DC32D
GENSET CONTROLLER
USER MANUAL

Software Version

No.	Version	Date	Note
1	V1.0	2024-05-28	Original release.
2			
3			
4			
5			

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Controller models to which this manual applies:
DC32D

Symbol Description

Symbol	Description
 Note	Remind operators to operate correctly, otherwise it may cause the equipment not to work correctly.
 Be care	It is indicated that potential hazards can damage equipment without proper precautions.
 Warning	It is indicated if appropriate preventive measures are not taken, potentially dangerous situations may result in death, serious personal injury or significant property losses.


Warning

1. The installation of this equipment must be carried out by professionals.
2. When installing and operating the controller, please read the entire instruction manual first.
3. Any maintenance and commissioning of the equipment must be familiar with all the equipment
4. t, safety standards and precautions in advance, otherwise it may cause personal injury or damage to related equipment.
5. The engine must have an overspeed protection device independent of the controller system to avoid casualties or other damage caused by engine out of control.
6. After the installation of the controller is completed, please verify that all protection functions are valid.


Be Care

1. Please keep the good connection of the power supply of the controller. Do not share the connection lines of the positive and negative electrodes of the battery with the floating charger.
2. During the operation of the engine, do not disconnect the battery,otherwise it may cause damage to the controller.

Catalogue

1. Summary

This Controller Series is specialized for small diesel, gasoline, gas generator sets, start, stop,monitor and defaults checking as well as parameters setting.

This controller has manual start, stop, and AMF functions.It has a point array LCD screen, can display various faults in the same time that the genset will be stopped once it can not work smoothly.

The controller has built-in simplified Chinese, traditional Chinese, English, Spanish, Russian, Türkiye, French and other display interfaces for selection, more language can be set according to user's request. All the parameters can be configured through the front face buttons or use programmable interface by USB to adjust via PC. It can be widely applied for all kinds of auto control system of gensets.

2. Main Features

- 32 units Micro-procession technology is used.
- 1.8 inches 128*64 LCD display with backlight, option language interface , user's language set if necessary.
- PC front face panel, which is water-proof, oil-proof, UV proof so that the durability is longer.
- It has **AMF** function, which can monitor the status of mains electricity and power generation, and automatically control the ATS conversion switch;
- USB Port: parameters can be set even without power.
- All the parameters can be set through front panel buttons.
- Collect and display a variety of engine and generator parameters.
- Records function: relative faults shall be recorded in real time.
- It has 5 relay outputs, 1 of which are configurable, and more than 10 functions can be selected for each channel.
- 2 switch value input, and each can be set as max 10 functions.
- 2 sensor simulation input connectors, various kinds of units can be set.
- Sensor can be self-defined by front face button or PC software.
- Various of crank conditions(RPM,Frequency) can be chosen
- Control Protection:Auto Start/Stop of genset,load transfer and perfect failure display and protection.
- Standard water-proof rubber gasket. The waterproof can reach IP65.
- Module design: All the connections are adapted with European connectors so that installation, connection, repair and replacement can be more easily.

3. Parameters Display

- Engine RPM
- Engine temperature
- Engine fuel level
- Engine battery voltage
- Generator voltage L-N
- Generator Frequency Hz
- Successful start Times
- Current running time
- Total running time
- Classes maintenance notice
- Input state
- Output state
- Mains phase voltage L-N
- Mains phase voltage L-L

- Mains Frequency Hz

4. Protection

- Over speed
- Under speed
- Low oil pressure
- High temperature
- Low fuel level
- External emergency alarm
- Sensor Open
- Over Frequency
- Under Frequency
- Over voltage
- Under voltage
- Maintenance expire
- Low water level alarm
- Crank failure
- Stop Failure
- Over battery voltage
- Under Battery voltage

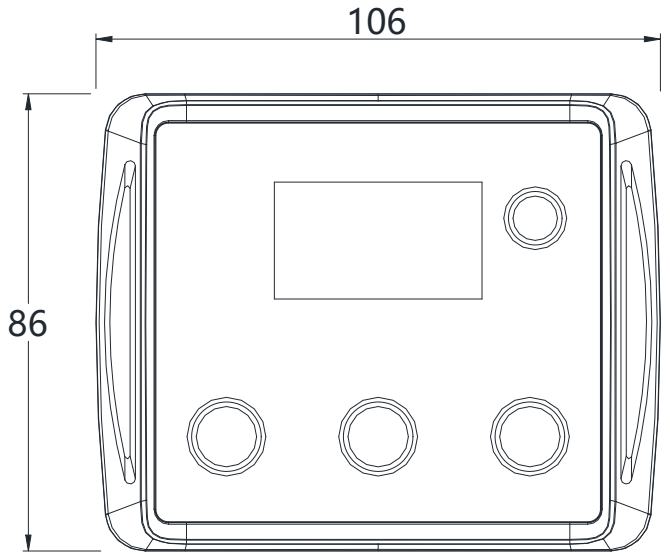
5. Parameters

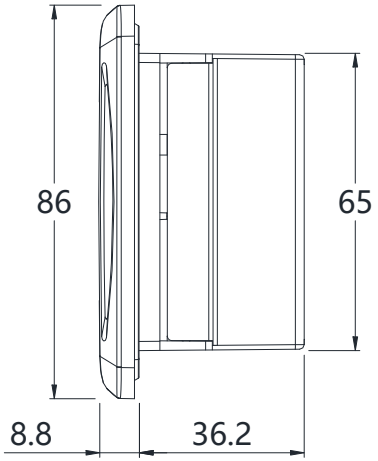
Options	Parameters
Operation Voltage	DC8-36V Continuous
Power Consumption	Standby：24V：MAX 1W
	Working：24V：MAX 2W
AC Voltage Input	1P2W(L-N input) 30VAC-360VAC(ph-N)
Rotate speed sensor Frequency	50-9000Hz
Generator Frequency input	50/60Hz
MAX Accumulating Time	9999.9Hours（Min Store time:6min）
Fuel Relay Output	MAX 1Amp DC+VE Supply voltage
Start Relay Output	MAX 1Amp DC+VE Supply voltage
AUX. Output 1	MAX 1Amp DC+VE Supply voltage
Gens Close Output	MAX 10Amp AC(ph-N) Output
Mains Close Output	MAX 10Amp AC(ph-N) Output
Switch value input	Available if connecting with Battery -
Insulation strength	Apply AC2.2kV voltage between high voltage terminal and low voltage terminal; The leakage current is not more than 3mA within 1min.
Working condition	-25-65℃
Storage condition	-40-85℃
Protection Level	IP65：when waterproof rubber gasket is added between controller and its panel
Overall dimension	106mm×86mm×45mm

