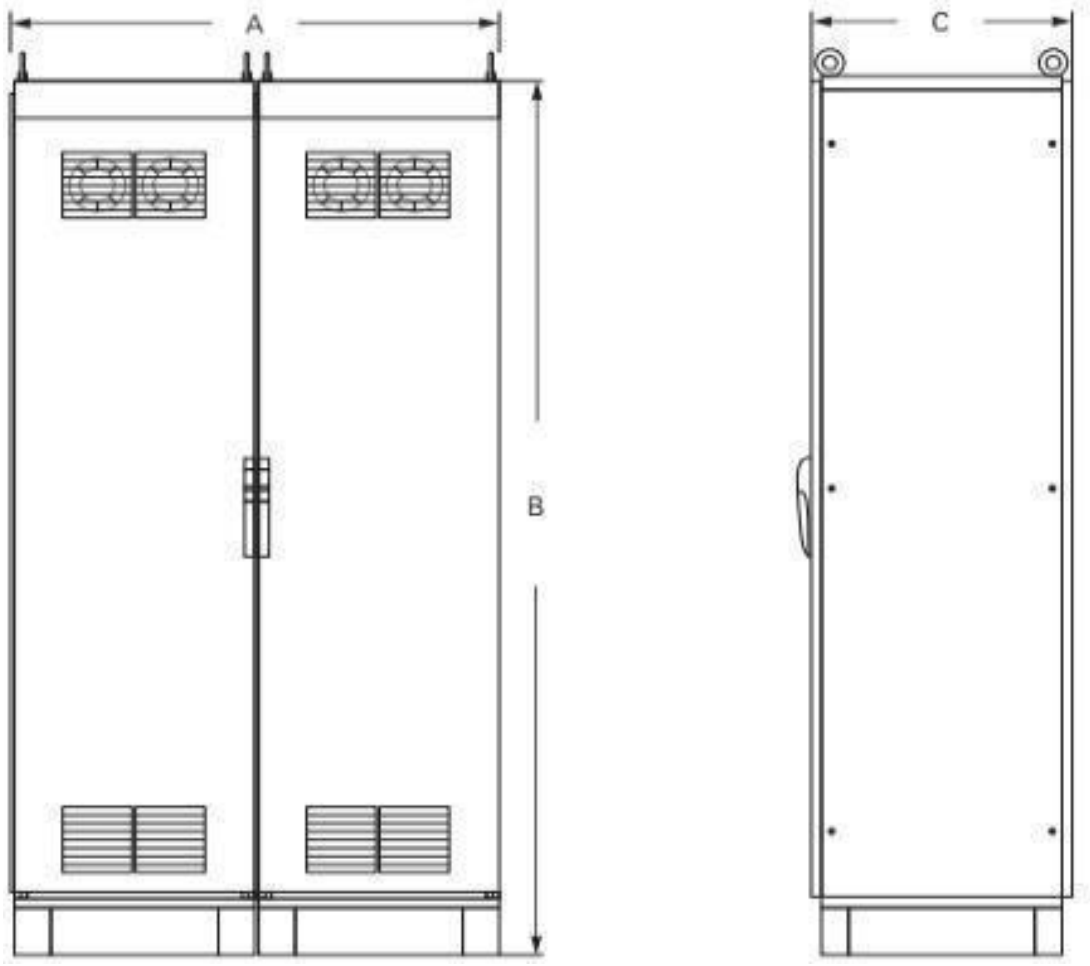


Fig.5

THGP Series Three-phase Harmonic Filter 449-781A,380~415V/50Hz,IP54,THID≤5% at rated load.

Model Number	Filter power (KW)	Current (A)	Structure	External mounting dimension(mm)			Weight (kg)	Heat Loss (W)
				H	W	D		
THGP0449LX54C	200	449	Fig.5	2000	1200	800	401	1202
THGP0527LX54C	250	527	Fig.5	2000	1200	800	437	1544
THGP0625LX54C	315	625	Fig.5	2000	1200	800	669	1778
THGP0781LX54C	355	781	Fig.5	2000	1200	800	713	2219

※ **Customized dimension is available upon request.**

Dimensions and Weight

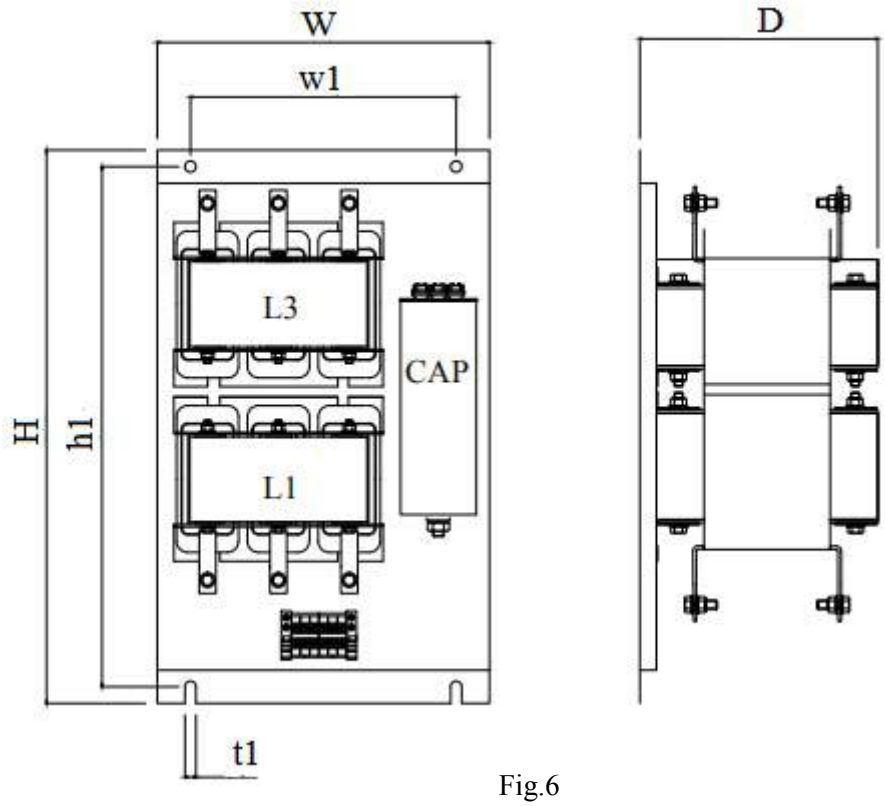


Fig.6

THG Series Three-phase Harmonic Filter 8-312A,380~415V/50Hz,IP00,THID≤10% at rated load.

