

MINCO 830/840 Intelligent Controller Manual



GuiLin Minco Electronic Co., Ltd.
GuiLin Gminco Intelligent Control S&T Co., Ltd.
Add: Building B-216, Venture Park of Returned Scholars,
Guilin High-Tech Zone, Guangxi, China
Tel: +86-773-5812281 5828281
Fax: +86-773-5828281
E-mail: sales@gminco.com 360233598@qq.com
Http: //www.gminco.com www.gminco.cn

Contents

I、 Summarization	1
II、 Characteristics	1
III、 Fixup dimension drawing	1
IV、 Function definition and operate instruction	2
4.1. Operate panel function instruction.....	2
(1).System menu operation button.	2
(2).LCD display	2
(3).Operation keys.....	3
(4).State indicator light	3
4.2. Connection port definition.....	4
V、 Parameter setting.....	5
5.1. Parameter setting instruction	6
5.2. System parameter description	10
5.3. Delay Time Instruction.....	12
5.4. Timing Start Instruction.....	14
VI、 Normal failure and handling method.....	14
VII Outside wiring diagram	16
VIII、 Front and back panel diagram.....	17

I、 Summarization

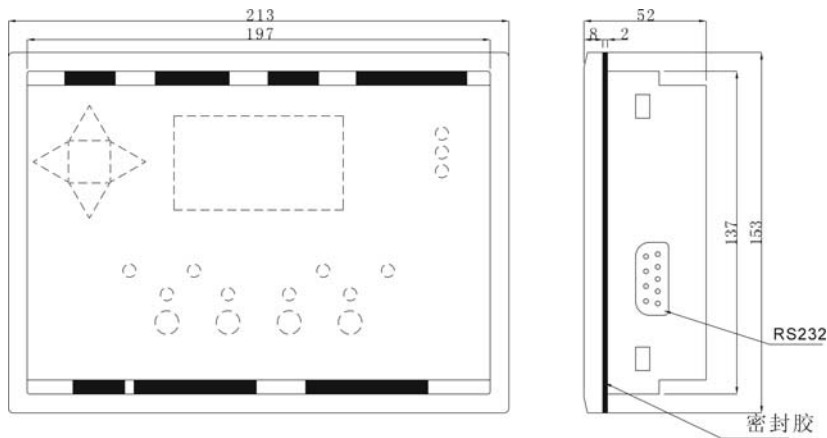
Minco 830/840 generator set intelligent controller adopts high performance microprocessor and industry components. It has measuring, controlling, protection, four remote control, flexible software setting functions and high anti-jamming ability. The controller display all the measuring parameters, control parameters and genset running state. Actually meets different types of generator auto control requirements.

II、 Characteristics

1. Minco830 apply for single generator automatic control system;
2. Based on 830, Minco840 adds mains monitoring, apply for double power automatic control system;.
3. Double processing chip, virtual measurement of voltage and current, multifunction, smart action;
4. Wide-screen LCD display with back-light;
5. Chinese and English double language menu, mutual operation, All the setting and operation can be completed without computer;
6. Auto start, auto protection, auto supply control;
7. Perfect auto protection, display warning message and work state, failure record more than 50 items;
8. Plenty of connected parameters (coolant temp, double oil pressure, oil temp. oil level etc.);
9. All relay contact capability is above 10A/250VAC/30VDC;
10. User-defined input/output, timer start & stop generator;
11. RS232 communication, attached "four remote control" monitor software;

III、 Fixup dimension drawing

Operate panel	W 213 X H 153mm
Install hole	W 199 X H 139mm
Depth	D 52mm







IV、 Function definition and operate instruction

4.1. Operate panel function instruction













Operate panel is composed of 128*64 LCD display, running operation button, indicator light and system menu operation button.

(1).System menu operation button.

Content	Function
	Parameter setting/enter to next menu/ confirm to revise
	Exit / Back to the superior menu
	Switch the display content, view all the measuring parameters of the generator set and the current state; Page up the menu/add value.
	Switch the display content, examine all the generator set measuring parameter and current state, menu page down/degree value.

