

FM Series IP55

□ 119 mm – 38 mm Thick Fan Type

□ 92 mm – 25 mm Thick Fan Type

Exhaust Type

Fan and Filter Panel



Ambient Temperature: -10~+60°C
 Operating Voltage Range: ±10%
 Dust-Removal Ratio of Filter Media: 95%
 (Details of dust-removal ratio → Page E-27)
 Materials

Enclosure

Hood: Polycarbonate (Flammability grade: V-0)

Grille: ABS

Mounting Frame: ABS

Installed Fan

Fan Frame: Die Cast Aluminum

Blades: Polycarbonate (Flammability grade V-0)

Installed Fan

Overheat Protection: Impedance Protected

Bearings: Ball Bearings

Specifications RoHS

Model	Diagram Number	Size	Input Voltage		Frequency	Input		Speed	Max. Air Flow		Max. Static Pressure	Noise Level
			VAC	Hz		W	A		m³/min	m³/h		
FMA23CI-2H251	①	209 mm×226 mm (□119 mm – 38 mm Thick Fan Type)	Single-Phase 220	50	14.0	0.11	2300	0.55	33	51	38	
			Single-Phase 230	50	16.7	0.11	2400	0.55	33	53	38	
				60	14.0	0.11	2500	0.61	36.6	56	40	
FMA23CI-2H221			Single-Phase 115	50	15.2	0.19	2300	0.55	33	53	38	
				60	14.0	0.18	2500	0.61	36.6	56	40	
FMA23CI-2J251			②	157 mm×170 mm (□119 mm – 38 mm Thick Fan Type)	Single-Phase 220	50	14.0	0.11	2300	0.37	22.2	59
	Single-Phase 230	50			16.7	0.11	2400	0.37	22.2	60	39	
		60			14.0	0.11	2500	0.41	24.6	63	40	
FMA23CI-2J221	Single-Phase 115	50			15.2	0.19	2300	0.37	22.2	60	39	
		60			14.0	0.18	2500	0.41	24.6	63	40	
FMA23CI-2K151	③	129 mm×134 mm (□92 mm – 25 mm Thick Fan Type)			Single-Phase 220	50	10.2	0.07	2600	0.16	9.6	41
			Single-Phase 230	50	12.2	0.09	2600	0.16	9.6	41	37	
				60	9.4	0.07	3000	0.20	12	55	41	
FMA23CI-2K121			Single-Phase 115	50	11.2	0.13	2600	0.16	9.6	41	37	
				60	9.4	0.12	3000	0.20	12	55	41	

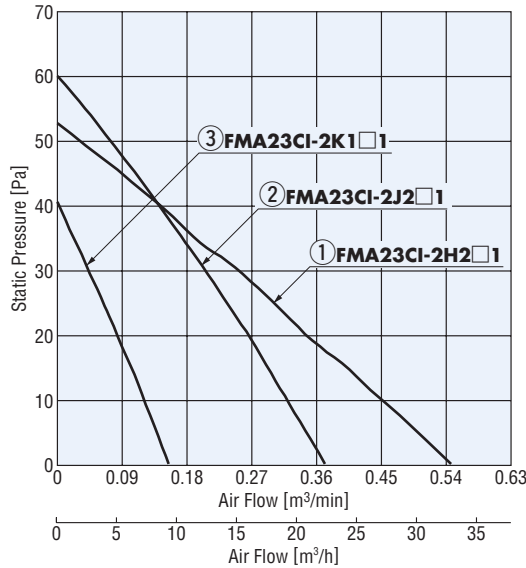
- How to read specifications → Page E-17
- Details of RoHS Directive → Page G-23
- The maximum air flow, maximum static pressure and noise level are representative values.
- Assemble the filter media to the hood. If you assemble it to the grill, the air flow may decrease.
- Internal structure of the **FM Series** → Page E-26
- For the air flow – static pressure characteristics, frequency – audible noise level, dimensions and panel cut-out, refer to the data and figures of each size.

The following items are included in each product.
 Cooling Module, Plug Cord, Mounting Screws,
 Operating Manual

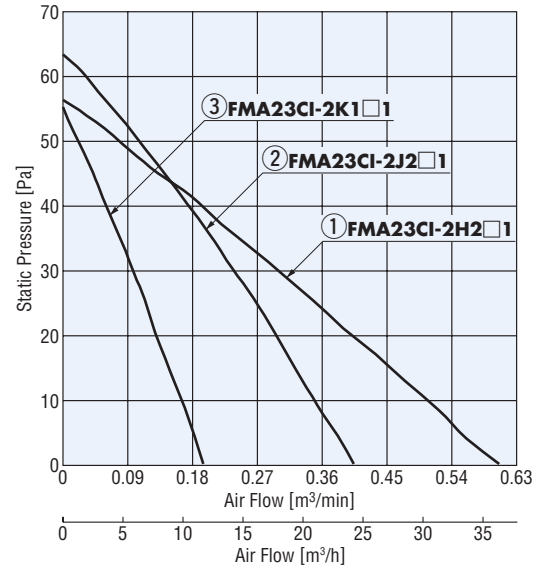
Air Flow – Static Pressure Characteristics

