Always operate the FabricAir® VarioDuct™ at its designed air volumes and static pressures stated on the technical drawings.

**Moving the membrane with actuator**

The actuator rotates in both directions: clockwise and counter clockwise. The actuator is overload protected, does not require limit switches and it automatically stops when the end stop is reached, which will be either at the 12 o’clock or 6 o’clock positions depending on the rotation direction.

Important! Never stop the actuator manually in between. Instead let it stop automatically. This will ensure that the membrane efficiently covers half the duct, activating either the upper or lower airflow patterns. The FabricAir® VarioDuct™ must not be run with the membrane positioned in between.

When switching the membrane position, do so with duct inlet air velocity ≤ 5 m/s.

**Important!** Follow all safety and electrical installation notes stated on the actuator manufacturer's technical data sheet, which is added at the end of this document.

**Moving the membrane with manual handle**

Move the manual handle up or down to change the position of the membrane. Fix the position of the membrane using the wing screw on the handle.

Important! The FabricAir® VarioDuct™ must not be run with the membrane positioned in between. Make sure the handle is vertical and pointing upward or downward – depending on the desired position of the membrane - when fixing with the wing screw.

To be continued on the next page...
When switching the membrane position, do so with duct inlet air velocity ≤ 5 m/s.

MAINTENANCE

The FabricAir® VarioDuct™ damper and its actuator are maintenance-free.

For maintenance of FabricAir® VarioDuct™ fabric ducting please refer to FabricAir laundering instructions.

WARRANTY

5 years on all parts, provided that all commissioning and installation guidelines, working conditions and actuator manufacturer's technical instructions are observed.

WORKING CONDITIONS

When switching the membrane position, do so with duct inlet air velocity ≤ 5 m/s, regardless if the damper is controlled automatically or manually.

**AMBIENT CONDITIONS (AUTOMATIC CONTROL)**

<table>
<thead>
<tr>
<th></th>
<th>Non-operating temperature</th>
<th>Operating temperature</th>
<th>Relative humidity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From -40°C [-40°F] to 80°C [176°F]</td>
<td>From -30°C [-22°F] to 50°C [122°F]</td>
<td>95% (non-condensing)</td>
</tr>
</tbody>
</table>

**AMBIENT CONDITIONS (MANUAL CONTROL)**

<table>
<thead>
<tr>
<th></th>
<th>Non-operating temperature</th>
<th>Operating temperature</th>
<th>Relative humidity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From -40°C [-40°F] to 120°C [248°F]</td>
<td>From -40°C [-40°F] to 80°C [176°F]</td>
<td>0-100%</td>
</tr>
</tbody>
</table>

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Damper actuator for adjusting dampers in technical building installations

- Air damper size up to approx. 0.4 m²
- Nominal torque 2 Nm
- Nominal voltage AC/DC 24 V
- Control Open-close, 3-point
- Spindle driver Form fit 8x8 mm

**Technical data**

### Electrical data
- **Nominal voltage**: AC/DC 24 V
- **Nominal voltage frequency**: 50/60 Hz
- **Nominal voltage range**: AC 19.2...28.8 V / DC 19.2...28.8 V
- **Power consumption in operation**: 0.5 W
- **Power consumption in rest position**: 0.2 W
- **Power consumption for wire sizing**: 1 VA
- **Connection supply / control**: Cable 1 m, 3 x 0.75 mm²
- **Parallel operation**: Yes (note the performance data)

### Functional data
- **Torque motor**: Min. 2 Nm
- **Direction of motion motor**: ccw rotation
- **Manual override**: with magnet
- **Angle of rotation**: 0...287.5°, 315° with one end stop clip mounted on the actuator
- **Running time motor**: 75 s / 90°
- **Sound power level motor**: 35 dB(A)
- **Spindle driver**: Form fit 8x8 mm
- **Position indication**: Mechanically, pluggable (with integrated magnet for gear disengagement)

### Safety
- **Protection class IEC/EN**: III Safety Extra-Low Voltage (SELV)
- **Protection class UL**: UL Class 2 Supply
- **Degree of protection IEC/EN**: IP54
- **Degree of protection NEMA/UL**: NEMA 2, UL Enclosure Type 2
- **EMC**: CE according to 2014/30/EU
- **Certification IEC/EN**: IEC/EN 60730-1 and IEC/EN 60730-2-14
- **Certification UL**: cULus according to UL 60730-1A, UL 60730-2-14 and CAN/CSA E60730-1:02
- **Mode of operation**: Type 1
- **Rated impulse voltage supply / control**: 0.8 kV
- **Control pollution degree**: 3
- **Ambient temperature**: -30...50°C
- **Non-operating temperature**: -40...80°C
- **Ambient humidity**: 95% r.h., non-condensing
- **Maintenance**: Maintenance-free

### Weight
- **Weight**: 0.24 kg

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**Safety notes**

- The device must not be used outside the specified field of application, especially not in aircraft or any other airborne means of transport.
- Outdoor application: only possible in case that no (sea)water, snow, ice, insolation or aggressive gases interfere directly with the actuator and that is ensured that the ambient conditions remain at any time within the thresholds according to the data sheet.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- The device may only be opened at the manufacturer’s site. It does not contain any parts that can be replaced or repaired by the user.

