

MMI7000Soft V1.0 Short Form Manual



**Windows-Software
for visualization of recorded grid
parameters**

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1. General

The software is compatible with the MMI7000-E from version 1.0 onwards.

System requirements:

- Windows (XP, Vista, Windows7)
- Net 3.5 (free / Microsoft)
- 1GB RAM (> 1GB for large files)

Following files are included in the software-CD:

- SETUP_MMI7000Soft_V1.0.exe (3 Files)
- MMI7000Soft_V1.0_Manual.pdf
- dotnetfx35.exe (Microsoft .Net Framework 3.5)

2. Installation

The program installation is done via the executable **exe**-file on the CD to any selected folder on PC (normal setup-program).

Possible with administrator-access only.

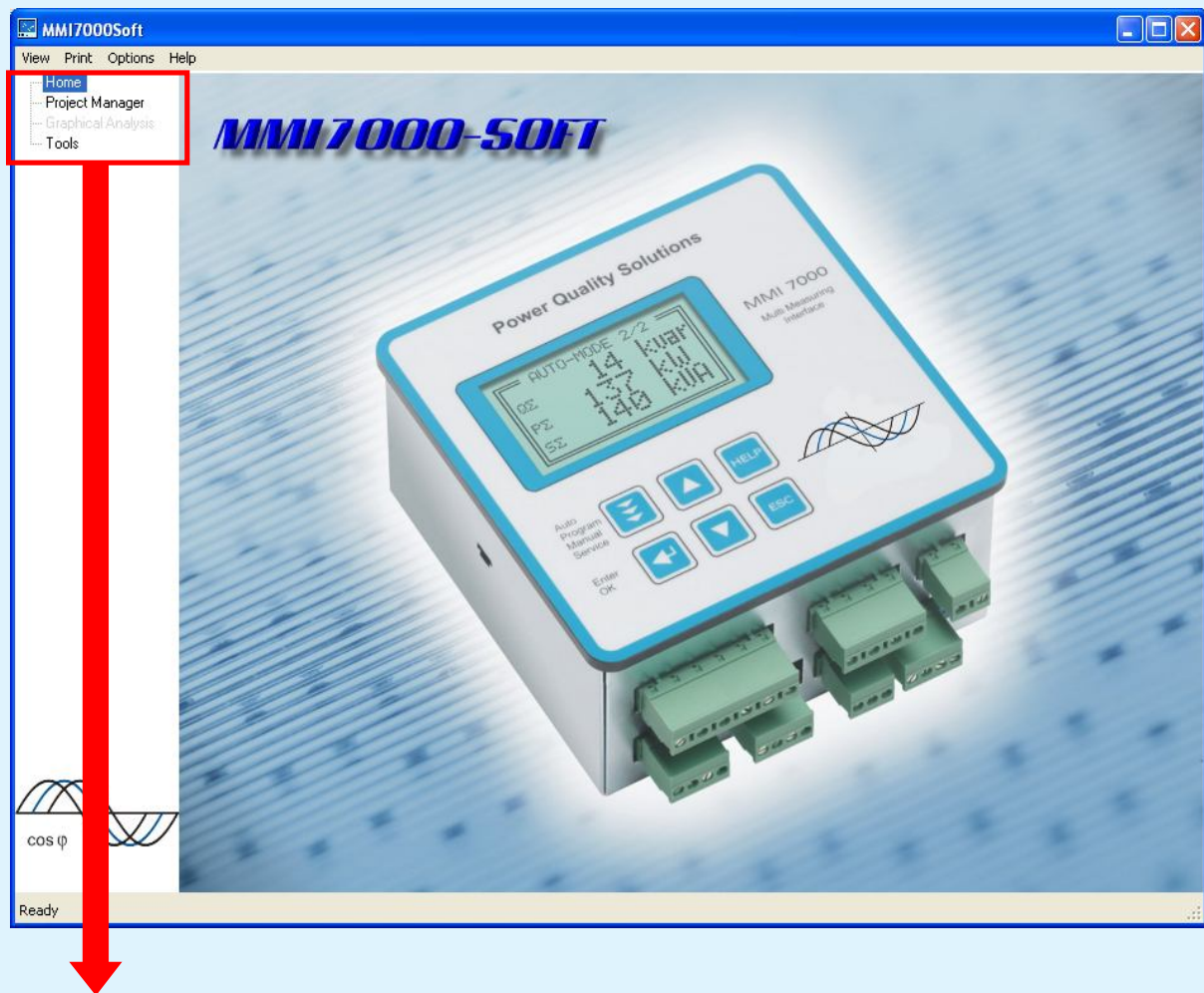
Microsoft Net 3.5 is required!



