PROK DEVICES PRIVATE LIMITED

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AC VOLTAGE RELAY
LVM SERIES

Introduction

Prok dvs make **AC Digital Microcontroller Based Definite-Time Under Voltage (UV) and Over Voltage (OV)/ Line Voltage Monitor (LVM)** is a microcontroller based voltage monitoring and supervision relay for poly-phase system. It can monitor both under voltage (UV) and over voltage (OV) conditions in the system. Both under voltage (UV) & over voltage (OV) conditions are associated with definite time tripping characteristics. It has wide setting range of operating time on the occurrence of fault condition.

DIGITAL MICROCONTROLLER BASED DEFINITE TIME UNDER VOLTAGE (UV) AND OVER VOLTAGE RELAY/ LINE VOLTAGE MONITOR(LVM) provides wide range of time delay for healthy resumption of the operating voltage.

FEATURES

- Site selectable system voltage
- Continuous display of measured voltage parameter
- 6 character 2 line LCD display with back-lit
- Accurate reading for balanced and unbalanced load.
- Wide range of auxiliary input for both AC & DC
- Independent contacts for Under & Over voltage
- Self reset & site selectable reset gap
- Built in fixed instantaneous Under & Over voltage
- User friendly setting modes using keypads
- Low power consumption
- Tropicalized design using microcontroller & ideal for industrial environment

APPLICATION

- Monitoring & Supervision of Under and Over Voltage in power generating plants & distribution system
- To protect Generator & AMF switchboards
- For protection of synchronous & induction motors

- For transformer feeder panel
- Protection for capacitor control panels

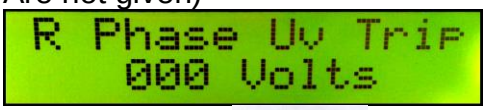
WORKING PRINCIPLE

All the line voltages are monitored and sensed simultaneously using three independent scale down potential transducer. This low level ac signal is subjected to signal conditioning, which includes surge suppressors and harmonic filter. The filtered signal is fed to the ADC of the industrial grade microprocessor. When the sensing voltage exceeds the user set value for under or over voltage, the relay given an output signal in the form of relay changeover for tripping/alarming.

Setting Procedure for AC Voltage Relay (LVM Series) 3P 4W

Step1: Connect the suitable auxiliary supply in the range of 85 -275V AC/DC voltage to the P (+) & N (-) Terminals Refer wiring diagram LVM 01/02/03 2C/O
Display shows for a while

Then display shows (if sensing 3ph voltages Are not given)



Step2: Press 

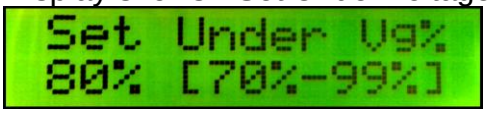
key to enter the setting mode
Setting mode consists of Mode 0 to mode 6 depending upon the models (LVM11, LVM02, LVM03) Modes will vary

In mode 0 - Display Shows Rated voltage (Un) selection
Select suitable rated voltage

1) 380V L-L corresponds to 220V P-N
2) 400V L-L corresponds to 230V P-N
3) 415V L-L corresponds to 240V P-N
4) 433V L –L corresponds to 250VP-N

After selecting the Rated Voltage Un, press 

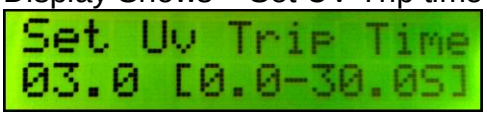
key to save the value
Display shows - Set Under voltage [70-99.0%] – Mode 1.



In mode 1- Select the suitable under voltage in the range of 70% to 99% of selected

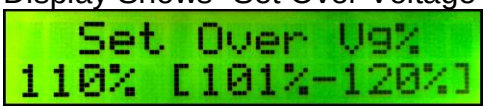
Un (220 to 250) P-N by using  or  key

After selecting the suitable % of Under voltage of Un, Press  key to save the value.
Display Shows – Set UV Trip time [0 -30 secs] DEFT selection – Mode 2



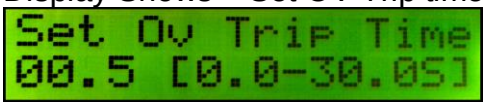
In mode 2- Select the suitable UV Trip Time in the range of 00.0- 30.0S in steps of 0.1S by using  or  key

After selecting the UV Trip Time press  key to save the value.
Display Shows- Set Over Voltage [101-120%] - mode 3



