DC30D
GENSET CONTROLLER
USER MANUAL

Software Version

No.	Version	Date	Note
1	V1.0	2018-9-1	Original release.
2	V1.1	2020-6-2	One phase / three phase automatic judgment function is added to the generator phase number.
3	V1.2	2020-8-1	1. Add "Fuel output delay" setting function; 2. Configurable relay output to increase "Rated running" 3. Add the setting option of "ATS in manual mode"; 4. Add some oil level sensor curves.
4	V1.3	2021-1-21	1. Name of unified input and output port. 2. Correction of errors in wiring diagram. 3. The disconnection action of oil pressure and temperature sensor changes from warning to alarm.
5	V1.4	2021-12-01	1. Update product pictures and icons to the latest version.
6	V1.5	2022-06-09	1. Added language and active power display.
7	V1.6	2022-09-30	1. "Pumping failure alarm and warning function" is added to switch input. 2. Add "pumping failure early warning delay".
8	V1.7	2022-11-01	1. Add description of DC30DR. 2. Added display language: French,Traditional Chinese
9	V1.8	2023-10-30	1.Add languages: Romanian, Polish, Portuguese, German, Korean, Vietnamese, Arabic Bahasa Indonesia.
10	V1.9	2024-02-27	Add emergency start mode and delete Traditional Language.
11	V2.0	2024-05-09	Add Farsi, maintenance reset code, preheat output mode
12	V2.1	2025-06-05	Add sensor curves, alarm outputs, warning /alarm codes, languages;

Chongqing Mebay Technology Co.,Ltd
Add: No6-2,Building 4, Gangan Rd, Jiangbei District, Chongqing.
Tel：+86-23-6869 3061
Fax：+86-23-6765 8207
Web：http://www.mebay.cn
http://www.cqmb.cn
E_mail：sales@mebay.cn

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 over speed 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.

The controller 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(DC30D) or RS485(DC30DR) to adjust via PC. It can be widely applied for all kinds of auto control system of gensets.

2. Main Features

There are two models under DC30D series.

DC30D: used for single machine automation. Start/Stop through remote start signal,With USB port.

DC30DR: Based on DC30D, Cancel USB port and add RS485 port.

- 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.
- USB Port(DC30D only): 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, 3 of which are configurable, and more than 10 functions can be selected for each channel.
- 1 switch value input, and each can be set as max 20 functions.
- 3 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, Oil Pressure) 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 oil pressure
- Engine temperature
- Engine fuel level
- Engine battery voltage
- Generator voltage L-N
- Generator current A
- Generator Frequency Hz
- Generator active power KW
- Successful start Times
- Current running time
- Total running time
- Classes maintenance notice

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
- Over current
- Maintenance expire
- Low water level alarm
- Emergency Stop
- Crank failure
- Stop Failure
- Over battery voltage
- Under Battery voltage

