



Advanced **G**reen **E**nergy & **C**ontrol

Over and Under protection relay

M A N U A L



OUV Series
April 2018

8ز – ش بلال بن رباح - النزهة الجديدة – القاهرة - تليفاكس: 02/26230107
8z Block –Belal ben Rabah St. – AlnozhaAlgadeda – Cairo – Egypt – Tel/Fax: 02-26230107
Website: www.agec-eg.com E-mail: design@agec-eg.com

Index

Content	Page
1. Safety cautions	3
2. Features	3
3. Device identification	4
3.1 Front	4
3.2 Back	5
4. Operation procedures	7
4.1 Start up	7
4.2 Settings	7
4.2.1 Flow Chart	11
4.2.2 Reset Settings Options	12
4.2.3 Parameters List	13
4.3 Faults	14
5. Technical Specifications	16
5.1 Electrical Specifications	16
5.2 Mechanical Specifications	16
5.3 Mechanical Protection	16
5.4 Electrical protection	17
6. Panel Cutout	17
7. Ordering information	17

***For your safety, please read the following before using.**

1. Safety Cautions

Warning

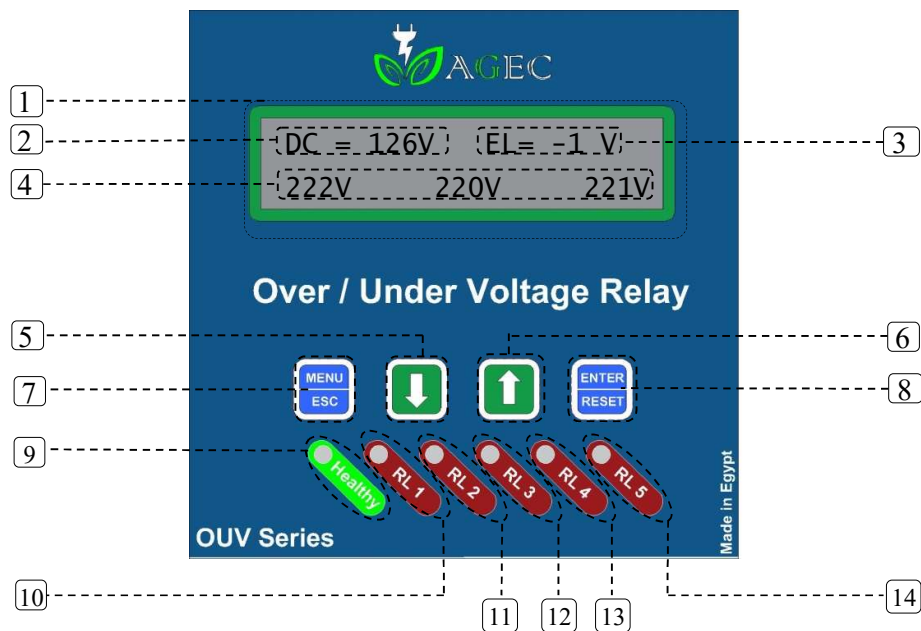
- 1. Must be mounted on Panel.**
May give an electric shock.
- 2. Do not connect terminals when power is on.**
May give an electric shock.
- 3. Do not disassemble or modify this unit. If it is necessary please contact us.**
May give an electric shock / cause fire.
- 4. Please check the terminals numbers before connecting power lines.**
May cause fire.
- 5. While cleaning the unit, do not use water or an oil-based detergent.**
May cause an electric shock / fire / damage of the unit.
- 6. check the polarity before connecting terminals.**
May cause fire.

2. Features:

- 1- Measure and display the real value of the input 3 phase AC voltage (L-N).
- 2- Measure and display the real value of the output DC voltage.
- 3- AC over (**ANSI 59**) and under voltage (**ANSI 27**) limits protection can be adjusted via display.
- 4- DC over (**ANSI 59**) and under voltage (**ANSI 27**) limits protection can be adjusted via display.
- 5- Earth leakage voltage limits protection can be adjusted via display.
- 6- Indicate the fault in LCD.
- 7- All settings stored in EEPROM.
- 8- Numerical LCD (16 * 2).
- 9- Parameters adjust via keypad.
- 10- Change over Form C relay for each protection function.
- 11- One Normally open relay Form A for common alarm.
- 12- Five programmable relays.
- 13- Five indication Leds for each relay.
- 14- Auto / Manual reset option.
- 15- Watch dog (healthy) relay.

