OP441-V01

selec

900VPR-BL-U

Operating Instructions

FEATURES

- Over voltage, Under voltage, Over frequency, Under frequency, Phase Asymmetry, Phase failure, Neutral Loss, Phase sequence monitoring system etc.
- True RMS measurement
- Trip Time delay, Recovery Time delay, Power ON delay
- Adjustable switching Hysteresis
- Two separate alarm relays operation

SPECIFICATIONS

DISPLAY
3 Digits, LCD with Backlight

ELECTRICAL CONNECTION
3Ø-3 wire, 3Ø-4 wire

AUXILIARY SUPPLY
85 – 270V AC/DC
50 / 60Hz

OPERATING RANGE
50 – 288V AC (L-N)
85 – 500V AC (L-L)

FREQUENCY RANGE
45 – 65Hz

VA RATING
4VA max.

TRIP SETTINGS

Under Voltage	: 50 to 288V AC (L-N) [for 3Ø-4 wire] 85 to 500V AC (L-L) [for 3Ø-3 wire]
Over Voltage	: 50 to 288V AC (L-N) [for 3Ø-4 wire] 85 to 500V AC (L-L) [for 3Ø-3 wire]
Under Frequency	: 45 – 65Hz
Over Frequency	: 45 – 65Hz
Phase Asymmetry	: 5 – 30%

TIME SETTINGS

Power ON Delay	: 0.5 – 300sec.
Trip Time Delay	: 0 – 300sec.
Recovery Time	: 0 – 300sec.
Response Time	
Under Voltage	: < 120ms
Over Voltage	: < 120ms
Phase Asymmetry	: < 120ms
Phase loss	: < 200ms
Phase sequence	: < 250ms

HYSTERESIS

Voltage	: 1 – 40V
Frequency	: 0.2 – 2.0Hz
Asymmetry	: 2 – 20.0%

RESOLUTION

Voltage	: 1V
Frequency	: 0.1Hz

ACCURACY

Voltage	: ±1% ± 2digits
Frequency	: ±0.5% ± 1digit
Time	: ±5% of setting ±120ms

(Trip Time Delay, Power ON Delay, Recovery Time Delay)

OUTPUT SPECIFICATIONS
2 Relays : Relay1 : 1C/O (SPDT)
Relay2 : 1C/O (SPDT)

RELAY RATING
NO (5A, 250V AC)
NC (3A, 250V AC)

LED INDICATION
LED1 : Continuously ON after trip
LED2 : Continuously ON after trip

ENVIRONMENTAL SPECIFICATIONS
- Indoor use
- Altitude of up to 2000 meters
- Pollution degree II

Temperature : Operating : -25°C to +55°C
Storage : -25°C to +70°C
Humidity : Up to 95% RH, non-condensing

MECHANICAL SPECIFICATIONS
No. of Push Buttons : 3
Size : 35mm width
Mounting : 35mm Din Rail Mount
Wire Size (max) : 4 sq.mm
Screw tightening torque : 0.5 N-M

WEIGHT
150 gms.

SAFETY PRECAUTIONS

All safety related codifications, symbols and instructions that appear in this operating manual or on the equipment must be strictly followed to ensure the safety of the operating personnel as well as the instrument.

If the equipment is not used in a manner specified by the manufacturer it might impair the protection provided by the equipment.

If there is physical damage to the unit then do not use it.

Read complete instructions prior to installation and operation of the unit.

WIRING GUIDELINES

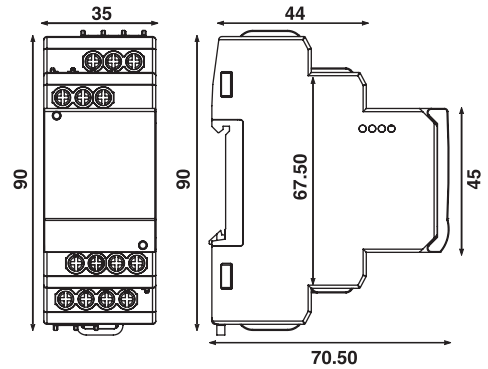
WARNING

1. To prevent the risk of electric shock power supply to the equipment must be kept OFF while doing the wiring arrangement.
2. Wiring shall be done strictly according to the terminal layout with shortest connections. Confirm that all connections are correct.

