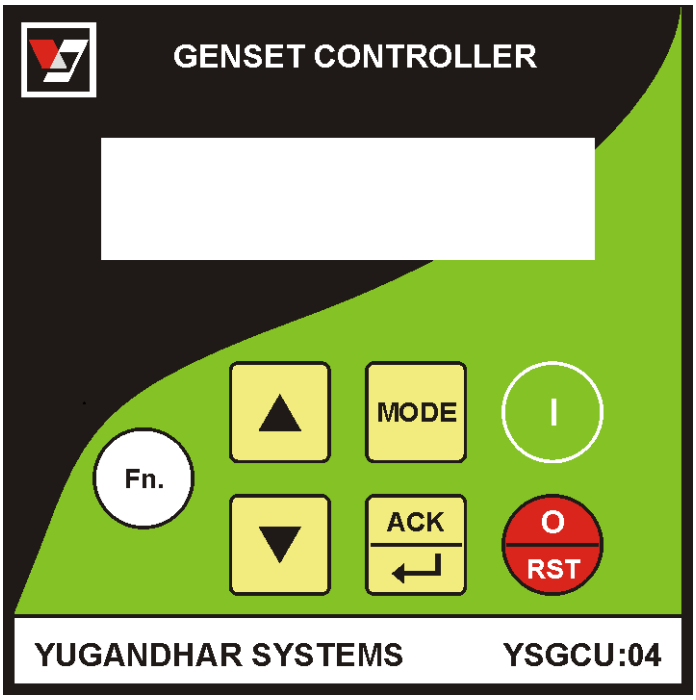
YSGCU:04
GENSET CONTROLLER



Introduction :

The YSGCU : 04 integrates Automatic Mains Failure (A.M.F.) module, and a Gen-Set controller. The YSGCU: 04 provides visual indication Alarms and status by means of LCD display. It has more than 25 programmable parameters. Unique bypass mode facilitates the safeties of the Generator even when operated using panel switches or key, thus eliminates the use of external Engine Safety Unit. The additional features like Engine Run time and Rest time make the controller most suitable for remote sites.

Modes of Operation:

Every time the controller is switched on, it enters Auto mode. Following are the different modes of operation…

a. Manual Mode
b. Auto Mode
c. Test Mode
d. Bypass Mode
e. Program Mode
f. Diagnostic Mode

Manual Mode :

The Manual mode allows you to manually control the Engine and contactors. Select the Manual mode using Mode key. START [I] and STOP [O] Keys are used to start/stop the engine. To control the contactors in Manual mode, if enabled Press ACK/↵ key. Press STOP key to stop the engine.

Auto Mode :

Select the Auto mode using the mode key. The engine starts when the controller detects a Mains failure. Here the settable parameter, Blackout time comes in picture. If the Mains Failure persists till the Blackout time is over, the Mains Contactor is switched OFF and the engine cranking is attempted. Once the Generator is started the controller waits for set duration (monitor delay) and then Generator Contactor is switched ON. If the Mains restores, and remains stable till the Mains Verification Time is over, the Generator Contactor will be switched OFF. The Mains Contactor will be switched ON after the Contactor Changeover Time. If the YSGCU: 04 detects any fault, during the running, the GENERATOR Contactor is switched OFF, engine is shut down and fault is declared. In this condition, if the Mains resumes the Mains Contactor is switched ON.

Test Mode :

This mode is active only of the Mains is available. In this mode the controller starts the engine, keeps it running till the set TEST time is over and then switches it off. The Generator contactor is closed only if it is programmed to do so, in test mode. You can switch OFF the generator using STOP key any time.

Bypass Mode :

This mode can not be selected using the mode key. If the external bypass input is on the controller terminates all the current operations, switches off the contactors, switches OFF the engine if ON and enters the Bypass mode. Here all AUTO, MANUAL and TEST features are bypassed. This mode facilitates the generator control, using the Panel switches. You can start/stop the generator and operates the contactors using the traditional control panel switches. The best thing here is that the YSGCU:04 works as an Engine Safety Unit. If any of the fault is detected the controller intervenes and shuts the engine OFF.

Program Mode :

The Program mode allows you to program various parameters and modify the settings. All the settings are password protected. See List of programmable parameters.

Diagnostic mode :

This mode is also password protected. Only the authorized person should use this mode. This mode allows you to check all the digital, analog inputs as well as relay outputs.

