PLUS POWER 6120 6100U GENSET CONTROLLER INSTALLATION INSTRUCTIONS

The contents are intended for quick guidance and supplement to the user who is using 6120 controller. Please read the standard manual for more details.
6120 controller has four variants as shown:

Type	Description
PLUS POWER6120 6110U/6110UC	Automatic Start Module, it controls generator to start/stop by remote start signal;
PLUS POWER6120 6120U/6120UC	Based on PLUS POWER6120 6110U/6110UC and add mains AC monitoring, mains/gens automatic switching control functions(AMF).

Note1: PLUS POWER6120 6110UC/6120UC with RS485 interface, PLUS POWER6120 6110U/6120U without RS485 interface.
Note2: PLUS POWER6120 6110UC/6120UC is taken as an example to describe in this manual.

1. KEYS DSCRIPTION

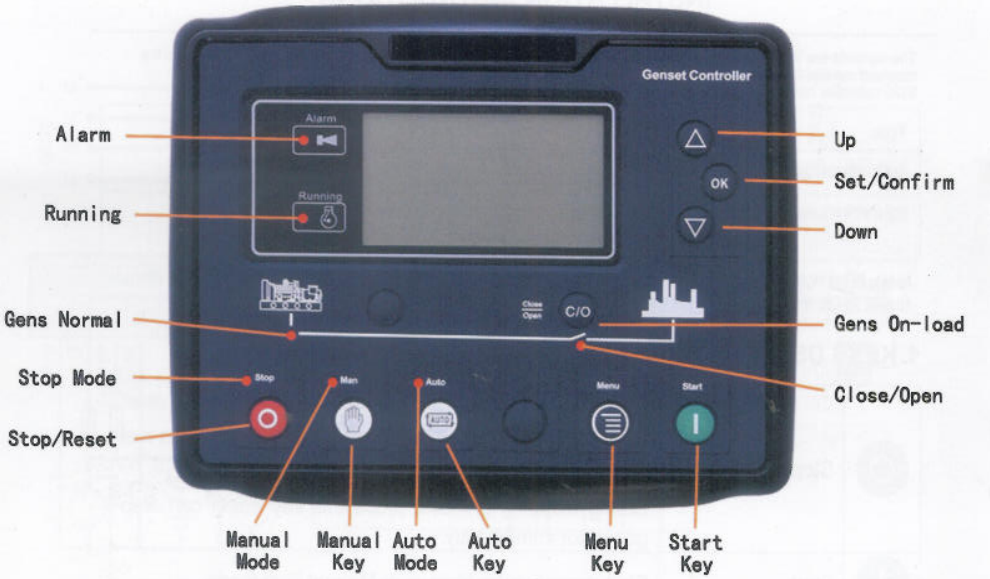
	Stop/ Reset	Can stop generator under Manual/Auto mode; Can reset shutdown alarm; Press this key at least 3 seconds to test panel indicators are OK or not(lamp test); During stopping process, press this key again can stop generator immediately.
	Start	Start genset under Manual or Manual Test mode.
	Manual	Pressing this key will set the module as Manual mode.
AUTO	Auto	Pressing this key will set the module as Auto mode.
	Running with load	Controller is under manual testing mode. Under this mode, gen-set will run automatically with load when gens normal. (RF6110UC without)
C/O	Gens Close/Open	Can control gens to switch on or off in Manual mode.
OK	Set/ Confirm	Shift cursor to confirm In parameters setting menu.
△	Up/Increase	Screen scroll; Up cursor and increase value in setting menu.
▽	Down/Decrease	Scroll screen; Down cursor and decrease value in setting menu.
	Menu	Pressing this key will set menu; Again pressing this key can return main interface.

