

# Compact IPM evaluation board test procedure

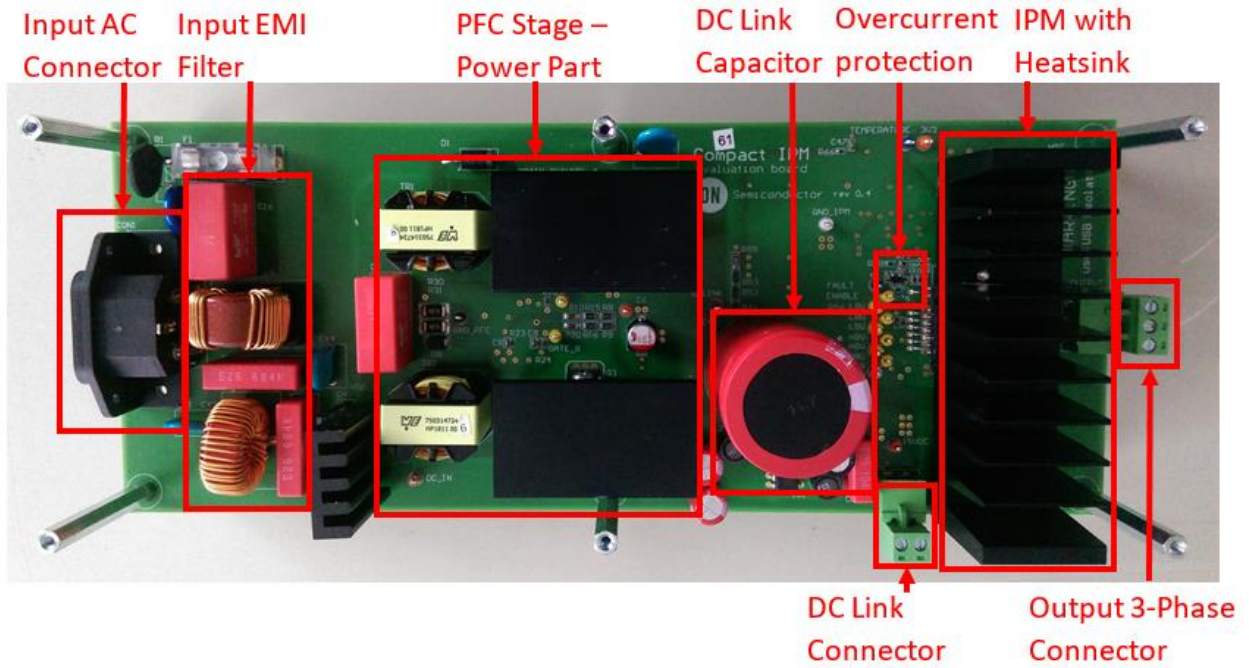


Figure 1. Picture of the evaluation board – top side

