

## 变频器专用滤波器 Special Filter For Inverter



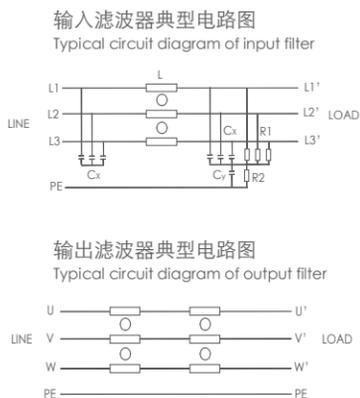
### 产品概述 (Product Introduction)

- 1.降低变频器对电网的传导干扰
- 2.在150kHz~30MHz范围内拥有优越的插入衰减表现
- 3.端子系列采用紧凑超薄设计
- 4.提高整个系统可靠性
- 5.N99为使用铜排接头, 其他为端子
- 6.端子为铜排以及后缀P系列的滤波器为高泄漏电流, 适合过证测试使用, 但不适用于有漏电保护器场合。
- 7.铜排以及后缀P系列的滤波器在电网电压不平衡及电容精度造成最大漏电流为33mA (400VAC/50Hz)

- 1.Reducing the conducted emission from inverter to power network.
- 2.Exceptional attenuation performance from 150kHz~30MHz.
- 3.Terminal series filter with most compact and slim design.
- 4.Improve the reliability of the whole system.
- 5.N99 uses copper bar connectors, while others are terminals
- 6.Terminals for copper and suffix P series of filter for high leakage currents, suitable for testing use, but does not apply to leakage protector occasions
- 7.Copper bar and filter the suffix P Series in non symmetrical and capacitance tolerance caused maximum leakage current is 33mA (400VAC/50Hz)

### 技术参数 (Technical Data)

- 1.额定电压: 440/250 VAC
- 2.工作频率: 50Hz
- 3.额定电流: 10A~2500A
- 3.高压试验: P-E 2100VDC/2sec P-P 2100VDC/2sec
- 4.温度范围: -25℃~100℃ (25/100/21)
- 5.设计依据: IEC/EN 60939、UL1283
- 6.典型滤波频率: 150kHz~30MHz



- 1.Rated voltage: 440/250 VAC
- 2.Operating frequency: 50Hz
- 3.Rated current: 10A~2500A
- 3.High potential test voltage: P-E 2100VDC/2sec P-P 2100VDC/2sec
- 4.Temperature range: -25 C~100 C (25/100/21)
- 5.Design corresponding to: IEC/EN 60939、UL1283
- 6.Typical work frequency: 150kHz~30MHz

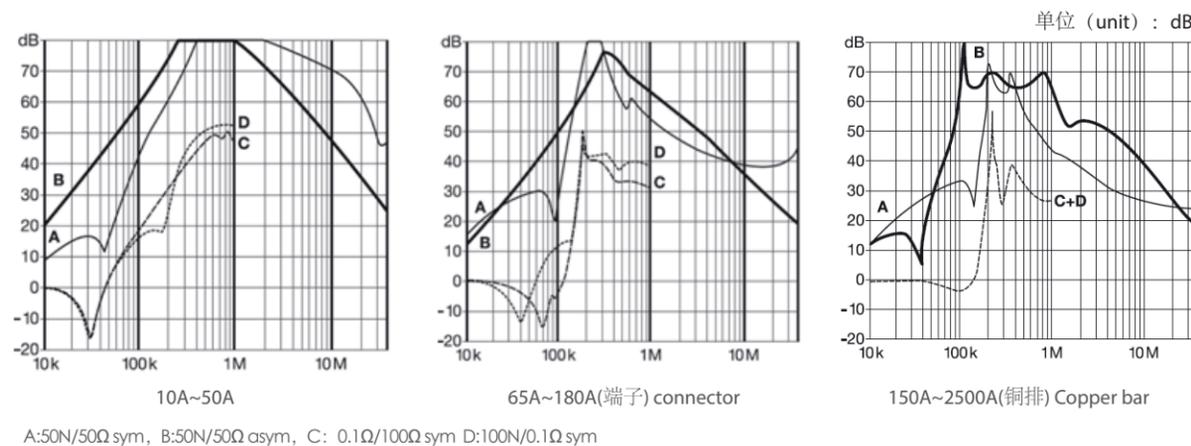
### 典型应用 (Typical Applications)