(2).LCD display





Genset runs is normal (Not setting state or nor fault state)

Operation	Description
<p>Main screen 1</p> <p> or  switch the display interface(This page is just for 840)</p>	<p>Normal 00.0HZ L-N: 000 000 000V</p>
<p>Main screen 2</p> <p> or  switch the display interface</p>	<p>F: 00.0HZ PF:0.00 L-N: 000 000 000V 00.0 00.0 00.0 A Power 0000.0 KW</p>
<p>Main screen 3</p> <p> or  switch the display interface</p>	<p>Speed: 0000 RPM (Success start genset time)Starts: 0005 Hours: 00000.05 (Electrical qty) ENERGY: 00000.0</p>
<p>Main screen 4</p> <p> or  switch the display interface</p>	<p>TEMP 1: --- °C TEMP 2: --- °C OIL P1--- MPa OIL P2 ---- MPa</p>
<p>Main screen 5</p> <p> or  switch the display interface</p>	<p>BATTERY: 27.7 V CHARGER: 00.0 V FUEL_L: --- %</p>
<p>Main screen 6</p> <p> or  switch the display interface</p>	<p>Stop/OFF status</p> <p>08-06-03/09:12:15</p>



Note:

1. When “display change mode” set in “auto” switch state, the LCD display screen will switch to next page for each 10 seconds; when “background light control” set in “auto” state, the LCD screen background light will be auto turn off without any operate after three minutes. Once the fault appear or press any button, the background light turns on. When “Background light” control setting as “constant light”, the LCD background light will keep lighting.
2. Without Coolant temp. Oil pressure, or Fuel level sensor connection, the controller display “— — —”, which does not affect controller normal work.

(3).Operation keys

Content	Function
	Press the button, controller in “start” state, the green LED keep bright .This is start by manual, the generator will keep running.
 (Auto)	Press the button, controller in “Auto” state, the yellow LED keep bright. ①When the “Remote start” switch is turned off and mains resume, the generator set will be stopped after cool down delay. ②When “Remote start” switch is turned on or mains failure, the generator set will be delay started. ③ If timing start generator is valid, generator is be timing started. After the end of the timed start, will delay shutdown.
	Press the button, the above red LED keep bright, the controller is in “stop/reset” state, it will unload, decelerate and idle stop, the fuel will be cut off after idle delay. When During decelerate and idle the “reset” indicator keep flash, keep light when generator stop. If quickly press the button twice, generator will be cut off fuel and stop immediately, without decelerate, idle process.
	Press the button, yellow indicator keep bright. Controller in “TEST” state. Start the generator by hand directly, when generator runs in normal, the controller make generator onload automatically and keeps onload running.(whether “remote start” switch turn on/off

(4).State indicator light

Content	Function
	Indicate the generator set failure, protected stop, Display the fault content.
	Indicate the generator set warning information, Display alarm detail



Indicate "remote start" port state, used for mains state monitoring

4.2. Connection port definition


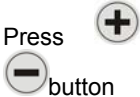


PortNo.	Function	
Power supply (8~36VDC, normal work current<300mA)		
1	"+" battery anode input	
2	"-" battery cathode input	
Analog input (input voltage range 0~5.0VDC)		
5	Fuel level sensor	
6	Oil pressure sensor 1	
7	Temp. sensor 1	
8	Oil pressure sensor 2	
9	Temp. sensor 2	
Mains three phase voltage input (0-300VAC, insulation inside) This function is just for 840		
10	Mains voltage phase R	
11	Mains voltage phase S	
12	Mains voltage phase T	
13	Mains zero line N	
Three phase load current input (0-5A AC, without inside isolation, current transformer must be added)		
14、15	A phase load current	
16、17	B phase load current	
18、19	C phase load current	
Genset three phase voltage input (0-300V AC, without inside isolation, current transformer must be added)		
20	U phase genset voltage	
21	V phase genset voltage	
22	W phase genset voltage	
23	N (Genset N wire)	
Switch output port (relay insulated, connector capacity 10A/250VAC /30VDC)		
24、25	Generator set supply (load)	
26、27	Mains supply (This function is just for 840)	
3	User-defined output1 (inversed diode inside)	
4	User-defined output2 (inversed diode inside)	
28	User-defined output 4	NO

29		Comm.
30		NC.
31		NO.
32	User-defined output 3	Comm.
33		NC.
34	Excitation/Charge failure input (charge generator input port D+, forbid connect to GND)	
35	Fuel (inversed diode inside)	
36	Comm. (Fuel & start contacts comm.)	
37	Start (inversed diode inside)	
Switch input port (add photoelectricity isolator, valid when connect to GND)		
38	User-defined input 4	
39	User-defined input 3	
40	User-defined input 2	
41	User-defined input 1	
42	Remote reset	
43	Remote start	
46	Speed signal input	
47		

V、Parameter setting

All the parameters can be read and written by communication protocol. Except coolant temp.



















oil pressure / fuel level sensor curve data adjust, all the parameters can be setting by controller.

