

# METERTOOL for Kamstrup kWh meter

## INSTALLATION AND USER GUIDE



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# 1 Introduction

METER TOOL for Kamstrup kWh meter is a tool intended for technicians and laboratories to change configurations of meters. It can also be used as backup in communication networks to read out data.

With METER TOOL for Kamstrup kWh meter it is possible to configure and read out electricity meters type 382 BCDE,J,K and L, 382 DIN, 162 BCDE,J,K and L and 351B.

## 1.1 Log of changes

Revision	Date	Change
F1	2011-11-18	The revision of this manual is compatible with Metertool revision S1. Setting for GSM use of Metertool implemented. KMP / DLMS addressing implemented. Period plan for generation L meters implemented.

## 1.2 System requirements

- METER TOOL for Kamstrup kWh meter is developed to be used with Windows 2000 Professional (service pack 3), Windows XP (service pack 2), Windows Vista and Windows 7.
- The program requires minimum 55 MB of free space on the PC's hard disk.
- The browser Internet Explorer 5.01 or newer must be installed on the PC.
- To facilitate configuration of Kamstrup meters, a serial data connection (COM port or USB port) between the electricity meter and the PC is used.
- Three hardware communication options are available:
  - An optical head type 6699-102 can be used for the COM port (sub-9 connector).
  - An optical head type 6699-099 can be used for USB port.
  - A data/pulse module (6850-003) is also available with additional serial wire with USB port (6699-098). This can also be delivered as one unit called "Metertool kit" (6830-017). Data/pulse module must to be used for programming of JJ- code in direct meters and configuration codes in the indirect meters.
- The optical head is placed between the pins on the front of the meter. The cable must point downwards  $\pm 20^\circ$ .
- For use with Kamstrup USB, a driver for USB must be installed. This driver is available on a FTP server and can be downloaded for free. See chapter 1.3.

## 1.3 Installation

To ensure that customers always have the latest revision of the METER TOOL software available, Kamstrup METER TOOL for kWh meter can be downloaded from a FTP server.

To download METER TOOL, you need a FTP client program. Kamstrup recommends FileZilla, which can be downloaded free of charge from the following homepage:

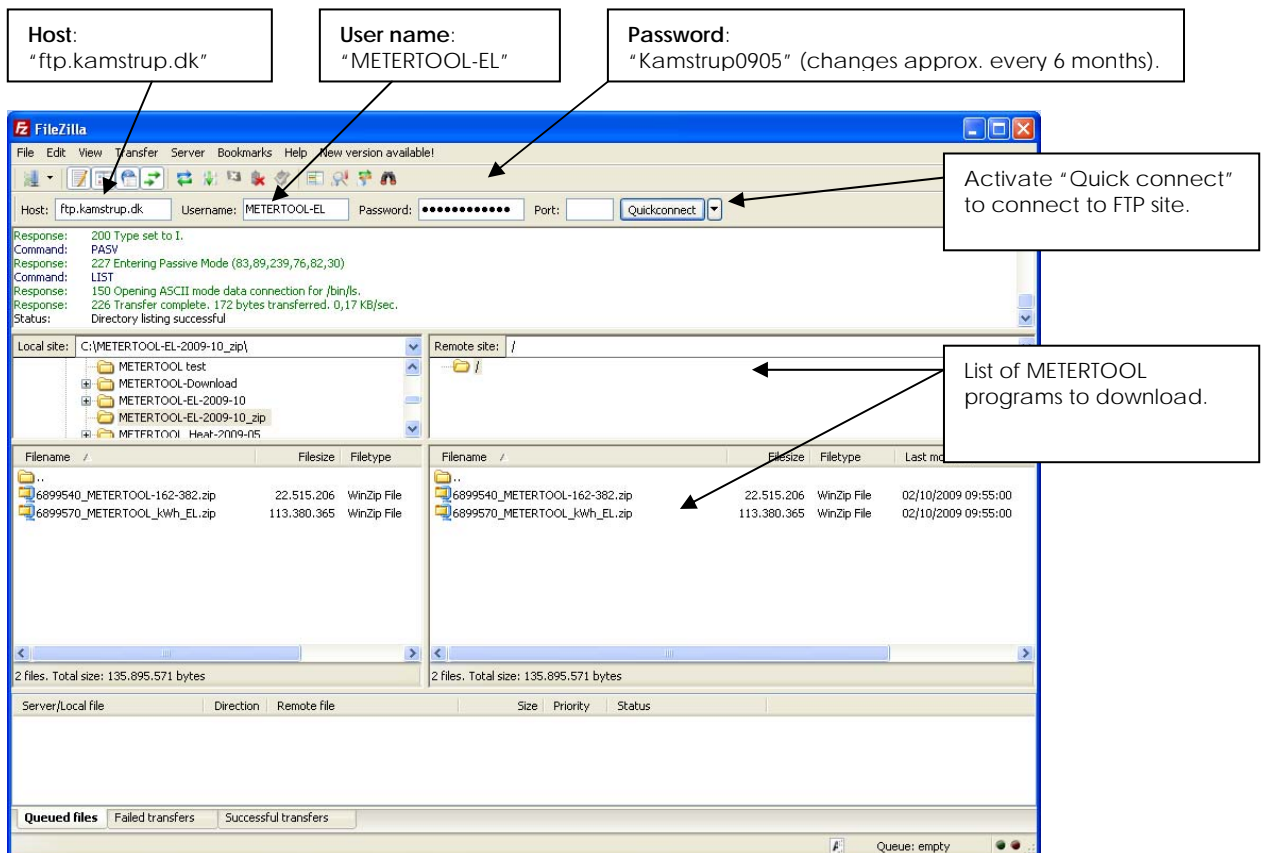
<http://filezilla-project.org/> / "Download FileZilla Client"



**Figure 1: FileZilla download front page**





After download: Unzip the file and start installation by activating the file "setup.exe".

Installation must be run locally (from CD or hard drive) and not from a central storage or USB storage. After downloading and installing the FTP client program, log on to the FTP server and fill in the shown information.



**Figure 2: The FileZilla front screen showing software available for free download**

To provide the METERTOOL service for all Kamstrup electricity meter types, METERTOOL is developed in different variants, which support different meter types and different meter generations. Below is shown the list of METERTOOL variants used for the different meter types. The different types of software are available on FileZilla.

ICON in Windows	METERTOOL Type Number	Meter Type	Meter Type Number
 <b>Kamstrup 351</b>	6899-107	351 CT meter (first generation)	685-351-X-XX-XXX (12 digits in the type number)
 <b>162 &amp; 382</b>	6899-540	162/382 direct meters (until ultimo 2006)	686-1XX-XX-XX 685-XXX-XX-XX (10 digits in the type number)
 <b>351 Combi</b>	6899-550	351A CT meter (second generation)	685-351-AX-XX-XXX (13 digits in the type number)
 <b>kWh Meter</b>	6899-570	162/382 BCDE, J, K and L direct meters.  351B CT meter	686-1XX-XX-XX-XXX 684-XXX-XX-XX-XXX (13 digits in the type number)  685-XXX-XX-XX-XXX (13 digits in the type number)

**Table 1: Different METERTOOL type numbers for different meter types**

### 1.3.1 Installing from CD-ROM

Insert the CD-ROM into your CD-ROM/DVD drive. The installation program will start automatically. If the program does not start automatically, use Windows Explorer to find the CD-ROM /DVD drive and choose the **Setup.exe** file from the CD-ROM.

The following support software will also be installed together with the METERTOOL program:

- .Net framework 2.0
- Crystal reports for .Net Framework 2.0
- Windows Installer 3.1
- SQL Server Compact Edition

### 1.3.2 Kamstrup USB driver

The latest version of the USB driver is available on the FTP server as well.

### 1.3.3 Contact us

In case of questions about or problems with the use of the program, please contact:

*Kamstrup A/S,  
Division for Electricity,  
Product group  
[El-produkt@kamstrup.dk](mailto:El-produkt@kamstrup.dk)*

## 2 Getting started

The program icon is found in the Start menu.

