DEIF

-power in control

CE

QUICK START GUIDE

TCM-2 replacement guide

- What's in the delivery?
- Getting started
- The first steps
- PC utility software

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SW version 3.0X.X or later

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1. About this document

1.1 General purpose

This document is the Quick Start Guide for the TCM-2 (**T**hyristor **C**ontrol **M**odule).
The document mainly includes general product information, mounting instructions and wiring descriptions.

The parameter settings and operation mode may vary, depending on the type of controller.

The TCM-2 module can operate in diff communication mod (CAN-BUS or traditional in COMBI-mode)
This guide is a description only for the traditional COMBI-mode

The general purpose of this Quick Start Guide is to help the user with the first steps of installing and using the unit.

Please make sure that you also read the DESIGNER REFERENCE HANDBOOK http://www.deifwindpower.com/Files/Filer/Documentation/Files/4189340613uk.pdf before starting to work with the TCM-2. Failure to do this could result in human injury or damage to the equipment.

1.2 Intended users

This Quick Start Guide is mainly intended for the educated engineers in charge. On the basis of this document, the educated engineers will give the electrician the information he needs in order to get started to install the unit. For detailed electrical drawings, the Installation Instructions must be used.

1.3 Contents/overall structure

This document is divided into chapters, and in order to make the structure simple and easy to use, each chapter will begin from the top of a new page.

2. Warnings and legal information

This chapter includes important information about general legal issues relevant in the handling of DEIF products. Furthermore, some overall safety precautions will be introduced and recommended. Finally, the highlighted notes and warnings, which will be used throughout this document, are presented.

2.1 Legal information and responsibility

DEIF takes no responsibility for installation or operation of the generator set. If there is any doubt about how to install or operate the generator controlled by the unit, the company responsible for the installation or the operation of the set must be contacted.

The units are not to be opened by unauthorised personnel. If opened anyway, the warranty will be lost.

2.2 Electrostatic discharge awareness

Sufficient care must be taken to protect the terminals against static discharges during the installation. Once the unit is installed and connected, these precautions are no longer necessary.

2.3 Safety issues

Installing the unit implies work with dangerous currents and voltages. Therefore, the installation of the unit should only be carried out by authorised personnel who understand the risks involved in the working with live electrical equipment.

Be aware of the hazardous live currents and voltages. Do not touch any AC measurement inputs as this could lead to injury or death.

2.4 Definitions

Throughout this document, a number of notes with helpful user information will be presented. To ensure that these are noticed, they will be highlighted in order to separate them from the general text.

2.5 Note symbol

The notes provide general information which will be helpful for the reader to bear in mind.

2.6 Warnings

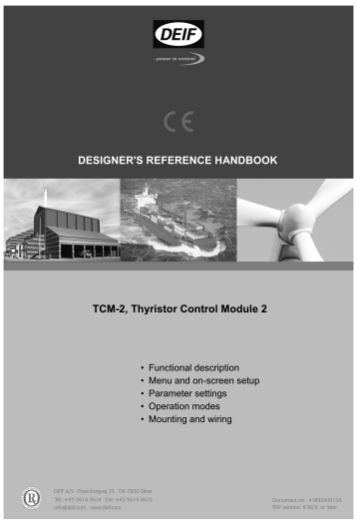
The warnings indicate a potentially dangerous situation which could result in death, personal injury or damaged equipment if certain guidelines are not followed.

3. What's in the delivery?

3.1 Standard delivery

The TCM-2 unit

DESIGNER's REFERENCE HANDBOOK



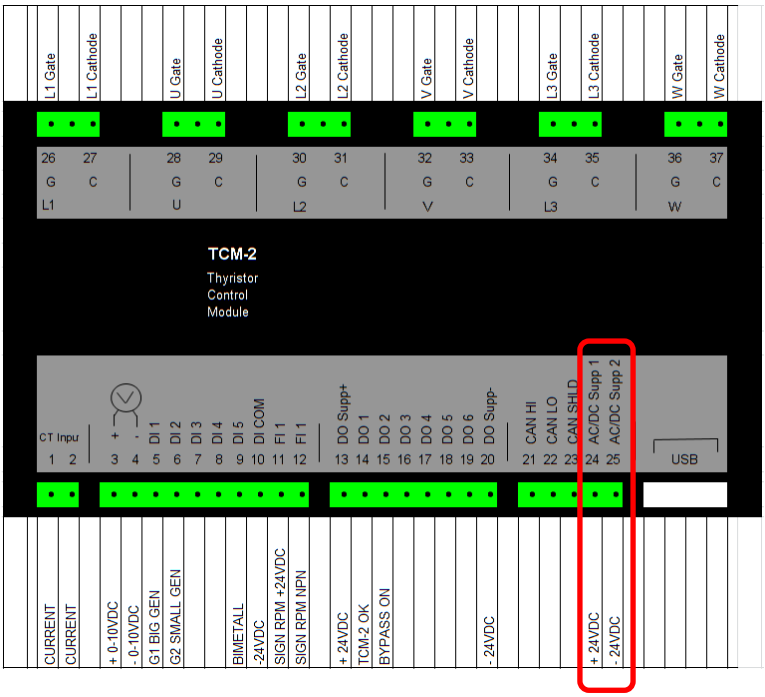
PC cable for utility software (USB service cable)

4. Getting started

4.1 Terminal description

Description of the terminals on TCM-2 for change request for double speed generator application!!

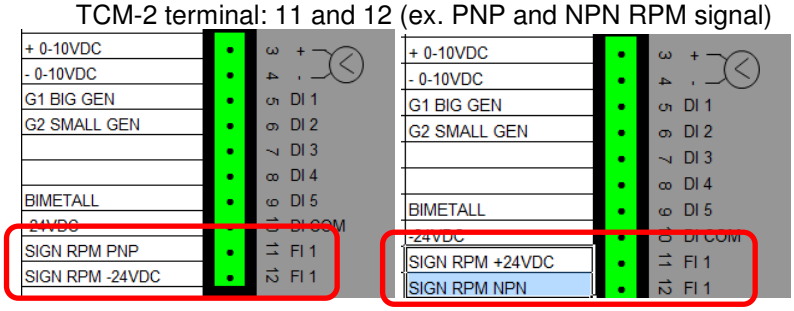
4.2 Power supply



4.3 Generator RPM signal

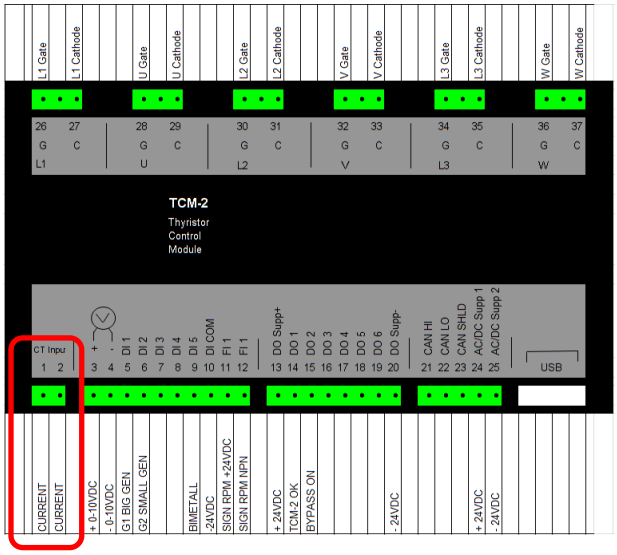
Generator RPM signal is required in the TCM-2. The RPM signal is connected to the TCM-2 by parallel connection to the main controller rpm input.