- How to read air flow – static pressure characteristics → Page E-18

◇ 50 Hz



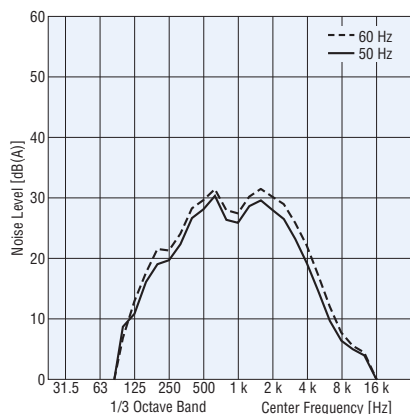
◇ 60 Hz



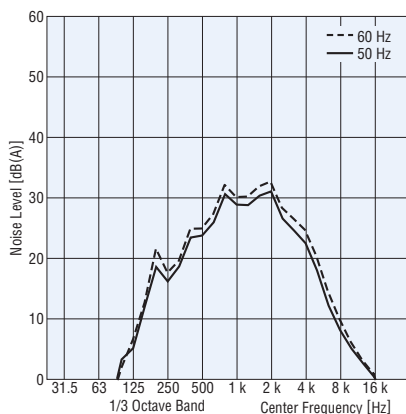
Frequency – Audible Noise Level (dB) (Measured at a distance of 1 m from the cover)

● How to read frequency – audible noise level → Page E-18

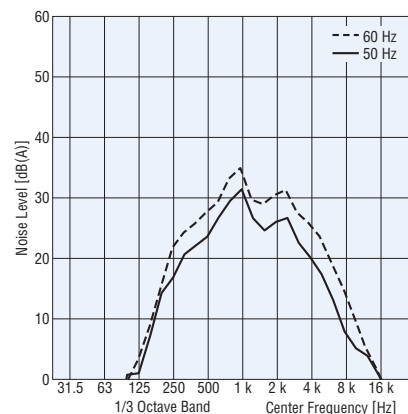
① FMA23CI-2H2□1



② FMA23CI-2J2□1



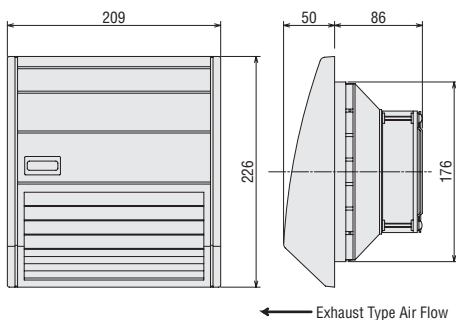
③ FMA23CI-2K1□1



Dimensions (Unit = mm)

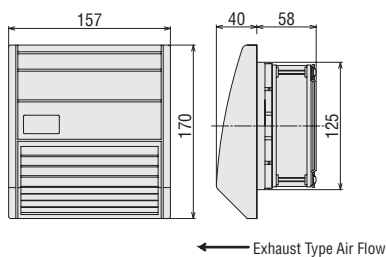
① FMA23CI-2H2□1

Mass: 1.2 kg



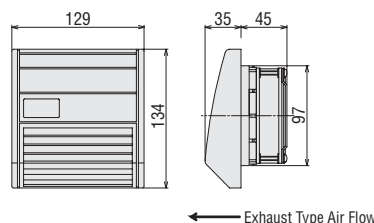
② FMA23CI-2J2□1

Mass: 0.9 kg

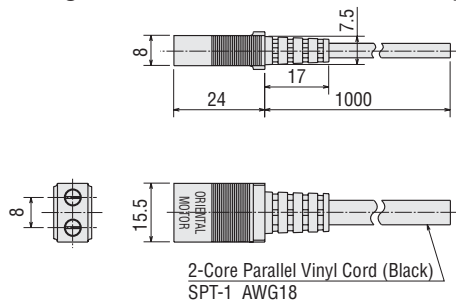


③ FMA23CI-2K1□1

Mass: 0.5 kg



● Plug Cord for Connection to Power Supply (Included)



● Refer to page E-38 for the panel cut-out and connection diagram, and page E-39 for the filter panel.

FM Series IP55

□ **119 mm – 38 mm Thick Fan Type**

□ **92 mm – 25 mm Thick Fan Type**

Suction Type

Fan and Filter Panel



Ambient Temperature: -10~+60°C
 Operating Voltage Range: ±10%
 Dust-Removal Ratio of Filter Media: 95%
 (Details of dust-removal ratio → Page E-27)
Materials
 Enclosure
 Hood: Polycarbonate (Flammability grade: V-0)
 Grille: ABS
 Mounting Frame: ABS
 Installed Fan
 Fan Frame: Die Cast Aluminum
 Blades: Polycarbonate (Flammability grade V-0)
 Installed Fan
 Overheat Protection: Impedance Protected
 Bearings: Ball Bearings

