APPLICATION NOTE

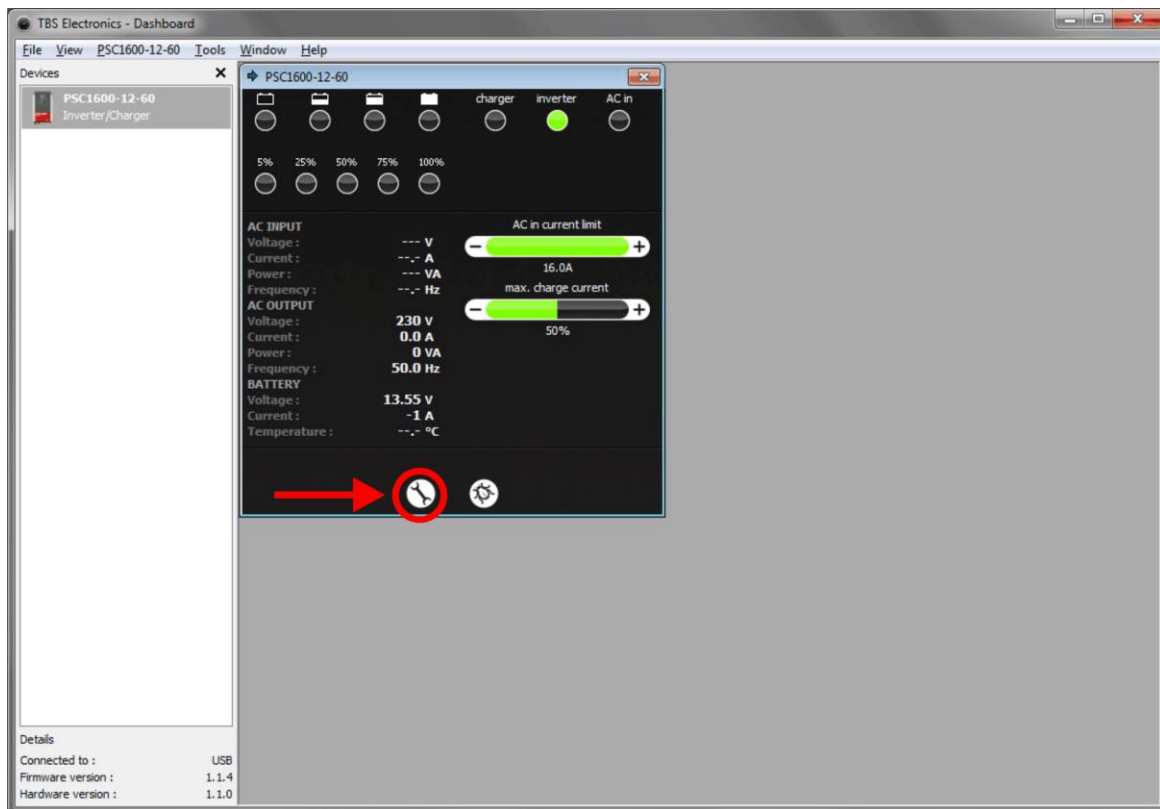| Application note #	AN15-EN-141		
Date	05-02-2015	**Revision**	A
Subject	Using Trigger-Action to activate a generator for charging the battery, once the battery voltage has dropped below a certain value		
Related product(s)	All Powersine Combi inverter/charger models		
No. of pages	8		

Description :

In a typical application, a generator will be used to charge the battery connected to the Powersine Combi. The generator start/stop commands can be controlled by the internal programmable (alarm-) relay of the Powersine Combi.

The generator must be started once the battery voltage has dropped below a certain value. This value must be higher than the low voltage shutdown value of the inverter, in order to avoid any loss of AC power to the loads. The generator can be deactivated again once the battery voltage has reached a certain higher value. A quite often used value is one that is slightly less than the absorption charging voltage. This guarantees that the battery is charged to approximately 80% and avoids the generator to run too long or inefficiently.