Both signals (PNP or NPN) can be used in the TCM-2
TCM-2 terminal: 11 and 12 (ex. PNP and NPN RPM signal)



4.4 Change of current measurement of the TCM-2

When the existing current measurement is connected as a direct (parallel) connection from the existing CT in the main controller, we have to change the CT signal to the TCM-2 from parallel connection into serial connection, in line with the main controller. But only if you are using the same CT for main controller and TCM-2.
If you have a separate CT to the TCM-2, then connect S1 and S2 directly to the terminals 1 and 2.

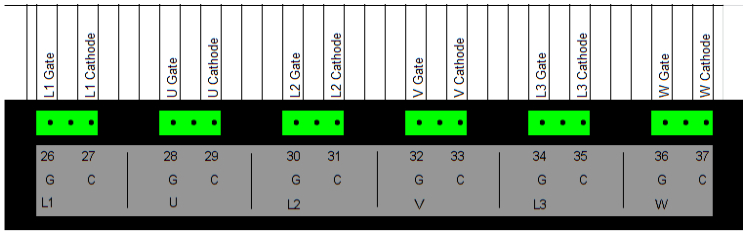


4.5 Modify the analogue input signal

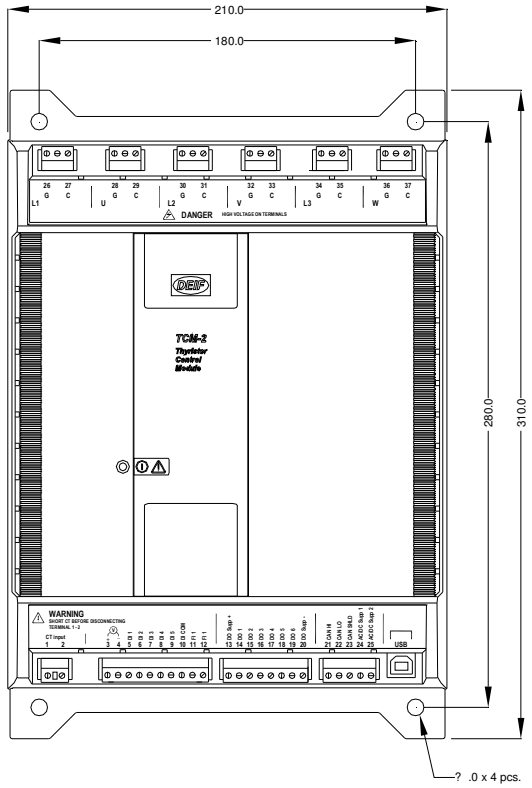
Only if the input signal is not 0-10 V but 0-20 mA, you have to modify the analogue input signal to TCM-2 from current signal (0-20 mA) to voltage signal (0-10V DC).
Mount a 500 ohm resistor parallel to the terminals 3 and 4 on the TCM-2, to change current signal into voltage signal.

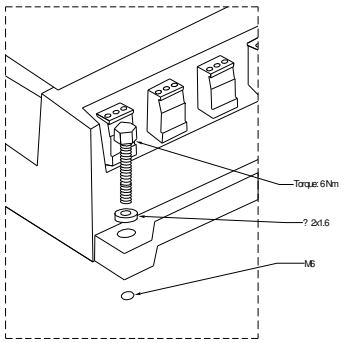
4.6 Attention! Thyristor signal and terminals

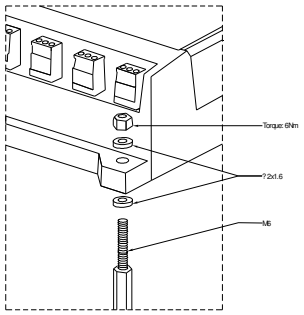
Pay attention to the thyristor signal wires and the terminal sequence