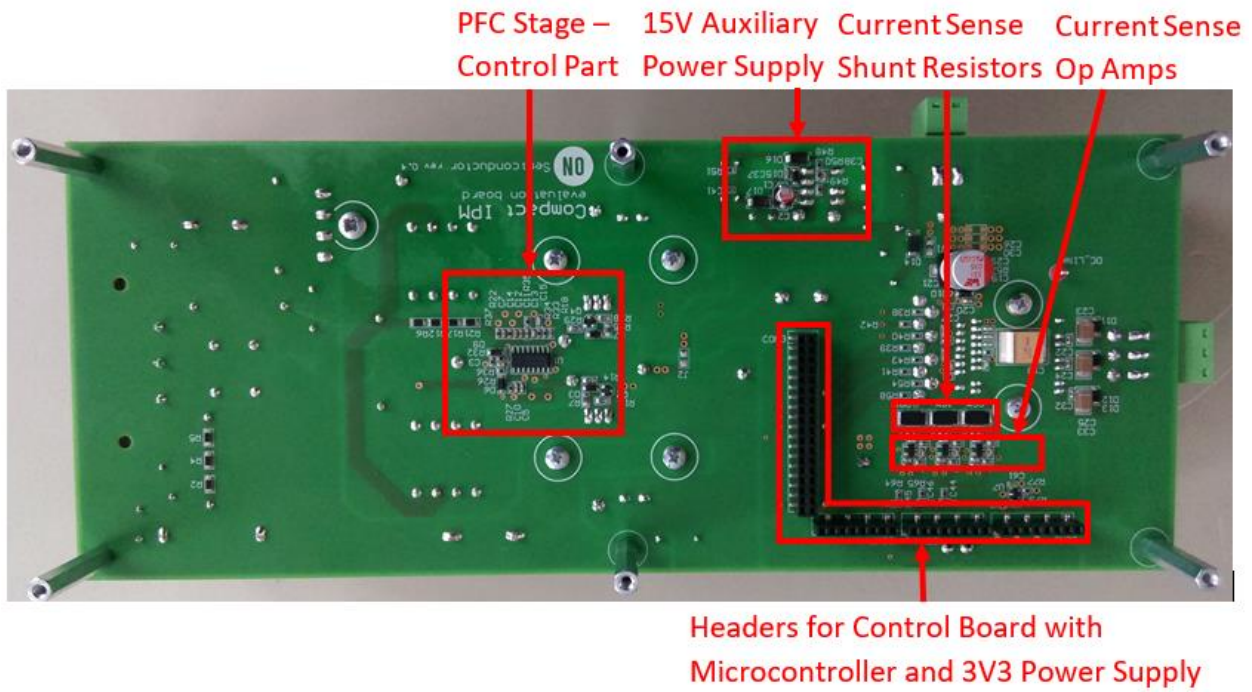


Figure 2. Picture of the evaluation board – bottom side