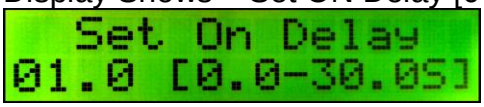
In mode 3- Select the suitable over voltage in the range of 101% to 120% of Selected Un (220 to 250) P-N by using  or  key

After selecting the suitable % of over voltage of Un, Press  key to save the value.
Display Shows – Set OV Trip time [0 -30 secs] DEFT selection – Mode 4



In mode 4- Select the suitable OV Trip Time in the range of 00.0- 30.0S in steps of 0.1S

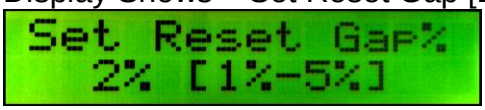
After selecting the OV Trip Time, press  key to save the value.
Display Shows – Set ON Delay [0 -30 secs] UV&OV DEFT selection – Mode 5



In mode 5- Select the suitable ON Delay in the range of 00.0- 30.0S in steps of 0.1S by using  or  key

After selecting the ON Delay, press  key to save the value.
Note: ON Delay is common for both UV & OV settings
ON Delay is the Delay from fault to healthy state

Display Shows – Set Reset Gap [1% -5%] UV&OV selection – Mode 6



In mode 6- Select the suitable Reset gap in the range of 1%- 5% of Un in steps of 1% by using  or  key

After selecting the Reset Gap, press SET key to save the value.

Note: % Reset gap is common for both UV & OV settings

% Reset gap (UN) is the voltage above or below the set UV/OV corresponding to reset from fault to healthy state.

If the sensing input voltages are given to R, Y, B, N Terminals refer wiring diagram

Display shows

Rn-220V	Yn- 220V
Bn-220V	3P4W /220

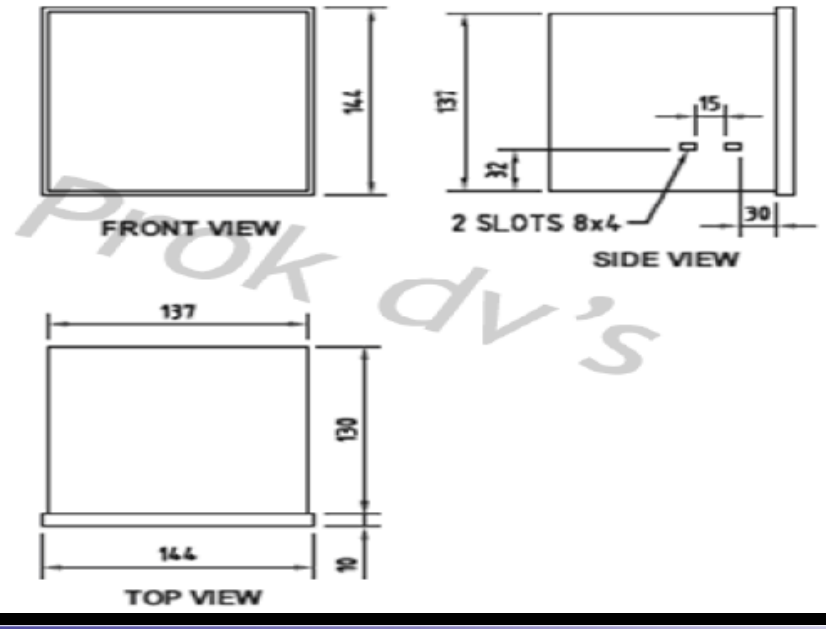
NOTE: During setting mode, If none of the key was pressed within 15 sec display returns to normal working condition retaining the previous settings.

