

High compact Magnetic Sensor

FC series 磁簧傳感器

- High compact 堅固耐用
- High Reliability 高穩定性
- High Noise Resistance 高抗干擾力
- Short circuit protection DC type附短路保護
- High protection class IP-67 高防水等級IP-67



● Model guiding / 型號索引

Ex. <u>FC</u> - <u>20</u> <u>R</u> - <u>H</u> - <u>2M</u>	
1 2 3 4 5	
1 Series (系列名稱)	「FC」: Magnetic sensor 「MS」: M8 Tubular type
2 Model (形式)	「20」: Plastic housing 「11」: Plastic housing 「05」: Plastic housing 「08」: M8
3 Output method (輸出方式)	「R」: Reed contact 「RE」: Output protection 「RN」: Reed contact NPN 「RP」: Reed contact PNP 「N」: NPN output 「P」: PNP output 「D」: Two wire solid state output
4 Sensitivity (感度) or Output status	「Non」: Standard sensitivity (<80 Gauss) 「H」: High sensitivity (<40 Gauss) 「L」: Low sensitivity (<120 Gauss) 「B」: NC type
5 Connection (出線方式)	「2M」: 2m cable/ 「1M」: 1m cable/ 「4M」: 4m cable 「PG」: M8 connector Lead wire/ 「PE」: Plastic connector Lead wire

※ Notice for use / 選型使用注意事項 (*)

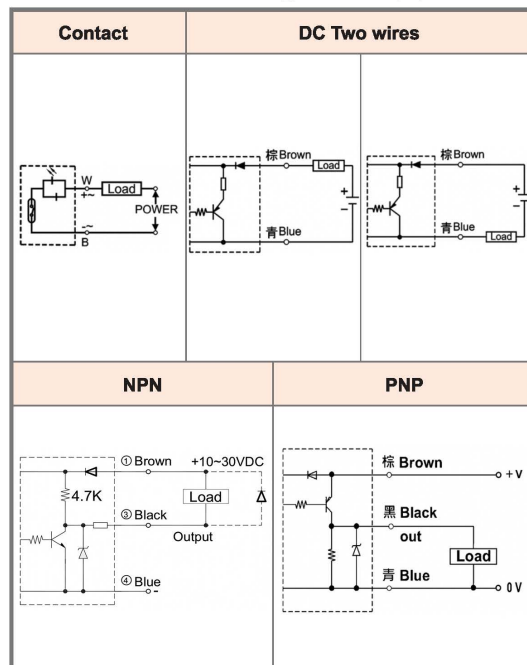
1. 所有型號都有輸出短路及極性保護，除「FC-xxR」沒輸出短路保護。
2. 請配合氣缸磁環選用適當感度的機型。「感度太高」動作點會提前或易受帶磁外物干擾，「感度太低」無動作或訊號漏失。
3. 「2線式」最好不要超過2個以上串聯使用以免無法推動負載。(因每個都有輸出壓降約3.0V)
4. 「FC-xxR」及「FC-xxRE」極性反接仍可感應輸出但指示燈不會亮，須更換極性即可正常動作，其他型極性接反則無動作。

1. All model with Output short circuit & Polarity reversed protection, excepted 「FC-xxR」.
2. Optimum sensitivity of sensor is required, if it is too high to be turned on too early or be interrupted, if it is too low to lose signal.
3. It maybe cannot operate the load, if series connection over 2 pieces of 「2 wire type」 sensor.
4. 「FC-xxR」 & 「FC-xxRE」 may turn on load but cannot turn on operating LED, other type don't work, if power polarity is reversed.