3. Getting Started (Start program)

Program start is either done via the icon generated on the desktop or by double click on the file **MMI7000Soft.exe** in the installation folder.

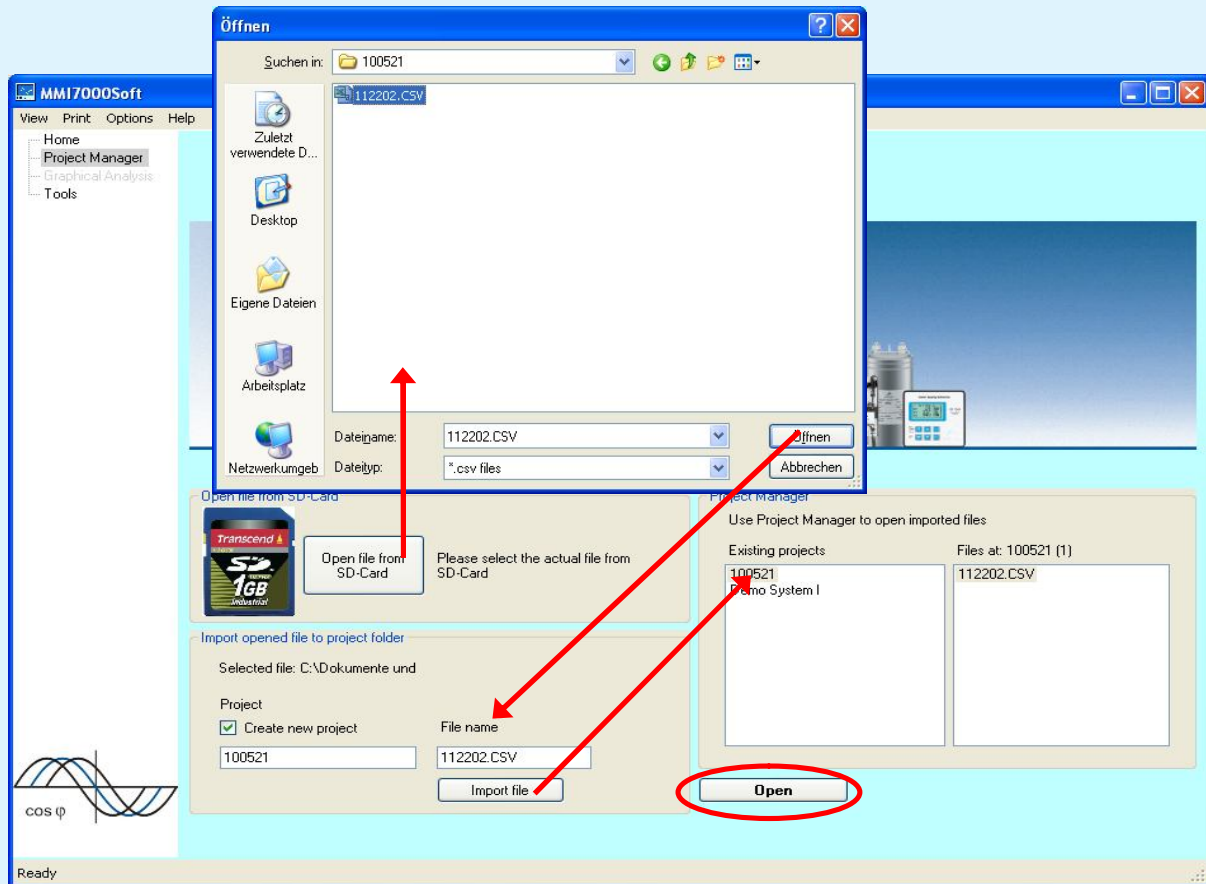
The start window of the program appears:



Main menu - Select **“Project Manager”** to start

4. Project Manager

4.1. Open file from SD-Card



File identification at SD-Card:

Folder name = starting date: Year Month Day in each case 2 digits per value

File name = starting time: Hour Minute Sec. in each case 2 digits per value

Click **“Open file from SD-Card”** button and a file browser appears. Select the recorded file and press **“Open”**.

