Reneneration Module For Elevator

（RG series）

Instruction

Manual

Version: V1.3

Content

Foreword

Thank you for using RG series elevator Regeneration Module (here and after known as RG module). RG module is the next generation intelligent regeneration module developed by Shenyang Bluelight Automation Technology Co.,Ltd. It combines high-performace IGBT and advanced PWM control technology. While working with inverter, it will have a good effect on energy saving and will improve heat radiation of machine room. With user friendly interface and advanced technology integrated together, the system not only has outstanding performance, but also shows strong reliability in practice.

- Adopts advanced vector control technology to achieve accurate control of feedback current and minimize harmonic.
- Adopts advanced space vector PWM calculation method, compare with traditional sine/cosine PWM method, it improves elevator operation efficiency and saves more energy.
- Perfect protection and intelligent process system, ensure safe running and decrease cost.
- Polar self-adaption of input and output terminal make installation faster.
- Using LCD display to achieve friendly interface, it make adjustment easier.

This user guide has introduced on how to use RG module. Please read it carefully and understand safety items before use (installation, running maintenance).

This user guide is for elevator designer, installation and maintenance technician. The installation, commissioning and maintenance must be performed by trained technician.

Chapter 1 Safety Information

The following conventions are used to indicate precautions in this user guide. Failure to notice the precautions provided in this user guide can result in serious or even fatal injury to damage to the products or to related equipment and systems.

Indicates precautions that if not heeded could possibly result in loss of life or serious injury.

Indicates precautions that if not heeded could result in relatively serious or minor injury to the operator and damage to the product. Also, it should be noted that even for precautions, in certain situations could result in serious accident.

Indicate important information that should be memorized.

Confirmation upon Delivery


◇ **Never install an RG module that is damaged or missing components.** Doing so can result in injury.

Installation


◇ **Always hold the case when carrying the integrated controller** Otherwise RG module may drop and damage. ◇ **Please install the device to a metal surface or other non-flammable objects** Otherwise there is a fire-hazard potential. ◇ **Please mount the device to an object that is strong enough.** Otherwise RG module may drop and damage. ◇ **Please install the device in a dry place where water or rain could not get into.** Otherwise RG module could get damaged. ◇ **For the same cabinet to install RG module and brake resistor, install cooling fan or other cooling device and make sure the air temperature entering is below 45°C** Overheat can result in fires or other accidents. ◇ **Do not install the device in the environment containing flammable, explosive gas or nearby.** Otherwise there is risk of fire or explosion. ◇ **Do not leave any metallic objects inside RG module.** Otherwise it may damage the device and has fire-hazard potential.

Wiring

WARNING

◇ **Always turn OFF the input power supply before wiring terminals.**
Otherwise, an electric shock or fire can occur.

◇ **Wiring must be performed by an authorized person qualified in electrical work.**
Otherwise, an electric shock or fire can occur.

◇ **Be sure to ground the ground terminal.**
Otherwise, an electric shock or fire can occur.

◇ **While installing and wiring, make sure the power of RG module and connected inverter has been cut off.**
Otherwise, there is the possibility of injury.

◇ **Operate after all charge on capacity of relative equipment has been exhausted.**
Otherwise, there is the possibility of injury.

CAUTION

◇ **Check to be sure that the voltage of the main AC power supply satisfies the rated voltage of RG module.**
Injury or fire can occur if the voltage is not correct.

◇ **Do not perform voltage withstand tests on RG module.**
Otherwise, semiconductor elements and other devices can be damaged.

◇ **Connect inverter and RG module as diagram.**
Otherwise, a fire may occur.

◇ **Tighten all terminal screws to the specified tightening torque.**
Otherwise, a fire may occur.

Trial Operation

WARNING

◇ **Check to be sure that the front cover is attached before turning ON the power supply.**
Otherwise, an electric shock may occur.

◇ **After power on, RG module enter standby mode, please do’t touch the terminals because they has been charged.**
Otherwise, an injury may occur.

◇ **Avoid dropping screw or pad or other metal into RG module.**
Otherwise RG module could get damaged.

◇ **Ensure the shell of RG module is complete while using. After power on, please do not touch inner part of RG module in any way.**
Otherwise, an fatal Injury may occur and RG module could get damaged.

CAUTION
◇ **Do not touch the radiation fins (heat sink). It can become very hot.** Otherwise, a burn injury may occur. ◇ **Be careful when changing the settings. The module is factory set to suitable settings.** Otherwise, the equipment may be damaged.

Maintenance and Inspection

WARNING
◇ **Do not touch RG module terminals. Some of the terminals carry high voltages and are extremely dangerous.** Doing so can result in electric shock. ◇ **Always have the protective cover in place when power is being supplied to the module. When attaching the cover, always turn OFF power to the module through the MCCB.** Doing so can result in electric shock. ◇ **After turning OFF the main circuit power supply, wait for the time indicated on the front cover, and make sure the CHARGE indicator light has gone out, and then perform maintenance and inspection.** The capacitor will remain charged and is dangerous. ◇ **Maintenance, inspection, and replacement of parts must be performed only by authorized personnel. Remove all metal objects, such as watches and rings, before starting work. Always use grounded tools.** Failure to heed these warning can result in electric shock. ◇ **Do not change the wiring, or remove connectors or terminal, during power on period.** Otherwise, an electric shock may occur.

CAUTION
◇ A CMOS IC is used in the control board. Handle the control board and CMOS IC carefully. The CMOS IC can be destroyed by static electricity if touched directly.

Other

WARNING
◇ Do not attempt to modify or alter RG module. Doing so can result in electrical shock or injury.

Chapter 2 Introduction and Installation

This chapter introduces models, specifications, product appearance, size, and product function of RG module, and describes the checks required upon receiving or installing an Inverter.

2.1. Model Description

The model description of RG module is shown in figure 2.1 (Take 15KW for example).

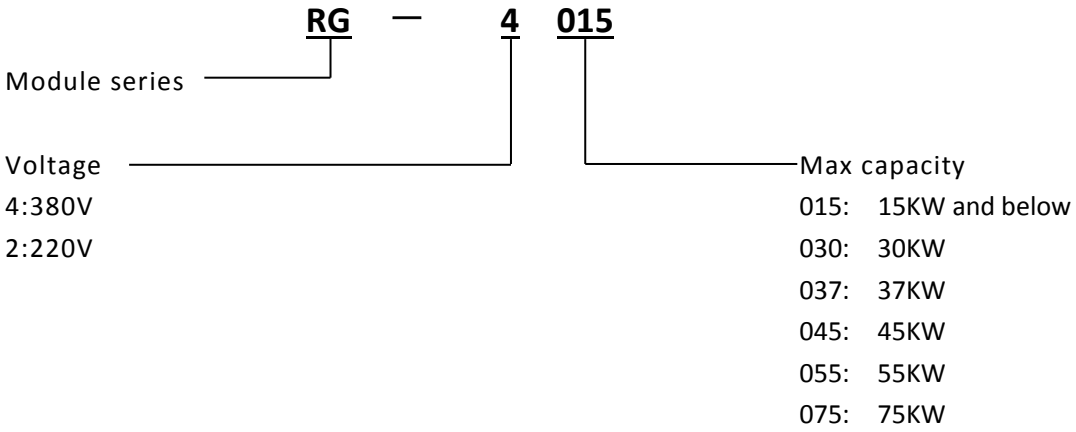


FIGURE 2.1 MODEL DESCRIPTION

2.2. Nameplate information

Nameplate information is shown in figure 2.2 below.

Nameplate attached to the right side of RG module describes the model, power, input, output, serial number, and other information about the controller.