Specifications RoHS

Model	Diagram Number	Size	Input Voltage VAC	Frequency Hz	Input W	Current A	Speed r/min	Max. Air Flow		Max. Static Pressure Pa	Noise Level dB (A)	
								m³/min	m³/h			
FMB23CI-2H251	①	209 mm×226 mm (□119 mm – 38 mm Thick Fan Type)	Single-Phase 220	50	14.0	0.11	2300	0.44	26.4	34	38	
				60	16.7	0.11	2400	0.47	28.2	37	38	
			Single-Phase 115	50	15.2	0.19	2300	0.47	28.2	37	38	
				60	14.0	0.18	2500	0.52	31.2	41	40	
				Single-Phase 220	50	14.0	0.11	2300	0.30	18	42	40
					60	16.7	0.11	2400	0.32	19.2	45	40
Single-Phase 230	50	15.2	0.19	2300	0.32	19.2	45	40				
	60	14.0	0.11	2500	0.34	20.4	47	41				
	Single-Phase 115	50	15.2	0.19	2300	0.32	19.2	45	40			
		60	14.0	0.18	2500	0.34	20.4	47	41			
FMB23CI-2J251	②	157 mm×170 mm (□119 mm – 38 mm Thick Fan Type)	Single-Phase 220	50	10.2	0.07	2600	0.14	8.4	28	37	
				60	12.2	0.09	2600	0.14	8.4	31	37	
			Single-Phase 230	50	9.4	0.07	3000	0.17	10.2	42	41	
				60	11.2	0.13	2600	0.14	8.4	31	37	
				Single-Phase 115	50	9.4	0.12	3000	0.17	10.2	42	41
					60	9.4	0.12	3000	0.17	10.2	42	41

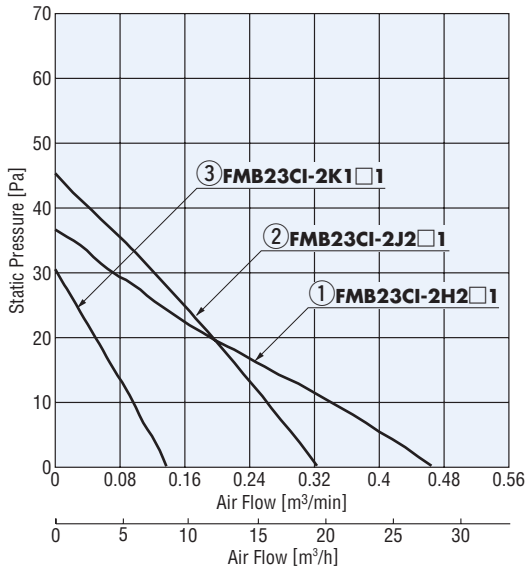
- How to read specifications → Page E-17
- Details of RoHS Directive → Page G-23
- The maximum air flow, maximum static pressure and noise level are representative values.
- Assemble the filter media to the hood. If you assemble it to the grill, the air flow may decrease.
- Internal structure of the **FM Series** → Page E-26
- For the air flow – static pressure characteristics, frequency – audible noise level, dimensions and panel cut-out, refer to the data and figures of each size.

The following items are included in each product.
 Cooling Module, Plug Cord, Mounting Screws,
 Operating Manual

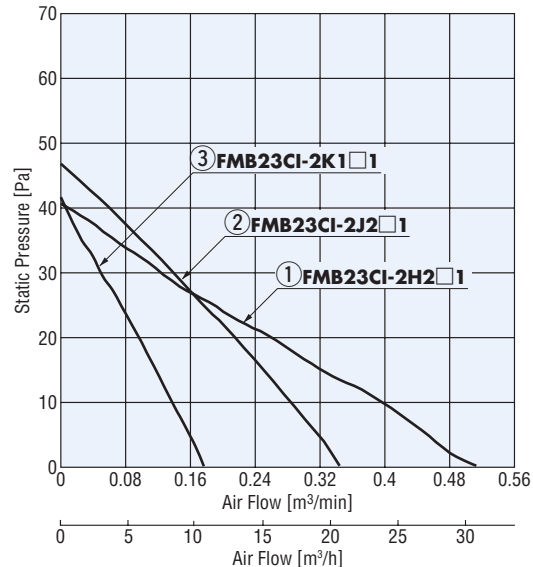
Air Flow – Static Pressure Characteristics

- How to read air flow – static pressure characteristics → Page E-18

◇ 50 Hz



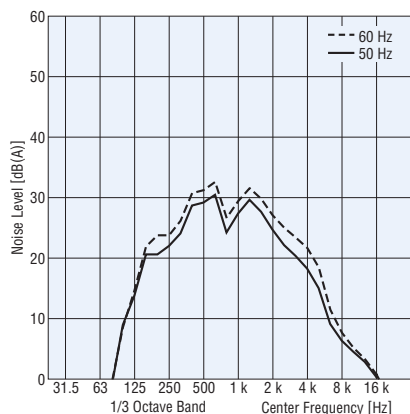
◇ 60 Hz



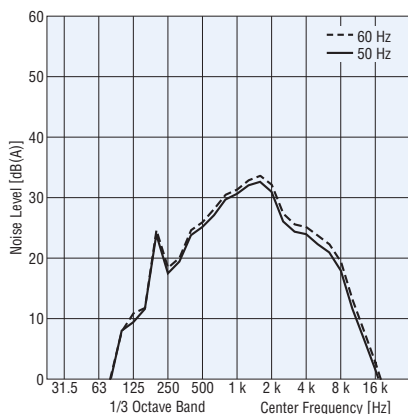
Frequency – Audible Noise Level (dB) (Measured at a distance of 1 m from the cover)