**Start ⇒ All Programs ⇒ Kamstrup METERTOOL ⇒ kWh Meter**

METERTOOL is ready when the Main menu appears.

### 2.1 Language

As default, the program starts in English language, which can be changed to Danish, German, Polish or Swedish. See 3.2.1 Language.

### 2.2 Optical head

The optical head for communication is available in two hardware variants with different order numbers:

- 9 pin COM port: Optical head type **6699-102**.
- USB port: Optical head type **6699-099**.

The optical head is placed between the pins on the front of the meter, and the cable must point downwards  $\pm 20^\circ$ .



**Figure 3: Hardware set-up for a laptop with METERTOOL and an optical head**

## 2.3 Hardware module

The hardware set-up can be ordered as a kit or as individual parts with the following part numbers:

- Hardware module: Hardware module **6850-003**.
- 3-wire USB connector: 3-wire USB interface **6699-098**.
- All-in-one Kit: Module and USB interface **6830-017**.



**Figure 4: Hardware set-up for a laptop with METERTOOL and a data/pulse module**



METER TOOL does not have an "Offline mode". Therefore, the eye or the module needs to be plugged to a meter, and the meter needs to be powered up before the communication can be established and METER TOOL can be used.



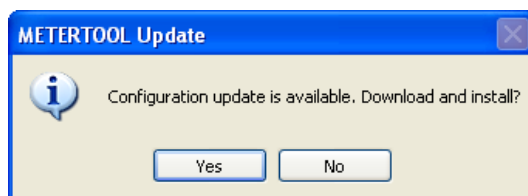
Baudrate of 1200 is the maximum when using the module port (data/pulse module with USB wire)

## 2.4 Communication

Hardware driver for the optical head is available on the FTP server. Before communication with the meter can be established, the correct serial port must be selected. See *3.2.2 Serial communication settings*.

## 2.5 Updates

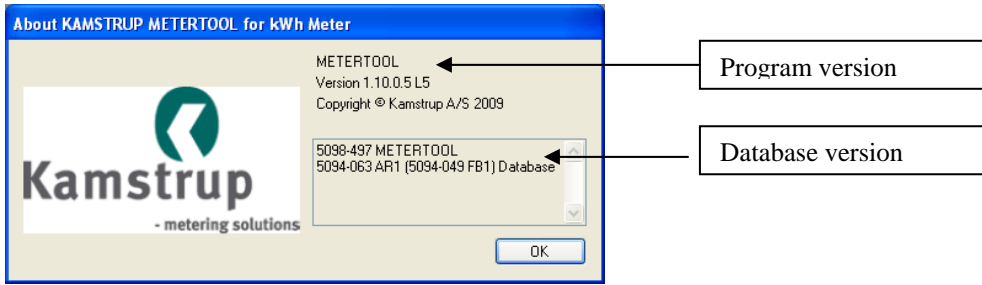
Configuration database updates for METER TOOL are available when new configurations such as display configurations or tariff / period plans are released. The database is updated automatically if the PC is connected to the Internet during start-up. When a new update is available, the following message is shown during start-up of METER TOOL:



**Figure 5: Configuration database update message**

Click yes to update the database version.

Current versions of the METERTOOL software and the configuration database can be seen from the **"About menu"**.

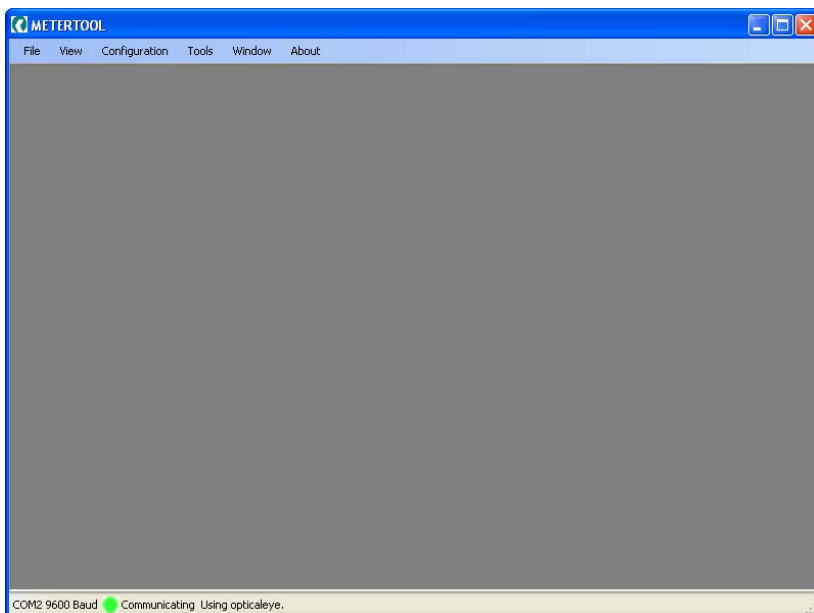


**Figure 6: The "About menu" is shown during MeterTool start-up**

## 3 Description of METERTOOL functionality

### 3.1 Main menu

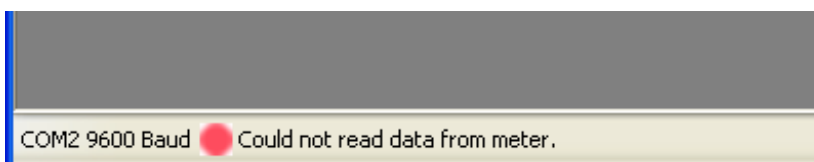
The following screen will appear after start-up. At the bottom of the screen, it is possible to check if any meters are found by METERTOOL and the communication port used.



**Figure 7: Main menu indicating the communication status**



If no meter is found by METERTOOL, the bottom screen will look like



**Figure 8: Main menu indicating no communication with meter**

In the latter case, answer the following questions:

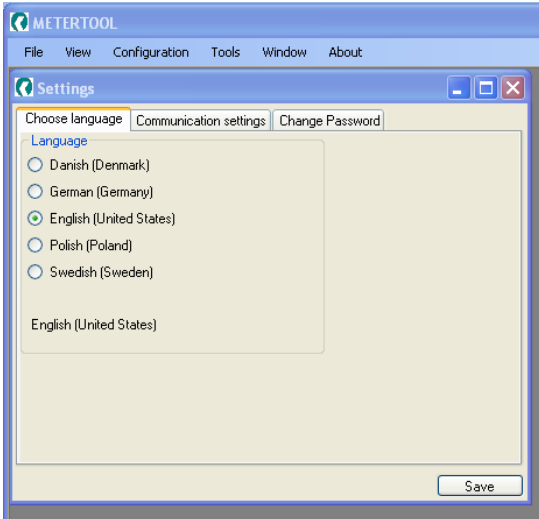
- Is the meter powered up?
- Is the optical eye or the data/pulse module placed correctly, according to the pictures in chapter 2.2 or chapter 2.3?
- The 6 pins Hardware module must be placed as close to the display as possible. Important in 8 pins meters.
- Is the correct serial port chosen?

METERTOOL cannot be used in "offline" mode, i.e. without being connected to a mains supplied meter.

## 3.2 File menu → Options

### 3.2.1 Language

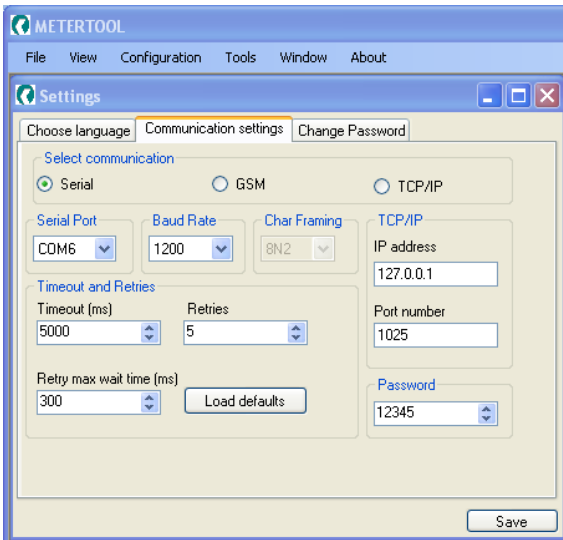
The language can be chosen from a number of predefined languages.