- 1.三相调速电机驱动、伺服驱动、变频器及逆变器
- 2.能量转换装置, 如机器及自动化设备
- 3.空调设备, 电梯, 电力供应, UPS, 注塑机
- 4.风能, 太阳能等新能源逆变系统
- 1.Three-phase variable speed motor drives, servo drives, inverter and converters
- 2.Energy conversion devices, such as machines and automatic equipment
- 3.HVAC equipment, elevators, power suppliers, UPS, injection molding machine and further three-phase applies
- 4.Wind energy, solar energy and other new energy inverter system

### 滤波器选型表 (Filter Selection Table)

适配变频器参数 Adapter inverter parameter		滤波器型号 Filter type		额定电流 Rated current	端子代码 Connector code
功率 Drive power rating	额定电压 Rated voltage	输入滤波器 Input filter	输出滤波器 Output filter		
5.5kW	440VAC	RFI4C10N6	RFI4C10N6P	10A	-N6
7.5kW	440VAC	RFI4C20N6	RFI4C20N6P	20A	-N6
15kW	440VAC	RFI4C30N10	RFI4C30N10P	30A	-N10
18.5kW	440VAC	RFI4C40N10	RFI4C40N10P	40A	-N10
22kW	440VAC	RFI4C50N16	RFI4C50N16P	50A	-N16
30kW	440VAC	RFI4C65N16	RFI4C65N16P	65A	-N16
37kW	440VAC	RFI4C80N35	RFI4C80N35P	80A	-N35
45kW	440VAC	RFI4C100N35	RFI4C100N35P	100A	-N35
55kW	440VAC	RFI4C130N50	RFI4C130N50P	130A	-N50
90kW	440VAC	RFI4C180N95	RFI4C180N95P	180A	-N95
75kW	440VAC	RFI4C150N99	RFI4C150N99	150A	
110kW	440VAC	RFI4C200N99	RFI4C200N99	200A	
132kW	440VAC	RFI4C250N99	RFI4C250N99	250A	
160kW	440VAC	RFI4C320N99	RFI4C320N99	320A	
220kW	440VAC	RFI4C400N99	RFI4C400N99	400A	
315kW	440VAC	RFI4C600N99	RFI4C600N99	600A	
400kW	440VAC	RFI4C800N99	RFI4C800N99	800A	
560kW	440VAC	RFI4C1000N99	RFI4C1000N99	1000A	
900kW	440VAC	RFI4C1600N99	RFI4C1600N99	1600A	
1320kW	440VAC	RFI4C2500N99	RFI4C2500N99	2500A	

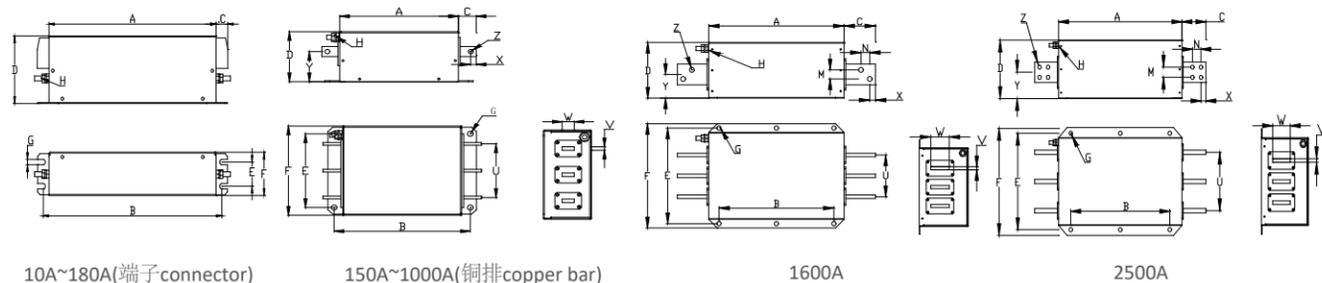
### 输入滤波器插入损耗 (Input Filter Attenuation)



### 滤波器输入输出端子接线范围及扭矩选择 (Filter Input/output Connector Cross Sections)

	-N6	-N10	-N35	-N35	-N50	-N95
多股软线/mm <sup>2</sup> Flex wire	0.5~6	0.5~10	1~16	10~35	16~50	25~95
美标线规 AWG number	AWG8-26	AWG6-24	AWG4-20	AWG2-8	AWG6-1/0	AWG4-4/0
推荐扭矩/N.m Recommended torque	1.36	1.36	2.71	4.41	4.41	19.2

