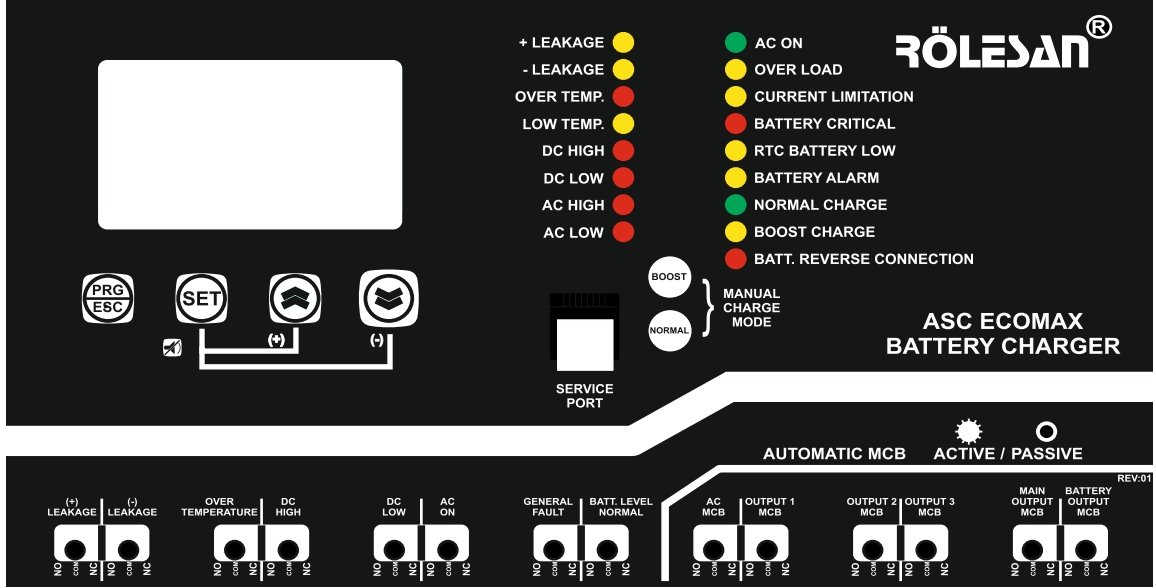# RÖLESAN

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ASC ECOMAX USER MANUAL

Usage and Menu Explanations

Notification Leds

+ Leakage	: At any contact between (+)polarity-earth in DC supply, the LED become active.
- Leakage	: At any contact between (-)polarity-earth in DC supply, the LED become active.
High Temperature	: When the internal temperature of the rectifier reaches the temperature value in the settings, the LED become active.
Low Temperature	: As soon as the rectifier internal temperature reaches the factory set 5 $^{\circ}$C, the LED becomes active.
DC High	: When the output of the rectifier reaches the DC High value in the settings, the LED becomes active.
DC Low	: When the output of the rectifier reaches the DC Low value in the settings, the LED becomes active.
AC High	: When the AC voltage reaches the AC High value in the rectifier settings, the LED becomes active.
AC Low	: When the AC voltage reaches the AC Low value in the rectifier settings, the LED becomes active.
AC ON	: LED is active when AC input supply is at nominal value.
Over Load	: When the DC output on the rectifier exceeds the total current value, the LED becomes active.
Current Limitation	: When the battery output on the rectifier reaches the battery charging current value in the settings section, the LEDs becomes active and the rectifier starts to work in current limiting mode.
Battery Critical	: When the battery voltage reaches below the battery alarm value in the setting,LED becomes active.
RTC Battery Low	: There is an RTC on the rectifier. When the device is de-energized, RTC works with the battery it is connected to. When the voltage of the battery drops below the factory set value, LED is activated.
Battery Alarm	: If Y is selected in the Battery Fail Y/N section in the rectifier setup menu and the battery voltages fall below the DC voltage set in the Battery Fail(v) section, the LED will be active.
Normal Charge	: When the rectifier is working in Normal Charge mode, the LED is active.
Boost Charge	: When the rectifier is working in Boost Charge mode, the LED is active.
Batt.Reverse Con.	: When the battery group is connected to the rectifier reversely, the LED is active.

