Cooling Fans

Centrifugal Blowers

Page

Introduction ...................................................... E-100
MB Series ......................................................... E-102
MBD Series ....................................................... E-114
Centrifugal blowers provide directional air flow by maximizing static pressure, making them optimal for spot cooling and for air flow through a duct. Alternatively, their high suction can be used to hold object in position or their directed air flow can be used to move objects.

**Features**

Since the exhaust outlet is reduced to focus air to a specified direction, these blowers are used for spot cooling. The static pressure is also high, which makes them a suitable choice when cooling equipment through which air cannot flow easily or when blowing air using a duct.

**Types of Centrifugal Blowers**

<table>
<thead>
<tr>
<th>Series</th>
<th>Features</th>
<th>Power Supply Voltage</th>
<th>Impeller Diameter [mm (in.)]</th>
</tr>
</thead>
</table>
| AC Centrifugal Blower MB Series | AC input centrifugal blowers
The MB Series is recognized by UL/CSA Standards and conforms to EN Standards. CE Marking is used in accordance with the Low Voltage Directive. (Certification status differs according to the product.)
RoHS-Compliant
The MB Series conforms to the RoHS Directive that prohibits the use of six chemical substances including lead and cadmium. | Single-Phase 100/110/115 VAC | φ160 (φ6.30) |
|                 |                                                                          | Single-Phase 200/220/230 VAC | φ120 (φ4.72) |
|                 |                                                                          | Three-Phase 200/220/230 VAC  | φ100 (φ3.94) |
|                 |                                                                          | 24 VDC                | φ80 (φ3.15)  |
|                 |                                                                          | 48 VDC                | φ60 (φ2.36)  |
|                 |                                                                          | φ50 (φ1.97)           | φ50 (φ1.97)  |

- The product for three-phase 220 VAC is not available.
- Details of safety standards ➜ Page G-2
- List of safety standard approved products (Model, Standards, File No., Certification Body) ➜ Page G-11

**System Configuration**

An example of a system configuration with the MB Series.

**Example of System Configuration**

![Example of System Configuration Diagram](image)

- The system configuration shown above is an example. Other combinations are available.
### General Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulation Resistance</td>
<td>100 MΩ or more when 500 VDC megger is applied between the windings and the frame after continuous operation under normal ambient temperature and humidity. (MBD Series: 10 MΩ or more, 250 VDC megger)</td>
</tr>
<tr>
<td>Dielectric Strength</td>
<td>Sufficient to withstand 1.5 kW AC at 50 Hz, applied to the windings and the frame for 1 minute after continuous operation under normal ambient temperature and humidity. (MBD Series: 500 VAC at 50 Hz, 1 minute)</td>
</tr>
<tr>
<td>Temperature Rise</td>
<td>45°C (81°F) or less measured by the thermometer method after the temperature of the motor case has stabilized after continuous operation under normal ambient temperature and humidity. (MBD Series: 15°C (27°F) or less)</td>
</tr>
</tbody>
</table>
| Operating Voltage Range     | AC Centrifugal Blower: ±10% of the rated voltage  
DC Centrifugal Blower: ±10% of the rated voltage |
| Insulation Class            | AC Centrifugal Blowers: UL, CSA: Class A [105°C (221°F)], Class E [120°C (248°F)]  
DC Centrifugal Blowers: Class E [120°C (248°F)] |
| Overheat Protection         | MB1665, MB1255, MB1040 and MB840 types have built-in thermal protector (automatic return type).  
Open: 120±5°C (248±9°F), Close: 77±15°C (170.6±27°F)  
MB630 and MB520 types are impedance protected.  
MBD Series has an overheat protection circuit. |
| Ambient Temperature         | −10°C−+50°C (+14°F−+122°F)  
(MB520, MB630 types, MBD series: −10°C−+60°C (+14°F−+140°F)) |
| Ambient Humidity            | 85% or less (non-condensing) |
| Color                       | Dark gray |
| Materials                   | Motor case: Die cast aluminum  
Casing: Die cast aluminum  
Impeller: Aluminum |