■ 产品尺寸图 (Product Size)



代号 Code 电流 Current	A	B	C	D	E	F	G	H	M	N	U	V	W	X	Y	Z
10A	168	180	15.5	75	20	40	4.5	M5								
20A	220	235	15.5	75	25	45	5.5	M5								
30A~40A	240	255	35	85	30	50	5.5	M5								
50A~65A	220	235	35	90	60	85	5.5	M6								
80A~100A	240	255	38.5	140	60	85	6.5	M8								
130A	240	255	43	150	65	95	6.5	M8								
180A	350	365	50	170	102	120	6.5	M8								
150A~250A	240	275	40	100	165	205	11.5	M10			120	3	20	10	51.5	9
320A								M10			120	4	25	12.5	51.5	11
400A								M10			120	6	25	12.5	51.5	11
600A								M10			120	8	25	12.5	51.5	11
800A	310	345	50	130	155	205	11.5	M10			120	6	40	20	68.5	13.5
1000A								M10			120	8	40	20	68.5	13.5
1600A	400	340	93	160	275	300	12.5	M12	26	26	120	10	60	17	68	14
2500A	600	500	98	200	330	370	14.5	M12	35	35	200	15	70	20	90	14

(单位 unit: mm)

■ 成品识别码 (Product Identification Code)

RFI	—	4NC	—	250	—	N99
变频器专用滤波器 Special Filter For Inverter RFI: Input filter RFO: Output filter		4: Working Voltage 4=380V, 7=690V N: N=Three-phase four-wire 无=Three-phase three-wire C: C=Three-stage filtering B: Second-order filtering		额定电流 Rated Current 10A-2500A		接线方式 Connection mode

三相四线滤波器 3-phase + Neutral Line Filters

■ 产品概述 (Product Introduction)

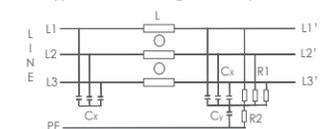
- 1.降低整个系统对电网的传导干扰
  - 2.在150kHz~30MHz范围内拥有优越的插入衰减表现
  - 3.设计紧凑, 优化工业设计
  - 4.系统进线安装该系列的滤波器, 可以提高整个系统可靠性
  - 5.N99为使用铜排接头, 其他为端子
- 1.Reducing the conducted emission from inverter to power network.
  - 2.Exception attenuation performance from 150kHz~30MHz
  - 3.Compact, space-saving design, optimized for industrial machinery
  - 4.Increases also the immunity if operated directly on the mains input
  - 5.N99 uses copper bar connectors, while others are terminals



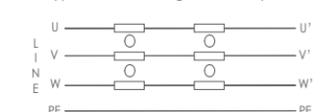
■ 技术参数 (Technical Data)

- 1.额定电压: 440/250 VAC
  - 2.工作频率: 50Hz
  - 3.额定电流: 10A~600A (@50°C)
  - 3.高压试验: P-E 2100VDC/2sec P-P 2100VDC/2sec
  - 4.温度范围: -25°C~100°C (25/100/21)
  - 5.设计依据: IEC/EN 60939、UL1283
  - 6.典型滤波频率: 150kHz~30MHz
- 1.Rated voltage: 440/250 VAC
  - 2.Operating frequency: 50Hz
  - 3.Rated current: 10A~600A (@50°C)
  - 3.High potential test voltage: P-E 2100VDC/2sec P-P 2100VDC/2sec
  - 4.Temperature range: -25°C~100°C (25/100/21)
  - 5.Design corresponding to: IEC/EN 60939、UL1283
  - 6.Typical work frequency: 150kHz~30MHz

输入滤波器典型电路图  
Typical circuit diagram of input filter



输出滤波器典型电路图  
Typical circuit diagram of output filter

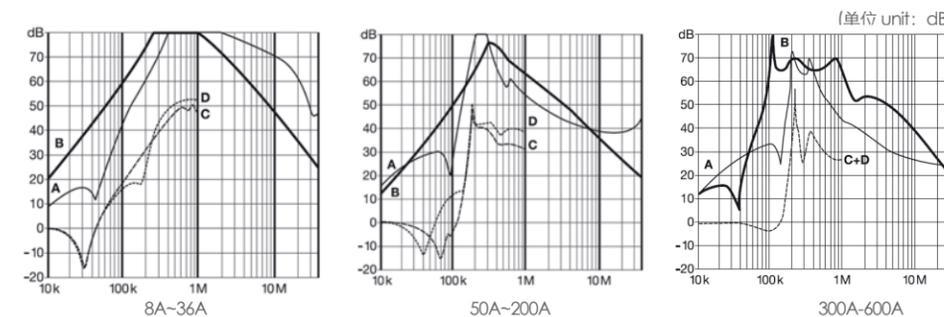


■ 典型应用 (Typical Applications)