**Figure 9: Menu for changing the user language**

Changes are saved, and the window closes. METERTOOL needs to be restarted before the change takes effect.

### 3.2.2 Serial communication settings



**Figure 10: Menu for changing the communication settings**

#### 3.2.2.1 Serial Port

Select the **Serial Port** to which the communication media is connected. Only available ports are shown. It is not possible to communicate with the meter unless the correct **Password** is entered. The default password is "12345".

Normally, the **Baud Rate** can be 9600 for J and later generation meters. For BCDE generation meters, the baud rate must be 1200. Be aware of the maximum of 1200 when using the module port.

Normally, there is no need for changing the factory settings for **Timeout and Retries**. However, if problems occur during the communication with the meter, the problem might be solved by increasing "Timeout (ms)".

Settings are only active when the "Save" button is clicked and the window closes automatically.

### 3.2.2.2 GSM

Selecting GSM makes it possible to have a point to point (p2p) communication with a meter with build in GSM. **The GSM in the meter must be transparent, not logger.** At a serial port of the computer a Master modem must be installed.

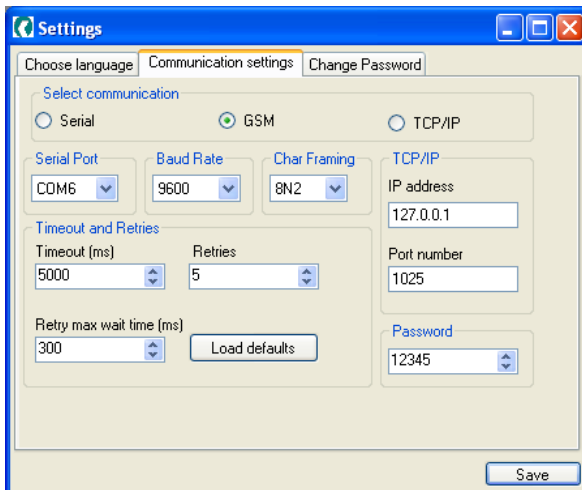


Figure 11: GSM settings

When pressing "Save" a new menu opens in the bottom right corner.



Figure 12: GSM phone number entry

Then it is possible to enter the phone number of the GSM meter you would like to connect to. When connected to a meter this is indicated in the bottom with signal strength of both the Master modem and the GSM meter.



Figure 13: GSM signal strength

To have a good communication the signal strength must be equal or above level = 12.

The Master modem must have the following settings:

- Be able to keep the GSM connection even if the COM port is closed.

The following is a list of modems tested together with METERTOOL:

- Wavecom M106B
- GT863-PY

As mentioned earlier the GSM modem mounted in the meter must be configured as transparent.

### 3.2.2.3 TCP/IP

Selecting TCP/IP makes it possible to communicate with an IP module connected via a LAN cable or with GPRS.

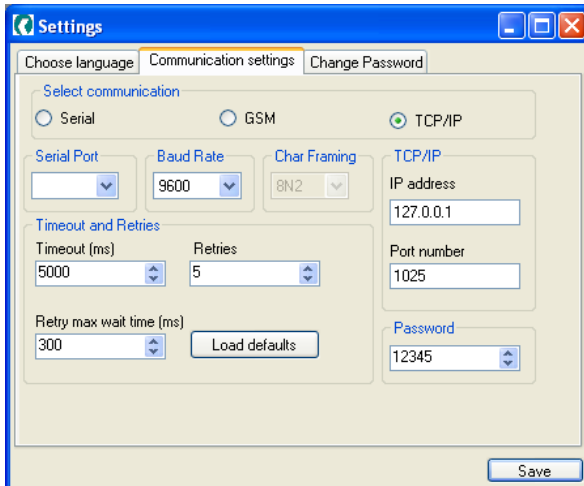


Figure 14: TCP/IP settings

### 3.2.3 Change Password

It is possible to change the **Password** in the meter from the default "12345" to another value between "00000" and "65535".

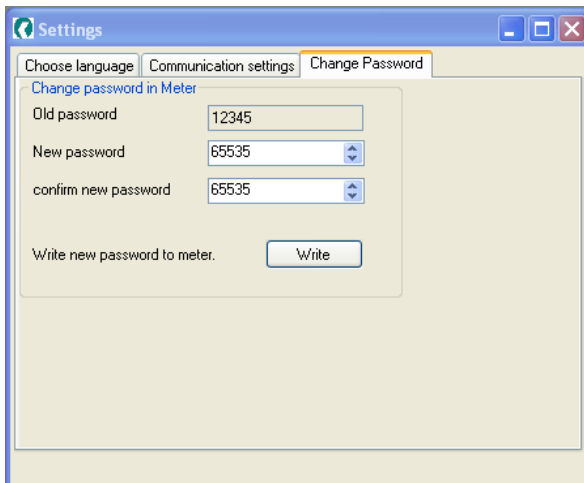


Figure 15: Password change!



If the password is changed there is **NO Fallback**.  
So it is very important that the Password is know by the user.

### 3.3 View menu

In the View menu, it is possible to read out different kinds of meter data and to get a visual view of the load profile.

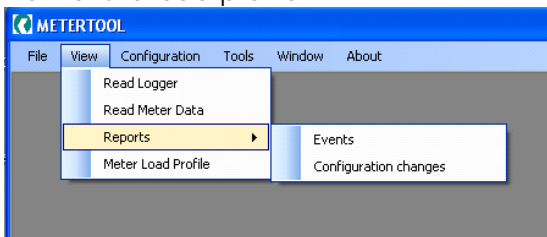


Figure 16: The View menu

#### 3.3.1 View → Read Logger

METER TOOL offers a list of different loggers, which can be read out on the screen and following be either printed in a report or saved in the METER TOOL database for further use.

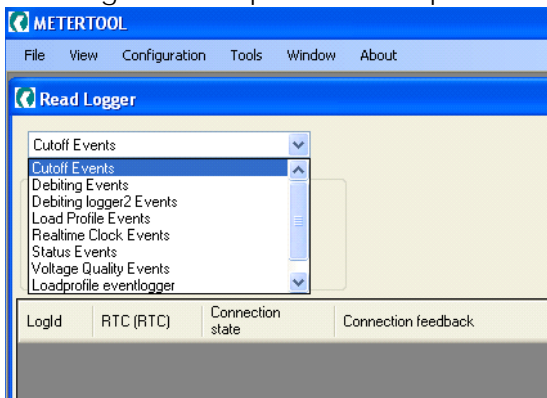


Figure 17: The Read Logger menu

In the menu bar, only the loggers are shown that are available in the specific meter type. The following description clarifies which loggers are available for which meter types.

- **Cut-off Events:** Captures all connect/disconnect events, e.g. Power disable, Relays released and Power enable (*only available for meters with disconnect function*).
- **Debiting Events:** Captures a number of predefined registered values for: Energy, energy types, tariffs, max power, RTC time for max power and accumulated max power. See the complete list in the meter data sheet. The capture interval can be configured to different periods as explained in section 3.4.5.
- **CT meter, Debiting events:** Differs slightly from the above regarding the energy registers (*only available in 351B*).
- **Debiting logger2 Events:** Captures 5 predefined registers (hour counter, A14, R12, A14 Tariff 1, A+ Tariff2) with the defined time interval for debiting logger 2, which can be daily, weekly or monthly. See also section 3.4.7 (*only available in direct meter from generation K and 351B*).
- **Load Profile Events:** Energy and energy types logged with the defined load profile integration period, sometimes also called log interval (*only available in from meter generation J and future generation*).
- **CT meter, Load Profile Events:** Differs slightly from the above regarding the energy registers (*only available in 351B*).
- **Real-time Clock Events:** Captures all adjustments of the Real-time Clock.
- **Status Events:** Captures tamper detection, magnetic influence and minor internal errors inside the meter with timestamp.