3. Device identification

3.1. Front



- 1 Numerical (16*2) LCD display shows measurements, settings and faults.
- 2 DC voltage measurement.
- 3 Earth Leakage measurement.
- 4 AC 3 phase voltage measurement.
- 5 Up arrow key (decrease parameter value in edition mode).
- 6 Down arrow key (increase parameter value in edition mode).
- 7 Menu/ESC key (enter and exit in edition mode)
- 8 Enter/RESET key(store parameter value and enter in edition mode,reset.in protection mode).
- 9 Watch dog (Healthy)Led.
- 10 Programmable relay 1 indication Led.
- 11 Programmable relay 2 indication Led.
- 12 Programmable relay 3 indication Led.
- 13 Programmable relay 4 indication Led.
- 14 Programmable relay 5 indication Led

3.2. Back

8	7	6	5	4	3	2	1
NC	COM	NO	-	+	NC	COM	NO
R5			Aux Supply 50-270 VDC/VAC		R4		
AC 3Ph (380VAC)					BAT 110 / 220 VDC		
E	N	L1	L2	L3		-	+
R3		R2		R1		W.Dog	
COM	NO	COM	NO	COM	NO	NO	COM
24	23	22	21	20	19	18	17
16	15	14	13	12	11	10	9

- ① Normally Open of internal relay (250VAC – 2 A) for programmable relay 4.
- ② Common of internal relay (250VAC – 2 A) for programmable relay 4.
- ③ Normally Close of internal relay (250VAC – 2 A) for programmable relay 4.
- ④ Positive or Line of the aux. supply.
- ⑤ Negative or neutral of the aux. supply.
- ⑥ Normally Open of internal relay (250VAC – 2 A) for programmable relay 5.
- ⑦ Common of internal relay (250VAC – 2 A) for programmable relay 5.
- ⑧ Normally Close of internal relay (250VAC – 2 A) for programmable relay 5.
- ⑨ Common of internal relay (250VAC – 2 A) for watch dog relay.
- ⑩ Normally Open of internal relay (250VAC – 2 A) for watch dog relay.
- ⑪ Normally open of internal relay (250VAC – 2 A) for programmable relay 1.
- ⑫ Common of internal relay (250VAC – 2 A) for programmable relay 1.
- ⑬ Normally Open of internal relay (250VAC – 2 A) for programmable relay 2.
- ⑭ Common of internal relay (250VAC – 2 A) for programmable relay 2.
- ⑮ Normally Open of internal relay (250VAC – 2 A) for programmable relay 3.
- ⑯ Common of internal relay (250VAC – 2 A) for programmable relay 3.
- ⑰ Positive of the DC Voltage or batteries.
- ⑱ Negative of the DC Voltage or batteries.
- ⑲ Not connected.
- ⑳ Phase 3 of the 3 phase AC voltage of the device.
- ㉑ Phase 2 of the 3 phase AC voltage of the device.
- ㉒ Phase 1 of the 3 phase AC voltage of the device.
- ㉓ Neutral of the 3 phase AC voltage of the device.
- ㉔ Earth of the device & Station.

Note:

- Watch Dog, R1, R2 and R3 relays can be changed between NO / NC using internal jumper in the device.
- Default of the relay is NO as in Fig. 3.



Figure 1

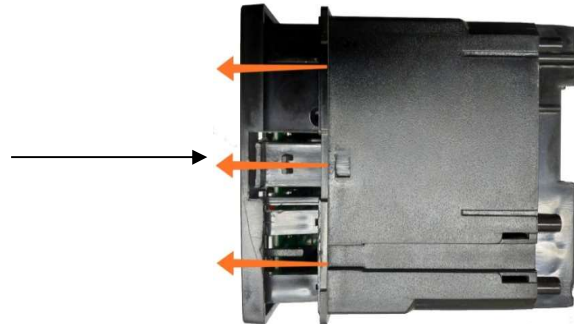


Figure 2



Figure 3

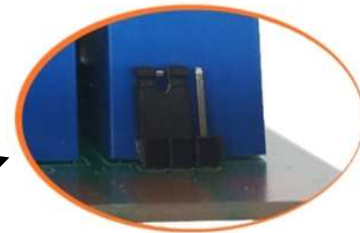


Figure 4

- Long press on the lock key as shown in Fig.1
- Pull up the relay cover while holding the lock from the housing as shown in Fig.2
- In Fig.3 jumper of the watch dog relay is marked by an elipse.
- In Fig.4 Zoomed in view of the jumper.
- The same for R1, R2 and R3.