Press button		Enter to parameter set interface Alarm limit set; Timer start set; Input port state set; Output port state set, Measure regulate set, Coolant temp set Failure record set; Delay time set; Oil pressure set Data and time set, System parameter set, Fuel level data set;
Press button		Select examine/setting parameter content (reversed display when selected)
Press button		Enter to the selected menu
Press button		Exit the parameter setting state











Note: Without any operation over three minutes, it will auto exit the















parameter setting state, to avoid illegimate operation

5.1. Parameter setting instruction

<p>Switch input status</p>	<p>Real time display controller input port state Remote start: 0 Remote reset: 0 Emergency stop: 1 AUX input 1: 0 AUX input 2: 0 AUZ input 3: 0 AUX input 4: 0 Note: Press any menu key will be exit</p>
<p>Relay output status</p>	<p>Real time display controller output port state Start: 0 Fuel: 0 Load: 0 Mains:0(It is for 840) AUX out 1: 0 AUX out 2: 0AUX out 3: 0 AUX out 4: 0 Note: Press any menu key will be exit</p>
<p>Failure record</p>	<p>Failure record 01/04 (Fault serial No./Fault amount) Emergency stop!! (fault reason) 08-06-03/11:26:38 (fault time) Note: press  or  button, display up or down failure; press  or  button, will be exit</p>
<p>Date and time set</p>	<p>Press  or  to change the reverse display data ; press  reverse display move to the left; Press , back to the superior menu , date and time will not changed. Press  reverse display move to the right, move to the last position press ,back to superior menu, date and time have been changed</p>
<p>Alarm limit set</p>	<p>High voltage:0250 High frequency :0530 High power :0500 Low fuel level:0020 Low voltage :0200 Low frequency:0470 High coolant temp.:0050 Low battery voltage :0105 High over current:0400 High over speed:0550 High fuel level:0080 Low charge:0080 Low oil pressure: 0020 Press  or  choose content and the content reversed display, Press  back to superior menu; Press  enter choosing parameter setting state, the selected parameter is underline, enter the parameter setting state, press  or  change the reversed display data; Press  move to the end of left; Press  back to the superior menu, press</p>

	<p>OK reversed display move to the end of right, press OK back to the superior menu, parameter changed and saved. Note: Unit of frequency:0.01Hz, unit of battery, charging voltage:0.01V, unit of oil pressure:0.01MPa, The rest without a decimal point, unit is 1</p>
<p>Measure regulate</p>	<p>Password: 8421(Default password) Genset A phase: 0000 Battery voltage: 0120 Genset B phase: 0000 Charge voltage: 0120 Genset C phase: 0000 Fuel regulate: 0050 Current A phase: 0000 Current B phase: 0000 Oil pressure 1 : 0020 Current C phase: 0000 Oil pressure 2 : 0020 Mains phase A Coolant temp.1: 0090 Mains phase B Coolant temp.2: 0090 Mains phase C Note: The measure regulate of mains three phase is just for 840. Coolant temp. ,oil pressure and oil temp./fuel level adjusting value are relevant to the error of real measuring.</p> <p>Password authentication input method Press + or - change data ; Press ← move to the left, move to first digit press ← back to superior menu; press OK move to the right, move to last digit, then press OK , enter next menu. As per the error value of controller measuring data and the real data to decide whether you need to data adjust. The controller already adjusted before leave factory. But it may be some warp in the use environment, if the warp is in the error range, we suggest not to adjust the data again.</p> <p>Press + or - choose content reversed display ; Press ← back to superior menu; Press OK , enter to choose data adjustment state, and the adjustment parameter underline. The data can be change.(Adjust range: - 10—— + 10) Enter data adjusting state , press + or - change data ; press ← back to superior menu, data adjustment in valid, Press OK data adjustment achieved, parameter change saved. Note: Minco830/840 provides calibration for three phase</p>

