

APPLICATION NOTE

Application note #	AN15-EN-140		
Date	04-02-2015	Revision	A
Subject	Using Trigger-Action to activate generator once AC output power exceeds a certain level		
Related product(s)	All Powersine Combi inverter/charger models		
No. of pages	8		

Description :

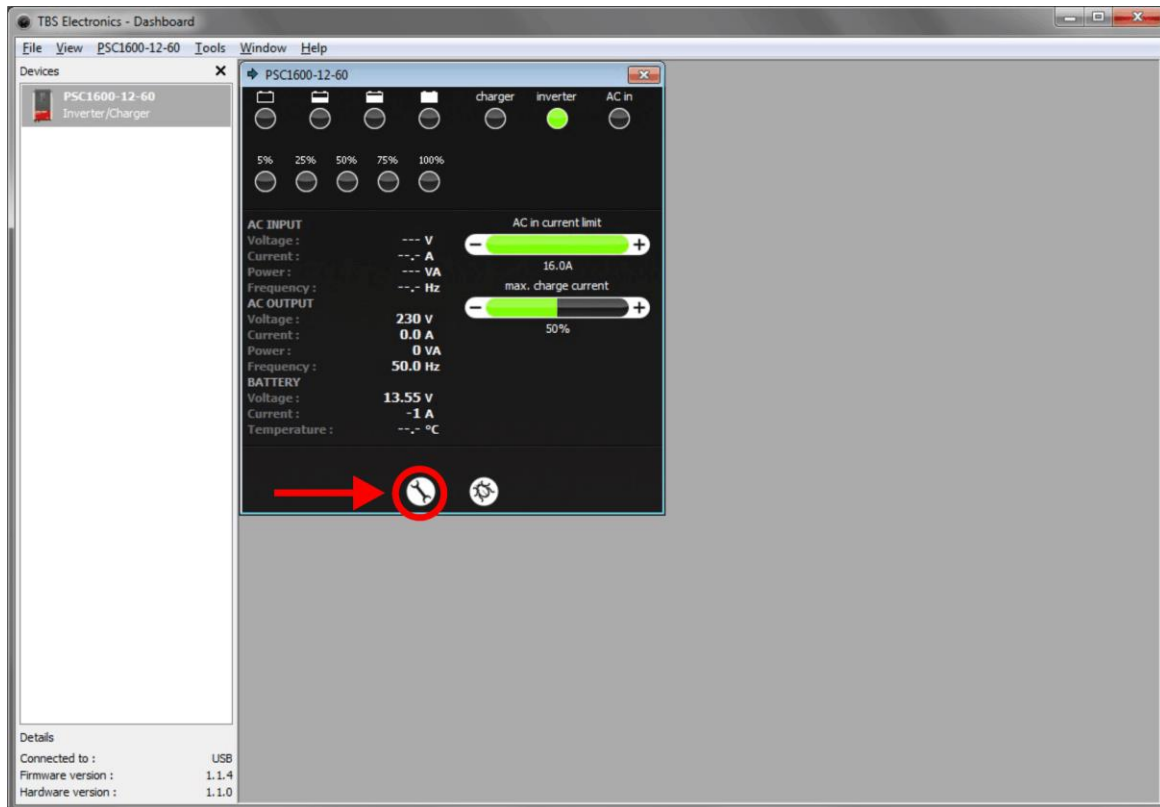
In certain applications it might be desirable to activate an external generator once the AC output load of the inverter exceeds a certain limit. This way the generator can take over the AC load through the automatic transfer switch of the Powersine Combi. Additionally, the generator can start recharging the batteries. This generator can be controlled by the internal programmable (alarm-) relay of the Powersine Combi.

Once the AC load has dropped below a certain level, the Powersine Combi can shut down the external generator and supply the AC load by the inverter again. This avoids the generator from running too long which saves fuel.

This scheme can be realized by setting up a so-called 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.