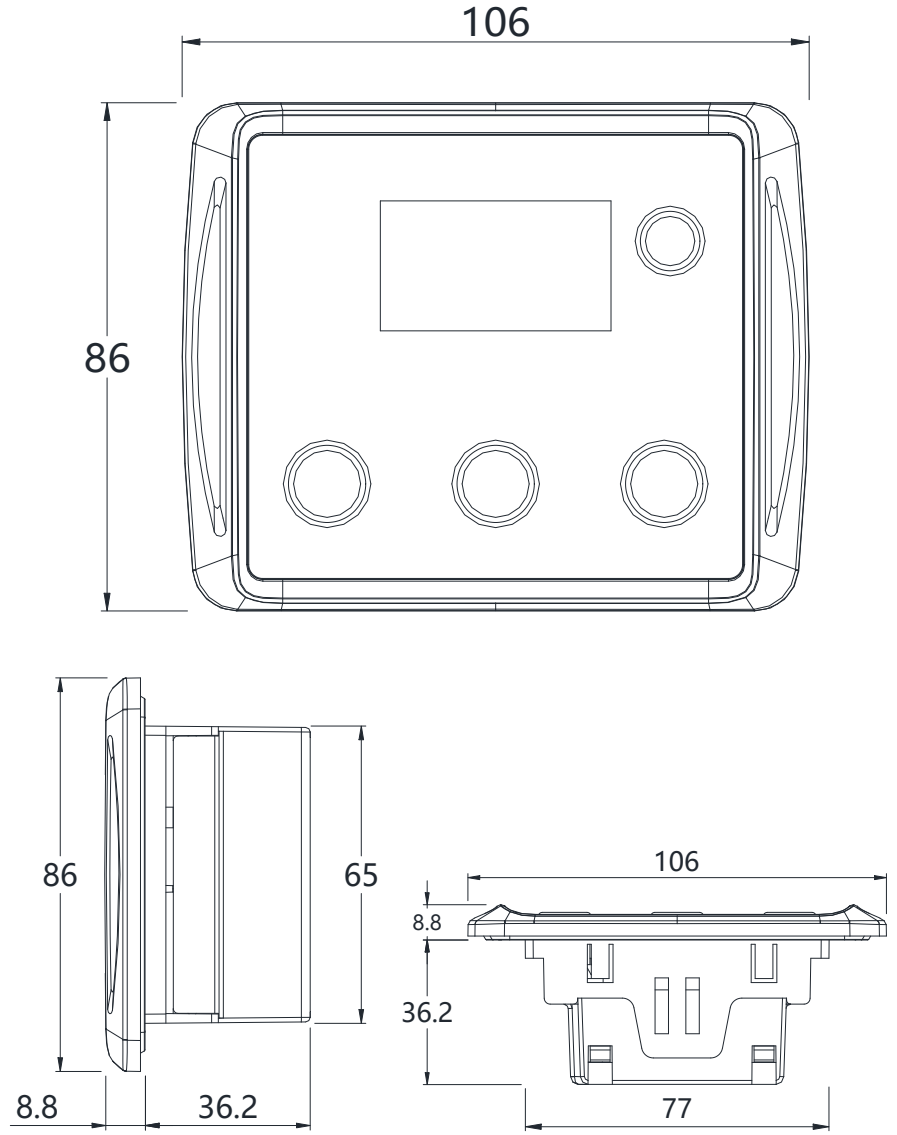
5. Parameters

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-450VAC(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	1Amp DC+VE Supply voltage
Start Relay Output	1Amp DC+VE Supply voltage
Programmable Relay output 1	1Amp DC+VE Supply voltage
Programmable Relay output 2	1AMP Non-contact-Normal open--Normal close output
Programmable Relay output 3	1AMP Non-contact Normal Open 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