Display measurements and messages:

YSGCU:04 controller is equipped with 16X2 backlit LCD display for displaying various messages and measurements. Following measurements are displayed on the LCD display.

a. Generator Frequency – Resolution 0.1 Hz
b. Generator RPM – Resolution 1 RPM
c. Generator Battery voltage – Resolution 0.1 V
d. Engine Run Hours - – Resolution 0.1 Hrs. – Max 99999.9 Hours. (Tamper proof)

All the necessary messages like engine status, faults, action guide lines and measurement parameters are displayed in English on LCD display. This reduces the headache of decoding the coded message as in traditional controllers.

CONTROLLER INPUTS AND OUTPUTS :

NO	NAME	FUNCTION	ORIGIN	NATURE
1	ALTN -N	Alternature supply Neutral	Alternetor output	supply on when engine is running
2	ALTN -PH	Alternature supply Phase		
3	EMR.STOP	Emergancy Stop	E.Stop Switch	NC when Estop pressed
4	LOW FUEL	Low Fuel Level	Fuel Tank-LFL switch	NC when Low Fuel Level
5	OVERLOAD	Overload	Overload Relay	NC when Overload
6	HCT	High Temperature	Engine- HCT switch	NC when High temp
7	LLOP	Low Oil Pressure	Engine-LOP switch	NC when Press is Low
8	MAINS FAIL	Mains Fail	Mains LVM	NC when mains ok
9	BYPS	Bypass Input	Bypass switch	NC when Bypass active
10	B+	12/24V (To be specified)	Battery	Aux.Supply
11	B-	Battery negative	Battery	Aux.Supply

NO	RELAY NAME	USE TO	CONTACT
12	START	Energise the Starter	NO (note1)
13	STOP	Energise the Fuel Solenoid	NO (note1)
14	FAULT	Common fault (Hooter)	NO (note1)
15	MC RLY POLE	Switch On mains contactor	NO
16	MC RLY NO		
17	GC RLY POLE	Switch On Gen-set contactor	NO
18	GC RLY NO		

All the relays outputs are potential free contacts (2.Amp @230 VAC)
Note1 : Either B+ve or B-ve is common for poles of these relays (to be specified)

Entering the Program Mode :

This mode is active only if the DG is not running. Press Fn Key and keep it pressed for 5 sec. The controller enters the program mode. Here by selecting various sub modes one can choose, Program mode, Diagnostic mode. All these modes are password protected.

For programming purpose the following keys are used…

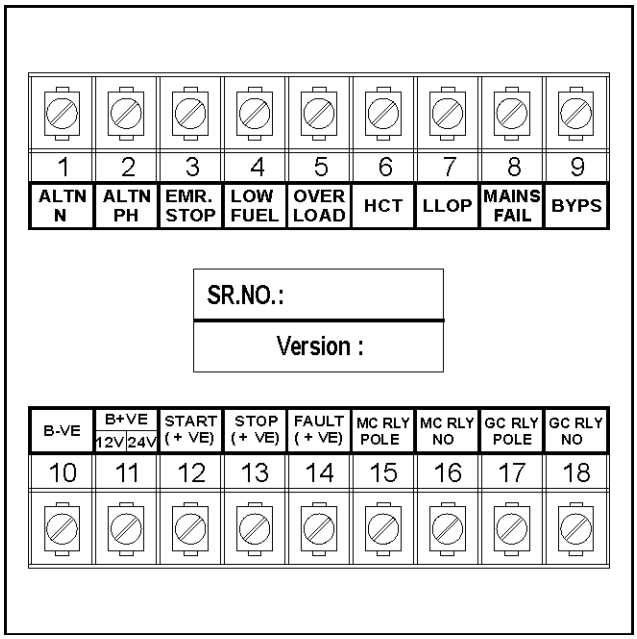
O/RST Key – Save the edited values in EEPROM and exit Program Mode.
Mode key - Save the current value and go to next parameter.
ACK/↵ - Save the current value and go to previous parameter
UP Key – Select the next Sub mode /parameter or Increment the value.
DOWN Key – Select the next Sub mode /parameter or Decrement the value.

After entering choosing the sub mode, the parameters in that sub mode are displayed. One can select the next or previous parameter using UP. and DOWN keys. Select the parameter to be edited and Press **ACK/↵**. Now the value of the selected parameter is displayed. Use UP or DOWN key to change the value and Press **ACK/↵** to save it.