Buttons

PRG/ESC Button	: It is used for to enter the setting menu of the rectifier and communication,event records, clock settings and to exit the warning section.
SET Button	: It is used to change the value by pressing the up or down buttons together with the set button if any change is desired in the setting menu of the rectifier.
Up Button	: It is used for page transitions of the rectifier, navigating the event logs and changing the values in the setting part.
Down Button	: It is used for page transitions of the rectifier, navigating the event logs and changing the values in the setting part.
BOOST Button	: It is used for the rectifier to pass fast charging mode manually.
NORMAL Button	: It is used to manually switch the rectifier to boost charge mode.

Rectifier Connection and Start-Up

1. Rectifier supply can be done with a socket or a panel connection. In both connection types, the AC value coming to the rectifier should be 230±5VAC. With the help of a multimeter after measuring and taking the appropriate supply value; the MCB ,which connection is established on, is turned off.

2. After the related MCB is turned off, the wiring is assembled to energize the rectifier. Connection to L, NE, EARTH terminals is made by considering the cable colors.

3. The MCB of the panel is opened so that all MCB's of the rectifier are closed, or if the connection point is a socket, the plug is inserted.

4. The 230±5VAC voltage, which we measure as the rectifier supply, must also be on the rectifier. It is verified with the help of multimeter that the measured value(230±5VAC) as rectifier supply in the connected L and NE terminals.

5. If there is no voltage at this connection point, the socket or panel connection point should be checked again.

6. If there is a voltage, it should be measured again from the lower connection point of the AC MCB, and it should be verified that the AC voltage is the same as the voltage between the L-NE terminals.

7. If the battery connection is accomplished;

 7.1. Turn off all the MCB.
    7.2. Battery voltage is measured with put in contact the multimeters negative(-) probe to the (-) terminal block and the (+) probe to the battery MCB's lower(+) point. If the displayed value on the multimeter is positive, it can be said that battery group connection is made correctly.

8. During the measurement, you can energize the rectifier with turning on the AC MCB if desired AC values are taken and battery connection is made correctly. Meantime, you should wait for the device to reach the adjusted DC völtage(26.7VDC). After that with turning on the battery MCB, charging of the batteries must be provided.

9. If the battery voltage is above 24VDC, the MCB intended for DC output must be opened. Otherwise, the devices connected to the DC output may not work because of insufficient voltage.

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Rectifier Display Images   –   The values on display images are intended for informative purposes only.

Battery Charge Voltage	VBATT. 26.7	VAC 224	AC Voltage
System Output Voltage	VOUT 26.7	IAC 02.2	AC Current
Battery Charge Current	IBATT. 02.5	HZ 49.9	Frequency
DC Output Current	IOUT 08.2	TEMP. 28.7	Device Int. Temperature
Error Message Notification	MESSAGE	NORMAL CHARGE	Charge Mode
Temperature Compensation Active	TEMP.COMP.ACTIVE	12:18	Time

This is the screenshot that comes when the rectifier is first turned on. No changes can be made to the values on the screen. They are informational values for users.

Battery Charge Voltage	VBATT. 26.7	VAC 000	AC Voltage
System Output Voltage	VOUT 26.7	IAC 00.0	AC Current
Battery Charge Current	IBATT. 02.5	HZ 00.0	Frequency
DC Output Current	IOUT 08.2	TEMP. 28.7	Device Int. Temperature
Error Message Notification	MESSAGE	NORMAL CHARGE	Charge Mode
Battery Charge Percentage	████████ % 99	12:18	Time

Another screenshot for informational purposes for users. No changes can be made to the values on the the screen.

RS232/RS485 SETTINGS	
BAUD RATE	38400
PARITY	N
DATA BIT	8
STOP BIT	1
MODBUS ID	1

This is the screenshot of the rectifier RS232/RS485 communication settings. In settings menu, only Baud Rate and Modbus ID values can be changed. When a change is desired, the set button is pressed while this page is open. A cursor will appear on the right side of the first line immediately after the button is pressed. With up and down buttons, value changes can be made. In order to move on the next statement, the set button must be pressed again. The setting menu can be exitted by pressing PRG/ESC button.

BaudRate : 19200-38400
Modbus ID : 1 - 247

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```
CLOCK SETTINGS
HOUR     | 10
MINUTE   | 22
DAY      | 14
MONTH    | 08
YEAR     | 18
```

This is the screenshot with the rectifier clock setting. If any change is desired on the clock and date, set button is pressed. A cursor will appear on the right side of the first line immediately after the button is pressed. With up and down buttons, value changes can be made. In order to move on the next statement, the set button must be pressed again. It is enough to press PRG/ESC button from exiting the any statement of the setting section.