● How to read frequency – audible noise level → Page E-18

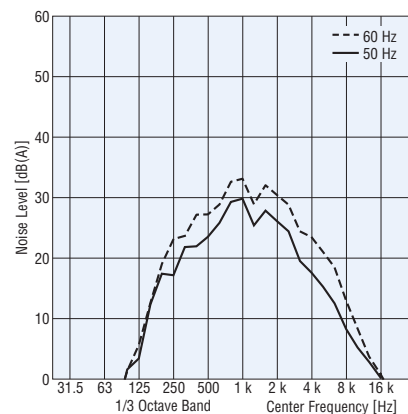
① FMB23CI-2H2 □ 1



② FMB23CI-2J2 □ 1



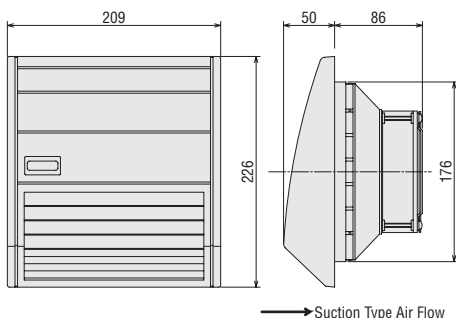
③ FMB23CI-2K1 □ 1



Dimensions (Unit = mm)

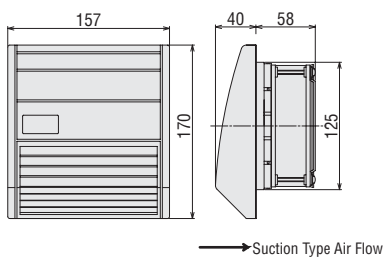
① FMB23CI-2H2 □ 1

Mass: 1.2 kg



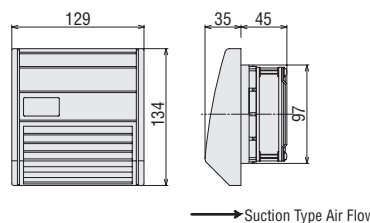
② FMB23CI-2J2 □ 1

Mass: 0.9 kg

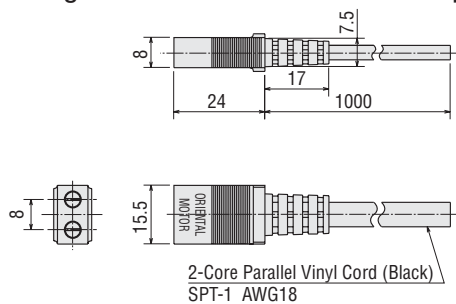


③ FMB23CI-2K1 □ 1

Mass: 0.5 kg



● Plug Cord for Connection to Power Supply (Included)



● Refer to page E-38 for the panel cut-out and connection diagram, and page E-39 for the filter panel.

FM Series IP43

□ **119 mm – 38 mm Thick Fan Type**

□ **92 mm – 25 mm Thick Fan Type**

Exhaust Type

Fan and Filter Panel



Ambient Temperature: -10~+60°C
 Operating Voltage Range: ±10%
 Dust-Removal Ratio of Filter Media: 48%
 (Details of dust-removal ratio → Page E-27)
 Materials

Enclosure: ABS
 Hood: Polycarbonate (Flammability grade: V-0)
 Grille: ABS
 Mounting Frame: ABS
 Installed Fan
 Fan Frame: Die Cast Aluminum
 Blades: Polycarbonate (Flammability grade V-0)

Installed Fan
 Overheat Protection: Impedance Protected
 Bearings: Ball Bearings

Specifications RoHS

Model	Diagram Number	Size	Input Voltage		Frequency	Input	Current	Speed	Max. Air Flow		Max. Static Pressure	Noise Level
			VAC	Hz					W	A		
FMA23BI-2H251	①	209 mm×226 mm (□119 mm – 38 mm Thick Fan Type)	Single-Phase 220	50	14.0	0.11	2300	1.18	70.8	49	40	
			Single-Phase 230	50	16.7	0.11	2400	1.21	72.6	51	40	
				60	14.0	0.11	2500	1.37	82.2	56	41	
Single-Phase 115			50	15.2	0.19	2300	1.21	72.6	51	40		
			60	14.0	0.18	2500	1.37	82.2	56	41		
FMA23BI-2H221												
FMA23BI-2J251	②	157 mm×170 mm (□119 mm – 38 mm Thick Fan Type)	Single-Phase 220	50	14.0	0.11	2300	0.75	45	56	37	
			Single-Phase 230	50	16.7	0.11	2400	0.76	45.6	58	38	
				60	14.0	0.11	2500	0.83	49.8	61	41	
Single-Phase 115			50	15.2	0.19	2300	0.76	45.6	58	38		
			60	14.0	0.18	2500	0.83	49.8	61	41		
FMA23BI-2J221												
FMA23BI-2K151	③	129 mm×134 mm (□92 mm – 25 mm Thick Fan Type)	Single-Phase 220	50	10.2	0.07	2600	0.33	19.8	40	36	
			Single-Phase 230	50	12.2	0.09	2600	0.34	20.4	41	36	
				60	9.4	0.07	3000	0.41	24.6	55	40	
Single-Phase 115			50	11.2	0.13	2600	0.34	20.4	41	36		
			60	9.4	0.12	3000	0.41	24.6	55	40		
FMA23BI-2K121												

- How to read specifications → Page E-17
- Details of RoHS Directive → Page G-23
- The maximum air flow, maximum static pressure and noise level are representative values.
- Assemble the filter media to the hood. If you assemble it to the grill, the air flow may decrease.
- Internal structure of the **FM Series** → Page E-26
- For the air flow – static pressure characteristics, frequency – audible noise level, dimensions and panel cut-out, refer to the data and figures of each size.