Model Number	Filter power (KW)	Current (A)	Structure	External mounting dimension(mm)						Weigh (kg)	Heat Loss (W)
				H	W	D	h1	w1	t1		
THG0008LX00C	4	8	Fig.6	550	300	200	520	270	10	18	58
THG0015LX00C	7.5	15	Fig.6	550	300	200	520	270	10	25	89
THG0026LX00C	11	26	Fig.6	550	400	240	520	370	10	33	123
THG0035LX00C	15	35	Fig.6	550	400	240	520	370	10	35	153
THG0046LX00C	22	46	Fig.6	600	400	240	570	370	10	38	182
THG0059LX00C	30	59	Fig.6	600	400	240	570	370	12	47	207
THG0078LX00C	37	78	Fig.6	600	450	320	570	420	12	66	232
THG0098LX00C	45	98	Fig.6	650	450	320	620	420	12	74	283
THG0117LX00C	55	117	Fig.6	650	450	320	620	420	12	82	333
THG0156LX00C	75	156	Fig.6	700	450	320	670	420	12	116	390
THG0176LX00C	90	176	Fig.6	700	550	380	670	520	14	132	432
THG0215LX00C	110	215	Fig.6	700	550	380	670	520	14	148	474
THG0273LX00C	132	273	Fig.6	800	550	380	770	520	14	155	558
THG0312LX00C	160	312	Fig.6	800	550	380	770	520	14	195	637

※ **Customized dimension is available upon request.**

Dimensions and Weight

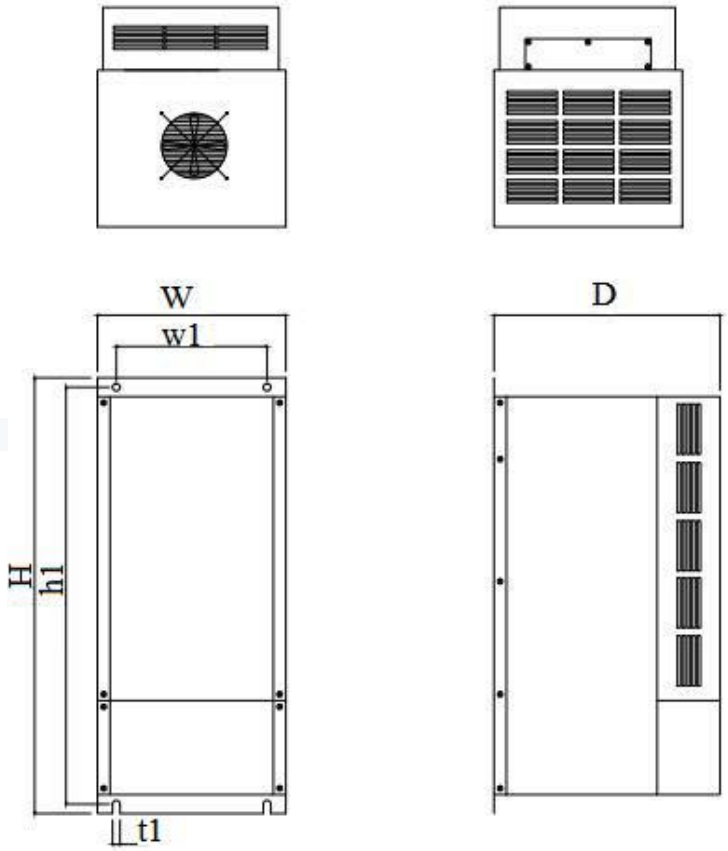


Fig. 7

THG Series Three-phase Harmonic Filter 8-312A,380~415V/50Hz,IP20,THID≤10% at rated load.

Model Number	Filter power (KW)	Current (A)	Structure	External mounting dimension(mm)						Weight (kg)	Heat Loss (W)
				H	W	D	h1	w1	t1		
THG0008LX20C	4	8	Fig.7	490	250	320	450	190	10	28	58
THG0015LX20C	7.5	15	Fig.7	540	250	320	510	190	10	35	89
THG0026LX20C	11	26	Fig.7	540	300	360	510	240	10	43	123
THG0035LX20C	15	35	Fig.7	540	300	360	510	240	10	45	153
THG0046LX20C	22	46	Fig.7	540	300	360	510	240	10	48	182
THG0059LX20C	30	59	Fig.7	560	300	360	530	240	12	57	207
THG0078LX20C	37	78	Fig.7	600	400	440	570	340	12	76	232
THG0098LX20C	45	98	Fig.7	630	400	440	600	340	12	84	283
THG0117LX20C	55	117	Fig.7	640	400	440	610	340	12	92	333
THG0156LX20C	75	156	Fig.7	730	400	440	700	340	12	126	390
THG0176LX20C	90	176	Fig.7	750	450	500	720	390	14	142	432
THG0215LX20C	110	215	Fig.7	770	450	500	740	390	14	158	474
THG0273LX20C	132	273	Fig.7	800	450	500	770	390	14	165	558
THG0312LX20C	160	312	Fig.7	820	450	500	790	390	14	205	637

※ **Customized dimension is available upon request.**

Dimensions and Weight

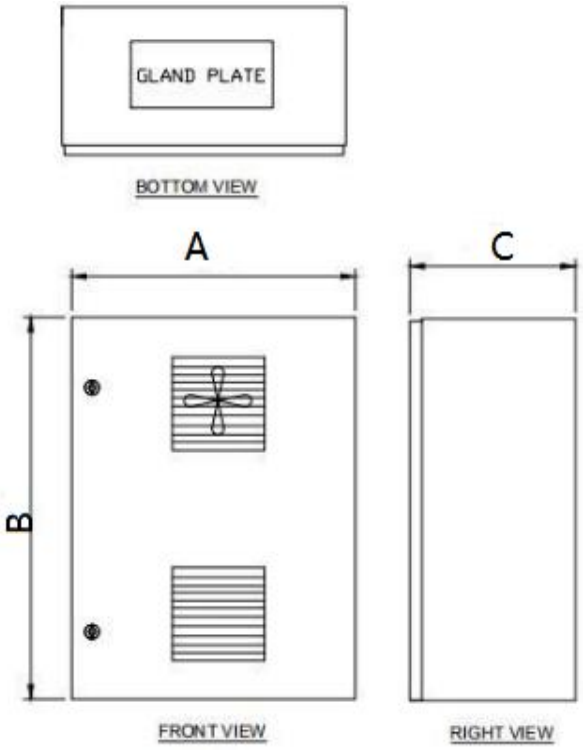


Fig.8

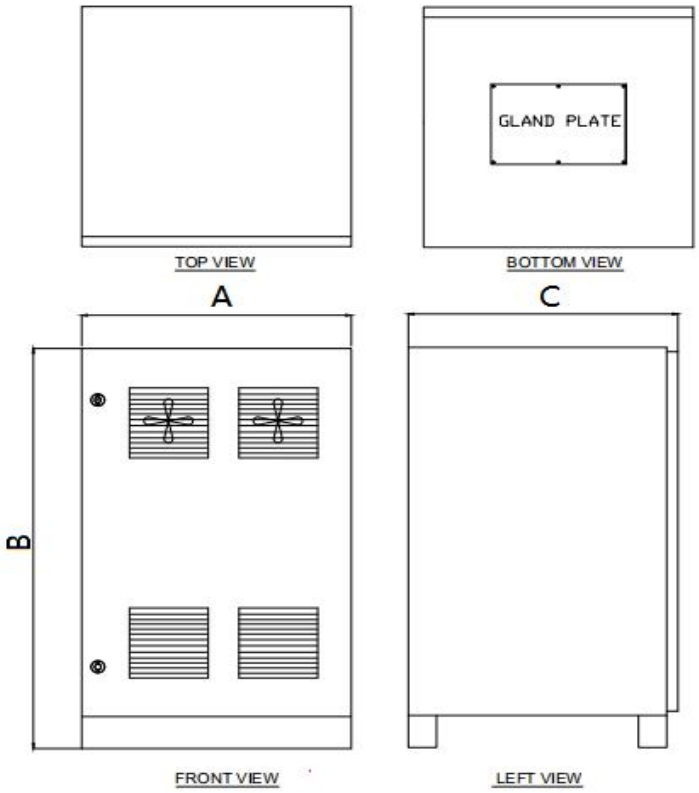


Fig.9

THG Series Three-phase Harmonic Filter 8-312A,380~415V/50Hz,IP54,THID≤10% at rated load.

