KRDB SERIES

Description
The KRDB Series is a compact time delay relay measuring only 2 in. (50.8 mm) square. Its microcontroller timing circuit provides excellent repeat accuracy and stability. Encapsulation protects against shock, vibration, and humidity. The KRDB Series is a cost effective approach for OEM applications that require small size, isolation, reliability, and long life.

Operation (Delay-on-Break)
Input voltage must be applied before and during timing. Upon closure of the initiate switch, the output relay energizes. The time delay begins when the initiate switch is opened. The output remains energized during timing. At the end of the time delay, the output de-energizes. The output will energize if the initiate switch is closed when input voltage is applied.

Reset: Reclosing the initiate switch during timing resets the time delay. Loss of input voltage resets the time delay and output.

Features & Benefits

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microcontroller based</td>
<td>Repeat accuracy +/- 0.5%, Factory calibration +/- 5%</td>
</tr>
<tr>
<td>Isolated, 10A, SPDT output contacts</td>
<td>Provides 100 million operations in typical conditions.</td>
</tr>
<tr>
<td>Totally solid state and encapsulated</td>
<td>No moving parts to arc and wear out over time and encapsulated to protect against shock, vibration, and humidity</td>
</tr>
<tr>
<td>Compact, low cost design measuring 2 in. (50.8mm) square</td>
<td>Allows flexibility for OEM applications</td>
</tr>
</tbody>
</table>

Accessories

P1004-95, P1004-95-X
External Adjust Potentiometer
Panel mountable, industrial potentiometer recommended for remote time delay adjustment.

P1023-6 Mounting bracket
The 90° orientation of mounting slots makes installation/removal of modules quick and easy.

Ordering Information

<table>
<thead>
<tr>
<th>MODEL</th>
<th>INPUT VOLTAGE</th>
<th>ADJUSTMENT</th>
<th>TIME DELAY</th>
<th>MODEL</th>
<th>INPUT VOLTAGE</th>
<th>ADJUSTMENT</th>
<th>TIME DELAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>KRDB1110S</td>
<td>12VDC</td>
<td>Fixed</td>
<td>10s</td>
<td>KRDB217S</td>
<td>24VAC/DC</td>
<td>Fixed</td>
<td>7s</td>
</tr>
<tr>
<td>KRDB112.5S</td>
<td>12VDC</td>
<td>Fixed</td>
<td>2.5s</td>
<td>KRDB222</td>
<td>24VAC/</td>
<td>Fixed</td>
<td>120s</td>
</tr>
<tr>
<td>KRDB1120M</td>
<td>12VDC</td>
<td>Fixed</td>
<td>20m</td>
<td>KRDB415S</td>
<td>120VAC</td>
<td>Fixed</td>
<td>5s</td>
</tr>
<tr>
<td>KRDB115M</td>
<td>12VDC</td>
<td>Fixed</td>
<td>5m</td>
<td>KRDB420</td>
<td>120VAC</td>
<td>Onboard</td>
<td>0.1 - 10s</td>
</tr>
<tr>
<td>KRDB1160M</td>
<td>12VDC</td>
<td>Fixed</td>
<td>60m</td>
<td>KRDB421</td>
<td>120VAC</td>
<td>Onboard</td>
<td>1 - 100s</td>
</tr>
<tr>
<td>KRDB120</td>
<td>12VDC</td>
<td>Onboard</td>
<td>0.1 - 10s</td>
<td>KRDB422</td>
<td>120VAC</td>
<td>Onboard</td>
<td>10 - 1000s</td>
</tr>
<tr>
<td>KRDB121</td>
<td>12VDC</td>
<td>Onboard</td>
<td>1 - 100s</td>
<td>KRDB424</td>
<td>120VAC</td>
<td>Onboard</td>
<td>1 - 100m</td>
</tr>
<tr>
<td>KRDB124</td>
<td>12VDC</td>
<td>Onboard</td>
<td>1 - 100m</td>
<td>KRDB425</td>
<td>120VAC</td>
<td>Onboard</td>
<td>10 - 1000m</td>
</tr>
<tr>
<td>KRDB125</td>
<td>12VDC</td>
<td>Onboard</td>
<td>10 - 1000m</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If you don’t find the part you need, call us for a custom product 800-843-8848
Time Delay Relays
Dedicated - Delay-on-Break

Accessories

**P0700-7 Versa-Knob**
Designed for 0.25 in (6.35 mm) shaft of Versa-Pot. Semi-gloss industrial black finish.

**P1015-64 (AWG 14/16), P1015-13 (AWG 10/12) Female Quick Connect**
These 0.25 in. (6.35 mm) female terminals are constructed with an insulator barrel to provide strain relief.