	<p>voltage, three phase current, and battery charge voltage. The measurement of controller will increase(reduce) according the increased(decreased) value of adjustment. The scope of adjustment is $\pm 10\%$.</p> <p>But the calibration of coolant temp., oil pressure and fuel level are different. Special explain, for coolant temp., oil pressure, fuel level sensors maybe positive modulus (It means the sensor output add along with input add), It maybe negative modulus(It means the sensor output minish along with input add). Add or minish adjust value lead to adjust result which is decided by the real situation.</p> <p>Note: The unit of current, battery voltage and charge voltage is 0.1.(e.g. actual value=displayed value *0.1), The unit of oil pressure is 0.01 Mpa</p>
<p>Delay time set</p>	<p style="text-align: center;">Password: 8421 (Default)</p> <p>Cool down :020 Idle stop:015 Transform:005 Genset start:005 Acc time:020 Over load:003 Cycle crank space:015 Crank time:008 Over voltage:003 Bypass time:020 Over frequency:003 Warm up:010 ETS fuel:000 Pre-fuel:005 Lose speed:030 Idle start :010 Close time :000 Low speed:020 AUX input 1:003 AUX input 2:005 AUX input 3:002 AUX input 4:005</p> <p>Press  or  choose content reversed display; press  back to superior menu; press  enter to choose parameter setting state, the adjusting parameter is underline.</p> <p>Enter setting state, press  or  change data, Press  cursor turn left, move to the first digit Press  back to superior menu, data will not be changed.; press  cursor turn right, move to last digit, press  back to superior menu, Changed parameter be saved.</p> <p>Note: Delay time up limit can't be over 255 seconds, if setting over 255s , system will change to 255s automatically.。</p>
<p>System parameter set</p>	<p style="text-align: center;">Input password: 8421 (default)</p> <p>Trip speed:0400 Output set 3 :002 Display mode:0 CT: 0500 Output set 4:004 Language C/E:0</p>

	Password:8421 LCD mode:0 Address:120 Speed source:0 Gear tooth No:135 Start method: 0 Voltage measure method:0 Input set 1:002 Input set 2:001 Input set 3:006 Input set 4 :008 Output set 1:000 Output set 2:006 Press  or  choose content reversed display ; Press  back to superior menu; Press  enter setting state, the adjusting parameter is underline. Press  or  change data; press  data will not be saved, press  the data can be saved ,then back to superior menu.
Timing start set	Date: Month—day/week T_1 : Begin time: Minute—end time: minute T_2 : Begin time: Minute—end time: minute T_3: Begin time: Minute—end time: minute Press  or  change the data of reversed display ; press  to turn left, when the reversed display move to first digit, press  back to superior menu, the date and time will not be changed; Press  to turn right, when the reversed display move the end of right, press  back to superior menu, the date and time setting will be saved
Coolant temp. set	1-0.66V/120℃ 2-1.04V/100℃ 3-1.27V/90℃ 4-1.62V/80℃ 5-1.94V/70℃ 6-2.36V/60℃ 7-3.00V/40℃ 8-4.06V/10℃
Oil pressure set	1-0.31V/0.00MP 2-1.29V/0.20MP 3-1.85V/0.40MP 4-2.07V/0.50MP 5-2.26V/0.60MP 6-2.41V/0.70MP 7-2.54V/0.80MP 8-2.75V/1.00MP
Fuel level set	1-0.08V/00% 2-0.33V/13 % 3-0.68V/27% 4-0.93V/40% 5-1.10V/53% 6-1.25V/67% 7-1.41V/80% 8-1.56V/100%

5.2. System parameter description

Trip frequency	When start the genset, if examine the genset rotate speed >trip speed, it considers the genset start successful and stop the crank output (trip speed generally setting to 1/3 of genset normal working rotate speed)
CT ration	CT rate setting correspond ratio is 5, for example the current rate setting in 500, it's correspond with 500:5
Passport	Leave factory password 8421, please change the password on your own
Address	Only use for multi equipment network, to differentiate the equipment .
Gear tooth number	The definition of this parameter is related with "speed source option". when "speed source option" is 0, the speed can be obtained by measuring frequency, this parameter is the ratio of speed to frequency, when "speed source" is 1,this parameter is the flywheel teeth of engine.
Output 1	AUX output definition: 0—Shutdown; 1—Auxiliary shutdown; 2—Clutch(LOAD); 3—Automation; 4—Idle (close); 5—Idle (open); 6—Pre-fuel; 7—Warm up; 8—Acceleration; 9—Deceleration; 10—Over speed; 11—Over load, 12—High speed, 13—Battery low, 14—Pumping, 15—Alarm
Output 2	
Output 3	
Output 4	
Input 1	AUX input definition :0—Monitor, 1—Low oil pressure; 2—High coolant temp.; 3—Acceleration limit; 4—Deceleration limit; 5—High oil temp; 6—Low fuel level (alarm but non-stop), 7—High fuel level, 8—Float charge failure, 9—Alarm, 10—Alarm non-stop (running period), 11—Alarm stop. 12-Monitor, Definition 16-31 are same as function of definition 0-15, 0-15 are effective when they are closed, 16-31 are effective when they are cut-off.
Input 2	
Input 3	
Input 4	
Crank mode	0: Detect low oil press when crank 1: Not detect low oil press when crank
Display mode	0: Switch in manual 1: Auto switch
Language Selection	0: Chinese 1: English
LCD mode	0: Auto shut down 1: Constant light