This scheme can be realized by setting up a socalled Trigger-Action event. For this, the Powersine Combi should be connected to a PC running TBS Dashboard through a TBSLink to USB interface box. These items are available in the "TBSLink to USB Interface Kit (art.# 5092120)". Given below is the step by step procedure to implement this Trigger-Action.
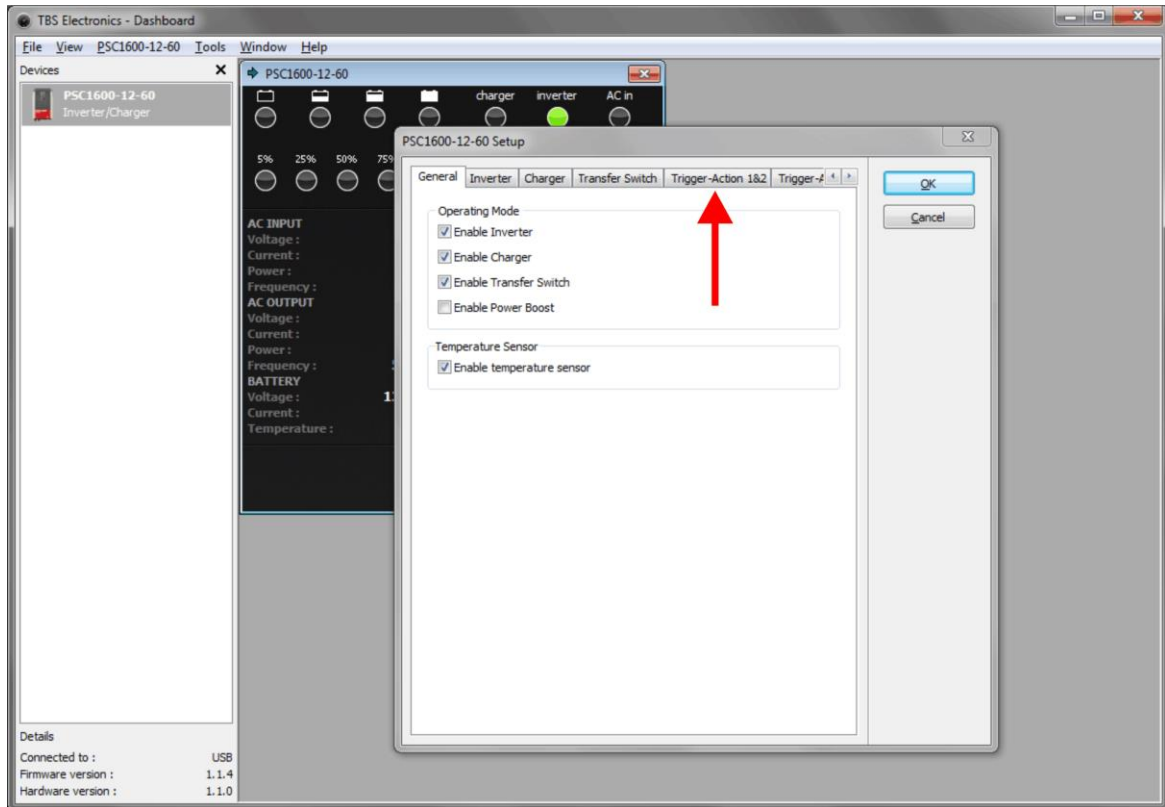
1

