



For Great Britain only: Compliance with Accelerated Loss of Mains Change Programme (ALoMCP)

Danfoss TLX Pro (Mark 2)

Table of Contents

- 1 Contents 4**
- 2 Safety 4**
- 3 Determination of the inverter type via the software version of the communication board 5**
- 4 User name and daily updated password for security level 2 . 7**
- 5 RoCoF settings change via the display..... 7**
 - 5.1 Logon with user name and daily updated password. 7
 - 5.2 Settings change in an individual device. 11
- 6 RoCoF settings change via the web server 14**
 - 6.1 Display the IP address of a device 14
 - 6.2 Login via the web server 15
 - 6.3 Settings change in an individual device. 16
 - 6.4 Settings change for the overall system via the master 19

1 Contents

This manual describes how the Rate of Change of Frequency (RoCoF) settings in TLX Mark 2 inverters are changed via the display or the webserver.

The procedure for the TLX Mark 1 inverters is different. Contact your responsible SMA Service Line if you want to change RoCoF setting in TLX Mark 1 inverters.

For the parameterization described below the inverter should be supplied with grid voltage and sufficiently high PV voltage (at least 250 volts).

Basic knowledge in using the display and/or the TLX web server interface is required.

All images, values and settings shown in this document are only examples and purely accidental. In practice, other values or settings will be shown depending on the operation site and default settings or EPC file possibly used.

2 Safety

DANGER

Danger to life due to electric shock when live components or cables of the inverter are touched

High voltages are present in the conductive components or cables of the inverter. Touching live parts and cables of the inverter results in death or lethal injuries due to electric shock.

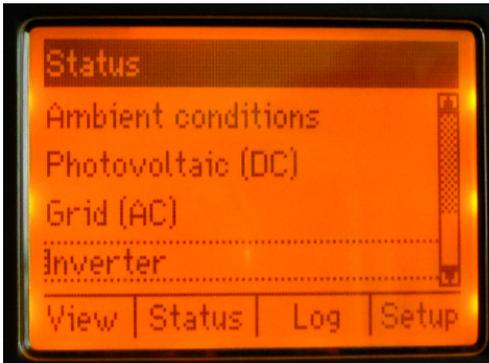
- Disconnect the inverter from voltage sources and make sure it cannot be reconnected before working on the device.
- Once disconnected from voltage sources, wait five minutes before touching any parts of the PV system or the inverter.
- Wear suitable personal protective equipment for all work on the product.
- Do not touch non-insulated parts or cables.

3 Determination of the inverter type via the software version of the communication board

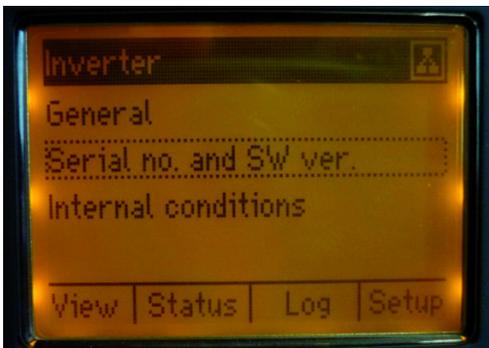
TLX Pro and TLX Pro+ are always Mark 2 devices. They have Ethernet interfaces and can thus be integrated into master-follower-systems and therefore also have a web server.

If the inverter type is unclear, it can be determined on the display in the user level as follows:

1. Press **F2** ("Status" menu).
2. With the keys \blacktriangle select **Inverter**.

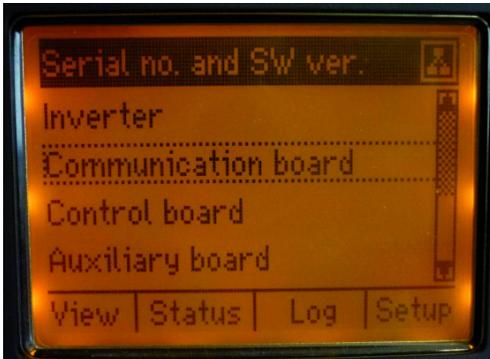


3. Press **OK**.
4. With the keys \blacktriangle select **Serial no. and SW ver.**



5. Press **OK**.

6. With the keys  select **Communication board**.



7. Press **OK**.



Software version of the comm. board is displayed; in this case version 3.31.

