Instructions for D65VMLP Series Voltage Monitoring Relay

THE MONITOR

The D65VMLP Voltage Monitoring Relay is a protective device for three-phase, Wye or Delta connected, 3 wire, power distribution networks supplying motor circuits. It may be installed in a motor feeder and control the supply to a number of motors or in a motor branch circuit to protect a single motor and its load. The D65VMLP automatically operates when one or more phases of the three-phase supply is lost, or when the phase sequence is reversed.

Each D65VMLP also responds to overcharge conditions (+/-10% fixed), a pre-selected under voltage threshold, and a pre-selected percent of phase imbalance. The percent phase imbalance is adjustable from 2-10% and the under voltage dropout can be set at 80-95% of the operating voltage. The adjustable time delay dropout on under voltage (0.3-30 seconds) eliminates nuisance tripping caused by momentary voltage fluctuations. There is also an adjustable time delay (1-300 seconds) on both power up and on restart after a fault has been cleared.

This industrial type control is designed to be installed, operated, and maintained by adequately trained workers. These instructions do not cover all details, variations, or combinations of the equipment, its storage, delivery, installation, check out, safe operation, or maintenance. Care must be exercised to comply with local, state, and national regulations, as well as safety practices, for this class of equipment.

MOUNTING AND WIRING

See Figure 1. The D65VMLP can be be mounted on 35mm DIN Rail or panel-mounted using EATON socket D3PA2.

Figure 2 shows the wiring diagram. When the proper three-phase line voltage is applied to the unit and the phase sequence is correct, the relay is energized after the Restart Delay is completed. The N.C. contact across terminals 1 & 2 opens, and the N.O. contact across terminals 1 & 8 open. Any one of five fault conditions will de-energize the relay after a delay and the contacts return to their normal state.

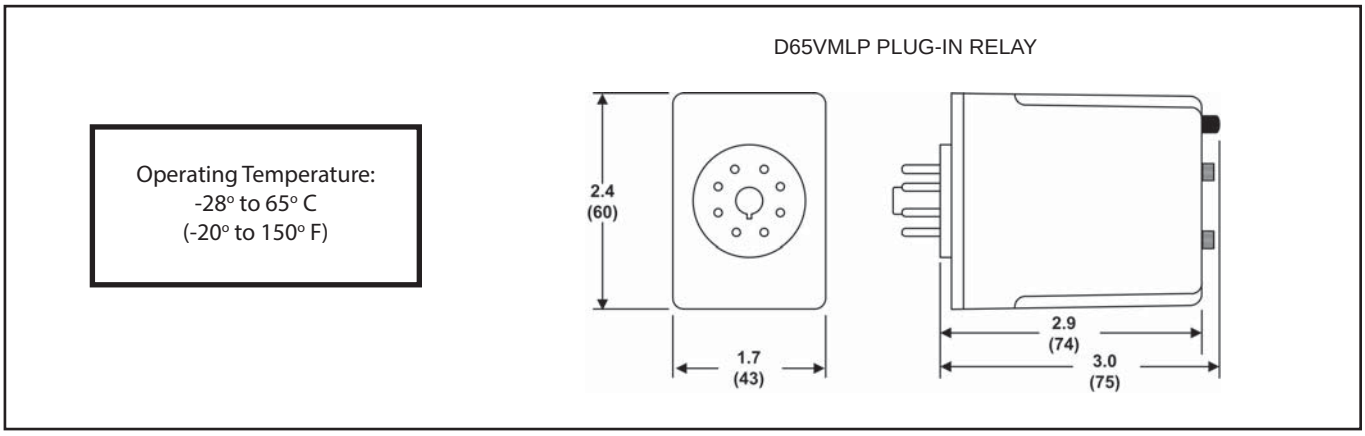

Fig. 1 Dimension Drawing: Inches (mm)

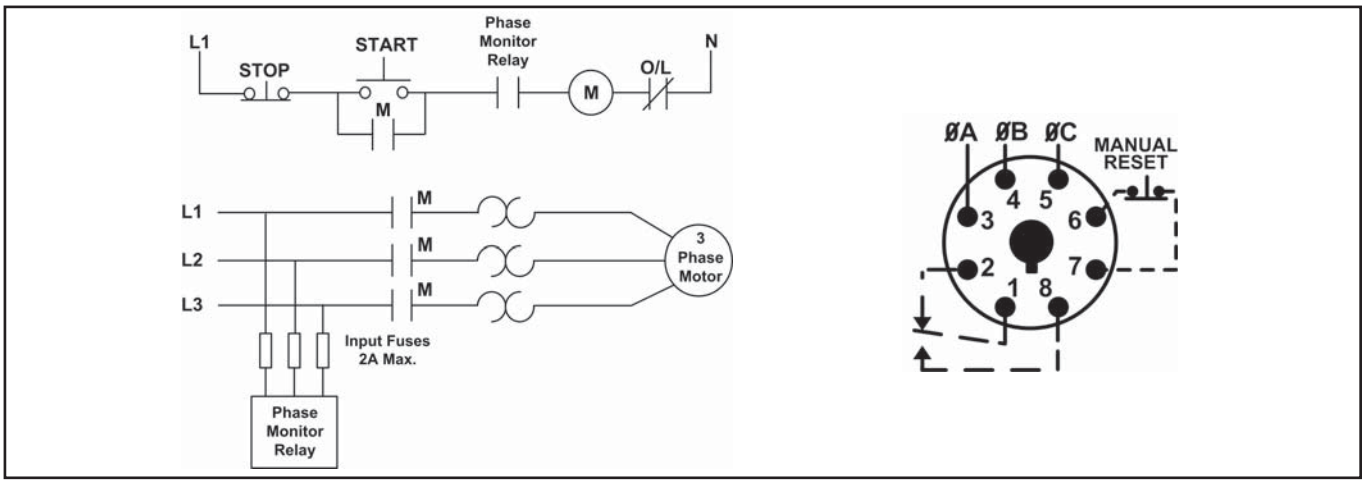

Fig. 2 Wiring Diagram

Powering Business Worldwide

INSTRUCTIONS AND OPERATION IL121001EN

Effective June 2017

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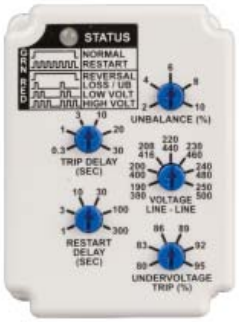
STALLATION AND SETUP