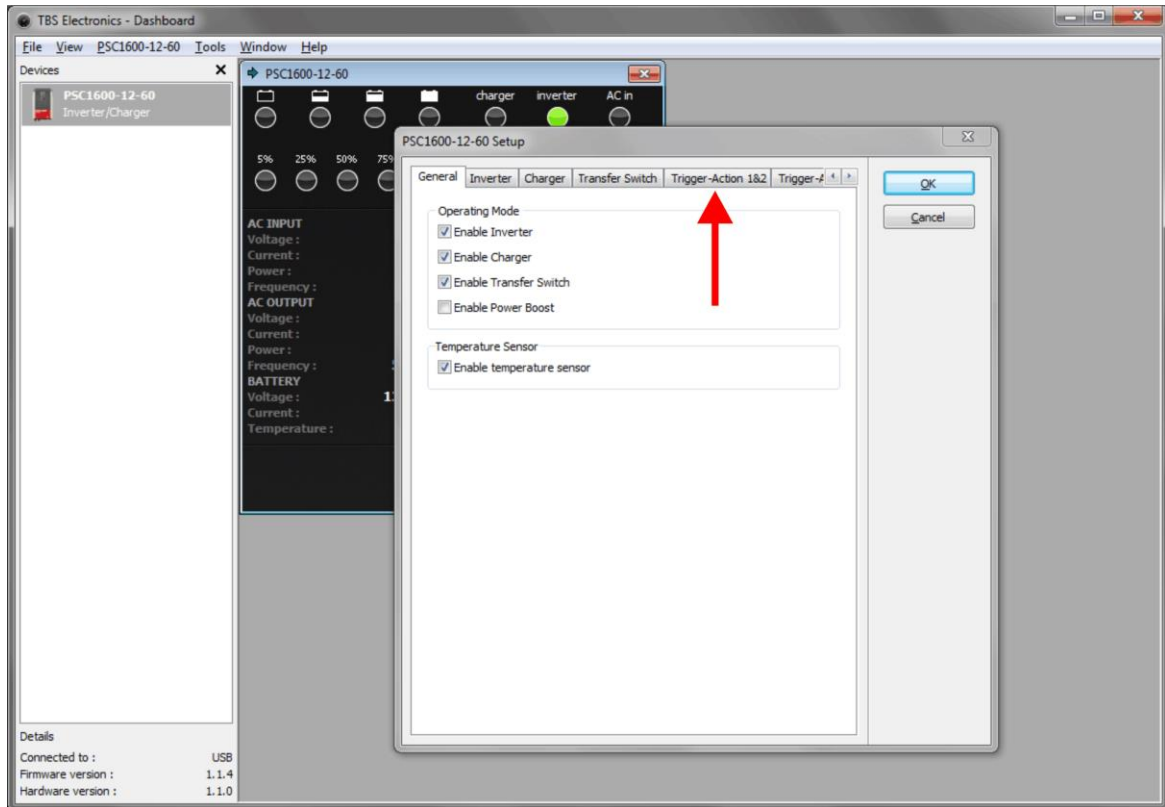
Step 1

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 :