8. Using the table below, determinate the inverter type by means of the software version of the Communication board.

| TLX inverter type | Communication board software versions | | | | | | | | | |
|-------------------|---------------------------------------|------|------|------|------|------|------|------|------|------|
| | 0.29 | 0.32 | 0.37 | 0.42 | 0.49 | 0.50 | 0.53 | 0.55 | 0.57 | 0.58 |
| Mark 1 | 0.59 | 0.61 | 0.62 | 0.63 | 0.65 | 0.66 | | | | |
| | 0.52 | 1.32 | 1.38 | 1.40 | 2.55 | 2.63 | 2.86 | 2.92 | 3.09 | |
| Mark 2 | 3.11 | 3.14 | 3.18 | 3.22 | 3.24 | 3.26 | 3.30 | 3.31 | 3.42 | |
| | 3.50 | 3.52 | 3.55 | 3.60 | 3.65 | 3.66 | 3.70 | 3.75 | | |
| | | | | | | | | | | |

4 User name and daily updated password for security level 2

At least security level 2 is required for the changes of the RoCoF settings described below.

A corresponding user name and an associated password, which is tied to the date and is valid for one day, can be obtained via the SMA Service Line.

Change settings via the web server

In order to change settings via the web server, it is important to ensure that the date in the inverter matches the date of the laptop/PC. Access will be denied if the dates do not match.

5 RoCoF settings change via the display

5.1 Logon with user name and daily updated password

1. Press **F4** ("Setup" menu).



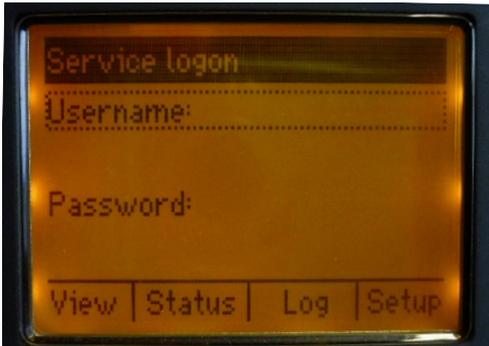
2. With the keys  select **Security**.



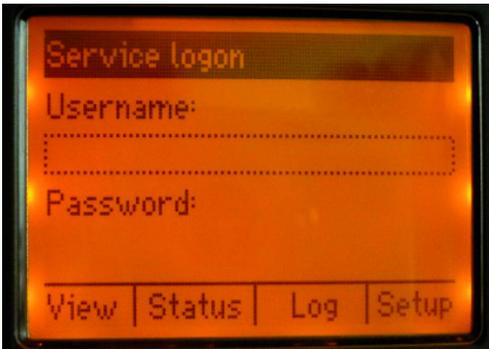
3. Press **OK**.



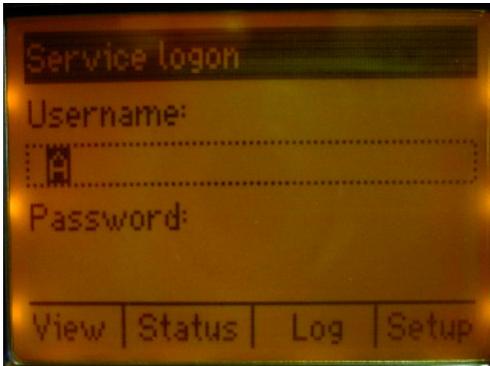
4. With the keys \blacktriangle select **Service logon**.
5. Press **OK**.



6. With the key \blacktriangledown jump to the line below **Username**.



7. Press **OK**.

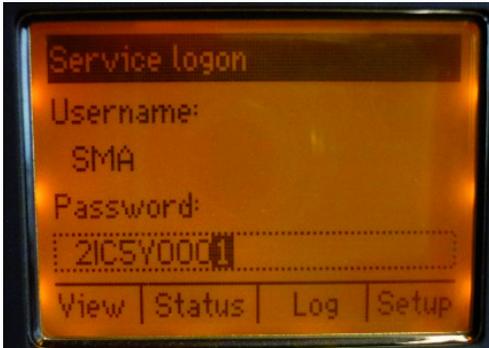


8. With the keys \blacktriangle select the character/digit for the highlighted position of the username.
9. Use the keys \blacktriangleleft to go forwards/backwards within the username.
10. Change this character/digit according to step 8.