1. Activate PFC and IPM stage by soldering J1 and J2.

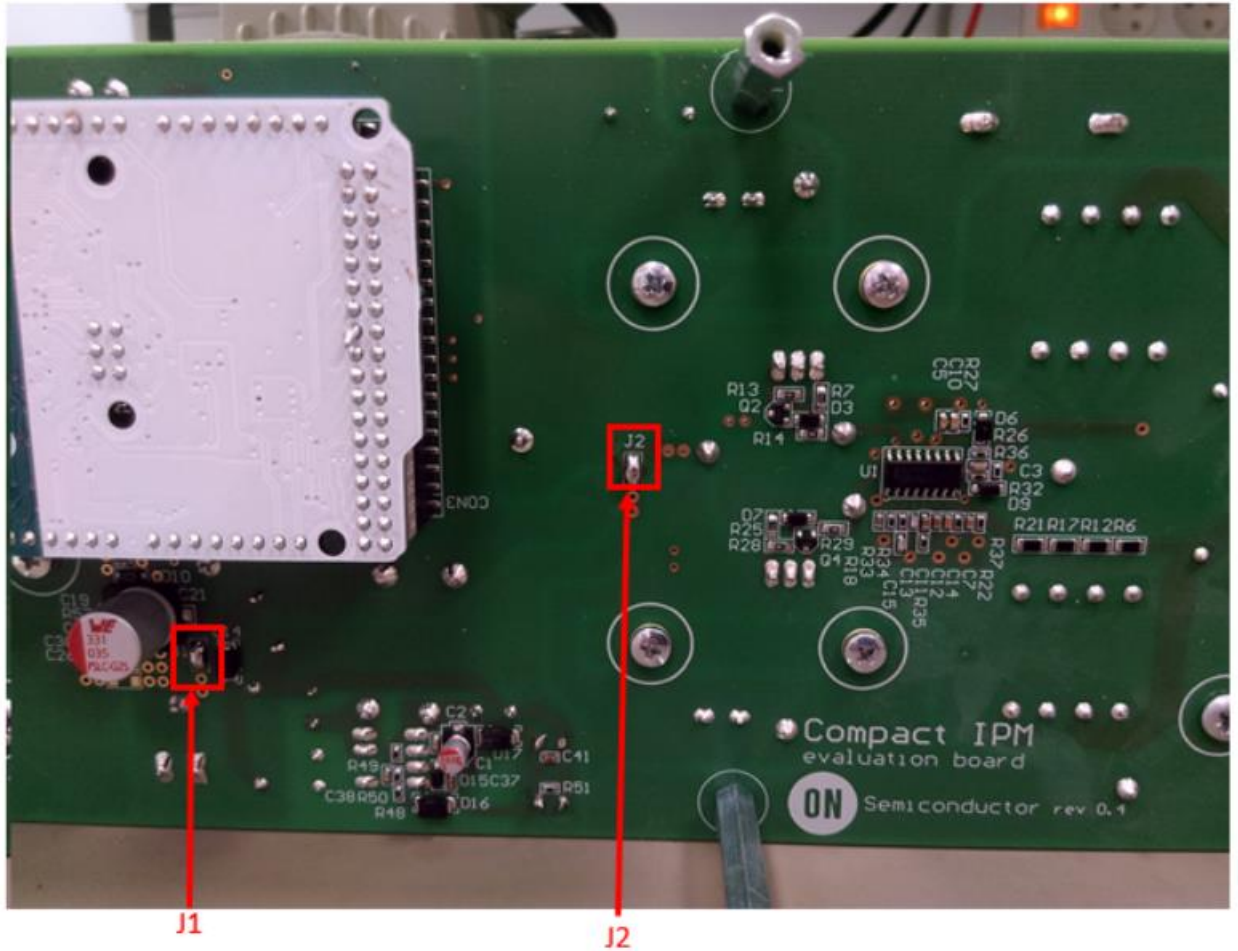
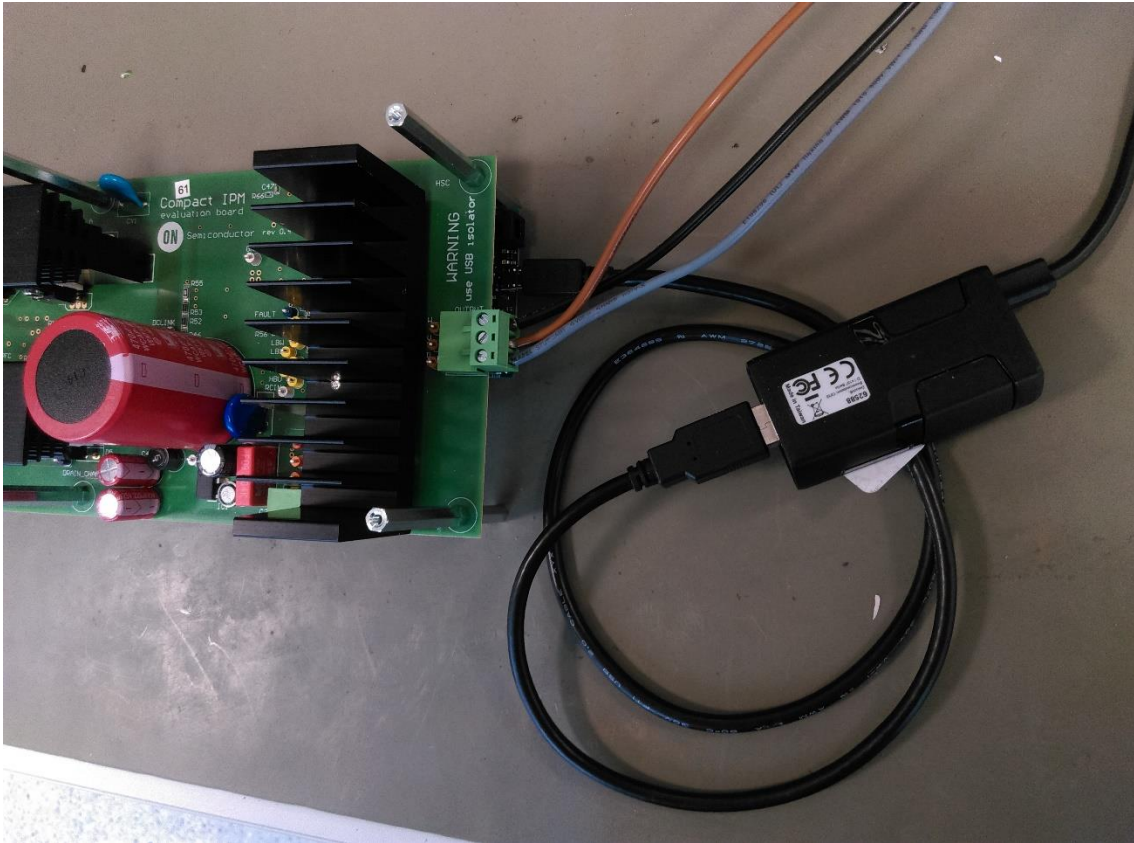