4. Operations Procedures:

4.1 Start up :


First when connect power to the device the LCD will show the following:

```
AGEC
TEL: 02-26230107
```



Then shown the for example:

```
DC = 125 V  EL= -1 V
222V      215V   219V
```

4.2 Settings :

To adjust the protection parameters go to “Edition mode” by pressing MENU/ESC key  for 3 sec until the screen shows:

```
->AC Settings
DC Settings
```

Using  and  keys you can select between different parameters like DC settings , Earth leakage and Reset settings.


To set AC settings Press  then appear

```
->AC ovr active
AC ovr value
```


To activate AC over press Enter/Reset  in the previous screen.

Then appear

```
->AC ovr Enable
AC ovr Disable*
```

Press Enter/Reset  to activate AC over , your selection will be marked by (*)




```
->AC ovr Enable*
AC ovr Disable
```

To set the other values of AC over press Menu/ESC  in the previous screen then appear

AC ovr active
->AC ovr value

To set AC over Value press Enter/Reset  then

AC ovr value
AC ovr=250 V

- To increase the AC over value press up arrow key 
- To decrease the AC over value press down arrow key 
- To store settings press ENTER/Reset key  the display will show




AC ovr value
Save ok

Then appear

AC ovr value
->AC ovr hys

- Press Enter/Reset  to set AC over hysteresis value

AC ovr hys
AC ovr hys.=5 V

- To increase the AC overhys value press up arrow key 
- To decrease the AC overhys value press down arrow key 
- To store settings press ENTER/Reset key  the display will show




AC ovr hys
Save ok

Then appear

AC ovr hys
->AC ovr delay

- Press Enter/Reset  to set AC over delay value

```
AC ovr delay
AC ovr del.= 6 S
```

- To increase the AC overdelayvalue press up arrow key 
- To decrease the AC over delay value press down arrow key 
- To store settings press ENTER/Reset key  the display will show:




```
AC ovr delay
Save ok
```

Then appear

```
AC ovr delay
->AC ovr relay
```

- Press Enter/Reset  to set AC over relay

```
AC ovr relay
AC ovr rel->1
```

- To scroll between the AC over relays press up arrow key  & 
- To select the desired relay press ENTER/Reset key  the display will show:

```
AC ovr relay
AC ovr rel->1*
```

Your selection will be marked by (*)

Press down arrow key  until shows:

```
AC ovr relay
AC ovr rel->save
```

Press Enter/Reset  to save

```
AC ovr relay
Save ok
```

Then appear

AC over relay
->AC undr active

Press down  5 times then appear

AC undr relay
->Escape

Press Menu/Escape  to get back to main screen in Edition Mode.