2. CONTROLLER DIMENSION

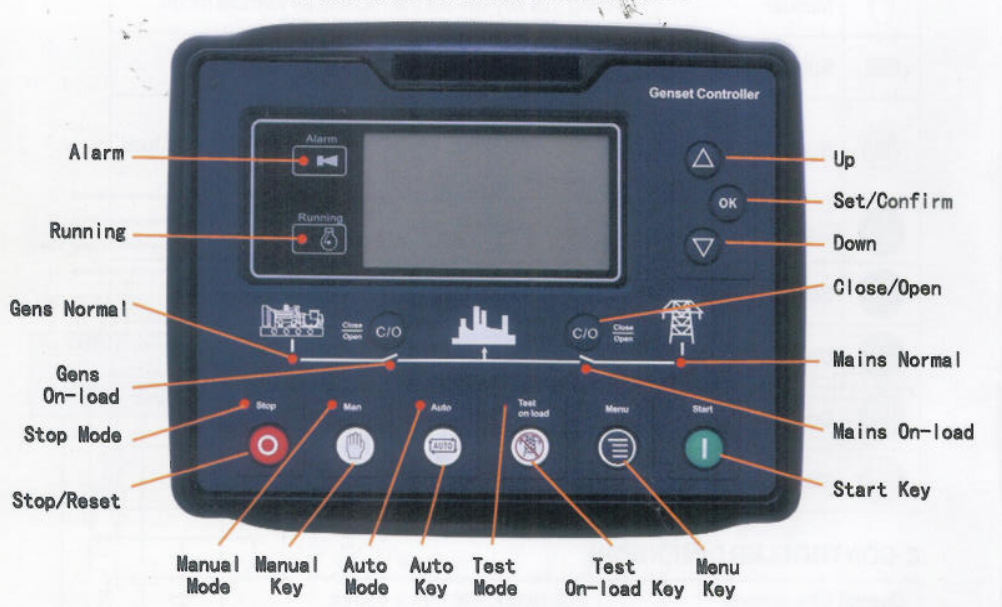
Overall Dimensions	208 mm x 166 mm x 48mm
Panel Cutout	186mm x 141mm

3. PANEL INDICATORS DESCRIPTION

PLUS POWER6120 6110UC Panel Indicators



PLUS POWER6120 6120UC Panel Indicators



4.PARAMETER EDITING

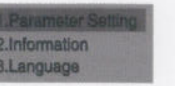
After controller powered on, press to enter into the parameters setting menu, the menu iterm as shown:

1)Press key to enter the menu interface after controller started, choose 1.(See Fig 1);

2)Press key to enter parameter configuration password confirm interface(See Fig 2);

When 1234 is nput, part of the parameters can be set; when 0318 is input , all the parameters can be set;

Fig1



3)Press key or key to increase or decarase values; Press key to shift cursor and confirm setting;

4)If password is correct, enter into parameter interface; Press key or key to choose parameter items;Press key to enter into current parameter setting menu;

5)If parameter within the range, the setting can be saved in internal Flash of controller. If out of range, it can not be saved.

Note:Pressing key at any time can exit the editor and return to main menu.

Fig2 Input Password

000

5. PARAMETER RANGE AND DEFINITION

No.	Items	Range	Default	Description
1	Mains Normal Delay	(0-3600)s	10	The delay from abnormal to normal or from normal to abnormal. It used for ATS (automatic transfer switch) control.
2	Mains Abnormal Delay	(0-3600)s	5	
3	Mains Under Voltage	(30-620)V	184	When mains voltage is under the point, mains under voltage active. When the value is 30, mains under voltage disabled.
4	Mains Over Voltage	(30-620)V	276	When mains voltage is greater than the point, mains over voltage active. When the point is 620V, mains over voltage disabled.
5	Transfer Rest Time	(0-99.9)s	1.0	It's the delay from mains open to generator closed or from generator open to mains closed.
6	Start Delay	(0-3600)s	1	Time from mains abnormal or remote start signal is active to start genset.
7	Stop Delay	(0-3600)s	1	Time from mains normal or remote start signal is inactive to genset stop.
8	Start Times	(1-10) times	3	When engine start failure, it's the maximum cranking times. When setting crank times out, controller send start fail signal.
9	Preheat Time	(0-300)s	0	Time of pre-powering heat plug before starter is powered up.
10	Crank Time	(3-60)s	8	Time of starter power up each time.
11	Crank Rest Time	(3-60)s	10	The second waiting time before power up when engine start fail.
12	Safe Running Time	(1-60)s	10	Alarm for low oil pressure, high temp, under speed, under frequency /voltage, charge fail are all inactive.

