



Wels, 30<sup>th</sup> of March 2015

## **ANTI ISLANDING PROTECTION FRONIUS GALVO, PRIMO, SYMO**

### **Fronius International GmbH**

hereby explains the mechanism of the inverter internal protection against unintentional islanding (Anti Islanding) for

/ **Fronius Galvo**

/ **Fronius Primo**

/ **Fronius Symo**

### **Passive Anti Islanding:**

In unintentional islands voltage and frequency exceed normal conditions with a very high probability. At abnormal conditions at the connection to the electric power system the inverter acts in accordance to IEEE 1547 (and is tested according to IEEE 1547.1). This standard explains e.g. response (tripping matrix) to abnormal voltage (chapter 4.2.3, Table ) and abnormal frequencies (chapter 4.2.4, Table 2).

### **Active Anti Islanding:**

In addition to the passive Anti Islanding, requirements for protection against unintentional islanding are fulfilled according to IEEE 1547 (chapter 4.4.1) (and tested according to IEEE 1547.1).

### **Explanation of the Active Anti Islanding function:**

The reactive current component injected by the inverter changes periodically (a reactive current pattern cap. and ind. with no reactive power on average). The reaction of the frequency on this reactive current pattern is measured and analyzed. In case of grid connection the grid frequency will not be influenced by the change in reactive current. In case of an island operation the reactive current pattern causes a change in frequency. The analysis of the measured frequency pattern clearly indicates the island and the inverter trips.

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A handwritten signature in blue ink, appearing to read "Thomas Mühlberger".

DI Thomas Mühlberger

Head of Solution Management