->AC settings
DC settings

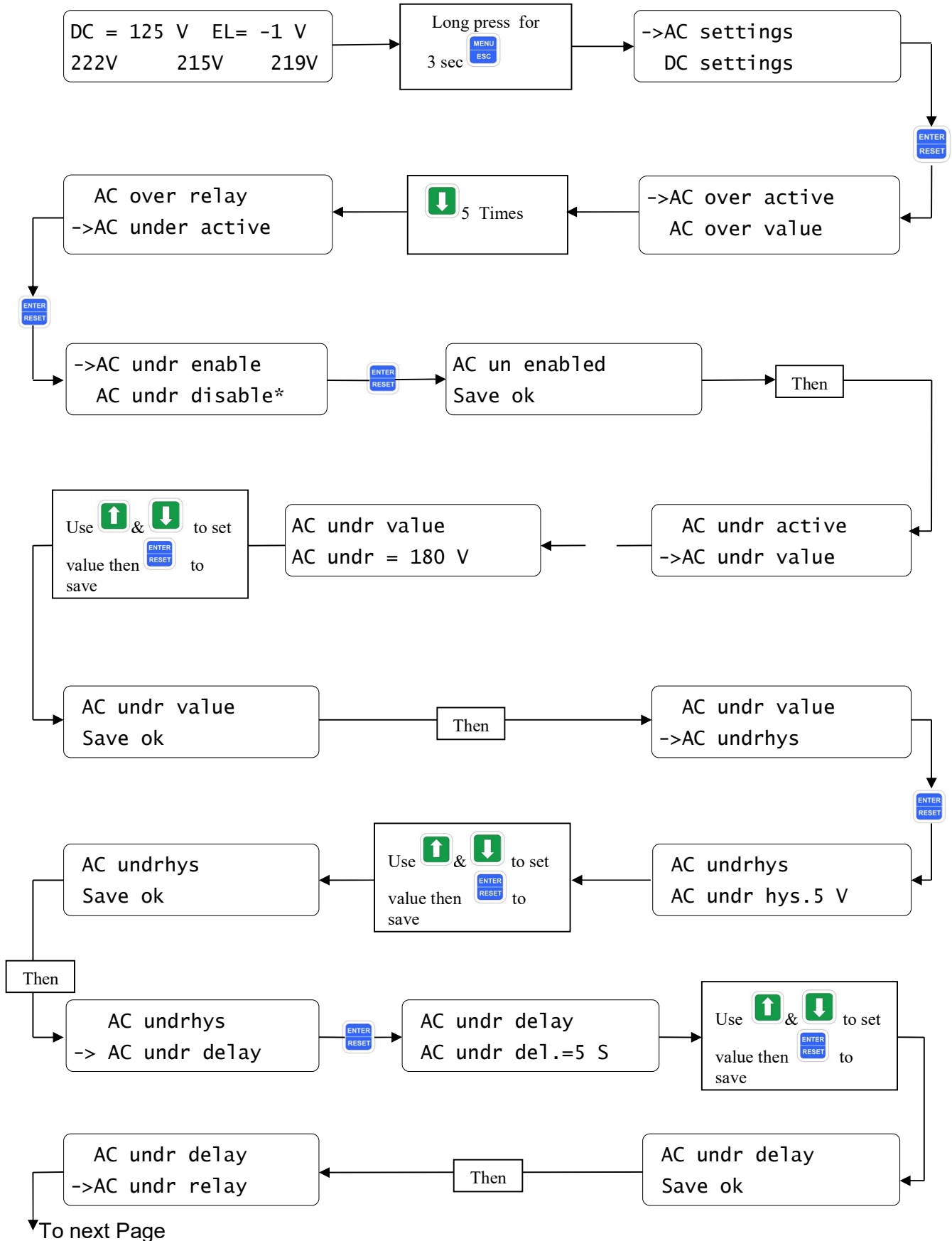
Press Menu/Escape  again to get back to Main screen

