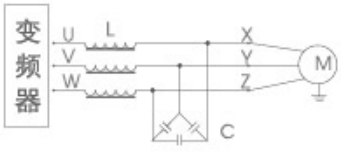
正弦波滤波器（SFR） Sine Wave Filter

典型电路图



■ 产品概述 （Product Introduction）

正弦波滤波器是在PWM变频器驱动下，其开关频率范围在2 – 8kHz之间仍提供正弦波输出电压。 在变频器驱动应用中，这种滤波器可以消除电机绝缘失效问题并通过消除与变频器输出波形相关的高dV/dT来减少电磁干扰，改善电机的性能和寿命，延长变频器输出距离，最长可达3KM。为保护电线电缆，使用正弦波滤波器可防止长引线驱动电机的过电压问题。在其他能源应用下，比如风力发电机，逆变器将电力通过升压变压器还原到实用的配电系统,这种滤波器可以允许使用标准变压器。满载并在60Hz时给变压器输入的谐波电压畸变最大值是5%的话，那么满载时给电机输入的谐波电压畸变一般就是5%。

Driven by the PWM inverter, the sine filter still provides sine wave output voltage when the switching frequency range is within the range of 2-8kHz. In the applications of inverter drives, such a filter can eliminate the problem of motor insulation failure and decrease electromagnetic interference by eliminating the high dV/dT related to inverter output waveform, so as to extend the life and improve the performance of the motor, and extend the output length of the inverter to up to 3KM. For the protection of wires and cables, the sine filter can avoid over-voltage of the drive motor with a long lead. In the application of other energy resources, wind generator, for example, the invertor restores the power to the utility power system through a step-up transformer. And such filters allow the use of a standard transformer. If the maximum value of the harmonic voltage distortion input to the transformer at full load and 60Hz is 5%, the harmonic voltage distortion input to the motor at full load is generally 5%.

■ 产品应用 （Product Application）

1.将变频器输出的PWM波转换成为正弦波
2.降低电机的涡流损耗以及电机噪声
3.减少输出电缆上和电机中的脉冲电流，延长电机寿命
4.可在变频器与电机间使用更长的电缆联线
5.减小对外的辐射,在一定场合可以使用非屏蔽电缆，降低了对现场布线的要求
6.有效防止高DV/DT、过电压、电机过热和涡流损耗造成的电机提前损坏。

1. Convert the PWM waves output by the inverter sine waves
2. Reduce the eddy current losses of the motor and the motor noise
3. Reduce the pulse current of the output cable and motor, extending the life of the motor*
4. A longer cable wire can be used between the inverter and motor
5. Reduce the external radiation, by using unshielded cable in certain situations, lowering the requirements for on-site wiring requirements
6. Effectively prevent fatigue damage of the motor caused by high DV/DT, over voltage, motor overheating and eddy current loss.

■ 技术规格 （Technical Specifications）

1. 工作电压：220VAC-690VAC
2. 工作电流：15A-1500A
3. 工作频率：50/60Hz.
4. 载波频率：2K-8K
5. 绝缘等级：class F,H
6. 压降：8%-12%
7. 电压谐波畸变失真THD≤5%
8. 空载电流≤8%
9. 使用环境：-10…+45 ℃,额定值不会降低。最高可达+55℃,
   在45℃以上，每升高1℃，额定电流降低2%
10. 防护等级：IP00-IP22

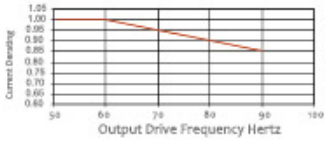
11. 最大电流：1.5×额定电流，持续60S
12. 噪　音：≤65dB
13. 温　升：≤85K
14. 抗电强度：铁芯-绕组 3000VAC/50Hz/5mA/10s无飞弧击穿(工厂测试)
15. 绝缘电阻：1000VDC绝缘阻值≥100MΩ
16. 海拔高度不超过2000米。
17. 运行环境温度-25℃～+45℃，相对湿度不超过90%。
18. 周围无有害气体，无易燃易爆物品。
19. 周围环境应有良好的通风条件，如装在柜内，应加装通风设备。

1. Work Voltage: 220VAC-690VAC
2. Work Current: 15A-1500A
3. Work Frequency: 50/60Hz
4. Switching frequency: 2~8KHz
5. Insulation Class: class F, H
6. Rated voltage drop: 8～12%
7. Voltage harmonic distortion: THD≤5%
8. Load Current≤8%
9. Operation Environment:-10~+45 ℃,rated value wont' t lower,when higer than 55℃, and every 1℃,the current will step down 2%
10. Protection class: IP00-IP22
11. Max Current: 1.5 x Rated current,continuous 60S
12. Noise: ≤ 65dB
13. Temperature Rise: ≤ 70K
14 Dielectric strength: Core Coil 3000VAC/50Hz/5mA/10s no electric arcing puncture (factory test)
15. Insulation Resistor: 1000VDC insulation resistance value ≥ 100MΩ
16. Under seal level 2000m
17. Running ambient temperature -25 ℃ ~ +45 ℃, comparative moisture not over 90%.
18. No hazardous gas,no inflammables and explosives
19. With well-ventilated condition,ventilation devices shall be mounted if installatioh in panels

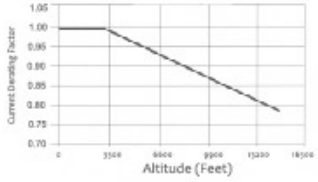
■ 执行标准 (Applicable Standards)