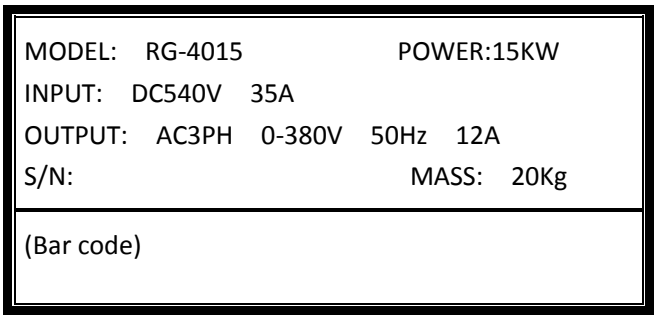


FIGURE 2.2 NAMEPLATE INFORMATION

2.3. Specifications

Specifications of RG module in chart 2.1.

CHART 2.1 SPECIFICATIONS

MODEL RG-40□□		4015	4030	4037	4045	4055	4075
MAX MOTOR POWER(KW)		15	30	37	45	55	75
RATED OUTPUT	MAX OUTPUT CURRENT (A)	26	46	52	64	78	110
	RATED OUTPUT CURRENT(A)	13	23	26	32	39	55
INPUT POWER	RATED VOLTAGE (V)	3-PHASE,AC380±15%, phase imbalance less than 10%					
	RATED FREQUENCY (HZ)	50±3HZ					
CONTROL FEATURES	ORIGIN FEEDBACK VOLTAGE	DEFAULT 610V, CAN BE ADJUST(THE MINIMUM VALUE SHOULD BE 30V HIGHER THAN EQUIVALENT DC VOLTAGE OF POWER NET)					
	BRAKING MODE	AUTO VOLTAGE TRACKING IN TWO DIRECTION					
	HYSTERESIS VOLTAGE	20V					
	FEEDBACK CALCULATION	SPACE VECTOR PWM(SVPWM) CLOSED LOOP VECTOR CONTROL					
	FEEDBACK MODE	SINE WAVE CURRENT					
	FEEDBACK POWER THD	<5%					
	POWER FACTOR OF AC	>0.96					
	EFFICIENCY	>90%					
	RESPONSE TIME OF BRAKING	BELOW 2MS					
	BRAKING TORQUE	150% & 60S,180% & 10S,200% & 5S					
	WORK SYSTEM	100% RATED TORQUE AND KEEP WORKING（DUTY RATIO 25%）					
	FAN CONTROL	AUTOMATIC START AND DELAY TO STOP					
MAIN PROTECTION FUNCTION	3 PHRASE PROTECTION	INCLUDE IMBALANCE POWER NET & LACK OF PHASE & ABNORMAL FREQUENCY AND SO ON					
	OVER VOLTAGE PROTECTION	DC 780V					
	OVER CURRENT PROTECTION	200% BEYOND RATED CURRENT					
	OVER HEAT PROTECTION	TEMPERATURE RESISTANCE DETECTION					
	SHORT CIRCUIT PROTECTION	YES					
I/O	RELAY OUTPUT	2 LINES, PROVIDE SWITCH CONTACT, EXTERNAL 24V DC, NO POLAR					
	OPTICAL ISOLATION INPUT	1 LINE, INTERNAL CURRENT-LIMIT RESISTANCE, EXTERNAL 24V DC, HAS POLAR					
DISPLAY	FUNCTION ACHIEVEMENT	BUTTON WITH LCD SCREEN					
	DISPLAY CONTENT	CURRENT STATUS, ENERGY FEEDBACK,CURRENT,BUS VOLTAGE, THRESHOLD SETTING OF FEEDBACK VOLTAGE, RTC CLOCK SETTING, FAULT RECORD ETC					

CHART2.1 SPECIFICATIONS (CONT'D)

USING AMBIENCE	**COOLING**	FORCED AIR COOLING
	PROTECTION DEGREE	IP20
	AMBIENT TEMPERATURE	-20℃~+40℃, WELL-VENTILATED
	HUMIDITY	BELOW 95%RH, NON-CONDENSING
	VIBRATION	<20HZ, >1G
	APPLICATION SITUATION	IN DOORS, ALTITUDE<1000M, WITHOUT DIRECT SUNLIGHT, DUST, CORROSIVE/EXPLOSIVE GASES, OIL FOG, VAPOR, WATER DRIPPING, OR SALTY SUBSTANCES
OTHER	**INTERNAL REACTOR**	YES
	INTERNAL NOISE FILTER	YES

2.4. Appearance

The appearance of RG series regeneration module is shown in figure 2.3.

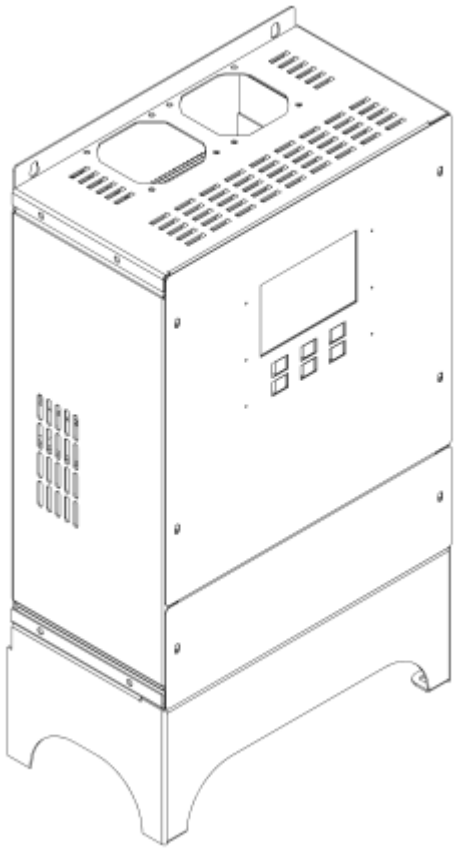


FIGURE2.3 APPEARANCE

2.5. Exterior Dimension

The exterior dimension of RG series regeneration module is shown in figure 2.4 and chart 2.2.

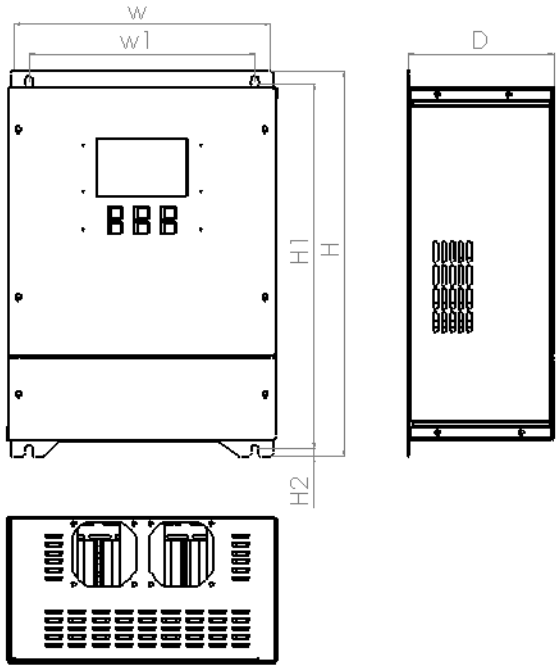


FIGURE 2.4(A) CLOSE TYPE EXTERIOR DIMENSION(<=30KW)