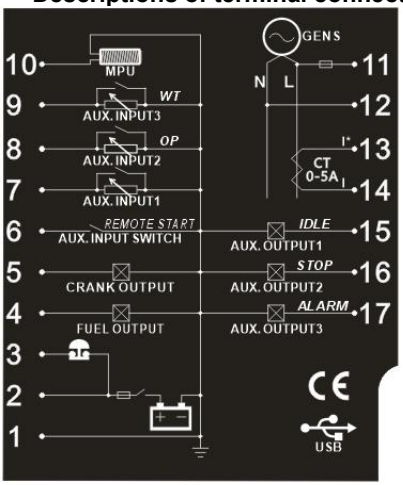
Weight	0.25Kg

6. Overall Dimension and Wiring Diagram

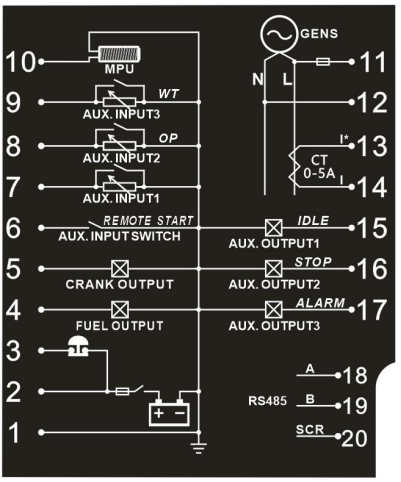
◆ **Overall Dimension:**



◆ **Descriptions of terminal connection**



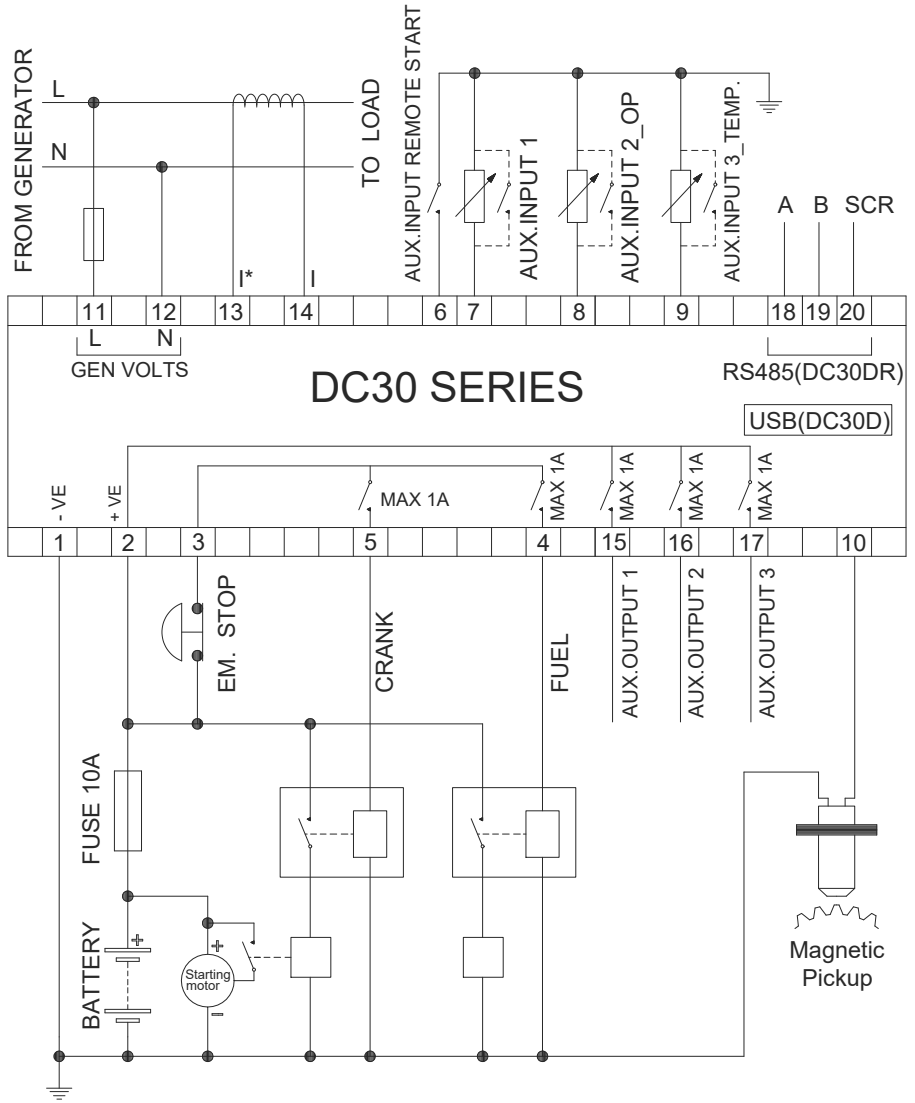
DC30D



DC30DR

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	Emergency Stop Input	B+ voltage input is active, and connected to emergency stop normal closed button.	1.0mm^2
4	Fuel Output	Rated current 1A; power supplied by PIN 2.	1.0mm^2
5	Crank Output	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	Connect t fuel level sensor or switch input according to function selection	1.0mm^2
8	Oil Pressure Input	Connect t Oil Pressure sensor or switch input according to function selection	1.0mm^2
9	Engine Temp. Input	Connect temperature 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-.	0.5mm^2
11	Generator Voltage L	Gens voltage Input，AC30-360V.	
12	Generator Voltage N		1.0mm^2
13	Load CT Secondary I* (in)	Current Transformer Secondary Rated 5A.	1.5mm^2
14	Load CT Secondary I (out)		1.5mm^2
15	Aux. Ouput1	Rated current 1A; power supplied by PIN 2.	1.0mm^2
16	Aux. Ouput2	Rated current 1A; power supplied by PIN 2.	1.0mm^2
17	Aux. Ouput3	Rated current 1A; power supplied by PIN 2.	1.0mm^2
18	RS485 A	A 120 Ω shielded wire and good grounding are recommended.Only DC30DR has it.	1.0mm^2
19	RS485 B		1.0mm^2
20	RS485 SCR		1.0mm^2

◆ **DC30D/DC30DR Typical Wiring Diagram**



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

WARNING:When generator is on-load, C. T. secondary must not be open circuit, Otherwise, the high voltage generated will pose a danger to personal safety.

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

DC30D 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

◆ AC current input

Current transformer with rated secondary current 62.5mA must be externally connected to the controller current input.

WARNING:When generator is on-load, C. T. secondary must not be open circuit, Otherwise, the high voltage generated will pose a danger to personal safety.

