



ECsync Control User Manual

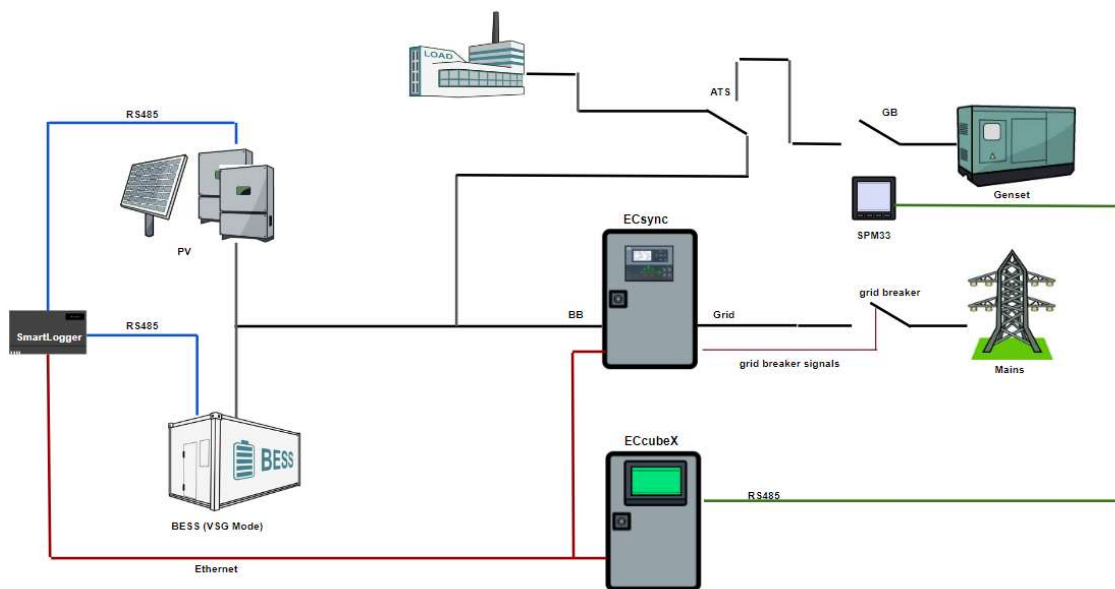
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Document change log

2024-02-18	First version

Overview

ECsync Control is the ENcombi plug and play cabinet for providing seamless transfer, by means of an external grid breaker, between on-grid and off-grid operation in BESS applications where the BESS itself does not feature seamless transfer by means of STS or otherwise.



The ECsync Control cabinet's main component is a synchronization relay. The ECsync Control is to be used in conjunction with an external mechanical grid breaker that shall be under the control of the ECsync Control cabinet. The ENcombi EMS ,ECpvX/ECcubeX, will communicate with and control the synchronization relay.

The ECsync Control cabinet can be operated in Manual mode and in Automatic mode. In Manual mode the mechanical breaker can be operated directly on the synchronization relay's display. The ECpvX/ECcubeX will acknowledge the manual commands made and control the plant accordingly. In Auto mode, the ECsync Control cabinet is commanded to work in either on-grid mode or in off-grid mode by the user from the ECpvX/ECcubeX. This is easily done both via the ECpvX built-in webserver, ECweb, or via the ECpanel HMI.

In on-grid mode, the ECsync Control cabinet will always reconnect the grid with the BESS when the grid is available. In off-grid mode, the ECsync Control cabinet will unload the external mechanical breaker by adjusting the BESS and PV output before opening it.