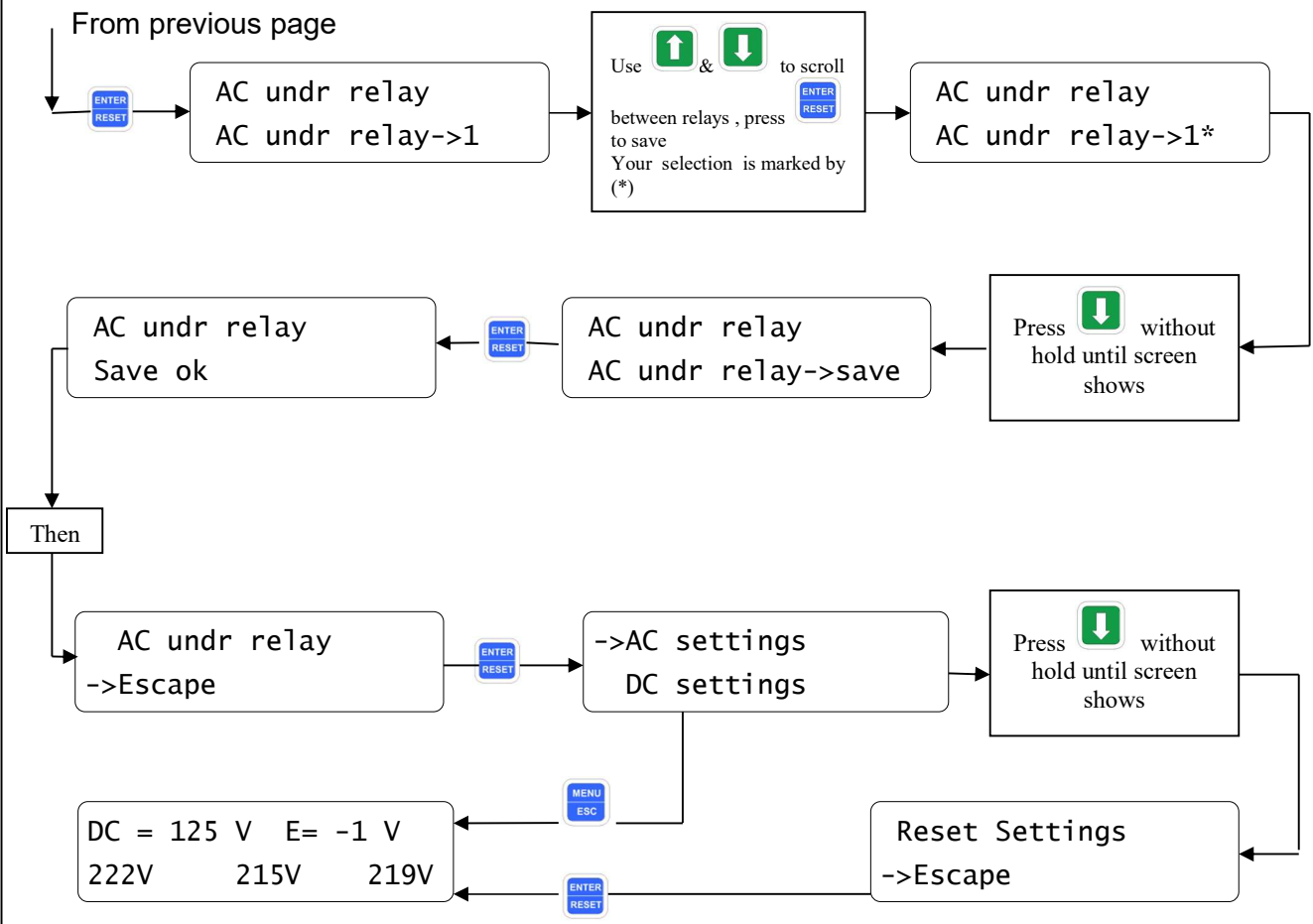
DC = 125 V E1= -1 V
222V 215V 219V

*Do the previous steps for all parameters

4.2.1 Flow Chart

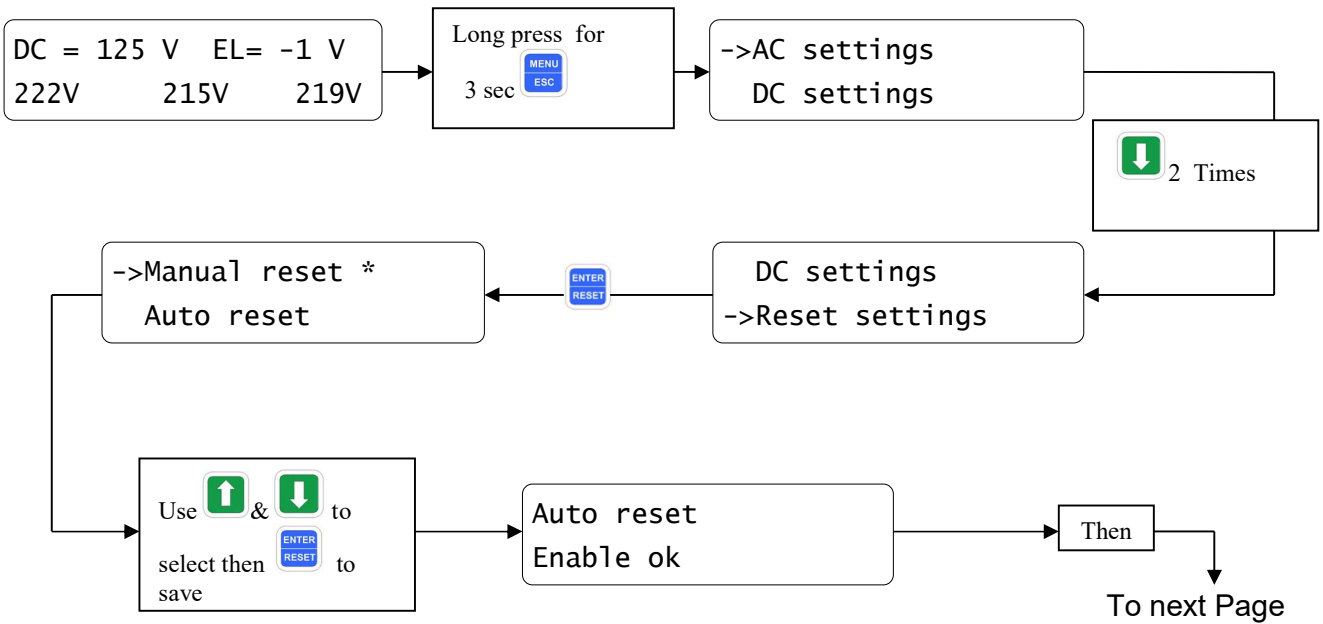
To set AC under options :