◆Withstanding voltage test

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 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.
	Manual Start Decrease	◆ Start the genset. ◆ Under edition mode, to decrease the numbers. ◆ Under records mode, pressing this key to change the page. ◆ Idle runtime process, press the start button again, then the idle runtime process will be jumped out.
	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.
	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.
	Setting Mode	◆ Pressing “Page” and “Stop” simultaneously to come into setting mode.

9. Control and operation instruction

◆ 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.

◆ Emergency start mode:

When in the shutdown state, hold down the page flipping key and continue to press the manual key 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.

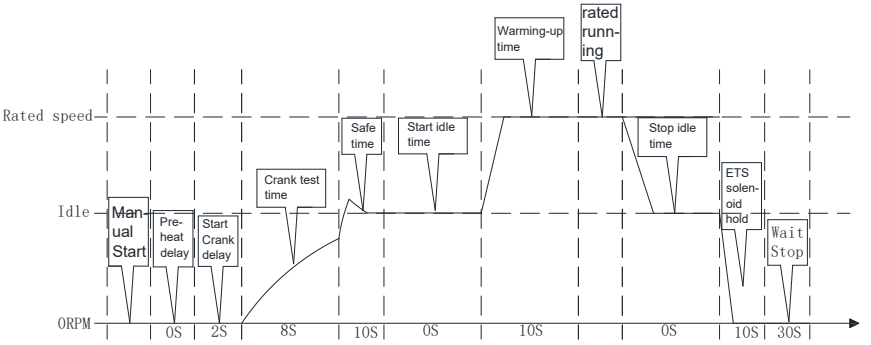
◆ Manual stop

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

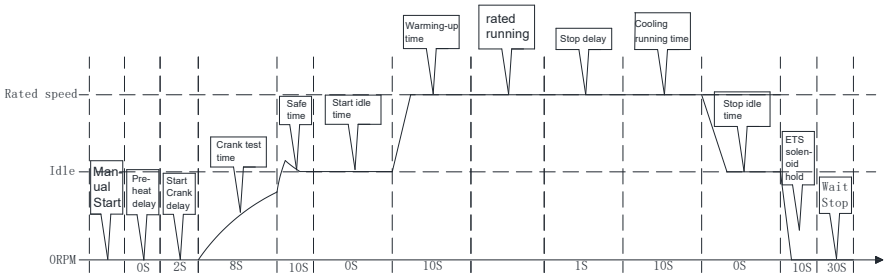
Please note before manually start:
1) Please make sure if the connection is right and meet requests.
2) There is fuse in the DC power of controller and make sure if the battery + and - are connected rightly.
3) Please make sure if all the parameters are right and the oil pressure indicators are in normal 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:

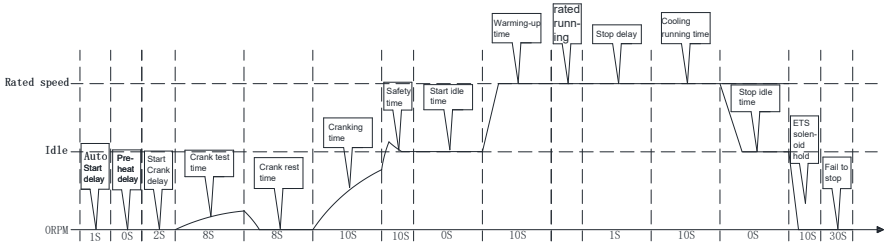


7) Automatic starting mode:

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 and oil pressure value (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 underspeed, low frequency, under voltage, over current during start idle time.

Note 4: No response to low frequency, under voltage, over current and over power 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.

◆ **Engine flywheel teeth automatic adjustment**

1) Crank disconnect must be set to “RPM/Frequency” or “RPM/Frequency/Oil Pressure”.
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!"

10. Setting Menu instructions

The steps to enter the **Menu** setting are as follows:

1) Press the key ✓ for more than 3 seconds.Or press the stop key STOP without releasing, press the OK key ✓ again, and then release all the keys to enter the setting menu page; The menu contents are as follows:

◆ **Fast Set Parameters:** This menu is for commonly used setup options and does not require a password to enter, making it easy for users to debug the unit.

◆ **Set Parameters: please refer to "Parameter".**

◆ **Language/语言: please refer to "Language".**

◆ **Information: Can view the product model, software version, release date and other information.**

◆ **Alarm records**

DC30D 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.