- **Transformer Ratio Events:** Captures every change in the transformer ratio number (*only available in 351B*).
- **Voltage Quality Events:** Captures with a timestamp when the voltage drops below the "Cut-off voltage", or when voltage is beyond the defined "High" and "Low" voltage limits for one or more phases.
- **Load profile event logger:** Captures with a timestamp every change in the load profile logger set-up, e.g. changes in the integration period or the number of energy types (*only available in meter generation K*).
- **Analysis log Events:** Captures the values of a number of defined registers with a configurable log interval. The log interval can be set independent of the log interval of the load profile logger (*only available in direct meter from generation K*).
- **Neutral fault log Events:** Captures if neutral fault is detected (*only available in meter generation L*).

In 3.3.3 View → Reports, it is explained in details how to read out different logs, print them to METERTOOL-screen (using reports) or to store the log data in the METERTOOL database.

LogId	RTC (RTC)	Active energy A+ (kWh)	Active energy A- (kWh)	Reactive energy R+ (kvarh)	Reactive energy R- (kvarh)
1	3/30/2010 1:...	0.24	0		
2	3/30/2010 1:...	0.24	0		
3	3/30/2010 1:...	0.24	0		
4	3/30/2010 1:...	0.24	0		
5	3/30/2010 1:...	0.24	0		
6	3/30/2010 1:...	0.24	0		
7	3/30/2010 1:...	0.24	0		
8	3/30/2010 1:...	0.24	0		
9	3/31/2010 0:...	0.55	0		
10	3/31/2010 9:...	1.01	0		

**Figure 18: An example of a read out of load profile for a two-quadrant (A+ and A-) meter**

By clicking the "Save" button, the log is stored in the METERTOOL database and is available for a load profile.

By clicking the "Report..." button, the file is also saved, and in addition a report is generated and shown on the screen.

### 3.3.2 View → Read Meter Data

Registers are selected in the left column by drag and drop or by the arrow buttons.

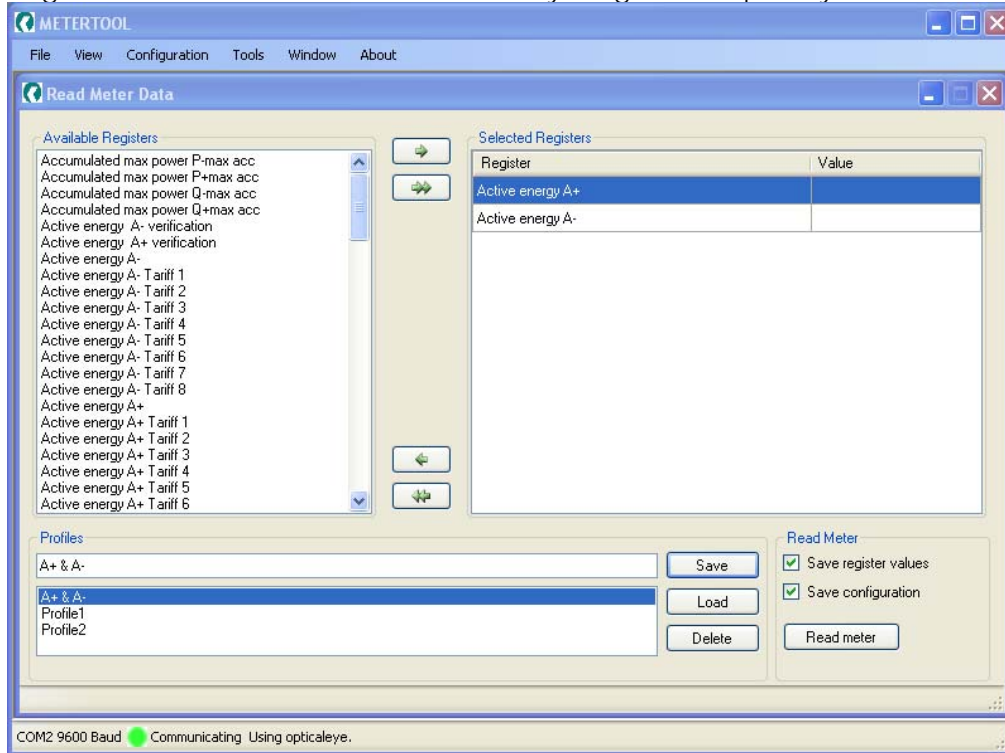


Figure 19: Menu for selectable Read Meter Data

#### 3.3.2.1 Register list Profiles

A customized list of register values can be saved as a profile in the METERTOOL database and will be permanently available for future use. Just write a name for the profile and click the "Save" button when the required registers are listed. Earlier saved profiles will be shown on the list and can be opened by clicking the "Load" button.

Values on the selected register list are updated on every click on the "Read meter" button. If the two tabs "Save register values" and "Save configuration" are checked (as default), the selected register values and meter configuration are saved in the METERTOOL database.

### 3.3.3 View → Reports

Data in the METERTOOL database can be viewed and printed or saved in different file formats and exported to other programs by choosing **View → Reports → Events**.

Every logger described in 3.3.1 *View → Read Logger* is available for the report functionality.

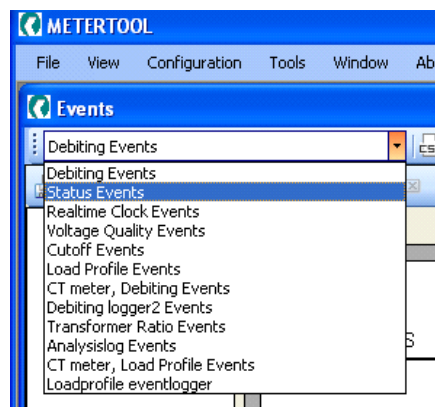


Figure 20: Available loggers for the Report view

In the group tree in the left pane of the screen, all logger reports stored in the METERTOOL database are shown. The reports are sorted in order of serial number and secondary in order of time. It is also possible to save the log data in a .csv file.

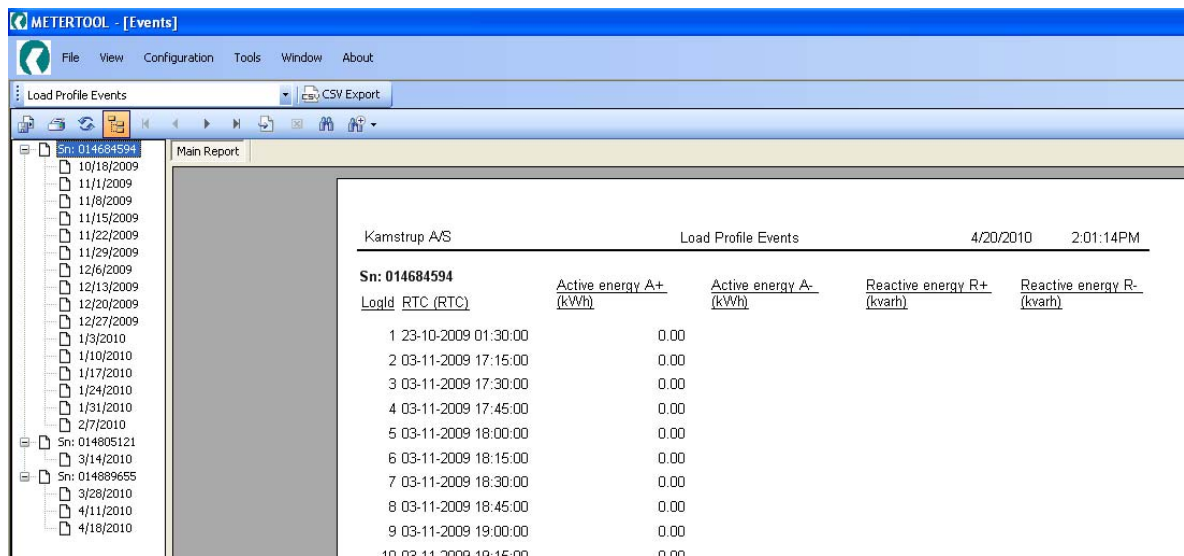


Figure 21: An example of a Report view

By selecting **View** → **Reports** → **Configuration changes**, it is possible to see a report of all done changes in the meter configuration.