- Do the previous steps for all parameters

4.2.2 Reset settings options:



From previous page




Your selection will be marked by (*).

4.2.3 Parameters list:

Parameter	ANSI	Default	Min	Max	Unit
AC over voltage active	-	Enable	-	-	-
AC over voltage value (U>)	59	250	130	320	V
AC over hysteresis		5	0	30	V
AC over delay		5	0	30	sec
AC over relay	-	R1	-	-	-
AC under voltage active	-	Enable	-	-	-
AC under voltage value (U<)	27	180	110	270	V
AC under hysteresis		5	0	30	V
AC under delay		5	0	30	sec
AC under relay	-	R2	-	-	-
DC over voltage active	-	Enable	-	-	-
DC over voltage value (U>)	59	142	66	153	V
DC over hysteresis		5	0	30	V
DC over delay		5	0	30	sec
DC over relay	-	R3	-	-	-
DC under voltage active	-	Enable	-	-	-
DC under voltage value (U<)	27	76	55	132	V
DC under hysteresis		5	0	30	V
DC under delay		5	0	30	sec
DC under relay	-	R4	-	-	-
Earth leakage voltage active	-	Enable	-	-	-
Earth leakage voltage value		27	0	55	V
Earth leakage hysteresis		5	0	30	V
Earth leakage delay		5	0	30	sec
Earth leakage relay		R5			
Reset settings	-	Manual	-	-	-

4.3 Faults :

When any fault occurs:

- The LCD will show the fault.
 - The Aux relay for the function will be active (NO & COM closed).
 - The fault red led related to the relay will be on.
 - In case of faults in Auto reset mode the related relay for each protection function will reset automatically only if the reason of fault disappeared like over , under voltageetc.
 - In case of faults in manual mode resetting the related relay for each protection function is done by pressing ENTER/RESET  key
- In case of AC faults, the LCD will show any of the following:

AC is over
AC input=260 V

AC is under
AC input=110 V

- In case of **AC Over** the related relay will be activated.
- In case of **AC Under** the related relay will be activated.
- If the AC value returned back to the user's set value the LCD will show Any of the following:

AC is normal <O>
Delay time= 4 S

AC is normal <U>
Delay time= 4 S

- In case of returning from the user's over set value **AC is normal** will be quoted by <O>.
- In case of returning from the user's under set value **AC is normal** will be quoted by <U>.
- After delay time is up screen goes back to main screen.

➤ In case of DC fault, the LCD will show any of the following:

DC is Over
DC input= 202 V

DC is under
DC input= 42 V

- In case of **DC Over** the related relay will be activated.

- In case of **DC Under** the related relay will be activated.
- If the DC value returned back to the user's set value the LCD will show Any of the following:

DC is normal <O>
Delay time= 4 S

DC is normal <U>
Delay time= 4 S

- In case of returning from the user's over set value **DC is normal** will be quoted by <O>.
- In case of returning from the user's under set value **DC is normal** will be quoted by <U>.
- After delay time is up screen goes back to main screen.