主要应用于工业设备, 机械, 机床及其他自动化控制的三相四线电力系统。由于出色的性能衰减, 该系列滤波器也是嘈杂的电源的首选, 应用于可再生能源、大功率的办公设备和其他三相四线的设备。因为相对较低的漏电流, 该系列滤波器甚至可以用于一些医疗设备。

Mainly industrial equipment, machinery, machinetools and diverse process automation systems with three-phase and neutral electricity supply. Due to the outstanding attenuation performance, The series is also the first choice for noisy power supplies, renewable energy applications, high power office equipment and further three-phase and neutral devices. Because of the relatively low leakage current, The series may even be used for some medical devices.

■ 输入滤波器插入损耗 (input filter attenuation)

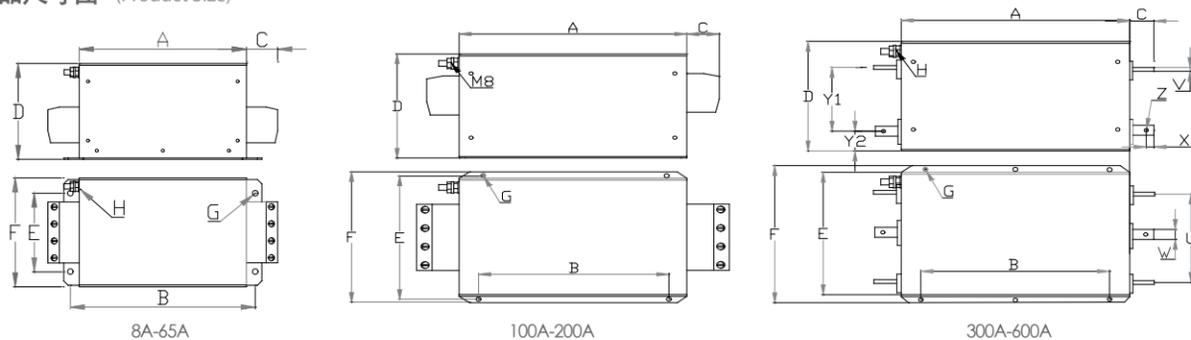


A:50N/50Ω sym, B:50N/50Ω asym, C: 0.1Ω/100Ω sym D:100N/0.1Ω sym

■ 滤波器选型表 (Filter Selection Table)

滤波器型号 Filter type	额定电流 Rated current @40°C [A]	漏电流 Leakage current @230VAC/50Hz [mA]	能量损耗 Power loss @25°C/50Hz [W]	端子类型 Connector type
RFI4NC8N06	8	<1	3.2	端子 solid safety connector
RFI4NC16N06	16	<1	6.5	端子 solid safety connector
RFI4NC25N10	25	<1	11.8	端子 solid safety connector
RFI4NC36N10	36	<1	15.3	端子 solid safety connector
RFI4NC50N16	50	<1	17.4	端子 solid safety connector
RFI4NC65N16	65	<1	18.9	端子 solid safety connector
RFI4NC100N35	100	<1	23.6	端子 solid safety connector
RFI4NC130N50	130	<1	28.5	端子 solid safety connector
RFI4NC160N95	160	<1	31	端子 solid safety connector
RFI4NC200N95	200	<1	47.4	端子 solid safety connector
RFI4NC300N99	300	<1	20.3	铜排 copper bar
RFI4NC400N99	400	<1	36	铜排 copper bar
RFI4NC600N99	600	<1	64.8	铜排 copper bar

■ 产品尺寸图 (Product Size)