### 3.3.4 View → Meter Load Profile

In the upper left corner, you can choose between all meters (serial numbers) from which the load profile logger is read out and saved in the database. Depending on the meter type, the different energy types can be shown.

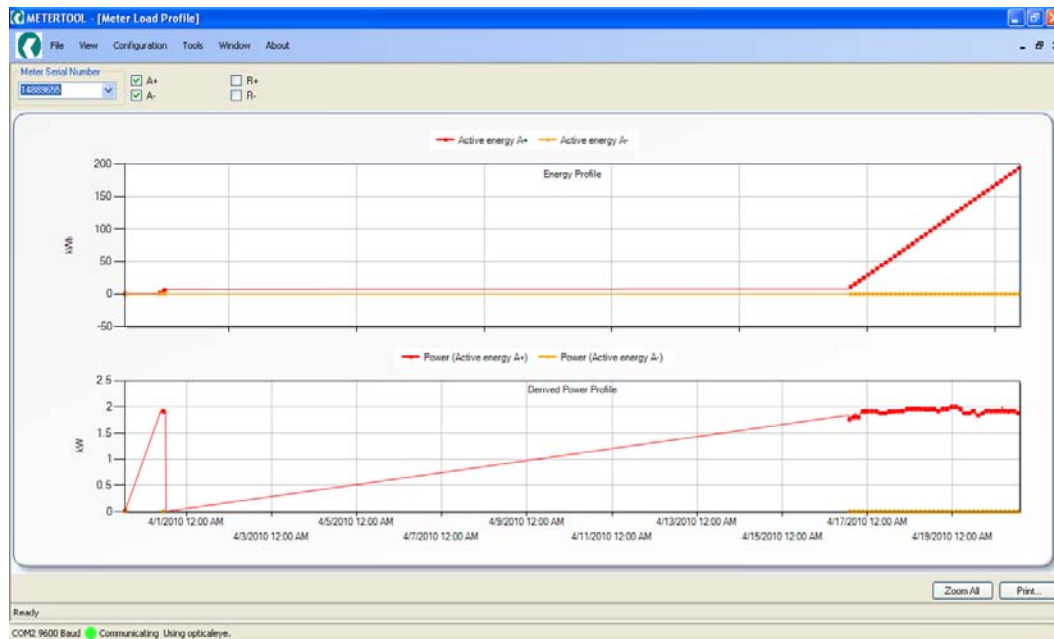
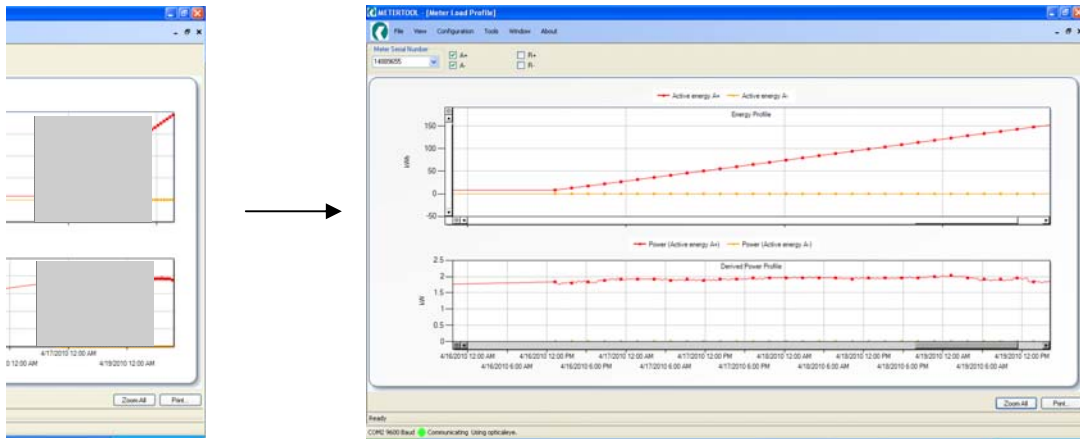


Figure 22: An example of a Meter Load Profile view.

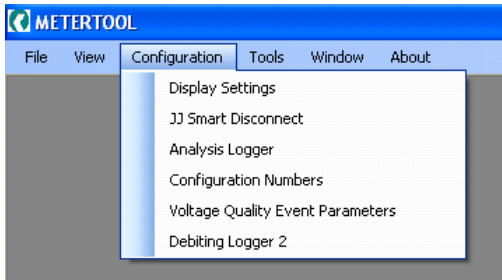
By marking a specific area on the graph, it is possible to view only the marked area of the log on the screen. When clicking the **“Zoom all”** button, the full log is again shown on the screen.



**Figure 23: A zoomed part of the Meter Load Profile view.**

### 3.4 Configuration menu

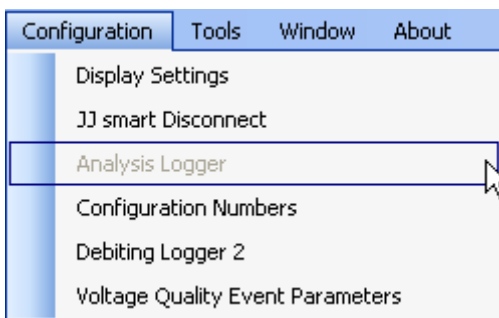
This section explains the different configuration options for the meter.



**Figure 24: The Configuration menu**

#### 3.4.1 Metertool behavior

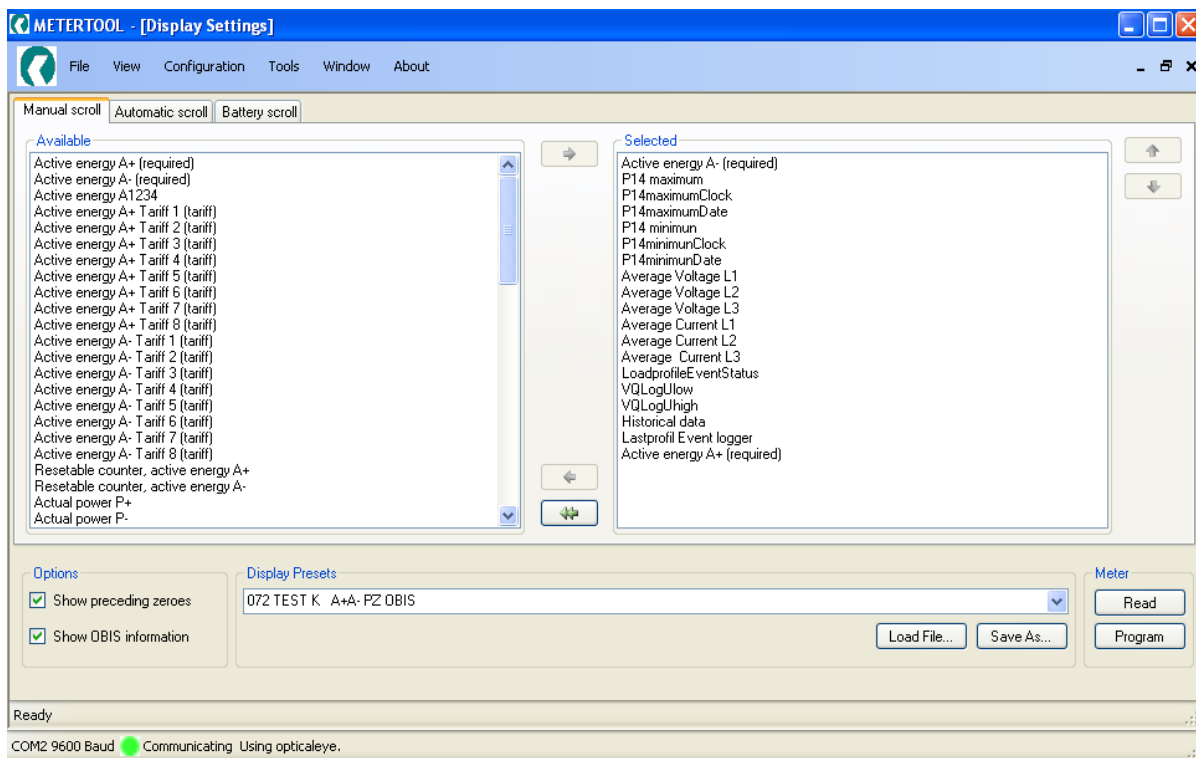
As this Metertool is used for different generations of direct meters as well as the CT meter 351B, you will see by using the program that depending of which meter type the tool is used on some of the "menus" are dimmed out. This is because this "menu" is not valid for the meter type connected to the Metertool. Below is shown how **Figure 24** will look if the Analysis Logger is not valid.