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Step 1

For this example we have connected a Powersine Combi PSC1600-12-60 to a PC running TBS Dashboard. The image below shows the connected PSC1600-12-60 on the left, as well as the display/control panel on the right :
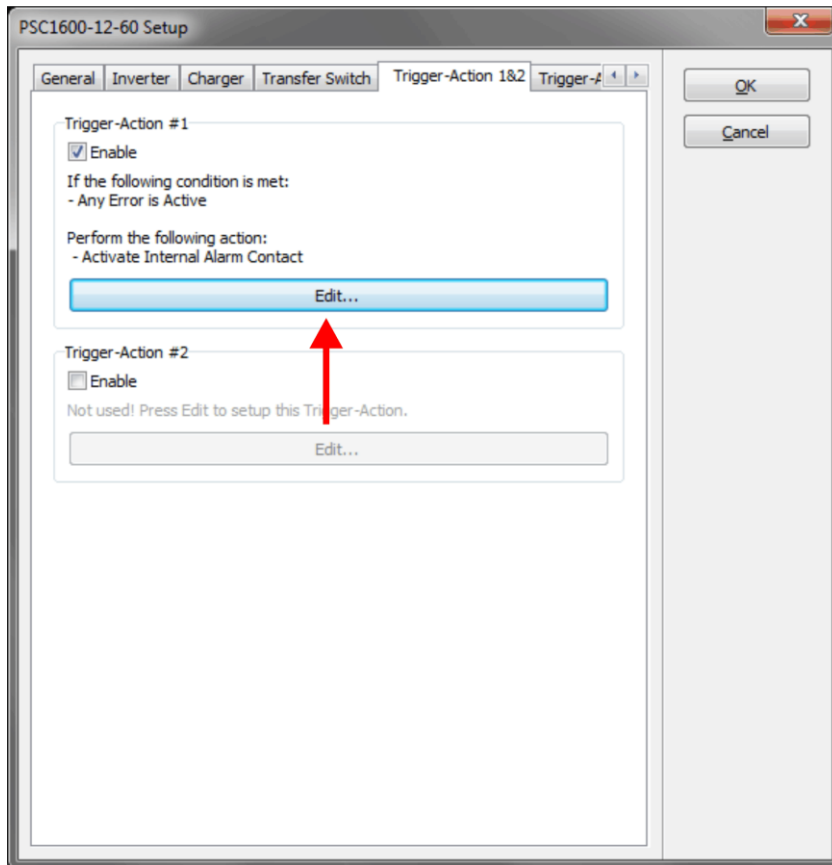

2

We need to press on the wrench tool button as indicated by the red arrow to activate the setup window. Please note that DIP switch no. 1, inside the Powersine Combi, needs to be set to ON (External programming). Otherwise setting up the Combi by the Dashboard software is blocked.

Step 2

Now that the setup window is opened, we need to select the tab "Trigger-Action 1&2" as indicated below by the red arrow :

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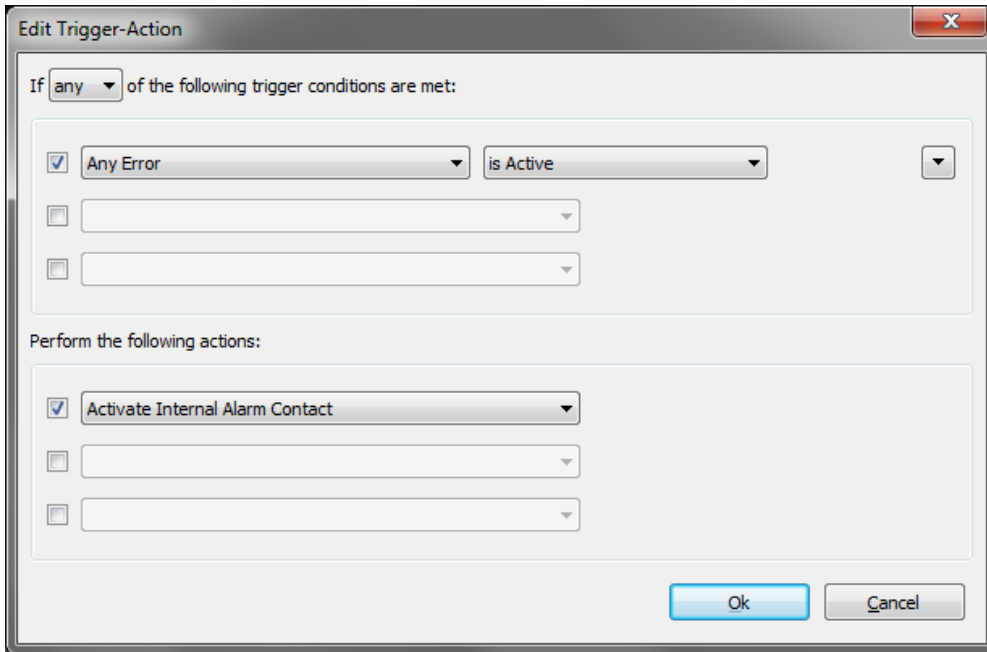
Step 3

With the "Trigger-Action 1&2" tab opened, you can see below that "Trigger-Action #1" is already set by the factory in order to trigger the internal alarm relay once any error is active.