CAUTION

1. To ensure the safe operation of unit, check the wiring and connections.

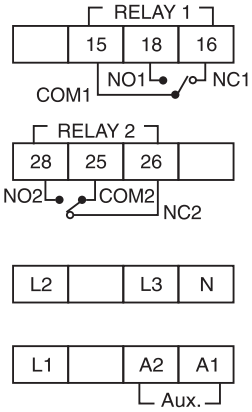
DIMENSIONS (All dimensions in mm)



LED INDICATION CHART

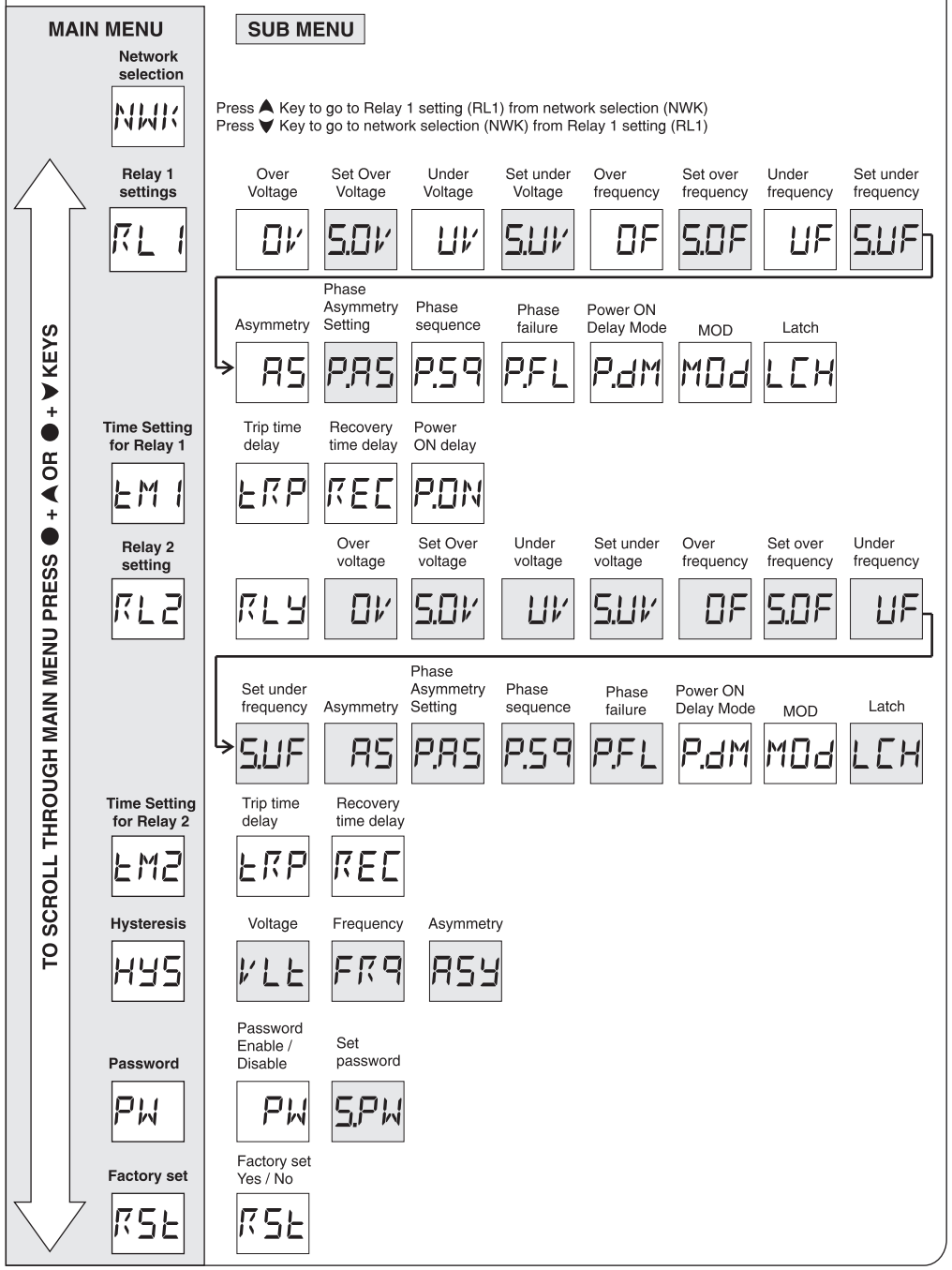
Various Conditions	'R1' LED	'R2' LED
No fault	OFF	OFF
R1 Trip	ON	OFF
R2 Trip	OFF	ON
Both the Relay Trip (If Programed for Both Relay)	ON	ON