● General data / 共同規格

Specification	規格	Data	
Sensor	感應器	Reed sensor	Hall sensor
Contact rated	接點功率	10W max.	---
Output current	輸出電流	50mA or 150mA or 500mA max.	50mA or 150mA max.
Current consumption	消耗電流	non	8mA max.
Output protection	輸出保護	*	Short circuit & Polarity reversed
Vibration resistance	耐震動	50g (490m/S ² / (55 ~ 2000 Hz)) IEC-60068-2-6)	60g (588m/S ² / (55 ~ 2000 Hz)) (IEC-60068-2-6)
Shock resistance	耐衝擊	100g (980m/S ² with 11ms) (IEC-60068-2-27)	120g (1176m/S ² with 11ms) (IEC-60068-2-27)
Protection class	保護等級	IP-67 (IEC-60529)	
EMC Interference	電磁相容	IEC 61000-6-4	
Dielectric strength	電介強度	2.5kv / 1 minute min.	
Insulation strength	絕緣強度	100 MΩ / 500vdc	
Operation circum.	工作環境	-25°C ~ +85°C : 100%RH max. (Condensation permitted)	

● Connection diagram / 接線圖



Specification / 規格

Series	Model	Wires	Operating voltage	Output method	Voltage drop	Leakage current	Output current	Sensitivity (Gauss)	Response frequency	Sensor	Housing material	Outline
FC-20	FC-20R	2c/4Φ	5~240VDC/AC	Contact	3.0V	non	500mA	H<40 N<80 L<120	200Hz	Reed sensor	Intensive Nylon	
	FC-20RE	2c/4Φ	5~60VDC	Contact	3.0V	non	150mA					
	FC-20RN	3c/4Φ	5~30VDC	NPN	3.0V	non						
	FC-20RP	3c/4Φ	5~30VDC	PNP	3.0V	non	150mA	<40	5KHz	Hall sensor		
	FC-20D	2c/4Φ	10~30VDC	T	3.5V	0.5mA						
	FC-20N	3c/4Φ	5~30VDC	NPN	0.8V	0.1mA						
FC-20P	3c/4Φ	5~30VDC	PNP	0.8V	0.1mA							
FC-04	FC-04R	2c/3Φ	5~240VDC/AC	Contact	3.0V	non	500mA	H<40 N<80 L<120	200Hz	Reed sensor	Intensive Nylon	
	FC-04RE	2c/3Φ	5~60VDC	Contact	3.0V	non	50mA					
	FC-04D	2c/3Φ	10~30VDC	T	3.5V	0.5mA	150mA					
	FC-04N	3c/3Φ	5~30VDC	NPN	0.8V	0.1mA						
	FC-04P	3c/3Φ	5~30VDC	PNP	0.8V	0.1mA						
FC-05	FC-05R	2c/3Φ	5~240VDC/AC	Contact	3.0V	non	500mA	H<40 N<80 L<120	200Hz	Reed sensor	Intensive Nylon	
	FC-05RE	2c/3Φ	5~60VDC	Contact	3.0V	non	50mA					
	FC-05D	2c/3Φ	10~30VDC	T	3.5V	0.5mA	150mA					
	FC-05N	3c/3Φ	5~30VDC	NPN	0.8V	0.1mA						
	FC-05P	3c/3Φ	5~30VDC	PNP	0.8V	0.1mA						
FC-10	FC-10D	2c/3Φ	10~30VDC	T	3.5V	0.5mA	150mA	<40	5KHz	Hall sensor	ABS	
	FC-10N	3c/3Φ	5~30VDC	NPN	0.8V	0.1mA						
	FC-10P	3c/3Φ	5~30VDC	PNP	0.8V	0.1mA						
FC-11	FC-11R	2c/3Φ	5~240VDC/AC	Contact	3.0V	non	500mA	H<40 N<80 L<120	200Hz	Reed sensor	Intensive Nylon	