Model Number	Filter power (KW)	Current (A)	Structure	External mounting dimension(mm)			Weight (kg)	Heat Loss (W)
				H	W	D		
THG0008LX54C	4	8	Fig.8	600	400	320	31	58
THG0015LX54C	7.5	15	Fig.8	600	400	320	38	89
THG0026LX54C	11	26	Fig.8	700	500	350	49	123
THG0035LX54C	15	35	Fig.8	700	500	350	51	153
THG0046LX54C	22	46	Fig.8	700	500	350	54	182
THG0059LX54C	30	59	Fig.8	700	500	350	63	207
THG0078LX54C	37	78	Fig.8	800	600	450	85	232
THG0098LX54C	45	98	Fig.8	800	600	450	93	283
THG0117LX54C	55	117	Fig.8	800	600	450	101	333
THG0156LX54C	75	156	Fig.9	1100	600	600	138	390
THG0176LX54C	90	176	Fig.9	1100	600	600	154	432
THG0215LX54C	110	215	Fig.9	1100	600	600	170	474
THG0273LX54C	132	273	Fig.9	1400	800	700	180	558
THG0312LX54C	160	312	Fig.9	1400	800	700	220	637

※ **Customized dimension is available upon request.**

Dimensions and Weight

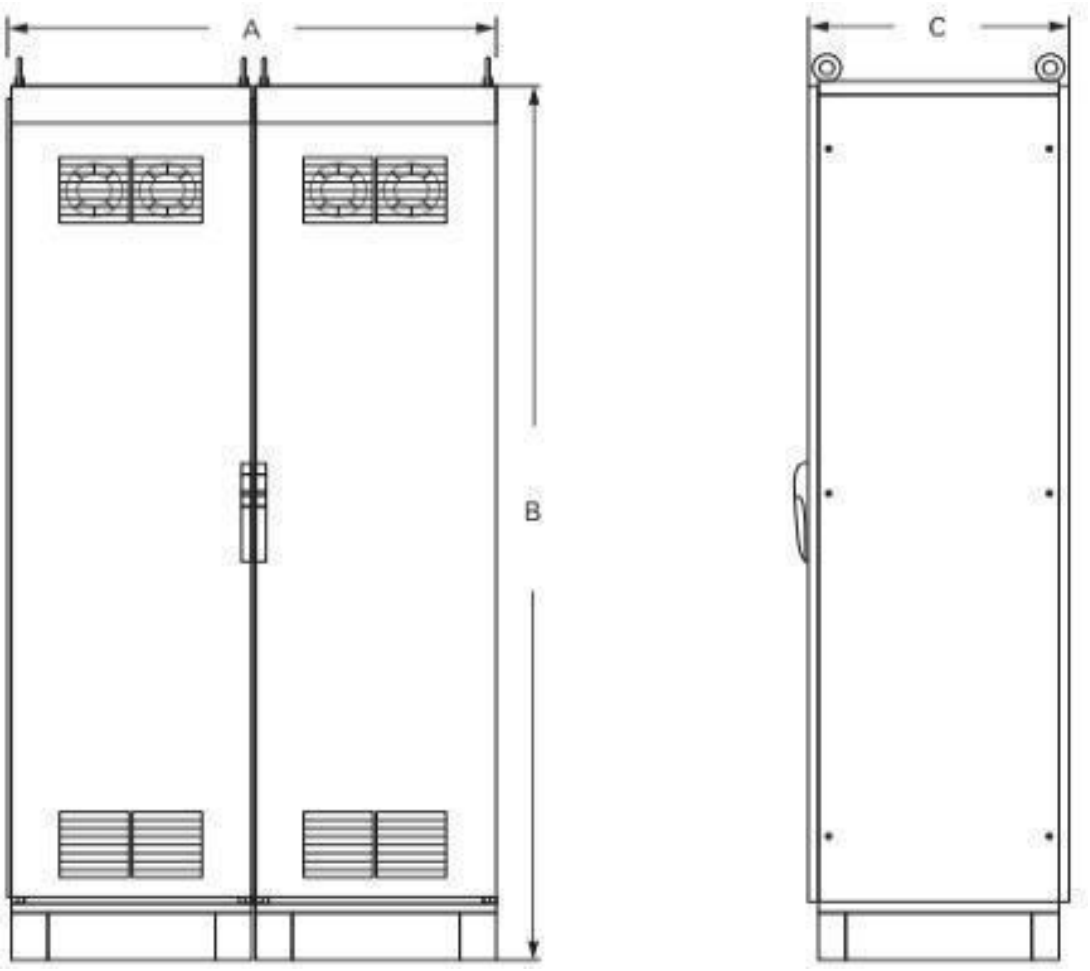


Fig.10

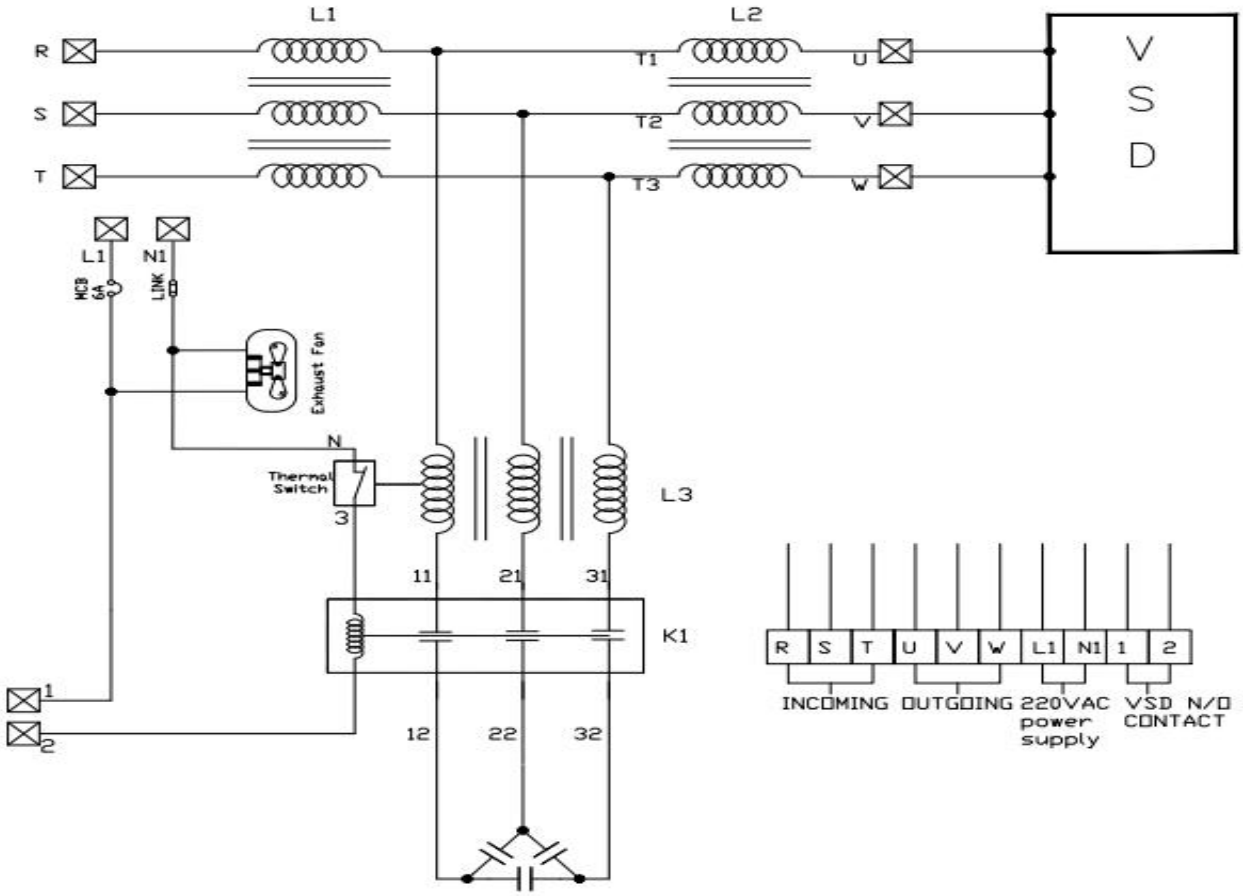
THG Series Three-phase Harmonic Filter 449-781A,380~415V/50Hz,IP54,THID≤10% at rated load.

