Time delay undervoltage module

Instructions apply to:

UL489 : PD-NF, Series NRX NF
IEC : PD-NF, IZM16
UL1066/ANSI : Series NRX NF

UL489 : PD-RF
IEC : PD-RF, IZM40

Figure 1. Time delay undervoltage module for Magnum DS, Magnum, Power Defense ICCB, Series NRX, IZM26, IZM9, IZMX and select molded case circuit breakers

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**WARNING**

(1) ONLY QUALIFIED ELECTRICAL PERSONNEL SHOULD BE PERMITTED TO WORK ON THE EQUIPMENT.
(2) ALWAYS DE-ENERGIZE PRIMARY AND SECONDARY CIRCUITS IF A CIRCUIT BREAKER CANNOT BE REMOVED TO A SAFE WORK LOCATION.
(3) DRAWOUT CIRCUIT BREAKERS SHOULD BE LEVERED (RACKED) OUT TO THE DISCONNECT POSITION.
(4) ALL CIRCUIT BREAKERS SHOULD BE SWITCHED TO THE OFF POSITION AND MECHANISM SPRINGS DISCHARGED. FAILURE TO FOLLOW THESE STEPS FOR ALL PROCEDURES DESCRIBED IN THIS INSTRUCTION LEAFLET COULD RESULT IN DEATH, BODILY INJURY, OR PROPERTY DAMAGE.

THE INSTRUCTIONS CONTAINED IN THIS IL AND ON PRODUCT LABELS HAVE TO BE FOLLOWED. OBSERVE THE FIVE SAFETY RULES:
– DISCONNECTING
– ENSURE THAT DEVICES CANNOT BE ACCIDENTALLY RESTARTED
– VERIFY ISOLATION FROM THE SUPPLY
– EARTHING AND SHORT-CIRCUITING
– COVERING OR PROVIDING BARRIERS TO ADJACENT LIVE PARTS

DISCONNECT THE EQUIPMENT FROM THE SUPPLY. USE ONLY AUTHORIZED SPARE PARTS IN THE REPAIR OF THE EQUIPMENT. THE SPECIFIED MAINTENANCE INTERVALS AS WELL AS THE INSTRUCTIONS FOR REPAIR AND EXCHANGE MUST BE STRICTLY ADHERED TO PREVENT INJURY TO PERSONNEL AND DAMAGE TO THE SWITCHBOARD.

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**Section 1: Description of Time Delay Undervoltage Module**

The Time Delay Undervoltage module (see Figure 1) takes an AC input voltage, rectifies it via a diode bridge to provide a DC output. The function of this remotely mounted device is to pass through its available voltage to the circuit breaker mounted Undervoltage Release (UVR) accessory. Also, on the loss of voltage or during a low voltage condition, it will assert the energy of a storage capacitor to provide a temporary voltage for the duration of up to two seconds. The Time Delay settings are user selected via a jumper that bridges selected pins together. When the line voltage is available to the module, the green, Power On, LED is illuminated. The module is setup for DIN Rail mounting.

*Note:* The left terminal of connector J2 has a positive polarity, which however, is not a concern for customer wiring since the circuit breaker’s UVR has a full wave, bridge rectifier input circuit.

**Standards**

The Time Delay UV Module is an Underwriter’s Laboratories (UL) and Canadian Standards Association (CSA) Recognized Component per file E52096SP. The device is also compliant to IEC 61000-4-5 surge immunity test requirements and carries the CE mark.

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**Section 2: Ratings and Settings**

The UV module can be used with Eaton air circuit breakers and molded case circuit breakers.

The UV module is applicable for 50/60 Hertz power frequencies and requires one Time Delay Undervoltage Module circuit breaker.

The UV module is suitable for use with Eaton undervoltage releases that are marked 110-127VAC. Similarly, the UVR module is suitable for use with Eaton undervoltage releases that are marked 208-240VAC.

**Table 1. Time delay modules available**

<table>
<thead>
<tr>
<th>Time Delay Undervoltage Module</th>
<th>Breaker UVR required</th>
<th>Time Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>120V AC</td>
<td>110-127V AC</td>
<td>0.1s; 0.5s; 1.0s; 2.0s</td>
</tr>
<tr>
<td>230V AC</td>
<td>208-240V AC</td>
<td>0.1s; 0.5s; 1.0s; 2.0s</td>
</tr>
</tbody>
</table>

The connections from the UV module to the voltage to be sensed uses a five pin Phoenix plug-in connector. Not all pins are used in the harnesses. Connectors are supplied with the module. Should the connectors be reordered, use the following part numbers:

- Connector from module to voltage: part # 1835122
- Connector from UVR to module: part # 1835106

**Settings**

The desired Time Delay setting is user selected made by applying a jumper across a marked pin matrix (see figure 2). This jumper is supplied. The default time is 0.1 seconds when shipped from the factory. If no jumper is installed the time setting will be 0.1 seconds.

**Section 3: Mounting**

Refer to figure 2 for an outline drawing of the UV module. Metric dimensions are shown in parenthesis. DIN Rail mounting is accomplished by hooking the module onto the top lip of rail and then by pushing the bottom to snap over the bottom lip of the rail. Moderate force is required for the initial installation. The removal of the module is accomplished by forcing a screw driver against side of the module and the two extended feet on the bottom. These have a slot for the tool to deflect the bite of the plastic enclosure away from the DIN Rail. (see figure 2 right view)
Section 4: Wiring

The wiring diagram is shown in figure 3. The scheme is essentially “in” to the module and “out” to the UVR. For Magnum, IZM or Mini Vac breakers, these are secondary contacts A-7 and A-8. The copper only wire must be of #14 gauge (1.63mm²) or #16 gauge (1.22mm²) and 75°C rated. An alternate wiring scheme shown in figure 3 demonstrates how a normally closed pushbutton is installed in series with one of the leads going to the circuit breaker’s UVR. When depressed, this button will provide a UV trip without any delay time. This pushbutton requires a 3A at 250VDC contact rating.

Figure 2. Outline of time delay undervoltage module
Notes

1. Nominal control voltage is 120 VAC for 120 VAC Time Delay Module and 230 VAC for 230 VAC Time Delay Module.

2. Time Delay UV R Module uses DIN rail mounting. Connector types are plug-in-Phoenix. Power is 5 pin part #1835122; UVR is 3 pin part #1835106.

3. Alternate scheme employs “normally closed” pushbutton that, when depressed, provides immediate trip.

4. Wire into breaker secondary contacts for undervoltage release.

Figure 3. Wiring diagram for time delay undervoltage module to undervoltage release.
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