	FC-11RE	2c/3Φ	5~60VDC	Contact	3.0V	non	50mA					
	FC-11D	2c/3Φ	10~30VDC	T	3.5V	0.5mA	150mA					
	FC-11N	3c/3Φ	5~30VDC	NPN	0.8V	0.1mA						
	FC-11P	3c/3Φ	5~30VDC	PNP	0.8V	0.1mA						
FC-36	FC-36D	2c/2.5Φ	10~30VDC	T	3.5V	0.5mA	50mA	<40	5KHz	Hall sensor	Intensive Nylon	
	FC-36N	3c/2.5Φ	5~30VDC	NPN	0.8V	0.1mA						
	FC-36P	3c/2.5Φ	5~30VDC	PNP	0.8V	0.1mA						
FC-37	FC-37D	2c/2.5Φ	10~30VDC	T	3.5V	0.5mA	50mA	<40	5KHz	Hall sensor	Intensive Nylon	
	FC-37N	3c/2.5Φ	5~30VDC	NPN	0.8V	0.1mA						
	FC-37P	3c/2.5Φ	5~30VDC	PNP	0.8V	0.1mA						
FC-47	FC-47R	2c/3Φ	5~240VDC/AC	Contact	3.0V	non	500mA	H<40 N<80 L<120	200Hz	Reed sensor	Intensive Nylon	
	FC-47RE	2c/3Φ	5~60VDC	Contact	3.0V	non	50mA					
	FC-47D	2c/3Φ	10~30VDC	T	3.5V	0.5mA	150mA					
	FC-47N	3c/3Φ	5~30VDC	NPN	0.8V	0.1mA						
	FC-47P	3c/3Φ	5~30VDC	PNP	0.8V	0.1mA						
FC-48	FC-48R	2c/3Φ	5~240VDC/AC	Contact	3.0V	non	500mA	H<40 N<80 L<120	200Hz	Reed sensor	Intensive Nylon	
	FC-48RE	2c/3Φ	5~60VDC	Contact	3.0V	non	50mA					
	FC-48D	2c/3Φ	10~30VDC	T	3.5V	0.5mA	150mA					
	FC-48N	3c/3Φ	5~30VDC	NPN	0.8V	0.1mA						
	FC-48P	3c/3Φ	5~30VDC	PNP	0.8V	0.1mA						
FC-50	FC-50R	2c/3Φ	5~240VDC/AC	Contact	3.0V	non	500mA	H<40 N<80 L<120	200Hz	Reed sensor	Intensive Nylon	
	FC-50RE	2c/3Φ	5~60VDC	Contact	3.0V	non	50mA					
	FC-50D	2c/3Φ	10~30VDC	T	3.5V	0.5mA	150mA					
	FC-50N	3c/3Φ	5~30VDC	NPN	0.8V	0.1mA						
	FC-50P	3c/3Φ	5~30VDC	PNP	0.8V	0.1mA						
FC-50S	FC-50SR	2c/3Φ	5~240VDC/AC	Contact	3.0V	non	500mA	H<40 N<80 L<120	200Hz	Reed sensor	Intensive Nylon	
	FC-50SRE	2c/3Φ	5~60VDC	Contact	3.0V	non	50mA					
	FC-50SD	2c/3Φ	10~30VDC	T	3.5V	0.5mA	150mA					
	FC-50SN	3c/3Φ	5~30VDC	NPN	0.8V	0.1mA						
	FC-50SP	3c/3Φ	5~30VDC	PNP	0.8V	0.1mA						
FC-53	FC-53R	2c/3Φ	5~240VDC/AC	Contact	3.0V	non	500mA	<40	200Hz	Reed	Intensive ABS	
	FC-53D	2c/3Φ	10~30VDC	T	3.5V	0.5mA	150mA	<40	5KHz	Hall		
FC-59	FC-59R	2c/2.5Φ	5~240VDC/AC	Contact	3.0V	non	500mA	<40	200Hz	Reed sensor	Intensive Nylon	
	FC-59RE	2c/2.5Φ	5~60VDC	Contact	3.0V	non	50mA					
	FC-59D	2c/2.5Φ	10~30VDC	T	3.5V	0.5mA	150mA	<40	5KHz	Hall sensor		
	FC-59N	3c/2.5Φ	5~30VDC	NPN	0.8V	0.1mA						