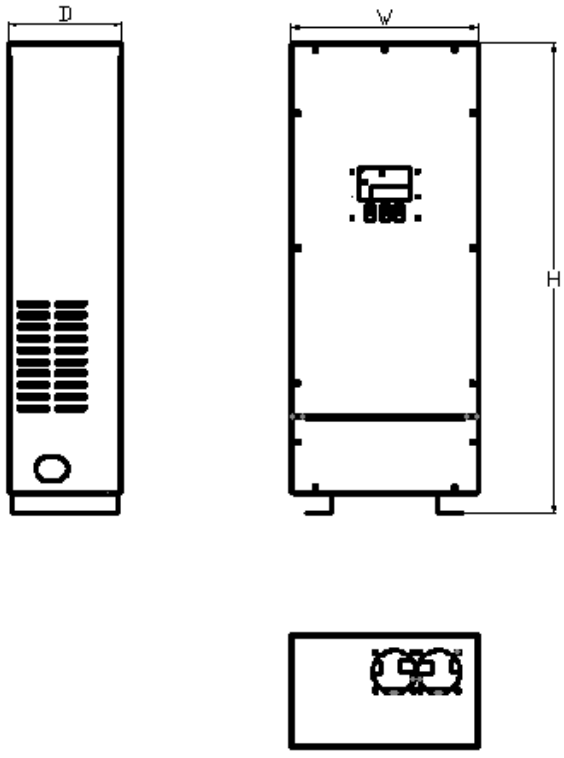


FIGURE 2.4(B) CLOSE TYPE EXTERIOR DIMENSION(30KW-75KW)

CHART 2.2 EXTERIOR DIMENSION

Voltage Level	Max Motor Power(KW)	Controller Model	Figure	Exterior Dimension						Weight (Kg)
				W	H	D	W1	H1	H2	
400V (3-phase)	15	RG-4015	Figure2.4 (A)	306	460	174	270	435	10	30
	30	RG-4030								30
	37	RG-4037	Figure2.4 (B)	403	1013	246	--	--	--	
	45	RG-4045								
	55	RG-4055								
	75	RG-4075								

2.6. Confirmation Upon Delivery

Check below items when receiving the products.

CHART 2.3 THINGS TO CHECK UPON DELIVERY

NOTES	METHOD
Check if product model is correct.	Check the model on the nameplate.
Check if product is broken.	Check exterior for any damage caused by shipment.
Check if mounting structure is loose.	Check mountingstructure. Tighten the loose components with a screw driver,if required.
Check if main control board is loose.	Remove the front cover,and check mounting structure. Tighten the loose components with a screwdriver,if required.

With any abnormalities above, please contact the company or regional office.

2.7. Installation

2.7.1. Installation Site

Install RG module in an area that meets the requirements listed in chart 2.4.

CHART 2.4 INSTALLATION ENVIRONMENT REQUIREMENTS

Type	Ambient Temperature	Ambient Humidity
Close	-10°C~+40°C	5~95%RH(No condensation)

Installation of controller should note the following:

1. Installthe module in a clean location which is free from oil mist and dust,or in a fully closed control cabinet which is completely shielded from floating dust.
2. Install the module in a place which metal powder, oil, water, and other foreign bodies can not enter.

3. Do not install the module in or nearby wood and other combustibles.
4. Installthe module in a place without radioactive substances.
5. Install the module in a place without harmful gas and liquid.
6. Install the module in a place without vibration.
7. Install the module in a place without chlorides.
8. Install the module in a place without direct sunlight.

2.7.2. Temperature Requirement

To enhance the reliability,the module should be installed in an environment temperature is not easy to rise. When installed in a cabinet,cooling fans or air conditioner are required to keep air temperature in the module below 45℃.

2.7.3. Protect the module from Foreign Object

Place a cover over the module during installation to shield it from metal powder produced by drilling. Be sure to remove the cover from the module after the completion of installation.Otherwise,ventilation will be reduced,causing the controller overheat.

2.7.4. Installation Orientation and Space

Install the module vertically to avoid reducing the cooling effect.When installing the module,please make sure that installation space is greater than that shown in figure 2.5, in order to rensure that RG module normal working and cooling.

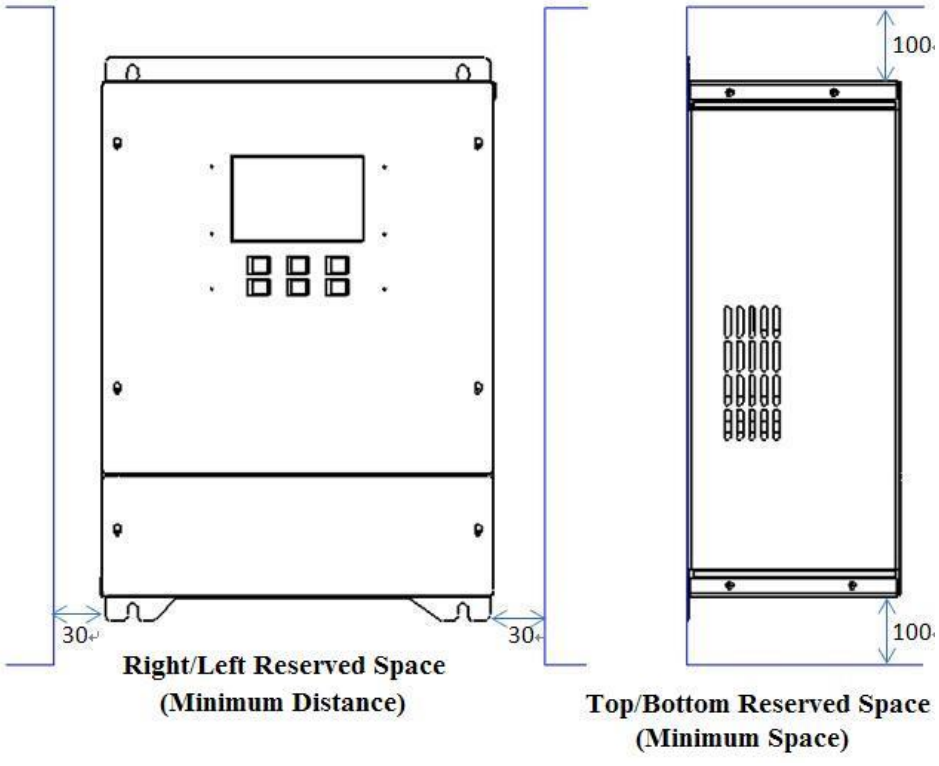


Figure 2.5 Installation Orientation and Space

Chapter 3 Wiring

This chapter describs the terminals and wiring specifications for main circuit.

3.1. Main circuit terminal

The definition of main circuit terminal is shown in Chart 3.1.

CHART3.1 MAIN CIRCUIT TERMINAL DEFINITION & FUNCTION

Terminal Symbol	Terminal name	Function Instruction
IN1,IN2	DC Bus terminal	Connect to positive pole and negative pole of DC BUS of inverter, non-polar
R/L1 , S/L2 , T/L3	Main power terminal	Connect to 3-phase AC power input, non-phase
⏚ (PE)	Protection Earth terminal (not Neutral)	Connect Protection Earth, protect personal safety

3.2. Main circuit wiring

3.2.1. Main circuit structure

The diagram of main circuit structure is shown in figure 3.1.