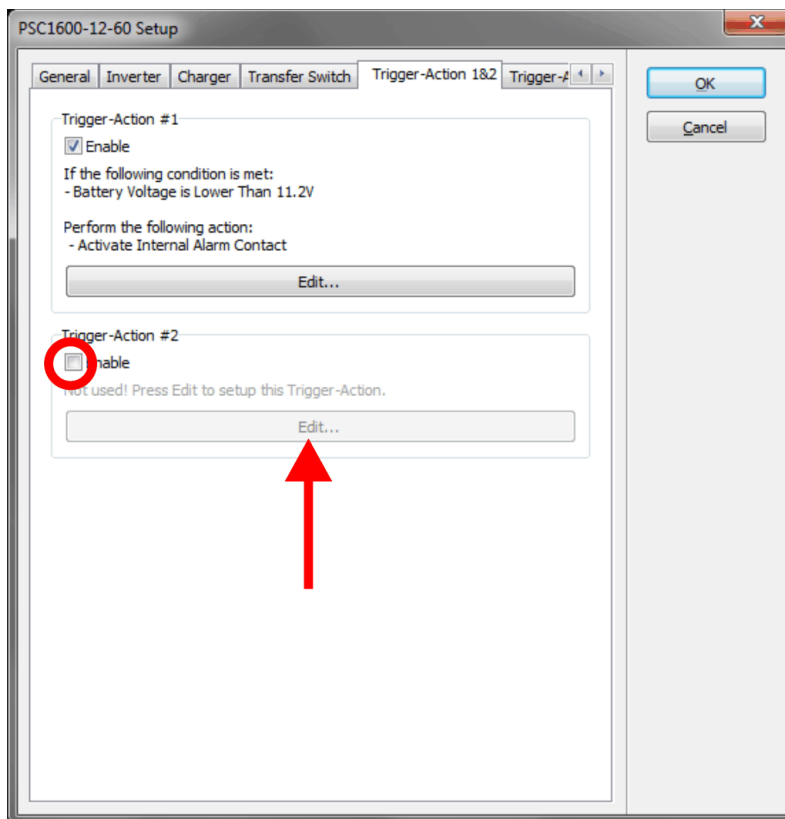
Step 2

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



Step 3

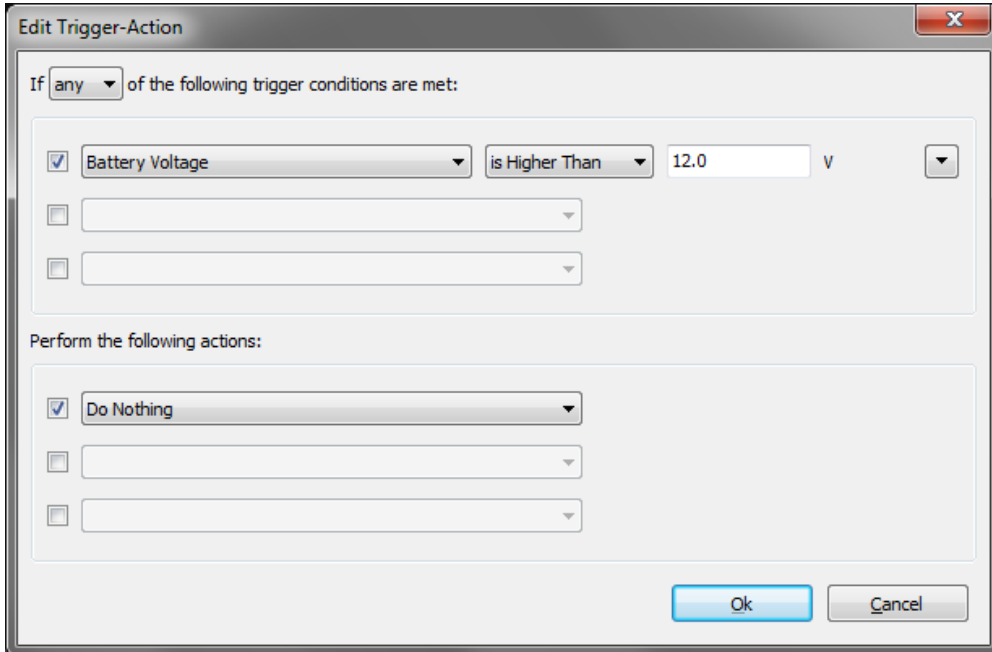
With the “Trigger-Action 1&2” tab opened, you can see below that “Trigger-Action #1” is already set by the factory in order to trigger the internal alarm relay once the battery voltage is lower than 11.2V. For this example, we will keep “Trigger-Action #1” unchanged and use the “Trigger-Action #2” slot for the new Trigger-Action event. Of course, when you don’t wish to let the factory set low battery voltage Trigger-Action interfere with the new Trigger-Action event, you can also choose to overwrite “Trigger-Action #1” with the new settings of this application note.