代号 Code 电流 Current	A	B	C	D	E	F	G	H	U	V	W	X	Y1	Y2	Z
8A~16A	160	180	15.5	80	65	100	5.5	M5							
25A~36A	160	180	35	100	75	115	5.5	M5							
50A~65A	190	210	35	110	90	125	6.4	M6							
100A	230	120	38.5	125	150	163	6.4	M8							
130A	250	200	43	140	157	170	6.4	M8							
160A~200A	280	220	52	170	166	180	6.4	M8							
300A	325	240	58	150	195	220	11	M10	120	4	25	12.5	72	43	11
400A	325	240	58	150	195	220	11	M10	120	6	25	12.5	72	43	11
600A	325	240	58	150	195	220	11	M10	120	8	25	12.5	72	43	11

(单位 unit: mm)

■ 滤波器输入输出端子接线范围及扭矩选择 (Filter Input/output Connector Cross Sections)

	-N6	-N10	-N16	-N35	-N50	-N95
多股软线/mm <sup>2</sup> Flex wire	0.5~6	0.5~10	1~16	10~35	16~50	25~95
美标线规 AWG number	AWG8-26	AWG6-24	AWG4-20	AWG2-8	AWG6-1/0	AWG4-4/0
推荐扭矩/N.m Recommended torque	1.36	1.36	2.71	4.41	4.41	19.2

单相滤波器 1-phase filter

■ 产品概述 (Product Introduction)

1. 具有高衰减性能的通用滤波器
2. 具有良好的共模差模滤波性能
3. 广泛应用于开关电源, UPS, 变频逆变等场合
4. 超过50A一定要确保接地良好, 否则有电击危险
5. 医用型的滤波器后缀为A

1. General purpose EMI filter with high attenuation performance
2. High common-mode and differential-mode attenuation
3. Widely used in switching power, UPS, inverter, etc.
4. Exceed 50A must ensure that the ground is good, otherwise there is a risk of electric shock
5. Medical type filter suffix for A



■ 技术参数 (Technical Data)

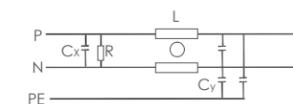
额定电压: 250 VAC  
 工作频率: 0~60Hz  
 额定电流: 3A~200A  
 高压试验: P/N-E 2000VAC/2sec θP-N 1100VDC/2sec  
 温度范围: -25°C~85°C (25/85/21)  
 设计依据: IEC/EN 60939  
 典型滤波频率: 150kHz~30MHz  
 Rated voltage: 250 VAC  
 Operating frequency: 0~60Hz  
 Rated current: 3A~200A  
 High potential test voltage: OP/N-E 2000VAC/2sec OP-N 1100VDC/2sec  
 Temperature range: -25°C~85°C (25/85/21)  
 Design corresponding to: IEC/EN 60939  
 Typical work frequency: 150kHz~30MHz

■ 典型应用 (Typical Applications)

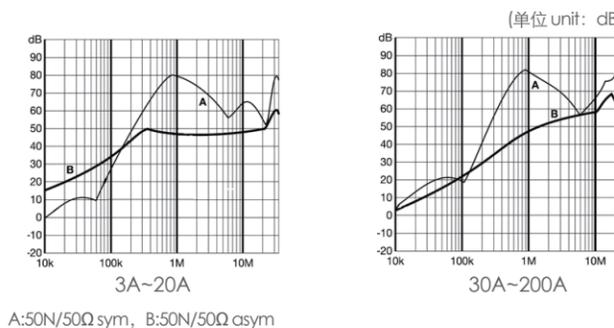
1. 电气和电子设备
2. 消费品
3. 家庭设备
4. 电子数据处理设备
5. 办公自动化和数据通信设备
6. 电磁环境恶劣且需要高性能滤波滤波器

Electrical and electronic equipment  
 Consumer goods  
 Household equipment  
 Electronic data processing equipment  
 Office automation and datacom equipment  
 Various noisy applications requiring high filter performance

典型电路图  
typical electrical schematic



■ 输入滤波器插入损耗 (Input Filter Attenuation)