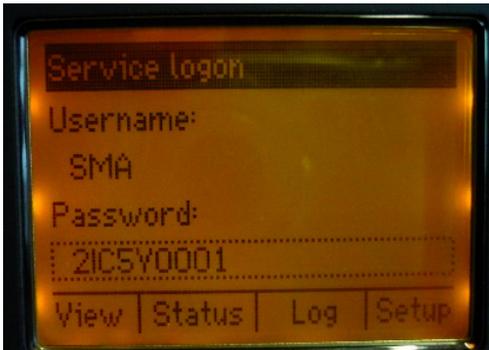


11. Press **OK** to finish entering the user name.
None of the characters/digits of the username are highlighted anymore.

12. With the key ▼ jump to the line below **Password:**, press **OK** and enter the password in the same way as the user name.



13. After entering the last character/digit, press **OK**.



You now have access to the desired security level.

14. Press **Back**, in order to quit the Service logon submenu.



The Security level should now show **2**.

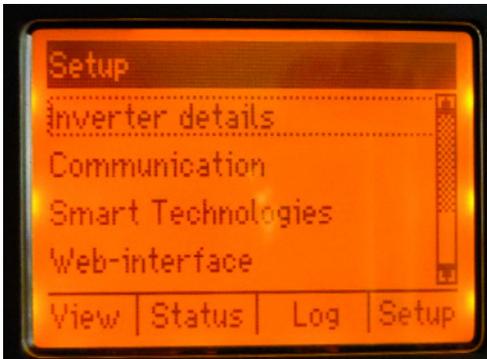
1.5. If the Security level is still **0**:

- Check entries and repeat/change if necessary.
- Make sure that the date in the inverter is correct.
- Make sure that the daily updated password corresponds to the date set in the inverter.

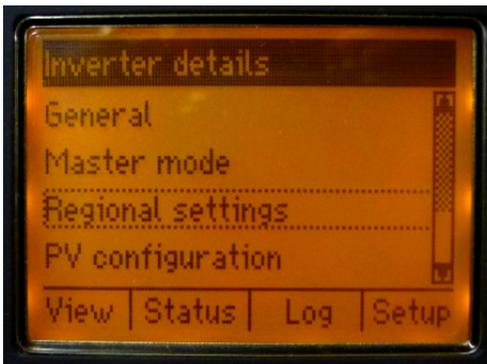
5.2 Settings change in an individual device

With security level 2 the parameter changes for the individual device can be made via the display. In order to change parameters for multiple devices within one system, log on to the web server of the master inverter.

1. Press **F4** ("Setup" menu).
2. With the keys \blacktriangle select **Inverter details**.



3. Press **OK**.
4. With the keys \blacktriangle select **Regional settings**.

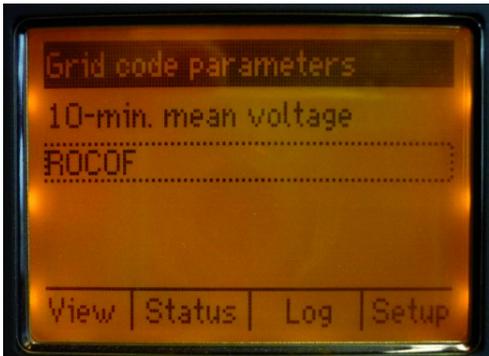


5. Press **OK**.

6. With the keys \blacktriangleleft select **Grid code parameters**.



7. Press **OK**.
8. With the keys \blacktriangleleft select **ROCOF**.



9. Press **OK**.
10. With the keys \blacktriangleleft select the desired parameter, e.g. **ROCOF limit**.



11. Press **OK**.

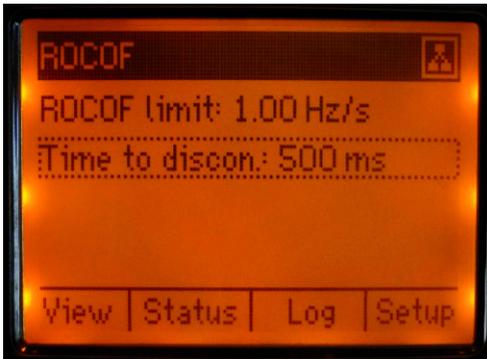
The first digit will be highlighted.