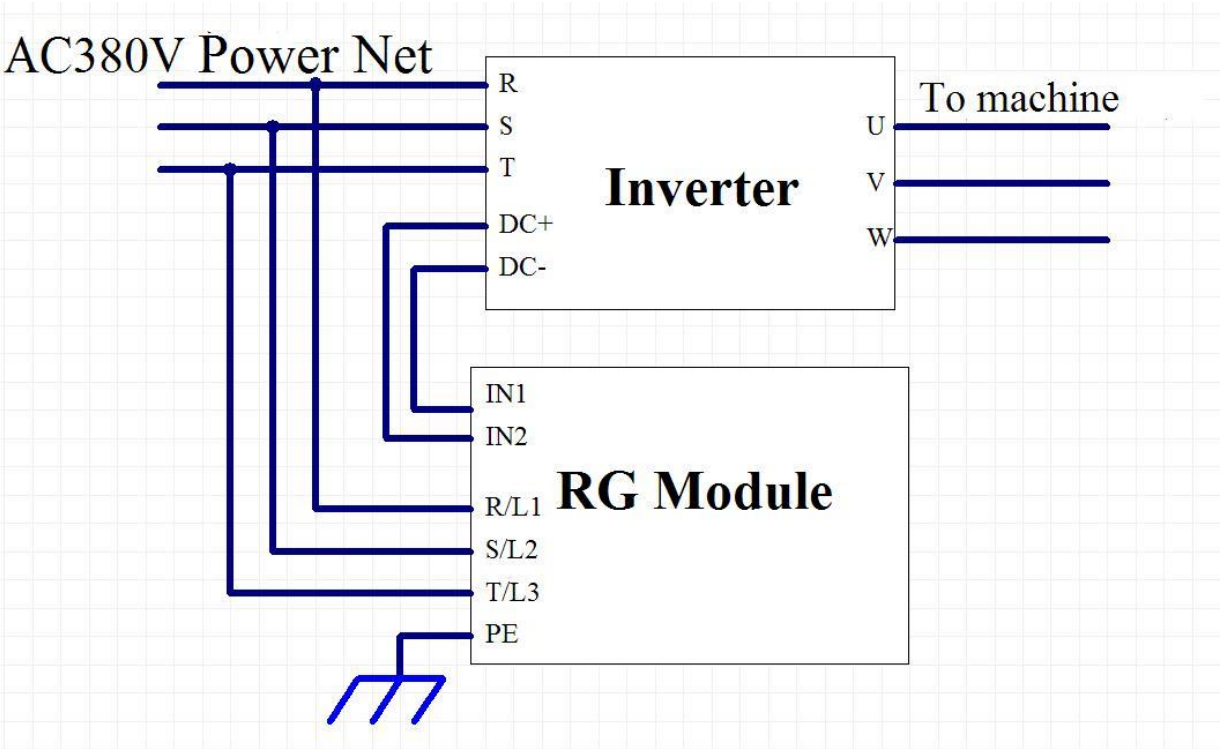


Figure 3.1 Diagram of main circuit

3.2.2. Specifications for main circuit wiring

The specifications for main circuit wiring is shown in Chart 3.2.

CHART3.2 WIRE SIZE AND CLAMPING TORQUE FOR MAIN CIRCUIT WIRING

Model	Terminal Symbol	Screws	Clamping Torque N·m	Wire size (min) mm^2	Wire size (Rec) mm^2	Wire type
RG-4015	IN1,IN2,R/L1,S/L2,T/L3	M4	1.2~1.5	4	4	Use power cable (e.g 600V vinyl power cable)
	PE			2.5~4	2.5	
RG-4030	IN1,IN2,R/L1,S/L2,T/L3			6~10	6	
	PE			6~10	6	
RG-4037	IN1,IN2,R/L1,S/L2,T/L3	M5	2.5~3.5	10	10	
	PE					
RG-4045	IN1,IN2,R/L1,S/L2,T/L3			16	16	
	PE					
RG-4055	IN1,IN2,R/L1,S/L2,T/L3			16~25	16~25	
	PE					
RG-4075	IN1,IN2,R/L1,S/L2,T/L3			35	35	
	PE					

3.2.3. Main circuit wiring

3.2.5.1 WIRING OF MAIN CIRCUIT INPUT

When wiring the main circuit, please pay attention to the following matters

1. Internal Fuse

   RG module has installed Fuse inside DC input, input terminals can be directly connect to positive pole and negative pole of inverter BUS.

2. Wiring of input terminals

   Input terminals IN1,IN2 should connect to positive pole and negative pole of inverter BUS. Input terminal do not distinguish the polar without special requirement. Easy for wiring.

3.2.5.2 WIRING OF MAIN CIRCUIT OUTPUT

1. Internal Fuse

   RG module has installed Fuse at output side. When short circuit or other serious fault happens, it will protect power net and RG module, and avoid fire.

2. Internal isolation relay

   Isolation relay has been installed at output side. When the power net gets unusual or the equipment meets default, RG module will break off from power net automatically and avoid from "Lonely Island" effect. When the fault disappear, the module will connect to power net again. So it raise the reliability of equipment and minimize effect to power net.

3. Wiring of output terminals

Output terminals R/L1,S/L2,T/L3 should be connected to 3-phase R,S,T. No need to distinguish phase without special requirement. System will adjust work status according current phase, this makes wiring easy.

3.3. Assistant Contact

Assistant contact can be divided to two type, monitor and enable. If there's no wire on assistant contact, RG module will work in normal mode as default.

3.3.1. Definition of Assistant Contact

The definition of assistant contact is shown in chart 3.3.

Chart 3.3 Definition of assistant contact

Contact Symbol	Contact Name	Function Description
X+	Positive polar input of feedback enable	Judge if enable feedback or not through external power, connect to positive polar of the power
X-	Negative polar input of feedback enable	Judge if enable feedback or not through external power,connect to negative polar of the power
Y1	Feedback status output 1	Relay contact. It will adhere when RG module start to work in feedback status, and will break when standby
Y2	Error output 2	Relay contact. It will keep open when RG module works normally, and will adhere when error
COM	Common contact	Common terminal of output relay

3.3.2 Wiring of Assistant Contact

3.3.2.1 INPUT CONTACT

Assistant contact X+ and X- should be connected to external 24V and a controllable contact. Do not inversely connect it. When the external controllable contact adhere, RG module will be disabled, then no feedback when elevator is braking. When the external controllable contact break, RG module will be enabled, then power will feedback to power net while braking. When assistant contact is hung in the air, it will enable RG module as default.

3.3.2.2 OUTPUT CONTACT

Output contact is the controllable switch of relays. Relative contacts are Y1,Y2 and COM. Normally Com is common ternimal of groud. By judging open or close status of relay contact through external circuit,RG module can get the information. Y1 contact adhering means feedbacking and Y1 contact keeping break means standby status. Y2 contact adhering means error occur, and Y2 break means RG module works normally.

3.3.3 Parameters of assistant contact

Chart 3.4 Parameters of assistant contact

Terminal Symbol	Definition	Usage	Interface Tech Spec			
			Interface type	Rated Capacity	On/off time	Max Speed
X+	Enable work input Positive polar	Input	OC	DC24V 7mA	10mS	100Hz
X-	Enable work input Negative polar					
Y1	Work status output	Output	Relay	DC 10A30V AC 10A250V	5/10mS	20cpm
Y2	Error output					
COM	common					

3.4. Precautions with wiring

1. Before connection, please pay attention to the precautions mentioned in chapter 1.2, especially the “warning” and “caution” part.

2. Before connection,make sure that the power supply is off, and the charge indicator LCD is out.

3. Please ask professional engineers with training and authorization for the wiring.

4. The wire size and clamping torque should follow the regulation of Chart 3.2 and chart 3.4

5. To increase wiring convenience and reliability,it is better to use round crimp type terminal (for main circuit) and club-shaped terminal (for assistant contact).

6. Make sure the connection ofground terminal PE is secure, do not share the ground cable with other devices such as welding machines or power tools. Minimize length and dimension of groundcable and ground at one point.

7. After wiring, make sure check the following:

1) Correctness and reliability of connection.

2) Whether there is leftover, such as wire, screw and metal filing

3) Whether the connection of the screw, the terminals and the connection parts is loose.

4) Whether the bare conductor of terminals is connected with other terminals.

Chapter 4 LCD Operation Interface

RG module is equipped with LCD display panel.It provides a nice and easy human-machine interface with both Chinese and English on display. This chapter will introduce the composition & function & display & operation mode & switch method etc.

4.1. Composition & Display & Function

LCD display panel is composed by one LCD screen and six buttons. The appearance is shown in Figure 4.1.