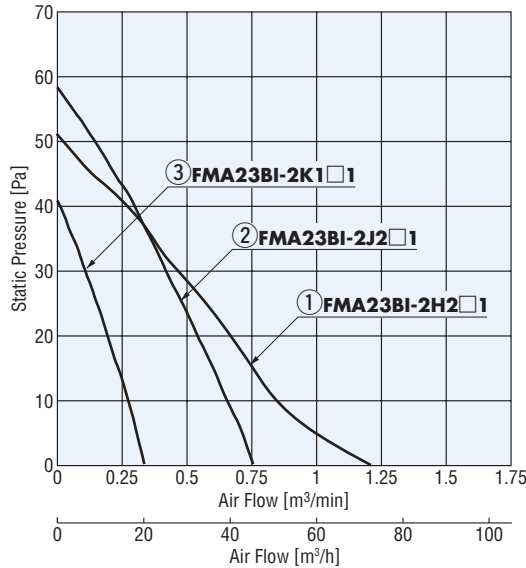
The following items are included in each product.

- Cooling Module, Plug Cord (1 m), Mounting Screws, Operating Manual

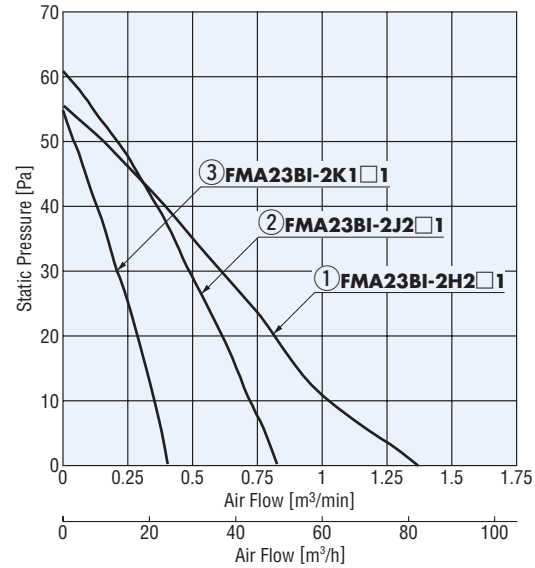
Air Flow – Static Pressure Characteristics

- How to read air flow – static pressure characteristics → Page E-18

◇ 50 Hz



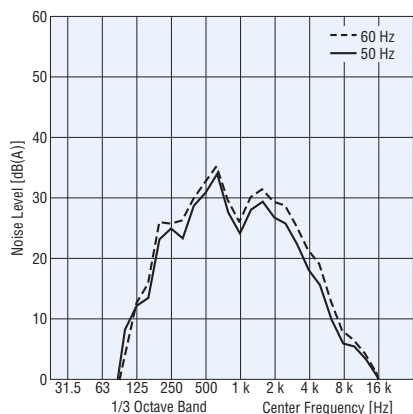
◇ 60 Hz



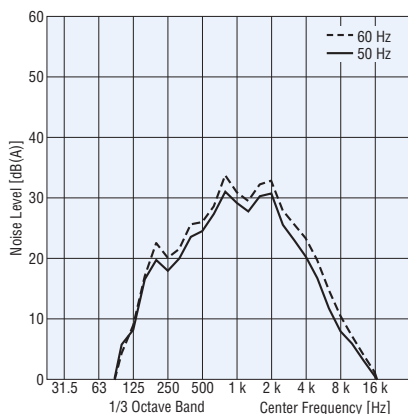
Frequency – Audible Noise Level (dB) (Measured at a distance of 1 m from the cover)

● How to read frequency – audible noise level → Page E-18

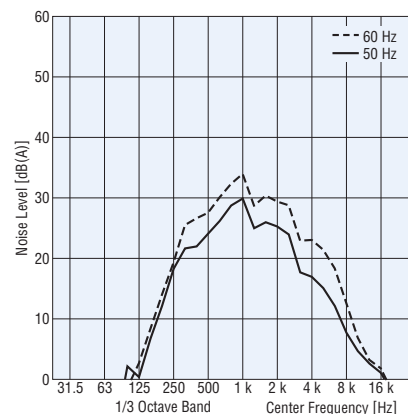
① FMA23BI-2H2□1



② FMA23BI-2J2□1



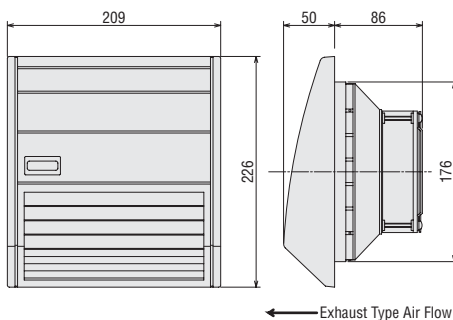
③ FMA23BI-2K1□1



Dimensions (Unit = mm)