1. Mount the unit in a suitable enclosure. For the D65VMLP, use the D3PA2 8 pin octal socket.



2. Set the VOLTAGE LINE-LINE knob to the actual three-phase line-to-line voltage. The Voltage Line-Line knob on the D65VMLP480 has two ranges (see right): 190-250V on the low voltage scale and 380-500V on the high voltage scale. The unit auto senses the three-phase line-line voltage when applied and automatically selects one of the two ranges. The D65VMLP120 has a single adjustable range of 102-138V and the D65VMLP600 has a single adjustable range of 460-600V.

3. Set initial settings on the UNDERVOLTAGE TRIP, TRIP DELAY and RESTART DELAY knobs to minimum. Set initial setting on the UNBALANCE knob to maximum.

4. Connect the three-phase line-line voltage to terminals 3, 4 and 5 (see Wiring Diagram on the side of the relay or on Page 1). A connection to the neutral or ground is not required in Wye systems. DO NOT connect output wires to terminals 1, 2 and 8 until later (Step 13).

5. RESET: As standard, these relays are in the Automatic Reset mode, which means they will automatically reset once the fault has been corrected. However, they can be set up in the Manual Reset mode by connecting an external N.C. switch across terminals 6 and 7. Upon application of three-phase voltage, the D65VMLP Series will go into Manual Reset mode if it recognizes a closure across terminals 6 and 7. After a fault clears, the relay will not reset until the N.C. switch is opened. NOTE: this unit can only be set back to Automatic Reset mode from Manual Reset mode by removing three-phase voltage, removing the N.C. switch across terminals 6 and 7, and reapplying the three-phase voltage.

6. Plug the three-phase monitor relay into the socket, making sure the key on the center post is in the proper orientation before insertion. If the relay must be removed from the socket, do NOT rock the relay back and forth excessively—the center post could be damaged.

7. Apply three-phase voltage. The LED indicator should initially flash GREEN if in the Automatic Reset mode while the relay goes through its start-up delay or waiting for an external switch to be operated if in the Manual Reset mode and then illuminate solid GREEN. If the LED turns RED solid or flashing, a fault condition exists and must be corrected. Use the LED Status Table at right to determine exact cause of fault. Make required corrections.

8. REMOVE THREE-PHASE VOLTAGE for Steps 9-13.

9. Set the RESTART DELAY knob. This setting should be the time period required after a fault has been cleared before the relay should automatically energize. NOTE: this value is ignored when in the Manual Reset mode (see Step 5).

10. Set the UNDERVOLTAGE TRIP knob between 80 and 95% of the line-line voltage setting. This value should be the same as the minimum operating voltage for the equipment to be adequately protected.

11. Set the TRIP DELAY knob. This is the maximum time period that an unbalance, undervoltage or overvoltage condition should be allowed to last. Too short a setting will cause nuisance tripping if there are momentary changes in the three-phase voltage. Too long a setting could cause damage to the equipment. Note that the setting should be at least slightly longer than the time a three-phase motor is drawing its inrush or startup current. This will avoid nuisance tripping caused by the starting current.

12. Set the UNBALANCE knob. This setting should be the maximum allowable unbalance in phase voltage that the three-phase system can tolerate. Too low of a setting can cause nuisance tripping. Too high of a setting may not adequately protect the system.

13. Connect the output terminal wires to terminals 1, 2 and 8 (see Wiring Diagram on the side of the relay or below).

14. When all connections are made, apply three-phase line-line voltage. The LED indicator should initially flash GREEN while the relay goes through its restart delay or waiting for an external switch to be operated if in the Manual Reset mode and then illuminate solid GREEN when all voltage conditions are correct.

15. If the LED does not illuminate solid GREEN during regular operation, a fault condition has occurred. REMOVE THREE-PHASE VOLTAGE, and check for proper phase rotation, presence of all three phases, and low or high voltage conditions. Use the LED Status Table at right to determine exact cause of fault. Correct if necessary. Re-energization is automatic upon correction of the fault condition unless using MANUAL RESET, which requires opening the N.C. switch across terminals 6 and 7 to reset the unit (see Step 5).

LED STATUS TABLE

GREEN		NORMAL (RELAY ON)
		RESTART (DELAY)
RED		REVERSAL
		LOSS/UB (UNBALANCE)
		LOW VOLT (UNDERVOLTAGE)
		HIGH VOLT (OVERVOLTAGE)

Table I - RELAY OUTPUT

10A @ 277V AC / 7A @ 30V DC
1HP @ 250V AC / 1/2HP @ 125V AC

Table II - REPLACEMENT UNITS

Mounting	Nominal Voltage	Catalog Number
Plug-in	102-138	D65VMLP120
	190-500	D65VMLP480
	460-600	D65VMLP600

Table III - RECOMMENDED SPECS

Wire Range	Torque, Plug-In Unit
(1) #16 to 12	8-10 LB-IN
(2) #16	8-10 LB-IN

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Printed in USA
Publication No. P49991/ 004
December 2010

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