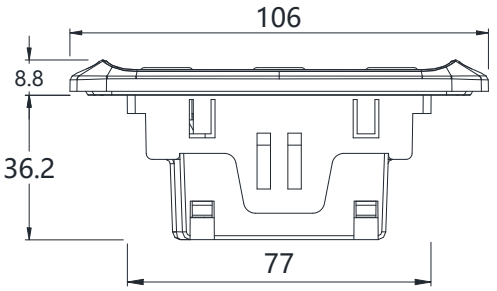
Panel cutout	78mm×66mm
Weight	0.25Kg

6. Overall Dimension and Wiring Diagram

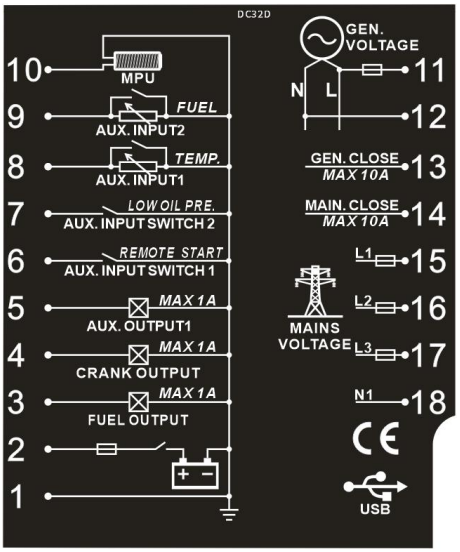
◆ **Overall Dimension:**





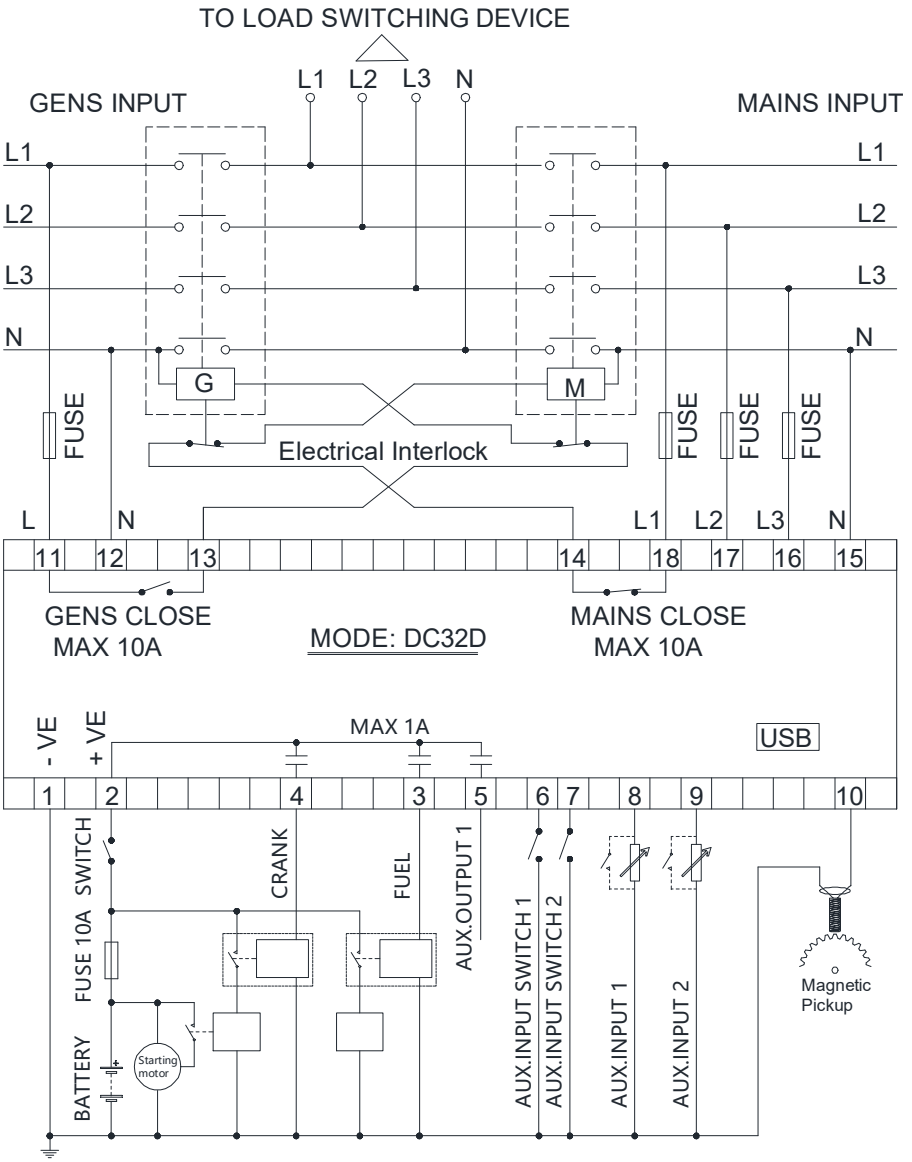


◆ **Descriptions of terminal connection**



No.	Function	Description	Cable cross sectional area
1	Battery Negative Input B-	Controller power supply input B-.	1.5mm^2
2	Battery Negative Input B+	Controller power supply input B+.	1.5mm^2
3	Fuel Output	Rated current 1A; power supplied by PIN 2.	1.0mm^2
4	Crank Output	Rated current 1A; power supplied by PIN 2.	1.0mm^2
5	Aux. Ouput1	Rated current 1A; power supplied by PIN 2.	1.0mm^2
6	Remote Start Input	Ground connected is active (B-)	1.0mm^2
7	Aux. Input switch 2	Connect to low oil pressure switch input according to function selection	1.0mm^2
8	Engine Temp. Input	Connect temperature sensor or switch input according to function selection	1.0mm^2
9	Fuel level Input	Connect fuel level sensor or switch input according to function selection	1.0mm^2
10	Magnetic Pickup	Connect to speed sensor, and shielded wire is recommended. The other end of speed sensor is connected to B-.	1.0mm^2
11	Generator Voltage L	Gens voltage Input，AC30-360V.	1.0mm^2
12	Generator Voltage N		1.0mm^2
13	Gens Close	Generator L1 active output, 10Amp max.	1.5mm^2
14	Mains Close	Mains L1 active output, 10Amp max.	1.5mm^2
15	Mains Voltage L1	Connected to the mains L1 phase.	1.0mm^2
16	Mains Voltage L2	Connected to the mains L2 phase.	1.0mm^2
17	Mains Voltage L3	Connected to the mains L3 phase.	1.0mm^2
18	Mains Voltage N	Connected to the mains N phase.	1.0mm^2

◆ **DC32D Typical Wiring Diagram**



⚠***Note:Please don't move battery during running status or it may cause the controller broken!***

7. Installation instruction

◆ The controller should be installed by four accessories and screw.

◆ Panel Cutout：W78mm*H66mm.