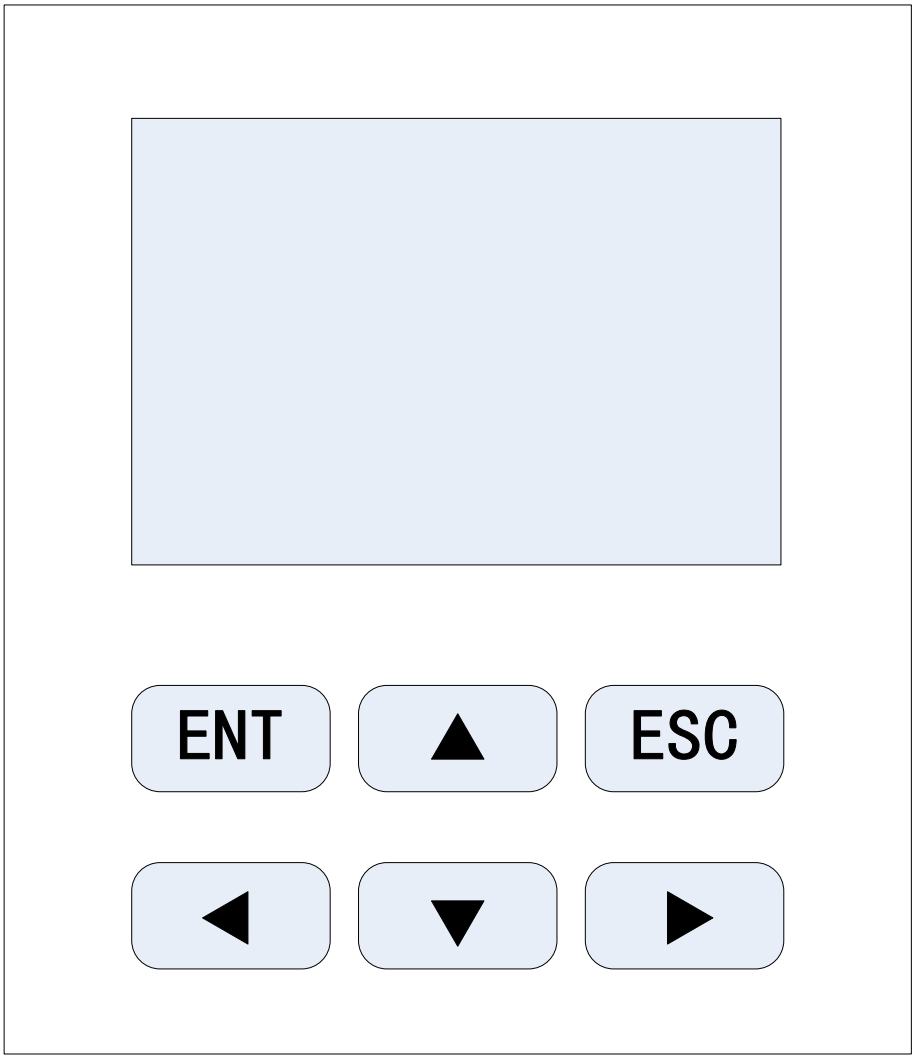


Figure 4.1 Appearance Diagram of LCD operation interface

4.1.1. Operation Button

At the bottom of LCD operation interface, there are 6 buttons under thin film. Their definition and function are shown in chart 4.1.

Chart 4.1 Definition and Function of the buttons

Button	Definition	Function
ENT	[ENT] （[Enter]）Button	Enter menu, and enter next submenu. Input set value and send command. Check fault information.
ESC	[ESC] （[Eixt]）Button	Back to previous menu.
▲	[UP] （[Up]）Button	Up scroll the menu or edit the value. Second function: Up scroll 10 items in Parameter setting interface.
▼	[DOWN] （[Down]）Button	Down scroll the menu or edit the value. Second function: Down scroll 10 items in Parameter setting interface.
◀	[LEFT] （[Left]）Button	Select left bit of the setting parameter.
▶	[RIGHT] （[Right]）Button	Select right bit of the setting parameter.

4.1.2. LCD display

When RG module power on, it will enter main menu. The main menu is shown in Figure 4.2.

Main menu shows current status of RG module. These status include working status & BUS voltage & feedback current & current time & total feedback energy. Under this interface, all above information will be renew in real time.

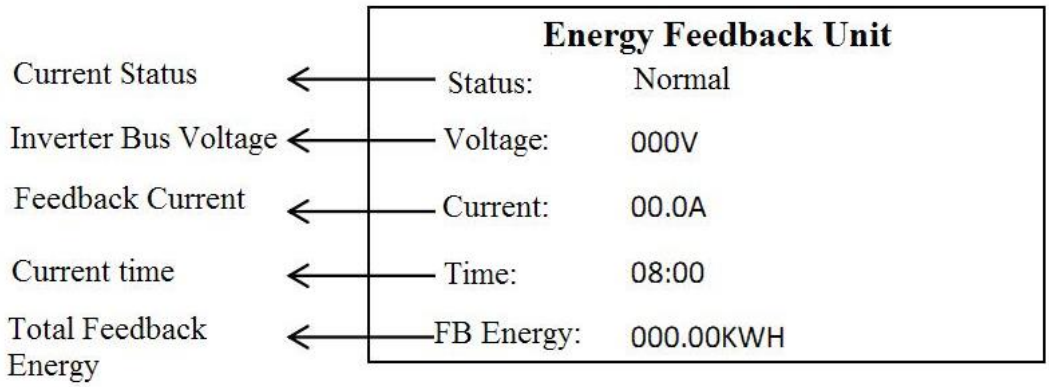


Figure 4.2 Main menu of LCD display panel

The description of each part of main menu is as follows.

1. Status of Feedback unit:

   Normal:RG module work normally and standby. Able to feedback energy when BUS voltage raise.

   FBing:RG module is feeding back, there is current sending back to power net.

   Feedbackcurrent and Total Feedback Energy will show amount of feedback energy.

   OverVol: Fault status, BUS voltage is beyond overvoltage conservation value.

   UndrVol: Fault status, BUS voltage is below undervoltage conservation value.。

   OverCur: Fault status, feedback current is beyond conservation value.

   OverTmp: Fault status, Temperature of cooling fin is beyond conservation value.

   EnetFlt: Fault status, current status of external net can not fulfill requirement.

   InterFlt: Fault status, RG module is abnormal.

   The detail introduction of above fault can be found in Chapter 4.5。

2. Inverter BUS voltage:

   Show BUS voltage of current feedback unit (Inverter).

3. Feedback current:

   Show the value of feedback current.

4. Total feedback energy:

   Show total feedback energy of RG module.

4.1.3. Function of LCD display

The LCD display has functions as follows.

1. Display BUS voltage.
2. Display feedback current.
3. Display total feedback energy.
4. Monitor status of RG module.
5. Set threshold of BUS voltage.
6. Set control parameters of PI adjustment.
7. Set to enable/disable RG module.
8. Password setting.
9. LCD setting.
10. Copy out and write in parameter.
11. Fault record.
12. Clock setting.