➤ In case of Earth leakage, the LCD will show any of the following:

EL is Over
Earth 1kg,=+ 46V

EL is over
Earth 1kg,=- 46V

- In case of **Positive or Negative Earth Leakage** the related relay will be activated.
- If the Earth Leakage value returned back to the user's set value the LCD will show the following:

E.L is normal
Delay time= 4 S

- After delay time is up screen goes back to main screen.
- If manual reset mode is enabled the fault will be locked even if the fault reason disappeared until pressing  to reset the related relay of the fault.
- If manual reset mode is enabled the fault can be cleared by pressing ENTER/RESET key  even if the fault reason is not disappeared.
- If Auto reset mode is enabled the fault will disappear automatically if the fault reason disappeared.

5. Technical Specifications:

5.1 Electrical Specifications:

Inputs:

Aux Power supply :50 to 270 VDC / VAC

DC Voltage range :110 VDC or 220 VDC

AC Voltage range :380 VAC/3Ø

Frequency range :50 Hz

Range of protection

Over Voltage – $U > (\text{ANSI 59}) \rightarrow 0.6 U_n \text{ to } 1.4 U_n$.

Reset factor $\rightarrow 1.15 U_n$.

Under Voltage– $U < (\text{ANSI 27}) \rightarrow 0.5 U_n \text{ to } 1.2 U_n$.

Reset factor $\rightarrow 0.9 U_n$.

Outputs:

- **For OUV – XXXXX-1-X**

General Alarm: 1 Form C relay + Serina 12 V.

- **For OUV – XXXXX-2-X**

Aux relay: 4 Free contact (NO, COM & NC) 2A @ 250VAC.

General Alarm: 1 Free contact (NO or NC) 2A @ 250VAC

- **For OUV – XXXXX-3-X**

Watch Dog: 1 Free contact (NO or NC) 2A @ 250VAC.

Aux relay: 2 Free contact (NO, COM & NC) 2A @ 250VAC.

3 Free contact (NO or NC) 2A @ 250VAC

5.2 Mechanical Specifications:

Dimension :96 mm * 96 mm * 112 mm.

Panel cutout :92 mm * 92 mm ± 1.

5.3 Protection Specifications

Temperature :-5°C to +60°C

Enclosure IP : IP 45

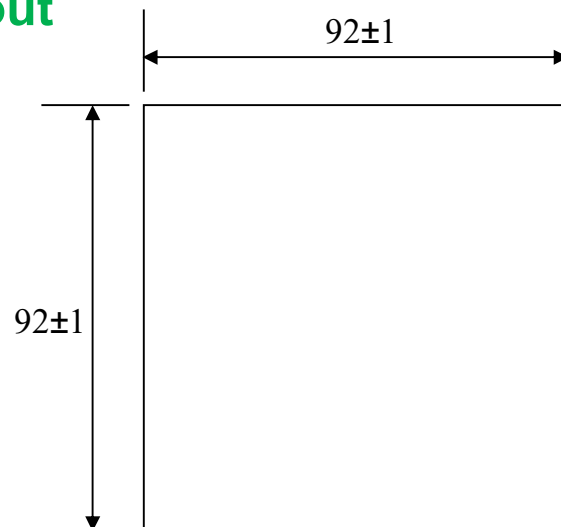
➤ The enclosure is isolated according to standard EN 60439-1 specification.

➤ The enclosure is protected against external mechanical shocks.

5.4 Electrical Protection:

- Over and under AC input voltage which can be adjusted.
- Over and under DC output voltage which can be adjusted.
- Positive and Negative earth leakage which can be adjusted.

6. Panel Cutout



(Unit: mm)

7. Ordering information

OUV – XXXXX-X-X						
OUV						Over / Under Voltage protection relay Sires.
Functions	0					AC Over protection deactivated.
	1					AC Over protection activated.
		0				AC Under protection deactivated.
		1				AC Under protection activated.
			0			DC Over protection deactivated.
		1			DC Over protection activated.	
			0			DC Under protection deactivated.
			1			DC Under protection activated.
				0		Earth Leakage protection deactivated.
				1		Earth Leakage protection activated.
Outputs					1	1 Form C relay + Serina 12 V.
					2	4 Form C relay + 1 Form A or Form B relay.
					3	2 Form C relay + 4 Form A or Form B relay.
DC range					A	110 DC voltage.
					B	220 DC voltage.
					C	110 and 220 DC voltage.