Model Number	Filter power (KW)	Current (A)	Structure	External mounting dimension(mm)			Weight (kg)	Heat Loss (W)
				H	W	D		
THG0449LX54C	200	449	Fig.10	2000	1200	800	259	713
THG0527LX54C	250	527	Fig.10	2000	1200	800	347	955
THG0625LX54C	315	625	Fig.10	2000	1200	800	434	1137
THG0781LX54C	355	781	Fig.10	2000	1200	800	468	1404

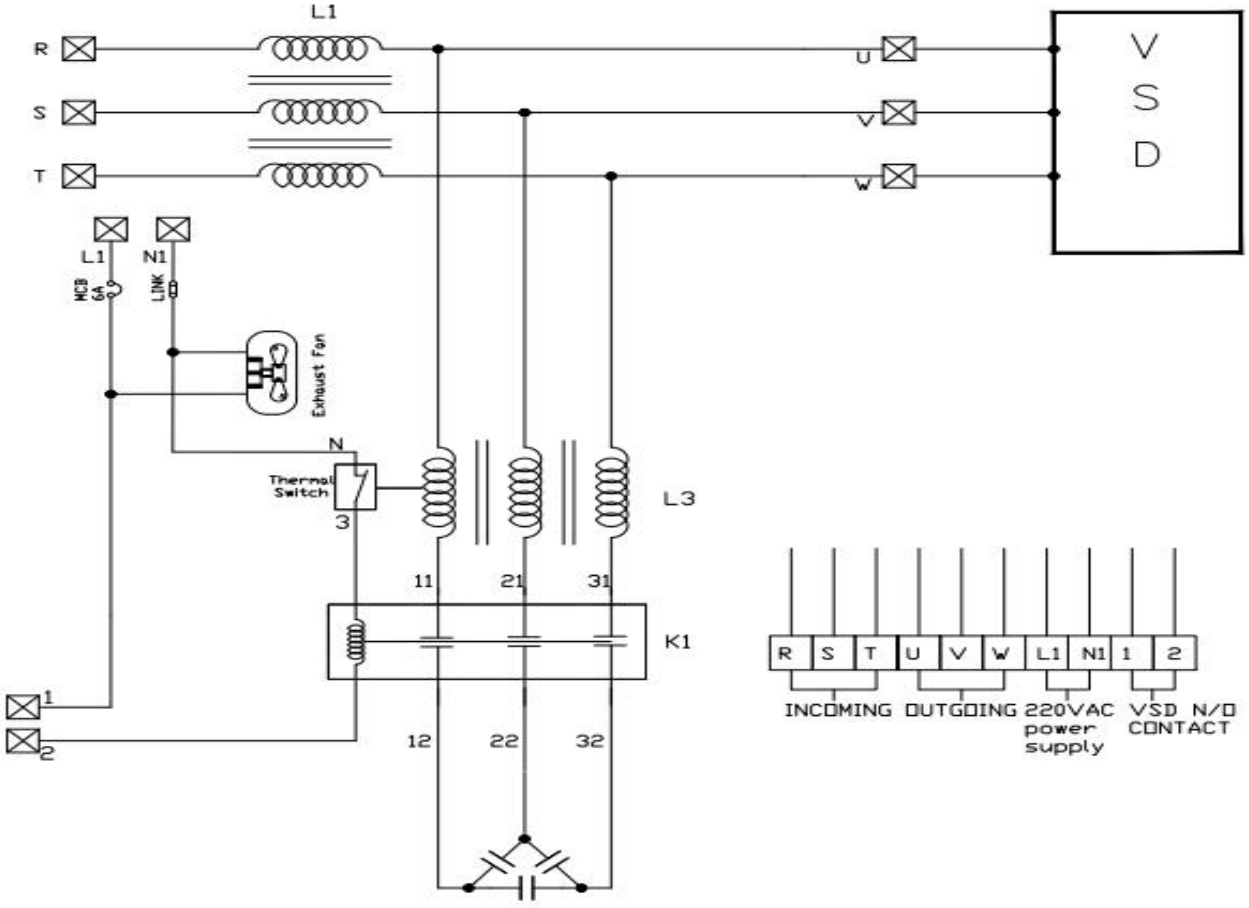
※ **Customized dimension is available upon request.**

Wiring Diagram

THGP Series



THG Series



Specification

System Voltage	380V- 415V, 440V- 480V, 600V- 690V
Voltage Tolerance	±10%
Typical Voltage Regulation	±5%
System Frequency	50 ±1Hz or 60Hz on request
Input Current Rating	8 ~ 3000A
Input Power Rating	4 ~ 1500KW
Voltage Line Unbalance	≤3% (Note: THID will increase, when the line voltage unbalanced is more than 3%)
Source Impedance	Minimum 0.5% ~ 6% (Generator minimum 10%, maximum 15%)
Total Demand Distortion	Meet International Power quality Standards
Total Voltage Harmonic Distortion	<2% to background voltage harmonic
Total Current Harmonic Distortion	Model: THGP≤5%THID (Under full load condition)
	Model: THG≤10%THID (Under full load condition)
Operating Temperature	−30℃~+50℃
Altitude	1000 meters (Maximum)
Relative Humidity	95%
Maximum Power Loss	1-3% loss as heat
Efficiency	95% at rated load
Dielectric Strength	Reactor (coil to coil): 3000V (1 min)
	Capacitors: (2 x rated) +1000V (1 min), minimum 2000V (1 min)
Overload Capacity	1.5 x Rated Current (1min, once per hour)
Damping	Self-damping reactor (no power resistor requires)
Lifetime	>100,000hours (rated power, under 50℃)
Environment	
Ventilation	Natural ventilation (without the fan)
Box	Indoors, Industrial, Outdoors, Open Kits
Reduce KVA Demand	As much as 30% (when current distortion is reduced from 100% to 5%)
Reduce Current Demand	As much as 30% (when current distortion is reduced from 100% to 5%)
Potential Saving	Saving typically by 1% to 6% (depend on the transformer and conductor)
Standard	
IEC / EN	Comply with EN60289, EN60076-3, VDE0532-76-6 Standard
CE(Low Voltage Directive)	Comply with EN60076-6, IEC60076-6 Standard
Harmonic Standard	Comply with IEEE-519, AN-2279, EN61000-3-2, EN61000-3-12, G5/4 Standard