To use “Trigger-Action #2” you need to check the Enable box (see red circle above) and then press the activated Edit button as indicated by the red arrow.

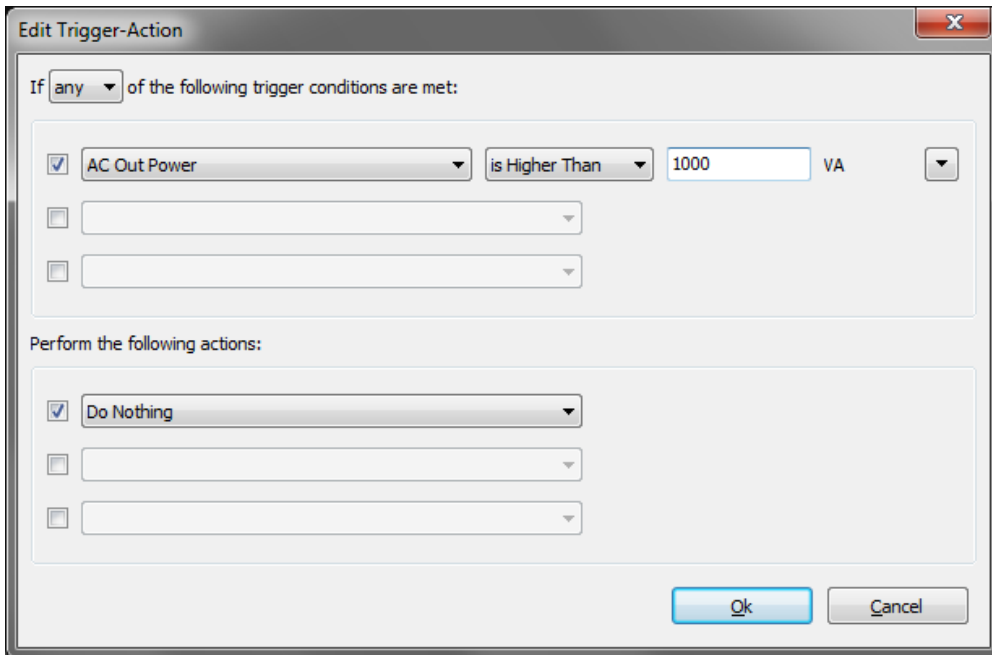
Step 4

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



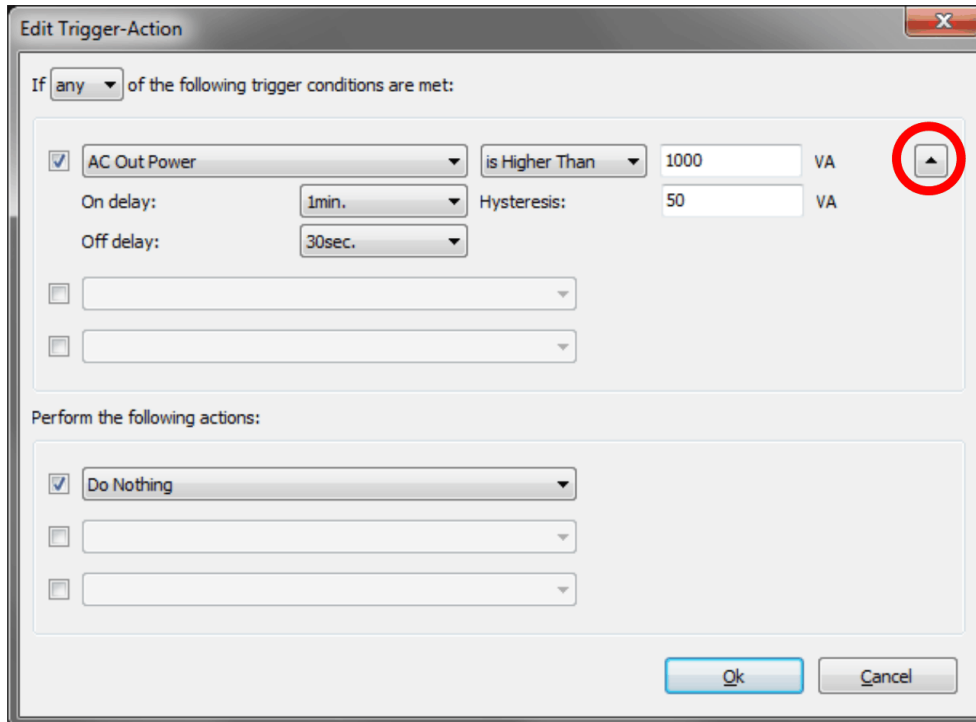
We will start by changing the Trigger conditions first. The trigger conditions in this example are : *start the generator when the output power is higher than 1000VA for at least 60 seconds and stop the generator again when the output power level is lower than 950VA for 30 seconds.*