### Comparison of Characteristics

#### MB Series

- **50 Hz**

- **60 Hz**

#### MBD Series
AC Centrifugal Blower
MB Series
Impeller Diameter 160 mm (6.30 in.)

**Specifications (RoHS)**

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage</th>
<th>Frequency</th>
<th>Current</th>
<th>Input</th>
<th>Speed</th>
<th>Max. Air Flow</th>
<th>Max. Static Pressure</th>
<th>Noise Level</th>
<th>Capacitor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VAC</td>
<td>Hz</td>
<td>A</td>
<td>W</td>
<td>r/min</td>
<td>m³/min</td>
<td>CFM</td>
<td>Pa</td>
<td>inH₂O</td>
</tr>
<tr>
<td>MB1665-B</td>
<td>Single-Phase 100</td>
<td>50</td>
<td>2.6</td>
<td>260</td>
<td>2750</td>
<td>8.0</td>
<td>282</td>
<td>490</td>
<td>1.96</td>
</tr>
<tr>
<td></td>
<td>Single-Phase 100</td>
<td>60</td>
<td>3.7</td>
<td>360</td>
<td>3100</td>
<td>9.0</td>
<td>318</td>
<td>686</td>
<td>2.75</td>
</tr>
<tr>
<td></td>
<td>Single-Phase 110</td>
<td>60</td>
<td>3.7</td>
<td>380</td>
<td>3200</td>
<td>9.0</td>
<td>318</td>
<td>686</td>
<td>2.75</td>
</tr>
<tr>
<td></td>
<td>Single-Phase 115</td>
<td>60</td>
<td>3.7</td>
<td>400</td>
<td>3200</td>
<td>9.0</td>
<td>318</td>
<td>686</td>
<td>2.75</td>
</tr>
<tr>
<td>MB1665-D</td>
<td>Single-Phase 200</td>
<td>50</td>
<td>1.3</td>
<td>245</td>
<td>2700</td>
<td>7.7</td>
<td>272</td>
<td>490</td>
<td>1.96</td>
</tr>
<tr>
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<td>Single-Phase 200</td>
<td>60</td>
<td>1.8</td>
<td>340</td>
<td>3000</td>
<td>8.4</td>
<td>297</td>
<td>686</td>
<td>2.75</td>
</tr>
<tr>
<td></td>
<td>Single-Phase 220</td>
<td>60</td>
<td>1.8</td>
<td>360</td>
<td>3150</td>
<td>8.7</td>
<td>307</td>
<td>686</td>
<td>2.75</td>
</tr>
<tr>
<td></td>
<td>Single-Phase 230</td>
<td>50</td>
<td>1.3</td>
<td>270</td>
<td>2750</td>
<td>8.0</td>
<td>282</td>
<td>490</td>
<td>1.96</td>
</tr>
<tr>
<td></td>
<td>Single-Phase 230</td>
<td>60</td>
<td>1.8</td>
<td>370</td>
<td>3150</td>
<td>8.9</td>
<td>314</td>
<td>686</td>
<td>2.75</td>
</tr>
<tr>
<td>MB1665-T</td>
<td>Three-Phase 200</td>
<td>50</td>
<td>1.8</td>
<td>280</td>
<td>2750</td>
<td>8.0</td>
<td>282</td>
<td>490</td>
<td>1.96</td>
</tr>
<tr>
<td></td>
<td>Three-Phase 200</td>
<td>60</td>
<td>1.8</td>
<td>360</td>
<td>3100</td>
<td>9.0</td>
<td>318</td>
<td>686</td>
<td>2.75</td>
</tr>
<tr>
<td></td>
<td>Three-Phase 230</td>
<td>60</td>
<td>1.8</td>
<td>400</td>
<td>3200</td>
<td>9.0</td>
<td>318</td>
<td>686</td>
<td>2.75</td>
</tr>
</tbody>
</table>

*How to read specifications ➜ Page E-19*  
*Details of safety standards ➜ Page G-2*  
*Details of RoHS Directive ➜ Page G-38*

The following items are included in each product:  
Fan, Capacitor*, Capacitor Cap*, Operating Manual  
*Single-phase fans only*

**Air Flow – Static Pressure Characteristics**

*How to read air flow – static pressure characteristics ➜ Page E-20*

**Dimensions**  
Unit = mm (in.)  
Mass: 5 kg (11 lb.)

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E-102  
ORIENTAL MOTOR GENERAL CATALOG 2009/2010  
Features E-100 / System Configuration E-100 / General Specifications E-101
Cooling Fans

Introduction

FM

AC Input

MRS

AC Input

Variable Flow

MRS

AC Input

MU

DC Input

Long-Life

MDE

DC Input

MDS/MD

AC Input

MB

DC Input

MBD

AC Input

MF

DC Input

MFD

Thermostats

A thermostat makes it possible for fans to operate only when cooling is necessary, thereby conserving energy.

Capacitor Dimensions Table

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacitor Model</th>
<th>Capacitor Dimensions mm (in.)</th>
<th>Mass g (oz.)</th>
<th>Capacitor Cap</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB1665-B</td>
<td>CH400CFAUL</td>
<td>A: 58 (2.28) B: 41 (1.61) C: 58 (2.28)</td>
<td>190 (6.7)</td>
<td>Included</td>
</tr>
<tr>
<td>MB1665-D</td>
<td>CH808FAUL</td>
<td>A: 58 (2.28) B: 35 (1.38) C: 50 (1.97)</td>
<td>150 (5.3)</td>
<td>Included</td>
</tr>
</tbody>
</table>

Connection Diagrams

● MB1665-B, MB1665-D

How to connect a capacitor → Page E-158

● MB1665-T

Line

L1(R)  L2(S)  L3(T)

Red    White    Black

PE

Fan Kit

The lineup includes a product configuration containing all necessary accessories in one package.