No.	Items	Range	Default	Description
13	Start Idle Time	(0-3600)s	0	Idle running time of genset when starting.
14	Warming Up Time	(0-3600)s	10	Warming time between genset switch on and high speed running.
15	Coolant Time	(3-3600)s	10	Time for cooling before stopping.
16	Stop Idle Time	(0-3600)s	0	Idle running time when genset stop.
17	ETS Time	(0-120)s	20	Stop electromagnet's power on time when genset is stopping.
18	Over Stop Delay	(0-120)s	0	If "ETS output time" set as 0, it is the time from end of idle delay to gen-set at rest; if not 0, it is from end of ETS solenoid delay to gen-set at rest
19	Switch Close Delay	(0-10)s	5.0	Mains' or generator's switch closing pulse width, when it is 0, output is continuous.
20	Flywheel Teeth	(10-300)	118	Number of flywheel teeth, it can detect disconnection conditions and engine speed.
21	Genset Abnormal Delay	(0-20.0)s	10.0	Over or under volt alarm delay
22	Genset Over Voltage shutdown	(30-620)V	264	When genset voltage is over the point, generator over voltage is active. When the point is 620V, generator over voltage is disabled.
23	Genset Under Voltage	(30-620)V	196	When generator voltage is under the point, generator under voltage is active. When the point is 30V, generator under voltage is disabled.
24	Under Speed shutdown	(0-6000)RPM	1200	When the engine speed is under the point for 10s, shutdown alarm signal is sent out.
25	Over Speed shutdown	(0-6000)RPM	1710	When the engine speed is over the point for 2s, shutdown alarm signal is sent.
26	Under Frequency shutdown	(0-75.0)Hz	45.0	When generator frequency is lower than the point (not equal to 0) for 10s, shutdown alarm signal is sent.
27	Over Frequency shutdown	(0-75.0)Hz	57.0	When generator's frequency is over the point and continues for 2s, generator over frequency is active.

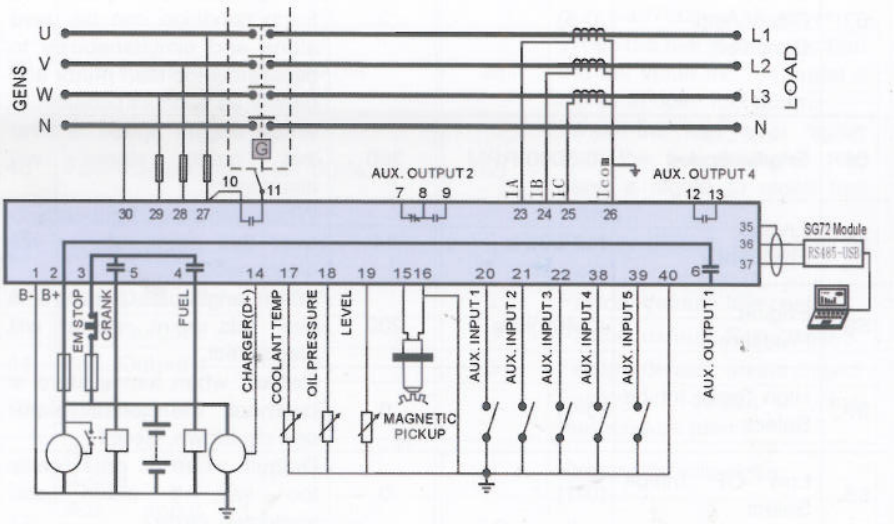
No.	Items	Range	Default	Description
28	High Temperature shutdown	(80-140)°C	98	When engine temperature sensor value is over this point, it sends out high temp. alarm. When the value is 140, warning alarm won't be sent. (only suited for temperature sensor, except for high temp. pressure alarm signal inputted by programmable input port)
29	Low Oil Pressure shutdown	(0-400)kPa	103	When engine oil pressure sensor value is under this point, Low Oil Pressure alarm is sending out. When the value is 0, warning alarm won't be sent. (only suited for oil pressure sensor, except for low oil pressure alarm signal inputted by programmable input port)
30	Low Fuel Level	(0-100)%	10	When fuel level sensor value under this point and remains for 10s, genset send out warning alarm, only warn but not shutdown.
31	Loss Of Speed Signal Delay	(0-20.0)s	5.0	When the delay setting as 0s, it only warn but not shutdown
32	Charge Failure	(0-30)V	6.0	During generator is running, when charge alternator WL/D+ voltage is under this point and remain for 5s, generator will warning alarm and shutdown.
33	Battery Over Voltage	(12-40)V	33.0	When generator battery voltage is over the point and remains for 20s, battery over voltage signal is active. it only warn but not shutdown
34	Battery Under Voltage	(4-30)V	8.0	When generator battery voltage is under the point and remains for 20s, battery under voltage signal is active. it only warn but not shutdown
35	CT Rate	(5-6000)/5	500	Current transformer rate
36	Full Load Current	(5-6000)A	500	Rated current of generator, used for calculating over load current.
37	Over Current Percentage	(50-130)%	120	When load current is over the point, the over current delay is initiated.