Sine Wave Filter

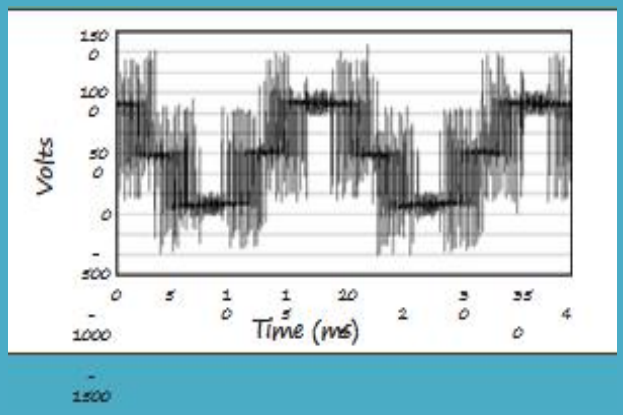
OPERATION THEORY

Sine wave filters utilize passive low pass filter technology converting VFD's PWM voltage into sine wave. It incorporates an unique PWM rated reactor combine with a rugged harmonic rated capacitor bank to form a network that attenuates the PWM switching frequency. This filter network removes most of the high frequency pulses from the waveform resulting in a near sine wave output voltage. Motors are therefor protected against dv/dt and excessive peak voltage.

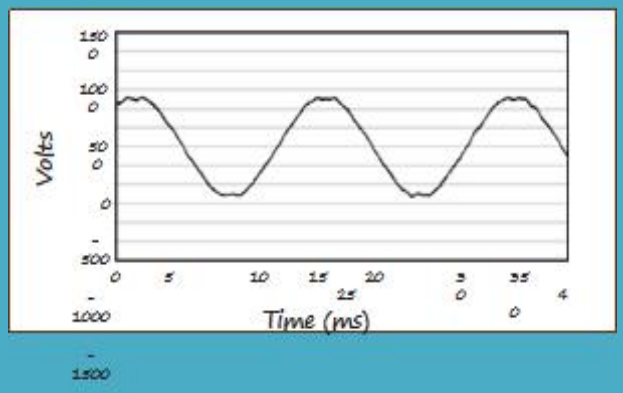
HIGH PERFORMANCE SINEWAVE OUTPUT FILTER

TPQSW

Voltage Without TPQSW



Voltage With TPQSW



Eliminate harmful dv/dt to result in sinewave output

- Greatly extend motor and cable life by reduction of motor noise, vibration, and heat
- Specific applications can reach 4500 meters

Typical Problems, Superior Solutions with TPQSW Sinewave filter

As Pulse Width Modulated (PWM) Drives are incorporated into various applications and processes, the increased energy savings and decreased maintenance on Drives can be offset by increases in Motor failures.

The TPQSW sinewave filter family has been designed as an engineered solution for motor failures due to the reflected wave phenomenon.

Reflective Wave Phenomenon

Voltage wave reflection is a function of the voltage rise time (dv/dt) and the length of the motor cables.

The impedance on either end of the cable run does not match,causing voltage pulses to be reflected back in the direction from which it arrived. As these reflected waves encounter other waves,their values add, causing higher peak voltage.

As wire length or carrier frequency increases, the overshoot peak voltage also increases.

Peak Voltages on a 460V system can reach 1200 to 1600V, causing rapid breakdown of motor insulation, leading to motor failure. On 575V systems, the peak voltages can easily reach 2100V. If this is left uncontrolled, insulation failure may occur.

Eliminate Reflective Wave

The TPQSW sinewave filter converts the PWM wave form to a near sinusoidal wave form by eliminating the carrier frequency, allowing sensitive applications to take advantage of the efficiencies and savings that PWM output power supplies and drives offer.

TPQSW sinewave filters:

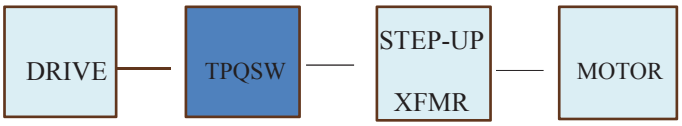
- Eliminate Torque Ripple
- Eliminate Voltage Wave Reflection
- Can reach 4500 meters for specific applications
- Reduce Motor Noise, Vibration, and Heat
- Increase Motor Life
- May be used with virtually all AC induction motors, lead lengths and lead types
- Can be used with a wide range of carrier frequencies from 2 kHz to 4 kHz and beyond.

Part Numbering System

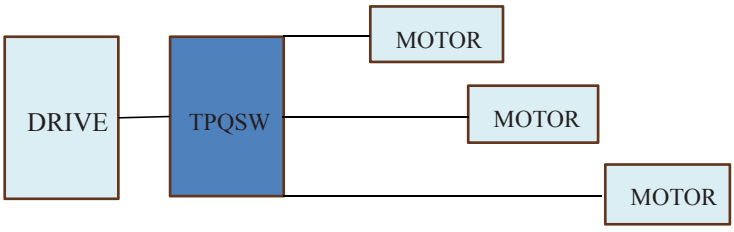
TPQSW2,5 0015 A A 0

Code	Enclosure
0	IP00(Open panel)
1	IP20
2	IP54
Code	**Frequency**
A	50HZ
B	60HZ
Code	**Voltage Rating**
A	380V-415V
D	600V-690V
Code	**Current Rating**
0008	08A
0015	15A
…	…A
Code	**Series**
2	PWM2-4kHz, 2 reactors
5	PWM2-4kHz, 1 reactors

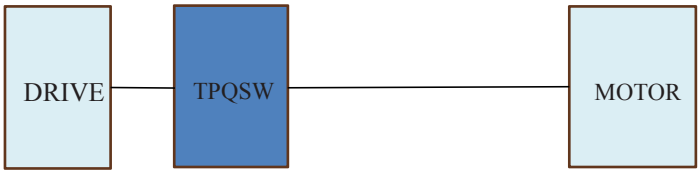
Low Voltage PWM Power Supply to Low Voltage Motor