We are going to overwrite this Trigger-Action with the one explained in this application note. So we need to press the long 'Edit' button as indicated by the arrow below :

4

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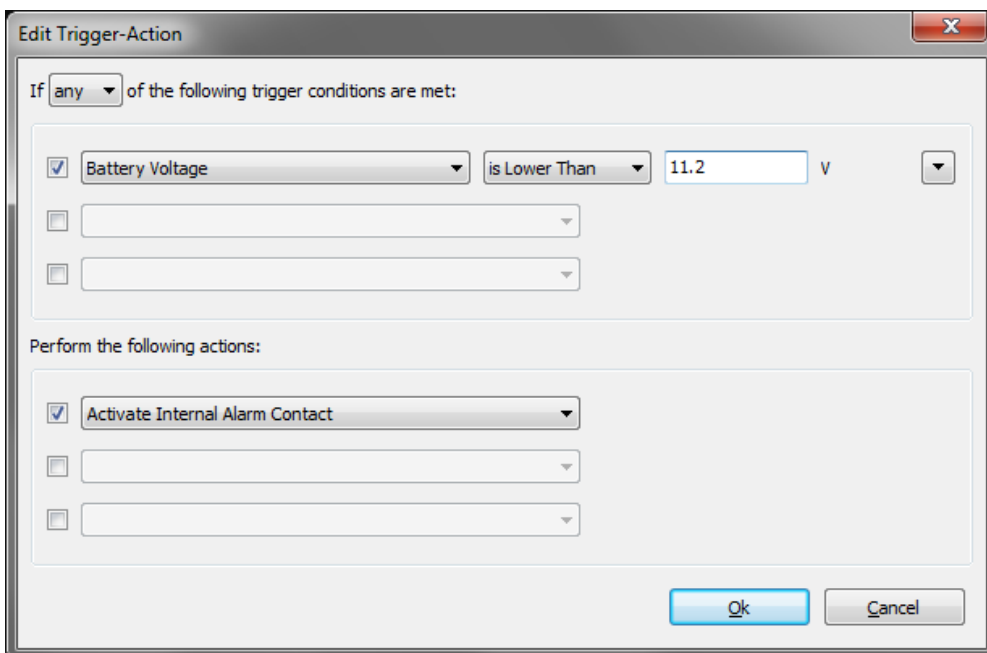
Step 4

The following edit window will appear, containing the default Trigger-Action values :

We will start by changing the Trigger conditions first. The trigger conditions in this example are :
Start the generator when the battery voltage drops below 11.2V for 10 seconds and stop the generator again when the battery voltage is higher than 14.3V for 30 seconds (14.3V is 0.1V below the standard 14.4V absorption voltage of a 'flooded battery' charge program).
First the "Battery Voltage" Trigger condition must be entered :