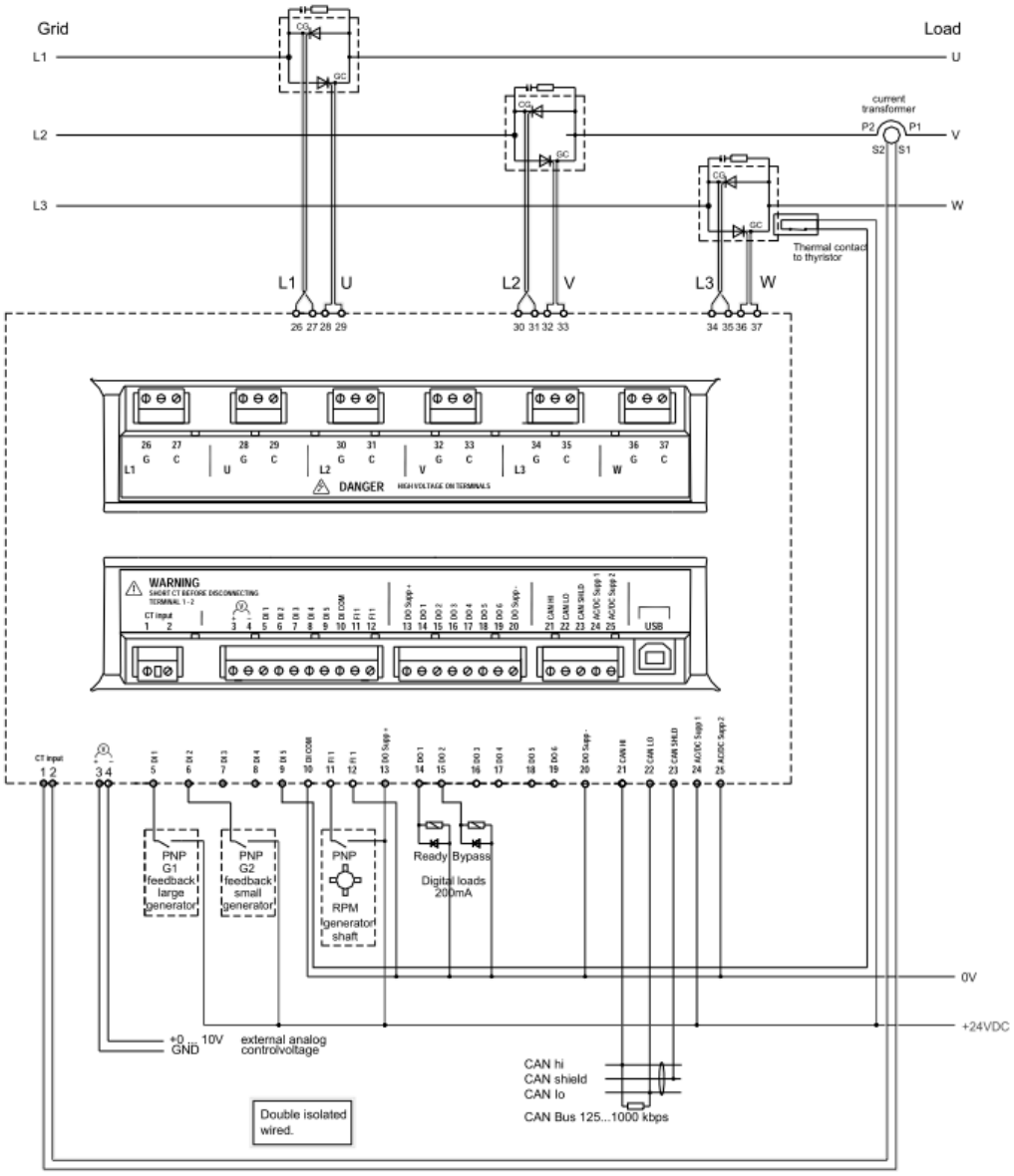
4.7 Dimensions, size and torque



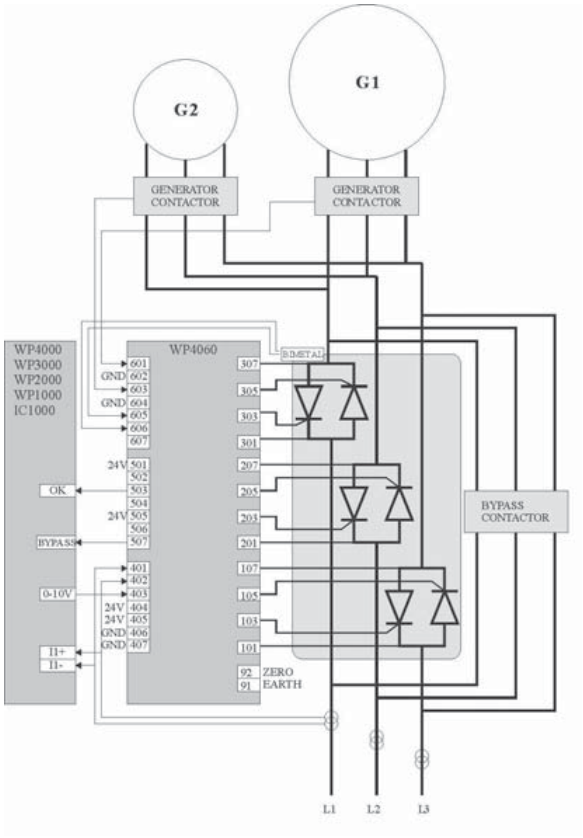




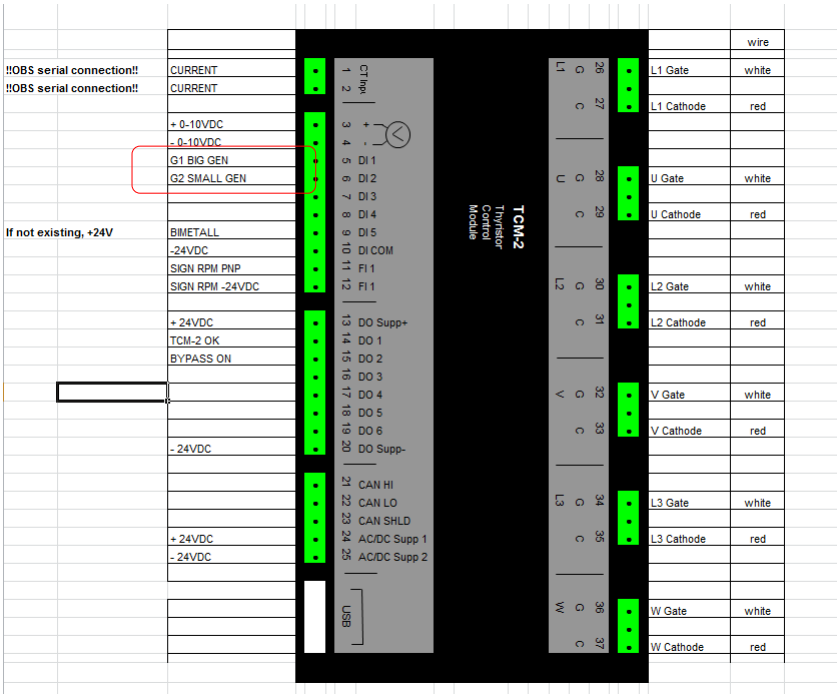
4.8 Connection diagram



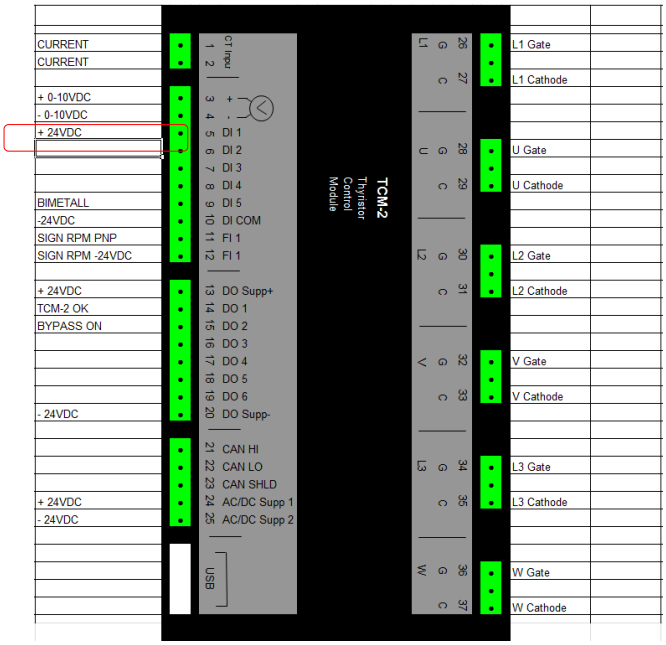
4.9 Example: basic wiring existing system



4.10 Transform the connections to TCM-2



Ex.: 2 speed generator in "COMBI" mode



Ex.: 1 speed generator in "COMBI" mode

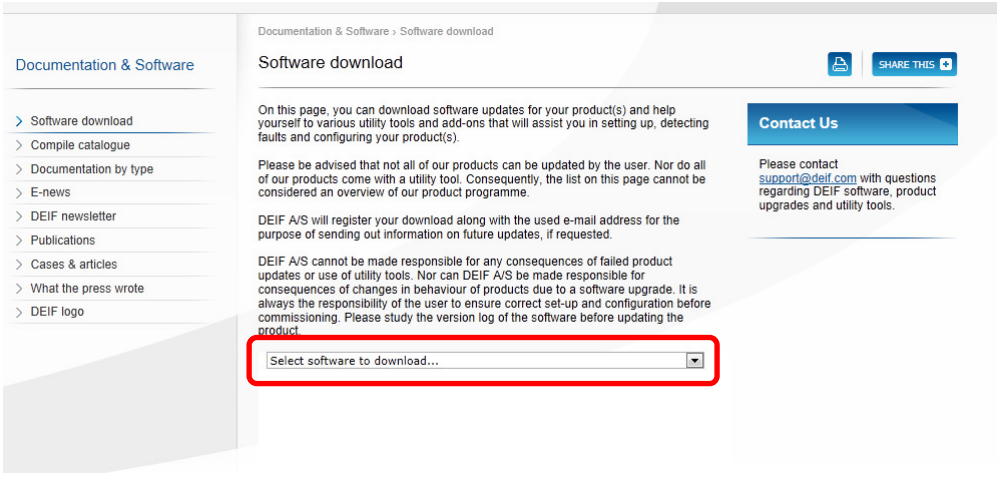
For further information about the installation from existing systems, please contact DEIF for assistance.