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Safety notes

• Cables must not be removed from the device.
• To calculate the torque required, the specifications supplied by the damper manufacturers concerning the cross-section, the design, the installation site and the ventilation conditions must be observed.
• The device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Product features

Simple direct mounting The actuator with its hollow spindle is mounted in a form-fit manner directly on the damper spindle and can be optionally secured with the Z-ARCM anti-rotation clip to prevent it from rotating.

Manual override Manual override with magnet possible (the gear is disengaged as long as the magnet adheres to the magnet symbol). The magnet for gear disengagement is integrated in the position indication.

Adjustable angle of rotation Adjustable angle of rotation with mechanical end stops.

High functional reliability The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.

Accessories

<table>
<thead>
<tr>
<th>Description</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-rotation clip for CM..</td>
<td>Z-ARCM</td>
</tr>
<tr>
<td>Magnet disengagement</td>
<td>Z-MA</td>
</tr>
<tr>
<td>Position indicator CM..</td>
<td>Z-PICM</td>
</tr>
<tr>
<td>End stop clips CM.. / CQ..</td>
<td>Z-ESCM</td>
</tr>
</tbody>
</table>

Electrical installation

Notes

• Connection via safety isolating transformer.
• Parallel connection of other actuators possible. Observe the performance data.

Wiring diagrams

AC/DC 24 V, open-close

AC/DC 24 V, 3-point

Cable colours:
1 = black
2 = red
3 = white
CM24-F-L Damper actuator, Open-close, 3-point, AC/DC 24 V, 2 Nm

Dimensions [mm]

<table>
<thead>
<tr>
<th>Spindle length</th>
<th>Dimensional drawings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min. 25</td>
<td><img src="image_url" alt="Dimensional drawings" /></td>
</tr>
</tbody>
</table>

Dimensions [mm]:
- Spindle length: 158, 20, 28, 130, 56, 24, 5, 19, 61
- Other dimensions as shown in the diagrams.
### Technical data

#### Electrical data
- **Nominal voltage**: AC 230 V
- **Nominal voltage frequency**: 50/60 Hz
- **Nominal voltage range**: AC 85...265 V
- **Power consumption in operation**: 1.5 W
- **Power consumption in rest position**: 1 W
- **Power consumption for wire sizing**: 3 VA
- **Connection supply / control**: Cable 1 m, 3 x 0.75 mm²
- **Parallel operation**: Yes (note the performance data)

#### Functional data
- **Torque motor**: Min. 2 Nm
- **Direction of motion motor**: ccw rotation
- **Manual override**: with magnet
- **Angle of rotation**: 0...287.5°, 315° with one end stop clip mounted on the actuator
- **Running time motor**: 75 s / 90°
- **Sound power level motor**: 35 dB(A)
- **Spindle driver**: Form fit 8x8 mm
- **Position indication**: Mechanically, pluggable (with integrated magnet for gear disengagement)

#### Safety
- **Protection class IEC/EN**: II reinforced insulation
- **Protection class UL**: II reinforced insulation
- **Degree of protection IEC/EN**: IP54
- **Degree of protection NEMA/UL**: NEMA 2, UL Enclosure Type 2
- **EMC**: CE according to 2014/30/EU
- **Low voltage directive**: CE according to 2014/35/EU
- **Certification IEC/EN**: IEC/EN 60730-1 and IEC/EN 60730-2-14
- **Certification UL**: cULus according to UL 60730-1A, UL 60730-2-14 and CAN/CSA E60730-1:02
- **Mode of operation**: Type 1
- **Rated impulse voltage supply / control**: 2.5 kV
- **Control pollution degree**: 3
- **Ambient temperature**: -30...50°C
- **Non-operating temperature**: -40...80°C
- **Ambient humidity**: 95% r.h., non-condensing
- **Maintenance**: Maintenance-free
- **Weight**: 0.25 kg

### Safety notes
- The device must not be used outside the specified field of application, especially not in aircraft or in any other airborne means of transport.
- Outdoor application: only possible in case that no (sea)water, snow, ice, insolation or aggressive gases interfere directly with the actuator and that is ensured that the ambient conditions remain at any time within the thresholds according to the data sheet.
- Caution: Power supply voltage!
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
Safety notes

• The device may only be opened at the manufacturer’s site. It does not contain any parts that can be replaced or repaired by the user.
• Cables must not be removed from the device.
• To calculate the torque required, the specifications supplied by the damper manufacturers concerning the cross-section, the design, the installation site and the ventilation conditions must be observed.
• The device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.

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<td>Z-ESCM</td>
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</tbody>
</table>

Electrical installation

Notes

• Caution: Power supply voltage!
• Parallel connection of other actuators possible. Observe the performance data.

Wiring diagrams

AC 230 V, open-close

AC 230 V, 3-point

Cable colours:
1 = blue
2 = brown
3 = white
<table>
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<tr>
<th>Dimensions [mm]</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Min. 25</td>
<td>20</td>
</tr>
</tbody>
</table>

**CM230-F-L**

Damper actuator, Open-close, 3-point, AC 230 V, 2 Nm

**www.belimo.eu**

CM230-F-L • en-gb • 2017-04-20 • subject to changes