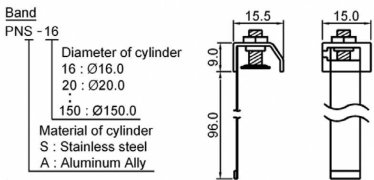
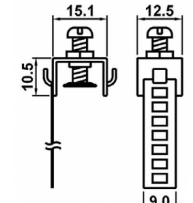
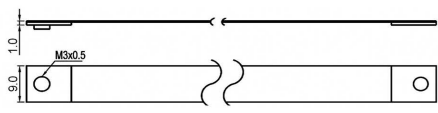
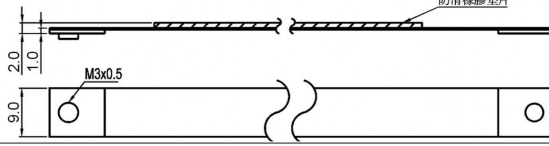
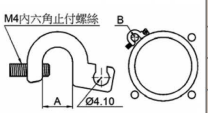
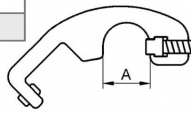
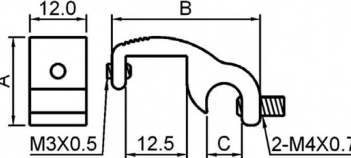
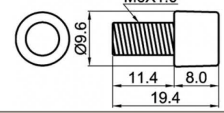
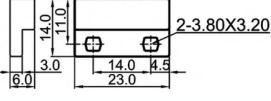
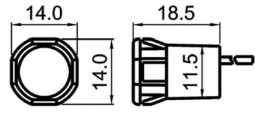
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FC series 磁簧傳感器

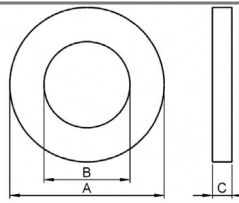
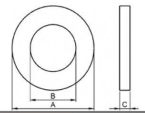
● Specification / 規格