TERMINAL CONNECTIONS



CONFIGURATION MENU

Press ▲ + ▼ for 3sec. to enter or exit configuration menu.



Note : Appearance of shaded menus dependant on selection of other parameters.

SUB MENU

Network Selection (NWK)			Press ▲ to enter sub menu from main menu	
Press ▲ or ▼ to scroll through sub menu		Press ● + ▲ or ● + ▼ to change parameter value		
DISPLAY (For 1sec)	**DESCRIPTION**	**DEFAULT VALUE**	**RANGE**	**CONDITION**
NWK	Network selection	3P4	3P3 / 3P4	

Relay 1 (RL1) settings			Press ▲ to enter sub menu from main menu	
Press ▲ or ▼ to scroll through sub menu		Press ● + ▲ or ● + ▼ to change parameter value		
DISPLAY (For 1sec)	**DESCRIPTION**	**DEFAULT VALUE**	**RANGE**	**CONDITION**
OV	Over voltage	> V ON R1	ON / OFF	
S.OV	Set Over Voltage	> V 264 R1	85 - 500V(Default : 498) [For 3P3W system] 50 - 288V(Default : 264) [For 3P4W system]	This option will be prompted only when OV protection ON
UV	Under voltage	<V OFF R1	ON / OFF	
S.UV	Set under voltage	<V 184 R1	85 - 500V(Default : 332) [For 3P3W system] 50 - 288V(Default : 184) [For 3P4W system]	This option will be prompted only when UV protection ON
OF	Over frequency	> ON R1	ON / OFF	
S.OF	Set over frequency	> 55 R1 Hz	45.0 - 65.0Hz	This option will be prompted only when OF protection ON
UF	Under frequency	< OFF R1 Hz	ON / OFF	
S.UF	Set under frequency	< 45 R1 Hz	45.0 - 65.0Hz	This option will be prompted only when UF protection ON
AS	Asymmetry	< As ON R1	ON / OFF	
P.AS	Phase Asymmetry Setting	V As 10.0 R1 %	5.0 - 30.0%	This option will be prompted only when AS protection ON
P.S9	Phase sequence	ON R1	ON / OFF	
P.FL	Phase failure	ON R1	ON / OFF	

DISPLAY (For 1sec)	DESCRIPTION	DEFAULT VALUE	RANGE	CONDITION
P.dM	Power 'ON' Delay Mode	OFF (R1)	ON / OFF	ON : NO OFF : NC
MOd	MOD	ON (R1)	ON / OFF	ON : NC (During Trip) OFF : NO (During Trip)
LCH	Latch	OFF (R1)	ON / OFF	If Latch is ON, user has to reset the unit manually when fault is removed

Time Setting for Relay 1 (TM1) — Press ▲ to enter sub menu from main menu

Press ▲or ▼ to scroll through sub menu — Press ● + ▲ or ● + ▼ to change parameter value

