

Lockout With Random Start

T2D Series HVAC/R Timer



Patent 5809793



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- Lockout Delay--Prevents Rapid Recycling of Compressor
- Random Start Delay--Helps Prevent Low Voltage Starting
- Delay on Make Timer--Optional Two Terminal Series Connection
- Totally Solid State 1 A Output
- 24 V AC ... 230 V AC in 2 Ranges

Approvals:

Accessories



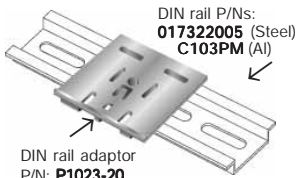
Female quick connect
P/N:
P1015-64 (AWG 14/16)



Quick connect to screw adaptor
P/N: **P1015-18**



Mounting bracket
P/N: **P1023-6**



DIN rail P/Ns:
017322005 (Steel)
C103PM (Al)

DIN rail adaptor
P/N: **P1023-20**

See accessory pages for specifications.

Description

The T2D Series provides protection against short cycling of compressors and other motors. At the end of each operation, a lockout delay prevents restarting the compressor or motor until the delay is completed. 24 V AC models can be used with thermostats that include a cooling anticipator resistor. Can be connected in series with the load for delay on make operation.

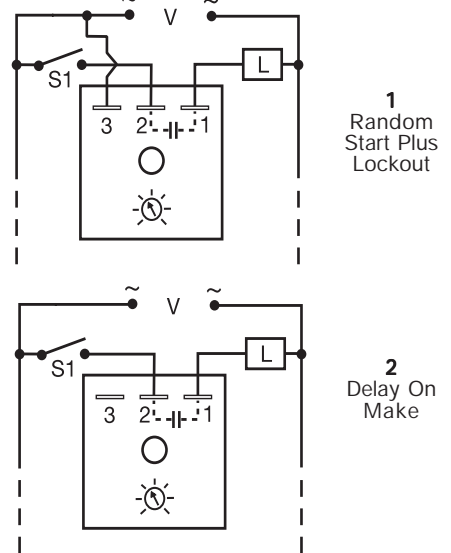
Operation

Connection #1: Upon application of input voltage, a random start time delay begins. At the end of this time delay, the output is energized. **Lockout Delay:** Input voltage must be applied prior to and during timing. When the thermostat or initiate switch opens, the output de-energizes and the lockout time delay begins. At the end of the lockout delay, the output is energized allowing the load to immediately energize when the initiate switch or thermostat closes.

Connection #2: Upon application of input voltage and closure of initiate switch, the time delay begins. At the end of the time delay, the output is energized and remains energized until power is removed.

Reset: Removing power resets the output and the time delay.

Connection

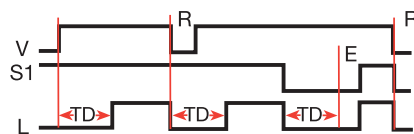


Dashed lines are internal connections.

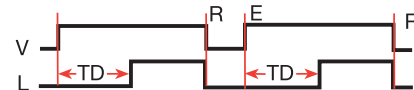
V = Voltage L = Load
S1 = Initiate Switch or Thermostat
E = Ready R = Reset
TD = Time Delay

Function

Connection Diagram #1



Connection Diagram #2



Ordering Table

T2D Series	X Input	X Adjustment	X Time Delay *
	- 24A - 24 V AC	- 1 - Fixed	- 1 - 1 ... 100 s
	- 120A - 120/230 V AC	- 2 - Knob Adjustable	- 2 - 10 ... 1000 s
			- 3 - 0.1 ... 10 m
			- 4 - 1 ... 100 m

Example P/N: **T2D24A23** Fixed - **T2D120A1180S**

*If Fixed Delay is selected, insert delay [1 ... 1000] followed by (S) sec. or [0.1 ... 100] (M) min.

Lockout With Random Start

T2D Series

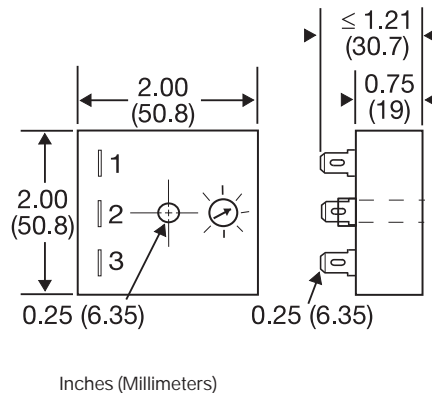
HVAC/R Timer

Technical Data

Input	
Voltage	24 V AC, or 120/230 V AC in 2 ranges
Tolerance	+/-20%
Frequency	50 ... 60 Hz
Output	
Minimum Load Current	24 V AC--100 mA; 120/230 V AC--40 mA
Rating	1 A steady state, 10 A inrush at 60°C
Voltage Drop	≅ 2.5 V at 1 A
Time Delay	
Initiate Time	After timing--16 ms
Type	Analog circuitry
Lockout & Random Start Delays	1 s ... 100 m in 4 adjustable ranges or fixed
	Note: The lockout & random start delays are the same length.
Tolerance	Adjustable: +/-30%; Factory Fixed: +/-30%
Repeat Accuracy	+/-1% or 20 ms, whichever is greater
Reset Time	After timing--≤ 16 ms; During timing--≤ 200 ms
Protection	
Dielectric Breakdown	≥ 2000 V RMS terminals to mounting surface
Insulation Resistance	≥ 100 MΩ
Mechanical	
Mounting	Surface mount with one #10 (M5 x 0.8) screw
Package	2 x 2 x 1.21 in. (50.8 x 50.8 x 30.7 mm)
Termination	0.25 in. (6.35 mm) male quick connect terminals
Environmental	
Operating Temperature	-20°C ... +60°C
Storage Temperature	-40°C ... +85°C
Humidity	95% relative, non-condensing
Weight	≅ 2.4 oz (68 g)
Cooling Anticipator (24 V AC Units Only)	
Minimum Cooling Anticipator	≥ 3,000 Ω

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Mechanical View



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