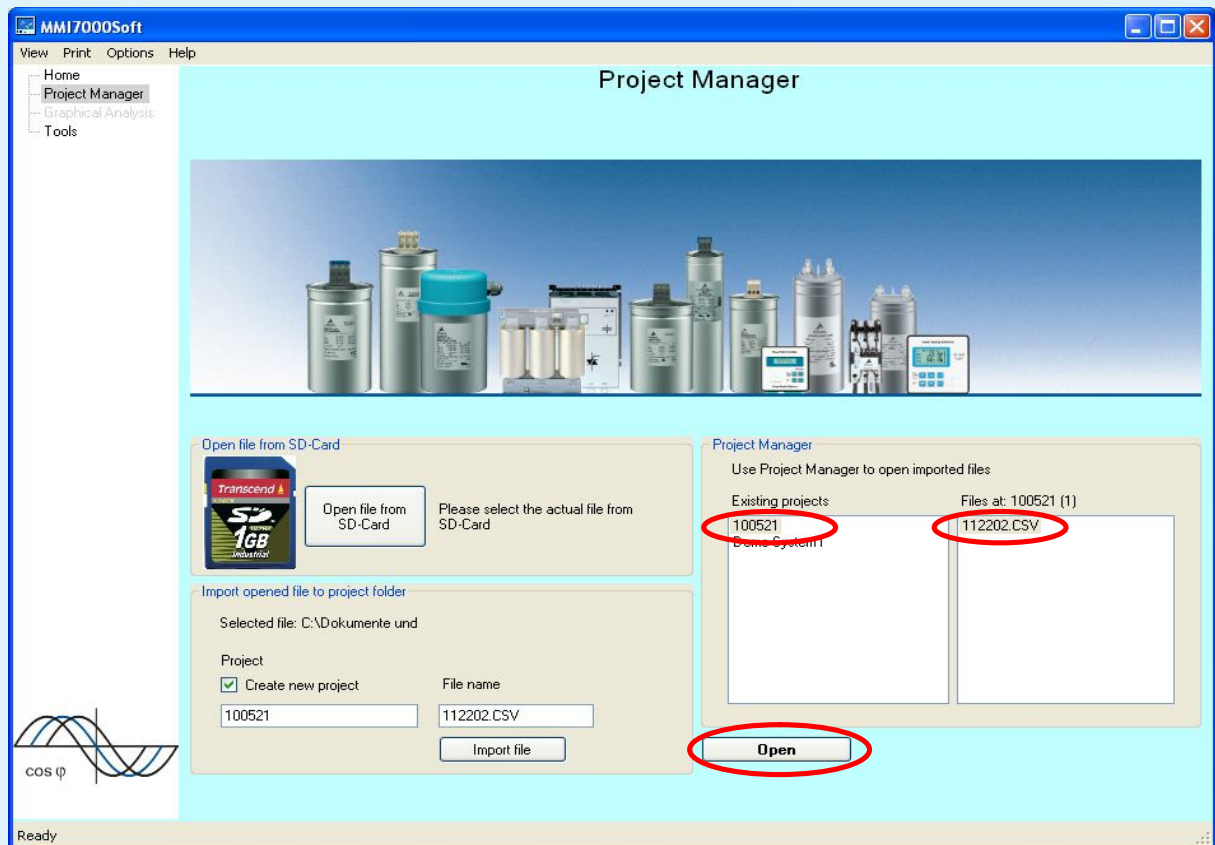
Customize **Project** and **File** name and press **“Import file”**.

The file is added to the **Project Manager** and ready to **Open**.

