Maintenance Bypass Switch
Technical Data TD01602002E

Supersedes TD01602002E
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Product Description
The Cutler-Hammer® Maintenance Bypass Switch is a UL® 1008 listed device that provides a simple and effective means for bypassing uninterruptible power supplies (UPS) while maintaining continuity of power to the critical computer loads. A Maintenance Bypass Switch is a requirement on every UPS installation in order to accommodate the maintenance and testing of the UPS system.

Application Description
The most typical applications of the Maintenance Bypass Switch are on Static or Rotary type UPS systems of 50 kVA or greater.
- Static UPS systems may require maintenance to the inductors or the capacitors that are needed for filtering and SCR commutation.
- Motor Generator systems, while extremely reliable, require more maintenance to the mechanical moving parts. Bearings and couplings need to be greased and examined to ensure proper functioning.

The Cutler-Hammer Maintenance Bypass Switch is the first to offer 100% current ratings make selection to the UPS kVA ratings compatible with UPS systems up to 750 kVA at 480 volts.

Features
- UL 1008 listing — File E131767.
- Make-before-break electrical operation.
- Lockout circuit to be wired into the UPS bypass authorization.
- Pilot devices to show UPS position “Normal” and “Bypassed.”
- Pilot device to show “Lockout” enabled.
- Reliable manually initiated electrical operation.
- High interrupting ratings are standard.
- Solid neutral connections are standard.

Benefits
- Safe and reliable operation is ensured due to the simple and durable switching design.
- Unauthorized bypass is prevented by the need of UPS system to send the bypass authorized signal.
- 100% current ratings make selection to the UPS kVA ratings easy to accomplish.
- Use of high interrupting rating switches or breakers makes the Maintenance Bypass Switches adaptable to systems with high levels of available fault current.

General Specifications
- Frequency 60 Hz.
- Line characteristics:
  - Nominal line voltage +15%, -25%
- Operating temperature:
  - 0°C – 70°C
  - 32°F – 160°F
- Storage temperature -20°C – 85°C.
- Humidity 95% noncondensing.

Note: Contact Eaton for applications other than 60 Hz.

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TABLE 1. KVA RATING, FULL LOAD CURRENT AND MAINTENANCE BYPASS SWITCH SIZE CROSS-REFERENCE CHART

<table>
<thead>
<tr>
<th>KVA RATING</th>
<th>208 V</th>
<th>SWITCH</th>
<th>480 V</th>
<th>SWITCH</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>83.3</td>
<td>100</td>
<td>36.1</td>
<td>100</td>
</tr>
<tr>
<td>50</td>
<td>139</td>
<td>150</td>
<td>63</td>
<td>100</td>
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<tr>
<td>65</td>
<td>180</td>
<td>225</td>
<td>81</td>
<td>100</td>
</tr>
<tr>
<td>75</td>
<td>208</td>
<td>225</td>
<td>90</td>
<td>100</td>
</tr>
<tr>
<td>100</td>
<td>278</td>
<td>300</td>
<td>120</td>
<td>150</td>
</tr>
<tr>
<td>125</td>
<td>347</td>
<td>400</td>
<td>150</td>
<td>225</td>
</tr>
<tr>
<td>150</td>
<td>416</td>
<td>600</td>
<td>180</td>
<td>225</td>
</tr>
<tr>
<td>200</td>
<td>555</td>
<td>600</td>
<td>240</td>
<td>300</td>
</tr>
<tr>
<td>225</td>
<td>625</td>
<td>800</td>
<td>271</td>
<td>300</td>
</tr>
<tr>
<td>250</td>
<td>722</td>
<td>800</td>
<td>301</td>
<td>400</td>
</tr>
<tr>
<td>300</td>
<td>833</td>
<td>1000</td>
<td>361</td>
<td>400</td>
</tr>
<tr>
<td>350</td>
<td>972</td>
<td>1000</td>
<td>420</td>
<td>600</td>
</tr>
<tr>
<td>400</td>
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<td>—</td>
<td>480</td>
<td>600</td>
</tr>
<tr>
<td>450</td>
<td>—</td>
<td>—</td>
<td>540</td>
<td>600</td>
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<tr>
<td>500</td>
<td>—</td>
<td>—</td>
<td>601</td>
<td>800</td>
</tr>
<tr>
<td>600</td>
<td>—</td>
<td>—</td>
<td>720</td>
<td>800</td>
</tr>
<tr>
<td>750</td>
<td>—</td>
<td>—</td>
<td>902</td>
<td>1000</td>
</tr>
</tbody>
</table>
TABLE 2. TRANSFER SWITCH EQUIPMENT CATALOG NUMBERING SYSTEM

