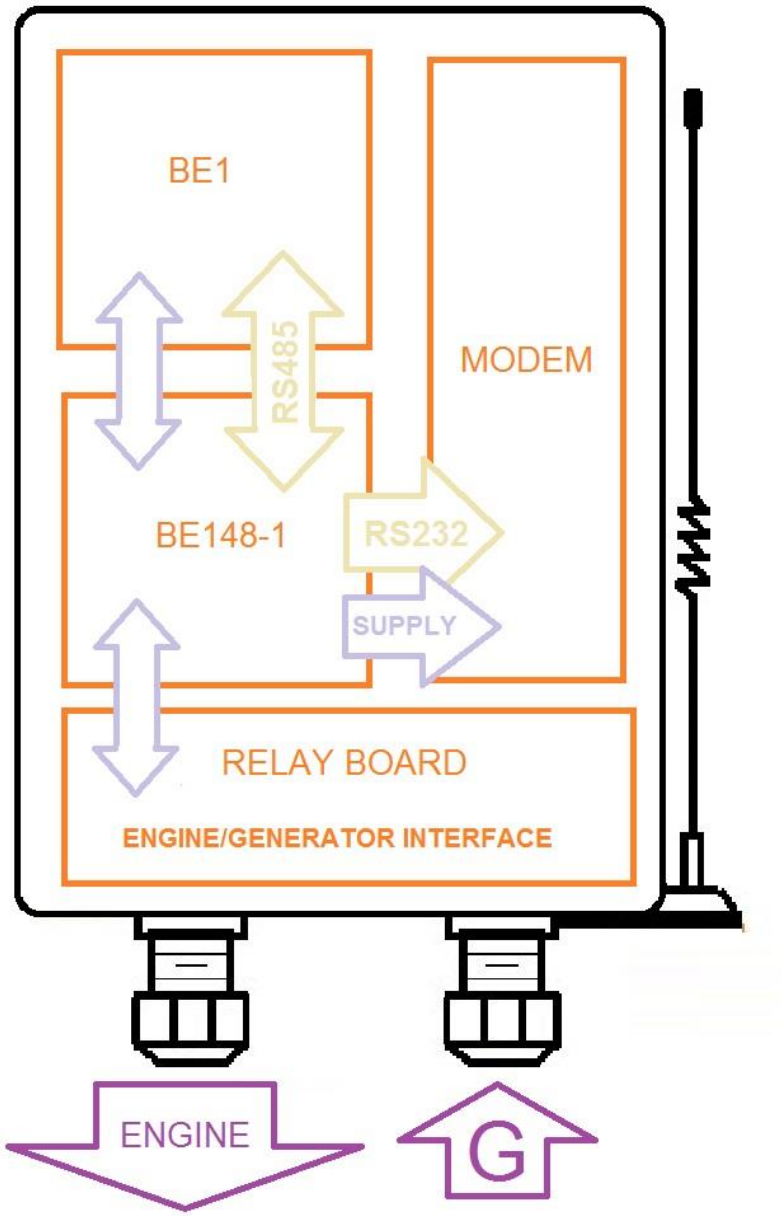
GSM GENERATOR CONTROL PANEL

1.0 INTRODUCTION

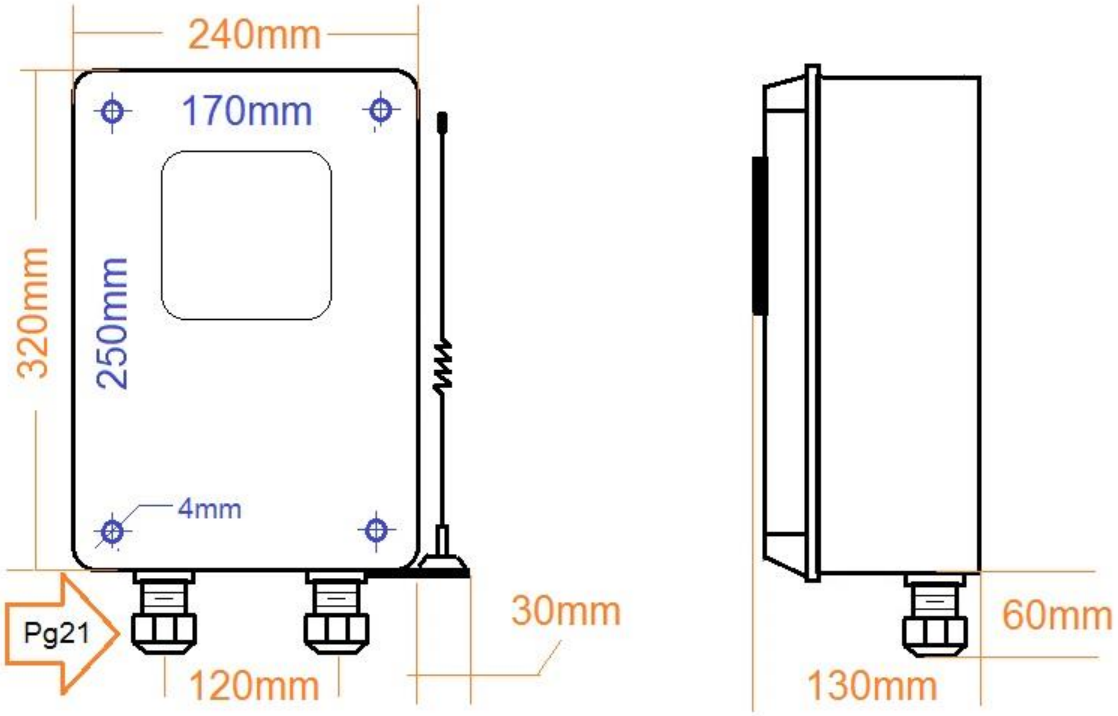
The BE1 GSM panel includes in a plastic box 320x240x130mm, the Be148-1 SMS gateway module, the Be1 generator controller, the F1403 Modem, and an interface relay board. The panel is supplied with all internal cables, an antenna and a printed version of the Be1 generator controller installation / programming manual. The panel is designed to start and stop a generator via SMS. With SMS commands you can monitor the engine instruments, fuel and generator. The block diagram of the panel is displayed below.