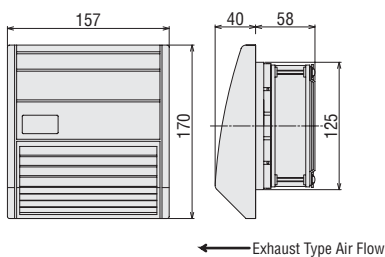
① FMA23BI-2H2□1

Mass: 1.2 kg



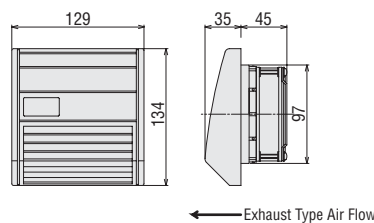
② FMA23BI-2J2□1

Mass: 0.9 kg

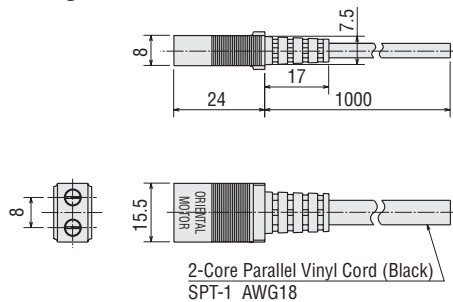


③ FMA23BI-2K1□1

Mass: 0.5 kg



● Plug Cord for Connection to Power Supply (Included)



● Refer to page E-38 for the panel cut-out and connection diagram, and page E-39 for the filter panel.

FM Series IP43

□ **119 mm – 38 mm Thick Fan Type**

□ **92 mm – 25 mm Thick Fan Type**

Suction Type

Fan and Filter Panel



Ambient Temperature: $-10 \sim +60^{\circ}\text{C}$
 Operating Voltage Range: $\pm 10\%$
 Dust-Removal Ratio of Filter Media: 48%
 (Details of dust-removal ratio → Page E-27)

Materials

Enclosure: ABS
 Hood: Polycarbonate (Flammability grade: V-0)
 Grille: ABS
 Mounting Frame: ABS
 Installed Fan
 Fan Frame: Die Cast Aluminum
 Blades: Polycarbonate (Flammability grade V-0)
 Installed Fan
 Overheat Protection: Impedance Protected
 Bearings: Ball Bearings

Specifications RoHS

Model	Diagram Number	Size	Input Voltage		Frequency	Input		Speed	Max. Air Flow		Max. Static Pressure	Noise Level
			VAC	Hz		W	A		m ³ /min	m ³ /h		
FMB23BI-2H251	①	209 mm×226 mm (□119 mm – 38 mm Thick Fan Type)	Single-Phase 220	50	14.0	0.11	2300	1.08	64.8	40	40	
			Single-Phase 230	50	16.7	0.11	2400	1.08	64.8	41	40	
				60	14.0	0.11	2500	1.25	75	46	41	
FMB23BI-2H221			Single-Phase 115	50	15.2	0.19	2300	1.08	64.8	41	40	
				60	14.0	0.18	2500	1.25	75	46	41	
FMB23BI-2J251			②	157 mm×170 mm (□119 mm – 38 mm Thick Fan Type)	Single-Phase 220	50	14.0	0.11	2300	0.70	42	42
	Single-Phase 230	50			16.7	0.11	2400	0.71	42.6	43	38	
		60			14.0	0.11	2500	0.80	48	45	40	
FMB23BI-2J221	Single-Phase 115	50			15.2	0.19	2300	0.71	42.6	43	38	
		60			14.0	0.18	2500	0.80	48	45	40	
FMB23BI-2K151	③	129 mm×134 mm (□92 mm – 25 mm Thick Fan Type)			Single-Phase 220	50	10.2	0.07	2600	0.40	24	33
			Single-Phase 230	50	12.2	0.09	2600	0.40	24	33	37	
				60	9.4	0.07	3000	0.49	29.4	44	41	
FMB23BI-2K121			Single-Phase 115	50	11.2	0.13	2600	0.40	24	33	37	
				60	9.4	0.12	3000	0.49	29.4	44	41	

- How to read specifications → Page E-17
- Details of RoHS Directive → Page G-23
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- Assemble the filter media to the hood. If you assemble it to the grill, the air flow may decrease.
- Internal structure of the **FM Series** → Page E-26
- For the air flow – static pressure characteristics, frequency – audible noise level, dimensions and panel cut-out, refer to the data and figures of each size.

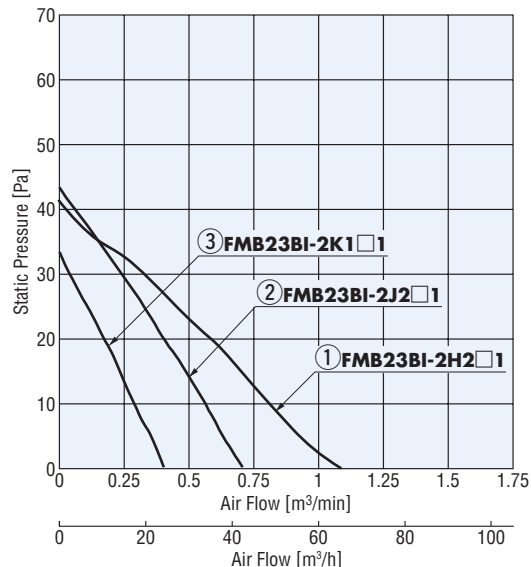
The following items are included in each product.