Details → Page E-137

Product Line

<table>
<thead>
<tr>
<th>Fan Kit Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-MB1665-B-A</td>
</tr>
<tr>
<td>T-MB1665-D-A</td>
</tr>
<tr>
<td>T-MB1665-T-A</td>
</tr>
</tbody>
</table>

Thermostats

A thermostat makes it possible for fans to operate only when cooling is necessary, thereby conserving energy.

RoHS

ReälS

Thermostats AM1-WA1/AM1-XA1

Details → Page E-133
AC Centrifugal Blower
MB Series
Impeller Diameter
\(\phi 120\) mm (\(\phi 4.72\) in.)

**Specifications (RoHS)**

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage</th>
<th>Frequency</th>
<th>Current</th>
<th>Input</th>
<th>Speed</th>
<th>Max. Air Flow</th>
<th>Max. Static Pressure</th>
<th>Noise Level</th>
<th>Capacitor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VAC</td>
<td>Hz</td>
<td>A</td>
<td>W</td>
<td>r/min</td>
<td>m³/min CFM</td>
<td>Pa inH₂O</td>
<td>dB (A)</td>
<td>(\mu F)</td>
</tr>
<tr>
<td><strong>MB1255-B</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single-Phase 100</td>
<td>50</td>
<td></td>
<td>1.3</td>
<td>110</td>
<td>2850</td>
<td>4.4 155</td>
<td>309 1.24</td>
<td>67</td>
<td>10</td>
</tr>
<tr>
<td>Single-Phase 100</td>
<td>60</td>
<td></td>
<td>1.6</td>
<td>150</td>
<td>3300</td>
<td>5.1 180</td>
<td>441 1.77</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td>Single-Phase 110</td>
<td>60</td>
<td></td>
<td>1.6</td>
<td>150</td>
<td>3300</td>
<td>5.1 180</td>
<td>441 1.77</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td>Single-Phase 115</td>
<td>60</td>
<td></td>
<td>1.6</td>
<td>150</td>
<td>3300</td>
<td>5.1 180</td>
<td>441 1.77</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td><strong>MB1255-D</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.0</td>
</tr>
<tr>
<td>Single-Phase 200</td>
<td>50</td>
<td></td>
<td>0.6</td>
<td>100</td>
<td>2850</td>
<td>4.4 155</td>
<td>314 1.26</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>Single-Phase 200</td>
<td>50</td>
<td></td>
<td>0.8</td>
<td>145</td>
<td>3200</td>
<td>4.9 173</td>
<td>451 1.81</td>
<td>69</td>
<td></td>
</tr>
<tr>
<td>Single-Phase 220</td>
<td>60</td>
<td></td>
<td>0.8</td>
<td>145</td>
<td>3300</td>
<td>5.1 180</td>
<td>451 1.81</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td>Single-Phase 230</td>
<td>50</td>
<td></td>
<td>0.6</td>
<td>110</td>
<td>2900</td>
<td>4.5 159</td>
<td>314 1.26</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>Single-Phase 230</td>
<td>60</td>
<td></td>
<td>0.8</td>
<td>150</td>
<td>3300</td>
<td>5.2 184</td>
<td>451 1.81</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td><strong>MB1255-T</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three-Phase 200</td>
<td>50</td>
<td></td>
<td>0.6</td>
<td>85</td>
<td>2850</td>
<td>4.4 155</td>
<td>314 1.26</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>Three-Phase 200</td>
<td>50</td>
<td></td>
<td>0.6</td>
<td>120</td>
<td>3280</td>
<td>5.0 177</td>
<td>451 1.81</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Three-Phase 220</td>
<td>60</td>
<td></td>
<td>0.65</td>
<td>125</td>
<td>3300</td>
<td>5.1 180</td>
<td>451 1.81</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td>Three-Phase 230</td>
<td>60</td>
<td></td>
<td>0.85</td>
<td>130</td>
<td>3300</td>
<td>5.2 184</td>
<td>451 1.81</td>
<td>71</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
- MB1255-T meets UL and CSA Standards only.
- How to read specifications ➔ Page E-19
- Details of safety standards ➔ Page G-2
- Details of RoHS Directive ➔ Page G-38

**How to read specifications:**
- Single-phase fans only

**How to read air flow – static pressure characteristics:**
- Page E-20

**Air Flow – Static Pressure Characteristics**

**Dimensions**
Unit = mm (in.)
Mass: 4 kg (8.8 lb.)

**Notes:**
- The following items are included in each product.
  - Fan, Capacitor, Capacitor Cap, Operating Manual
  - Single-phase fans only