4.2. Structure and switch of interface

The structure and interface switch process of LCD operation interface, as shown in Figure.4.3

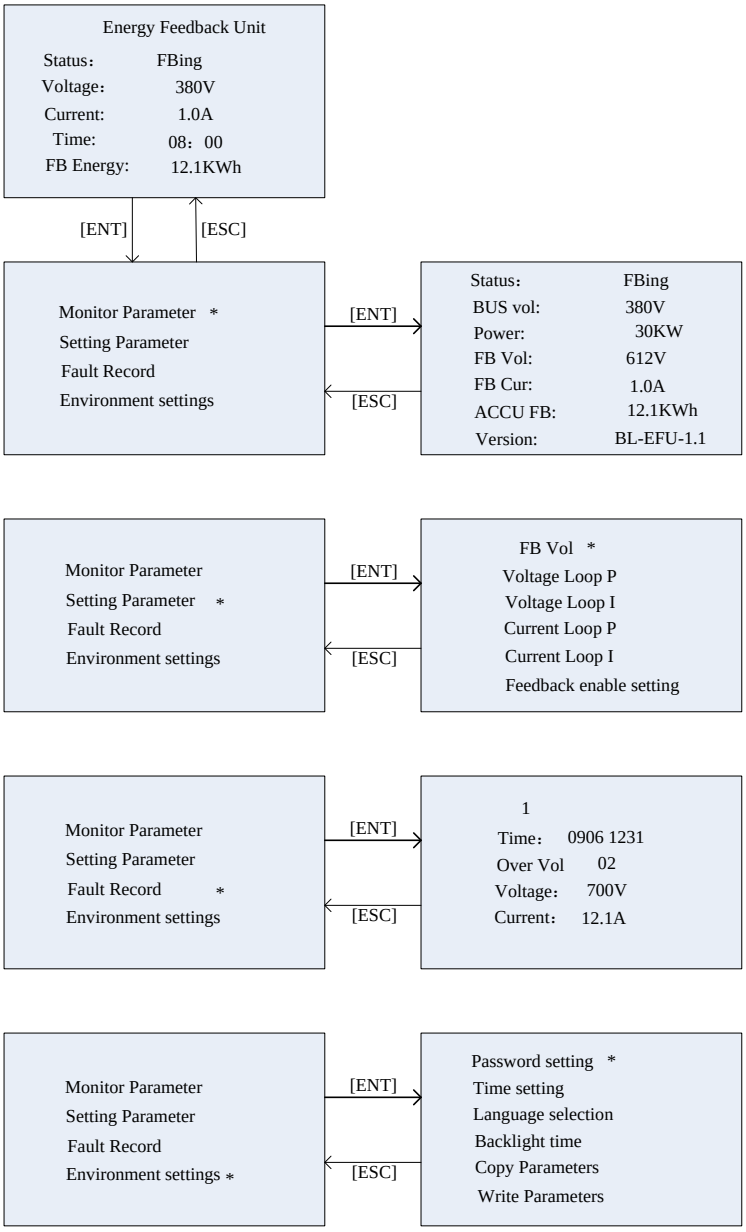


Figure 4.3 The structure and switch process of LCD

4.3. Paramter setting

Select parameter setting in main menu and enter. Before entering, you should input password first. If the password is correct, then you can enter next interface, as shown in Figure 4.4.

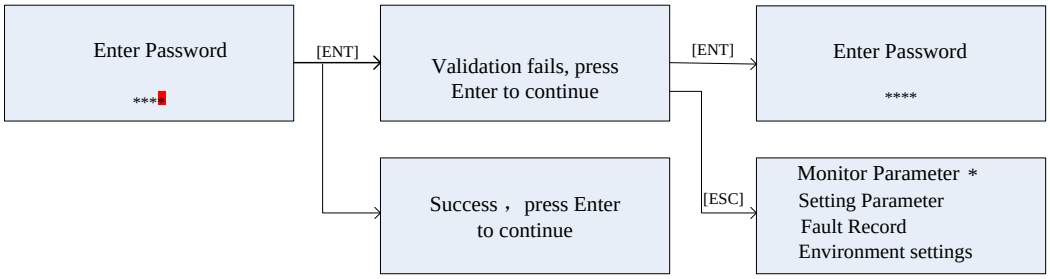
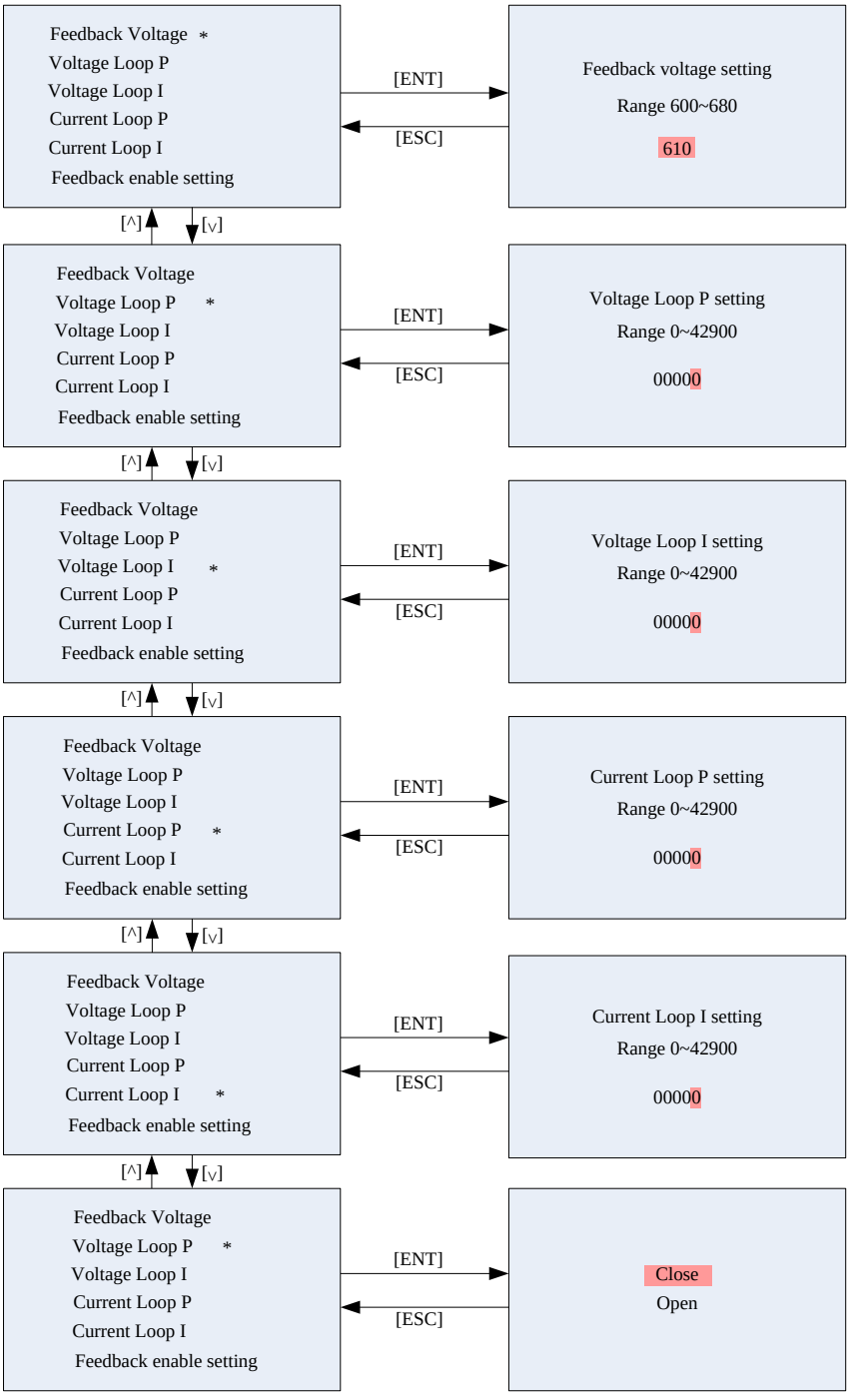


Figure 4.4 Password validation

After password validation, it will enter setting interface. Under parameter setting interface, you may press ▲, ▼ to change the value , press ◄, ► to move the cursor, press [Enter] to save parameters. If setting is correct and save successfully, it will show “Success, press ESC to continue”. If setting is incorrect or save fail, it will show “Setting Fail”.

