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# KRD9 SERIES


## Description

The KRD9 Series microcontroller timing circuit provides excellent repeat accuracy and stability. Cost effective approach for OEM applications that require small size, isolation, reliability, and long life.

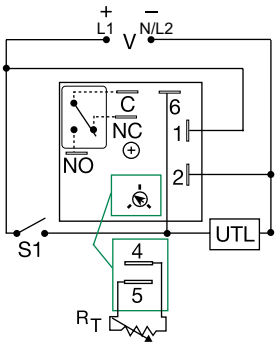
### Operation (Retriggerable Single Shot)

**Function Type A (Output Initially De-energized):** Input voltage must be applied prior to and during timing. When the initiate switch is closed, (momentary or maintained) the output energizes and the time delay starts. On completion of the delay, the output de-energizes. The unit will time out if S1 remains in the open or closed position for the full time delay. Reclosing the initiate switch resets the time delay and restarts timing; the output remains energized. The output will not energize if the initiate switch is closed when input voltage is applied.

**Function Type B (Output Initially Energized):** Upon application of input voltage, the output energizes and the time delay starts. At the end of the time delay, the load de-energizes. The unit will time out if S1 remains in the open or closed position for the full time delay. Closing (re-closing) the initiate switch resets the time delay and restarts timing; the output remains energized.

**Reset:** The time delay and the output are reset when input voltage is removed.

## Wiring Diagram




V = Voltage
S1 = Initiate Switch C = Common, Transfer Contact
UTL = Untimed Load (optional)

A knob is supplied for adjustable units, or $R_T$ terminals 4 & 5 for external adjust. See external adjustment vs time delay chart. The untimed load is optional. Relay contacts are isolated.

## Features & Benefits

| FEATURES | BENEFITS |
|---|---|
| **Microcontroller based** | Repeat Accuracy + / - 0.5%, Factory calibration + / - 5% |
| **Compact, low cost design** | Allows flexiblility for OEM applications and reduces labor and component costs |
| **Isolated, 10A, SPDT output contacts** | Allows control of loads for AC or DC voltages |
| **Encapsulated circuitry** | Protects against shock, vibration, and humidity |

## Ordering Information

| MODEL | INPUT VOLTAGE | ADJUSTMENT | TIME DELAY | FUNCTION TYPE |
|---|---|---|---|---|
| KRD9120B | 12VDC | Onboard | 0.1 - 10s | Energized |
| KRD92115MA | 24VAC/DC | Fixed | 15m | De-energized |
| KRD92115MB | 24VAC/DC | Fixed | 15m | Energized |
| KRD9220B | 24VAC/DC | Onboard | 0.1 - 10s | Energized |
| KRD93115MA | 24VDC | Fixed | 15m | De-energized |
| KRD9423B | 120VAC | Onboard | 0.1 - 10m | Energized |

If you don't find the part you need, call us for a custom product 800-843-8848

## Accessories

**P1004-95, P1004-95-X Versa-Pot**
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.

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

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

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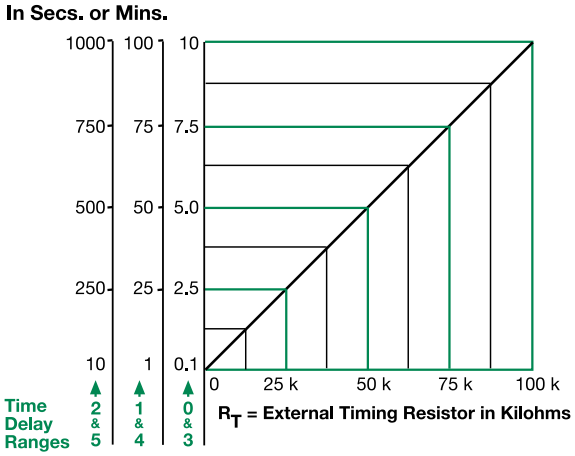
**P1015-18 Quick Connect to Screw Adapter**
Screw adapter terminal designed for use with all modules with 0.25 in. (6.35 mm) male quick connect terminals.

**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 two #10 screws.

## External Resistance vs. Time Delay

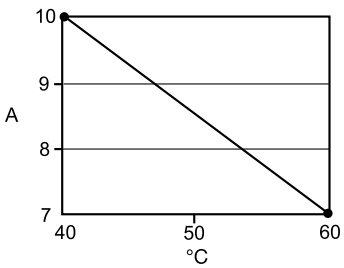



**This chart applies to externally adjustable part numbers.**
The time delay is adjustable over the time delay range selected by varying the resistance across the $R_T$ terminals; as the resistance increases the tie delay increases.

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 ohn $R_T$. For 1 to 100 S use a 100 K ohm $R_T$.

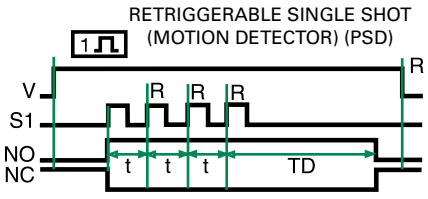
## Output Current/Ambient Temperature




## Specifications

| | |
|---|---|
| **Time Delay** | |
| **Type** | Microcontroller based with watchdog circuitry |
| **Range** | 0.1s - 1000m in 6 adjustable ranges or fixed |
| **Repeat Accuracy** | ±0.5% or 20ms, whichever is greater |
| **Tolerance (Factory Calibration)** | ≤ ±5% |
| **Reset Time** | ≤ 150ms |
| **Initiate Time** | ≤ 40ms; ≤ 750 operations per minute |
| **Time Delay vs Temp. & Voltage** | ≤ ±5% |
| **Input** | |
| **Voltage** | 12, 24 or 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% |
| **Power Consumption** | AC ≤ 2VA; DC ≤ 2W |
| **Output** | |
| **Type** | Isolated relay contacts |
| **Form** | SPDT |
| **Rating (at 40°C)** | 10A resistive @ 125VAC;<br>5A resistive @ 230VAC & 28VDC;<br>1/4 hp @ 125VAC |
| **Max. Switching Voltage** | 250VAC |
| **Life (Operations)** | Mechanical - 1 x $10^7$ ; Electrical - 1 x $10^5$ |
| **Protection** | |
| **Circuitry** | Encapsulated |
| **Isolation Voltage** | ≥ 1500V RMS input to output |
| **Insulation Resistance** | ≥ 100 MΩ |
| **Polarity** | DC units are reversed 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");<br>**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
t = Incomplete Time Delay
TD = Time Delay
R = Reset