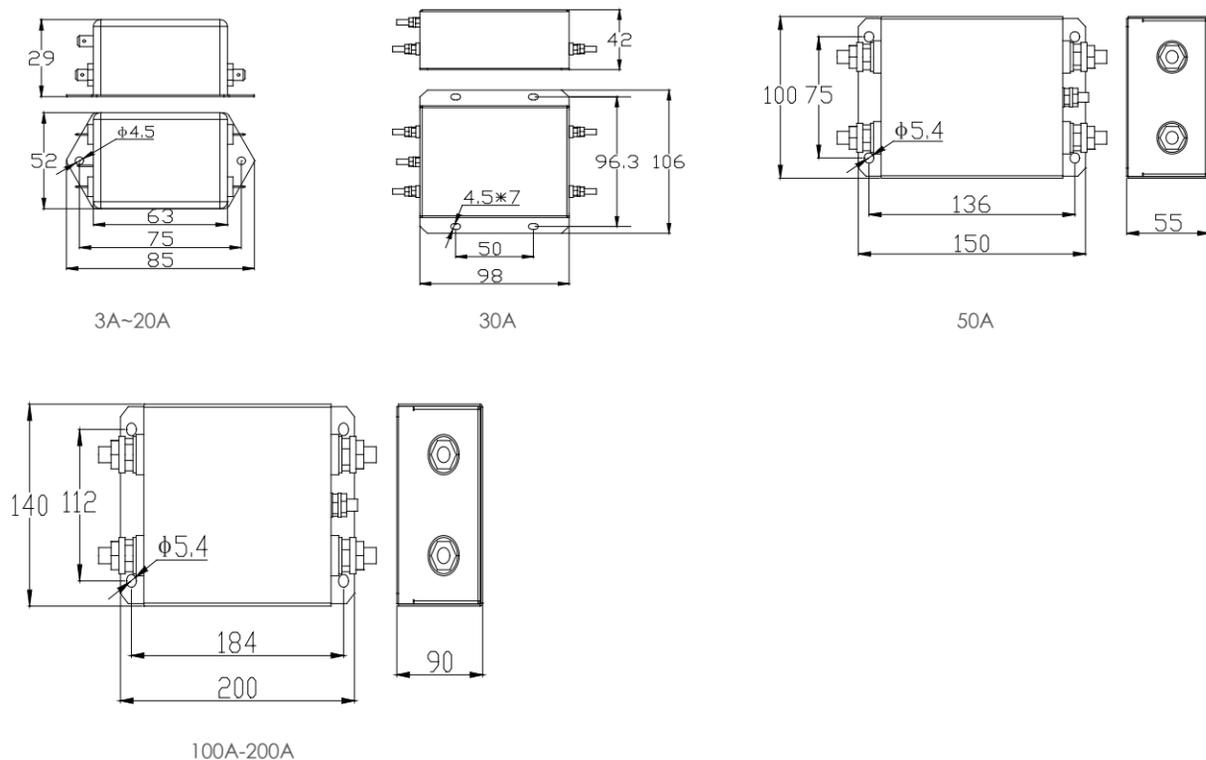


■ 滤波器选型表 (Filter Selection Table)

滤波器型号 Filter type		额定电流 Rated current @40°C [A]	漏电流 Leakage current @230VAC/50Hz [mA]		能量损耗 Power loss @25°C/50Hz [W]	端子类型 Connector type
通用型 Universal filter	医用型 Medical filter		通用型 Universal filter	医用型 Medical filter		
RFD2B3N01	RFD2B3N01A	3	0.87	0.074	2.3	
RFD2B6N01	RFD2B6N01A	6	0.87	0.074	3.2	
RFD2B10N01	RFD2B10N01A	10	0.87	0.074	3.8	
RFD2B16N01	RFD2B16N01A	16	0.87	0.074	4.7	
RFD2B20N01	RFD2B20N01A	20	0.87	0.074	5.6	
RFD2B30N05	RFD2B30N05A	30	0.87	0.074	8.5	
RFD2B50N05	RFD2B50N05A	50	1.75	0.074	13.3	
RFD2B100N05	RFD2B100N05A	100	1.75	0.074	30.2	
RFD2B200N05	RFD2B200N05A	200	3.5	0.074	46.9	

■ 产品尺寸图 (Product Size)

(单位 unit: mm)



■ 成品识别码 (Product Identification Code)



线噪声滤波器 (RF) Line noise filter

■ 产品概述 (Product Introduction)

有效抑制伺服放大器电源侧或输出侧产生的无线电干扰，也可抑制高频漏电流（零相电流）。在0.5MHz-5MHz范围尤其有效。

Effectively suppress radio interference generated on power supply side or output side of the servo amplifier, and also suppress high-frequency leakage current (zero phase current). Especially effective in the range of 0.5MHz-5MHz.