Multiple Motor Applications



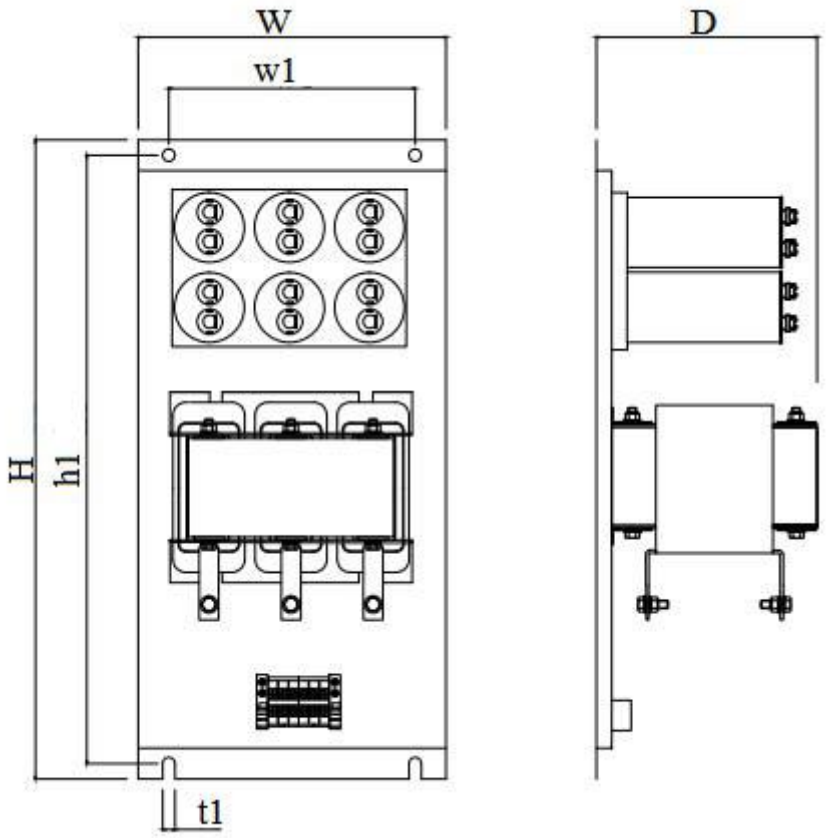
Extreme Long Lead Applications



Product Specifications

- Carrier frequencies from 2 kHz to 4 kHz
- Short Term Overload Rating: Tolerance 200% rated I for a minimum of 3 minutes
- System Voltage: 380 VAC, 600 VAC
- Insulation System: Class H (180° C) or Class R (220° C)
- Temperature Rise: 115° C or 155° C
- Ambient Temperature:
  Open Panel 50° C (122° F)
  Enclosed Panel 40° C (104°F)
- Distance: up to 4500 meters
- Voltage Distortion: < 5% (typical)
- Enclosures:
  IP00,IP20 and IP54

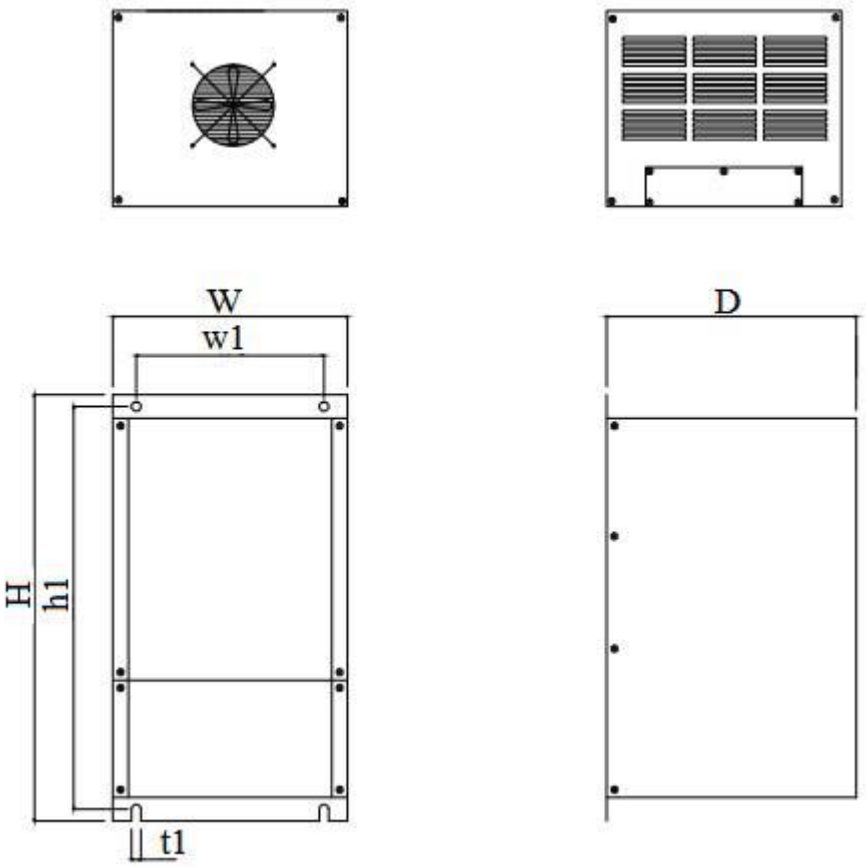
Dimensions and Weight



Sinewave Filter 8-312A, 380-415V/50Hz, IP00

Model Number	Motor Size (KW)	Current (A)	External mounting dimension(mm)						Weight (kg)	Heat Loss (W)
			H	W	D	h1	w1	t1		
TPQSW50008AA0	4	8	450	200	190	420	170	10	15	33
TPQSW50015AA0	8	15	450	300	195	420	270	10	17	43
TPQSW50026AA0	11	26	500	300	200	470	270	10	19	55
TPQSW50035AA0	15	35	500	300	205	470	270	10	21	65
TPQSW50046AA0	22	46	600	300	215	570	270	10	23	85
TPQSW50059AA0	30	59	600	300	220	570	270	10	26	95
TPQSW50078AA0	35	78	600	300	225	570	270	10	29	115
TPQSW50098AA0	45	98	600	300	235	570	270	10	32	131
TPQSW50117AA0	55	117	600	300	240	570	270	10	35	144
TPQSW50137AA0	65	137	600	300	255	570	270	10	40	155
TPQSW50156AA0	75	156	700	350	240	670	320	10	41	170
TPQSW50176AA0	90	176	700	350	255	670	320	12	45	185
TPQSW50215AA0	110	215	700	350	270	670	320	12	50	215
TPQSW50234AA0	120	234	700	350	295	670	320	12	61	250
TPQSW50273AA0	135	273	700	350	310	670	320	12	68	280
TPQSW50312AA0	160	312	700	350	330	670	320	12	80	311