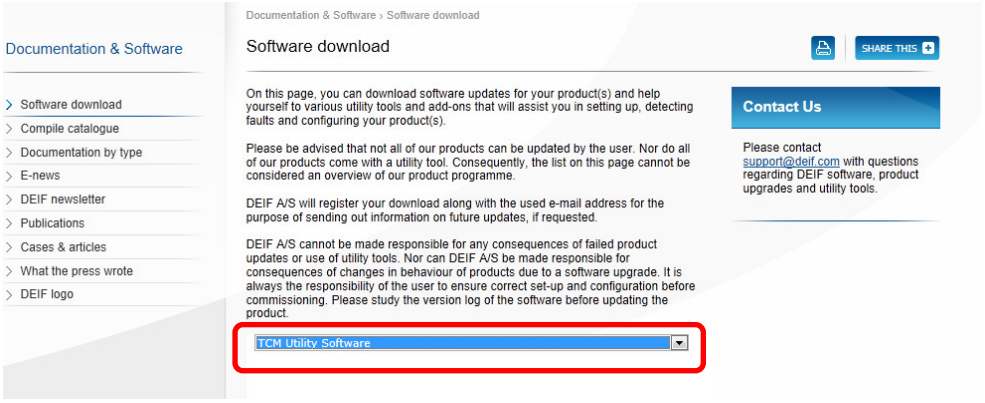
5. TCM-2 utility Software

5.1 Download TCM-2 utility SW from the internet

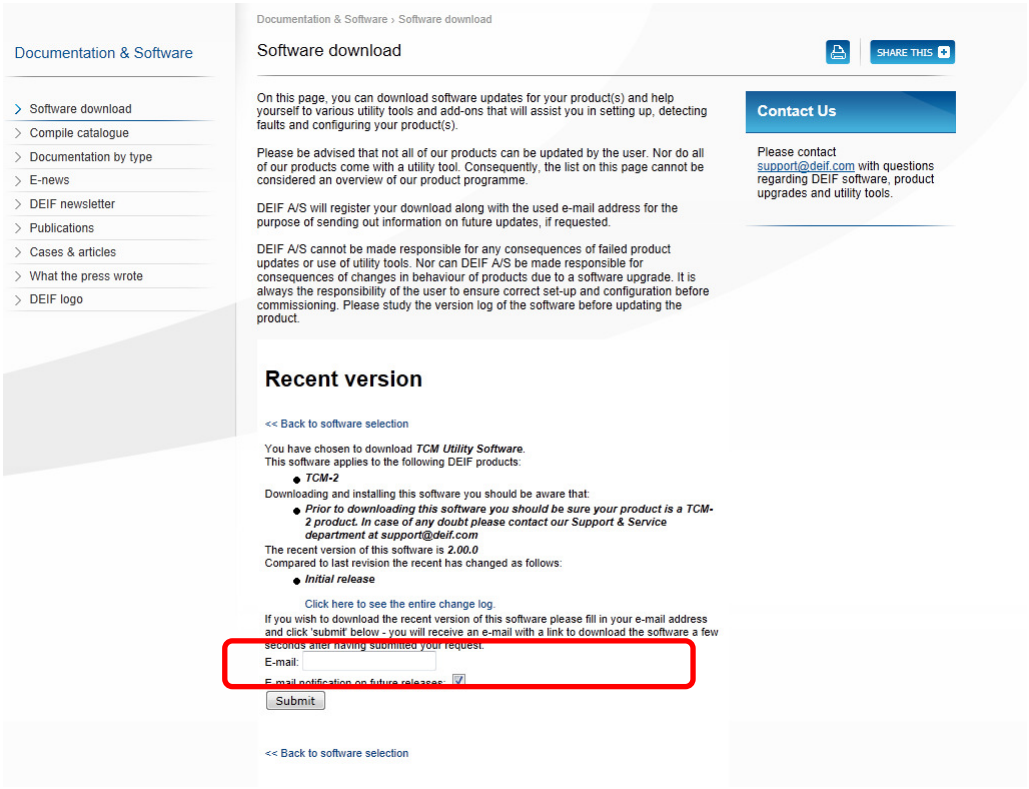
Link: http://www.deif.com/download_centre/Software_download.aspx

- Select the software to download <TCM utility software>





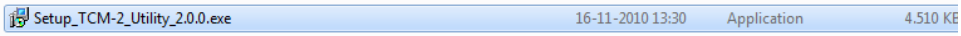
- Fill in your e-mail address and click ”Submit”

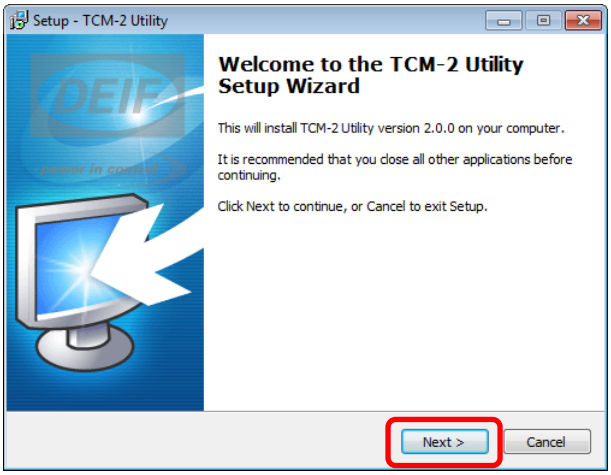


- Subsequently, you will receive an e-mail containing a link. Click the link and follow the instructions.