**P1015-18 Quick Connect to Screw Adapter**
Screw adapter terminal designed for use with all modules with 0.25 in. (6.35 mm) male quick connect terminals.

**C103PM (AL) DIN Rail**
35 mm aluminum DIN rail available in a 36 in. (91.4 cm) length.

**P1023-20 DIN Rail Adapter**
Allows module to be mounted on a 35 mm DIN type rail with one #10 screws.

External Resistance vs. Time Delay

In Secs. or Mins.

<table>
<thead>
<tr>
<th>Time Delay Ranges</th>
<th>0</th>
<th>1</th>
<th>10</th>
<th>25</th>
<th>50</th>
<th>75</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1 kΩ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.25 kΩ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.5 kΩ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 kΩ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5 kΩ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 kΩ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 kΩ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25 kΩ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 kΩ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75 kΩ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100 kΩ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[ R_T = \text{External Timing Resistor in Kiloohms} \]

This chart applies to externally adjustable part numbers. The time delay is adjustable over the time delay range selected by varying the resistance across the \( R_T \) terminals; as the resistance increases the time delay increases.

When selecting an external \( R_T \), add the tolerances of the timer and the \( R_T \) for the full time range adjustment.

Examples: 1 to 50 S adjustable time delay, select time delay range 1 and a 50 K ohm \( R_T \). For 1 to 100 S use a 100 K ohm \( R_T \).

Output Current/Ambient Temperature

<table>
<thead>
<tr>
<th>°C</th>
<th>40</th>
<th>50</th>
<th>60</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>9</td>
<td>8</td>
<td>7</td>
</tr>
</tbody>
</table>

Specifications

**Time Delay**
- **Type**: Microcontroller with watchdog circuitry
- **Range**: 0.1 s - 1000 m in 6 adjustable ranges or fixed
- **Repeat Accuracy**: ±0.5% or 20 ms, whichever is greater
- **Tolerance (Factory Calibration)**: ≤ ±5%
- **Recycle Time**: ≤ 150 ms
- **Initiate Time**: ≤ 40 ms
- **Time Delay vs Temp. & Voltage**: ≤ ±5%

**Input**
- **Voltage**: 12, 24, 110VDC, 24, 120 or 230VAC
- **Tolerance**
  - 12VDC & 24VDC/AC
    - -15% - 20%
  - 110VDC, 120 or 230VAC
    - -20% - 10%
- **AC Line Frequency/DC Ripple**: 50/60 Hz / ≤ 10%

**Output**
- **Type**: Isolated relay contacts
- **Form**: SPDT
- **Rating (at 40°C)**
  - 10A resistive @ 125VAC;
  - 5A resistive @ 230VAC & 28VDC;
  - 1/4 hp @ 125VAC
  - 250VAC

Max. Switching Voltage Life (Operations)
- Mechanical - 1 x 107; Electrical - 1 x 105

Protection
- **Circuitry**: Encapsulated
- **Isolation Voltage**: ≥ 1500V RMS input to output
- **Insulation Resistance**: ≥ 100 MΩ
- **Polarity**: DC units are reverse polarity protected

Mechanical
- **Mounting**: Surface mount with one #10 (M5 x 0.8) screw
- **Dimensions**
  - H 50.8 mm (2.0”);
  - W 50.8 mm (2.0”);
  - D 30.7 mm (1.21”)
- **Termination**: 0.25 in. (6.35 mm) male quick connect terminals

Environmental
- **Operating/Storage Temperature**: -40° to 60°C / -40° to 85°C
- **Humidity**: 95% relative, non-condensing
- **Weight**: ≤ 2.6 oz (74 g)

Function Diagram

- **V** = Voltage
- **S1** = Initiate Switch
- **NO** = Normally Open Contact
- **NC** = Normally Closed Contact
- **TD** = Time Delay
- **t** = Incomplete Time Delay
- **R** = Reset