OP3241-V01

selec

VPRD-2-280/520V-CE
Operating Instructions



FEATURES

- Under voltage, over voltage, under frequency, over frequency, asymmetry, phase failure and phase sequence monitoring in 3Ø system
- RMS measurement
- Power ON delay, Trip time delay and Delay on release
- Adjustable switching hysteresis
- Two separate alarm relays operation

SPECIFICATIONS

DISPLAY
3 Digits, Liquid Crystal Display
ELECTRICAL CONNECTION
3Ø-3 wire, 3Ø-4 wire, 1Ø-2 wire
SUPPLY TYPE
Self powered
OPERATING RANGE
280 – 520V AC (L-L)
160 – 300V AC (L-N)
FREQUENCY RANGE
45 - 65Hz
VA RATING
35VA max
TRIP SETTINGS
Under Voltage : 280 to 520V AC (L-L)
[for 3Ø-3 wire]
160 to 300V AC (L-N)
[for 3Ø-4 wire, 1Ø-2 wire]
Over Voltage : 280 to 520V AC (L-L)
[for 3Ø-3 wire]
160 to 300V AC (L-N)
[for 3Ø-4 wire, 1Ø-2 wire]
Under Frequency : 45 – 65Hz
Over Frequency : 45 – 65Hz
Phase Asymmetry : 5.0 – 99.9%

TIME SETTINGS
Power ON Delay : 0 - 999sec
Response Delay : 0 - 999sec
(Trip time delay)
Recovery Time : 0 - 999sec
Response Time : <250ms
HYSTERESIS
Voltage : 1.0 – 99.9V
Frequency : 0.2 – 2.0Hz
Asymmetry : 2.0 – 20%
RESOLUTION
Voltage : 1V
Frequency : 0.1Hz
ACCURACY
Voltage : ±1% of Full Scale (+/-1digit)
Frequency : ±0.3Hz
Time : ±5% of setting ± 250ms
(Recovery Time, Trip Delay. Power ON 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 (Green) : Power ON
LED2 (Red) : Relay1 trip indication
LED3 (Red) : Relay2 trip indication
ENVIRONMENTAL SPECIFICATIONS
- Indoor use
- Altitude of up to 2000 meters
- Pollution degree II

Temperature : Operating : 0 to 55°C
Storage : -20 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
135 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

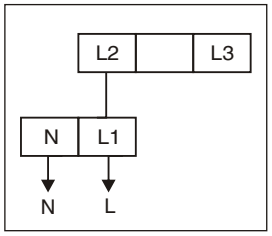
WARNING

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.

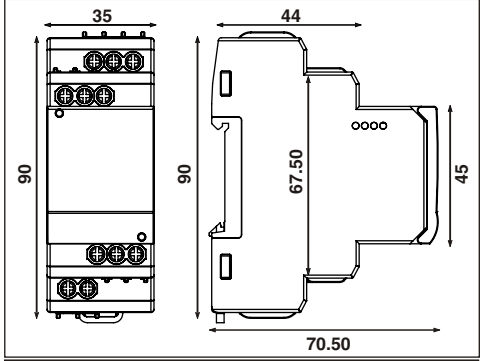
CAUTION

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

TERMINAL CONNECTION FOR 1P2W



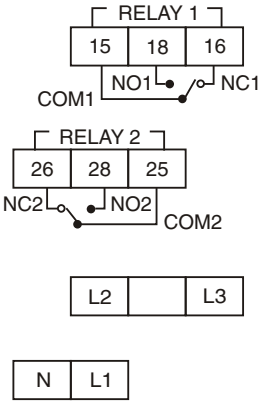
DIMENSIONS (All dimensions in mm)



LED INDICATION CHART

Various Conditions	Power LED	'R1' LED	'R2' LED
No fault	ON	OFF	OFF
Trip (Relay 1)	ON	ON	OFF
Trip (Relay 2)	ON	OFF	ON
Trip (If programmed for both relays)	ON	ON	ON