Variants

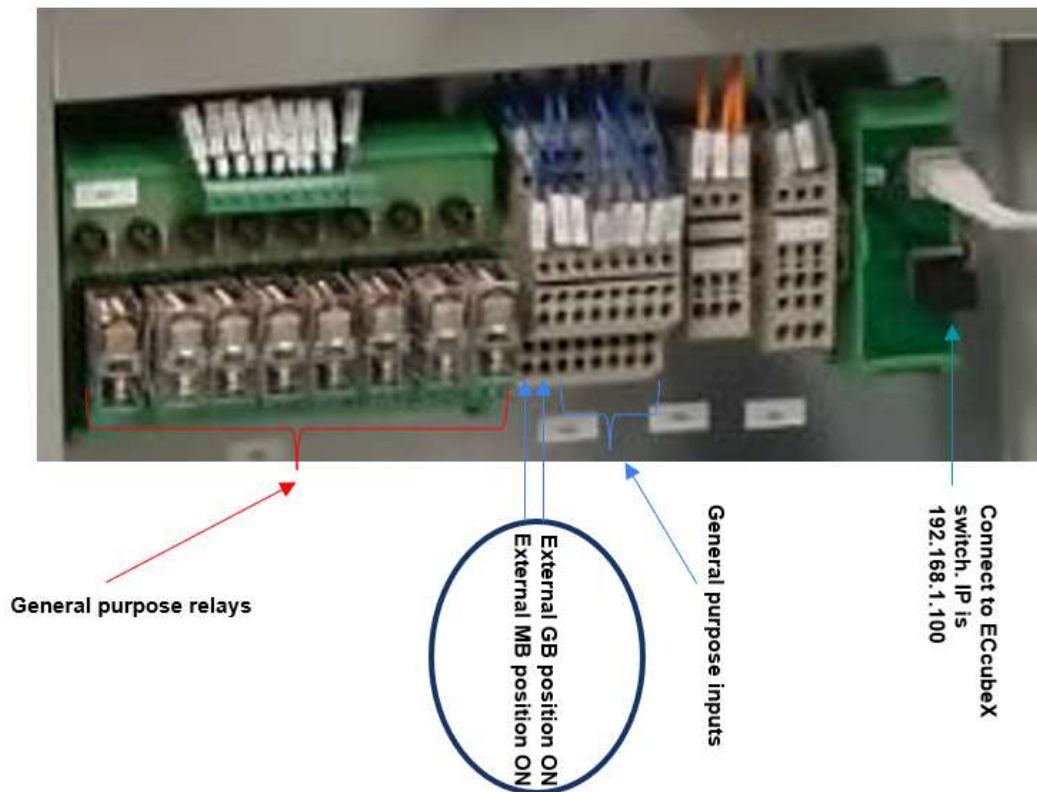
Consult the ECsync Control datasheet for the details.

Installation

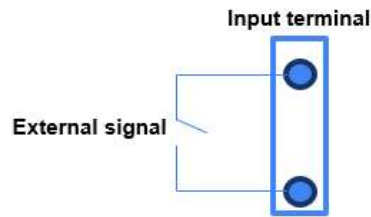
Consult the ECsync Control datasheet for the information on how to install the ECsync Control cabinet. Installing and operating the ECsync Control may require work with currents and voltages. The installation must only be carried out by authorized personnel who understand the risks involved in working with electrical equipment.

External MB & GB position feedbacks

The External MB and GB feedbacks are inherited from the ECsync product that has a built-in mechanical breaker. The ECsync product needs to know the position of the external MB and/or GB that can connect to the grid side of the ECsync. Dedicated inputs are reserved for these position feedbacks. The ECsync Control already controls an external breaker and these inputs are therefore considered irrelevant. Still one of the inputs needs (MB position ON feedback) to have a high signal to prevent the ECsync Control cabinet from opening the external breaker.



Note that an input is activated with potential free signal by shortening the two respective input terminals.