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*Features E-100 / System Configuration E-100 / General Specifications E-101*
[Image of a capacitor and its dimensions]

**Capacitor Dimensions Table**

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacitor Model</th>
<th>Capacitor Dimensions mm (in.)</th>
<th>Mass g (oz.)</th>
<th>Capacitor Cap</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB1255-B</td>
<td>CH100CFAUL</td>
<td>A: 48 (1.89) B: 22.5 (0.89) C: 31.5 (1.24)</td>
<td>40 (1.41)</td>
<td>Included</td>
</tr>
<tr>
<td>MB1255-D</td>
<td>CH20BFAUL</td>
<td>A: 48 (1.89) B: 19 (0.75) C: 29 (1.14)</td>
<td>40 (1.41)</td>
<td>Included</td>
</tr>
</tbody>
</table>

**Connection Diagrams**

- **MB1255-B, MB1255-D**
  - How to connect a capacitor → Page E-158

- **MB1255-T**
  - Details → Page E-153

**Thermostats**

A thermostat makes it possible for fans to operate only when cooling is necessary, thereby conserving energy.

- Thermostats AM1-WA1/AM1-XA1

**Accessories**

The following products are RoHS-Compliant.

- Finger Guard FGB12  Conformed component E-145
- Filter FLB12    — E-147
- Mounting Bracket PA56A    — E-152
- Duct Joint FD12    — E-153

**Fan Kit**

The lineup includes a product configuration containing all necessary accessories in one package.

- Details → Page E-143

**Product Line**

- Fan Kit Model
  - T-MB1255-B-GA
  - T-MB1255-B-FA
  - T-MB1255-D-GA
  - T-MB1255-D-FA
  - T-MB1255-T-GA
  - T-MB1255-T-FA

  - GA (Included with finger guard, mounting bracket and mounting screws)
  - FA (Included with filter, mounting bracket and mounting screws)
AC Centrifugal Blower
MB Series
Impeller Diameter φ100 mm (φ3.94 in.)

Specifications (RoHS)

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage</th>
<th>Frequency</th>
<th>Current</th>
<th>Input</th>
<th>Speed r/min</th>
<th>Max. Air Flow m³/min</th>
<th>Max. Static Pressure Pa</th>
<th>Noise Level dB (A)</th>
<th>Capacitor μF</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB1040-B</td>
<td>Single-Phase 100</td>
<td>50 Hz</td>
<td>0.50 A</td>
<td>45 W</td>
<td>2750 r/min</td>
<td>2.3 m³/min</td>
<td>81.2 Pa</td>
<td>60 dB (A)</td>
<td>3.0 μF</td>
</tr>
<tr>
<td></td>
<td>Single-Phase 110</td>
<td>60 Hz</td>
<td>0.55 A</td>
<td>55 W</td>
<td>3050 r/min</td>
<td>2.6 m³/min</td>
<td>91.8 Pa</td>
<td>1.4 dB (A)</td>
<td>63 μF</td>
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<tr>
<td>MB1040-D</td>
<td>Single-Phase 200</td>
<td>50 Hz</td>
<td>0.25 A</td>
<td>40 W</td>
<td>2750 r/min</td>
<td>2.3 m³/min</td>
<td>81.2 Pa</td>
<td>60 dB (A)</td>
<td>1.2 μF</td>
</tr>
<tr>
<td></td>
<td>Single-Phase 220</td>
<td>60 Hz</td>
<td>0.30 A</td>
<td>50 W</td>
<td>3100 r/min</td>
<td>2.6 m³/min</td>
<td>91.8 Pa</td>
<td>1.2 dB (A)</td>
<td>65 μF</td>
</tr>
<tr>
<td></td>
<td>Single-Phase 230</td>
<td>50 Hz</td>
<td>0.50 A</td>
<td>55 W</td>
<td>3200 r/min</td>
<td>2.6 m³/min</td>
<td>91.8 Pa</td>
<td>1.1 dB (A)</td>
<td>64 μF</td>
</tr>
</tbody>
</table>

 Ambient Temperature: −10°C to +50°C (−14°F to +122°F)  
 Operating Voltage Range: ±10%  
 Materials  
 Motor Case: Die Cast Aluminum  
 Casing: Die Cast Aluminum  
 Impeller: Aluminum  
 Overheat Protection: Built-in Thermal Protector  
 Bearings: Ball Bearings

Air Flow – Static Pressure Characteristics

Dimensions
Unit = mm (in.)  
Mass: 2 kg (4.4 lb.)  
Protective Earth Terminal  
M4  
Lead Wires 300 mm (12 in.)  
til Style 3205, AWG20
Introduction

**FM**
- AC Input
- MRS

**Variable Flow**
- MRS
- AC Input

**MU**
- DC Input
- Long-Life
- MDE
- DC Input

**MDS**/**MD**
- AC Input

**MB**
- DC Input
- MBD

**MF**
- DC Input
- MFD

Thermostats

A thermostat makes it possible for fans to operate only when cooling is necessary, thereby conserving energy.