**Figure 25: The Configuration menu (Analysis Logger dimmed out)**

### 3.4.2 Configuration → Display Settings

After selecting the Display Settings menu, click the “Read” button to see the current display settings for the meter. It is possible to switch between “Manual”, “Automatic” and “Battery” scroll.



**Figure 26: Settings for display configuration**

#### 3.4.2.1 User-defined display configurations

User-defined display configurations can be made by adding registers to or removing registers from the “Selected” window by drag and drop or by the arrow buttons. Registers for total energy (1, 2, 3 or 4 dependent on meter type) are mandatory and cannot be deleted. The order of selected registers is changed by arrow up and arrow down.

#### 3.4.2.2 Options

Preceding zeroes (in front of energy register values) and OBIS information (in the upper left corner) will be shown when these two fields are checked.

#### 3.4.2.3 Display Presets

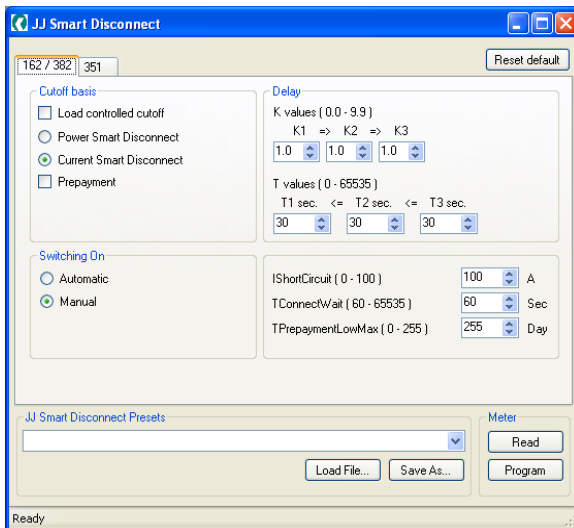
From the roll-down menu, it is possible to select one of the Kamstrup predefined display configurations. The field shows either the display (FFF) code or “999 User-defined” if the display configuration is different from one of the predefined settings. Clicking “Save As...” will save such a User-defined display configuration and clicking “Load File...” will open a previously saved User-defined display configuration. Changes only take effect when the “Program” button is clicked. The display settings can also be changed via the configuration numbers explained in *3.4.5 Configuration → Configuration Numbers*.

### 3.4.3 Configuration → JJ Smart Disconnect

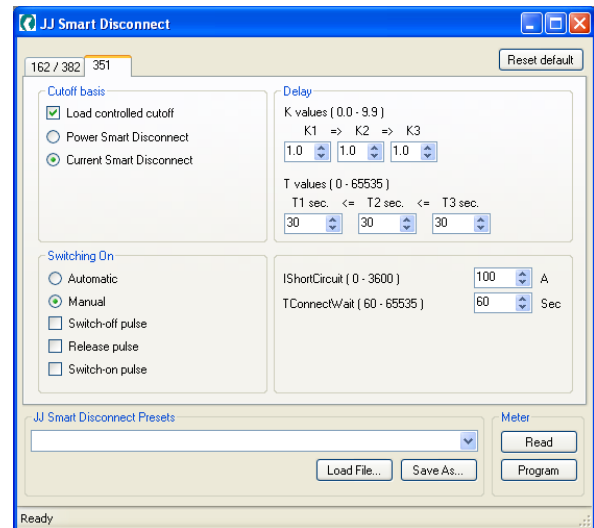
The smart disconnect option is available for 162, 282, 382 generation J and following generations with integrated breakers. The option is also available for 351B meters, but the menu is slightly different for the two meter types as shown in **Figure 27** and **Figure 28**.



JJ Smart Disconnect settings can only be changed via the module



**Figure 27: Smart Disconnect menu for 162 and 382**



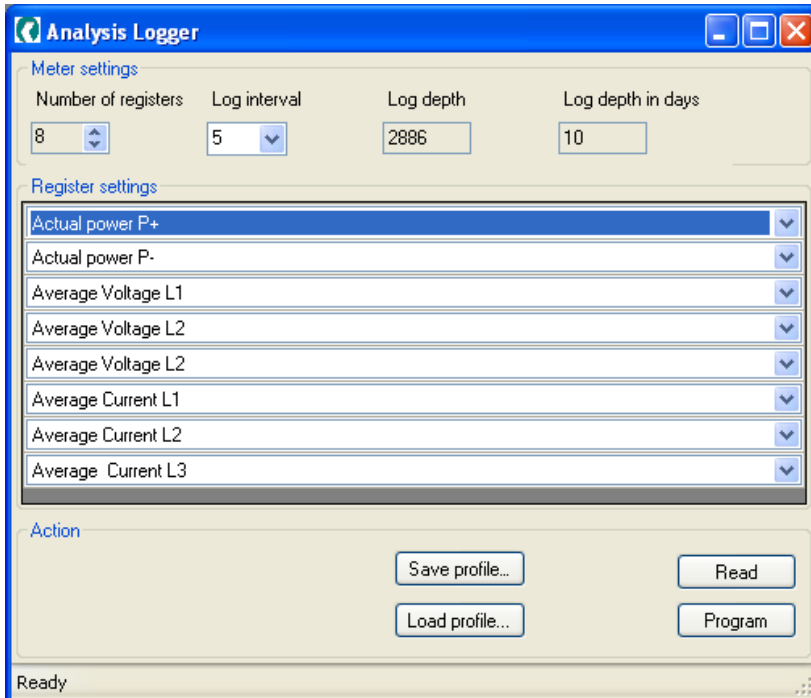
**Figure 28: Smart Disconnect menu for 351B**

- **Cut-off Basis:** The disconnect functionality is selected by marking “Load controlled cutoff” and/or “Prepayment” (“Prepayment” is not available for 351B). At the same time, it is necessary to choose whether the functionality is regarding power or current.
- **Switching On:** Select if the switching on after disconnection is to be done automatically or manually.
- **Delay:** The parameters are relevant for delays in the disconnect functionality, allowing time-limited periods of power exceeding the cut-off value.
- **Ishortcircuit:** Defines the current above which the disconnect functions is disabled in order to protect the relays.
- **Tconnectwait:** The time from disconnection until a re-connect is possible. The minimum time is 60 seconds.
- **Tprepaymentlowmax:** The numbers of days after the prepayment value reaches 0, until the meter finally cuts off. In the meantime, only a minimum load equal to the Pexemption value is acceptable. This is described in *3.4.5.3 Configuration variables*. If this value is exceeded, the meter disconnects immediately.

The Smart Disconnect user-defined settings can be saved and programmed to the meter in a similar way as with the tariff- / period-plan settings, which is exemplified in 3.5.7.

### 3.4.4 Configuration → Analysis Logger

The analysis logger is available for 162, 282 and 382 generation K and following generations. Click the **“Read”** button to see the current settings for the analysis logger.



**Figure 29: Settings for Analysis Logger**

Be aware that the log depth depends on the meter type (1, 2 or 4 quadrants), the log interval of the load profile logger (i.e. Load profile period, configuration code E) and the number of registers and log intervals of the analysis logger.