Ensure RG module is not working in feedback status while setting. Otherwise setting is forbidden. The interface of setting parameter is shown in Figure 4.5.



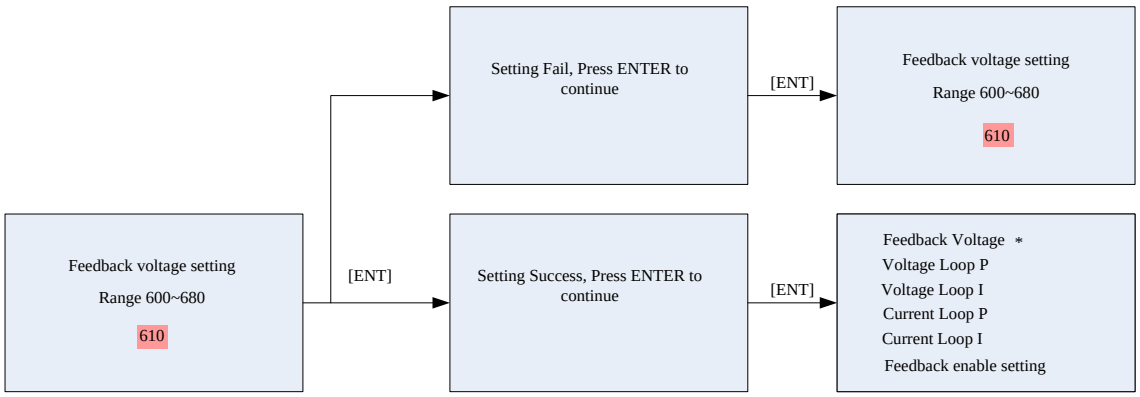


Figure 4.5 Parameter setting interface

4.4. Enviroment setting

In environment setting interface, the display language, the parameter visit grade, input password and the shortcut menu of the operator can be set.

In environment setting interface, you may perform setting through LCD operator. Including password setting & time setting & language select & backlight time & parameter copy and parameter write. The detail is as follows:

Password setting: Before operation, it will ask for input password. If the password is correct, then you can change it. You may reset and change the password in enviroment setting.

Time setting: You may change time displayed on LCD panel.

Language select: You may switch display language between Chinese and English.

Backlight time: The LCD screen will automatically shut down to save energy if no operation has been done during a certain time. You may adjust the time of shutting down backlight through this parameter.

Parameter copy: Copy parameters of RG module to operator.

Parameter write: Write parameters in RG module from operator.

In setting interface, press ▲, ▼ button to change the value, press ◀, ▶ button to move the cursor, and press [ENTER] to confirm.

The interface of inviroment setting is shown in Figure 4.6.

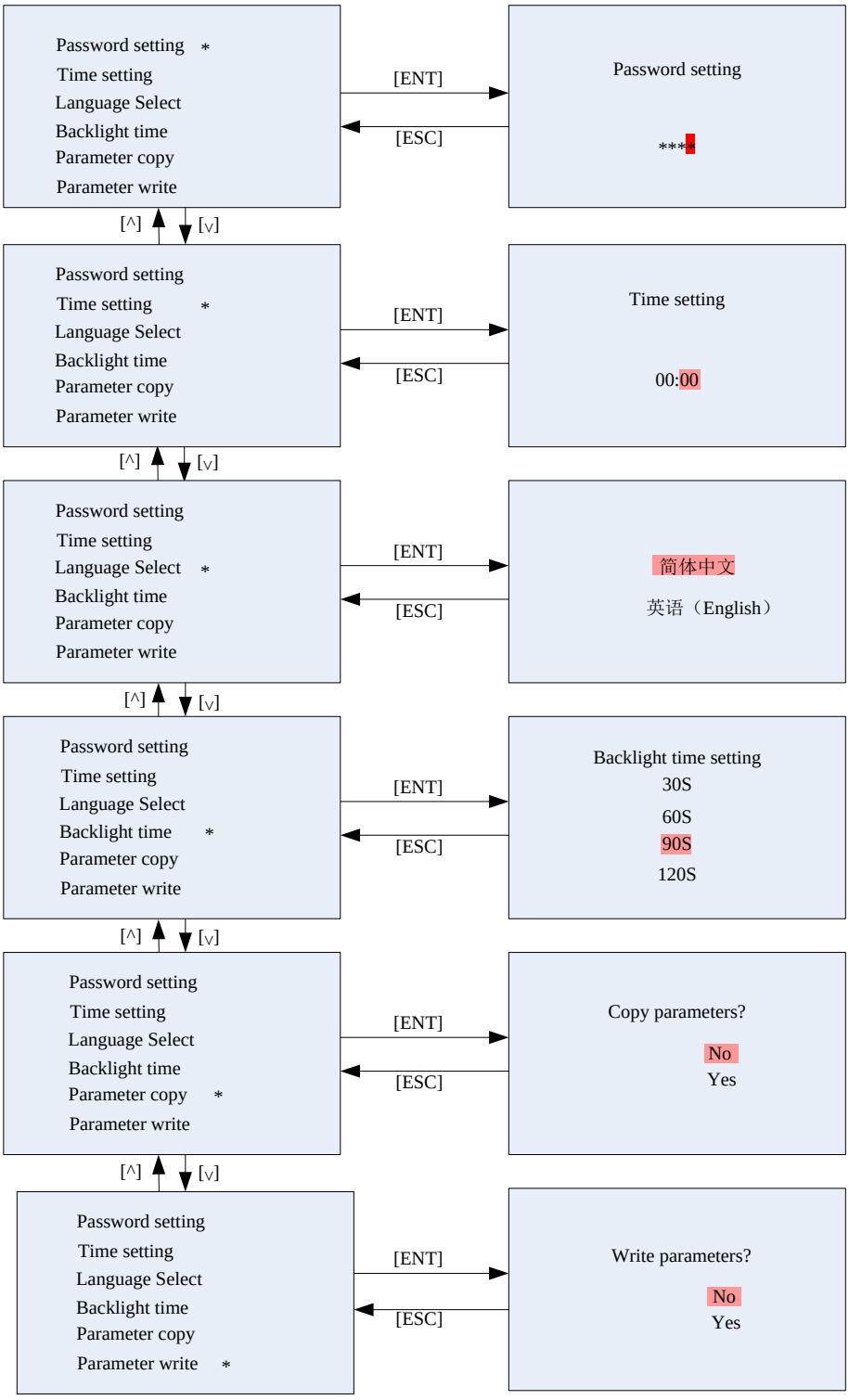


Figure 4.6 Enviroment setting interface

4.5. Fault Record

Select fault record in main menu and press [ENT] to enter. It will show the last 10 fault records. The 8 numbers in first line refer to the time when fault occurred. For example, 03040800 refer to Mar.4th , 08:00. And the following is content of the fault. Fault diagnosis and treatment is shown in Figure 4.2.

Figure 4.2 Fault diagnosis and treatment

Fault name	Reason	Treatment
Under Voltage	BUS voltage is below 380V	Check the wiring of inverter and RG module, Check if input voltage is normal.
Over Voltage	BUS voltage is beyond 670V	RG module does not work and inverter do not properly brake.
Over Current	Feedback current is beyond limit	Check the capacity of RG module fit for current inverter. Check if there is short circuit.
Over Heat	Temperature of RG module is beyond limit	Check if the fan works properly
External fault	Voltage of power net is abnormal	Check if the voltage of power net can fulfill feedback requirement
Internal fault	Inner part of RG module is abnormal	Contact with factory
Overtime	Single working time is beyond limit	Check working time while braking

Chapter 5 Compact Operation Panel

The operation panel is composed of 3 buttons and 4 LEDs. The appearance is shown in Figure 5.1.