Note: If the controller is installed directly in the genset shell or other fluctuated equipment, the rubber pad must be installed.

◆Battery Voltage Input

DC32D controller is suitable for 98-18 VDC battery voltage. Battery negative must be reliably connected to the enclosure of the engine. The controller power supply B+ and B- must be connected to battery positive and negative, and the wire size must not be less then 1.5mm2.

NOTE:

In case of floating charger connect charger output to battery positive and negative directly, then, connect battery positive and negative poles to controller positive and negative power supply

If withstanding voltage test is conducted after the controller has already been installed onto the control panel, please unplug all controller terminal connections in order to prevent high voltage from damaging it.

8. Panel and display

◆ **Panel Operation**

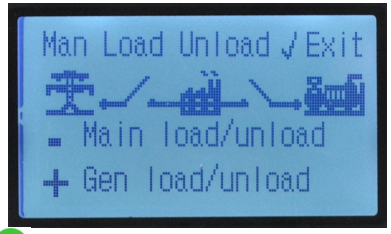
◆ **Key Function Description**

Button	Name	Main function
STOP	Stop Reset Revert	◆ Can stop generator under manual/auto mode. ◆ Can reset shutdown alarm. ◆ During stop procession, pressing this key again can stop generator immediately. ◆ Pressing this key can cancel the setting and back to upper class under edition. ◆ Under the setting mode with checking data, the data can be saved and system will exit after pressing. ◆ In standby mode, press the button for more than 3 seconds to check the alarm records under stop mode.
START	Manual Start Decrease	◆ Start the genset. ◆ Under edition mode, to decrease the numbers. ◆ Under records mode, pressing this key to change the page. ◆ Manual Closing Page, Mains Closing;
AUTO	Auto Increase	◆ Pressing this key will set the module into auto mode. ◆ Under edition mode, to increase the numbers. ◆ Under records mode, pressing this key to change the page. ◆ Manual Closing Page, Gens Closing;
	Page change Confirm	◆ Page change. ◆ Confirm the change under edition mode. ◆ In standby state, press for 3 seconds to enter the parameter setting mode. ◆ Choose alarm records under records checking mode. ◆ Exit Manual Closing page.

	Setting Mode	◆ Pressing “Page” and “Stop” simultaneously to come into setting mode.

◆ Manual closing operation details

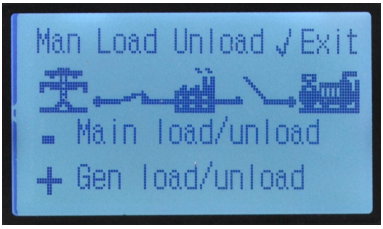
Press “Manual key START” to start the unit manually and execute the starting process. When the unit enters rated operation normally, press and hold down “Manual key START” for 3 seconds, the controller will enter the following manual closing interface, refer to the following:

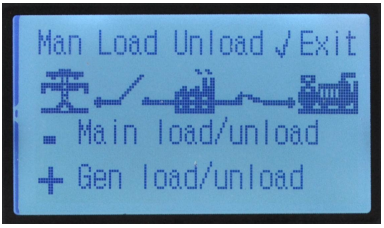


Press the “Manual key START” to close or open the mains, and press the “Auto key AUTO” to close or open the Gens;

When the Mains has been loaded, press the Gens load, first the mains open, after the delay is over,press the Gens load again, then the Gens closes;

When the Gens has been loaded, press the Mains load, first the Gens open, after the the delay is over, press the Mains load again,then the Mains close.
Refer to the following diagram for the display of the closing state (left: Mains closes the gate, Gens splits the gate; right: Mains splits the gate, Gens closes the gate)





When you want to exit the interface after manual closing, press the “Confirm button ✓” to exit the manual closing page;

◆ Engine flywheel teeth automatic adjustment

1) Crank disconnect must be set to “RPM/Frequency”.
2) In manual mode, Start the generator set.
3) At the same time, press START and ✓ for more than 0.5 seconds, the controller will automatically calculate and save the number of flywheel teeth according to the generation frequency and generator poles.

4) After calculating and saving the number of flywheel teeth successfully, the controller shows: " Flywheel xxx teeth,saved successfully!"

◆ Alarm records checking

DC32D controller can save three group of alarm records which contains the alarm record data includes detailed data such as alarm time, generator parameters, engine parameters, etc.

How to check the alarm records:

1） Press the button STOP for more than 3 seconds to check the alarm records under stop mode.

2） In the history alarm list browsing interface, press AUTO+ to move up the cursor, and press START- to move down the cursor to choose the record you need. Press ✓ to confirm the record and come into history records checking page.

3） Press AUTO+ or START- to change the alarm record data. Press STOP to return to the history alarm list browsing interface.

4） In the history alarm list browsing interface, press STOP to exit.

Control and operation instruction

◆ Emergency start mode:

When in the shutdown state, hold down the page flipping key ✓ and continue to press the manual key START- to start the generator set in case of emergency.

At this time, the controller does not judge whether the engine has been started successfully according to the successful starting conditions. The disengagement of the starter must be controlled by the operator. When the operator observes that the unit has been started successfully, release the key, the starter stops output, and the controller enters the safety delay.

◆ Maintenance expiry reset password

The controllers are equipped with a quick reset maintenance countdown function, which is operated as follows:

1) Press the key ✓ for more than 3 seconds to enter the setting menu interface.

2) In the setting menu interface, press START- key to move down, select "Maintenance Countdown Reset", and input "Maintenance Countdown Reset Password".

3) In the pop-up dialogue box, select "Yes", the controller will reset the maintenance countdown to the set value.

4) After the maintenance countdown is reset successfully, the controller will exit the setting interface automatically.

⚠ Note: The maintenance countdown password cannot be set as the same as the parameter setting password!

◆ **Manual Start**

In stop mode turn the starter key from OFF to ON position to power on the controller, then change the starter key position to START to begin cranking; after the engine fires, release the starter key(crank disconnect condition is gen frequency>14.0Hz), then the controller can monitor and display the relevant parameters of the generator set in real time.

◆ **Manual stop**

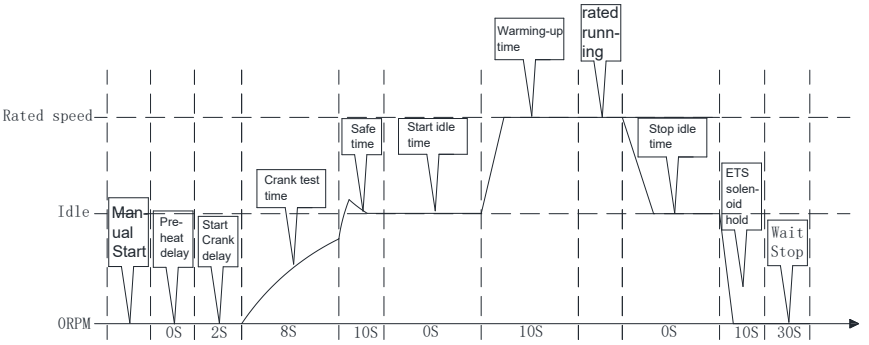
Under any circumstances, if starter key is turned from ON to OFF position, it will lead to shutdown.