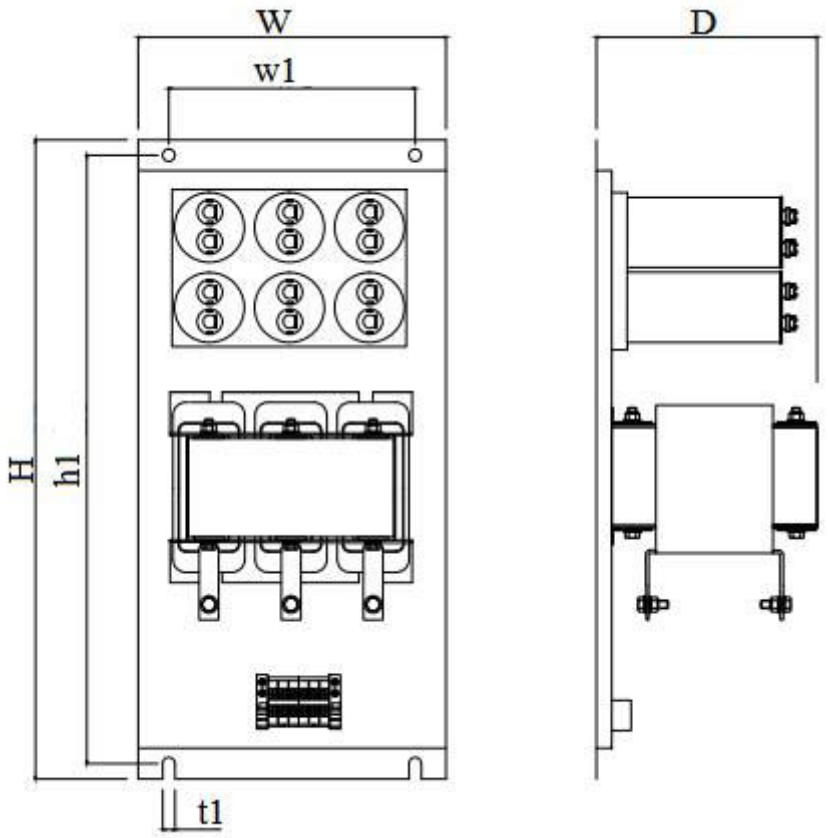
Dimensions and Weight



Sinewave Filter 8-312A, 380-415V/50Hz, IP20

Model Number	Motor Size (KW)	Current (A)	External mounting dimension(mm)						Weight (kg)	Heat Loss (W)
			H	W	D	h1	w1	t1		
TPQSW50008AA1	4	8	500	200	220	470	170	10	20	33
TPQSW50015AA1	8	15	500	300	225	470	270	10	22	43
TPQSW50026AA1	11	26	550	300	230	520	270	10	24	55
TPQSW50035AA1	15	35	550	300	235	520	270	10	26	65
TPQSW50046AA1	22	46	650	300	245	620	270	10	28	85
TPQSW50059AA1	30	59	650	300	250	620	270	10	31	95
TPQSW50078AA1	35	78	650	300	255	620	270	10	34	115
TPQSW50098AA1	45	98	650	300	265	620	270	10	37	131
TPQSW50117AA1	55	117	650	300	270	620	270	10	40	144
TPQSW50137AA1	65	137	650	300	285	620	270	10	45	155
TPQSW50156AA1	75	156	750	350	270	720	320	10	46	170
TPQSW50176AA1	90	176	750	350	285	720	320	12	50	185
TPQSW50215AA1	110	215	750	350	300	720	320	12	55	215
TPQSW50234AA1	120	234	750	350	325	720	320	12	66	250
TPQSW50273AA1	135	273	750	350	340	720	320	12	73	280
TPQSW50312AA1	160	312	750	350	360	720	320	12	85	311

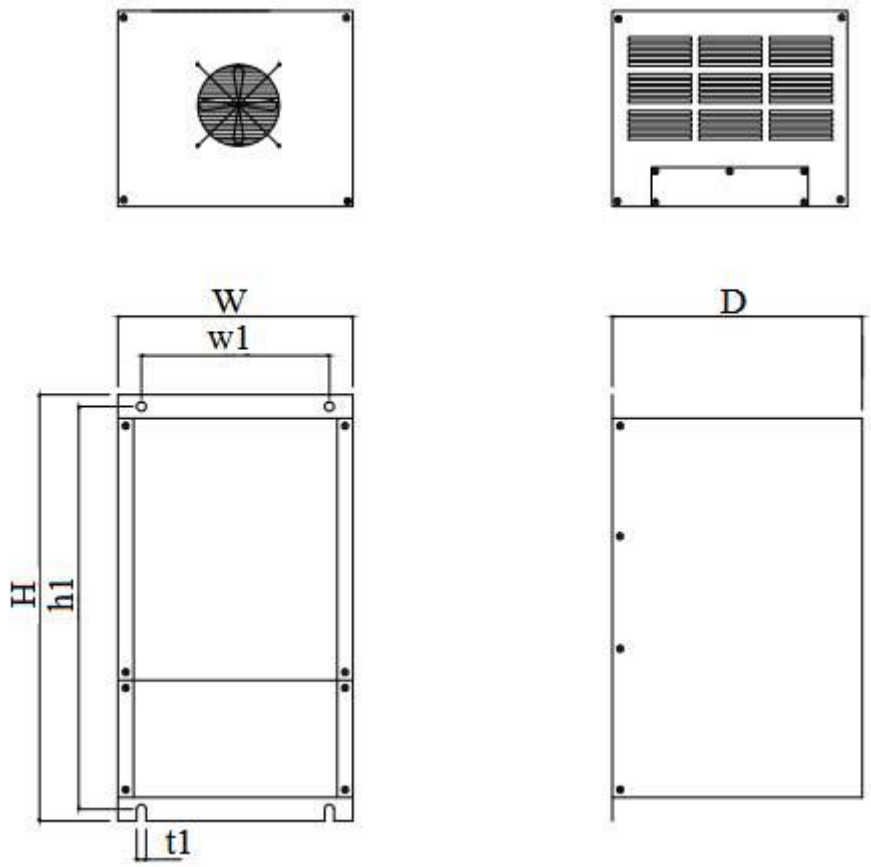
Dimensions and Weight



Sinewave Filter 8-312A, 600-690V/50Hz, IP00

Model Number	Motor Size (KW)	Current (A)	External mounting dimension(mm)						Weight (kg)	Heat Loss (W)
			H	W	D	h1	w1	t1		
TPQSW50008DA0	4	8	450	200	190	420	170	10	15	33
TPQSW50015DA0	8	15	450	300	195	420	270	10	17	43
TPQSW50026DA0	11	26	500	300	200	470	270	10	19	55
TPQSW50035DA0	15	35	500	300	205	470	270	10	21	65
TPQSW50046DA0	22	46	600	300	215	570	270	10	23	85
TPQSW50059DA0	30	59	600	300	220	570	270	10	26	95
TPQSW50078DA0	35	78	600	300	225	570	270	10	29	115
TPQSW50098DA0	45	98	600	300	235	570	270	10	32	131
TPQSW50117DA0	55	117	600	300	240	570	270	10	35	144
TPQSW50137DA0	65	137	600	300	255	570	270	10	40	155
TPQSW50156DA0	75	156	700	350	240	670	320	10	41	170
TPQSW50176DA0	90	176	700	350	255	670	320	12	45	185
TPQSW50215DA0	110	215	700	350	270	670	320	12	50	215
TPQSW50234DA0	120	234	700	350	295	670	320	12	61	250
TPQSW50273DA0	135	273	700	350	310	670	320	12	68	280
TPQSW50312DA0	160	312	700	350	330	670	320	12	80	311