**Capacitor** (Included)

- Capacitor Dimensions Table

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacitor Model</th>
<th>Capacitor Dimensions mm (in.)</th>
<th>Mass g (oz.)</th>
<th>Capacitor Cap</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB1040-B</td>
<td>CH30BFAUL</td>
<td>58 (2.28) 21 (0.83) 31 (1.22) 50 (1.77)</td>
<td>Included</td>
<td></td>
</tr>
<tr>
<td>MB1040-D</td>
<td>CH12BFAUL</td>
<td>37 (1.46) 18 (0.71) 27 (1.06) 30 (1.06)</td>
<td>Included</td>
<td></td>
</tr>
</tbody>
</table>

**Connection Diagram**

- How to connect a capacitor → Page E-158

**Thermostats**

A thermostat makes it possible for fans to operate only when cooling is necessary, thereby conserving energy.

**Panel Cut-Out**

Unit = mm (in.)

**Accessories**

The following products are RoHS-Compliant.

- Finger Guard
- Filter
- Mounting Bracket
- Duct Joint

**Fan Kit**

The lineup includes a product configuration containing all necessary accessories in one package.

**Product Line**

- T-MB1040-B-GA
- T-MB1040-B-FA
- T-MB1040-D-GA
- T-MB1040-D-FA

- GA (Included with finger guard, mounting bracket and mounting screws)
- FA (Included with filter, mounting bracket and mounting screws)
AC Centrifugal Blower
MB Series
Impeller Diameter
ϕ80 mm (ϕ3.15 in.)

Specifications RoHS

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage</th>
<th>Frequency</th>
<th>Current</th>
<th>Input</th>
<th>Speed</th>
<th>Max. Air Flow</th>
<th>Max. Static Pressure</th>
<th>Noise Level</th>
<th>Capacitor</th>
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<td></td>
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<td>Hz</td>
<td>A</td>
<td>W</td>
<td>r/min</td>
<td>m³/min CFM</td>
<td>Pa inH₂O</td>
<td>dB (A)</td>
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<td>63.5</td>
<td>226</td>
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<td>Single-Phase 115</td>
<td>60</td>
<td>0.37</td>
<td>36</td>
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<td>1.8</td>
<td>63.5</td>
<td>226</td>
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<td>MB840-D</td>
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<td>63.5</td>
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<td>0.906</td>
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<td>Three-Phase 230</td>
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<td>0.15</td>
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<td>1.8</td>
<td>63.5</td>
<td>226</td>
<td>0.906</td>
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</tbody>
</table>

MB840-T meets UL and CSA Standards only.
How to read specifications → Page E-19
Details of safety standards → Page G-2
Details of RoHS Directive → Page G-38

Air Flow – Static Pressure Characteristics
How to read air flow – static pressure characteristics → Page E-20

Dimensions Unit = mm (in.)
Mass: 1.3 kg (2.9 lb.)
Protective Earth Terminal M4
UL Style 3266, AWG20
Lead Wires 300 mm (12 in.)

Features E-100 / System Configuration E-100 / General Specifications E-101
Cooling Fans

Introduction

FM

AC Input

MRS

AC Input

Variable Flow

MRS

AC Input

MU

DC Input

Long-Life

MDE

DC Input

MDS/MD

AC Input

MB

DC Input

MBD

AC Input

MF

DC Input

MFD

Thermostats

Accessories

Installation

Copper

Copper

Aluminum

Aluminum

MRS

MDS/MD

AC Input

AC Input

Cross Flow Fans

Cross Flow Fans

Thermostats

Accessories

Panel Cut-Out

Unit = mm (in.)

Outlet Side

Intake Side

Capacitor Dimensions Table

Model | Capacitor Model | Capacitor Dimensions mm (in.) | Mass g (oz.) | Capacitor Cap
--- | --- | --- | --- | ---
MB840-B | CH15FAUL | 31 (1.22) 14.5 (0.57) 23.5 (0.93) 35 (1.24) | Included
MB840-D | CH25FAUL | 31 (1.22) 17 (0.67) 27 (1.08) 40 (1.41) | Included

Connection Diagrams

MB840-B, MB840-D

How to connect a capacitor → Page E-158

MB840-T

Thermostats

A thermostat makes it possible for fans to operate only when cooling is necessary, thereby conserving energy.

Accessories

The following products are RoHS-Compliant.