This instruction manual applies even if you only purchase the Be148-1 kit. The kit includes all parts except the plastic box and the relay interface board. To use the panel you may require a copy of the Be1 generator controller installation and programming manual.

2.0 Be1 GSM PANEL SETUP

Unpack the panel. Loose a little of the 4 fixing screws. Totally remove the 2 screws on the right side. Loose the two screws on the left side in a way that the door of the panel can pivot toward the left side. Position the GSM panel onto the wall in the desired location. Mark the hole location on the wall following a 250mm/vertical and 170mm horizontal pattern. There you are the drawing and dimensions.



[1] Check the inside of the panel: the Be148-1 SMS gateway with 4-pole and 6-pole connectors in position, the RS232 cable, the antenna, and the modem power supply cable. Do not plug now the female blade terminal on position #18 (12V battery supply).

[2] Insert the SIM into the modem. Make sure the SIM has the PIN disabled. If not, you must disable it by using a mobile phone.

[3] Make sure the modem F1403 is connected to Be148-1 via the RS232 cable and the jack plug is inserted.

[4] Connect the generator as indicated in the Be1 Typical Application Wiring Diagram (section 17 of the Be1 installation manual). When in doubt, contact us first for information. Before connecting the battery supply on terminal #18, connect in series a fuse of a suitable size to protect the cables from short circuits.

[5] Before configuring the GSM system, test the engine and the generator by following the Be1 controller instruction manual. At the end, put the Be1 in OFF mode. Remove the battery supply from blade terminal #18. In the next step, you are going to set up the GSM system.

[6] When you connect the battery, the GSM panel will turn on all LED indicators for a second. After that, the **SYSTEM SETUP** illuminates to indicate the modem initializatio. If the **GSM ERROR** blinks, the power supply is lower than 8Vdc. You must raise the supply above 10Vdc; check the battery voltage.

[7] The green indicators 'Power' and 'Online' on the metal case of the modem will turn on. The green indicator 'Act' will blink from time to time. The green LED 'Online' will start blinking when the modem is connected to the GSM network. This will take approximately one or two minutes.

[8] When the modem is functional, the green indicator **GSM ONLINE** turns on. At the same time, the **SYSTEM SETUP** will turn OFF. When there are connection problems, the red indicator **GSM ERROR** is permanently on.

3.0 GSM SETUP and SMS SYNTAX

[A] When the green **GSM ONLINE** indicator is on, type on your mobile **BE1 *PHONE NUMBER#**. Type a blank space after Be1 and before the symbol *. The * is the asterisk symbol. The # is the hash symbol. The **PHONE NUMBER** is your mobile phone number that must include your country code. The system accepts either lower or upper-case letters. After re-checking the syntax, send the SMS to modem number. Every time the Be1 GSM panel receives or sends an SMS, the **SEND RECEIVE** LED turns on for a second.

[B] After a few seconds you will receive the SMS with the text: **PHONE SAVED**.

[C] Uplug terminal #18 (or disconnect the battery) for about 5 seconds, then reconnect it.

[D] After 2 minutes you must receive the SMS **MODE OFF; ENGINE OFF; NO ALARMS**.

Congratulations, the system is ready for use. The next section describes the syntax of the available commands.