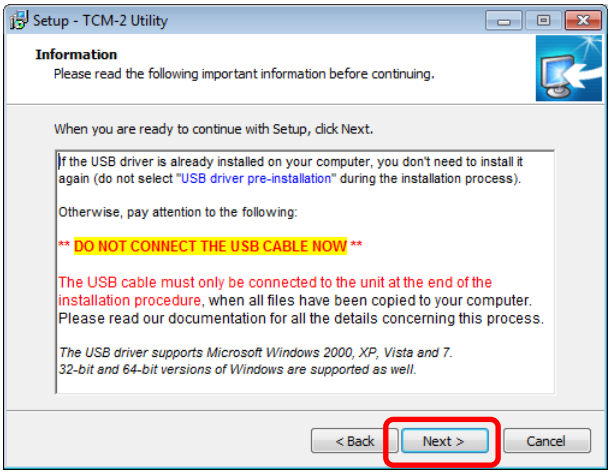
5.2 Install TCM-2 Utility SW

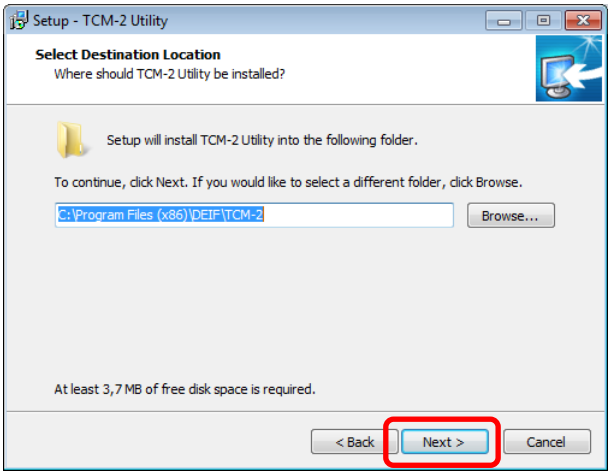
Run the <Setup_TCM-2_Utility_2.0.0.exe> and follow the instructions through the installation

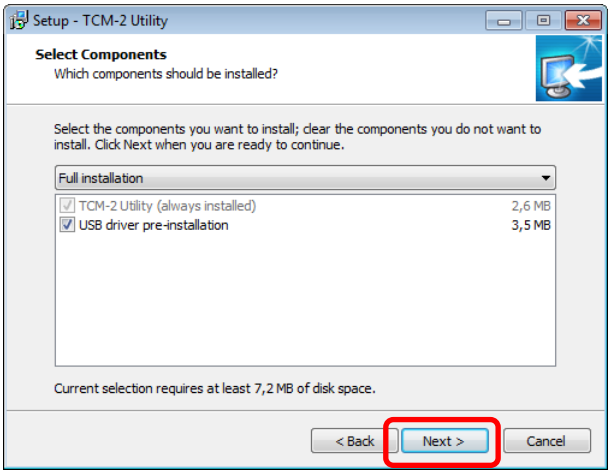


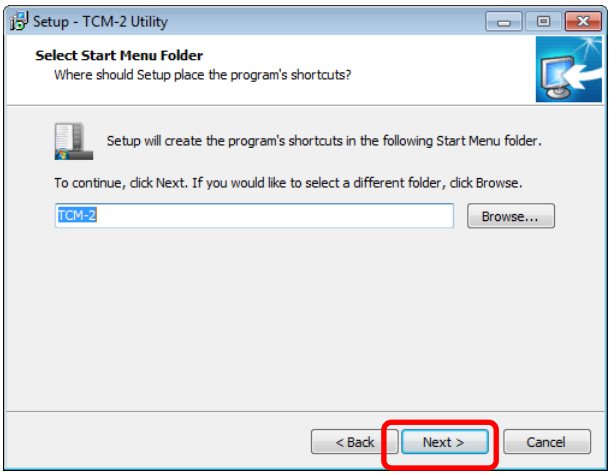


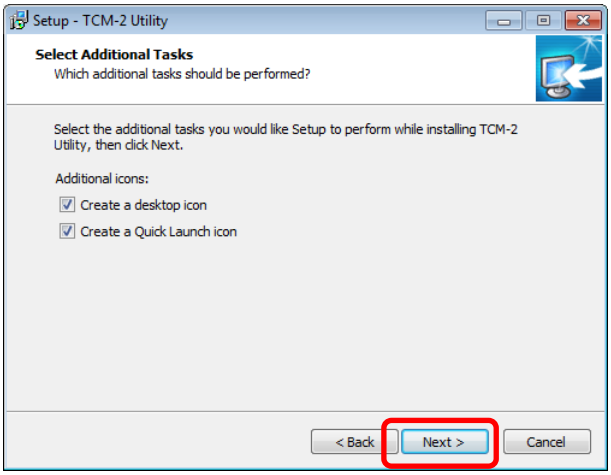
If the TCM-2 is connected with a USB cable, then disconnect the cable from the unit now.

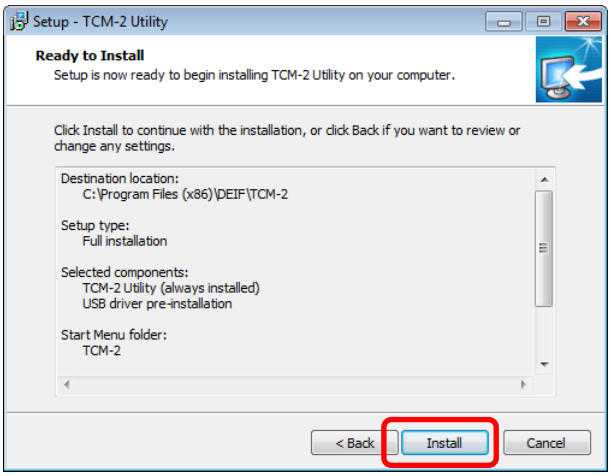


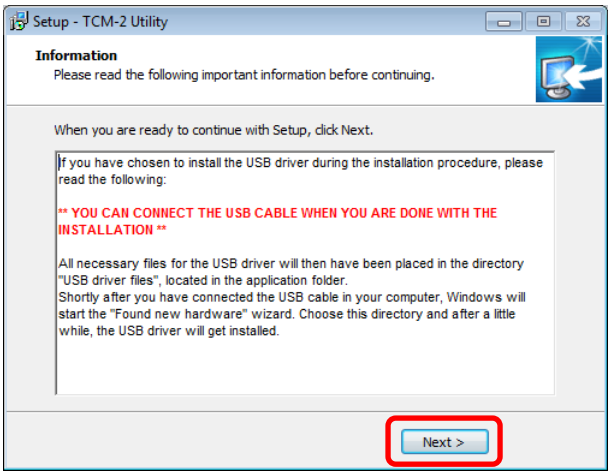




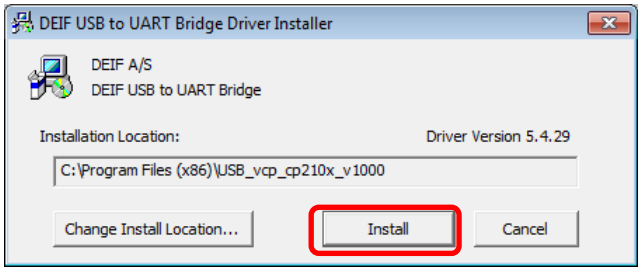

Setup - TCM-2 Utility
Select Start Menu Folder
Where should Setup place the program's shortcuts?
Setup will create the program's shortcuts in the following Start Menu folder.
To continue, click Next. If you would like to select a different folder, click Browse.
TCM-2
Browse...
< Back
Next >
Cancel