Please note before manually start:

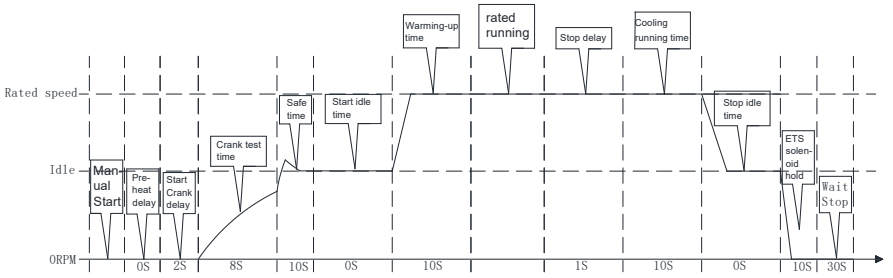
1) Please make sure if the connection is right and meet requests.
2) There is fuse in the DC power of controller and make sure if the battery + and - are connected rightly.
3) Please make sure if all the parameters are right and the oil pressure indicators are in normal light.
4) Please take appropriate measurement so that the genset shall be stopped under emergency.
5) Manual start mode:

Press the "STOP" to ensure the stop gear before starting. Press "START" start gear indicator light on, at this time will detect the normal connection of each sensor, if the sensor is open, then report the sensor open alarm, if normal, then execute the start-up process of the unit. When the unit is running normally, press the "STOP" and the controller will perform the parking process in the following sequence:

Manual start and stop process:



6) After the manual start is successful, pressing the "automatic key" can be converted into an automatic file. The specific working time is as follows:

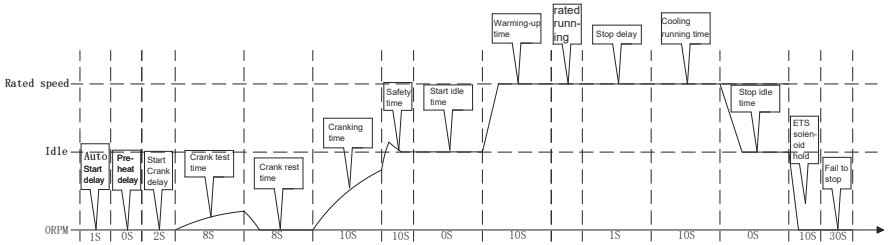


7) Automatic starting mode:

Press the "STOP" to ensure the stop gear before starting. Press "AUTO" automatic gear indicator light on, at this time will wait for the remote start signal to be valid, the unit will execute the start process in the following sequence. When the unit enters the normal rated operation, the power generation closing relay will output and switch to the power supply of the generating unit.

The controller will detect the remote start signal in real time. When the remote start signal fails, the " Stop delay" will be executed. After the completion of the stop delay, the engine high-speed " Cooling time" and the subsequent shutdown process will be executed.

Auto start and stop process:



8) Notices in Starting Process

Note 1: During the Cranking time, the controller automatically detects the speed signal, frequency signal (according to the parameter setting) to reach the judgment condition of successful start, then the judgment is that the start is successful and the motor relay is closed.

Note 2: Within the safety delay, only respond to emergency stop, immediate stop, over speed, over frequency, other alarms are not responded to.

Note 3: No response to alarm and warning of under speed, low frequency, under voltage during start idle time.

Note 4: No response to low frequency, under voltage is required when entering the Warming-up time.

Note 5: After entering rated operation, the Gens load relay output.

Note 6: In the process of shutdown, if the remote starting signal is restored to be valid within the " Cooling time", the rated operation will be entered again.

Note 7: If the stop key is pressed again during idle time, the idle time will be can celled and the stop operation will be executed directly.

Warnings and Shutdown Alarms

◆ **Warnings**

Notes: Warning is a non-serious failure state, which will not harm the gensets system for the time being. It only reminds operators to pay attention to the situation that does not meet the requirements and solve it in time to ensure the continuous operation of the system. When the warning occurs, the gensets does not stop. Once the fault is removed, the warning is automatically canceled.

Low Fuel Level Sensor Warning

When the controller detects that the fuel level is lower than “**Low fuel level warning**”, Then start warning delay and the duration (Normal alarm delay) have not returned to normal, the warning of the engine low fuel level sensor is reported. "**ALARM**" lights on, without stopping the engine, and displays "**Low FL sensor** " on the LCD screen.

Low Fuel Level Switch Warning

When the controller detects that the Low fuel level warning switch input is valid to the ground, Then start warning delay and the duration (Normal alarm delay) have not returned to normal, the warning of Low fuel level switch is reported. "**ALARM**" lights on, without stopping the engine, and displays " **Low FL switch** " on the LCD screen.

External Instant Warning

When the controller detects the validity of the "instant alarm switch input" at the switch input port, Then start warning delay and the duration (Normal alarm delay) have not returned to normal, the warning of the External instant warning is reported. "**ALARM**" lights on, without stopping the engine, and displays " **Instant warn** " on the LCD screen.

Temperature Sensor Opened Warning

When the safety delay is over, the controller detects that the Temperature sensor is disconnected, Then start alarm delay and the duration (Normal alarm delay) have not returned to normal, the alarm of the Temperature sensor opened is reported. "**ALARM**" lights on flicker, Generator stops running, and displays "**WT sensor open** " on the LCD screen.

Fuel Level Sensor Opened Warning

When the safety delay is over, the controller detects that the Fuel level sensor is disconnected, Then start warning delay and the duration (Normal alarm delay) have not returned to normal, the warning of the fuel level sensor opened is reported. "**ALARM**" lights on, without stopping the engine, and displays " **FL sensor open** " on the LCD screen.

Maintenance expiration warning
When the action after the primary maintenance expired set as “warning”, When the countdown to maintenance is detected as "0", Then start warning delay and the duration (Normal alarm delay) have not returned to normal, the warning of Maintenance expiration is reported. "**ALARM**" lights on, without stopping the engine, and displays "**Maintain end**" on the LCD screen.

Over Battery Voltage Warning
When the controller detects that the battery voltage is higher than “**Over battery voltage warning**”, Then start warning delay and the duration (Normal alarm delay) have not returned to normal, the warning of High Battery Voltage is reported. "**ALARM**" lights on, without stopping the engine, and displays " **Over BATT volt** " on the LCD screen.