4.0 TABLE AND SYNTAX OF SMS COMMANDS

The list of the commands is indicated below along with a short description. When typing a command, any uppercase or lowercase character can be used. If the Be1 is in Manual mode, the commands marked with **(*)** will be ignored.

The square brakets are not part of SMS but help to understand better the description.

[be1 auto] (*)	Is a request to enter the AUTO mode. The command is ignored when the Be1 controller is in MANUAL mode.The Be1 will answer with the SMS **[MODE AUTO;]**
[be1 status]	Is a request to get the status of the engine. An example of answer is: **[MODE AUTO; ENGINE OFF; NO ALARMS;]**

[be1 alarm]	It requests to get information about active alarms. In case of no alarms, the Be1 returns the message **[NO ALARMS:]**
[be1 genv]	It requests voltage and frequency of the generator. An example of answer is **[VOLTAGE(V)=230; FREQUNCY(H)=50.4;]**
[be1 engine]	Speed, and engine instruments enabled on the Be1 controller. Example of SMS **[BATTERY(V)=12.4; SPEED(RPM)=1550; OIL(BAR)=4.8;FUEL(%)=76]**.
[be1 off] (*)	It commands the BE1 to shut down the engine by entering the OFF mode. This commands works if the Be1 controller is in AUTO mode. The Be1 will return the message **[MODE OFF;]**

THE START AND STOP COMMANDS

[be1 start] (*)	If Be1 is in AUTO mode, It makes starting the engine. The Be1 will return the message **[ENGINE STARTING;]**. If the engine fails to start you will get the SMS **[Fail to start shutdown;][ENGINE OFF;]**. If the engine will successfully start you will receive **[ENGINE RUNNING;]**. When the Be1 GSM panel recognize a start request, it activates the green indicator **OUTPUT ACTIVE.**
[be1 stop] (*)	It stops the engine after a start made upon an SMS START. As option you can type the SMS **[be1 off]**. In this case you stop the engine and instruct the Be1 controller to enter the OFF mode.

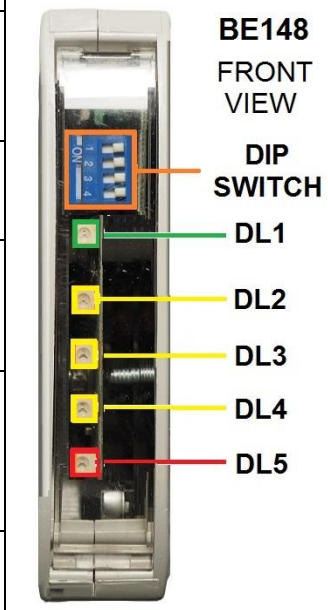
NOTE ABOUT REMOTE INPUT 4 (terminal #23)

The Be1 controller features a default setting for [INPUT 4] (terminal #23) with option [12]. This is a REMOTE START optiion with normally open contact. The input #23 is also connected to the Be148-1 output J3. The Be1 receives all requests for a remote start on this input. When you connect terminal #23 to the battery minus, the Be1 will start the engine. You can connect here, in a logic 'OR' manner, start requests coming from other devices like a pressure switch, a level switch, or a relay suitable for your application.
See the picture on section 7.0 about REMOTE/EMERGENCY INPUTS. You can set up a delay to start and a delay to stop the engine in seconds or minutes (see the settings of [P0] and [P1] on table 7.0 of the Be1 programming manual).

NOTE ABOUT REMOTE INPUT 5 (terminal #24)

The Be1 controller features a default setting for [INPUT 5] (that is the terminal #24) with the option [6]. This is an EMERGENCY INPUT feature with normally closed contact. The panel is supplied with a jumper that connect the terminal #24 to battery minus. You can change the setting for the input and remove the jumper. You can configure the input as digital or analog (see 7.07A, 7.07B on the programming manual. See the picture on section 7.0 about REMOTE/EMERGENCY INPUTS.

6.0 FRONT VIEW

DIP SW		NO FUNCTIONS AVAILABLE IN THE STANDARD VERSION BY ACTIVATING A DIP-SWITCH.
DL1		**GSM ONLINE** (GREEN). It indicates that the modem is ready. After a power on it may take 2 minutes until it turns permanently on.
DL2		**SEND RECEIVE** (YELLOW). It turns on for about a second when the modem is send or receive an sms.
DL3		**OUTPUT ACTIVE** (GREEN). It indicates that the contacts JD3-4 are closed. It is used to activate the Be1 remote start input.
DL4		**SYSTEM SETUP** (YELLOW). It will turn on for about two minutes all the time you turn on the supply. It will connect the modem to the GSM network and will cancel all SMS stored in the cache of the GSM provider.
DL5		**GSM ERROR** (RED). It blinks when the power supply falls below 8Vdc. This alarm auto-resets if supply voltage rises above 10Vdc. The LED is permanently on when the Be148-1 fails to activate the MODEM.