Details → Page E-137

<table>
<thead>
<tr>
<th>Product</th>
<th>Model</th>
<th>Safety Standards</th>
<th>Page</th>
</tr>
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<tbody>
<tr>
<td>Finger Guard</td>
<td>FGB8</td>
<td>Conformed component</td>
<td>E-145</td>
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<td>Filter</td>
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<td>—</td>
<td>E-147</td>
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<td>Mounting Bracket</td>
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<td>—</td>
<td>E-152</td>
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<tr>
<td>Duct Joint</td>
<td>FD8</td>
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<td>E-153</td>
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Fan Kit

Details → Page E-143

<table>
<thead>
<tr>
<th>Fan Kit Model</th>
<th>Description</th>
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<tbody>
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<td>T-MB840-B-GA</td>
<td>Fan Kit Model</td>
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<tr>
<td>T-MB840-B-FA</td>
<td>Fan Kit Model</td>
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<tr>
<td>T-MB840-D-GA</td>
<td>Fan Kit Model</td>
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<tr>
<td>T-MB840-D-FA</td>
<td>Fan Kit Model</td>
</tr>
<tr>
<td>T-MB840-T-GA</td>
<td>Fan Kit Model</td>
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<tr>
<td>T-MB840-T-FA</td>
<td>Fan Kit Model</td>
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</tbody>
</table>

- GA (Included with finger guard, mounting bracket and mounting screws)
- FA (Included with filter, mounting bracket and mounting screws)
AC Centrifugal Blower
MB Series
Impeller Diameter ɸ60 mm (ɸ2.36 in.)

Specifications (RoHS)

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage VAC</th>
<th>Frequency Hz</th>
<th>Current A</th>
<th>Input W</th>
<th>Speed r/min</th>
<th>Max. Air Flow m³/min</th>
<th>Max. Static Pressure Pa</th>
<th>Noise Level dB (A)</th>
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<tbody>
<tr>
<td>MB630-B</td>
<td>Single-Phase 100</td>
<td>50</td>
<td>0.11</td>
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<td>0.44</td>
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<td>53.0</td>
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<td>2500</td>
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<td>2500</td>
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<td>17.3</td>
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<td>0.08</td>
<td>11.0</td>
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<td>0.50</td>
<td>17.7</td>
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<td>0.50</td>
<td>17.7</td>
<td>56.0</td>
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<td>Single-Phase 230</td>
<td>60</td>
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<td>14.0</td>
<td>2900</td>
<td>0.55</td>
<td>19.4</td>
<td>83.0</td>
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</table>

@How to read specifications ➔ Page E-19  ▪ Details of safety standards ➔ Page G-2  ▪ Details of RoHS Directive ➔ Page G-38

Air Flow – Static Pressure Characteristics

Air Flow – Static Pressure Characteristics

@How to read air flow – static pressure characteristics ➔ Page E-20

Dimensions  Unit = mm (in.)

Mass: 0.5 kg (1.1 lb.)

Lead Wires 300 mm (12 in.)
UL Style 3266, AWG20
Panel Cut-Out  Unit = mm (in.)

Outlet Side  Intake Side

Connection Diagram

Thermostats
A thermostat makes it possible for fans to operate only when cooling is necessary, thereby conserving energy.

Thermostats  AM1-WA1/AM1-XA1

Accessories
The following products are RoHS-Compliant.

<table>
<thead>
<tr>
<th>Product</th>
<th>Model</th>
<th>Safety Standards</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting Bracket</td>
<td>PAS2B</td>
<td>-</td>
<td>E-152</td>
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</tbody>
</table>

Fan Kit  The lineup includes a product configuration containing all necessary accessories in one package.

Product Line

<table>
<thead>
<tr>
<th>Fan Kit Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-MB630-B-A</td>
</tr>
<tr>
<td>T-MB630-D-A</td>
</tr>
</tbody>
</table>
AC Centrifugal Blower
MB Series
Impeller Diameter
ϕ50 mm (ϕ1.97 in.)

**Specifications (RoHS)**

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage</th>
<th>Frequency</th>
<th>Current</th>
<th>Input</th>
<th>Speed</th>
<th>Max. Air Flow</th>
<th>Max. Static Pressure</th>
<th>Noise Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VAC</td>
<td>Hz</td>
<td>A</td>
<td>W</td>
<td>m/min</td>
<td>CFM</td>
<td>Pa</td>
<td>dB (A)</td>
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<tr>
<td>MB520-B</td>
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<td>0.11</td>
<td>8</td>
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<td>7</td>
<td>3000</td>
<td>0.24</td>
<td>8.47</td>
<td>53</td>
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<td>0.11</td>
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<td>3200</td>
<td>0.25</td>
<td>8.83</td>
<td>55</td>
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<td>13</td>
<td>3300</td>
<td>0.27</td>
<td>9.53</td>
<td>60</td>
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</tbody>
</table>

**How to read specifications** ➜ Page E-19  ▪ Details of safety standards ➜ Page G-2 ▪ Details of RoHS Directive ➜ Page G-38

The following items are included in each product.

