Single Phase Undervoltage Monitor
HLV Series
30 A SPDT Relay Output

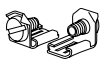
US Patent 6708135

- Protects against undervoltage in Single Phase Systems
- 30 A SPDT N.O. Output Contacts
- 100 ... 240 VAC Input Voltage
- 70 ... 220 VAC Adjustable Undervoltage Trip Point in 2 Ranges
- Restart Delays from 3 ... 300 s
- Trip Delay 1 ... 20 s Fixed
- Isolated or Non Isolated Relay Contacts

Approvals:

7

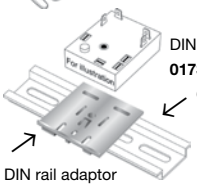
Accessories



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

Female quick connect P/Ns:
P1015-64 (AWG 14/16)
P1015-13 (AWG 10/12)

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



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

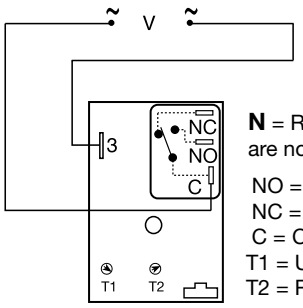
DIN rail adaptor
P/N: **P1023-20**

See accessory pages for specifications.

Description

The HLV Series is a single phase undervoltage monitor designed to protect sensitive equipment from brownout or undervoltage conditions. Time delays are included to prevent nuisance tripping and short cycling. The 30 A, 1 hp rated SPDT relay contacts allow direct control of motors, solenoids and valves. The output relay can be ordered with isolated SPDT contact to allow monitoring of one voltage and switching a separate voltage. Two undervoltage trip point ranges allow monitoring of 110 to 120 VAC or 208 to 240 VAC systems.

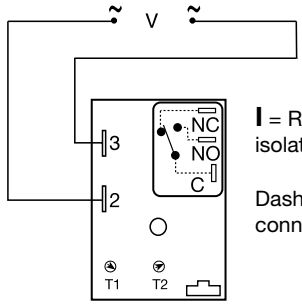
Connection



N = Relay contacts are non-isolated.

NO = Normally Open
NC = Normally Closed
C = Common
T1 = Undervoltage Trip Point
T2 = Restart Delay

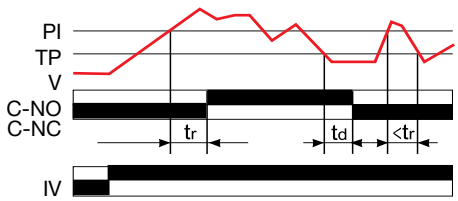
Dashed lines are internal connections.



I = Relay contacts are isolated.

Dashed lines are internal connections.

Function



tr = Restart Delay
td = Trip Delay
PI = Pull-in 105% or trip point
TP = Trip Point
V = Monitored Voltage
IV = Input voltage
C-NO = Normally Open Contacts
C-NC = Normally Closed Contacts

Operation

Upon application of input voltage the output relay remains de-energized. When the input voltage value is above the pull-in voltage, the restart delay begins. At the end of the restart delay, the output relay energizes. When the input voltage falls below the trip point, the trip delay begins. If the input voltage remains below the pull-in voltage for the entire trip delay the relay de-energizes. If the input voltage returns to a value above the pull-in voltage, during the trip delay, the trip delay is reset and the relay remains energized. If the input voltage falls below the trip point voltage during the restart delay, the delay is reset and the relay remains de-energized. Reset is automatic upon correction of an undervoltage fault.
Reset: Removing input voltage resets the output relay and the time delays.

HLV	A	X	X	X	X
Series		**Undervoltage Range** **4** - 70 ... 120 VAC **6** - 170 ... 220 VAC	**Output Connection** **I** = Isolated SPDT **N** = Non-Isolated SPDT	**Restart Delay** **2** - Onboard Adjustment 3...300 s	**Trip Delay** Fixed 1 ... 20 s in 1 s increments

Example P/N's: **HLVA4N25** = 70 ... 120 VAC Trip Point Range, Non-Isolated SPDT, Adjustable Restart Delay, Trip Delay fixed at 5 seconds
HLVA6I220 =170 ... 220 V Trip Point Range, Isolated SPDT, Adjustable Restart Delay, Trip Delay fixed at 20 seconds

HLV02B01 12.05.06

Single Phase Undervoltage Monitor
HLV Series
30 A SPDT Relay Output

Voltage Monitors

Technical Data

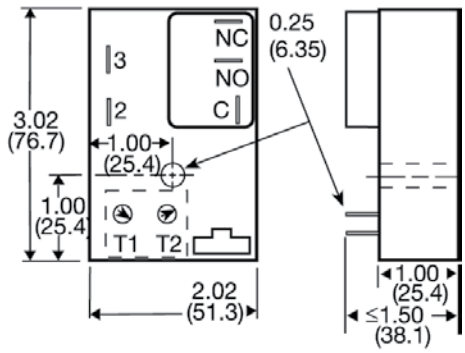
Input		
Min and Max RMS Voltage		70 ... 264 VAC
Line Frequency		50 ... 60 Hz
Power Consumption		AC ≤ 4 VA
Undervoltage Sensing		
Type		Peak Voltage Sensing
Ranges	(4)	70 ... 120 VAC
	(6)	170 ... 220 VAC
Pull-In Voltage		105% or Trip Point Voltage
Trip Point Accuracy		± 3% of Trip Point
Time Delay		
Restart Delays		3 ... 300 s adjustable
Trip Delay		1 ... 20 s fixed in 1 s increments
Repeat Accuracy		+/-0.5% or 20 ms, whichever is greater
Tolerance (Factory Calibration)		+/-5%
Reset Time		≤ 150 ms
Time Delay vs. Temp. & Voltage		≤ +/-10%
Output		
Type/Form		Electromechanical relay/SPDT

Ratings:		SPDT-N.O	SPDT-N.C.
General Purpose	125/240 V AC	30 A	15 A
Resistive	125/240 V AC	30 A	15 A
	28 V DC	20 A	10 A
Motor Load	125 V AC	1 hp*	1/4 hp**
	240 V AC	2 hp**	1 hp**

Life	Mechanical -- 1 x 10^6 Electrical -- 1 x 10^5, *3 x10^4, **6,000
Protection	
Surge	IEEE C62.41-1991 Level A
Circuitry	Encapsulated
Isolation Voltage	≥ 1500 V RMS input to output; isolated units
Insulation Resistance	≥ 100 MΩ
Mechanical	
Mounting	Surface mt. with one #10 (M5 x 0.8) screw
Package	3 x 2 x 1.5 in. (76.7 x 51.3 x 38.1 mm)
Termination	0.25 in. (6.35 mm) male quick connects
Environmental	
Operating Temp.	-40°C ... +60°C
Storage Temp.	-40°C ... +85°C
Humidity	95% relative, non-condensing
Weight	≅ 3.9 oz (111 g)

7

Mechanical View



T1 = Undervoltage Trip Point
T2 = Restary Delay

Inches (Millimeters)

HLV02B01 02.10.06