First the "AC Out Power" Trigger condition must be entered :



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 :



The screenshot shows the 'Edit Trigger-Action' dialog box. At the top, it says 'If any of the following trigger conditions are met:'. Below this, there are three rows of trigger conditions. The first row is checked and contains: 'AC Out Power' (dropdown), 'is Higher Than' (dropdown), '1000' (text input), 'VA' (unit), 'On delay: 1min.' (dropdown), 'Hysteresis: 50' (text input), 'VA' (unit), and 'Off delay: 30sec.' (dropdown). The second and third rows are unchecked and empty. To the right of the first row, there is a small rectangular button with an up/down arrow icon, which is circled in red. Below the trigger conditions, there is a section 'Perform the following actions:' with three rows. The first row is checked and contains 'Do Nothing' (dropdown). The second and third rows are unchecked and empty. At the bottom right, there are 'Ok' and 'Cancel' buttons.

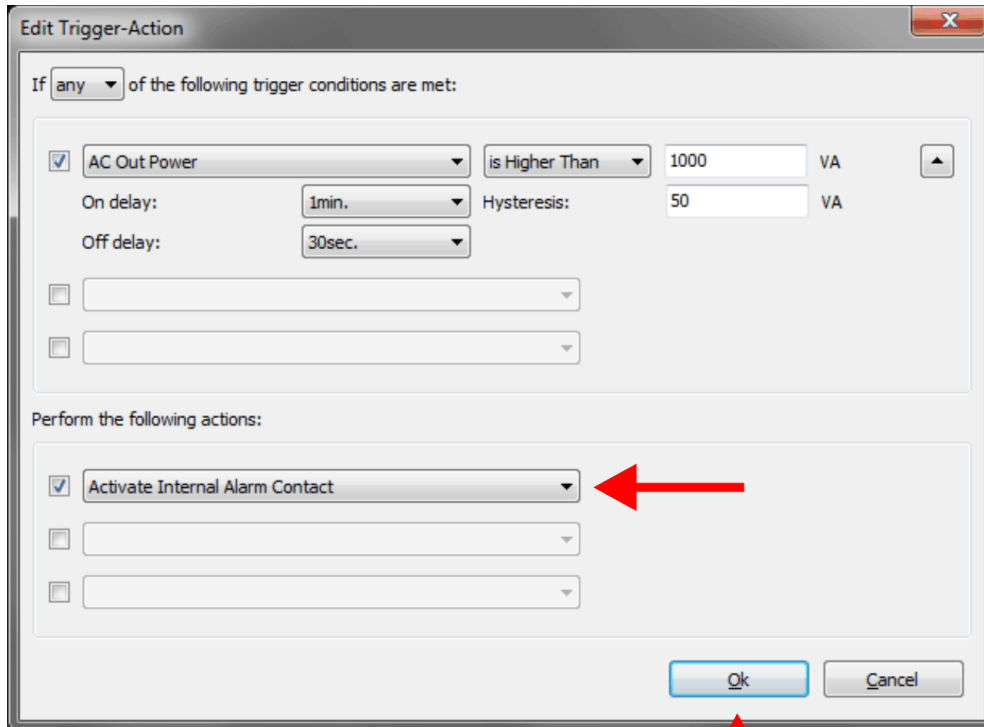
As you can see, we have set the 'On delay' to '1 min.', which means that the Trigger will be considered active once the output power is higher than 1000VA for 1 minute.