Figure 3. Situation of J1 and J2

2. Connect Arduino Due to board with USB isolator.



**Figure 4. Evaluation board with control board and USB isolator**



3. Connect the Induction motor.

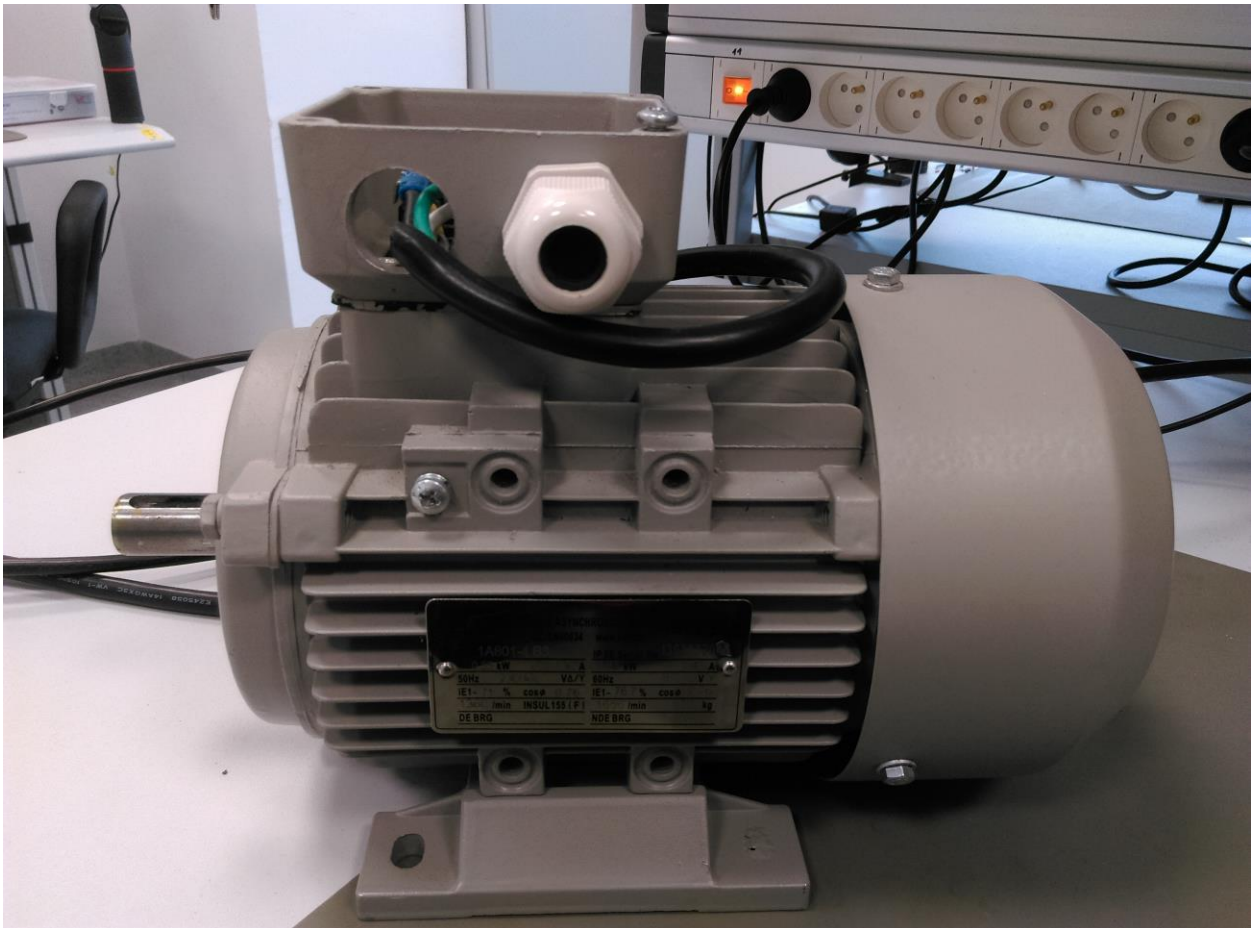