DISPLAY (For 1sec)	DESCRIPTION	DEFAULT VALUE	RANGE	CONDITION
tRP	Trip time delay	3.0 s (R1 t)	0.0 - 300s	
REC	Recovery time	0.5 s (R1 t off)	0.0 - 300s	
P.ON	Power ON delay	0.5 s (ton)	0.5 - 300s	Applicable for Relay 1 and Relay 2

Relay 2 (RL2) — Press ▲ to enter sub menu from main menu

Press ▲or ▼ to scroll through sub menu — Press ● + ▲ or ● + ▼ to change parameter value

DISPLAY (For 1sec)	DESCRIPTION	DEFAULT VALUE	RANGE	CONDITION
RLY	Relay	RL 1 (R2)	RL1 / RL2	If RL1 is selected, all the settings done for RL1 & TM1 will be automatically set for RL2 and no other parameter of RL2 & TM2 will be prompted.
OV	Over voltage	> V ON (R2)	ON / OFF	
S.OV	Set Over voltage	> V 264 (R2)	85 - 500V(Default : 498) [For 3P3W system] 50 - 288V(Default : 264) [For 3P4W system]	This option will be prompted only when OV protection ON
UV	Under voltage	<V OFF (R2)	ON / OFF	
S.UV	Set under voltage	<V 184 (R2)	85 - 500V(Default : 332) [For 3P3W system] 50 - 288V(Default : 184) [For 3P4W system]	This option will be prompted only when UV protection ON

Note : Relay (RL2) submenus are not visible when its is selected as Relay 1 (RL1).

DISPLAY (For 1sec)	DESCRIPTION	DEFAULT VALUE	RANGE	CONDITION
OF	Over frequency	> ON (R2 Hz)	ON / OFF	
S.OF	Set over frequency	> 55 (R2 Hz)	45.0 - 65.0Hz	This option will be prompted only when OF protection ON
UF	Under frequency	< OFF (R2 Hz)	ON / OFF	
S.UF	Set under frequency	< 45 (R2 Hz)	45.0 - 65.0Hz	This option will be prompted only when UF protection ON
AS	Asymmetry	< As ON (R2)	ON / OFF	
PAS	Phase Asymmetry Setting	V As 10.0 (R2 %)	5.0 - 30.0%	This option will be prompted only when AS protection ON
PSQ	Phase sequence	ON (R2)	ON / OFF	
PFL	Phase failure	ON (R2)	ON / OFF	
P.dM	Power 'ON' Delay Mode	OFF (R2)	ON / OFF	ON : NO OFF : NC
MOd	MOD	ON (R2)	ON / OFF	ON : NC (During Trip) OFF : NO (During Trip)
LCH	Latch	OFF (R2)	ON / OFF	If Latch is ON, user has to reset the unit manually when fault is removed

Time Setting for Relay 2 (TM2) — Press ▲ to enter sub menu from main menu

Press ▲or ▼ to scroll through sub menu — Press ● + ▲ or ● + ▼ to change parameter value

DISPLAY (For 1sec)	DESCRIPTION	DEFAULT VALUE	RANGE	CONDITION
tRP	Trip time delay	3.0 s (R2 t)	0.0 - 300s	
REC	Recovery time	0.5 s (R2 t off)	0.0 - 300s	

Hysteresis (HYS)		Press ▲ to enter sub menu from main menu		
Press ▲or ▼ to scroll through sub menu		Press ● + ▲ or ● + ▼ to change parameter value		
DISPLAY (For 1sec)	**DESCRIPTION**	**DEFAULT VALUE**	**RANGE**	**CONDITION**
VLt	Hysteresis for voltage	1.0	1.0 - 40.0V	
FR9	Hysteresis for frequency	0.2	0.2 - 2.0Hz	
ASy	Hysteresis for Asymmetry	2.0	2.0 - 20.0%	

Password (PW)		Press ▲ to enter sub menu from main menu		
Press ▲or ▼ to scroll through sub menu		Press ● + ▲ or ● + ▼ to change parameter value		
DISPLAY (For 1sec)	**DESCRIPTION**	**DEFAULT VALUE**	**RANGE**	**CONDITION**
PW	Password	diS	ENB / DIS	Enable / Disable password protection option
S.PW	Set password	0	0-999	Will be prompted only when Password option is enabled

NOTE : PW option will be asked when the user enter the config. menu if PW option is enabled in the config menu and the user has to enter the password which he has set in the S.PW (set password) option.