Functionality

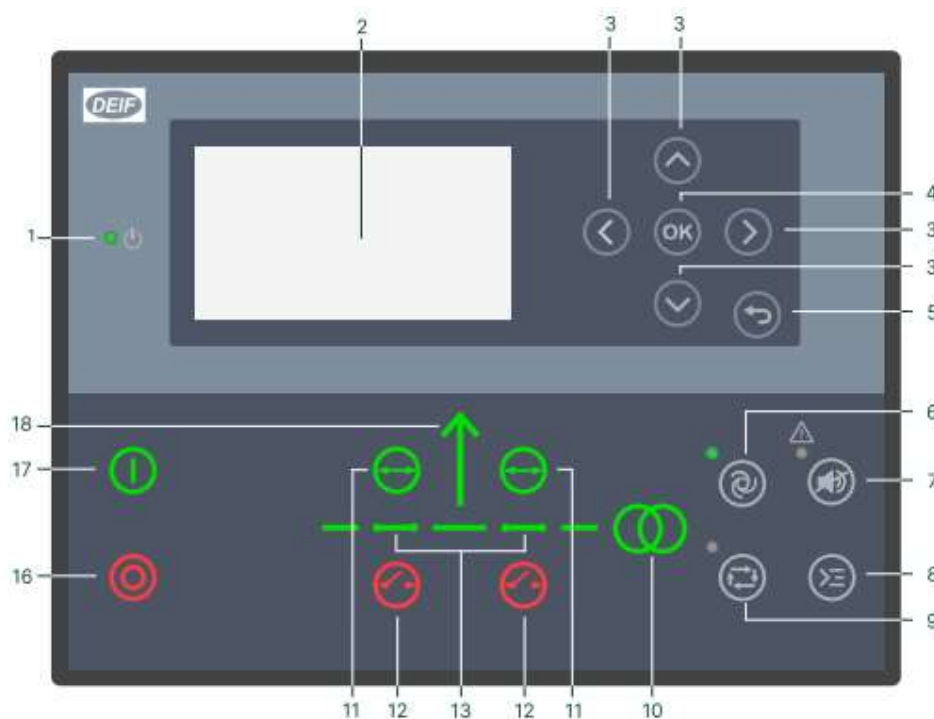
ECsync Control operates an external breaker that parallels the BB side with the Grid side. The synchronization of the breaker is handled by a synchronization relay. CTs are not included in the ECsync Control cabinet for current readings and must be installed externally. The ECpvX/ECcubeX reads the AC measurements, breaker position, configurable input status and controls the configurable relay outputs via either Modbus TCP or Modbus RTU.

- The ECsync Control will close the external breaker when BB is dead and either feedback from MB or GB is active.
- The ECsync Control will sync and close the external breaker when in on-grid mode, BB voltage is present and the grid voltage is present and either feedback from MB or GB is active.
- The ECsync Control will unload and open the external breaker when in off-grid mode, BESS is in operation and the either feedback from MB or GB is active.
- The ECsync Control will open the external breaker when neither feedback from MB or GB is active.
- The ECsync Control will open the external breaker when feedback from MB is active and a grid code protection activates.
- The external MB and GB can be controlled by the ECpvX/ECcubeX via a configurable output in the ECsync Control cabinet.
- There is dual supply to the synchronization relay so that it is alive when voltage is present on either the BB side or the grid side.

Synchronization relay

A DEIF AGC150 Mains is used as the synchronization relay in the ECsync Control. The ECsync Control is delivered with a pre-programmed synchronization relay from the factory that matches the integration with the ECpvX. Changing the factory configuration of the synchronization relay may cause the operation to fail. Only the protection scheme and the rated voltage, current, and power levels and the associated VT and CT settings should be adjusted as per the project requirements. You must therefore check these parameters before using the ECsync Control.