In **Project Manager** you can: delete, rename, copy and paste files or projects by using the right mouse button. You also can open files directly (refer to 3.2)

Project Manager

4.2. Open file in Project Manager

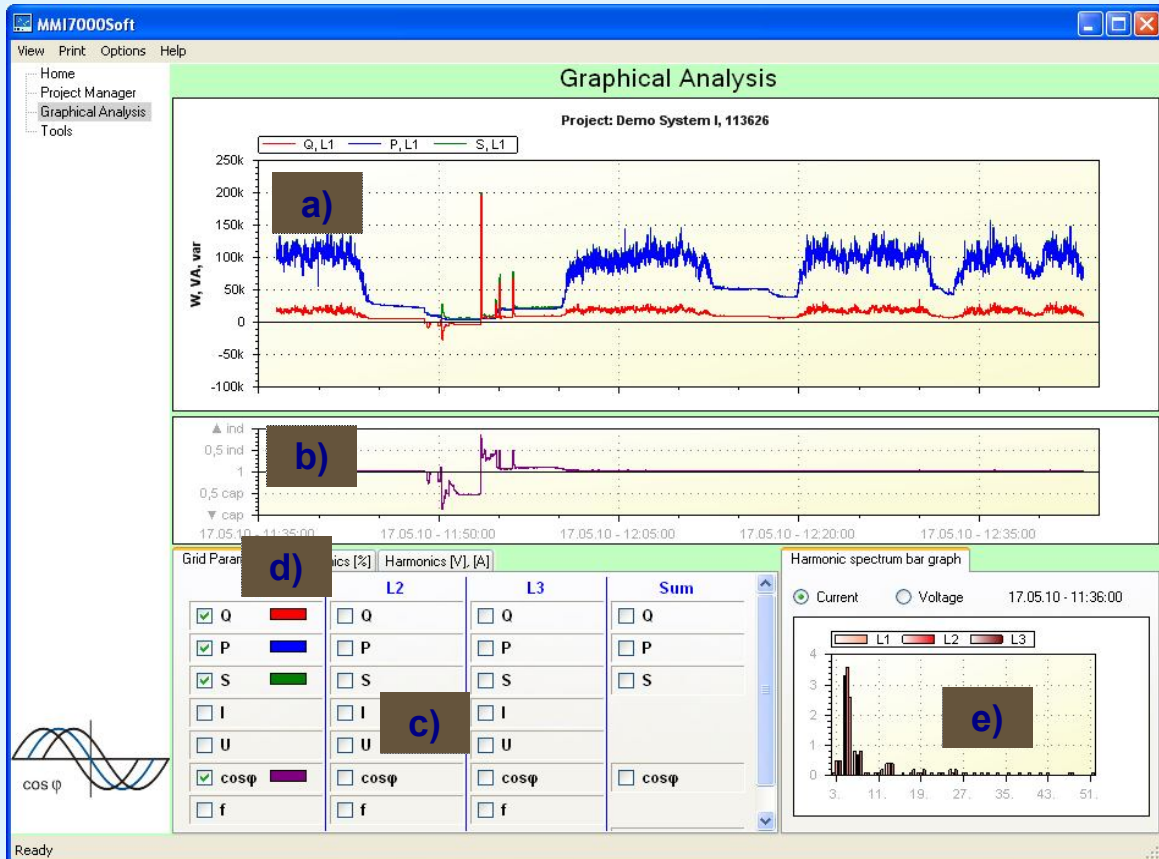


- 1) Select **Project** at the left corner of **Project Manager**
- 2) Select **File** at the right side
- 3) Press “**Open**” to use the selected file

In **Project Manager** you can: delete, rename, copy and paste files or projects by using the right mouse button.