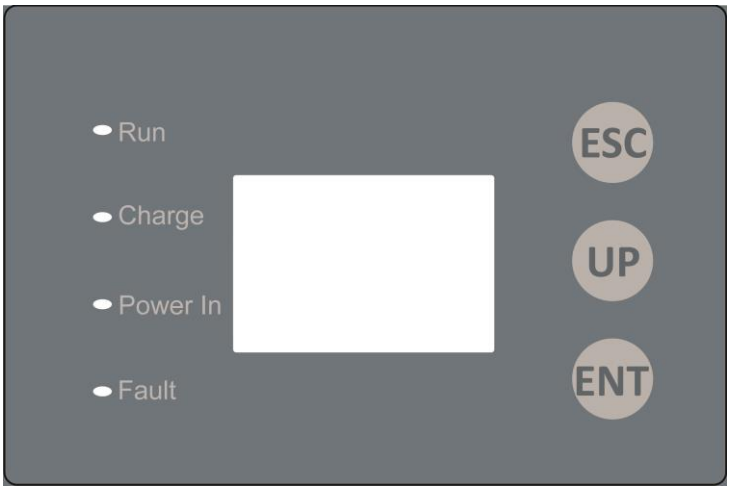


Figure 5.1 The appearance of operation panel

5.1 Defintion of LED indicators

The label and function of 4 LED indicators on operation panel is shown in Chart 5.1.

Chart 5.1 The label and function of 4 LED indicators on operation pane

Label	Function
Run	Working indicator. While RG module work normally, this indicator flicker.
Charge	No sense.
Power In	External power indicator. While external power is connected, this indicator light on. While external power cut off, this indicator turn off.
Fault	Fault indicator. While device has fault, this indicator light on. After fault reset, this indicator turn off.

5.2 LCD panel

5.2.1. Monitor status of LCD panel

While RG module work, LCD panel will show related parameter, DC Bus voltage, output current, and accumulated power according to current working status.

Regeneration Module
Voltage: 540 V
Current: 0.0 A
Power: 0 Kwh

Figure 5.1 Monitor status of LCD panel

5.2.2. Setting method of LCD panel

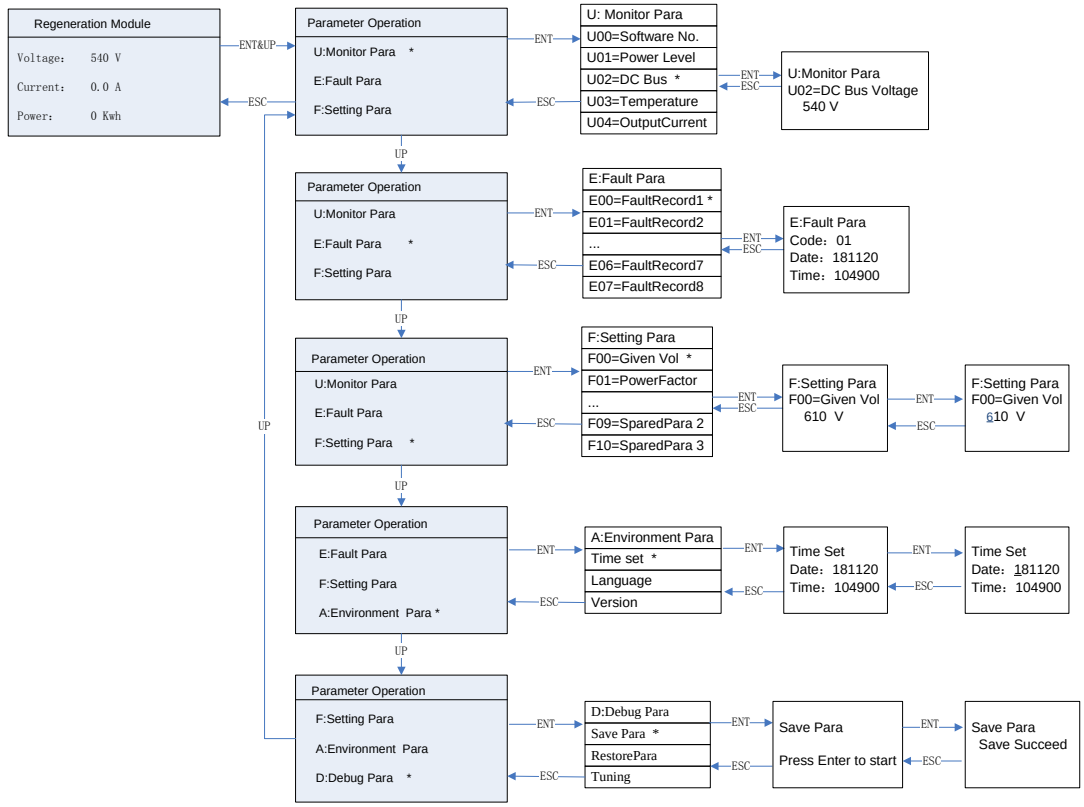


Figure 5.2 Setting method of LCD panel

Press ENT and UP button together at main menu to enter 1st level menu. Press Up button to switch option, press ESC to return main menu.

Press ENT at 1st level menu, it will enter to 2nd level menu. At 2nd level menu, it show operational parameters. Press ENT at 2nd level menu, it will enter to 3rd level menu. At 3rd level menu, it will show detail value of parameters. Then press ENT, the value will invert to black background, press UP button will change its value. Press ENT to confirm or ESC to backspace.

Note: **The parameters in Monitor Para and Fault Para are read-only, cannot be modified.**

5.3 Setting Parameter Description

Chart 5.1 Setting parameter desciption

Parameter	Description	Range	Default Value
F00:Given Voltage	Working Voltage of RG module	600-700	610
F01:Correction Factor	Regeneration Correction Factor	800~1200	1000
F02:VoltageLoopP	VoltageLoopP	0~5000	1000
F03:VoltageLoopI	VoltageLoopI	0~5000	1000
F04:VoltageLoopLimit	VoltageLoopLimit	0~200	180
F05:CurrentLoopP	CurrentLoopP	0~5000	1000
F06:CurrentLoopI	CurrentLoopI	0~5000	1000
F07:CurrentLoopLimit	CurrentLoopLimit	0~100	100
F08:Spared Para 1	Spared Para 1	0~65535	0
F08:Spared Para 2	Spared Para 2	0~65535	0
F08:Spared Para 3	Spared Para 3	0~65535	0

Note: After changing setting parameter, please enter to D:Debug Para->Save Para, perform save operation. Otherwise, the changed parameter will lose after power off.

Chapter 6 Maintenance

6.1 Safety Precautions for Drive Maintenance & Storage

◇ The maintenance should only be done after cutting off power.
◇ There are high voltage terminals, please DO NOT TOUCH.
◇ Only authorized and qualified personnel are allowed to inspect/service integrated controller.
◇ DO NOT remove or change terminals and air wire when module power on.
◇ After maintenance, please make sure all terminals and contactors are tightly secured.
◇ DO NOT touch components on control board directly.
◇ Avoid to crash.

6.2 Daily Check

Daily check normally including:

1） Check if the LCD indicator is working properly.

2） Check if RG module works normally while braking.

3） Check fault record, confirm if there were faults. If the faults often occurs, trouble shoot should be done.

4） Check if fan is working properly.

Chapter 7 Warranty

In normally using condition, if the module break down, factory will answer for repairment in warranty period. RG module warranty period is 18 months after manufacturer .However, even within the 18-month warranty period, repair cost will be charged in the following cases:

1） Damage caused by miss-operation – not following manual guidance.

2） Damage due to use outside rated range.

3） Damage due to abnormal application of the drive.

4） Damage due to natural environment, such as fire, flood, earthquake ect.