# Electromagnetic Lock Installation Instruction

## Indoor Series

### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Holding Force</th>
<th>Current Draw</th>
<th>Optional Bracket</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM-150 Series</td>
<td>300 lbs (136 Kg)</td>
<td>350mA@12VDC 170mA@24VDC</td>
<td>L-300, EM-1000L bracket for narrow door frames.</td>
</tr>
<tr>
<td>10061 Series</td>
<td>500 lbs (272 Kg)</td>
<td>500mA@12VDC 250mA@24VDC</td>
<td>LZ-300, LZ-300N, EM-1000L/LZ bracket for in-swinging doors.</td>
</tr>
<tr>
<td>EM-300 Series</td>
<td>600 lbs (272 Kg)</td>
<td>600mA@12VDC 250mA@24VDC</td>
<td>EM-300L bracket for narrow door frames.</td>
</tr>
<tr>
<td>10064 Series</td>
<td>650 lbs X2 (272 Kg X2)</td>
<td>500mA@12VDC 250mA@24VDC</td>
<td>LZ-300, EM-1000L bracket for narrow door frames.</td>
</tr>
<tr>
<td>EM-350 Series</td>
<td>800 lbs (363 Kg)</td>
<td>500mA@12VDC 250mA@24VDC</td>
<td>LZ-350 bracket for in-swinging doors.</td>
</tr>
<tr>
<td>10010 Series</td>
<td>1200 lbs (545 Kg)</td>
<td>500mA@12VDC 250mA@24VDC</td>
<td>LZ-500 bracket for narrow door frames.</td>
</tr>
<tr>
<td>10060 Series</td>
<td>1200 lbs X2 (545 Kg X2)</td>
<td>500mA@12VDC 250mA@24VDC</td>
<td>LZ-500N bracket for in-swinging doors.</td>
</tr>
</tbody>
</table>

### Holding Force Curve & Accessories

The holding force of the electromagnetic lock is depending on the voltage of the power supply. The graph below illustrates the change of the holding force under different voltage. The holding forces of the electromagnetic lock used here by the manufacture here "Collinear" force.

Please note that the actual accessory pack varies according to the electromagnetic lock model.

![Holding Force Graph](image)

### Optional Bracket

Identify the door swinging direction and inspect the door frame header to determine if bracket is required. A L-bracket, LZ-bracket or U-bracket (optional) may be required for the electromagnet depending on the frame header and swinging direction.

![Bracket Diagram](image)

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MI-02-EM-AL Ver E Publish:2005.02.21
1. Fold the mounting template along the dotted line to a 90-degree angle.
2. Close the door, find a mounting location on the door frame near the upper free-moving corner of the door, and three holes in door as indicated on the template.
3. Place the template against the door and frame. Drill two holes in the frame as close to the corner of the door frame as possible.
4. Drill two holes in the frame and three holes in the door as indicated on the template.
5. Mounting the armature plate to the door. Actual installation varies according to door style.
6. Hollow Metal Door
   - Drill an 8 mm hole through door from outside bolt side only, enlarge the 8mm hole to 16mm.
7. Solid Door
   - Drill an 8 mm hole thru door from outside bolt side of door, drill 12.7 mm hole, 36mm in depth.
8. Reinforced Door
   - Drill at 6.8 mm dia. Hole and lap for M8x12.5 thread.
9. Micro EM-locks (300 LBS) maximum thickness of door is 44 mm.
10. Mini EM-locks (600 LBS) maximum thickness of door is 50 mm.
11. Midi EM-locks (800 LBS) maximum thickness of door is 48 mm.
12. Standard EM-locks (1200 LBS) maximum thickness of door is 46 mm.

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**With L bracket for narrow door frames**

- L bracket is used as extension on narrow door frames to provide adequate mounting surface.

**With U bracket for frameless glass doors**

- Universal glass door kits are compatible with lock models, except 1200 lbs serial.
- UBK-000 for 8mm of glass door
- UBK-010 for 10mm of glass door
- UBK-012 for 12mm of glass door
- UBK-014 for 14mm of glass door

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**Additional Notes:**

- Make sure the Guide Pins are in the two guide pin holes.
- Put one rubber washer between two washers, and place them over the armature screw between the armature plate and the door.
- This will allow the armature plate to pivot slightly around the armature screw in order to compensate for door misalignment.
- Screw the two self-tapping screws in the slotted holes of the mounting plate and adjust the position of the mounting plate so that it and the armature plate from a 90-degree angle.