◆ **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!

11. 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.

Note: When a warning fault occurs, the warning indicator **"WARNING"** is always on, and the current fault interface displays the warning description, Generators will not stop.

Code	Display name	Description
A11	Low fuel level sensor	When the controller parameter "Low fuel level Sensor Alarm Action" is set to "Warning", detected sensor less than the "Warning Threshold", after the warning delay, it will report the "**Low fuel level sensor**" warning.
A12	Low fuel level switch	When the controller detects that the AUX. Input "**Low fuel level warning input**" switch is active, after the warning delay, it will report the "**Low fuel level switch**" warning.
A13	Under battery voltage	When the controller detects that the battery voltage is lower than the "**Under battery voltage warning**", after the warning delay, it will report the "**Under battery voltage**" warning.
A26	Instant warning switch	When the controller detects that the AUX. Input "**External instant warning input**" switch is active, after the warning delay, it will report the **"Instant warning switch"**.
A28	RPM Signal lost	When the controller parameter "**Action if RPM lost**" is set to "**warning**", the detected speed value is 0, after the warning delay, it will report the "**RPM Signal lost**" warning.
A34	Fuel level sensor open	When the controller parameter "**Action if Fuel level sensor disconnected**" is set to "**warning**", When the fuel level sensor is detected to be disconnected, it will report the **"Fuel level sensor open"**
A 47	Over battery voltage	When the controller detects that the battery voltage is over than the "**Over battery voltage warning**", after the warning delay, it will report the "**Over battery voltage**" warning.
A 52	Maintain end	When the controller parameter **" maintenance expire"** is set to **"warning"**, when the countdown to maintenance is detected as "0" or maintenance date less than current date, it will report the "**Maintain end**" warning.
A 67	Pumping failure	When the controller detects that the AUX. Input "**pumping failure warning"** switch is active, after the warning delay, it will report the **"pumping failure"** warning.
A 97	Pumping failure warning	When the controller detects that the AUX. Input "**pumping failure Alarm"** switch is active, after the warning delay, it will report the **"pumping failure warning"** warning.

◆ **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 will light up and the generator unit automatically stops.

Code	Display name	Description
E0	Emergency stop	When the controller detects that the input voltage of PIN 3 is less than 2V, then start alarm delay and the duration (0.5s) have not returned to normal, it will report the **"Emergency stop "** alarm.
E1	Over speed	When the controller detects that the engine speed is higher than "**Over speed alarm**", after the alarm delay, it will report the **"Over speed "** alarm.
E2	Under speed	When the controller detects that the engine speed is under than "**Under speed alarm**", after the alarm delay, it will report the **"Under speed "** alarm, after the alarm delay, it will report the **"Under speed "** alarm.
E3	Over frequency	When the controller detects that the generator frequency is higher than "**Over frequency alarm**", after the alarm delay, it will report the **"Over frequency"** alarm.
E4	Under frequency	When the controller detects that the generator frequency is lower than "**Under frequency alarm**", after the alarm delay, it will report the **"Under frequency"** alarm.
E5	Over voltage	When the controller detects that the generator voltage is higher than "**Over voltage alarm**", after the alarm delay, it will report the **"Over voltage"** alarm.
E6	Under voltage	When the controller detects that the generator voltage is lower than "**Under voltage alarm**", after the alarm delay, it will report the **"Under voltage"** alarm.
E8	Low oil pressure sensor	When the controller parameter **"Low Oil Pressure Sensor Alarm Action"** is set to **"Alarm and stop"**, detected sensor less than the **"Alarm Threshold"**, after the alarm delay, it will report the "**Low oil pressure sensor**"alarm.
E9	Low oil pressure switch	When the controller detects that the AUX. Input **"Low oil pressure alarm"** switch is active, after the alarm delay, it will report the **"Low oil pressure switch"** alarm.
E10	Oil Pressure sensor open	When the controller parameter "**Action if oil pressure sensor disconnected**" is set to "**Alarm and stop**", When the oil pressure sensor is detected to be disconnected, it will report the **"Oil Pressure sensor open"**
E11	High WT sensor	When the controller parameter **"High coolant temperature Sensor Alarm Action"** is set to **"Alarm and stop"**, detected sensor less than the **"Alarm Threshold"**, after the alarm delay, it will