Cooling Module, Plug Cord (1 m),
 Mounting Screws, Operating Manual

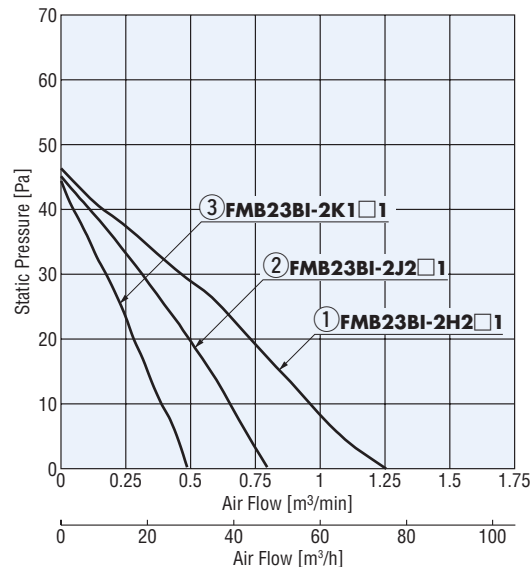
Air Flow – Static Pressure Characteristics

- How to read air flow – static pressure characteristics → Page E-18

◇ 50 Hz



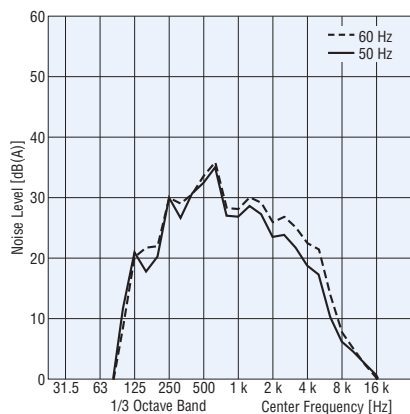
◇ 60 Hz



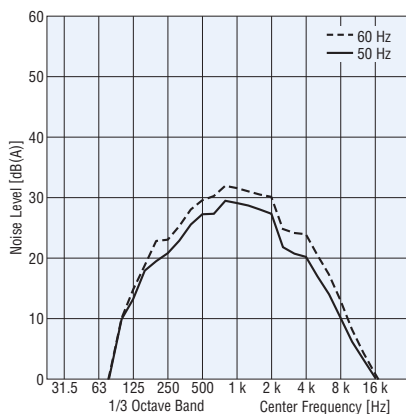
Frequency – Audible Noise Level (dB) (Measured at a distance of 1 m from the cover)

● How to read frequency – audible noise level → Page E-18

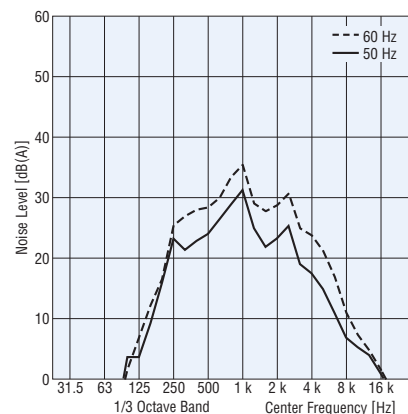
① FMB23BI-2H2 □ 1



② FMB23BI-2J2 □ 1



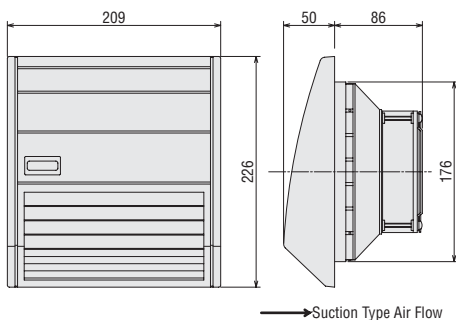
③ FMB23BI-2K1 □ 1



Dimensions (Unit = mm)

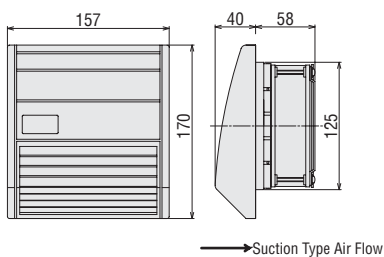
① FMB23BI-2H2 □ 1

Mass: 1.2 kg



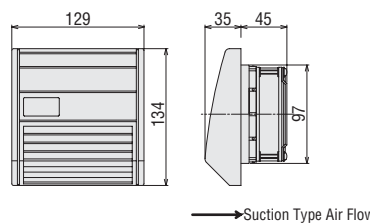
② FMB23BI-2J2 □ 1

Mass: 0.9 kg

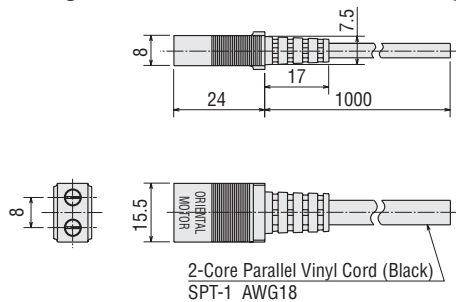


③ FMB23BI-2K1 □ 1

Mass: 0.5 kg



● Plug Cord for Connection to Power Supply (Included)



● Refer to page E-38 for the panel cut-out and connection diagram, and page E-39 for the filter panel.

Panel Cut-Out (Unit = mm) These panel cut-outs apply to both fan and filter panel, and filter panel.