Series	Model	Wires	Operating voltage	Output method	Voltage drop	Leakage current	Output current	Sensitivity (Gauss)	Response frequency	Sensor	Housing material	Outline
FC-06	FC-06R	2c/2.5Φ	5~240VDC/AC	Contact	3.0V	non	500mA	H<40 N<80 L<120	200Hz	Reed	Intensive Nylon	
	FC-06RE	2c/2.5Φ	5~60VDC	Contact	3.0V	non	50mA	<40	5K Hz	Hall sensor		
	FC-06D	2c/2.5Φ	10~30VDC	T	3.5V	0.5mA						
	FC-06N	3c/2.5Φ	5~30VDC	NPN	0.8V	0.1mA						
	FC-06P	3c/2.5Φ	5~30VDC	PNP	0.8V	0.1mA						
FC-07	FC-07R	2c/2.5Φ	5~240VDC/AC	Contact	3.0V	non	500mA	H<40 N<80 L<120	200Hz	Reed	Intensive Nylon	
	FC-07RE	2c/2.5Φ	5~60VDC	Contact	3.0V	non	50mA	<40	5K Hz	Hall sensor		
	FC-07D	2c/2.5Φ	10~30VDC	T	3.5V	0.5mA						
	FC-07N	3c/2.5Φ	5~30VDC	NPN	0.8V	0.1mA						
	FC-07P	3c/2.5Φ	5~30VDC	PNP	0.8V	0.1mA						
MS-08	MS08-10N	3c/4Φ	5~30VDC	NPN	0.8V	0.1mA	150mA	<40	5K Hz	Hall	Cu	
	MS08-10P	3c/4Φ	5~30VDC	PNP	0.8V	0.1mA						
FC-08	FC-08R	2c/4Φ	5~240VDC/AC	Contact	3.0V	non	500mA	<40	200Hz	Reed	Cu	
	FC-08D	2c/2.5Φ	10~30VDC	T	3.5V	0.5mA						
	FC-08N	3c/3Φ	5~30VDC	NPN	0.8V	0.1mA						
FC-20z	FC-20zR	2c/4Φ	5~240VDC/AC	Contact	3.0V	non	500mA	H/N/L	200Hz	Reed	Die cast Zn alloy	
	FC-20zD	2c/4Φ	10~30VDC	T	3.5V	0.5mA						
	FC-20zN	3c/4Φ	5~30VDC	NPN	0.8V	0.1mA						
	FC-20zP	3c/4Φ	5~30VDC	PNP	0.8V	0.1mA						
FC-05z	FC-05zR	2c/3Φ	5~240VDC/AC	Contact	3.0V	non	500mA	H/N/L	200Hz	Hall sensor	Die cast Zn alloy	
	FC-05zD	2c/3Φ	10~30VDC	T	3.5V	0.5mA						
	FC-05zN	3c/3Φ	5~30VDC	NPN	0.8V	0.1mA						
	FC-05zP	3c/3Φ	5~30VDC	PNP	0.8V	0.1mA						
FC-36z	FC-36zD	2c/2.5Φ	10~30VDC	T	3.5V	0.5mA	50mA	<40	5K Hz	Hall sensor	Die cast Zn alloy	
	FC-36zN	3c/2.5Φ	5~30VDC	NPN	0.8V	0.1mA						
	FC-36zP	3c/2.5Φ	5~30VDC	PNP	0.8V	0.1mA						
FC-58z	FC-58zR	2c/2.5Φ	5~120VDC/AC	Contact	3.0V	non	100mA	<120	200Hz	Reed	Die cast Zn alloy	
	FC-58zRE	2c/2.5Φ	5~60VDC	Contact	3.0V	non	50mA					
	FC-58zRN	3c/2.5Φ	5~30VDC	NPN	0.8V	0.1mA						
	FC-58zRP	3c/2.5Φ	5~30VDC	PNP	0.8V	0.1mA						
FC-06z	FC-06zR	2c/2.5Φ	5~240VDC/AC	Contact	3.0V	non	500mA	H<40 N<80 L<120	200Hz	Reed	Die cast Zn alloy	
	FC-06zRE	2c/2.5Φ	5~60VDC	Contact	3.0V	non	50mA					
	FC-06zD	2c/2.5Φ	10~30VDC	T	3.5V	0.5mA						
	FC-06zN	3c/2.5Φ	5~30VDC	NPN	0.8V	0.1mA						
	FC-06zP	3c/2.5Φ	5~30VDC	PNP	0.8V	0.1mA						
FC-07z	FC-07zR	2c/2.5Φ	5~240VDC/AC	Contact	3.0V	non	500mA	H<40 N<80 L<120	200Hz	Reed	Die cast Zn alloy	
	FC-07zRE	2c/2.5Φ	5~60VDC	Contact	3.0V	non	50mA					
	FC-07zD	2c/2.5Φ	10~30VDC	T	3.5V	0.5mA						
	FC-07zN	3c/2.5Φ	5~30VDC	NPN	0.8V	0.1mA						
	FC-07zP	3c/2.5Φ	5~30VDC	PNP	0.8V	0.1mA						
FC-T12	FC-T12R	2c/3Φ	5~240VDC/AC	Contact	3.0V	non	100mA	<40	200Hz	Reed sensor	PC	
	FC-T12RE	2c/3Φ	5~60VDC	Contact	3.0V	non	50mA					
FC-12	FC-12R	2c/4Φ	5~240VDC/AC	Contact	3.0V	non	500mA	<40	200Hz	Reed	Cu	
	FC-12D	2c/4Φ	10~30VDC	T	3.5V	0.5mA						
	FC-12N	3c/4Φ	5~30VDC	NPN	0.8V	0.1mA						
	FC-12P	3c/4Φ	5~30VDC	PNP	0.8V	0.1mA						
FC-18	FC-18RE	2c/4Φ	5~60VDC	Contact	3.0V	non	500mA	<40	200Hz	Reed sensor	PP	
	FC-18N	3c/4Φ	5~30VDC	NPN	0.8V	0.01mA	150mA					