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Step 5

Next, by pressing the rectangular up/down arrow button as indicated by the red circle below, we can enter the additional Trigger conditions :
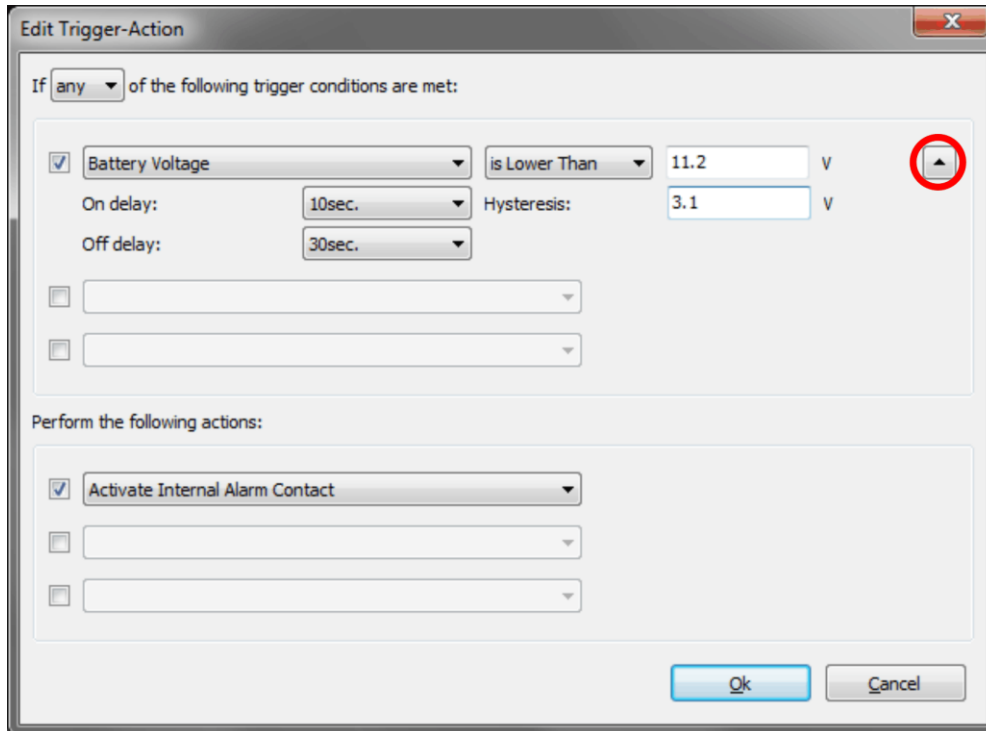

As you can see, we have set the 'On delay' to '10sec.', which means that the Trigger will be considered active once the battery voltage is lower than 11.2V for 10 seconds.

The 'Hysteresis' is set to '3.1V', which means that for the Trigger to de-activate again, the battery voltage must be increased to at least 11.2V + 3.1V = 14.3V.

And finally, we have set 'Off delay' to '30sec.', which means that the Trigger will at least be active for 30 seconds, even if the battery voltage is already higher than 14.3V.