Factory set (RST)		Press ▲ to enter sub menu from main menu		
Press ▲or ▼ to scroll through sub menu		Press ● + ▲ or ● + ▼ to change parameter value		
DISPLAY (For 1sec)	**DESCRIPTION**	**DEFAULT VALUE**	**RANGE**	**CONDITION**
rSt	Reset (Factory set)	NO	YES / NO	

TRIP VALUE SETTING (Online) **Press ▲ key for 3 sec. to enter or exit Trip Value Setting menu :**

Press ▲or ▼ to scroll through main menu		Press ● + ▲ or ● + ▼ to change parameter value		
DISPLAY (For 1sec)	**DESCRIPTION**	**DEFAULT VALUE**	**RANGE**	**CONDITION**
LCK	LOCK	YES	YES / NO	This option will prompted first when the user enters the trip setting menu. User has to set NO after which he can access the trip setting menu.
S.OV	Set over voltage for Relay 1	> V 264 R1	85 - 500V(Default : 498) [For 3P3W system] 50 - 288V(Default : 264) [For 3P4W system]	
S.UV	Set under voltage for Relay 1	<V 184 R1	85 - 500V(Default : 332) [For 3P3W system] 50 - 288V(Default : 184) [For 3P4W system]	

Press ▲or ▼ to scroll through main menu		Press ● + ▲ or ● + ▼ to change parameter value		
DISPLAY (For 1sec)	**DESCRIPTION**	**DEFAULT VALUE**	**RANGE**	**CONDITION**
S.OV	Set over voltage for Relay 2	> V 264 R2	85 - 500V(Default : 498) [For 3P3W system] 50 - 288V(Default : 264) [For 3P4W system]	
S.UV	Set under voltage for Relay 2	<V 184 R2	85 - 500V(Default : 332) [For 3P3W system] 50 - 288V(Default : 184) [For 3P4W system]	
tRP	Trip time delay for Relay1	3.0 s R1 t	0.0 - 300s	
tRP	Trip time delay for Relay2	3.0 s R2 t	0.0 - 300s	
LCK	LOCK	NO	YES / NO (In this option if YES is selected by the user, then whenever the user enters the Trip Value Setting, initially LOCK option will be prompted. The user will have to set NO after which he can access the trip setting menu. If the user wants to disable LOCK option, he can set NO when LOCK option is prompted after TRP option.)	

NOTE : If Values are changed, the same setting in config menu will also changed and vice versa, also if RL1 is selected for RL2 in config menu no parameter of Relay 2 will be prompted in the above trip value setting.

ONLINE KEYS	Individual parameters can be viewed with every press of ▼ keys.

PARAMETER	SYMBOL
*Average Voltage	L1 L2 L3
Voltage (L1-phase)	L1
Voltage (L2-phase)	L2
Voltage (L3-phase)	L3
Voltage (L1-L2 phase)	L1 L2
Voltage (L2-L3 phase)	L2 L3
Voltage (L1-L3 phase)	L1 L3
Frequency	Hz
Phase Asymmetry	As %

*** Default Page** : This page is displayed after 3 sec. from other online page.
For 3P4W system average of L-N voltages is shown.
For 3P3W system average of L-L voltages is shown.

TRIP INDICATION	Trip Indication on press of ▲ key : Trip value will be displayed till the key is pressed.
RESET	Press ● key for 3sec. to reset manually (Applicable only if Latch is ON)

Master Password : 753

In Trip value setting & configuration menu, if no key pressed for 30 sec. then unit resumes online mode.

(Specifications subject to change as development is a continuous process.)

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