Under Battery Voltage Warning
When the controller detects that the battery voltage is lower than “**Under battery voltage warning**”, Then start warning delay and the duration (Normal alarm delay) have not returned to normal, the warning of Under Battery Voltage is reported. "**ALARM**" lights on, without stopping the engine, and displays " **Under BATT volt** " on the LCD screen.

Water pumping failure switch warning
When the controller detects that the "pumping failure warning switch input" switch of the programmable input port is valid, the pumping failure warning delay starts and lasts for a period of time " Normal alarm delay". If the "pumping failure warning switch input" switch of the programmable input port is still valid, the pumping failure switch warning is reported, and the public alarm light "**ALARM**" is on,without stopping the engine , and displays " **Pump fail warning**" on the LCD screen.

◆ **Starting fault**

Fail to Start
If the number of cranks exceeds the predetermined number of cranks, the failure of start-up will be reported if the start-up of the generating unit is still unsuccessful. "**ALARM**" lights on, without stopping the engine, and displays " **Crank failure** " on the LCD screen.

◆ **Shutdown Alarms**

 Warning: After the Shutdown Alarm occurs, the system will be locked immediately and the generator set will be stopped.Only after troubleshooting, press 

key to clear the alarm, can it be re-operated.

 Notes：When the shutdown alarm failure occurs, the "**ALARM**" lights flicker and the generator unit automatically stops.

Over Speed Alarm
When the controller detects that the engine speed is higher than “ **Over speed alarm**”, Then start alarm delay and the duration (Emergency delay) have not returned

to normal, the alarm of over speed is reported. "**ALARM**" lights flicker, Generator stops running, and displays " **Over Speed** " on the LCD screen.

Under Speed Alarm
When the controller detects that the engine speed is under than " **Under speed alarm**", Then start alarm delay and the duration (Normal alarm delay) have not returned to normal, the alarm of under speed is reported. "**ALARM**" lights flicker, Generator stops running, and displays " **Under Speed** " on the LCD screen.

Low Oil Pressure Switch Alarm
When the controller detects that the Low Oil Pressure alarm switch input is valid to the ground, Then start alarm delay and the duration (Normal alarm delay) have not returned to normal, the alarm of Low Oil Pressure Switch is reported. "**ALARM**" lights flicker, Generator stops running, and displays " **Low OP switch**" on the LCD screen.

High Temperature Sensor Alarm
When the controller detects that the engine Temperature is higher than " **High temperature alarm**", Then start alarm delay and the duration (Normal alarm delay) have not returned to normal, the alarm of High Temperature is reported. "**ALARM**" lights flicker, Generator stops running, and displays " **High WT sensor** " on the LCD screen.

High Temperature Switch Alarm
When the controller detects that the High temperature alarm switch input is valid to the ground, Then start alarm delay and the duration (Normal alarm delay) have not returned to normal, the alarm of High Temperature Switch is reported. "**ALARM**" lights flicker, Generator stops running, and displays "**High WT switch**" on the LCD screen.

Temperature Sensor Opened Alarm
When the safety delay is over, the controller detects that the Temperature Sensor is disconnected, Then start alarm delay and the duration (Normal alarm delay) have not returned to normal, the alarm of the Temperature Sensor opened is reported. "**ALARM**" lights flicker, Generator stops running, and displays " **WT sensor open** " on the LCD screen.
Fuel Level Sensor Opened Alarm
When the safety delay is over, the controller detects that the Fuel Level Sensor is disconnected, Then start alarm delay and the duration (Normal alarm delay) have not returned to normal, the alarm of the Fuel Level Sensor opened is reported. "**ALARM**" lights flicker, Generator stops running, and displays " **FL sensor open** " on the LCD screen.

Low Fuel Level Switch Alarm
When the controller detects that the Low fuel level alarm switch input is valid to the ground, Then start alarm delay and the duration (Normal alarm delay) have not returned to normal, the alarm of Low fuel level switch is reported. "**ALARM**" lights flicker, Generator stops running, and displays " **Low FL switch** " on the LCD screen.

External Instant Alarm
When the controller detects that the External instant alarm input input is valid to the ground, Then start alarm delay and the duration (Normal alarm delay) have not

returned to normal, the alarm of External instant input is reported. "**ALARM**" lights flicker, Generator stops running, and displays " **Instant alarm**" on the LCD screen.

Over Frequency Alarm
When the controller detects that the generator frequency is higher than " Over freq alarm", Then start alarm delay and the duration (Emergency delay) have not returned to normal, the alarm of Over Frequency is reported. "**ALARM**" lights flicker, Generator stops running, and displays "**Over frequency**" on the LCD screen.

Under Frequency Alarm
When the controller detects that the generator frequency is lower than " Under speed alarm", Then start alarm delay and the duration (Normal alarm delay) have not returned to normal, the alarm of Under Frequency is reported. "**ALARM**" lights flicker, Generator stops running, and displays "**Under frequency**" on the LCD screen.

Over Voltage Alarm
When the controller detects that the voltage of the generator is higher than "Over voltage alarm", Then start alarm delay and the duration (Gens Abnormal Delay) have not returned to normal, the alarm of Over Voltage is reported. "**ALARM**" lights flicker, Generator stops running, and displays " **Over Voltage** " on the LCD screen.

Under Voltage Alarm
When the controller detects that the voltage of the generator is lower than " Under voltage alarm", Then start alarm delay and the duration (Gens Abnormal Delay) have not returned to normal, the alarm of Under Voltage is reported. "**ALARM**" lights flicker, Generator stops running, and displays "**under Voltage**" on the LCD screen.

Maintenance Expiration Alarm
When the action after the primary maintenance expired set as "alarm", When the countdown to maintenance is detected as "0", Then start warning delay and the duration (Normal alarm delay) have not returned to normal, the warning of Maintenance expiration is reported. "**ALARM**" lights on, Generator stops running, and displays "**Maintain end**" on the LCD screen.

Low Water Level Switch Alarm
When the controller detects that the Low water level alarm switch input is valid to the ground, Then start alarm delay and the duration (Normal alarm delay) have not returned to normal, the alarm of Low water level switch is reported. "**ALARM**" lights flicker, Generator stops running, and displays " **Low Water Level** " on the LCD screen.

Water pumping failure switch alarm
When the controller detects that the "pumping failure alarm switch input" switch of the programmable input port is effective, the anti-interference delay starts and lasts for a period of time "Normal alarm delay", and the "pumping failure alarm switch input" switch of the programmable input port is still effective, the pumping failure switch alarm is reported, the public alarm light "ALARM" is on, and the current fault screen displays "**Pump fail warning**";
When the "pumping failure alarm delay" is completed, the "pumping failure alarm switch input" switch of the programmable input port is still valid, the pumping failure

alarm is reported, "**ALARM**" lights flicker, Engine stops running, and the current fault screen displays "**Pump fail alarm**".

