

# Single Phase Undervoltage Monitor

## HLV Series

### 30 A SPDT Relay Output



US Patent 6708135

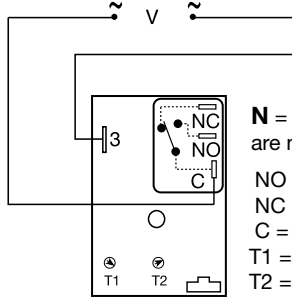
- Protects against undervoltage in Single Phase Systems
- 30 A SPDT N.O. Output Contacts
- 100 ... 240 VAC Input Voltage
- 70 ... 220 VAC Adjustable Undervoltage Trip Point in 2 Ranges
- Restart Delays from 3 ... 300 s
- Trip Delay 1 ... 20 s Fixed
- Isolated or Non Isolated Relay Contacts

Approvals:

#### 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

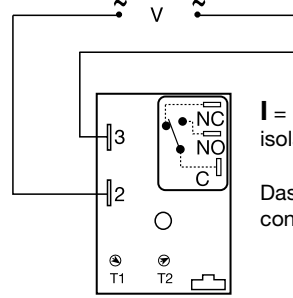


**N** = Relay contacts are non-isolated.

NO = Normally Open  
NC = Normally Closed  
C = Common

T1 = Undervoltage Trip Point  
T2 = Restart Delay

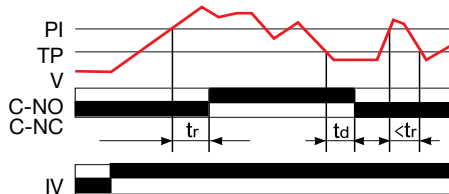
Dashed lines are internal connections.



**I** = Relay contacts are isolated.

Dashed lines are internal connections.

#### Function



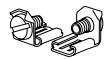
tr = Restart Delay  
td = Trip Delay  
PI = Pull-in 105% or trip point  
TP = Trip Point  
V = Monitored Voltage  
IV = Input voltage  
C-NO = Normally Open Contacts  
C-NC = Normally Closed Contacts

#### 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.

#### Accessories



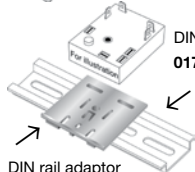
Quick connect to screw adaptor  
P/N: **P1015-18**



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.

**HLV**  
Series

**A**

**X**

**Undervoltage Range**  
4 - 70 ... 120 VAC  
6 - 170 ... 220 VAC

**X**

**Output Connection**  
I = Isolated SPDT  
N = Non-Isolated SPDT

**X**

**Restart Delay**  
2 - Onboard Adjustment  
3...300 s

**X**

**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