MODELS:1) LVM11- Both Under & Over Voltage -3P4W

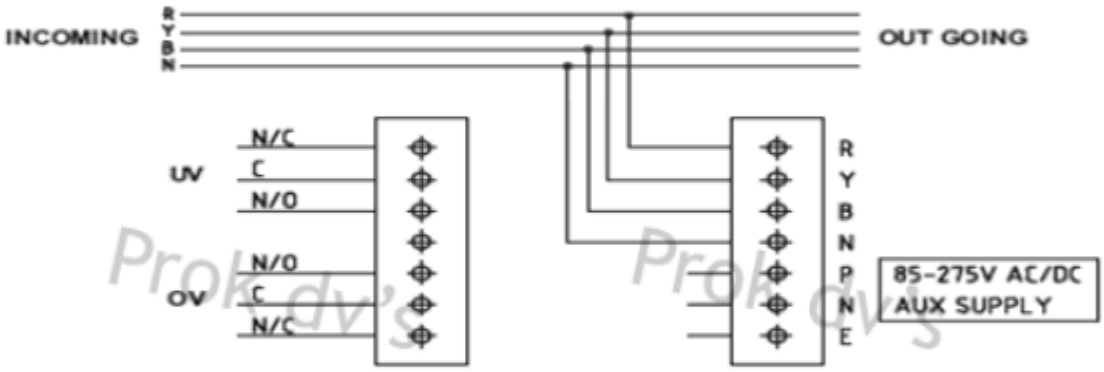
2) LVM02- Only Under Voltage -3P4W

3) LVM11- Only Over Voltage - 3P4W

MECHANICAL DIMENSION- DIMENSIONS OF DIGITAL MICROCONTROLLER BASED DEFINITE-TIME UNDER VOLTAGE (UV) AND OVER VOLTAGE (OV) RELAY / LINE VOLTAGE MONITOR (LVM)

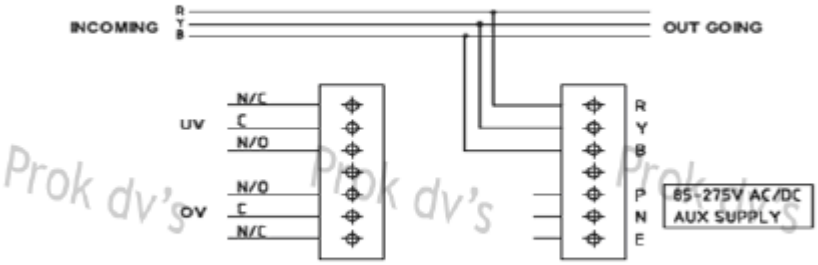


WIRING DIAGRAM _DIGITAL MICROCONTROLLER BASED DEFINITE-TIME UNDER VOLTAGE (UV) AND OVER VOLTAGE (OV) RELAY / LINE VOLTAGE MONITOR (LVM)



NOTE: FOR SHUNT RELEASE CONNECT C & N/O CONTACTS
FOR UV RELEASE OR CONTACTOR COIL CONNECT C & N/C CONTACTS
ARE SHOWING IN HEALTHY CONDITION

DIGITAL MICROCONTROLLER BASED DEFINITE-TIME UNDER VOLTAGE (UV) AND OVER VOLTAGE (OV) RELAY / LINE VOLTAGE MONITOR (LVM) IEEE DEVICE CODE-27, 59