■ 技术规格 (Technical Specifications)

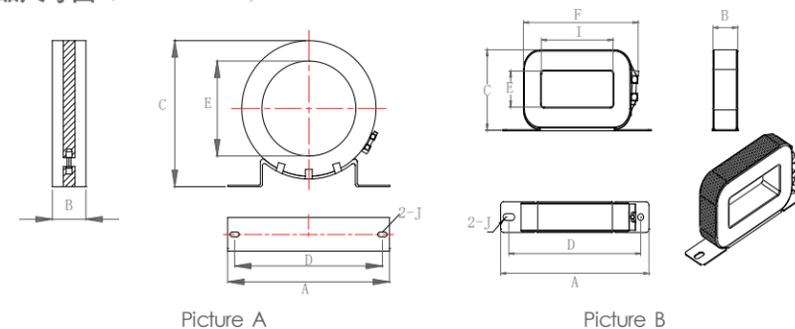
品名 Product Name	尺寸 Size (±1mm)				Ae (mm <sup>2</sup> ) TYP	Lm (mm <sup>2</sup> ) TYP	重量 Picture	AL (uH/N <sup>2</sup> ± 35%)			
	A	B	C	D				10KHZ	100KHZ		
RF-BFS01	65	15	42	50	18.3	6.5*11	121	78.1	60	13.8~23.1	18.5
RF-BFS02	65	20	47	50	22	6.5*11	175	91.7	98.4	16.1~26.8	21.5
RF-BFS03	80	19	57	65	30	6.5*11	186	120	140	17.0~28.4	17.4
RF-BFS04	110	25	70	95	38	6.5*11	305	152	280	13.1~24.3	22.7
RF-BFS05	135	20	88	115	40	6.5*11	384	174	425	12.4~20.8	16.6
RF-BFS06	170	18	115	155	65	6.5*11	371	260	400	8.5~14.1	11.3

品名 Product Name	尺寸 Size (±1mm)				Ae (mm <sup>2</sup> ) TYP	Lm (mm <sup>2</sup> ) TYP	重量 Picture	AL (uH/N <sup>2</sup> ± 35%)					
	A	B	C	D				10KHZ	100KHZ				
RF-BFL01	50	25.5	44.3	40	22.2	25	8.4	5*5	212	89	115	4.5~7.5	6.0
RF-BFL02	160	25.4	106.6	140	50.8	114.2	63.4	6.5*11	645	308	1200	3.8~6.3	5.0
RF-BFL03	180	30	85	160	37	130	86	6.5*11	647	314	1450	3.6~6.0	4.8
RF-BFL04	220	40	125	190	59	160	101	8.5*14	1200	421	3100	5.2~8.6	6.9
RF-BFL05	250	39	145	220	60	190	113.2	8.5*14	1548	497	4200	5.3~8.8	7.0
RF-BFL06	310	40	166	280	78	240	160	8.5*14	1577	597	5000	4.4~7.3	5.8

备注：本产品符合UL94V-0认定的数值（耐热温度130℃），本产品不含有臭氧层破坏物质ODC，在制造过程中也没有使用臭氧层破坏物质ODC  
This product meets the UL94V-0 certification value (heat-resistant temperature of 130 °C), This product does not contain ozone depleting substances (ODCs), and no ODCs were used during the manufacturing process

Ae: 有效截面积, Lm: 平均磁路长  
Ae: effective cross-sectional area, Lm: average magnetic path length

■ 产品尺寸图 (Product Size)

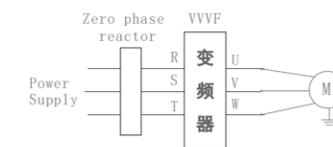


■ 成品识别码 (Product Identification Code)

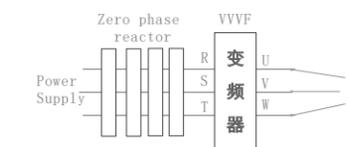


典型电路图

(Typical circuit diagram)



注) 将电源线在零相电抗器处卷成4匝以上  
在输出端也需要同样适用。  
Note) Roll the power cord into more than 4 turns at the zero phase reactor  
It also needs to be applicable at the output end.



注) 请勿直接贯通使用。(4个以上)

根据所使用的电缆的种类、尺寸不同，存在无法使用的场合。

Note) Please use without rolling directly. (4 or more)

400V and above 200KW models, please use RF-BFL series

Depending on the type and size of cable used, there may be situations where it cannot be used.