IEC289: 1987 Reactor
GB10229-88 Reactor (eqvIEC289: 1987)
JB9644-1999 Reactors used for semiconductor electrical driving

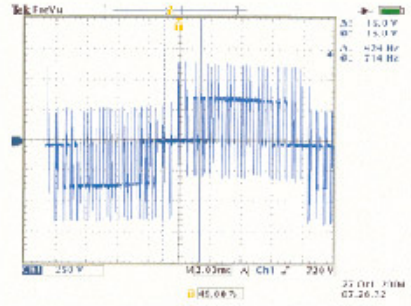
Sine Wave Filter Current Derating for Drive Output Frequency



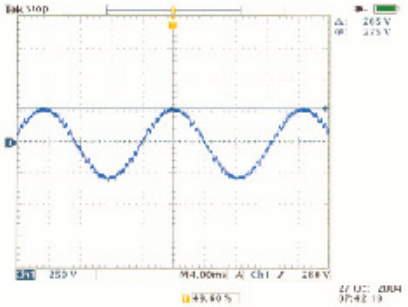
Altitude Derating Curve



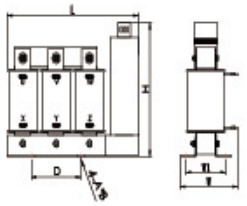
Raw output voltage waveform



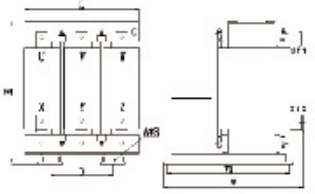
Output Voltage after Sine Wave Filter



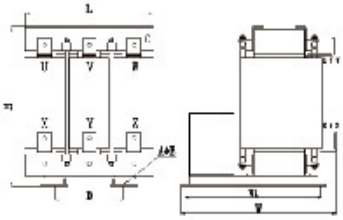
■ 产品尺寸图 (Product Size)



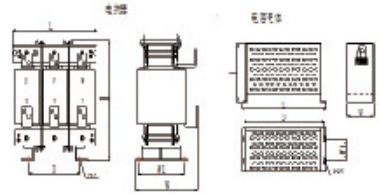
Picture A



Picture B



Picture C



Picture D

滤波器型号 TYPE	材质 Material	适配功率 Power(kw)	图号 Picture NO.	额定电流 Rated Current (A)	绝缘等级 Insulation Class	尺寸 Dimension(±5mm)					
						L(max)	W(max)	H(max)	W1±2	D±2	A*B
SFR-0007-8M00-0.4SC	CU	2.2	图 A	7	F	195	200	195	72	120	8.5*20
SFR-0010-6M00-0.4SC	CU	3.7		10	F	275	160	265	92	120	8.5*20
SFR-0015-4M00-0.4SC	CU	5.5		15	F	275	160	265	92	120	8.5*20
SFR-0020-3M00-0.4SC	CU	7.5		20	F	290	160	250	110	120	11*18
SFR-0030-2M00-0.4SC	CU	11		30	F	330	185	250	104	182	11*18
SFR-0040-1M50-0.4SC	CU	15		40	F	330	185	250	104	182	11*18
SFR-0050-1M20-0.4SC	CU	18.5		50	F	380	210	260	118	214	11*18
SFR-0060-1M10-0.4SC	CU	22		60	F	380	210	260	118	214	11*18
SFR-0080-0M85-0.4SA	AL			80	F	460	230	290	149	243	11*18
SFR-0090-0M80-0.4SA	AL	37	图 B	90	F	460	230	290	149	243	11*18
SFR-0120-OM52-0.4SA	AL	45		120	F	525	270	335	164	260	15*25
SFR-0150-0M45-0.4SA	AL	55		150	F	525	270	350	174	260	15*25
SFR-0200-0M30-0.4SA	AL	75		200	F	525	310	350	194	260	12*25
SFR-0250-0M28-0.4SA	AL	110		250	F	550	335	375	214	260	15*25
SFR-0290-0M23-0.4SA	AL	132		290	F	540	330	430	216	260	15*25
SFR-0330-0M20-0.4SA	AL	160		330	F	600	340	450	204	350	15*25
SFR-0390-0M17-0.4SA	AL	185		390	F	600	340	460	216	350	15*25
SFR-0490-0M14-0.4SA	AL	220	图 C	490	F	480	580	560	480	300	15*25
SFR-0600-0M12-0.4SA	AL	280		600	F	480	640	575	510	300	15*25
SFR-0660-0M10-0.4SA	AL	315		660	F	480	640	575	510	300	15*25
SFR-0800-087U-0.4SA	AL	380	图 D	800	F	550	400	640	320	360	15*25
电容+壳						520	165	310	100	480	11*18
SFR-1000-070U-0.4SA	AL	450		900	F	680	490	750	320	400	15*25
电容+壳						565	180	380	100	540	11*18
SFR-1200-058U-0.4SA	AL	500		1200	F	680	510	780	320	400	15*25
电容+壳						410	360	380	275	380	11*18
SFR-1500-050U-0.4SA	AL	630		1500	F	700	530	800	370	400	15*25
电容+壳						565	365	380	275	540	11*18

备注：其他规格尺寸，可根据用户要求制造。Remark: Dimension can be customization

■ 成品识别码 (Product Identification Code)

SFR	–	0330	–	0.4SC
正弦波滤波器 Sine Wave Filter		额定电流 Rated Current		0.4:Working Voltage 0.2=220V,0.4=380V,0.7=690V,1.1=1140V S: D=Single Phase Reactor S=Three Phase Reactor C: C=Copper A:Aluminium