12. In order to modify a parameter:

- Change the digit by means of the keys \uparrow \downarrow .
- Move the cursor by means of the keys \leftarrow \rightarrow .
- Confirm the parameter value with **OK**.

13. Set the desired numerical values:

- Set **ROCOF limit** to 1 Hz/s.
- Set **Time to discon.** to 500 ms.

14. Confirm changes with **OK**.

6 RoCoF settings change via the web server

RoCoF settings can either be made device by device or throughout the whole system via the master inverter.

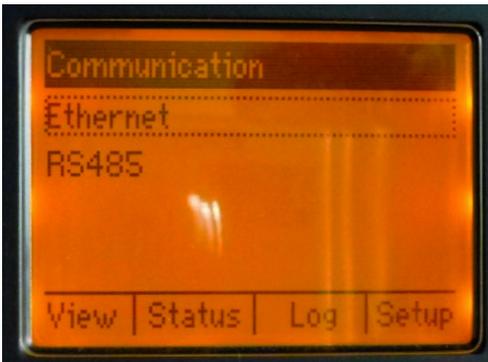
6.1 Display the IP address of a device

The web server of the devices can be reached by entering the appropriate IP address in a common web browsers such as Firefox or Google Chrome. If the IP address is unknown, it can be identified as follows:

1. Press **F4** ("Setup" menu).
2. Select **Communication**.



3. Press **OK**.
4. Select **Ethernet**.

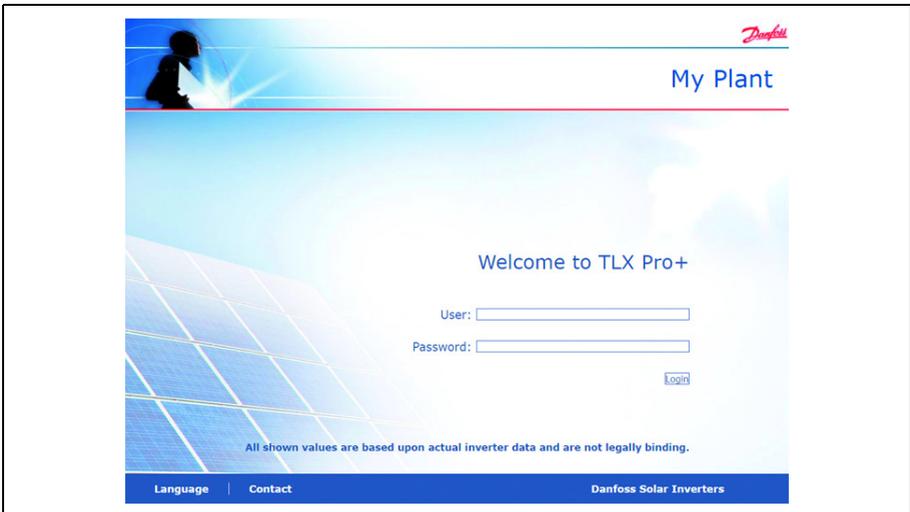


- 5. Press **OK**.



6.2 Login via the web server

Inverter and PC/laptop must be in the same network. The IP address for the inverter must be entered as URL in the web browser accordingly.



- 1. Enter **User name** and **Password**.
- 2. Click **Login**.