```
EVENT RECORD(VOLT)
        A  |  B  |  C  | BATT.
0:    225 | 220 | 219 |  121
         18:07  12.07.18

1:    001 | 001 | 001 |  119
         10:09  08.07.18
```

The rectifier records the phase and battery voltage, including the hour, minute, day, month and year values, when the power is turned on for the first time or the phase is de-energized. If the rectifier continues to work in this way, it will continue to take values in 10-minute periods. The last event record is assigned to number 0 and the rectifier takes 10 pieces of records. With the help of up and down buttons, we can see all the values on this screen by pressing SET button.

```
BATT. EVENT RECORD(VOLT)
        BATT.
0:  119
         15:07  08.07.18

1:  120
         01:21  07.07.18
```

If the rectifier turns on with only battery supply, it will give a warning after 10 seconds. Meantime, including the battery voltage, hour, minute, day, month and year values, rectifier takes event record. The last event record will assigned to number "0" and andt the rectifier takes 10 pieces of event records. With the help of up and down buttons, we can see all the values on the screen by pressing the SET button.

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Rectifier Warning Messages

Messages →

```
MESSAGES                    1/3
 1: DC POSITIVE LEAKAGE
 2: DC NEGATIVE LEAKAGE
 3: OVER TEMPERATURE
 4: LOW TEMPERATURE
 5: DC HIGH VOLTAGE
 6: DC LOW VOLTAGE
```

Messages →

```
MESSAGES                    2/3
 7 : AC HIGH VOLTAGE
 8 : AC LOW VOLTAGE
 9 : AC LOW VOLTAGE
10: OVER LOAD
11 : CURRENT LIMITATION
12: CHANGE CLOCK BATTERY
```

Messages →

```
MESSAGES                    3/3
13:BATTERY FAIL
14:HZ HIGH
15:BATTERY LOW VOLTAGE
16:FAN FAILURE
17:DC %15 HIGH
18:DC %10 LOW
```

All errors occured in the rectifier are displayed in Messages section which consists of 3 pages.

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YENİMAHALLE/ANKARA
ULUS VD:735 071 24 94
TEL:+90 312 395 60 91   FAX:+90 312 395 60 93**

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Rectifier Settings

This is the screenshot where the general settings of the rectifier is started to adjust. In order to enter this screen, the PRG/ESC button must be pressed. In order to understand which statement is selected, background color is adjusted to white color. If any changes is desired on the selected statement, any of the up or down buttons must be pressed together with the SET button. In order to move on the next statement, SET button must be pressed.

```
BATT. CHR. VOLT.      26.7
BOOST CHR. VOLT.      28.8
NORMAL CHR. CUR.      02.6
BOOST CHR. CUR.       05.2
DC OUT. CURRENT       25.0
DC HIGH                 32
DC LOW                  22
```

Battery Charge Voltage	: Battery Charge Voltage (V)
Boost Charge Voltage	: Battery Charge Voltage (V)
Normal Charge Current	: Battery Charge Current (A)
Boost Charge Current	: Battery Charge Current (A)
DC Output Current	: DC Output Current (A)
DC High	: DC High Warning Voltage (V)
DC Low	: DC Low Warning Voltage (V)

```
AC HIGH                250
AC LOW                 184
BATT. FAIL Y/N           N
BATT. FAIL (V)          20
BATT. FAIL MIN        0010
MAINTENANCE Y/N          N
BATT.MAIN.WAIT.DAY      07
```

AC High	: AC High Warning Voltage (V)
AC Low	: AC Low Warning Voltage (V)
Battery Fail Y/N	: Battery Fail Level Control Active or Passive
Battery Fail (V)	: Battery Fail Level Value
Battery Fail MIN	: Battery Fail Control Time
Maintenance Y/N	: Battery Maintenance Yes/No
Bat.Main.Look.Day	: When the rectifier enters the maintenance mode, the battery charging

voltage should drop to DC Low level within the adjusted time. At the end of the set time, if the battery does not drop the DC Low level, the rectifier exits from battery maintenance mode automatically.

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```
BATT.MAIN.PER.(MONTH)    06
BATT.MAIN. DATE          ↵
HZ HIGH                  55
HZ LOW                   40
TEMPERATURE              65
BUZ Y/N                   N
AUT.BOOST.CHR. Y/N        Y
```

Battery Main. Per.(Month) : Battery maintenance period. How many months after the next maintenance is desired is adhusted under this setting.