6.0 BASIC FEATURES

Power Supply: 11-15Vdc. **Consumption:** max 100mA. **Operating temperature:** -15 up to 50 deg, Celsius. **Dimensions** 110x120x22 mm. **Relay Output:** rated at 1A 30VDC. **Humidity range:** 5% up to 95% Weight: 130 grams

For not mentioned specifications and MODEM: contact bernini@bernini-design.com

BERNINI DESIGN SRL

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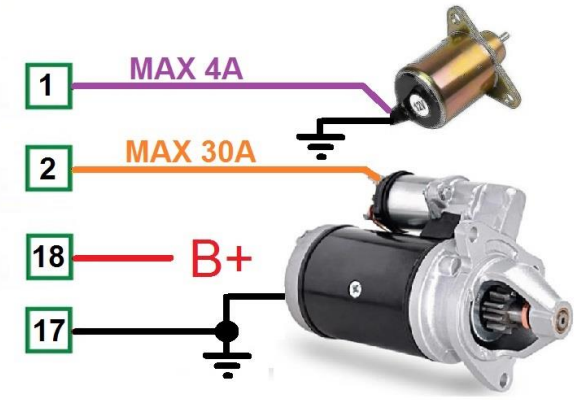
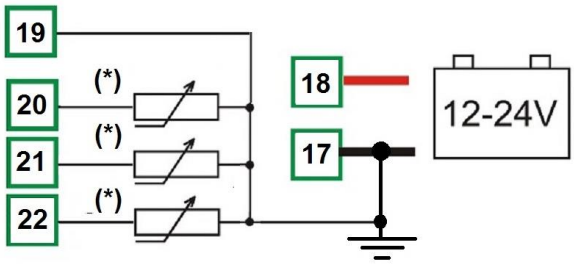
7.0 CONNECTION DIAGRAM

BATTERY/ENGINE START CIRCUIT
(#2#17#18 blade terminal 6.3X0,8mm)
(#1#3#4#5 male/female)

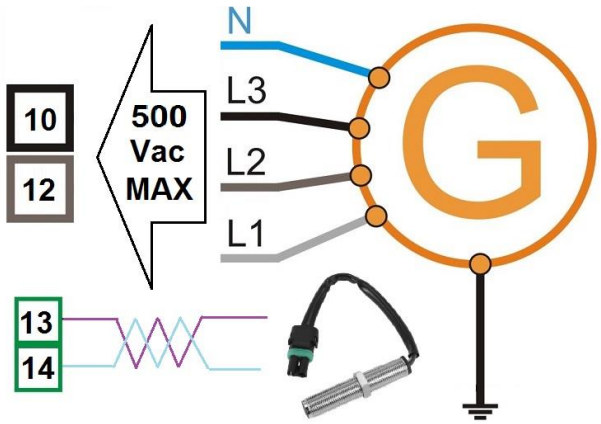


OUTPUT
(#1#3#4#5 male/female)

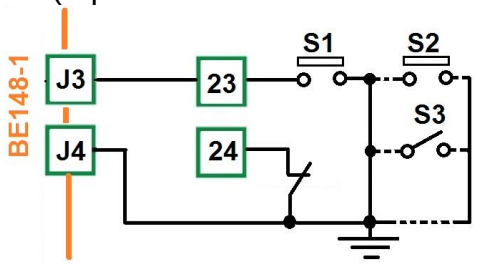
ENGINE SENSORS
(6-pole male/female #19 to #24)
(blade terminals 6,3X0.8mm #17#18)



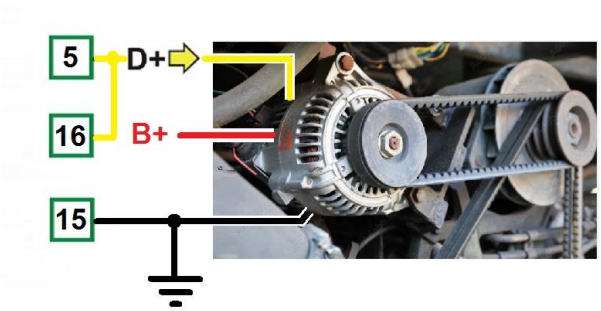
ALTERNATOR AND PICK UP
(3-pole male/female #10#11#12)
(2-pole male/female #13#14)



REMOTE INPUT AND EMERGENCY
(6-pole male/female #19 to #24)



BELT ALTERNATOR
(2-pole male/female #15#16)
(male/female #5)



FLYWEEL ALTERNATOR
(2-pole male/female #15#16)
(male/female #5)