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## HRDB SERIES

### Delay-on-Break Timer



### Description

The HRDB Series combines an electromechanical, relay output with microcontroller timing circuitry. The HRDB offers 12 to 230V operation in five options and factory fixed, external, or onboard adjustable time delays with a repeat accuracy of  $\pm 0.5\%$ . The isolated output contact rating allows for direct operation of heavy loads, such as compressors, pumps, blower motors, heaters, etc. The HRDB is ideal for OEM applications where cost is a factor.

#### Operation (Delay-on-Break)

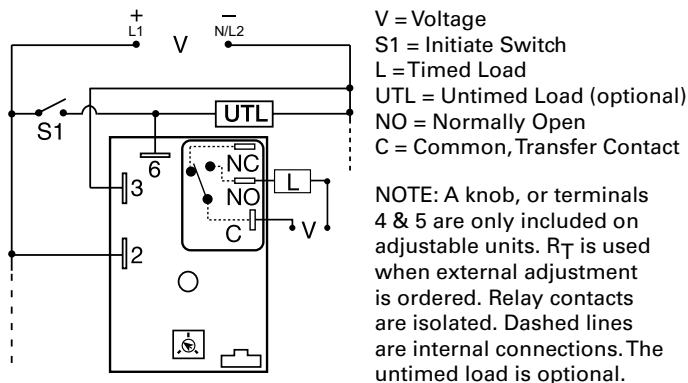
Input voltage must be applied before and during timing. Upon closure of the initiate switch, the output relay energizes. The time delay begins when the initiate switch is opened. The output remains energized during timing. At the end of the time delay, the output de-energizes. The output will energize 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

FEATURES	BENEFITS
<b>Microcontroller based</b>	Repeat Accuracy $\pm 0.5\%$
<b>Compact, low cost design</b>	Allows flexibility for OEM applications
<b>Isolated, 30A, SPDT, NO output contacts</b>	Allows direct operation of heavy loads: compressors, pumps, blower motors, heaters.

### Wiring Diagram



### 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.

### Ordering Information

MODEL	INPUT VOLTAGE	ADJUSTMENT	TIME TOLERANCE	TIME DELAY	MODEL	INPUT VOLTAGE	ADJUSTMENT	TIME TOLERANCE	TIME DELAY
HRDB1110M	12VDC	Fixed	+ / -5%	10m	HRDB223	24VAC	Onboard	+ / -5%	0.1 - 10m
HRDB117S	12VDC	Fixed	+ / -5%	7s	HRDB321	24VDC	Onboard	+ / -5%	1 - 100s
HRDB120	12VDC	Onboard	+ / -5%	0.1 - 10s	HRDB324	24VDC	Onboard	+ / -5%	1 - 100m
HRDB121	12VDC	Onboard	+ / -5%	1 - 100s	HRDB423	120VAC	Onboard	+ / -5%	0.1 - 10m
HRDB124	12VDC	Onboard	+ / -5%	1 - 100m	HRDB623	230VAC	Onboard	+ / -5%	0.1 - 10m
HRDB21A65M	24VAC	Fixed	+ / -1%	65m					

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# Time Delay Relays

## Dedicated - Delay-on-Break

### HRDB SERIES

#### Accessories



**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.



**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.

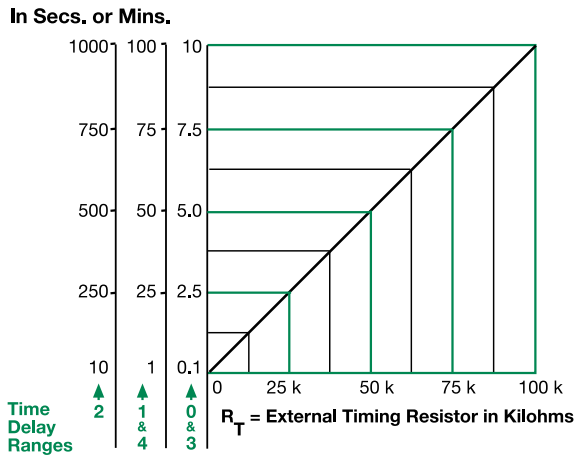


**C103PM (AL) DIN Rail**  
 35 mm aluminum DIN rail available in a 36 in. (91.4 cm) length.



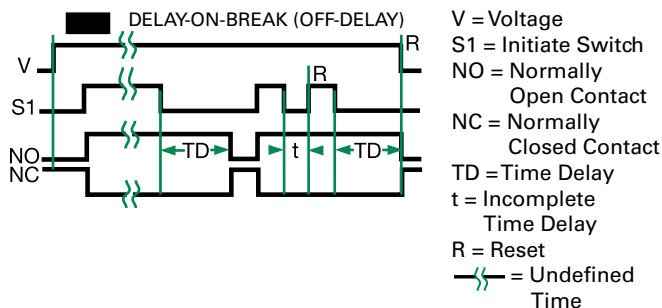
**P1023-20 DIN Rail Adapter**  
 Allows module to be mounted on a 35 mm DIN type rail with two #10 screws.

#### 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 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  $R_T$ .

#### Function Diagram



#### Specifications

##### Time Delay

**Type** Microcontroller circuitry  
**Range** 0.1s - 100m in 5 adjustable ranges or fixed  
**Repeat Accuracy**  $\pm 0.5\%$  or 20ms, whichever is greater

##### Tolerance

**(Factory Calibration)**  $\pm 1\%$ ,  $\pm 5\%$   
**Reset Time**  $\leq 150$ ms  
**Initiate Time**  $\leq 20$ ms

##### Time Delay vs Temp. & Voltage

$\pm 2\%$

##### Input

**Voltage** 12 or 24VDC; 24, 120, or 230VAC

##### Tolerance

**12VDC & 24VDC** -15% - 20%  
**24 to 230VAC** -20% - 10%

##### AC Line Frequency

50/60 Hz

##### Power Consumption

AC  $\leq 4$ VA; DC  $\leq 2$ W

##### Output

**Type** Electromechanical relay  
**Form** Isolated, SPDT

##### Ratings

	SPDT-NO	SPDT-NC
<b>General Purpose Resistive</b>	125/240VAC 30A	15A
	125/240VAC 30A	15A
	28VDC 20A	10A
<b>Motor Load</b>	125VAC 1 hp*	1/4 hp**
	240VAC 2 hp**	1 hp**

##### Life

Mechanical -  $1 \times 10^6$ ;  
 Electrical -  $1 \times 10^5$ , \* $3 \times 10^4$ , \*\*6,000

##### Protection

**Surge** IEEE C62.41-1991 Level A  
**Circuitry** Encapsulated  
**Dielectric Breakdown**  $\geq 2000$ V RMS terminals to mounting surface  
**Insulation Resistance**  $\geq 100$  M $\Omega$   
**Polarity** DC units are reverse polarity protected

##### Mechanical

**Mounting** Surface mount with one #10 (M5 x 0.8) screw  
**H** 50.8 mm (2"); **W** 50.8 mm (2");  
**D** 38.1 mm (1.51")

##### 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**  $\approx 3.9$  oz (111 g)