#### 3.4.4.1 Change analysis logger

The following options are possible for the analysis logger:

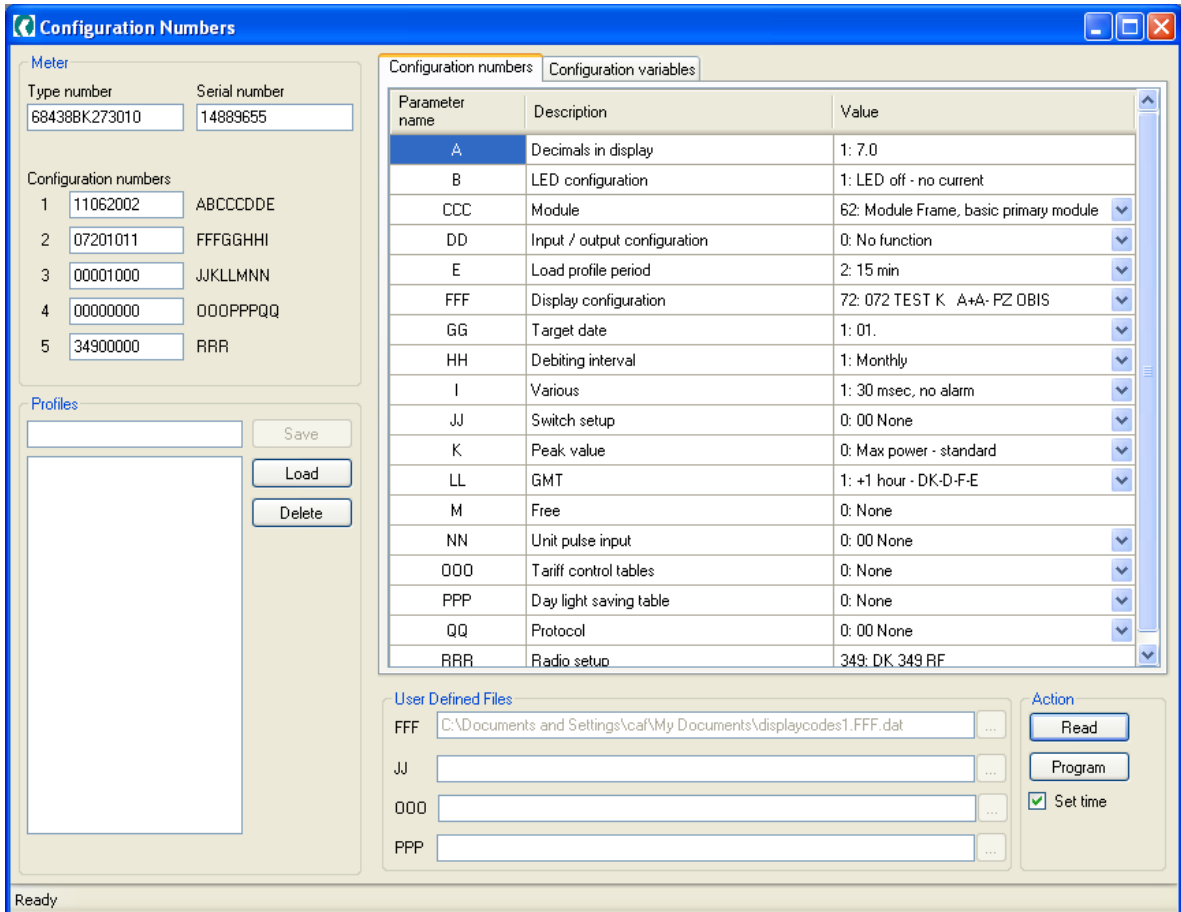
- To add more registers, click the up-arrow for the number of registers, and select afterwards the registers to be logged from the list of predefined registers. Only the predefined registers are selectable.
- To remove registers, click the corresponding down-arrow. Please be aware that decreasing the number of registers will remove the registers from the bottom of the list.
- The log interval can also be configured with a number of predefined period values.
- The changes will not take effect before the **“program”** button is clicked and the downloading is executed.



All existing analysis logger data will be deleted when a new configuration for the analysis logger is programmed to the meter.

### 3.4.5 Configuration → Configuration Numbers

After selecting the Configuration Numbers menu, click the “Read” button to see the current configuration settings for the meter.



**Figure 30: Settings for configuration numbers**

Changes can be made by means of the drop-down menus or by entering new values. New and changed profiles can be named and saved as a profile.

#### 3.4.5.1 Transformer ratio

For CT meters, the transformer ratio is also available in the configuration settings as an additional line in the full list as shown in **Figure 31**.

SSS	Transformer ratio (x / 5A)	1: 5A / 5A
T	Transformer ratio (unlocked / locked)	1: Unlocked

**Figure 31: Additional configuration settings for transformer ratio.**



The SSS-code (transformer ratio) can only be changed via the module port, and only if the meter is unlocked for this feature.

#### 3.4.5.2 User-defined Files

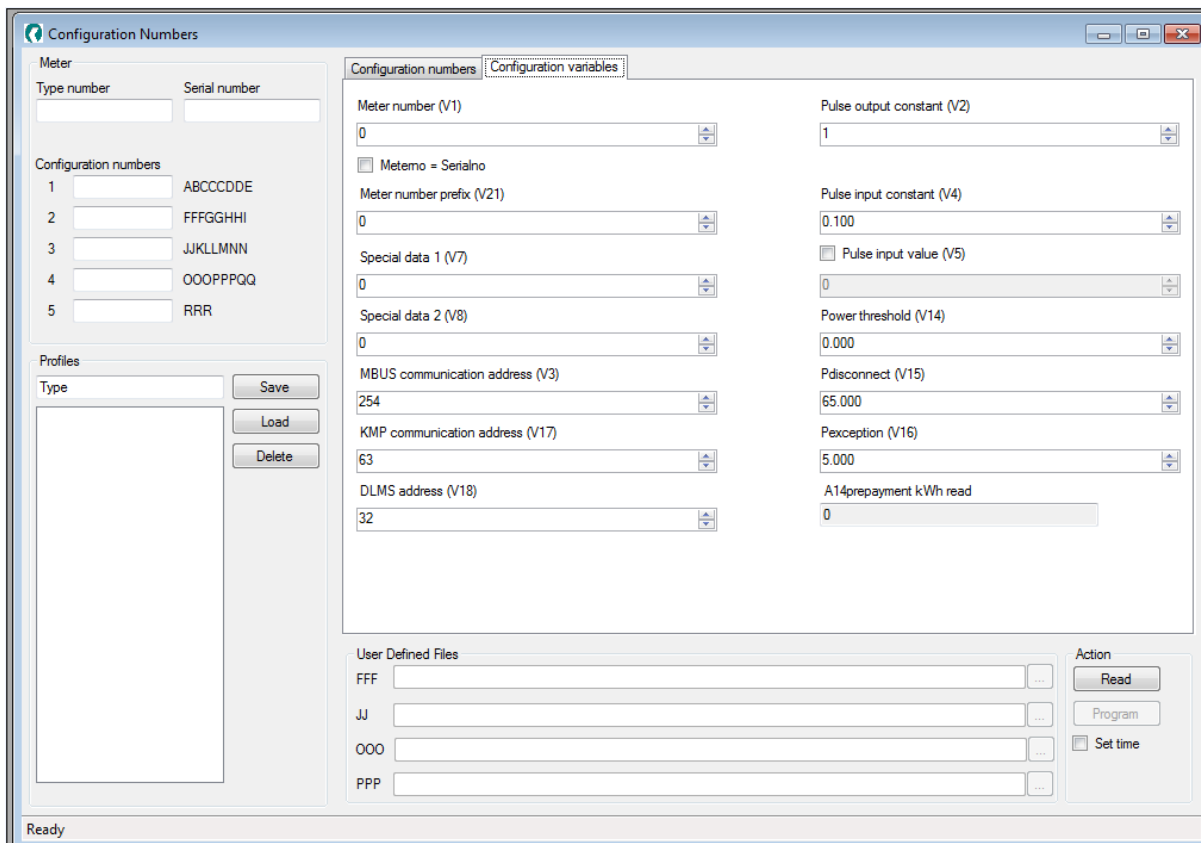
User-defined Display configurations, Smart Disconnect, Tariff / Period control tables and Daylight saving tables (FFF, JJ, OOO and PPP-codes), which are saved on a local drive, can

be opened by selecting “999: User Defined” in the drop-down menu. See also 3.5.7 for an example on how to generate a customized tariff plan and download it to the meter.