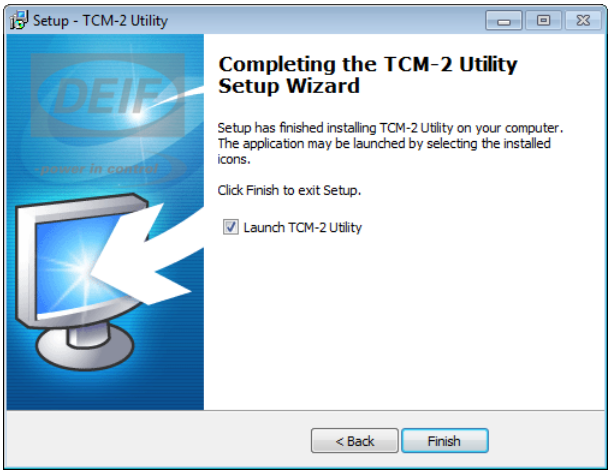

Setup - TCM-2 Utility
Select Additional Tasks
Which additional tasks should be performed?
Select the additional tasks you would like Setup to perform while installing TCM-2 Utility, then click Next.
Additional icons:
Create a desktop icon
Create a Quick Launch icon
< Back
Next >
Cancel


Setup - TCM-2 Utility
Ready to Install
Setup is now ready to begin installing TCM-2 Utility on your computer.
Click Install to continue with the installation, or click Back if you want to review or change any settings.
Destination location:
C:\Program Files (x86)\DEIF\TCM-2
Setup type:
Full installation
Selected components:
TCM-2 Utility (always installed)
USB driver pre-installation
Start Menu folder:
TCM-2
< Back
Install
Cancel



….and install the <USB to UART Bridge> driver





….done, and Launch the TCM-2 utility application

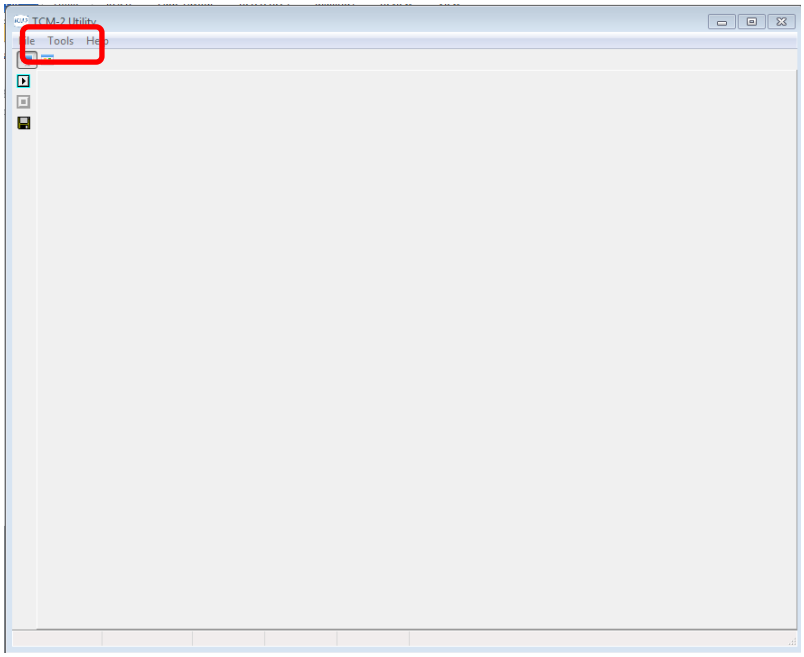
Installation guideline: link:
http://www.deifwindpower.com/Files/Filer/Documentation/Files/4189340606.pdf

6. The first steps

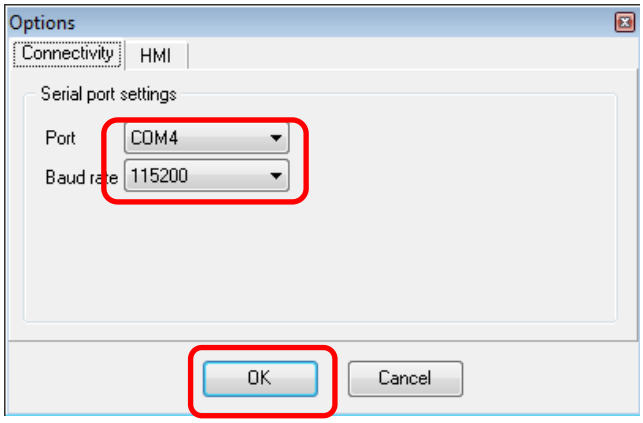
6.1 Getting connected with the unit

After successful download and installation of Utility SW, continue with switch on the power, 24V DC supply from the main controller to the TCM-2 and the main controller.

- Connect 24V DC supply to the TCM-2 and measure the supply on terminal
- Connect USB cable from the service port (TCM-2) to the PC
- Open TCM-2 utility SW

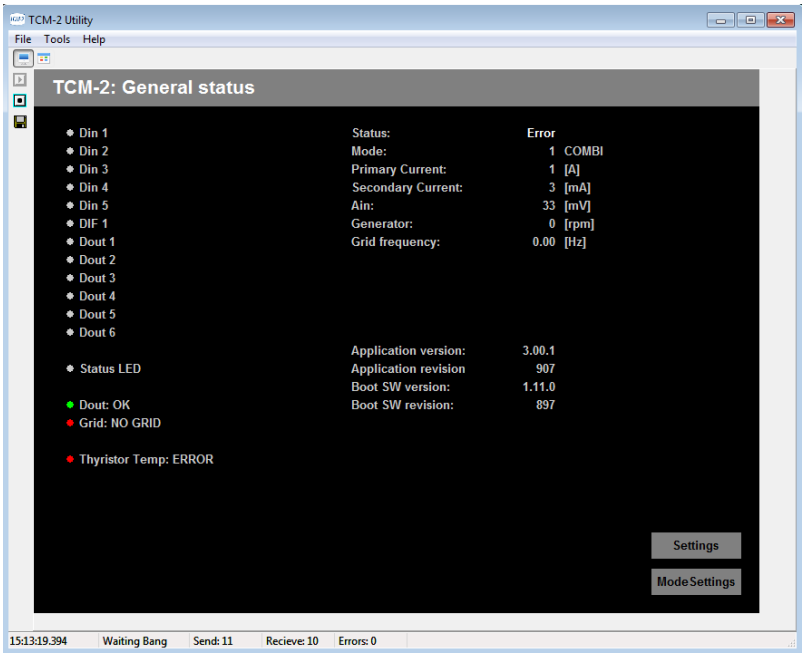


- Select <Tools> and <Options> for adjusting the correct connection
- Adjust the correct comport and baud rate (115200) to your unit and confirm with <OK>



