Motor & Phase Rotation Indicator

Model: D03121
IMPORTANT SAFETY INFORMATION

Please read these instructions carefully before use and retain for future reference.

• When using electrical appliances basic safety precautions should always be followed.
• Use the meter only as specified in this manual, or the protection provided may be impaired.
• Do not operate the indicator or use the testing line if it appears damaged, or if the indicator is not operating properly.
• Do not operate the indicator with missing or an incorrectly installed battery back cover.
• There are no user-serviceable parts in this product. Refer servicing to qualified personnel.
• Do not use the indicator around explosive gas or vapour.
• Do not connect the instrument to a power supply with a voltage exceeding the test working voltage.
• Do not use the instrument in a thunderstorm or damp conditions.
• Replace the batteries as soon as the low battery indicator appears on the display.
• Fit a full set of batteries at one time.
• Remove dead batteries from the appliance or if it is not going to be used for a long time.
• Never mix old and new batteries together, or different types of batteries.
• Never dispose of batteries in a fire, or attempt to recharge ordinary batteries.

OVERVIEW

1. Input jack
2. Phase line indicator light
3. Counter-clockwise indicator light
4. Power light
5. Test button
6. Description of indicator light
7. Left sensor position
8. Right sensor position
9. Clockwise indicator light
10. Direction indication symbol

OPERATION

Contact type phase sequence test:
• Connect one end of the test lead to the indicator (connect L1, L2 and L3 test leads to the corresponding input jack) and another end to the alligator clip.
• When the three-phase line is tested, it will clamp the end of the test line with the alligator clip to the three phase lines in the three-phase system (e.g. U, V and W
terminal in three-phase motor).

- Press the “TEST” button and the power light will turn green, indicating that the indicator is ready for testing.
- “Clockwise rotation (R)” or counter-clockwise rotation (L)” with the indicator light on, indicates L1-L2-L3 of the three-phase system connected to the indicator in “positive phase” or “negative phase”.

CAUTION: The rotation indicator light will still be on if the non-energized conductor is connected and the L1, L2 or L3 test lead is not connected. Refer to the information (right).

Non-contact type magnetic field rotation direction test (motor rotation direction test)

- Remove the test line from the indicator.
- Place the indicator above the motor and make it parallel to the motor driving shaft body.
- Make the bottom of the indicator face towards the motor driving shaft.
- The distance from the indicator to the motor shall be no more than 2.5cm.
- Press the “TEST” button and the power light will turn green, indicating that the indicator is ready for testing.
- If the “Clockwise rotation (R)” or the “Counter-clockwise rotation (L)” indicator light is on, it indicates that the motor is in “clockwise rotation” or “counter-clockwise rotation”.

CAUTION: Non-contact type magnetic field rotation direction test is applicable to single-phase and three-phase motors. If the motor is controlled by a transducer, the indicator can not normally test the rotation direction of the motor.

When a non-contact type test is made, get the coil of the motor as close to the sensor on the indicator as possible, in order to get accurate results.

To obtain reliable test results for motor rotation, refer to the table below:

<table>
<thead>
<tr>
<th>No. of pole pair</th>
<th>Magnetic field rotations at frequency (Hz) below (1 rev/min)</th>
<th>Angle between poles</th>
<th>Minimal size of motor case Ø</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16 2/3</td>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>1</td>
<td>1000</td>
<td>3000</td>
<td>3600</td>
</tr>
<tr>
<td>2</td>
<td>500</td>
<td>1500</td>
<td>1800</td>
</tr>
<tr>
<td>3</td>
<td>333</td>
<td>1000</td>
<td>1200</td>
</tr>
<tr>
<td>4</td>
<td>250</td>
<td>750</td>
<td>900</td>
</tr>
<tr>
<td>5</td>
<td>200</td>
<td>600</td>
<td>720</td>
</tr>
<tr>
<td>6</td>
<td>167</td>
<td>500</td>
<td>600</td>
</tr>
<tr>
<td>8</td>
<td>125</td>
<td>375</td>
<td>450</td>
</tr>
<tr>
<td>10</td>
<td>100</td>
<td>300</td>
<td>360</td>
</tr>
<tr>
<td>12</td>
<td>83</td>
<td>250</td>
<td>300</td>
</tr>
<tr>
<td>16</td>
<td>62</td>
<td>188</td>
<td>225</td>
</tr>
</tbody>
</table>
Confirm Motor Wiring
• Connect one end of the test line to the indicator and connect L1, L2 and L3 test lines to the corresponding input jack.
• Connect the alligator clip to the other end of the test line.
• Clamp the alligator clip to the motor connector, L1 to U, L2 to V and L3 to W.
• Press the “TEST” button and the power light turns green, indicating that the indicator is ready for testing.
• Half turn the motor driving shaft to the right.

Detect Magnetic Field
• If you intend to detect magnetic field, you should place the indicator into the electromagnetic valve. If the “Clockwise rotation (R)” or “Counter-clockwise rotation (L)” indicator light is on, it means the magnetic field exists.

TECHNICAL SPECIFICATION

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>0~40°C, maximal 80% humidity (non-condensing)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-10~50°C, maximal 80% relative humidity (non-condensing)</td>
</tr>
<tr>
<td>Altitude</td>
<td>&lt;2000m</td>
</tr>
<tr>
<td>Anti-explosion type</td>
<td>IP40</td>
</tr>
<tr>
<td>Safety Class</td>
<td>IEC61010-1 600V CAT III, Pollution class II</td>
</tr>
<tr>
<td>Maximum working voltage</td>
<td>400V AC voltage</td>
</tr>
<tr>
<td>Nominal voltage (rotation direction)</td>
<td>2<del>400V AC voltage, 2</del>400Hz</td>
</tr>
<tr>
<td>Nominal voltage (phase sequence)</td>
<td>120<del>400V AC voltage, 2</del>400Hz</td>
</tr>
<tr>
<td>Test current (per phase)</td>
<td>&lt;3.5mA</td>
</tr>
<tr>
<td>Battery type</td>
<td>1.5V AA</td>
</tr>
<tr>
<td>Size and Weight</td>
<td>125mm x 66mm x 30mm, approx 90g</td>
</tr>
</tbody>
</table>

MAINTENANCE AND REPLACING THE BATTERIES
• Periodically wipe the case with a damp cloth and mild detergent. Do not use any chemicals, abrasives or solvents that may damage the indicator.
• Unscrew the bolts of the battery cover.
• Remove the cover and old battery.
• Replace with a new battery of the same specification.
• Replace the battery cover and tighten the back cover.

INFORMATION ON WASTE DISPOSAL FOR CONSUMERS OF ELECTRICAL & ELECTRONIC EQUIPMENT.
When this product has reached the end of its life it must be treated as Waste Electrical & Electronics Equipment (WEEE). Any WEEE marked products must not be mixed with general household waste, but kept separate for the treatment, recovery and recycling of the materials used. Contact your local authority for details of recycling schemes in your area.