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**With LZ bracket for In-swinging doors**

Installation Steps of LZ bracket for In-swinging doors:

1. **Frame**
   - Find a mounting location on the door frame for the L bracket. Make sure that the door is still closeable.

2. **Tighten the electromagnetic lock**
   - On the L bracket by using the fixing screw.

3. **Assemble the Z bracket**
   - And make sure that the Z bracket is adjustable.

4. **Insert the guide pins into the armature plate.**
   - The guide pins will prevent the armature plate to pivot around.

5. **Put one rubber washer between armature plate and the Z bracket,**
   - And place them over the 8mm armature screw.

6. **Close the door.**
   - Measure the correct position by bringing the armature plate close to the contact surface of the electromagnetic lock.

7. **Turn on the power of EM-Lock,**
   - And let the armature plate bonds to the EM-lock. Adjust the position between the Z bracket and the door frame.

8. **Once the position is correct,**
   - Use the screws to permanently mount the Z bracket on the door frame. This should be the last step.

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**Connecting Diagram**

- **Orange:** Door Sensor N.O.
- **White:** Door Sensor Com.
- **Brown:** Door Sensor N.C.

**Status LED:**
- **GREEN:** Unlocked
- **RED:** Locked
- **OFF:** No power

**Trigger**

**Relocking timer**

**Magnet bond sensor output**

**Control Device N.C. contact or Access Relay**

**Door Held Open Alarm**

The time for the "Door Held Open Alarm" is depending on the "VR timer adjust" within 90 seconds. The models with "Door Held Open Alarm" function are: 10002BD, 10003BD, 10004BD.

If the "Door Held Open Alarm" timer is set for 5 seconds, the following will happen: If the door has been opened, but has remained open for more than 5 seconds then an audible alarm will sound until the door has been closed correctly.

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Important Notes

During the installation procedure, it is important to make sure that the working direction of the armature plate has to be facing toward the contact surface of the electromagnetic lock in order to have the maximum holding force.

Be aware that it is better to install the electromagnet lock inside the house and hide the cable inside the door frame in order to against the unlawful entry.

The electromagnetic locks are fail-safe and will require a power supply equipped with battery backup to ensure that power outages may interfere with desired security.

Do not install a diode in parallel with any magnetic lock. A diode will cause a delay when releasing the door and residual magnetist to occur.

The contact surface of the electromagnetic lock and the armature plate has to be completely attached; otherwise, the reed, which is located inside the electromagnetic lock, will not be detected. It will result in an incorrect output message for the bond sensor.

Damage to the mating surfaces may reduce the efficiency of the lock and cause rust.

Apply a light coat of a silicon lubricant to prevent rust. Wipe away the excess.

Do not run power wires and signal wire in the same cable or conduit.

Distance in feet from power source to farthest locking device

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Trouble Shooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Door does not lock</td>
<td>No power</td>
<td>Check to make sure the wires are securely tightened to the correct terminal block</td>
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<tr>
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<td>Check that the power supply is connected and operating properly</td>
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<td></td>
<td>Make sure the lock switch is wired correctly</td>
</tr>
<tr>
<td>Reduced holding force</td>
<td>Poor contact between electromagnet and armature plate</td>
<td>Make sure the electromagnet and armature plate are properly aligned</td>
</tr>
<tr>
<td></td>
<td>Low voltage or incorrect voltage setting</td>
<td>Make sure the contact surfaces of the electromagnet and armature plate are clean and free from dust</td>
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<tr>
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<td>Ensure the electromagnetic lock is set for the correct voltage</td>
</tr>
<tr>
<td>Sensor output is not functioning</td>
<td>A secondary diode was installed across the electromagnet</td>
<td>Check for proper voltage at the electromagnet lock's input. If low, determine if the correct wire gauge is being used to prevent excessive voltage drop</td>
</tr>
<tr>
<td></td>
<td>Misalignment between the reed switch and its magnet</td>
<td>Remove any diode installed across the magnet for &quot;spike&quot; suppression. (The magnet is fitted with a metal oxide varistor to prevent back EMF)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check the installation of armature with supplied template</td>
</tr>
</tbody>
</table>
TEMPLATE FOR MINI MAGNET

Magnet

DRILL 3.2MM HOLE (2 PLACES)

DRILL 8MM HOLE FOR CABLE ACCESS

Place again header

FOLD ON DOTTED LINE

Armature

DRILL 8MM HOLE FOR ARMATURE SCREW

DRILL 6MM HOLE FOR GUIDE PINS

Place again door

FOLD ON DOTTED LINE