- Fan, Operating Manual

**Air Flow – Static Pressure Characteristics**

**Dimensions**  Unit = mm (in.)

Mass: 0.3 kg (0.7 lb.)

- Lead Wires 300 mm (12 in.)
- UL Style 3266, AWG20
- Protective Earth Terminal M420 (0.79 in.)
- Unpainted 3 x M3
**Cooling Fans**

**Introduction**

- **FM**
- **AC Input**
- **MRS**
- **Variable Flow**
- **MRS**
- **AC Input**
- **MU**
- **DC Input**
- **MDE**
- **DC Input**
- **MDS/MD**
- **AC Input**
- **MB**
- **DC Input**
- **MBD**

**Thermostats Accessories Installation**

- **Cooling Module**
  - Axial Flow Fans
  - Centrifugal Blowers
  - Cross Flow Fans

---

**Panel Cut-Out**  
Unit = mm (in.)

Outlet Side

Intake Side

**Connection Diagram**

**Thermostats**

A thermostat makes it possible for fans to operate only when cooling is necessary, thereby conserving energy.

**RoHS**

Thermostats **AM1-WA1/AM1-XA1**

@ Page ➜ E-133

---

**Accessories**

The following products are RoHS-Compliant.

Details ➜ Page E-137

<table>
<thead>
<tr>
<th>Product</th>
<th>Model</th>
<th>Safety Standards</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting Bracket</td>
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<td>E-152</td>
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</table>

**Fan Kit**

The lineup includes a product configuration containing all necessary accessories in one package.

Details ➜ Page E-143

---

**Product Line**

- **Fan Kit Model**
  - T-MBS20-B-A
  - T-MBS20-D-A

---

---
DC Centrifugal Blower  
**MBD Series**  
**Impeller Diameter**  
ϕ120 mm (ϕ4.72 in.)

### Specifications (RoHS)

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage</th>
<th>Current</th>
<th>Speed</th>
<th>Max. Air Flow</th>
<th>Max. Static Pressure</th>
<th>Noise Level</th>
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</thead>
<tbody>
<tr>
<td>MBD12-24</td>
<td>24 VDC</td>
<td>1.5 A</td>
<td>1900</td>
<td>3.0 m³/min</td>
<td>106 Pa</td>
<td>372 dB (A)</td>
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</table>

How to read specifications ➔ Page E-19  
Details of RoHS Directive ➔ Page G-38

The following items are included in each product.

Fan, Operating Manual

### Air Flow – Static Pressure Characteristics

How to read air flow – static pressure characteristics ➔ Page E-20

### Dimensions  
Unit = mm (in.)

Mass: 1.5 kg (3.3 lb.)  
Unit = mm (in.)

---

**Ambient Temperature:** −10 to +60°C (−14 to +140°F)  
**Operating Voltage Range:** ±10%  
**Materials:**  
- Motor Case: Die Cast Aluminum  
- Casing: Die Cast Aluminum  
- Impeller: Aluminum  
**Overheat Protection:** Built-in Overheat Protection  
**Circuit:**  
- Bearings: Ball Bearings
Cooling Fans

Introduction

FM

AC Input

MRS

AC Input

Variable Flow

MRS

AC Input

MU

DC Input

Long-Life

MDE

DC Input

MDS/MD

AC Input

MB

DC Input

MBD

AC Input

MF

DC Input

MFD

Thermostats

Accessories

Installation

Panel Cut-Out  Unit = mm (in.)

Connection Diagram

Accessories

The following products are RoHS-Compliant.

<table>
<thead>
<tr>
<th>Product</th>
<th>Model</th>
<th>Safety Standards</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Filter</td>
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<td>E-152</td>
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<td>Duct Joint</td>
<td>FD12</td>
<td>—</td>
<td>E-153</td>
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</table>

Fan Kit

The lineup includes a product configuration containing all necessary accessories in one package.

Details ➜ Page E-143

Product Line

- **Fan Kit Model**
  - T-MBD12-24-GA
  - T-MBD12-24-FA

- **-GA** (Included with finger guard, mounting bracket and mounting screws)
- **-FA** (Included with filter, mounting bracket and mounting screws)
DC Centrifugal Blower
MBD Series
Impeller Diameter
ϕ100 mm (ϕ3.94 in.)

Specifications (RoHS)

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage VDC</th>
<th>Current A</th>
<th>Speed r/min</th>
<th>Max. Air Flow m³/min</th>
<th>Max. Air Flow CFM</th>
<th>Max. Static Pressure Pa</th>
<th>Noise Level dB (A)</th>
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<tbody>
<tr>
<td>Low-Speed Alarm, Contact Alarm Type (Alarm specifications: ⑦)</td>
<td>MBD10-24A</td>
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<td>2400</td>
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<td>294</td>
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<td>68.8</td>
<td>294</td>
</tr>
</tbody>
</table>

Air Flow – Static Pressure Characteristics

Dimensions

Unit = mm (in.)