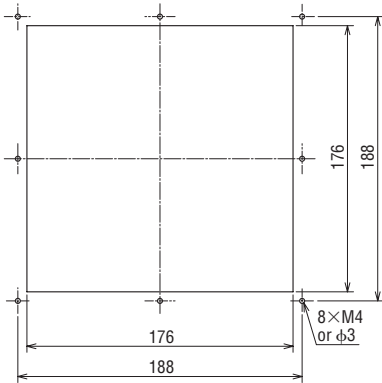
● Dimensions 209 mm×226 mm

◇ Fan and Filter Panel

- IP55: **FMA23CI-2H2**□1 (Exhaust Type)
- IP55: **FMB23CI-2H2**□1 (Suction Type)
- IP43: **FMA23BI-2H2**□1 (Exhaust Type)
- IP43: **FMB23BI-2H2**□1 (Suction Type)

◇ Filter Panel

- IP55: **FMZ23CI-D**
- IP43: **FMZ23BI-D**



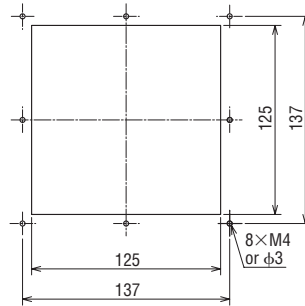
● Dimensions 157 mm×170 mm

◇ Fan and Filter Panel

- IP55: **FMA23CI-2J2**□1 (Exhaust Type)
- IP55: **FMB23CI-2J2**□1 (Suction Type)
- IP43: **FMA23BI-2J2**□1 (Exhaust Type)
- IP43: **FMB23BI-2J2**□1 (Suction Type)

◇ Filter Panel

- IP55: **FMZ23CI-E**
- IP43: **FMZ23BI-E**



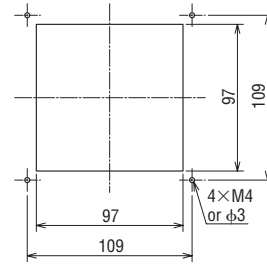
● Dimensions 129 mm×134 mm

◇ Fan and Filter Panel

- IP55: **FMA23CI-2K1**□1 (Exhaust Type)
- IP55: **FMB23CI-2K1**□1 (Suction Type)
- IP43: **FMA23BI-2K1**□1 (Exhaust Type)
- IP43: **FMB23BI-2K1**□1 (Suction Type)

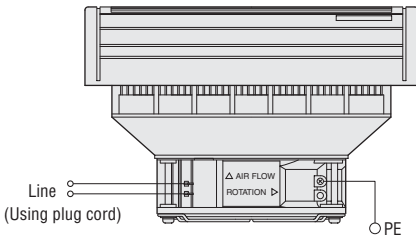
◇ Filter Panel

- IP55: **FMZ23CI-F**
- IP43: **FMZ23BI-F**



● Providing M4 mounting holes will enable mounting and replacement of the fan from outside of the enclosure.

Connection Diagram The connection diagram applies to all IP55/IP43 models of FM Series.



Filter Panel **IP55/IP43** **RoHS**

Ingress of dust or water droplets into the enclosure and discharge dust from the enclosure can be prevented by installing a filter panel over the vent holes in the enclosure.

Product Line

● IP55

Model	Size (mm)
FMZ23CI-D	209×226
FMZ23CI-E	157×170
FMZ23CI-F	129×134

The following items are included in each product.
Filter Panel, Operating Manual

● IP43

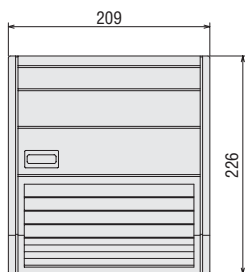
Model	Size (mm)
FMZ23BI-D	209×226
FMZ23BI-E	157×170
FMZ23BI-F	129×134



Dimensions (Unit = mm)

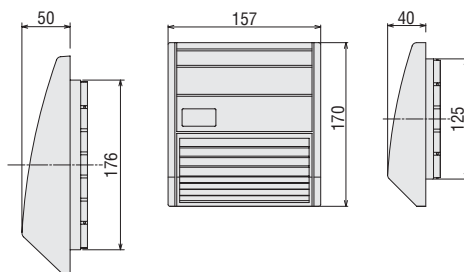
FMZ23□I-D

Mass: 0.5 kg



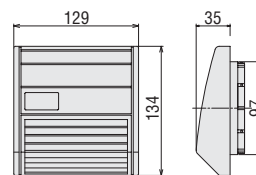
FMZ23□I-E

Mass: 0.3 kg



FMZ23□I-F

Mass: 0.2 kg



● Dimensions of panel cut-out are also same as those of fan filter panels.

Accessories

● Replacement Filter Medias

◇ Filter Medias for IP55 **RoHS**

Model	Applicable Model
FMXAC-D	FM Series Dimensions 209 mm×226 mm IP55
FMXAC-E	FM Series Dimensions 157 mm×170 mm IP55
FMXAC-F	FM Series Dimensions 129 mm×134 mm IP55

◇ Filter Medias for IP43 **RoHS**

Model	Applicable Model
FMXAB-D	FM Series Dimensions 209 mm×226 mm IP43
FMXAB-E	FM Series Dimensions 157 mm×170 mm IP43
FMXAB-F	FM Series Dimensions 129 mm×134 mm IP43

- These filter medias apply to both fan and filter panel, and filter panel.
- These filter medias are the same as those supplied with each product.
- It is recommended that the filter media be checked periodically for clogging, because a clogged filter media will cause the cooling capacity to drop.