Fixed parts / 固定帶

PNS/PNA (for FC-20)		BSS/BSA (for FC-48) / BES/BEA (for FC-04)				PH (for FC-20)																																			
		Alumina alloy cylinder		Stainless steel cylinder																																					
		Model	Inner dia.	Outer dia.	Model	Inner dia.	Outer dia.																																		
		BSA-20 / BEA-20	20Φ	25Φ	BSS-06 / BES-06	6Φ	8.5Φ																																		
		BSA-25 / BEA-25	25Φ	30Φ	BSS-08 / BES-08	8Φ	10Φ																																		
		BSA-30 / BEA-30	30Φ	35Φ	BSS-10 / BES-10	10Φ	11Φ																																		
		BSA-32 / BEA-32	32Φ	38Φ	BSS-12 / BES-12	12Φ	13.2Φ																																		
		BSA-40 / BEA-40	40Φ	47Φ	BSS-16 / BES-16	16Φ	17Φ																																		
		BSA-50 / BEA-50	50Φ	58Φ	BSS-20 / BES-20	20Φ	21.5Φ																																		
		BSA-63 / BEA-63	63Φ	72Φ	BSS-25 / BES-25	25Φ	26.5Φ																																		
		BSA-80 / BEA-80	80Φ	89Φ	BSS-32 / BES-32	32Φ	33.5Φ																																		
		BSA-100 / BEA-100	100Φ	110Φ	BSS-40 / BES-40	40Φ	42Φ																																		
					BSS-50 / BES-50	50Φ	52Φ																																		
					BSS-63 / BES-63	63Φ	65Φ																																		
BES/BEA (for FC-04)																																									
DT (for FC-07)																																									
		型號	A	B																																					
		DT07-1	7.90	4.0Φ~6.0Φ																																					
		DT07-2	10.4	8.0Φ~10.0Φ																																					
		DT07-3	15.1	12.0Φ~14.0Φ																																					
<table border="1"> <thead> <tr> <th>Model</th> <th>A</th> <th>Inner dia.</th> </tr> </thead> <tbody> <tr> <td>PI-1</td> <td>11.20</td> <td>32~40Φ</td> </tr> <tr> <td>PI-2</td> <td>14.10</td> <td>50~63Φ</td> </tr> <tr> <td>PI-3</td> <td>15.50</td> <td>80Φ</td> </tr> <tr> <td>PI-4</td> <td>16.30</td> <td>100Φ</td> </tr> <tr> <td>PI-5</td> <td>19.80</td> <td>125Φ</td> </tr> <tr> <td>PI-6</td> <td>26.50</td> <td>150Φ</td> </tr> </tbody> </table>		Model	A	Inner dia.	PI-1	11.20	32~40Φ	PI-2	14.10	50~63Φ	PI-3	15.50	80Φ	PI-4	16.30	100Φ	PI-5	19.80	125Φ	PI-6	26.50	150Φ	PI (for FC-20)																		
Model	A	Inner dia.																																							
PI-1	11.20	32~40Φ																																							
PI-2	14.10	50~63Φ																																							
PI-3	15.50	80Φ																																							
PI-4	16.30	100Φ																																							
PI-5	19.80	125Φ																																							
PI-6	26.50	150Φ																																							
		<table border="1"> <thead> <tr> <th>型號</th> <th>尺寸</th> <th>A</th> <th>B</th> <th>C</th> </tr> </thead> <tbody> <tr> <td>PM-6</td> <td></td> <td>19.1</td> <td>31.3</td> <td>7.3</td> </tr> <tr> <td>PM-8</td> <td></td> <td>18.4</td> <td>33.5</td> <td>9.5</td> </tr> <tr> <td>PM-10</td> <td></td> <td>16.7</td> <td>35.7</td> <td>11.2</td> </tr> <tr> <td>PM-12</td> <td></td> <td>20.0</td> <td>35.5</td> <td>11.5</td> </tr> <tr> <td>PM-14</td> <td></td> <td>24.0</td> <td>38.0</td> <td>13.5</td> </tr> <tr> <td>PM-16</td> <td></td> <td>24.0</td> <td>40.0</td> <td>15.5</td> </tr> </tbody> </table>		型號	尺寸	A	B	C	PM-6		19.1	31.3	7.3	PM-8		18.4	33.5	9.5	PM-10		16.7	35.7	11.2	PM-12		20.0	35.5	11.5	PM-14		24.0	38.0	13.5	PM-16		24.0	40.0	15.5	PM (for FC-20)		
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Magnetic ring / 磁環