		report the "**High WT sensor**"alarm.
E12	High WT switch	When the controller detects that the AUX. Input **"High coolant temperature alarm"** switch is active, after the alarm delay, it will report the **"High WT switch"** alarm.
E13	WT sensor open	When the controller parameter "**Action if coolant temperature sensor disconnected**" is set to "**Alarm and stop**", When the coolant temperature sensor is detected to be disconnected, it will report the **"WT sensor open".**
E20	Low water level switch	When the controller detects that the AUX. Input **"Low coolant level alarm"** switch is active, after the alarm delay, it will report the **"Low water level switch"** alarm.
E21	Crank failure	If the number of cranks exceeds the predetermined number of cranks, the **"Crank failure"** will be reported if the start-up of the generating unit is still unsuccessful.
E23	Stop failure-RPM	When the controller detects that the speed is not "0" after the execution of the shutdown, it will report the "**Stop failure-RPM**" alarm.
E26	Stop failure-Oil pres	When the controller detects that the Oil Pressure is not "0" after the execution of the shutdown, it will report the "**Stop failure-Oil pres**" alarm.
E34	Low fuel level switch	When the controller detects that the AUX. Input **"Low Fuel level alarm"** switch is active, after the alarm delay, it will report the **"Low fuel level switch"** alarm.
E39	Instant alarm switch	When the controller detects that the AUX. Input "**External instant alarm input"** switch is active, after the alarm delay, it will report the **"Instant warning switch"** alarm.
E43	Over power	When the controller parameter **"Over power action"** is set to **"Trip and stop"**, the controller detects that the generator power is higher than "**Over total power Alarm**", after the alarm delay, it will report the "**Over power**" alarm.
E46	Maintain end	When the controller parameter **"Maintenance expire"** is set to **""Alarm and stop"**, when the countdown to maintenance is detected as "0" or maintenance date less than current date, it will report the " **Maintain end**" alarm.
E54	Stop failure-Hz	When the controller detects that the frequency is not "0" after the execution of the shutdown, it will report the "**Stop failure-Hz**" alarm.
E55	Over current	When the controller parameter "**Action in case of over current"** is set to **"Trip and stop"**, the controller detects that the generator current is higher than **"Phase current over-load alarm"**, after the alarm delay, it will report the "**over current**" alarm.

E78	Pumping failure	When the controller detects that the AUX. Input **"pumping failure Alarm"** switch is active, after the warning delay, it will report the **"pumping failure warning"** warning. After the **Pump fail warn delay** it will report the **"pumping failure"** alarm.
E81	485 Comms. fail	When the controller working mode is set to **"Slave mode"**,and no message is received from the **Host** within a fixed period of time, it will report **"Host Comms. fail"** alarm.

12. 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-Reserved 7-Românesc	Display language selection. 0: English; 1: Simplified Chinese; 2: Spanish; 3: Russian; 4: Turkish; 5: French; 6: Reserved; 7: Romanian;

		8-Polski 9-Português 10-Deutsch 11-한국어 12-Tiếng Việt 13-بالعربية 14-Bahasa Indonesia 15-فارسی; 16-Italiano	8: Polish; 9: Portuguese; 10: German; 11: Korean; 12: Vietnamese; 13:Arabic; 14: Bahasa Indonesia; 15: Persian; 16: Italian;
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 AC system	Disable ***1 phase 2 wire*** 2 phase 3 wire 3 phase 3 wire 3 phase 4 wire 1P/3P	Gens phases: No gens parameters can be displayed if setting as disable, which is applied to water pump genset. 1P1W: Power*1. 2P3W: Power*2. 3P3W: Power*2. 3P4W: Power*3. 1P/3P: Input≤300V:Power=voltage*current, Current=phase current; Input>300V: Power=voltage/1.732*current *3, Current=phase current;Rated phase current=Rated current/3.
3	CT rate	5-6000A/5A ***(500A/5A)***	Used for setting genset CT primary current, secondary rated current 5A.
4	Rated frequency	40.0-80.0Hz***(50.0Hz)***	Calculate the alarm value.
5	Rated voltage	80-360V***(230V)***	Calculate the alarm value.
6	Rated current	5-6000A***(500A)***	Calculate the alarm value.
7	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.
8	Rated RPM	500-4500RPM***(1500)***	Calculate the alarm value.
9	Flywheel teeth	0-300***(0)***	If the setting is 0, (RPM sensor Disabled), then RPM is resulted by Hz.
10	Pressure/Temperature unit	℃/KPA ***℃/BAR*** ℃/PSI F/KPA F/BAR F/PSI	Unit display.
11	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.
12	Manual crank times	1-30 ***(1 time)***	Crank times under mode and test mode.