Stop Failure With Speed Alarm
When the controller detects that the speed is not "0" after the execution of the shutdown, the alarm of stop failure is reported. "**ALARM**" lights flicker,and displays "**Stop fail-RPM**" on the LCD screen.

Stop Failure With Frequency Alarm
When the controller detects that the frequency is not "0" after the execution of the shutdown, the alarm of stop failure is reported. "**ALARM**" lights flicker,and displays "**Stop fail-Hz**" on the LCD screen.

9. Parameter setting

◆ Please set the parameters according to below steps:

1）In the stop mode, please STOP and ✓ simultaneously, then loose ✓ so that you can come to configuration mode.

2）Select the “Set Parameters” menu and press ✓ ,then you can come to enter password interface,the default password is “***07623***”.

3）Under the parameter browsing interface,press START− to shift up the parameters, press AUTO+ to shift down the parameters, press ✓ to get into parameter changing page.

4）Under the parameter modification interface, Press AUTO+ to add number 1, press START− to reduce number 1, press ✓ to turn the digit into right and done.

5）Under the parameter modification interface, Press STOP to cancer parameter modification and return to parameter browsing interface.

6）Under the parameter browsing interface,Press STOP to save the parameters and exit from edition page.

Revert back to default: input password “**97011**” when coming into parameters setting, then all the parameters can be set as defaults.

Note: the data can not be saved if the user didn’t press STOP to confirm the setting.

◆ Parameter list.

1) Basic setting

No	Parameter	Range ***(default)***	Notes
0	Language	0-English ***1-简体中文*** 2-Español 3-Русский 4-Türk dili 5-Français 6-繁体中文	Language option. Display language selection. 0: English, 1: Simplified Chinese, 2: Spanish, 3: Russian, 4: Turkish, 5: French,6: Traditional Chinese, 7: Romanian, 8: Polish, 9: Portuguese, 10: German, 11: Korean, 12: Vietnamese, 13:Arabic 14: Bahasa Indonesia, 15: Persian.

		7-Românesc 8-Polski 9-Português 10-Deutsch 11-한국어 12-Tiếng Việt 13-بالعربية 14-Bahasa Indonesia 15-فارسی;	
1	Gens poles	2/4/6/8***(4)***	When the flywheel teeth is set as 0,the RPM will be resulted by frequency. Pole 2: 50Hz---3000RPM. Pole 4: 50Hz---1500RPM. Pole 6: 50Hz---1000RPM. Pole 8: 50Hz---750RPM
2	Gens enable	Disable ***Enable***	Gens enable: No Gens parameters can be displayed if setting as disable, which is applied to water pump Genset.
3	Rated frequency	40.0-80.0Hz***(50.0Hz)***	Calculate the alarm value.
4	Rated voltage	80-600V***(230V)***	Calculate the alarm value.
5	Rated battery voltage	8.0-36.0V***(12.0V)***	Calculate the alarm value. One battery gens should be set as 12V, two batteries gens should be set as 24V.
6	Rated RPM	500-4500RPM***(1500)***	Calculate the alarm value.
7	Flywheel teeth	0-300***(0)***	If the setting is 0, (RPM sensor Disabled), then RPM is resulted by Hz.
8	Temperature unit	℃ F	Unit display.
9	Power on Mode	***STOP*** Auto Auto save	The mode of Controller after Power-on. Note: Auto save function can not record the mode with manual.
10	Manual crank times	1-30 ***(1 time)***	Crank times under mode and test mode.
11	Auto start crank times	1-30 ***(3 times)***	Crank times under auto mode.
12	E.T.S. hold times	1-10***(2 times)***	The max E.T.S. hold on power shall be canceled once stop success under auto mode . the output interval time is " Fail to stop ".
13	Crank disconnect	RPM Frequency ***RPM/Frequency***	1.Please check if the running status, stop condition are according with crank condition. 2.Means either of the conditions can be acceptable as crank condition. But all of them should be meet together to regard as stop condition.
14	Frequency disconnect	0-200%***(28%)***	Rated frequency multiplying by this value is regarded as crank success condition. When the gens frequency is over the condition value, then system regards it as crank success.
15	RPM disconnect	0-200%***(24%)***	Rated RPM multiplying by this value is

			regarded as crank success condition. When the RPM is over the condition value, then system regards it as crank success, motor escaped.
16	Temperature for Fan open	20－200℃***(75℃)***	Used for controlling radiator: when the temperature reaches the set temperature, then the radiator is opened.
17	Temperature for Fan close	20－200℃***(60℃)***	Used for controlling radiator: when the temperature is lower than the set temperature, then the radiator is closed.
18	Maintenance countdown	0-5000h***(500h)***	When it is set as 5000, then this function is disabled.
19	Maintenance expire	***Warning***/Alarm and stop	The action after the primary maintenance expired.
20	Maintenance expiry reset password	*0-65535（**06869**）*	When the maintenance countdown time arrives, enter the password to reset the maintenance countdown time, this password cannot be the same as the parameter setting password.
21	User password	00000-65535***(07623)***	Change the password.

2)Delay time setting

NO	Parameter	Range***(default)***	Notes
1	Start delay	0-65000s***(1s)***	The time during the genset starts after the remote start signal is valid.
2	Stop delay	0-6500.0s***(1.0s)***	The time during the genset stop after the remote start signal is invalid.
3	Preheat time	0-6500.0s***(0.0s)***	The time needed to be preheat before the starter on power.
4	Cranking time	3.0-60.0s***(8.0s)***	The time when the starter is on power.
5	Crank rest time	3.0-60.0s***(10.0s)***	If crank failure, the waiting time before the second test time.
6	Safety delay	1.0-60.0s***(10.0s)***	Low oil pressure, high temperature, under speed, under frequency, under voltage, are all invalid during this time except for emergency stop ,over speed, over freq.
7	Start idle time	0-3600.0s***(0.0s)***	Idle running time when crank successfully.
8	Warming-up time	0-3600.0s***(10.0s)***	The time needed for loading.
9	Cooling time	0-3600.0s***(10.0s)***	After unloading, the time of cooling down by radiator before stop. During the delay, if the remote start signal is valid, then genset will come into rated running.
10	Stop idle time	0-3600.0s***(0.0s)***	Idle-speed running time.
11	E.T.S. hold time	0-600.0s***(10.0s)***	Stop solenoid on power time.
12	Fail to stop	5-180.0s***(30.0s)***	If the RPM is 0 during the stop failure time, then the stop failure time is no needed.
13	Emergency delay	0-10.0s***(1.5s)***	Over Speed and over frequency emergency alarm delay.
14	Normal alarm delay	2.0-20.0s***(5.0s)***	The alarm delay except for over speed /emergency/over frequency.
15	Gens Abnormal	2.0-20.0s***(10.0s)***	It is used for alarm delay of generator with high

	Delay		or low voltage.
16	Choke close delay	0-200.0s***(3.0s)***	Choke close delay.
17	Fuel output delay	1.0-60.0s***(2.0s)***	The output time of fuel valve relay before crank.
18	Pump fail warn delay	0－6500.0s ***(300.0s)***	Detect the delay time from early warning to alarm shutdown after the "pumping failure alarm" switch is effective.
19	Back to Gens time	0-3600.0s***(5.0s)***	There shall be loading delay from Mains to Gens if the remote start signal valid or Mains abnormal under Cooling time.
20	Closing output time	1.0-10.0s***(10.0s)***	when it is 10s, it is regarded as continuous output.
21	Opening output time	0.0-10.0s***(3.0s)***	when it is 0s, it is regarded as disable unload output.
22	Mains closing delay	0-3600.0s***(1.0s)***	The delay time before the mains is closed.
23	Gens closing delay	0-3600.0s***(3.0s)***	The delay time before the generation is closed.