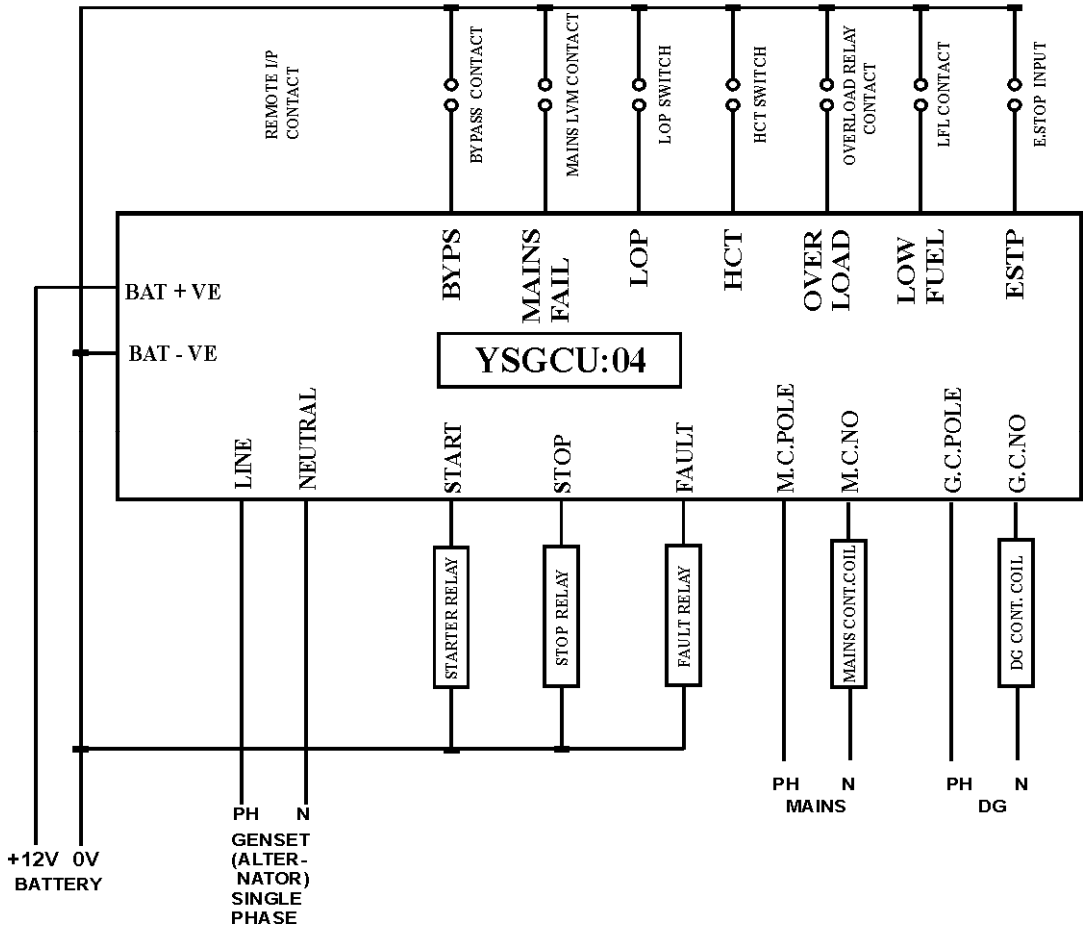
Program Mode - List of settable parameters

Sr.No.	Parameter Description	Unit	Min.Val.	Max.Val.	Fact. Setting
0	Blackout Time Units	Selection	SEC.	MIN.	SEC
1	Blackout Time	Sel.para 1	1	999	10
2	Start Attempts	no.s	1	9	3
3	Fuel Solenoid	Selection	ETR	ETS	ETS
4	Crank Period	Sec.	2	9	5
5	Crank Pause	Sec.	2	99	5
6	Monitor Delay	Sec.	1	300	10
7	Mains Verify Delay	Sec.	1	300	30
8	Cool Down Period	Sec.	0	600	20
9	Stop Cycle Period	Sec.	10	99	20
10	Contactor Delay	Sec.	1	9	3
11	Contactor Control	Selection	NO	YES	YES
12	Select Engine RPM	RPM	1500	3000	1500
13	Over Speed Warning	RPM	1500	1700	1600
14	Over Speed Alarm	RPM	1500	1700	1650
15	Under Speed Warning	RPM	900	1500	1350
16	Under Speed Alarm	RPM	900	1500	1300
17	Decranking RPM	RPM	500	1200	1200
18	Check LOP Sw. while Start / Stop	Selection	No	Yes	Yes
19	Fault Verification Delay	Sec.	1	9	3
20	DG Battery Low Voltage	Volts	0	24.0	9.0
21	DG Battery Voltage Mulitiplyer	Selection	1000	30000	1000
22	Run Time	Min.	1	999	240
23	Rest Time	Min.	0	600	90
24	Test Cycle Duration	Min.	1	99	5
25	Auto Test After Duration	Days	1	99	99

YSGCU: 04 Back Panel View :



YSGCU:04 WIRING DIAGRAM :



Please note that the Development of a product is a continuous process. The specification are subject to change any time.