7. Settings

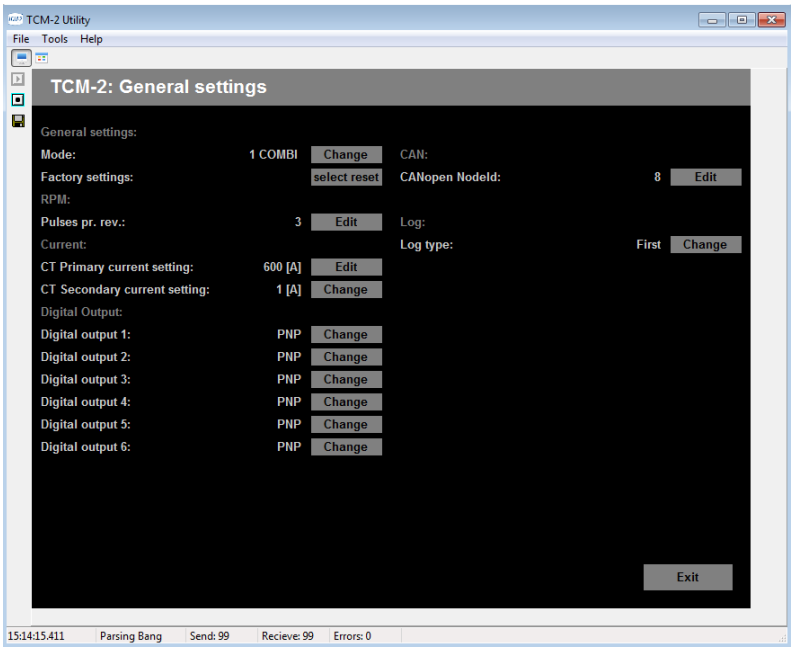
- Select <Tools> and <Open HMI> (**H**uman **M**achine **I**nterface) for connecting to the TCM-2
- Select <File> and <Option> to set the baud rate. Baud rate should be 115200.
- Start HMI screen by selecting 



7.1 Mode settings

- Select settings for the correct mode: 

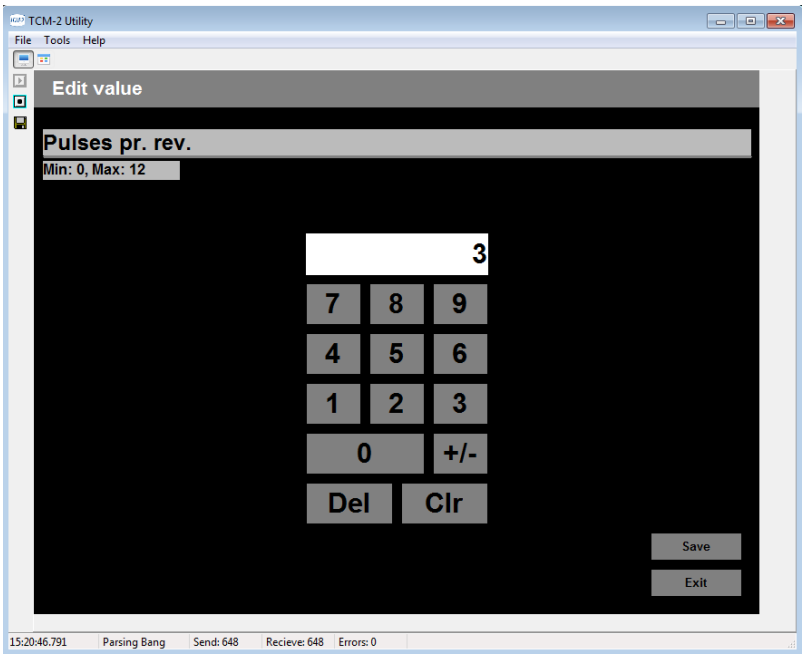
- Change the required mode from **CANopen** to **COMBI** , by selecting 



7.2 RPM sensor settings

- Adjust the correct pulse per revolution for the generator RPM sensor, by selecting <Edit>

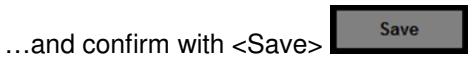
…and confirm with <Save> 

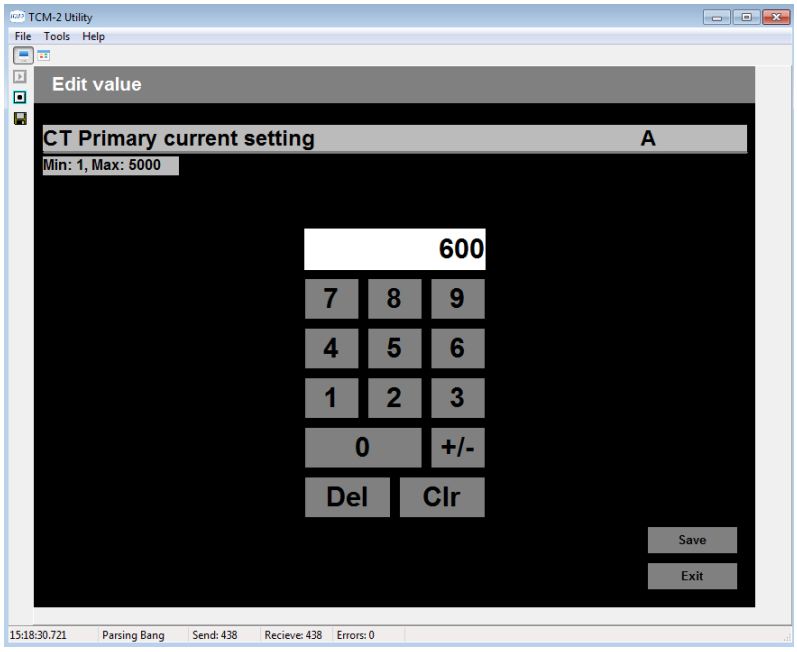


7.3 CT Primary current settings

➢ Change the correct settings for the current measurement CT, by selecting <Edit>