Battery Maintenance Date: The value of the battery maintenance hour and date are entered under the head of this setting.

Hz High   : Phase Frequency High Warning
Hz Low   : Phase Frequency Low Warning
Temperature   : Rectifier Inner Temperature High Warning
Buz Y/N   : Buzzer Yes / No.   If "Y" is selected in case of any fault occured, the buzzer gives audible warning.
Aut.Bst. Charge Y/N   : Automatic boost charge. If Yes is selected, it works with BST.CHR.WAIT. AC.MIN in common which is stated on the next page. This mode is starts to work when AC supply on the device is de-energized. Device starts to work with boost charge mode if AC supply is energized after the adjusted time. Boost charge duration can be determined from the BST.CHR.DUR.(MIN) menu.

```
MAN.BOOST.CHR Y/N          N
BOOST CHR.DUR(MIN)        010
BST.CHR.WAIT.AC(MIN)      005
BATTERY ALARM             21
TEMP. COMPENSATION         N
BATTERY MV               018
FAN TEMPERATURE           45
```

Man.Bst.Chr. Y/N   : If boost charge is desired to start manually, Yes should be selected. Boost Charge Duration can be adjusted from the BST.CHR.DUR.(MIN) menu.

Bst.Chr.Dur.(MIN)   : Boost charge time
Bst.Chr.Wait.AC(MIN)   : Rectifier turns on with the Boost Charge Mode if Automatic Boost Charge is on Yes state and AC is de-energized with phase is energized again at the end of the adjusted time.
Battery Alarm   : Battery Critical Level Setitng(V). If the Battery Fail Control is "Y" which is stated on the previous page, when the battery voltage drops below the adjusted level, it gives a warning.
Temperature Comp.   : It is used for the choice of active/passive state of the temperature compensation function. Battery mV value is entered as battery mV value and this adjusts the rectifier charge system automatically if "Y" is selected.
Fan Temperature   : It gives a warning when device internal temperature is above its adjusted level.

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```
BATTERY DIS. Y/N          Y
BATTERY DIS. (V)          20
```

BATTERY DISCONNECT Y/N :Battery Disconnect active/passive
BATTERY DISCONNECT(V) :Battery Disconnect voltage level

SINGLE-LINE DIAGRAM

```
228                    26.7          DC
VAC                    VDC           OUT

                                 08.2A


                            02.3A
2 PCS. BATT.                        BATT.
SERIALLY CON.                        OUT
```
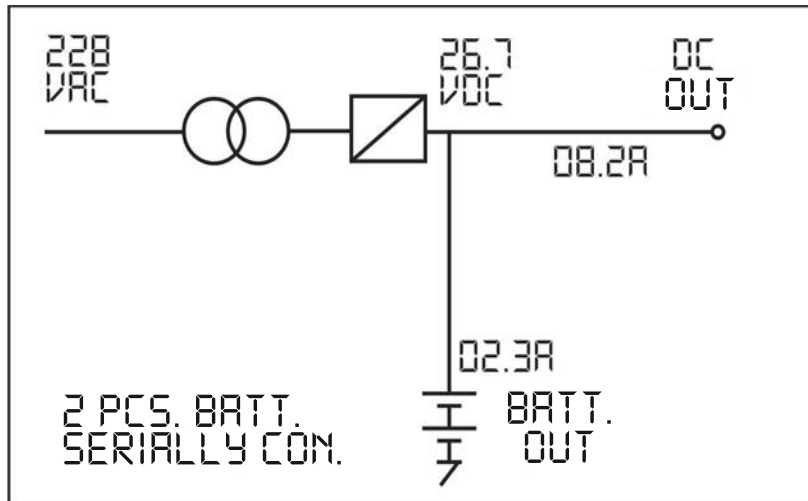
MCB STATE

```
         MCB STATES
AC MCB                    ON
OUTPUT-1                  ON
OUTPUT-2                  ON
OUTPUT-3                  OFF
OUTPUT-MAIN              ON
OUTPUT-BATT.            ON
```