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Step 6

Next we need to decide what kind of Action needs to be linked to the activated Trigger. The Action type can be selected from the drop down list as indicated below by the red arrow :
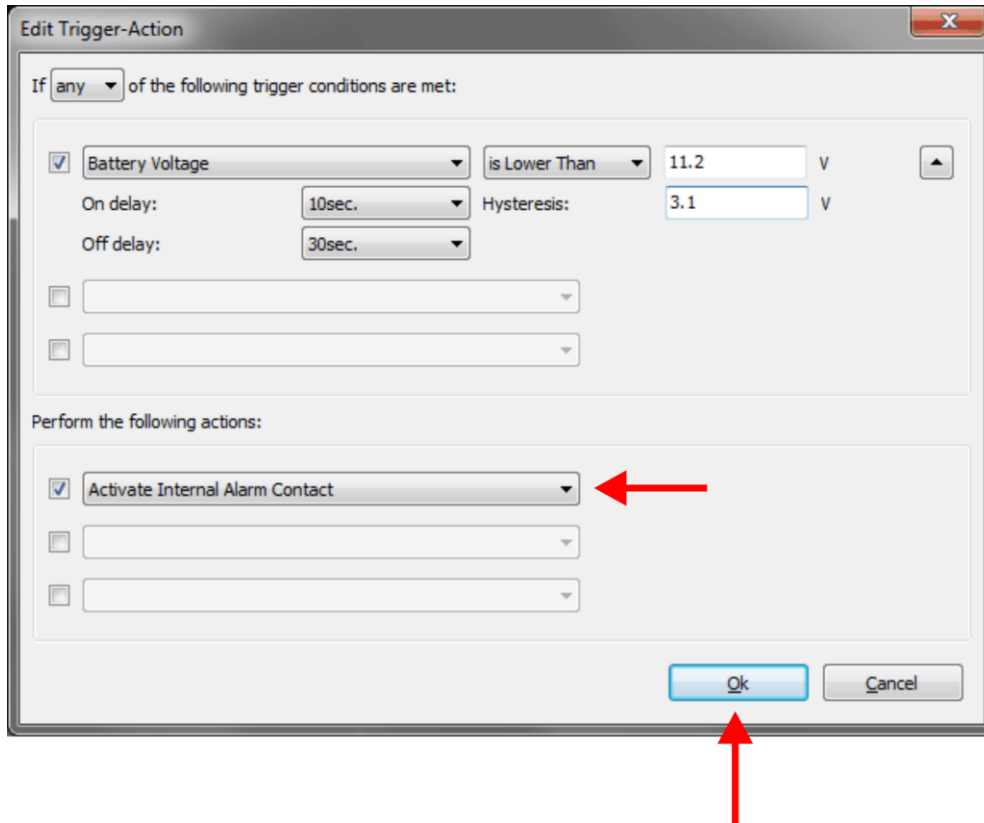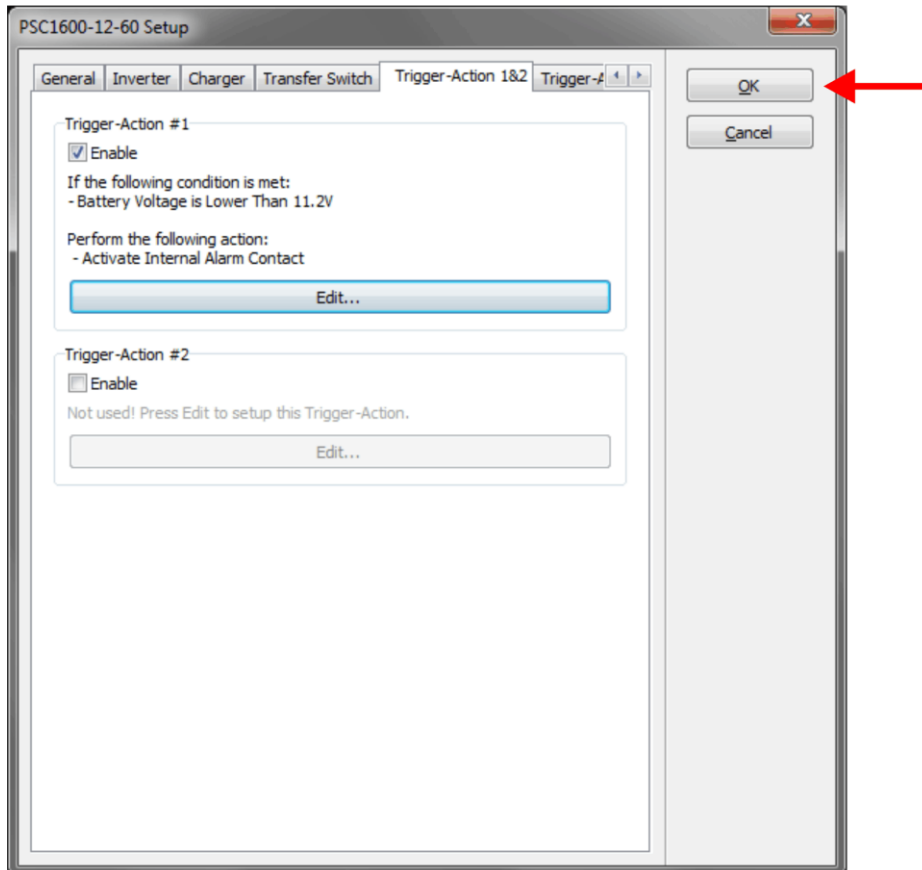
As you can see, we have kept the already existing Action to activate the internal alarm contact of the Combi once the Trigger conditions are met.

Now you need to press 'Ok' as indicated by the red arrow.

Step 7

After the Trigger-Action settings have been made and confirmed, you will jump back to the Setup window which indicates an updated summary of 'Trigger-Action #1' :

Once the 'Ok' button (see red arrow) is pressed, Dashboard will transfer all updated data to the Combi and everything should work as desired.

Since there are too many generator- or generator starter products on the market, it is up to the user to check how to interface the internal alarm relay contact to the generator start circuit.

- End of document -

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