Speed source	0 : From Genset power supply frequency 1 : From Speed sensor
Measure voltage Method	0: Measure phase voltage 1: measure line voltage
Generator type	AUX

Auxiliary Output Definition Instruction

Shutdown: Any of failure for engine protection stop can bring public failure output;

Auxiliary Shutdown: Output is energized when genset stops. Output will be de-energized when ETS delay is finished;

Genset supply: Output will be energized when remote start switch closed after normal running;

Automation: Auto relay will have an output when the controller is in auto state;

Idle (close) /Idle (open): Output will be energized during the period of idle start and idle stop, but the state of which are opposite;

Pre-fuel: Output will be energized during the period of pre fuel;

Warm-up: Output will be energized before pre-fuel and generator start;

Acceleration/Deceleration: Output will be energized during the period of acceleration delay and deceleration delay, which coordinate to finish the mechanical speed governing;

Over Speed: Output will be energized when the genset is over speed;

Over load: Output will be energized when genset is over load.

High speed: Output will be energized when genset is running with rated speed.

Low Battery: Output will be energized when battery voltage is low.

Pumping: Output will be energized when low fuel level is detected to alarm, output will be vanished when high fuel level is detected, fuel can be resupplied automatically;

Alarm: Output will be energized when genset alarm

Auxiliary Input Definition Instruction:

Monitor: Not control, only monitor the state, needless input ports can be set up to monitor;

Low Oil Pressure: Genset will shutdown when low oil pressure is detected;

High Coolant Temperature: Genset will shutdown when the high coolant temperature is detected;

Acceleration Limit/Deceleration Limit: Coordinate with output of acceleration and deceleration to finish mechanical speed governing

High Oil Temperature: Genset will be protected & stopped when high oil temperature is detected;

Low Fuel Level: Alarm when low fuel level is detected, but genset will not stop;

High Fuel Level: Realize pumping function with low fuel level together;

Float charge Failure Alarm: Float charge failure alarms during the running time (this port is closed), but genset will not shutdown.

Alarm: User-defined alarm, instruct to auxiliary input 1—4 alarm;

Alarm Non-stop: User-defined alarm, but only during the period of genset working, instruct to auxiliary input 1—4 alarm;

Alarm Stop: User-defined alarm, cause to shutdown when genset is running, instruct to auxiliary input 1—4 stop

Attention: Display, alarm and protection of coolant temp., oil pressure and fuel level can be realized by measuring the analog volume, and also can be realized by defining the high coolant temp., low oil pressure, fuel level to the auxiliary input portion. If the analog volume and alarm input are exist together in the system, then any of alarm can come into being protection and alarm. If the switch alarm protection is no need, please define the auxiliary input to another function; if the analog volume alarm protection is no need, please set the alarm up-low limit to the measurement limit so as to not alarm.

Fuel temp. & oil pressure sensor just for display, not for control

Output of acceleration and deceleration are in coordination with limit of acceleration and deceleration to realize mechanical speed adjustment. Normal speed adjustment function can be realized by definite output of acceleration and deceleration but not detect properly and not alarm.

Since output and input can be user-defined, Minco 830/840 controller's input and output function actualized is much more than the real amount of input and output. Although some function of controller has been appointed, which can't execute if there is no definition for input and output port.