§ RME series Rubber anisotropic magnetic ring	
	
使用環境溫度	-25°C ~ 80°C
磁通密度	2,500~2,600 GAUSS
保磁力 (iHC)	2,800~3,200 Oe
保磁力 (bHC)	2,100~2,400 Oe
最大磁積能	1.3 ~ 1.5 M Oe
磁阻力	20~50kgf/cm2
延展性	10~20%
硬度	30~50 HV
材料密度	1.2~1.8 g/cm3
Model	Dimension (mm)
	A±0.3 B±0.2 C±0.1
RME-164	15.5 8.3 4.0
RME-204	19.5 9.3 4.0
RME-254	24.5 13.3 4.0
RME-254L	24.5 17.3 4.0
RME-304	29.5 21.3 4.0
RME-324	31.5 21.3 4.0
RME-404	39.5 22.3 4.0
RME-504	49.5 32.3 4.0
RME-634	62.5 42.3 4.0
RME-804	79.5 58.3 4.0
RME-1004	99.5 78.3 4.0
RME-1254S	124.5 79.3 4.0
RME-1254	124.5 108.3 4.0
RME-1504	149.5 125.3 4.0
RME-2004	195.5 176.3 4.0
Model	Dimension (mm)
	A±0.3 B±0.2 C±0.1
RME-165	15.5 8.3 5.0
RME-205	19.5 9.3 5.0
RME-205L	19.5 12.3 5.0
RME-255	24.5 13.3 5.0
RME-305	29.5 21.3 5.0
RME-325	31.5 21.3 5.0
RME-405	39.5 22.3 5.0
RME-505	49.5 32.3 5.0
RME-635	62.5 42.3 5.0
RME-805	79.5 58.3 5.0
RME-1005	99.5 78.3 5.0
§ PME series Plastic anisotropic magnetic ring	
	
使用環境溫度	-40°C ~ 120°C
磁通密度	2,800~3,000 GAUSS
保磁力 (iHC)	3,000~3,600 Oe
保磁力 (bHC)	2,400~2,800 Oe
最大磁積能	1.8 ~ 2.0 M Oe
磁阻力	70~80kgf/cm2
延展性	5~7%
硬度	110~120 HV
材料密度	3.8~4.0 g/cm3
Model	Dimension (mm)
	A±0.3 B±0.2 C±0.1
PME-204	19.5 9.3 4.0
PME-254	24.5 13.3 4.0
PME-304	29.5 21.3 4.0
PME-324	31.5 21.3 4.0
PME-404	39.5 22.3 4.0
PME-504	49.5 32.3 4.0
PME-634	62.5 42.3 4.0
PME-804	79.5 58.3 4.0
PME-1004	99.5 78.3 4.0
Model	Dimension (mm)
	A±0.3 B±0.2 C±0.1
PME-125	11.5 6.3 5.0
PME-165	15.5 8.3 5.0
PME-205	19.5 9.3 5.0
PME-255	24.5 13.3 5.0
PME-305	29.5 21.3 5.0
PME-325	31.5 21.3 5.0
PME-405	39.5 22.3 5.0
PME-505	49.5 32.3 5.0
PME-635	62.5 42.3 5.0
PME-805	79.5 59.3 5.0
PME-1005	99.5 78.3 5.0