Figure 5. Used Induction motor

4. Connect input 230VAC.

5. Measure 15VDC, 3V3DC and 390VDC.

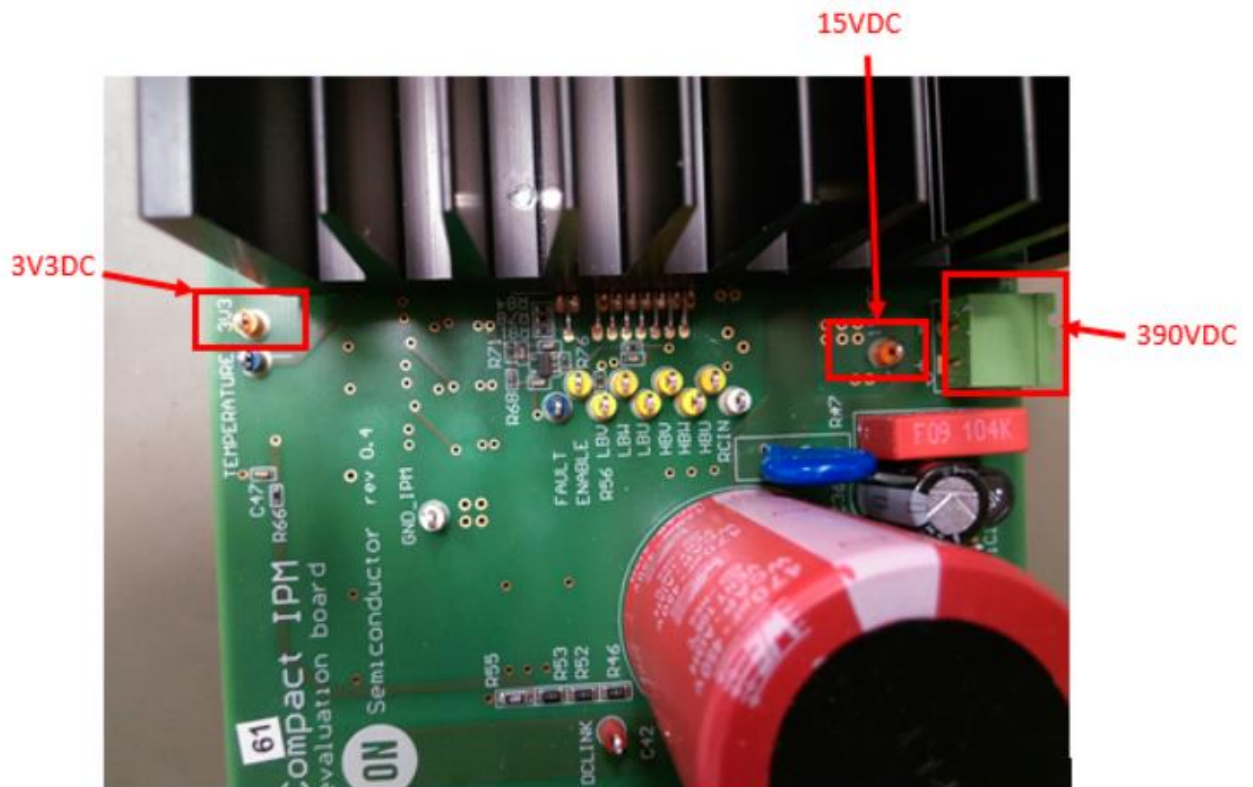


Figure 6. Picture of the evaluation board – top side (detail)