No.	Items	Range	Default	Description
38	Over Current Delay	(0-3600)s	1296	When load current is over the point, over current signal is sent. When the delay is 0, only warn but not shutdown.
39	Fuel Pump Open	(0-100)%	25	When the fuel level lower than the set value for 10s, send a signal to open fuel pump.
40	Fuel Pump Close	(0-100)%	80	When the fuel level higher than the set value for 10s, send a signal to close fuel pump.
41	Aux. Output 1	(0-17)	2	Factory default: Energized to stop
42	Aux. Output 2	(0-17)	3	Factory default: Idle control
43	Aux. Output 3	(0-17)	5	Factory default: Gens closed
44	Aux. Output 4	(0-17)	6	Factory default: Mains closed
45	Aux. Input 1	(0-15)	1	Factory default: High temperature alarm
46	Aux. Input 1 Active	(0-1)	0	Factory default: close
47	Aux. Input 1 Delay	(0-20.0)s	2.0	
48	Aux. Input 2	(0-15)	2	Factory default: Low oil pressure alarm
49	Aux. Input 2 Active	(0-1)	0	Factory default: close
50	Aux. Input 2 Delay	(0-20.0)s	2.0	
51	Aux. Input 3	(0-15)	10	Factory default: Remote start input
52	Aux. Input 3 Active	(0-1)	0	Factory default: close
53	Aux. Input 3 Delay	(0-20.0)s	2.0	
54	Aux. Input 4	(0-15)	11	Factory default: Low fuel level warn
55	Aux. Input 4 Active	(0-1)	0	Factory default: close
56	Aux. Input 4 Delay	(0-20.0)s	2.0	
57	Aux. Input 5	(0-15)	12	Factory default: Low coolant level warn
58	Aux. Input 5 Active	(0-1)	0	Factory default: close
59	Aux. Input 5 Delay	(0-20.0)s	2.0	
60	Power Mode Select	(0-2)	0	0: Stop Mode; 1: Manual Mode; 2: Auto Mode
61	Module Address	(1-254)	1	The address of controller.
62	Password	(0-9999)	1234	

No.	Items	Range	Default	Description
63	Crank Disconnect Condition	(0-5)	2	Conditions of disconnecting starter (generator, magnetic pickup sensor, oil pressure), Each condition can be used alone and simultaneously to separating the start motor and genset as soon as possible.
64	Engine Speed	(0-3000)RPM	360	When engine speed is over this point, starter will disconnect.
65	Engine Frequency	(10-30)Hz	14	When generator frequency is over this point, starter will disconnect.
66	Engine Oil Pressure	(0-400)kPa	200	When engine oil pressure is over this point, starter will disconnect.
67	High Temp. Inhibit Select	(0-1)	0	Default: when temperature is overheat, the genset alarm and shutdown. **Note1**
68	Low OP Inhibit Select	(0-1)	0	Default: when oil pressure is too low, it alarm and shutdown. **Note2**
69	Voltage Input Select	(0-3)	0	0: 3P4W 1: 2P3W 2: 1P2W 3: 3P3W
70	Temp. Sensor Select	(0-9)	8	SGX
71	Pressure Sensor Select	(0-9)	8	SGX
72	Liquid Level Sensor Select	(0-5)	3	SGD
73	Poles Number	(2-32)	4	Number of magnetic poles, used for calculating rotating speed of generator without speed sensor.
74	Temp. Sensor Open Circuit Action	(0-2)	1	0: Indication; 1: Warning; 2: Shutdown
75	Oil Pressure Sensor Open Circuit Action	(0-2)	1	
76	Maintenance time	(0-5000)h	30	It is used for setting genset maintenance interval.
77	Maintenance time out action	(0-2)	0	0 Not used; 1 Warning; 2 Shutdown When maintenance action type is set as "Not used" maintenance alarm reset.
78	Defined Sensor Curve	(0-2)		0:Defined temperature sensor 1: Defined pressure sensor 2: Defined liquid level sensor Select the sensor, input corresponding 8 values.

6. TYPICAL APPLICATION

RF6110 U Typical Application Diagram



RF6120 U Typical Application Diagram