TERMINAL CONNECTIONS

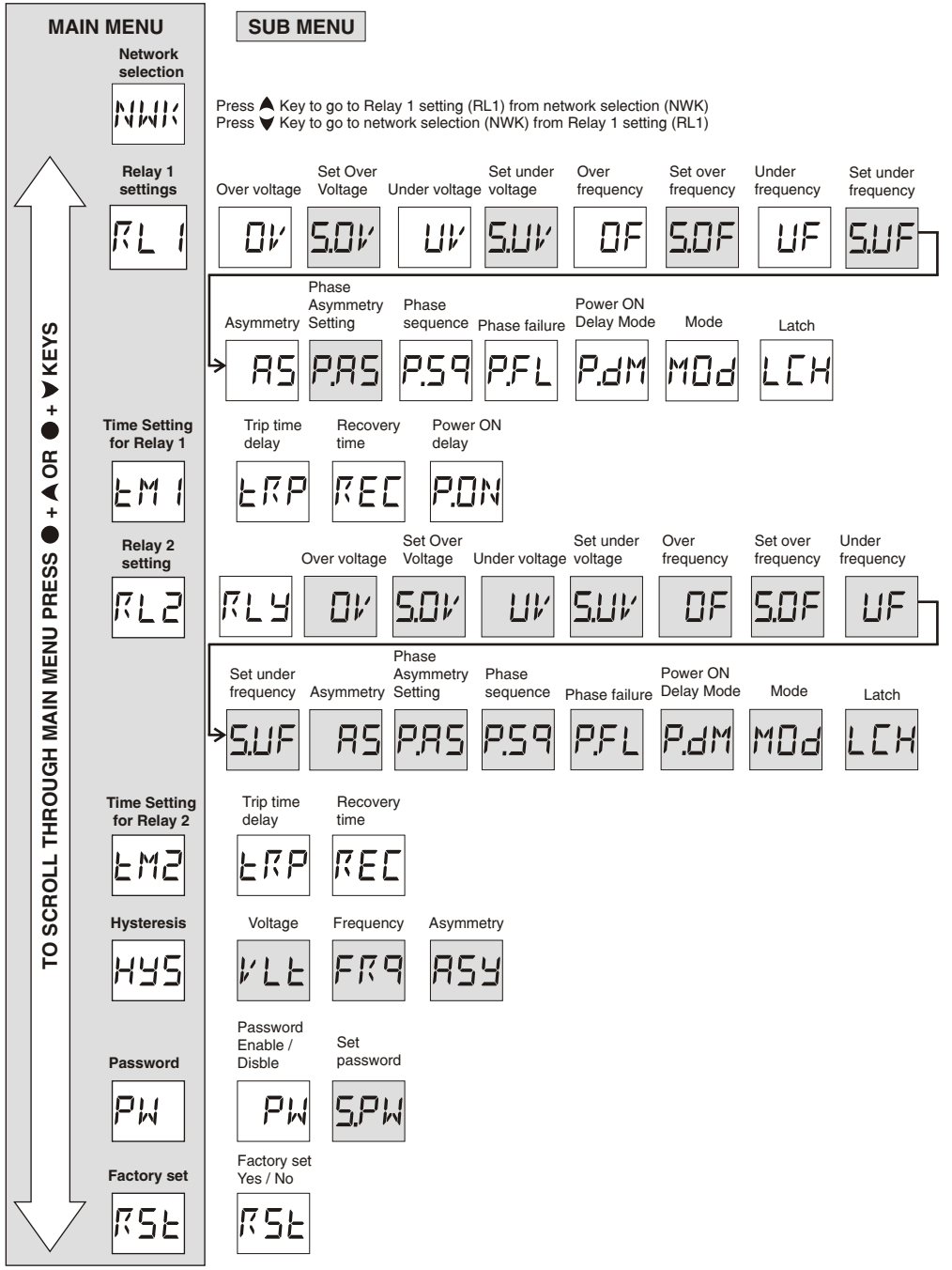


ORDER CODE INFORMATION

Product	Supply	Certification	
		CE	cULus LISTED
VPRD-2-280/520V-CE	280-520V	■	-

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 / 1P2	

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 288 R1	280 - 520V(Default : 498) [For 3P3W system] 160 - 300V(Default : 288) [For 3P4W,1P2W system]	This option will be prompted only when OV option is made ON
UV	Under voltage	<V OFF R1	ON / OFF	
S.UV	Set under voltage	<V 192 R1	280 - 520V(Default : 332) [For 3P3W system] 160 - 300V(Default : 192) [For 3P4W,1P2W system]	This option will be prompted only when UV option is made ON
OF	Over frequency	> OFF R1 Hz	ON / OFF	
S.OF	Set over frequency	> 55 R1 Hz	45.0 - 65.0Hz	This option will be prompted only when OF option is made 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 option is made ON
AS	Asymmetry	As ON R1	ON / OFF	NA for 1P2W
P.AS	Phase Asymmetry Setting	V As 10.0 R1 %	5.0 - 99.9%	This option will be prompted only when AS option ismade ON