Dimensions and Weight

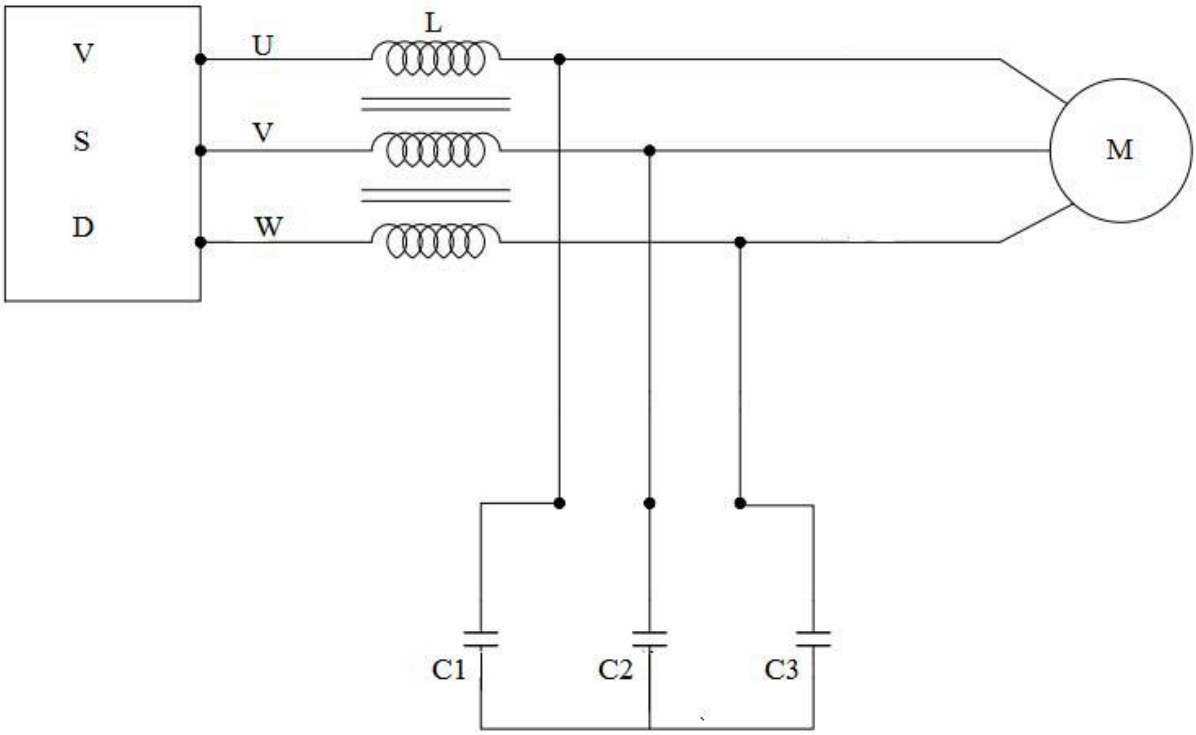


Sinewave Filter 8-312A, 600-690V/50Hz, IP20

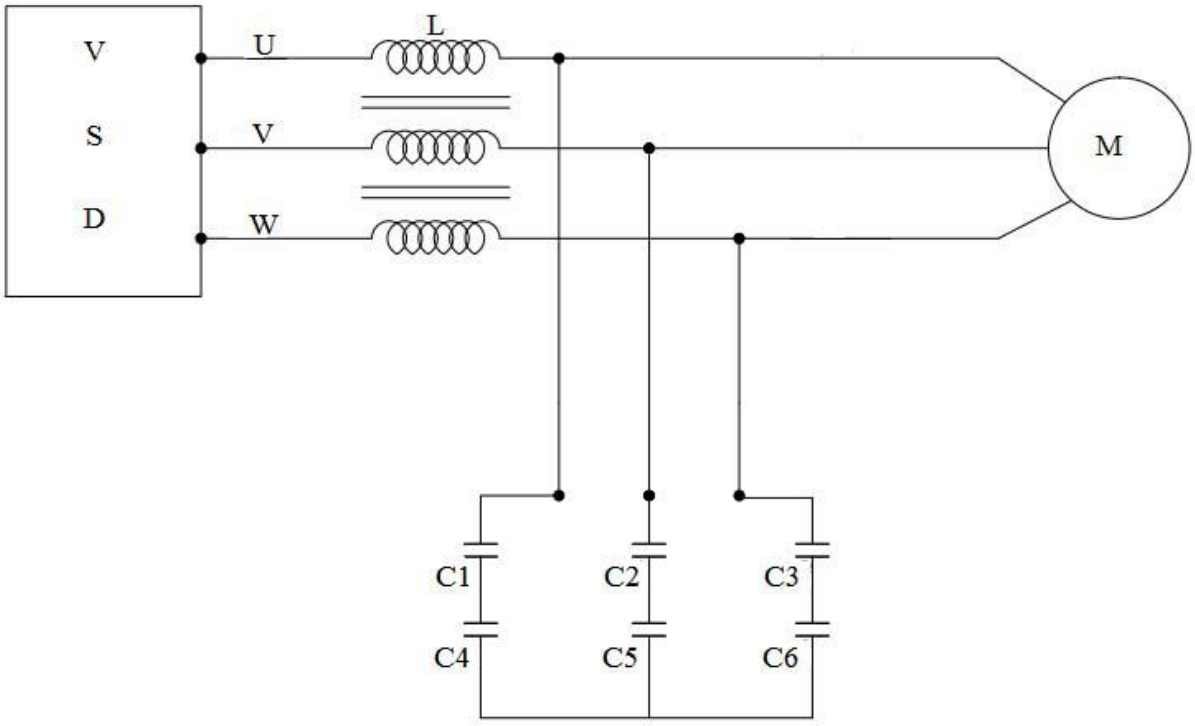
Model Number	Motor Size (KW)	Current (A)	External mounting dimension(mm)						Weight (kg)	Heat Loss (W)
			H	W	D	h1	w1	t1		
TPQSW50008DA1	4	8	500	200	220	470	170	10	20	33
TPQSW50015DA1	8	15	500	300	225	470	270	10	22	43
TPQSW50026DA1	11	26	550	300	230	520	270	10	24	55
TPQSW50035DA1	15	35	550	300	235	520	270	10	26	65
TPQSW50046DA1	22	46	650	300	245	620	270	10	28	85
TPQSW50059DA1	30	59	650	300	250	620	270	10	31	95
TPQSW50078DA1	35	78	650	300	255	620	270	10	34	115
TPQSW50098DA1	45	98	650	300	265	620	270	10	37	131
TPQSW50117DA1	55	117	650	300	270	620	270	10	40	144
TPQSW50137DA1	65	137	650	300	285	620	270	10	45	155
TPQSW50156DA1	75	156	750	350	270	720	320	10	46	170
TPQSW50176DA1	90	176	750	350	285	720	320	12	50	185
TPQSW50215DA1	110	215	750	350	300	720	320	12	55	215
TPQSW50234DA1	120	234	750	350	325	720	320	12	66	250
TPQSW50273DA1	135	273	750	350	340	720	320	12	73	280
TPQSW50312DA1	160	312	750	350	360	720	320	12	85	311

Wiring and Diagram

400V 50Hz Sinewave filter



690V 50Hz Sinewave filter



Specification

System Voltage	400V,690V
Phase	3 phase
Frequency	50 HZ
Carrier Frequency	2KHz to 4KHz
Per phase inductance	+/-3% tolerance for all three phases
Output wave form	Sine wave

Job reference

Hong Kong Landmark

Exchange Square

Alexandra House

China Mobile Data Centre

China Unicom Data Centre

Tin Shui Wai Hospital

AMD @ Chai Chee Lane

DBS Asia Hub @ Changi Business Park

Exxonmobile @ Jurong island

DBS Asia Hub @ Changi Business Park

DUO Tower @ mixed development

Halliburton@ Tuas Ave 12

HSBC @ HSBC Building

DBS Asia Hub@ Changi Business Park

Lonza Biologics Plant 2

Mandarin Oriental

National Centre for Infectious Disease

Vietnam Nestle-Binh An Factory

Ocean Financial Centre

PUB@Changi Water Reclaimation Plant

PUB @Jurong Water Reclaimation Plant

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