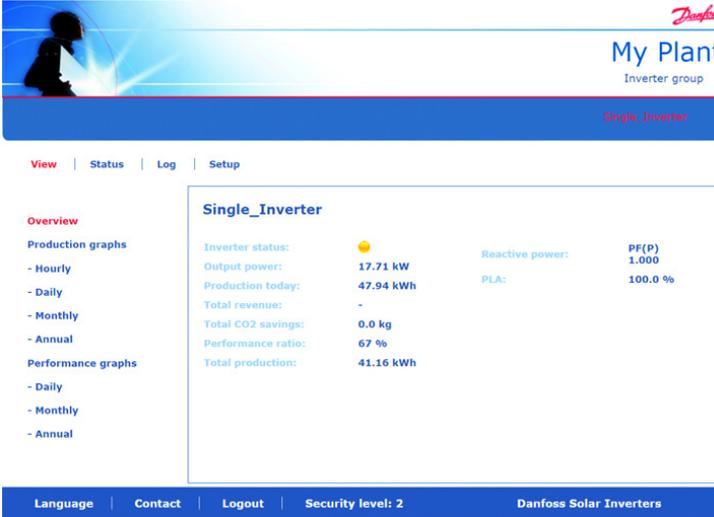
i TLX inverters without the Pro feature

In case of TLX inverters without the Pro feature, access for customers isn't intended. The welcome page shows a text line in red. The web server can nevertheless be accessed (service interface).

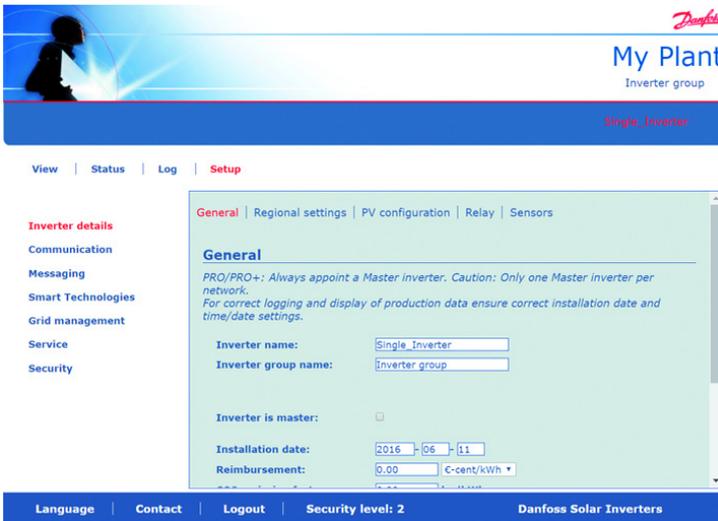


6.3 Settings change in an individual device

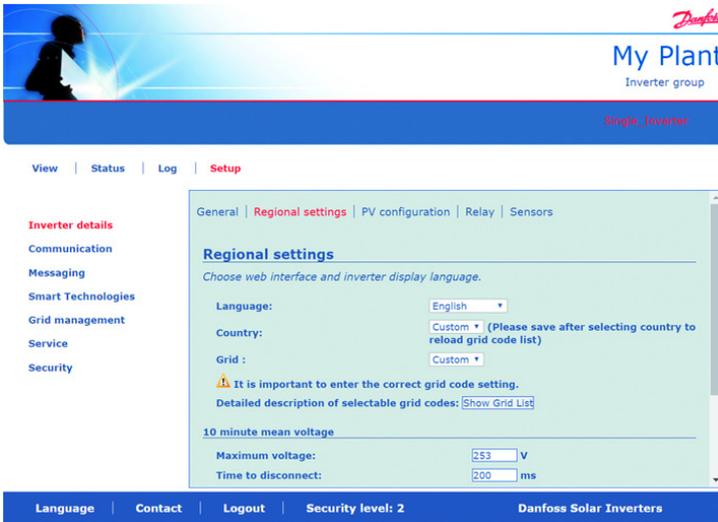
After logging into an individual device to make a parameter change only in this specific device:



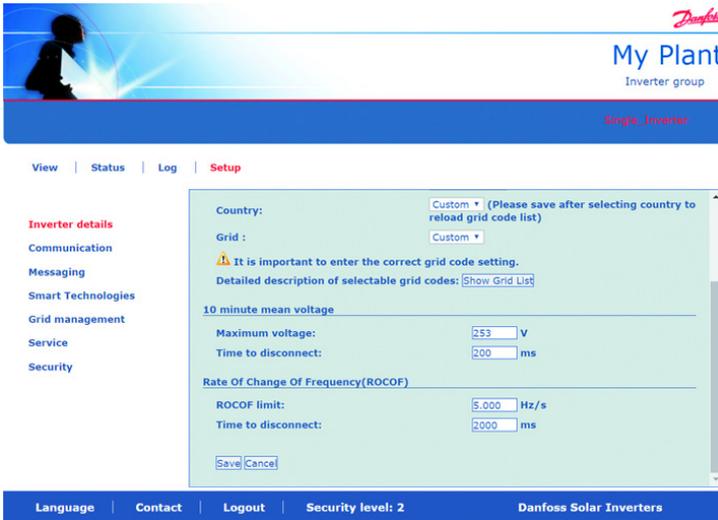
1. Click **Setup**.
2. Click **Inverter details**.



3. Click **Regional settings**.



4. Scroll down.



5. Make parameter changes:

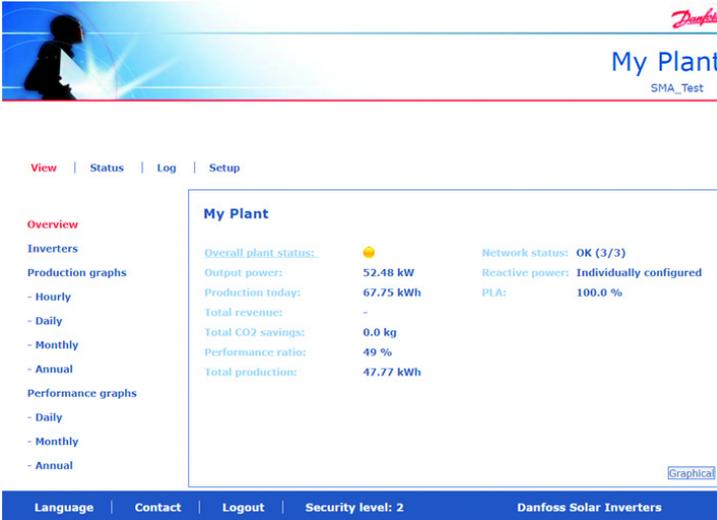
- Set **ROCOF limit** to 1 Hz/s.
- Set **Time to disconnect** to 500 ms.

The screenshot shows the 'My Plant' web interface for a 'Single Inverter'. The 'Setup' tab is active, displaying configuration options. Under the '10 minute mean voltage' section, the 'Time to disconnect' is set to 200 ms. In the 'Rate Of Change Of Frequency (ROCOF)' section, the 'ROCOF limit' is set to 1.000 Hz/s and the 'Time to disconnect' is set to 500 ms. A 'Save' button is located at the bottom of the configuration area.

6. Click **Save**.

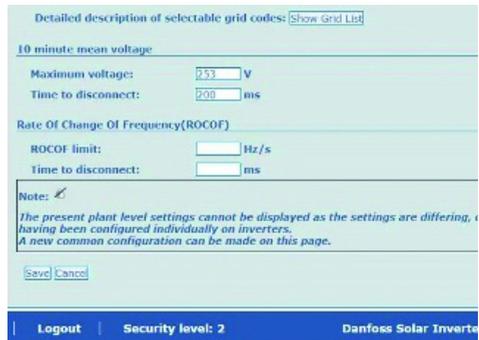
6.4 Settings change for the overall system via the master

If you are logged in the master inverter, the parameter change affects all the inverters. In this case only the plant name is displayed, not the inverter name.



If the values of a parameter differ between the inverters in the system, no value will be displayed.

Nevertheless the value that you enter and store will be stored in all the inverters.



1. Click **Setup**.
2. Click **Plant details**.

The screenshot shows the 'My Plant' web interface. At the top right, there is a logo for 'Danfoss' and the text 'My Plant SMA_Test'. Below the header, there is a navigation bar with 'View', 'Status', 'Log', and 'Setup' (highlighted in red). On the left side, there is a sidebar menu with 'Plant details' (highlighted in red) and other options like 'Communication', 'Messaging', 'Users & Groups', 'Smart Technologies', 'Grid management', 'Service', and 'Security'. The main content area is titled 'General' and contains the following fields:

- Plant name: My Plant
- The plant consists of: 3 inverter(s)
- The master inverter is: MASTER
- Installation date: 2016-06-11
- Reimbursement: 0 €-cent/kWh
- Consumption: 0 €-cent/kWh
- CO2 emission factor: 0 kg/kWh

At the bottom of the page, there is a blue footer bar with 'Language', 'Contact', 'Logout', 'Security level: 2', and 'Danfoss Solar Inverters'.