5.3. Delay Time Instruction

Delay of "cool stop (down)"	When the controller is in "Auto" state, once the "Remote start" switch input turn off and mains resumed the genset will be stopped after delay.
Delay of "genset start"	When the controller is in "Auto" state, once the "Remote start" switch input turn on or mains failure , the genset will be started after delay.
Delay of "Crank INTerval"	When the cranking time delay finish, if the start succeed condition is not satisfied and not reach the crank times limit, the delay will be repeated and crank times added 1.
Delay of "cranking time"	When the genset start and begin to delay, if the start succeed condition is satisfied (genset rotate speed>trip speed) it's consider to be genset start successful and stop delaying.
Delay of "bypass time"	After the gen-set start successfully, that begin to start the delay of bypass. "low oil pressure", "high coolant temperature " etc will not be monitored during the delay to avoid mistake alarm when genset in initially starting.
Delay of "energize to stop"	Output of auxiliary stop relay is energized when engine stop."Ergize to stop" delay begin, output of auxiliary stop relay is de-energized when delay finish.

Delay of “pre-fuel”	Delay of pre-fuel has begun before engine starts and relay of pre-fuel close at the same time., Relay of pre-fuel cutoff after delay finish, and engine start to crank.
Delay of “idle start”	Delay of idle start begin after the engine starts successfully, and the relay of “idle start” begin to work at same time.
Delay of “idle stop”	When genset stops, delay of “idle stop” begin after deceleration finish, and idle relay begins to work.
Delay of “ACC”	Genset start successful and idle (start) finish. Acc relay closed when Acc delay begins.”Acc failure” will alarm when the delay finish but not get the signal of Acc in a right position.
Delay of “Auxiliary Input 1”	Delay begins at the time of auxiliary input 1 closes, delay will break off when the state returns to be normal. When the input still closes after delay finishes, it will alarm.
Delay of “Auxiliary Input 2”	Delay begins at the time of auxiliary input 2 closes, delay will break off when the state returns to be normal. When the input still closes after delay finishes. it will alarm.
Delay of “Auxiliary Input 3”	Delay begins at the time of auxiliary input 3 closes, delay will break off when the state returns to be normal. When the input still closes after delay finishes, it will alarm.
Delay of “Auxiliary Input 4”	Delay begins at the time of auxiliary input 4 closes, delay will break off when the state returns to be normal. When the input still closes after delay finishes, it will alarm.
Delay of “Loss Speed”	Delay begins when no speed signal is detected during the running. If the speed signal isn't be detected until delay finish, then it will alarm.
Delay of “Supply(close) time”	The time of the closing relay output is set to 0, the relay continuous has output.
Delay of “Retransformation”	When “remote start” switch turn off and starts to delay, the controller is in a “auto” state, and it gets ready to stop after delay finishes.
Delay of “over load”	Delay begins when current is exceed the alarm upper limit. If the current is in normal, delay will break off. When it's still over current after delaying, it will be overload to stop. When the current exceeds stop upper limit, then protect to stop without any delay.
Delay of “over voltage”	Delay begins when voltage exceeds the upper limit. When voltage returns to normal during the period of delay, delay will be interrupted. If the phenomena of overvoltage still exists after delay finishes, then it will be in an overvoltage protection to stop

Delay of “over frequency”	Delay begins when the frequency exceed the upper limit. When voltage returns to normal during the period of delay, delay will be interrupted. If the phenomena of over frequency still exists after delay finishes, then it will be in an over frequency protection to stop. If the frequency is above the upper limit, then it will stop to be protected without any delay.
Delay of “Warm Up”	It provides a delay between starts and loads successfully. It can prolong the time of transferring to supply. It also can help the genset to run to supply in the best condition and avoid friction loss of genset to the minimum when it's in not an emergency situation.
Delay of “Deceleration”	Delay begins at when genset stops, and deceleration relay will close. The controller will alarm for “deceleration failure” when the right deceleration signal can not be detected after delay finishes.

5.4. Timing Start Instruction

Timing start is only valid on the automatic state of Minco830/840.

Auto start estimate the now date(month-day/week) to be correct or not, if it's correct, then start the machine to work or stop the machine to halt at the setting time(hour: minute).All the parameters are set to 0, then it means time start function is not available.

Any one of month/day/week is set to 0, it means that the setting corresponds with current time. When month/day/week are all set to 0, it means timing start daily. When day and month are set to 0, it means timing start weekly. When month and week are set to 0, it means timing start monthly.


For example:





The date of timing start is set to:08-00/01 Time: 10:00-12:20. It means that the genset will starts at 10:00,and stops at 12:20 in every Monday of every week in August.

The date of timing start is set to:00-03/00 Time: 10:00-12:20. It means that the genset will starts at 10:00,and stops at 12:20 in the 3rd of every month.