6. Connect the board to PC, Start the Motor GUI and follow the instruction below.

#### The way how to use GUI:

1. Connection to COM port:

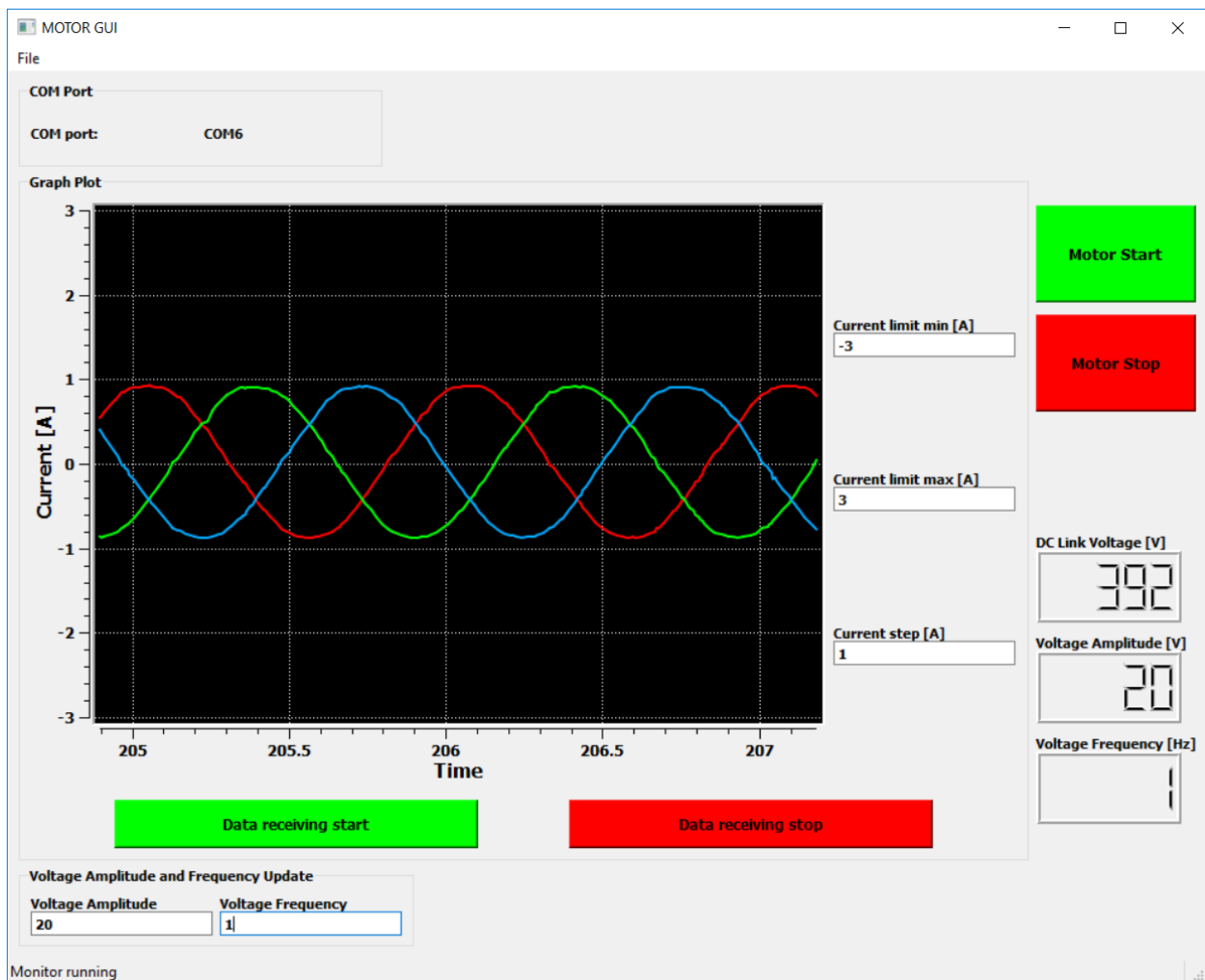
- File -> Select COM port
- Choose the COM port
- File -> Start communication

2. DC link voltage, phase voltage amplitude, frequency and current measurement:

- Press button data receiving start/stop. If the data receiving started correctly DC link voltage value should be visible. (sometimes, it is needed to press button more times)

3. Voltage amplitude and frequency update:

- Write demanded value to relevant box and press Enter (in this case Voltage amplitude 20 and frequency 1, current with amplitude almost 1A and frequency 1Hz after motor start should be visible). If the value is changed correctly, it should be visible also on LCD. (sometimes, it is needed to press Enter more times)
4. Motor Start/Stop:
- Press Start/Stop button. (sometimes, it is needed to press button more times)
  - After Stop button is pressed, all motor phases are shorted (lower transistors of the IPM are ON, upper are OFF).



**Figure 7. Graphical user interface for controlling the motor in the open loop**

7. When motor stops and board is disconnected from AC source, there is still voltage on DC link capacitor, so please be careful. To discharge it, just run the motor via GUI with Motor Start button. After successful discharge, it should be visible also on DC link voltage value in GUI.