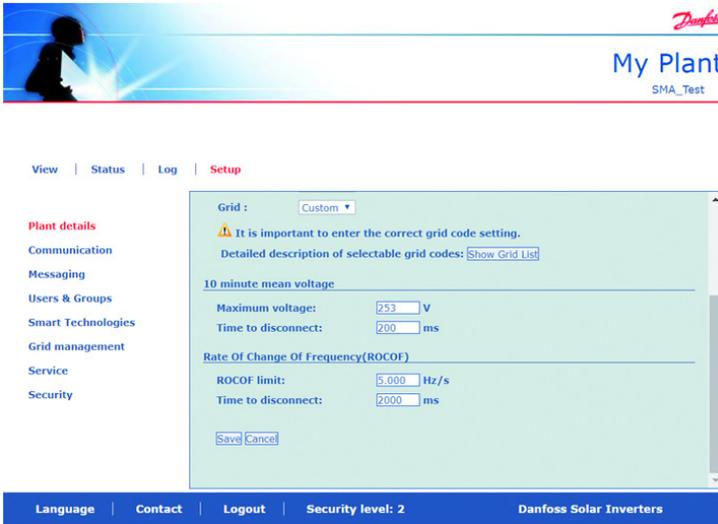
3. Click **Regional settings**.

The screenshot shows the 'My Plant' web interface. At the top right, there is a logo for 'Danfoss' and the text 'My Plant SMA_Test'. Below the header, there is a navigation bar with 'View', 'Status', 'Log', and 'Setup' (highlighted in red). On the left side, there is a sidebar menu with 'Plant details' (highlighted in red) and other options like 'Communication', 'Messaging', 'Users & Groups', 'Smart Technologies', 'Grid management', 'Service', and 'Security'. The main content area is titled 'Regional settings' and contains the following fields:

- Language: English
- Country: Custom (Please save after selecting country to reload grid code list)
- Grid: Custom
- Warning: It is important to enter the correct grid code setting.
- Detailed description of selectable grid codes: Show Grid List
- 10 minute mean voltage
- Maximum voltage: 253 V
- Time to disconnect: 200 ms

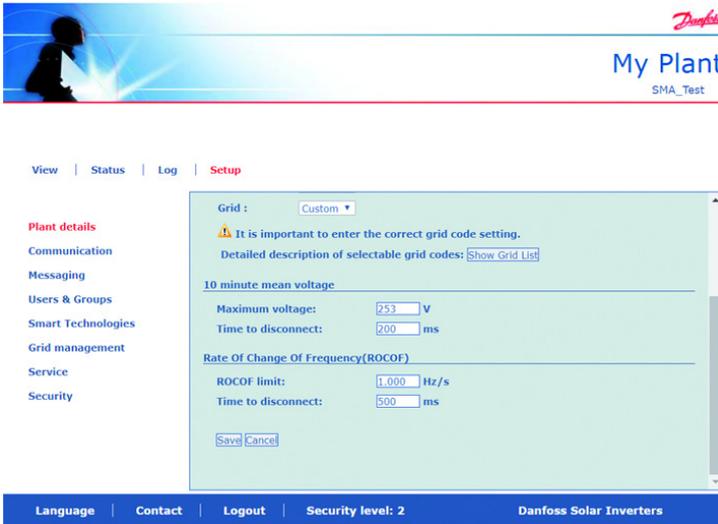
At the bottom of the page, there is a blue footer bar with 'Language', 'Contact', 'Logout', 'Security level: 2', and 'Danfoss Solar Inverters'.

4. Scroll down.



5. Make parameter changes:

- Set **ROCOF limit** to 1 Hz/s.
- Set **Time to disconnect** to 500 ms.



6. Click **Save**.

SMA Solar Technology AG recommends to verify the setting at least on one of the non-master inverters (see Section 6.3, page 16).

SMA Solar Technology

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