DISPLAY (For 1sec)	DESCRIPTION	DEFAULT VALUE	RANGE	CONDITION
P.SQ	Phase sequence	ON (R1)	ON / OFF	NA for 1P2W
P.FL	Phase failure	ON (R1)	ON / OFF	NA for 1P2W
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 - 999sec	
REC	Recovery time	0.5 s (R1 t off)	0.0 - 999sec	
P.ON	Power ON delay	0.5 s (R1 ton)	0.0 - 999sec	Applicable for Relay 1 & 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 288 (R2)	280 to 520V AC (Default value : 498V) [for 3Ø-3 wire] 160 to 520V AC (Default value : 288V) [for 3Ø-4 wire] 160 to 520V AC (Default value : 288V) [for 1Ø-2 wire]	This option will be prompted only when OV option is made ON
UV	Under voltage	< V OFF (R2)	ON / OFF	

Note : Relay 2 (RL2) Default values shown are applicable when Relay 2 (RL2) selected as Relay 1 (RL1)

DISPLAY (For 1sec)	DESCRIPTION	DEFAULT VALUE	RANGE	CONDITION
S.UV	Set under voltage	< V 192 (R2)	280 to 520V AC (Default value : 332V) [for 3Ø-3 wire] 160 to 520V AC (Default value : 192V) [for 3Ø-4 wire] 160 to 520V AC (Default value : 192V) [for 1Ø-2 wire]	This option will be prompted only when UV option is made ON
OF	Over frequency	> OFF (R2 Hz)	ON / OFF	
S.OF	Set over frequency	> 55 (R2 Hz)	45.0 - 65.0Hz	This option will be prompted only when OF option is made 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 option is made ON
AS	Asymmetry	As ON (R2)	ON / OFF	NA for 1P2W
P.AS	Phase Asymmetry Setting	As 10.0 (R2 %)	5.0 - 99.9%	This option will be prompted only when AS option is made ON
P.SQ	Phase sequence	ON (R2)	ON / OFF	NA for 1P2W
P.FL	Phase failure	ON (R2)	ON / OFF	NA for 1P2W
P.dM	Power 'ON' Delay Mode	OFF (R2)	ON / OFF	ON : NO OFF : NC
MOd	MOD	OFF (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 - 999s	
REC	Recovery time	0.5 s (R2 t off)	0.0 - 999s	

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	V 1.0 H	1.0 - 99.9V	
FRQ	Hysteresis for frequency	0.2 H	0.2 - 2.0Hz	
ASY	Hysteresis for Asymmetry	As 2.0 H %	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	000	000-999	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 — **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.

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 1	> V 288 R1	280 - 520V(Default : 498) [For 3P3W system] 160 - 300V(Default : 288) [For 3P4W,1P2W system]	
S.UV	Set under voltage for Relay 1	<V 192 R1	280 - 520V(Default : 332) [For 3P3W system] 160 - 300V (Default : 192) [For 3P4W,1P2W system]	
S.OV	Set over voltage for Relay 2	> V 288 R2	280 - 520V(Default : 498) [For 3P3W system] 160 - 300V(Default : 288) [For 3P4W,1P2W system]	
S.UV	Set under voltage for Relay 2	<V 192 R2	280 - 520V(Default : 332) [For 3P3W system] 160 - 300V(Default : 192) [For 3P4W,1P2W system]	
tRP	Trip time delay for Relay1	s 3.0 R1 t	0.0 - 999s	
tRP	Trip time delay for Relay2	s 3.0 R2 t	0.0 - 999s	
LCK	LOCK	NO	YES / NO, (In this option if YES is selected by the user, then whenever 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 promoted after TR2 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 ▼ or ▲ 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 %

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
Master Password	753

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

* **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.

(Specifications are subject to change, since development is a continuous process)

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