3)Engine Alarm setting

NO	Parameter	Range ***(defaults)***	Notes
1	Over speed alarm	0-200% ***(114%)***	Rated RPM multiplying by this value is regarded as over speed alarm value.When the RPM is higher than the alarm value and comes into over speed delay but still higher(emergency faults delay), then over speed alarms. if the value is set as 200, then the over speed alarm is disabled.
2	Under speed alarm	0-200% ***(80%)***	Rated RPM multiplying by this value is regarded as under speed alarm value.When the RPM is lower than the alarm value and comes into under speed delay but still lower (normal faults delay), then under speed alarms. if the value is set as 0, then the under speed alarm is disabled.
3	High temperature alarm	20-200℃ ***(98℃)***	When the temperature is higher than the alarm value and comes into high temperature delay but still higher (normal faults delay), then high temperature alarms. If the value is set as 200, then the high temperature alarm is disabled.
4	Low fuel level warning	0-100% ***(10%)***	When the fuel level is lower than the value and comes into low fuel level warning delay but still lower (normal warning delay), then low fuel level warns. If it is higher than the value then warning clears. If the value is set as 0, then the low fuel level warning is disabled.
5	Over battery voltage warning	0-200% ***(135%)***	Rated battery voltage multiplying by this value is regarded as over battery voltage warning value.When the battery input is higher than the warning value and comes into over battery voltage delay but still higher (normal faults delay), then over battery voltage warns. if the value is set as 200, then the over battery voltage is disabled.
6	Under battery voltage warning	0-200% ***(67%)***	Rated battery voltage multiplying by this value is regarded as under battery voltage warn value.When the

			battery input is lower than the warning value and comes into under battery voltage delay but still lower (normal faults delay), then under battery voltage warns. if the value is set as 0, then the under battery voltage is disabled.

4)Generator alarm parameters

NO	Parameter	Range***(defaults)***	Notes
1	Over freq alarm	0-200%***(114%)***	Rated frequency multiplying by this value is regarded as under over frequency alarm value. When the Freq is higher than the value and comes into over freq delay but still higher (emergency faults delay), then over frequency alarms.If the value is set as 200, then the alarm is disabled.
2	Under freq alarm	0-200%***(80%)***	Rated frequency multiplying by this value is regarded as under frequency alarm value. When the Freq is lower than the value and comes into under freq delay but still lower (normal faults delay), then under frequency alarms.If the value is set as 0, then the alarm is disabled.
3	Over voltage alarm	0-200%***(120%)***	Rated voltage multiplying by this value is regarded as over voltage alarm value. When the voltage is higher than the value and comes into over voltage delay but still higher (normal faults delay), then over voltage alarms.If the value is set as 200, then the alarm is disabled.
4	Under voltage alarm	0-200%***(80%)***	Rated voltage multiplying by this value is regarded as under voltage alarm value. When the voltage is lower than the value and comes into under voltage delay but still lower (normal faults delay), then under voltage alarms.If the value is set as 0, then the alarm is disabled.

5)Output/input setting

NO	Parameters	Range***(defaults)***	Notes
1	AUX. OUTPUT 1 （**Functional of PIN 5**）	0-20***(3. Preheat mode)***	**0.Disable.** **1.Public warning output:** when there is any warning output. **2.Public alarm output:** when there is any alarm output, alarm locks till revert back. **3.Preheat mode :** preheat before start. **4.Fuel output:** output once gens starts and off till stable. **5.Crank output:** output once cranking. **6.Choke control:** choke will be started after crank success and off after delay. **7.Idle speed control:** used for speed controller, there is no output under idle but output under high speed. **8.Gens load:**Continuous or pulsed output, determined by the closing output time. **9.High speed control:** The output is valid after idle

			delay is completed, and the output is invalid after high-speed heat dissipation. **10. Fan Control:** used to control radiator electrical fan. there is output when the preset temperature is higher than " **Temperature for Fan open**" and no output when the preset temperature is lower than "**Temperature for Fan close**". **11. E.S.T. hold:** shutdown output, it is used for gens with stop solenoid. when the setting value of shutdown delay is over, then it is off. **12. Rated running:** there is output under rated running. **13. Gens unload:**Continuous or pulsed output, determined by the opening output time. **14. Mains load:**Continuous or pulsed output, determined by the closing output time. **15. Mains Unload:**Continuous or pulsed output, determined by the opening output time. **16. Public Unload control:**Public unload function, mains unload and genset unload will output. **17. Preheat mode 2:** preheat before crank success. **18. Preheat mode 3:** preheat after safety delay. **19. Preheat mode 4:** preheat till temperature-up end. **20. Preheat mode 5:** preheat till temperature-up end, but no preheat when motor starts.
2	AUX. INPUT SWITCH 1 （**Functional of PIN 6**）	0-14***(1. Remote start)***	**0.**Disable. ***1.Remote start switch input.*** **2.**Low oil pressure alarm switch input. **3.**High temperature alarm switch input. **4.**Low water level alarm switch input. **5.**Low fuel level warning switch input. **6.**Low fuel level alarm switch input. **7.**External instant warning input. **8.**External instant alarm input. **9.**High temperature cooling and Stop Input : When the signal is valid and the generator is in normal operation, if there is a high temperature alarm, the controller first after the Cooling time delay after the temperature is lower than the high temperature alarm value before stopping; when the signal is invalid, if there is a high temperature alarm, the controller will stop directly. **10.Emergency stop.** **11.**Pump fail alarm switch input-Normally closed valid. **12.**Pump fail warning switch input-Normally closed valid. **13.**Pump fail alarm switch input-Normally open valid. **14.**Pump fail warning switch input-Normally open valid.
3	AUX. INPUT	0-14	**0.**Disable.