Display



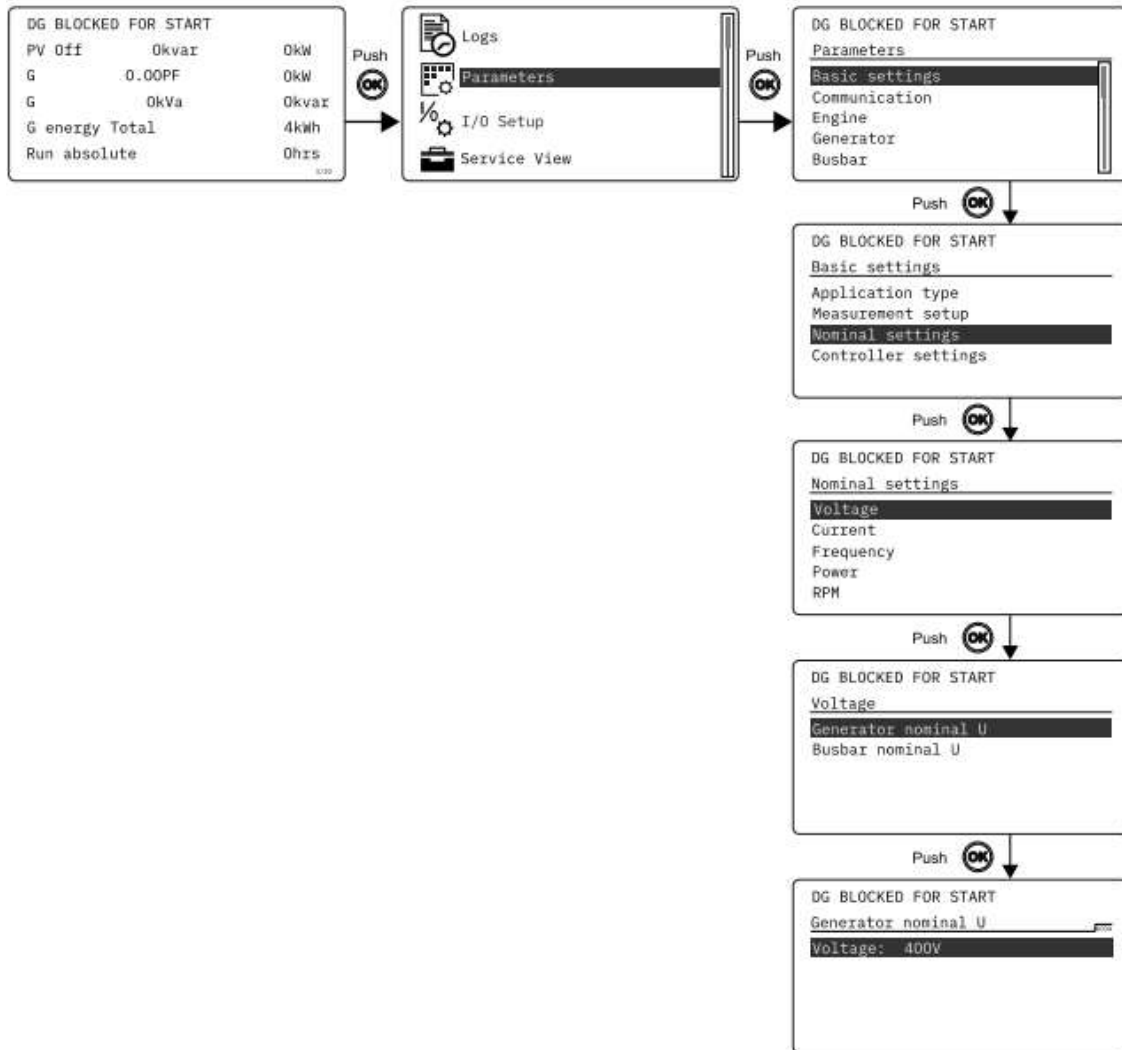
Nbr.	Name	Function
1	Power	Green: The sync. relay power is ON. Off: The sync. relay power is OFF.
2	Display screen	Resolution: 240 x 128 px. Viewing area: 88.50 x 51.40 mm. Six lines, each with 25 characters.
3	Navigation	Move the selector up, down, left and right on the screen.
4	OK	Go to the Menu system. Confirm the selection on the screen.

5	Back	Go to the previous page.
6	AUTO mode	The operator can't connect or disconnect the ECsync Control breaker using the breaker buttons on the sync. relay display. The ECpvX can connect and disconnect the ECsync Control breaker via ECweb or the ECpanel. The sync. relay automatically synchronises before closing the breaker. The breaker is deloaded by the ECpvX before the sync. relay is commanded to open it.
7	Silence horn	Stops an alarm horn (if configured) and enters the Alarm menu
8	Shortcut menu	Access the Jump menu, Mode selection, Test, Lamp test.
9	Manual mode	The operator can connect or disconnect the ECsync Control breaker using the breaker buttons on the sync. relay display. The ECpvX cannot connect or disconnect the ECsync Control breaker from ECweb or the ECpanel. The sync. relay automatically synchronises before closing a breaker.
10	Grid symbol	Green: Mains voltage and frequency are OK. The sync. relay can synchronise and close the breaker. Red: Grid failure.
11	Close breaker	Push to close the breaker (only active in Manual mode).
12	Open breaker	Push to open the breaker (only active in Manual mode).
13	Breaker symbols	Green: Breaker is closed. Green flashing: Synchronising. Red: Breaker failure
16	Stop	Not used
17	Start	Not used
18	Load symbol	Green: The supply voltage and frequency are OK. Red: Supply voltage/frequency failure.

Parameters editing

You can configure the sync. relay parameters via the display. From the View menu, push the OK button to reach the parameter menu. Use the navigation buttons to find the various parameters and select with the OK button. Below is an example of how to reach

and navigate the parameter menu. A password is required for editing the parameters. The factory default password is 2002.



ECpvX setup

The ECpvX controls and reads data from the ECsync Control via Modbus TCP or Modbus RTU. Consult the ECpvX User Manual for information on how to set up the communication and parameters for synchronization as well as on the data visualization and how to apply the control commands.