…and confirm with <Save>

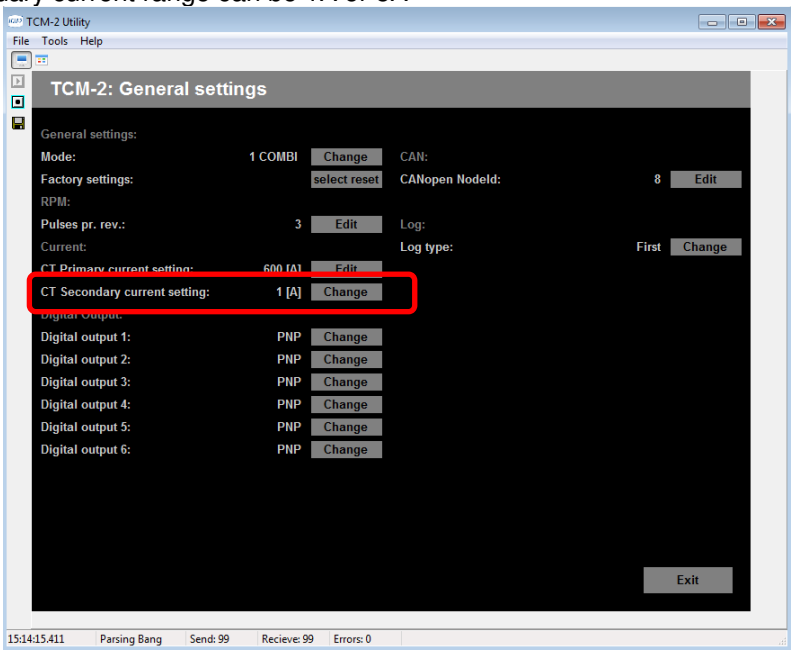




7.4 CT Secondary current settings

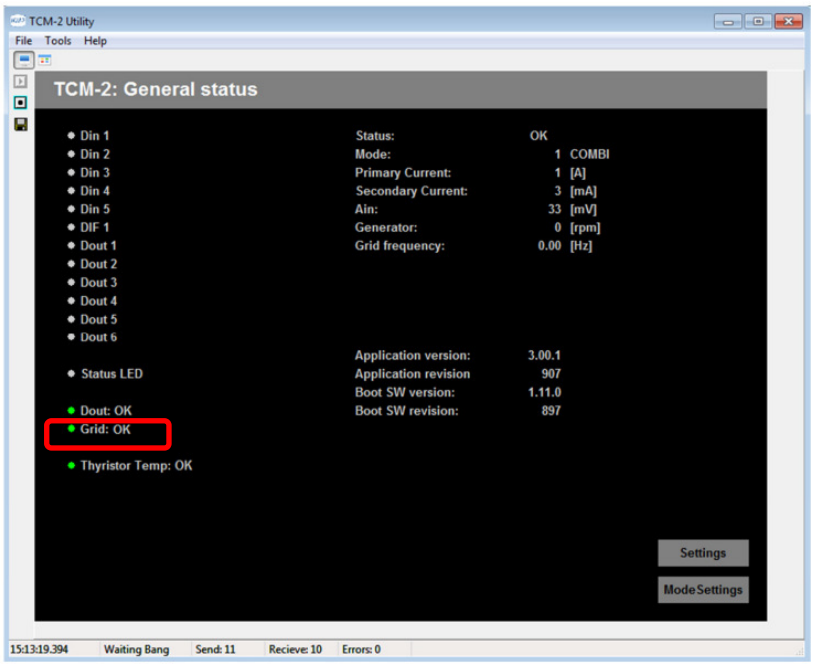
➢ Change the correct CT Secondary current settings by selecting 

the secondary current range can be 1A or 5A



8. Switch on the Power 400/690V AC

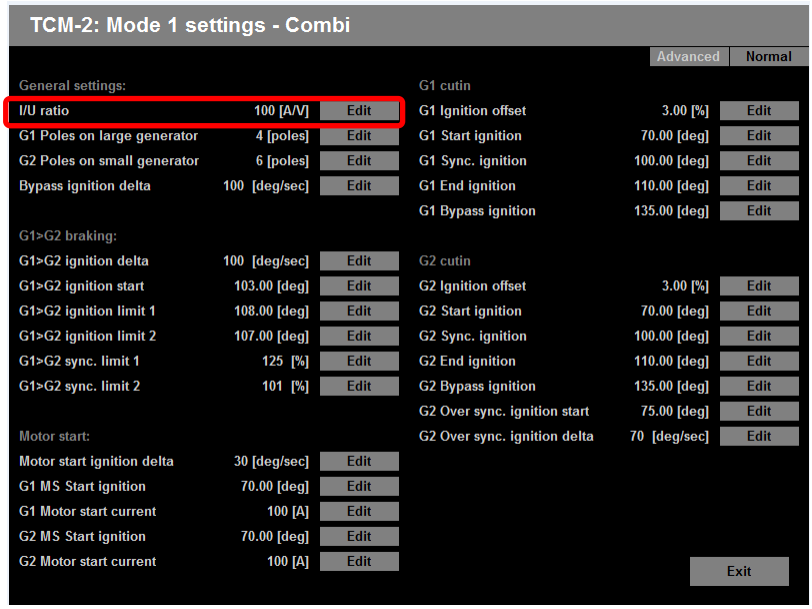
- Cross-check the connection L1, L2, L3 between the TCM-2 to the grid connection and to the generator connection, before you switch on the power
- Switch on the power (400V AC/690V AC) and the LED on the HMI for grid ok, will change from red to green
- Measure with an authorised multi-meter the grid between each phases and to the neutral



9. Test run

- Connect a clamp multi-meter on the grid line (for instance L1) to measure the current under a motor start, and confirm all correct settings from the clamp multi-meter and the value from the main controller.
- Adjust the settings on the main controller for instance 50 A for motor start (small g or big G)
  - Parameter xxx.xx for cut-in motor start changes to 50 A
  - Parameter 0 < G1 changes from 20 s to 100 s
  - Parameter 0 < G2 changes from 20 s to 100 s

- If the current values are not identical (in the range of 10%), you have to adjust the I/U ratio

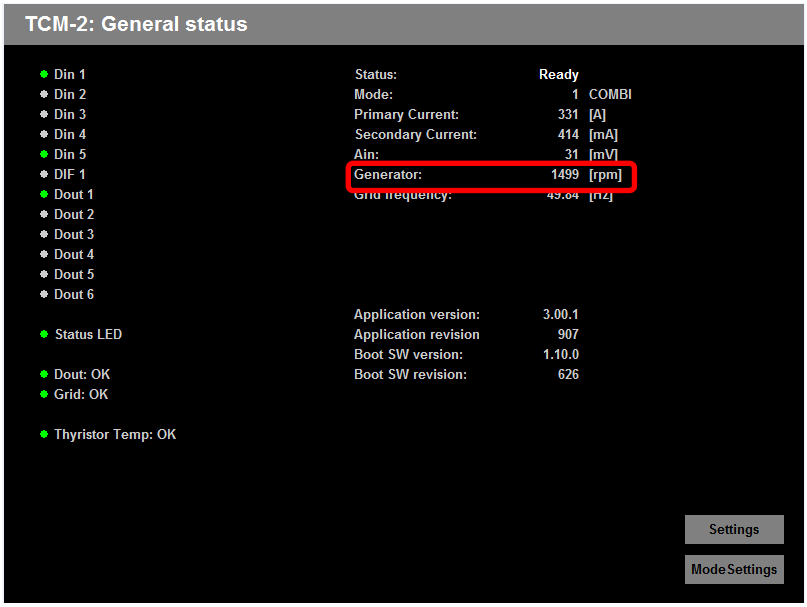


9.1 Motor start with G2 (small generator)

- In the service menu, make a motor start for G2 and read/confirm the current in
  - Clamp multi-meter
  - In the display from the main controller
  - TCM-2 HMI overview page

9.2 RPM sensor check

- Yaw out of the wind
- Release the brake so you smoothly get a rotation on the generator
- Confirm that the readings are identical on
  - the display from the main controller
  - TCM-2 HMI



9.3 Final check

- Switch off the power
- Disconnect all measurement equipment
- Check-up that the wires are tight and correctly connected
- Switch on the power and close the panel from the main controller
- Parameter for motor start has to be set as default value before testing