	SWITCH 2 （**Functional of PIN 7**）	***(2. Low oil pressure alarm)***	**1.**Remote start switch input. **2.**Low oil pressure alarm switch input. **3.**High temperature alarm switch input. **4.**Low water level alarm switch input. **5.**Low fuel level warning switch input. **6.**Low fuel level alarm switch input. **7.**External instant warning input. **8.**External instant alarm input. **9.**High temperature cooling and Stop Input : When the signal is valid and the generator is in normal operation, if there is a high temperature alarm, the controller first after the Cooling time delay after the temperature is lower than the high temperature alarm value before stopping; when the signal is invalid, if there is a high temperature alarm, the controller will stop directly. **10.Emergency stop.** **11.**Pump fail alarm switch input-Normally closed valid. **12.**Pump fail warning switch input-Normally closed valid. **13.**Pump fail alarm switch input-Normally open valid. **14.**Pump fail warning switch input-Normally open valid.
4	AUX. INPUT 1 （**Functional of PIN 8**）	0-24 ***(12.Temperature sensor VDO 40-120℃)***	**0.**Disable. **1.**Remote start (on load). **2.**Low oil pressure alarm switch input. **3.**High temperature alarm switch input. **4.**Low water level alarm switch input. **5.**Low fuel level warning switch input. **6.**Low fuel level alarm switch input. **7.**External instant warning input. **8.**External instant alarm input. **9.**High temperature shutdown disabled: When the signal is valid and the generator is in normal operation, if there is a high temperature alarm, the controller will stop the generator after high-speed heat dissipation delay; when the signal is invalid, if there is a high temperature alarm, the controller will stop directly. **10.**Reserve for switching input **11.**Self-define temperature sensor ***12.Temperature sensor VDO 40-120℃*** **13.**Temperature sensor MEBAY-001B **14.**Temperature sensor SGH **15.**Temperature sensor SGD **16.**Temperature sensor SGX **17.**Temperature sensor CURTIS **18.**Temperature sensor DATCON **19.**Temperature sensor VOLVO-EC

			20. Temperature sensor 3015238 **21.**Temperature sensor PT100 **22.**Temperature sensor MEBAY-Mier **23.**Temperature sensor WEICHAI 40-120℃ **24.**Temperature sensor GENCON 40-120℃
5	AUX. INPUT 2 （**Functional of PIN 9**）	0-31 ***(0.Disable)***	***0.Disable.*** **1.**Remote start switch input. **2.**Low oil pressure alarm switch input. **3.**High temperature alarm switch input. **4.**Low water level alarm switch input. **5.**Low fuel level warning switch input. **6.**Low fuel level alarm switch input. **7.**External instant warning input. **8.**External instant alarm input. **9.**High Temperature cooling and Stop Input : When the signal is valid and the generator is in normal operation, if there is a high temperature alarm, the controller will stop the generator after high-speed heat dissipation delay; when the signal is invalid, if there is a high temperature alarm, the controller will stop directly. **10.**Reserve for switching input **11.**Self-define fuel level sensor **12.**Fuel level sensor 0-100Ω **13.**Fuel level sensor 100-0Ω **14.**Fuel level sensor 0-107Ω **15.**Fuel level sensor 107-0Ω **16.**Fuel level sensor 0-180Ω **17.**Fuel level sensor 180-0Ω **18.**Fuel level sensor 180-10Ω **19.**Fuel level sensor 10-180Ω **20.**Fuel level sensor 120-10Ω **21.**Fuel level sensor 10-120Ω **22.**Fuel level sensor 90-0Ω **23.**Fuel level sensor 0-90Ω **24.**Fuel level sensor 0-30Ω **25.**Fuel level sensor 73-10Ω **26.**Fuel level sensor 240-33Ω **27.**Fuel level sensor 33-100Ω **28.**Fuel level sensor 0-200Ω **29.**Fuel level sensor 200-0Ω **30.**Fuel level sensor 0-190Ω **31.**Fuel level sensor 190-0Ω

6)Mains protection

No	Parameter	Range***(defaults)***	Notes
1	Phase	Disable 1 Phase 2 Wire 2 Phase 3 Wire	Choose the input, there is no display if setting as disable.

		3 Phase 3 Wire ***3 Phase 4 Wire***	
2	Mains under volt	55-330V***(184V)***	When the mains voltage is lower than the "low voltage crank threshold" and comes into mains low voltage delay(normal failure delay) but still lower, then mains becomes invalid. If the voltage become higher than "low voltage revert threshold" during normal failure delay time, then it will not alarm.
3	Revert under volt	55-330V***(207V)***	
4	Mains over volt	55-330V***(276V)***	When the mains voltage is higher than the" high voltage crank threshold" and comes into mains high voltage delay(normal failure delay) but still higher, then mains becomes invalid. If the voltage become lower than "low voltage revert threshold" during normal failure delay time, then it will not alarm.
5	Revert over volt	55-330V***(253V)***	
6	Mains normal delay	0.0-3600.0S***(10.0S)***	The time from abnormal to normal, which is used for ATS transfer.
7	Mains abnormal delay	0.0-3600.0S***(5.0S)***	
8	Loss of Phase	***Loss of 1 Phase*** Loss of 2 Phases Loss of 3 Phases	Set the phase loss condition to judge whether the mains is abnormal.

7)LCD setting

No	Parameter	Range***(defaults)***	Notes
1	Start screen display	0-20.0s***(5.0s)***	Start screen display time,0: No-display.
2	Saving mode	5.0-6000.0s ***(600.0s)***	LCD light will be closed automatically without any button pressed after delay.If setting as 6000s, back light always lighted.
3	Homing display	5.0-600.0s ***(600.0s)***	The time when the page reverts back to the home page .If setting as 600.0s:disabled.
4	LOGO delay display under standby	5.0-6000.0 ***(6000.0s)***	Start screen will be opened without any button pressed after delay.If setting as 6000.0s: disabled.

8)Self-define curve

NO	Parameter	Notes
1	Self-define temperature curve	*Sensor curve can be User-defined by panel buttons, resistance and according value should be input,MAX 15 groups ,MIN 2 groups.* ***Rule: resistance should be input from small to large.***
2	Self-define fuel level curve	

10. Fault finding

Symptoms	Possible Solutions
Controller no response with power	Check DC voltage. Check DC fuse. Check if the terminal 1 and 2 is with battery voltage.
Genset shutdown	Check the water/cylinder temperature is too high or not;

	Check the genset AC voltage; Check DC fuse.
High temperature alarm	Check temperature sensor and its wiring. Check the temperature sensor type and controller settings must be consistent; Check whether the temperature sensor is normal.
Shutdown Alarm in running	Check related switch and its connections according to the information on LCD; Check programmable inputs.
Fail to start	Check fuel return circuit and wiring. Check start battery. Consult engine manual.
Starter motor does not respond	Check the wiring to the starter. Check start battery.
USB communication is abnormal	Check the USB connection; Check whether the USB port of the computer is normal. Check whether the USB driver is installed.