Three times interval can be set on every day, please set “0” to no-use time interval.

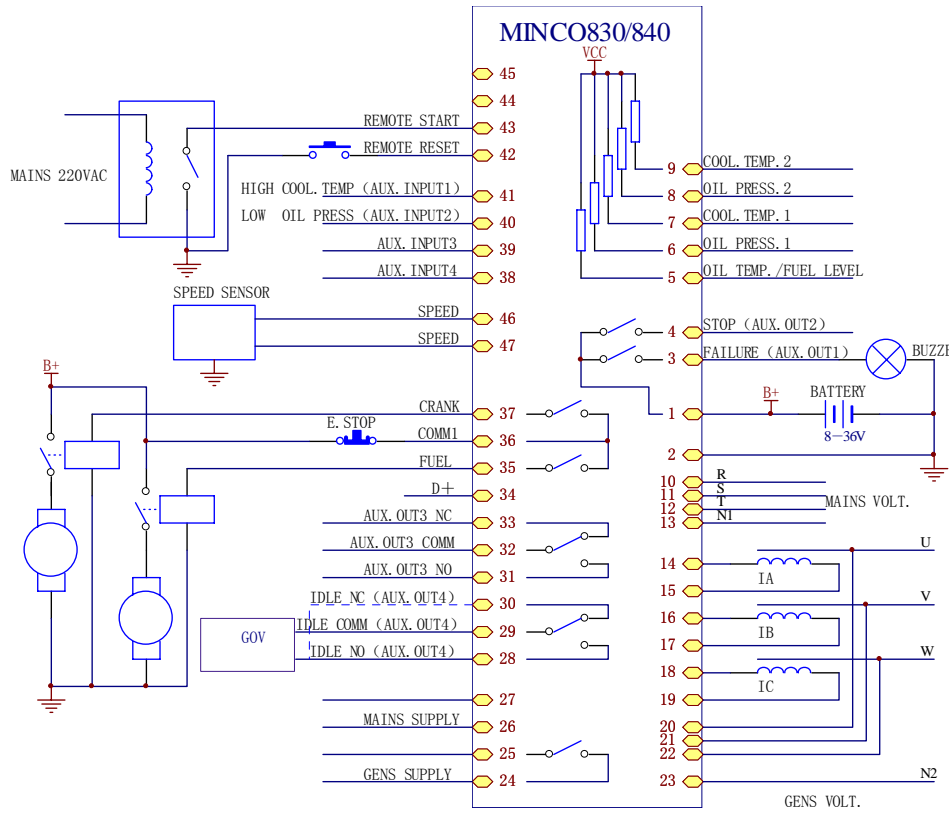
VI、 Normal failure and handling method

Failure	Description	Solution
Manual start failure	Press the  key, the green light isn't bright on the above and the motor doesn't work.	Check whether the green light is broken, if the LED light isn't broken, please contact with the factory; If the LED light is broken, please see below solution.

	<p>Press the  key, the green light is bright on the above and the motor doesn't work.</p>	<p>Check the menu of "low oil pressure" in the "input port state", if display "0", please check whether the oil pressure sensor is ok; if display "1", the oil pressure sensor is ok, now please press , measuring the module port 37 "start" whether there's 24V with a multimeter, if the voltage is 24V, check whether the outside middle relay, start motor is broken, and whether the battery voltage is enough; If port 37 no output, the module might be damaged.</p>
Auto start failure	<p>Module in  (Auto) state, inspection "remote start" have input, the "remote start" state light isn't bright and the motor doesn't work.</p>	<p>Check the menu of "remote start" in the "input state", if the "remote start" display "0" means that the outside timer etc module relay is broken cause didn't receive the input signal; If display "1", the module might be broken.</p>
	<p>Module in  (Auto) state, inspection "remote start" have input, the "remote start" state light is bright on and the motor doesn't work.</p>	<p>Check the oil pressure sensor; Switch to the manual start, check whether there're output signal of the port 37- "remote start", the outside components and the battery voltage.</p>
Wheel tooth is fighting when start	<p>Start successful and motor keep running, the wheel tooth is fighting.</p>	<p>Lower down the trip speed; Suggest used speed sensor to get the rotate speed.</p>
On load current display incorrect.	<p>Current ratio setting incorrect.</p>	<p>Reset the current ratio.</p>

VII Outside wiring diagram

(Mains connection will be removed on 830)



VIII. Front and back panel diagram (Minco 830 and Minco840)