13	Auto start crank times	1-30 ***(3 times)***	Crank times under auto mode.
14	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 ".
15	Crank disconnect	RPM Hz Oil pressure(delay) ***RPM/Frequency*** RPM/Oil Pressure Frequency/Oil Pressure RPM/Frequency/Oil press.	1.If there is no oil pressure sensor, please don't choose it. 2.Oil pressure switch input is not the crank condition 3.Please check if the running status, stop condition are according with crank condition. 4.Means either of the conditions can be acceptable as crank condition. But all of them should be meet together to regard as stop condition.
16	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.
17	Oil pressure disconnect	0-400kpa***(200kpa)***	When the engine oil pressure is over the condition value, then system regards it as crank success, motor escaped.
18	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.
19	Temperature for Fan open	20—200℃***(75℃)***	Used for controlling radiator: when the temperature reaches the set temperature, then the radiator is opened.
20	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.
21	Maintenance countdown	0-5000h***(500h)***	When it is set as 5000, then this function is disabled.
22	Maintenance expire	***Warning***/Alarm and stop	The action after the primary maintenance expired.
23	User password	00000-65535***(07623)***	Change the password.
24	Power mode	***kVa*** kW	Different power calculation methods.
25	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.

2)Delay time setting

NO	Parameter	Range***(default)***	Notes
1	Start delay	0-6500.0s***(1.0s)***	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	Oil pressure disconnect delay	0-20.0s ***(0.0s)***	When the crank condition contains oil pressure, if the oil pressure is higher than the preset value and continue for few seconds, then it is regarded as crank success.
7	Safety delay	1.0-60.0s***(10.0s)***	Low oil pressure, high temperature, under speed, under frequency, under voltage, charge failure are all invalid during this time except for emergency stop ,over speed, over freq.
8	Start idle time	0-3600.0s***(0.0s)***	Idle running time when crank successfully.
9	Warming-up time	0-3600.0s***(10.0s)***	The time needed for loading.
10	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.
11	Stop idle time	0-3600.0s***(0.0s)***	Idle-speed running time.
12	E.T.S. hold time	0-600.0s***(20.0s)***	Stop solenoid on power time.
13	Fail to stop	5-180.0s***(0.0s)***	If the RPM is 0 during the stop failure time, then the stop failure time is no needed.
14	Emergency delay	0-10.0s***(1.5s)***	Emergency and over frequency alarm delay.
15	Normal alarm delay	2.0-20.0s***(5.0s)***	The alarm delay except for emergency stop and over frequency
16	Gens Abnormal Delay	2.0-20.0s***(10.0s)***	It is used for alarm delay of generator with high or low voltage.
17	Choke close delay	0-200.0s***(3.0s)***	Choke close delay.
18	Over current delay	0－3600.0s ***(60.0s)***	When the loading current is higher than the preset value, it is regarded as over current.
19	Fuel output delay	1.0-60.0s***(2.0s)***	The output time of fuel valve relay before crank.
20	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.

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	Low oil pressure alarm	0-999kpa ***(103kpa)***	When the oil pressure is lower than the alarm value and comes into low oil pressure delay but still lower (normal faults delay), then low oil pressure alarms. If the value is set as 0, then the under speed alarm is disabled.
4	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.
5	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.
6	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.
7	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	Current over-load alarm	0-200%***(100%)***	Rated current multiplying by this value is regarded as over current alarm value. When the current is higher than the value and comes into over current delay but still higher (over current faults delay), then over current alarms.If the value is set as 200, then the alarm is disabled.

5)Output/input setting

NO	Parameters	Range***(defaults)***	Notes
1	AUX. OUTPUT 1 （**Functional of PIN 15**）	**Source:**0-50 ***(7. Idle speed control)***	**Source:** Select the output source to control the state of the output. See **AUX. Output function table** for details of all available functions.
2	AUX. OUTPUT 2 （**Functional of PIN 16**）	**Source:**0-50 ***(12. E.S.T. hold)***	
3	AUX. OUTPUT 3 （**Functional of PIN 17**）	**Source:** 0-50 **(2.Public alarm output)**	

AUX. Output function table

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 1: 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: there is continuous output once the conditions can be meet, which can control the switch with load.
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.Preheat mode 2: preheat before crank success.
14.Preheat mode 3: preheat after safety delay.
15.Preheat mode 4: preheat till temperature-up end.
16.Preheat mode 5: preheat till temperature-up end, but no preheat when motor starts.
17.Emergency stop alarm: Action when emergency stop alarm.
18.Over speed alarm: Output when over-speed alarms.
19.Under speed alarm: Action when under-speed alarm.
20.Over frequency alarm: Action when over frequency alarms
21.Under frequency alarm: Action when under frequency alarm.