<table>
<thead>
<tr>
<th>Type (Position 1-2)</th>
<th>ME = Maintenance Bypass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orientation (Position 3)</td>
<td>H = Horizontal</td>
</tr>
<tr>
<td>Logic (Position 4)</td>
<td>E = Electromechanical</td>
</tr>
</tbody>
</table>

MB H E FD A 3 0030 A S U

Frame Molded Case (Position 5-6)
FD = HFD (100 A – 150 A)
KD = HKD (225 A, 300 A)
LD = HLD (400 A)
NB = NB (600 – 1000 A)

Switch (Position 7)
A = Fixed Mount, Molded Case Switch (MCS) Both

Poles (Position 8)
2 = 2-Pole
3 = 3-Pole
4 = 4-Pole

Amperes (Position 9-12)
0100 = 100 A
0150 = 150 A
0225 = 225 A
0300 = 300 A
0400 = 400 A
0600 = 600 A
1000 = 1000 A

Voltage (Position 13)
A = 120 V, 60 Hz
B = 208 V, 60 Hz
W = 240 V, 60 Hz
X = 480 V, 60 Hz
E = 600 V, 60 Hz

Enclosure (Position 14)
K = Open
S = NEMA® 1
J = NEMA 12
R = NEMA 3R
L = NEMA 4
D = NEMA 4X

Listing (Position 15)
U = Listed
R = (Recognized)
X = No Listing

Normal Power Connections
Transfer Mechanism
Solid Neutral Bar
Load Power Connections

Bypass Power Connections
Logic Disconnect Plugs
Maintenance Bypass Switch Control Panel
UPS Lockout Circuit Connection

FIGURE 3. MAINTENANCE BYPASS SWITCH

TABLE 3. STANDARD WITHSTAND, CLOSING AND INTERRUPTING RATINGS

<table>
<thead>
<tr>
<th>TRANSFER SWITCH AMPERE RATING</th>
<th>RATING WHEN USED WITH UPSTREAM CIRCUIT BREAKER</th>
<th>RATING WHEN USED WITH UPSTREAM FUSE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SUGGESTED BREAKER RATING</td>
<td>240 V</td>
</tr>
<tr>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>150</td>
<td>150</td>
<td>100</td>
</tr>
<tr>
<td>225</td>
<td>225</td>
<td>100</td>
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<tr>
<td>300</td>
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<td>800</td>
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<tr>
<td>1000</td>
<td>1000</td>
<td>1000</td>
</tr>
</tbody>
</table>

1. Tested in accordance with UL 1008.
2. For maximum breaker rating in circuits where the transfer switch is evaluated as a “motor branch circuit conductor” refer to the NEC® Section 430-25 for sizing.
3. Also can use Class RK5 fuse with 100 kA rating.

Note: To attain the maximum rating shown in the chart, when protected by an upstream breaker, the upstream device must have an equivalent interrupting rating.
FIGURE 4. OUTLINE DIMENSIONS AND TERMINAL DATA

TABLE 5. MBHE WEIGHTS — IN LBS. (KG)

<table>
<thead>
<tr>
<th>FRAME (AMPERES)</th>
<th>NEMA 1 AND 3R</th>
<th>NEMA 4X</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>130 (59)</td>
<td>375 (170)</td>
</tr>
<tr>
<td>150 – 300</td>
<td>300 (136)</td>
<td>864 (392)</td>
</tr>
<tr>
<td>400</td>
<td>330 (150)</td>
<td>950 (431)</td>
</tr>
<tr>
<td>600 – 1000</td>
<td>490 (222)</td>
<td>1410 (640)</td>
</tr>
</tbody>
</table>

TABLE 6. MAINTENANCE BYPASS SWITCH TERMINAL DATA

<table>
<thead>
<tr>
<th>MAINTENANCE BYPASS SWITCH (MBHE)</th>
<th>STANDARD TERMINAL DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMPERES</td>
<td>BREAKER FRAME</td>
</tr>
<tr>
<td>100 – 150</td>
<td>HFD</td>
</tr>
<tr>
<td>225 – 300</td>
<td>HKD</td>
</tr>
<tr>
<td>400</td>
<td>HLD</td>
</tr>
<tr>
<td>600</td>
<td>NB</td>
</tr>
<tr>
<td>800</td>
<td>NB</td>
</tr>
<tr>
<td>1000</td>
<td>NB</td>
</tr>
</tbody>
</table>

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