The 'Hysteresis' is set to '50VA', which means that for the Trigger to de-activate again, the output power must be below $1000\text{VA} - 50\text{VA} = 950\text{VA}$.

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 output power has dropped below 950VA.

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 :

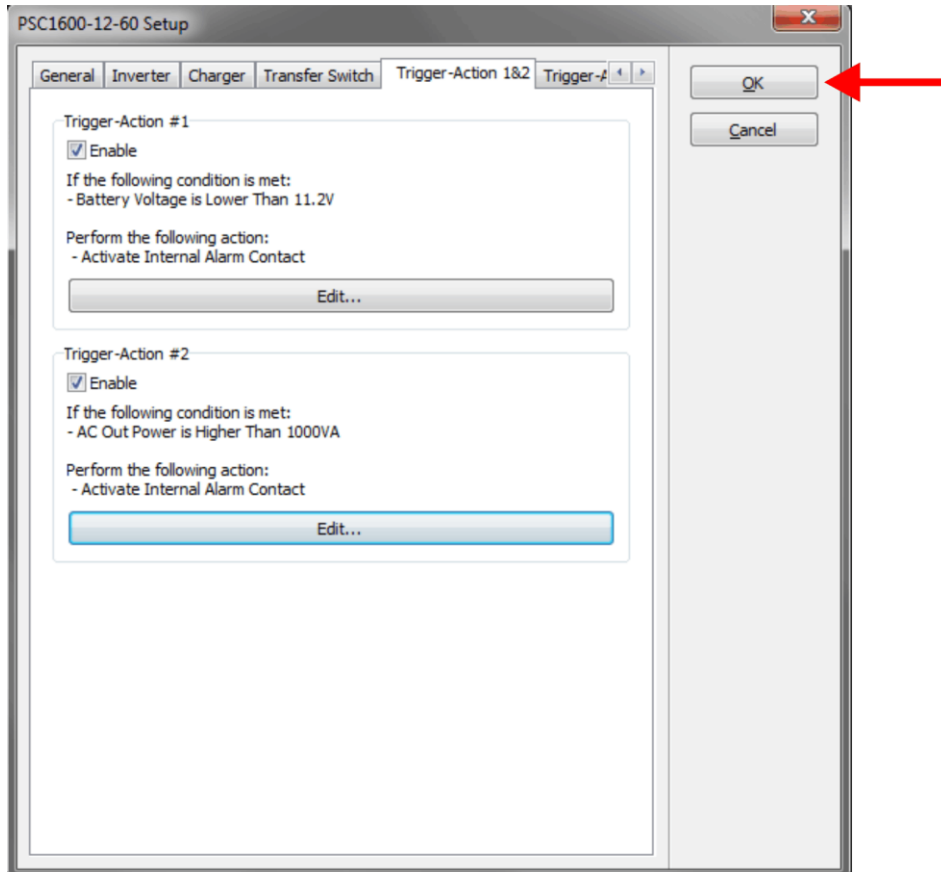


As you can see, we have chosen to activate the internal alarm contact of the Combi once the Trigger conditions are met.

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 the new 'Trigger-Action #2' :



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 -