22.Over voltage alarm: Action when over-voltage alarm. **23.Under voltage alarm:**Action when under-voltage alarm. **24.Low oil pressure sensor alarm:** Output when low oil pressure sensor alarms. **25.Low oil pressure switch alarm:**Output when low oil switch alarms. **26.Oil pressure sensor open alarm:**Output when oil pressure sensor open alarm. **27.High WT sensor alarm:**Output when water temperature sensor alarms. **28.High WT switch alarm:**Output when water temperature switch alarms. **29.WT sensor open alarm:**Output when water temperature sensor open alarm. **30.Low water level switch alarm:**Output when low water level switch alarm. **31.Crank failure alarm:**Output when the engine fails to start. **32.Stop failure alarm-RPM:**Output when the engine shutdown fails to alarm. **33.Stop failure alarm-Oil pres:**Output when the engine shutdown fails to alarm. **34.Low fuel level switch alarm:**Output when low Fuel level switch alarm. **35.Instant alarm switch alarm:**Output when Instant alarm switch. **36.Maintain end alarm:**Output when maintain end alarm. **37.Stop failure alarm-Hz:**Output when the engine shutdown fails to alarm. **38.Over current alarm:** Action when over-current alarm. **39.Pumping failure alarm:**Output when pumping failure alarm. **40.Under battery voltage warn:** Action when the under battery voltage warning. **41.Over battery voltage warn:** Action when the over battery voltage warning. **42.Low fuel level warn:** Action when low fuel level sensor/switch warning. **43.....-50: Reserved.**			
4	AUX. INPUT SWITCH （**Functional of PIN 6**）	0-13***(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.**Pump fail alarm switch input-Normally closed valid. **11.**Pump fail warning switch input-Normally closed valid. **12.**Pump fail alarm switch input-Normally open valid. **13.**Pump fail warning switch input-Normally open valid.
5	AUX. INPUT 1 （**Functional of PIN 7**）	0-32 ***(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 **32.**Fuel level sensor 100-33Ω
6	AUX. INPUT 2 （**Functional of PIN 8**）	0-23***(11. Oil pressure sensor VDO 0-10Bar)***	**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 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 oil pressure sensor ***12.Oil pressure sensor VDO 0-10Bar*** **13.**Oil pressure sensor MEBAY-003B **14.**Oil pressure sensor SGH **15.**Oil pressure sensor SGD **16.**Oil pressure sensor SGX **17.**Oil pressure sensor CURTIS **18.**Oil pressure sensor DATCON 10Bar **19.**Oil pressure sensor VOLVO-EC **20.**Oil pressure sensor 3015237 **21.**Oil pressure sensor WEICHAI 0-0.6MPa **22.**Oil pressure sensor GENCON 0-10Bar **23.**Oil pressure sensor SUZUKI
7	AUX. INPUT 3 （**Functional of PIN 9**）	0-25 ***(11.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℃ **25.**Temperature sensor SUZUKI

6)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	LCD light will be closed automatically without any

		(600.0s)	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.

7)Self-define curve

NO	Parameter	Notes
1	Self-define oil pressure 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 temperature curve	
3	Self-define fuel level curve	

8)RS485 communication setting (DC30DR only)

No	Parameter	Range***(default)***	Notes
1	Controller ID	1-255***(16)***	The IP built by controller and PC.
2	485 baud rate	0-4800 1-9600 ***2-19200*** 3-38400 4-57600 5-115200	RS485 communication baud rate selection.
3	Controller working mode	***Host mode*** Slave mode	**Slave mode** can read and display parameters of slave controller through RS485 port.

13. 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.
Genset Emergency Stop	Check the emergency stop button; Check that the voltage of the controller's 3 feet to the ground should be the battery voltage. Check the controller connection.
Low oil pressure alarm	Check oil pressure sensor and its wiring. Check the oil pressure sensor type and controller settings must be consistent; Check whether the low pressure sensor is normal.
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.