Mass: 1.2 kg (2.6 lb.)

Lead Wires 300 mm (12 in.)
UL Style 1007, AWG24
**Panel Cut-Out**  
Unit = mm (in.)

Outlet Side | Intake Side
---|---

**Cooling Fans**

- **Introduction**
- **FM**
- **AC Input**
- **MRS**
- **AC Input**
- **Variable Flow**
- **MRS**
- **AC Input**
- **MU**
- **DC Input**
- **Long-Life**
- **MDE**
- **DC Input**
- **MDS/MD**
- **AC Input**
- **MB**
- **DC Input**
- **MBD**
- **AC Input**
- **MF**
- **DC Input**
- **MFD**

**Connection Diagrams**

24 VDC or 48 VDC
- Red
- Black
- GND
- White
- Blue
  - Alarm Output  
  (Alarm type only)

24 VDC or 48 VDC
- Red
- Black
- GND
- Yellow
  - Pulse Sensor Output  
  (Pulse sensor type only)

**Accessories**

The following products are RoHS-Compliant.

Details ➜ Page E-137

<table>
<thead>
<tr>
<th>Product</th>
<th>Model</th>
<th>Safety Standards</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finger Guard</td>
<td>FGB10</td>
<td>Conformed component</td>
<td>E-145</td>
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<tr>
<td>Filter</td>
<td>FLB10</td>
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<td>E-147</td>
</tr>
<tr>
<td>Mounting Bracket</td>
<td>PAS48</td>
<td>—</td>
<td>E-152</td>
</tr>
<tr>
<td>Duct Joint</td>
<td>FD10</td>
<td>—</td>
<td>E-153</td>
</tr>
</tbody>
</table>

**Fan Kit**

The lineup includes a product configuration containing all necessary accessories in one package.

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**Product Line**

<table>
<thead>
<tr>
<th>Fan Kit Model</th>
<th>T-MBD10-24A-GA</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-MBD10-24A-FA</td>
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<tr>
<td>T-MBD10-24S-GA</td>
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<tr>
<td>T-MBD10-48-FA</td>
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</tbody>
</table>

- **GA** (Included with finger guard, mounting bracket and mounting screws)
- **FA** (Included with filter, mounting bracket and mounting screws)
DC Centrifugal Blower

MBD Series

Impeller Diameter
ϕ80 mm (ϕ3.15 in.)

Specifications (RoHS)

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage VDC</th>
<th>Current A</th>
<th>Speed r/min</th>
<th>Max. Air Flow m³/min</th>
<th>Max. Static Pressure Pa</th>
<th>Noise Level dB (A)</th>
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</thead>
<tbody>
<tr>
<td>Low-Speed Alarm, Contact Alarm Type</td>
<td>MBD8-24A</td>
<td>24</td>
<td>0.7</td>
<td>2600</td>
<td>1.45</td>
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<tr>
<td>Pulse Sensor Type</td>
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<td>2600</td>
<td>1.45</td>
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<tr>
<td>Standard Type</td>
<td>MBD8-48S</td>
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<td>1450</td>
<td>1.2</td>
<td>196</td>
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How to read specifications ➔ Page E-19
Alarm specifications ⑦, ⑨ ➔ Page E-21
Details of RoHS Directive ➔ Page G-38

Air Flow – Static Pressure Characteristics

How to read air flow – static pressure characteristics ➔ Page E-20

Dimensions
Unit = mm (in.)

Mass: 1.1 kg (2.4 lb.)

Lead Wires 300 mm (12 in.)
UL Style 1007, AWG24
E-119

Cooling Fans

Introduction

FM

AC Input

MRS

AC Input

Variable Flow

MRS

AC Input

MU

DC Input

Long-Life

MDE

DC Input

MDS/MD

AC Input

MB

DC Input

MBD

AC Input

MF

DC Input

MFD

Thermostats Accessories Installation

Cooling Module
Axial Flow Fans

Centrifugal Blowers

Cross Flow Fans

Panel Cut-Out

Unit = mm (in.)

Outlet Side

Intake Side

Connection Diagrams

Fan Kit

The lineup includes a product configuration containing all necessary accessories in one package.

Details ➔ Page E-143

Accessories

The following products are RoHS-Compliant.

Details ➔ Page E-137

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<tr>
<td>Duct Joint</td>
<td>FD8</td>
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<td>E-153</td>
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Fan Kit Model

- GA (Included with finger guard, mounting bracket and mounting screws)
- FA (Included with filter, mounting bracket and mounting screws)

PRODUCT LINE

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