5. Graphical Analysis

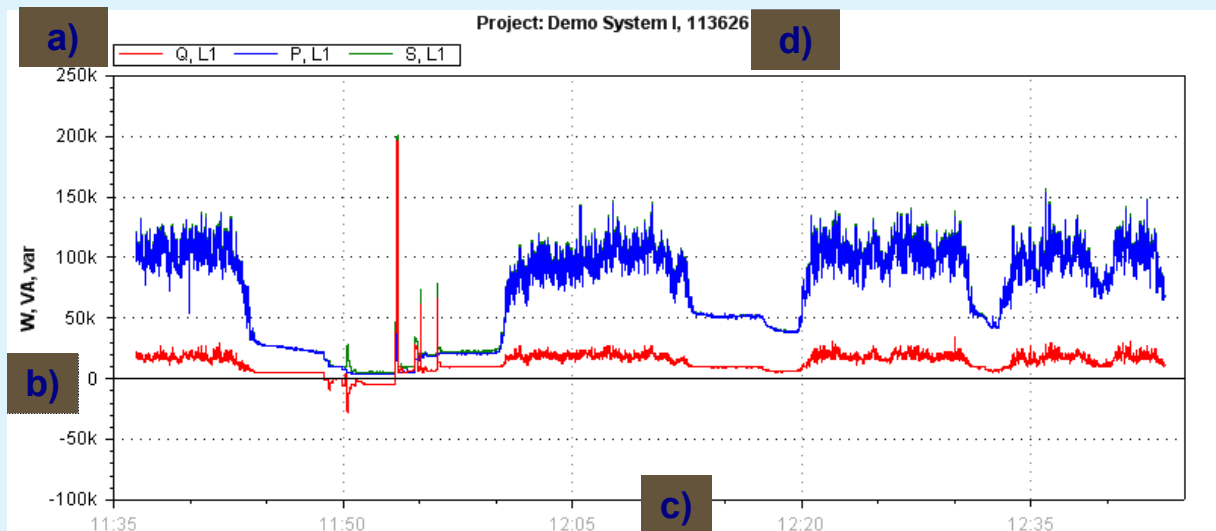
Displaying graphical analysis of all measured values is possible in this window.



- Main graph diagram (top) shows all parameters except $\cos \varphi$ and harmonics.
- Additional diagram (below) is used for $\cos \varphi$ and harmonics. Time axis is in synchronization with the main graph window.
- Control panel. Display the curve by checking the box. Change the color of the curve with the colored button.
- Show $\cos \varphi$ or harmonics in the additional graph window.
- Harmonic spectrum at specific point of time (click in the main graph window for selection point). Select current or voltage harmonics by using the radio-buttons at the top of the bar-diagram.

Graphical Analysis

5.1. Using the graph window



- a) Legend shows color, style, unit, phase (additional min., avg. and max., if the selected time-period is more than 1sec) of the displayed curves
 - b) Y-axis. If it belongs to the selected curve, it is colored black. Otherwise it is grey.
 - c) Time axis
 - d) Project and file name
-
- 1) Select curve, select detail by holding key (zoom in)
 - 2) Scroll for zooming in or out, press to move curve
 - 3) Extended options, e.g. un-zoom, print, set to default



6. Tools for PFC-calculations

Several tools for calculation and conversion of important values when designing a PFC-system

Tools for PFC-calculations

Select cables and fuses
 Selection of required cable cross sections and fuses for power capacitors and/or compensation systems.
 Rated voltage: 30V, 50Hz / 60Hz
 Rated power: 2.5 kvar
 Current: 6.3 A
 Cable cr.section: 1 x 1.5 mm²
 Fuse: 10 A

Using 3-phase capacitor as 2-pole
 Use 3-phase capacitor in single-phase
 Rated power: 100 kvar
 66,7 kvar
 50,0 kvar

Equivalent capacitor power
 Conversion of capacitor output for different voltages.

$$Q_{New} = \left(\frac{V}{V_R} \right)^2 \cdot Q_R$$

 Qr - Rated power: 100 kvar
 Capacity / phase: 548,1 µF
 Vr - Rated voltage: 440 V
 fr - Rated frequency: 50 Hz
 Vnew - New voltage: 400 V
 fnew - New frequency: 50 Hz
 p - Detuning factor: none
 Qnew - New Power: 82,6 kvar

Reactive power demand (Qc)
 Calculation of required compensation output for an inductive load.
 Actual cos φ: 0,87 ind
 Actual active power: 100 kW
 Target cos φ: 0,98 ind
 Needed reactive power: 36,4 kvar

The above mentioned values are guidelines for operation in normal conditions at ambient temperatures up to 35°C. Upgrade according to conditions, e.g. temperature or harmonics differ. Additionally the regulations and standards in the specific country have to be considered.

- a) After selecting the rated capacitor power and voltage you will get the recommended cable cross-sections, fuses and the nominal current at the capacitor.
- b) If you want to use a 3-phase-capacitor as 2-pole, you can calculate the power with this tool.
- c) In some cases capacitor voltage should not be the same as grid voltage. This tool helps to calculate the equivalent reactive power of the capacitor in your network.
- d) This tool is helpful if you want to calculate the reactive power needed to reach the specified target cos φ.