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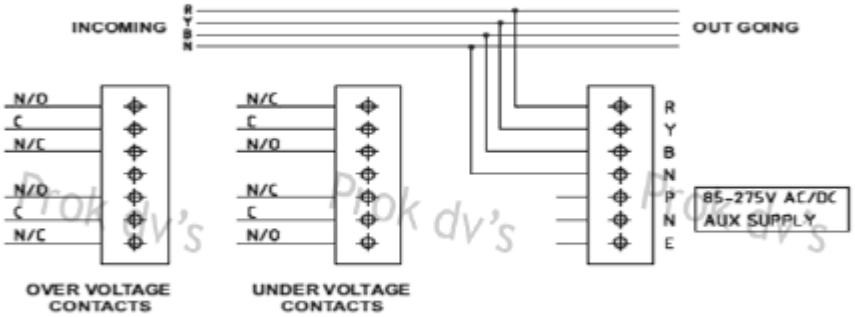
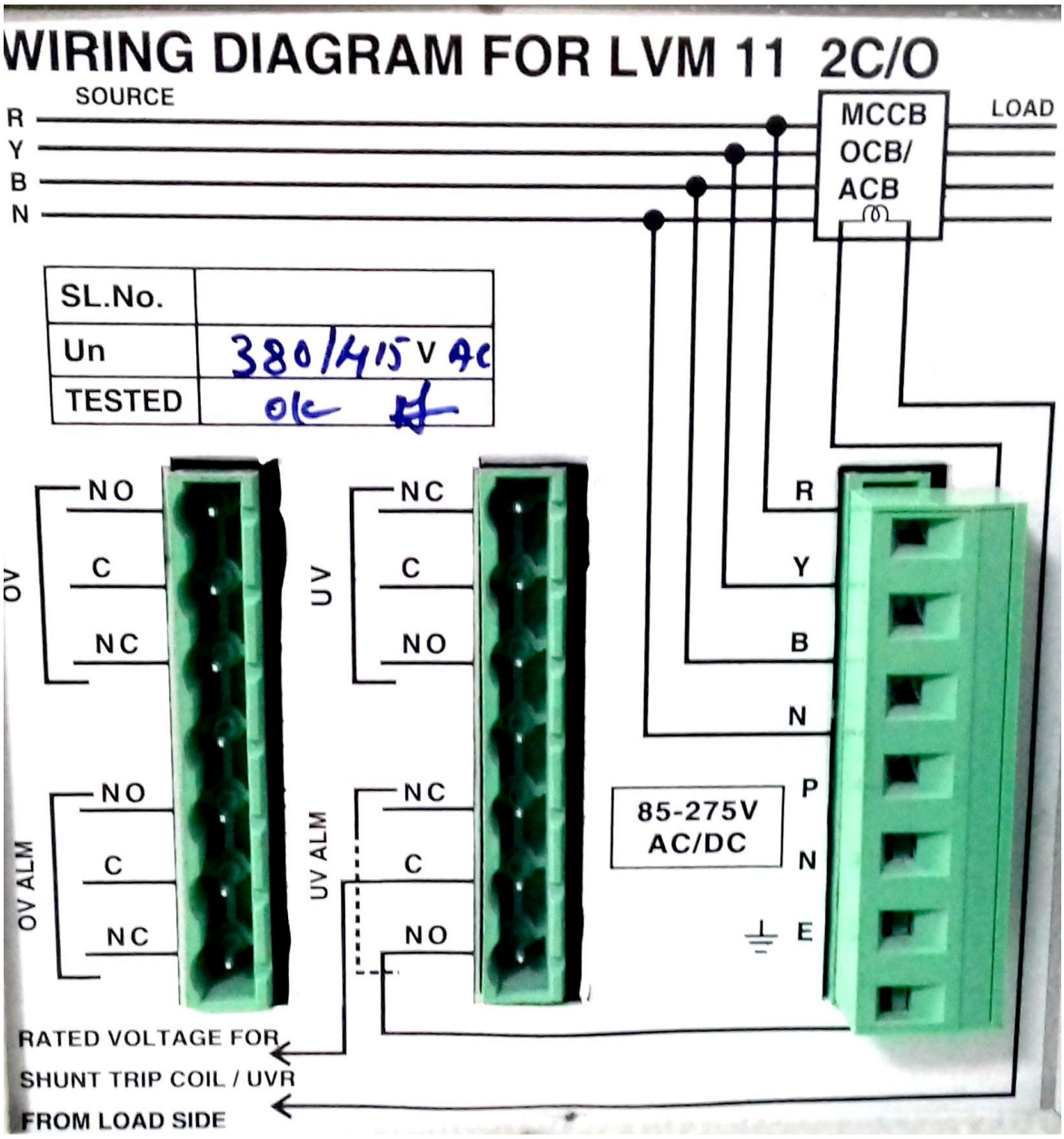


NOTE: FOR SHUNT RELEASE CONNECT C & N/O CONTACTS
FOR UV RELEASE OR CONTACTOR COIL CONNECT C & N/C CONTACTS
ARE SHOWING IN HEALTHY CONDITION

Wiring Diagram:



Technical Specification

	3 Phase 4 Wire	3 Phase 3 Wire
Aux voltage	85 to 275V AC/DC	85 to 275V A C/DC
System voltage Un	220V230V/240V/250VAC site selectable	110V/380V/400V/415V/433VACsite selectable
Over voltage setting range	101% to 120% in steps of 1% site selectable	101% to 120% in steps of 1% site selectable
Over voltage trip time	0-30sec in steps of 0.1sec	0-30sec in steps o f 0.1sec
Under voltage setting range	70% to 99% in steps 1% Site selectable	70% to 99% in steps 1% Site selectable
Under voltage trip time	0-30sec in steps of 0.1sec	0-30sec in steps of 0.1sec
Reset gap	1% to 5% o f Un in steps of 1%	1% to 5% o f Un in steps of 1%
On time delay	0 -30sec in steps of 1sec	0 -30sec in steps of 1sec
Default high set setting With instantaneous trip	Fixed UV high set <70% of Un Fixed OV high set >120% of Un	Fixed UV high set <70% of Un Fixed OV high set >120% of Un
Contacts	Independent contact for UV/OV	Independent contact for UV/OV
	1 C/O or 2C/O , 6A -230VAC	1 C/O or 2C/O , 6A -230VAC
Indications	Display of the Magnitude and nature of fault by LCD an d LED indications for relay trip	Display of the Magnitude and nature of fault by LCD an d LED indications for relay trip
Model dimension	144x144x120mm [H x W x D]	144x144x120mm [H x W x D]
	1mm tolerance	1mm tolerance
Cut out dimension	137 mmx137mm	137 mmx137mm
Model	LVM11-Both UV&OV LVM02-UV only LVM03-OVonly	LVM11A-Both UV&OV LVM02A-UVonly LVM03A-OVonly