### 3.4.5.3 Configuration variables

The page with additional configuration variables contains some specific configuration data that are not part of the configuration numbers just described. Click the “Read” button to see the current settings.

The notification in brackets (e.g. V1, V2, V3, etc.) refers to the order configuration. If the values are changed, the changes will not take effect before the “Program” button is clicked.



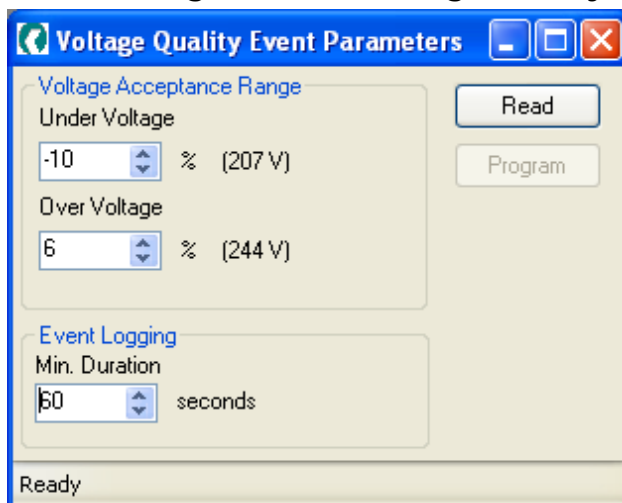
**Figure 32: The configuration variables which are not part of the configuration numbers**

In the following, the different variables on the screen are described shortly.

- **Meter number:** This number is normally equal to the customer number on the meters front label. As default the number is equal to the serial number, but can be customized in the order configuration.
- **Meter number prefix:** Used for customer specific purposes when a prefix is wanted.
- **Special data 1:** Customer specific value. Could be anything that a company found useful, e.g. a phone number for service purposes.
- **Special data 2:** Customer specific value. Same function as Special data 2.
- **MBUS communication address:** This value is used as the M-Bus address when the meter is used with a wired M-Bus module. The value is 254 as default, but can be set to the range between 0 and 254. Is also configurable in the order configuration (V3).

- **KMP communication address:** This value is used for changing the KMP address when using RS-485 modules (multi drop). The value is 63 (3F in hex) as default, but can be set to the range between 0 and 63 (0 and 3F in hex).
- **DLMS address:** This value is used for changing the DLMS address when using RS-485 module (multi drop). The value is 32 (20 in hex) as default, but can be set to the range between 16 and 125 (10 and 7D in hex).
- **Pulse output constant:** Specifies the number of output pulses for every kWh consumed.
- **Pulse input constant:** Specifies a reciprocal scale factor of the input pulses. The range of the value is 0.1 to 1000, i.e. a power scaling of 10 to 0.001.
- **Pulse input value:** This value can be set if the input source (e.g. the water meter) has an offset (pre-consumption) when it is connected to the electricity meter.
- **Power threshold:** Every time the actual power exceeds this threshold value, the power threshold counter adds one to its register value.
- **Pdisconnect:** Only relevant to meters with disconnect function. Specifies the limit for the breakers to disconnect the power to the installation.
- **Pexception:** Only relevant to meters with disconnect and prepayment functions. Sets the maximum allowable power/current when the power has been re-connected after a power disconnect due to the prepayment register reaching 0. Will normally be set as the minimum requirements for consumption in a house installation.
- **A14prepayment kWh read:** The current value for the prepayment register. The prepayment value is read-only with METERTOOL.

### 3.4.6 Configuration → Voltage Quality Event Parameters



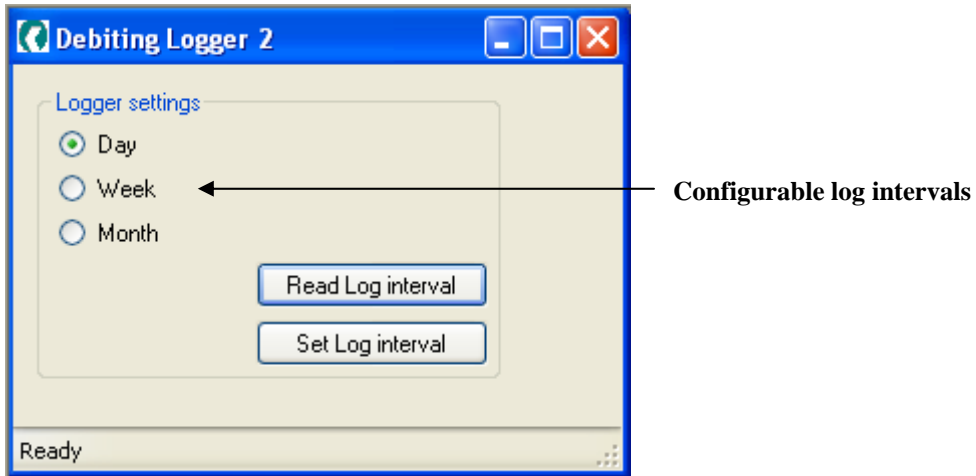
**Parameters: Range:**  
 Under Voltage 230V - (0 - 20 %)  
 Over Voltage 230V + (0 - 20 %)  
 Min. Duration 10...2550 secs.

**Figure 33: The settings for voltage quality events**

New settings are not active before the "Program" button is clicked.

### 3.4.7 Configuration → Debiting Logger 2

The debiting logger 2 is available for 162 and 382 generation K and following generations. The debiting logger 2 is also available for 351B.



**Figure 34: Settings for debiting logger 2**

New settings are not active before the "Set Log interval" button is clicked.

### 3.5 Tools Menu

Finally, METERTOOL contains some additional tools for configuration, read-out and control of the meter. These options are available in the Tools menu.

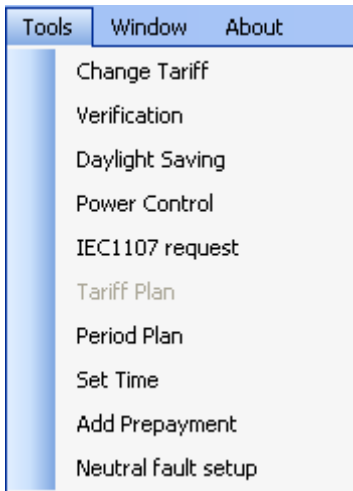


Figure 35: Tools menu

#### 3.5.1 Tools Menu → Change Tariff

This option allows the user to manually change the tariff immediately. The current tariff is shown by clicking the “**Read tariff**” button. All tariffs from 1 to 8 can be set.

This can be used in laboratory for checking that the meter is calculating energy in the right tariff.

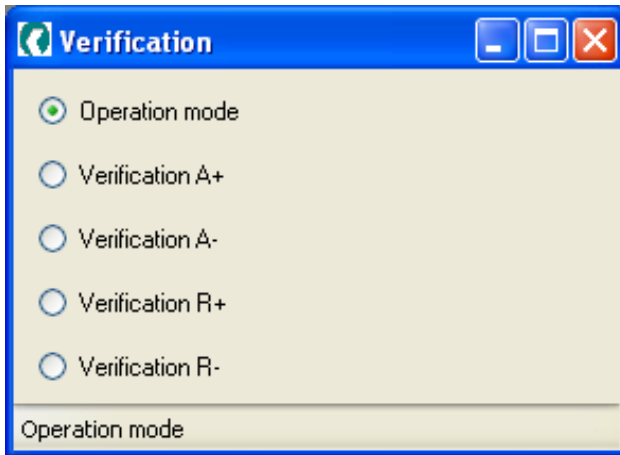


Figure 36: Change Tariff menu

If the meter uses a defined tariff plan, a Change Tariff request will overrule the plan, but at next tariff shift (every 15 min.), the tariff plan will again have highest priority.

### 3.5.2 Tools Menu → Verification

This option allows the user to change the display mode from operation mode to verification mode. In operation mode, the energy registers are shown with the configured resolution, i.e. [7.0] or [6.1].



**Figure 37: Settings for the verification**

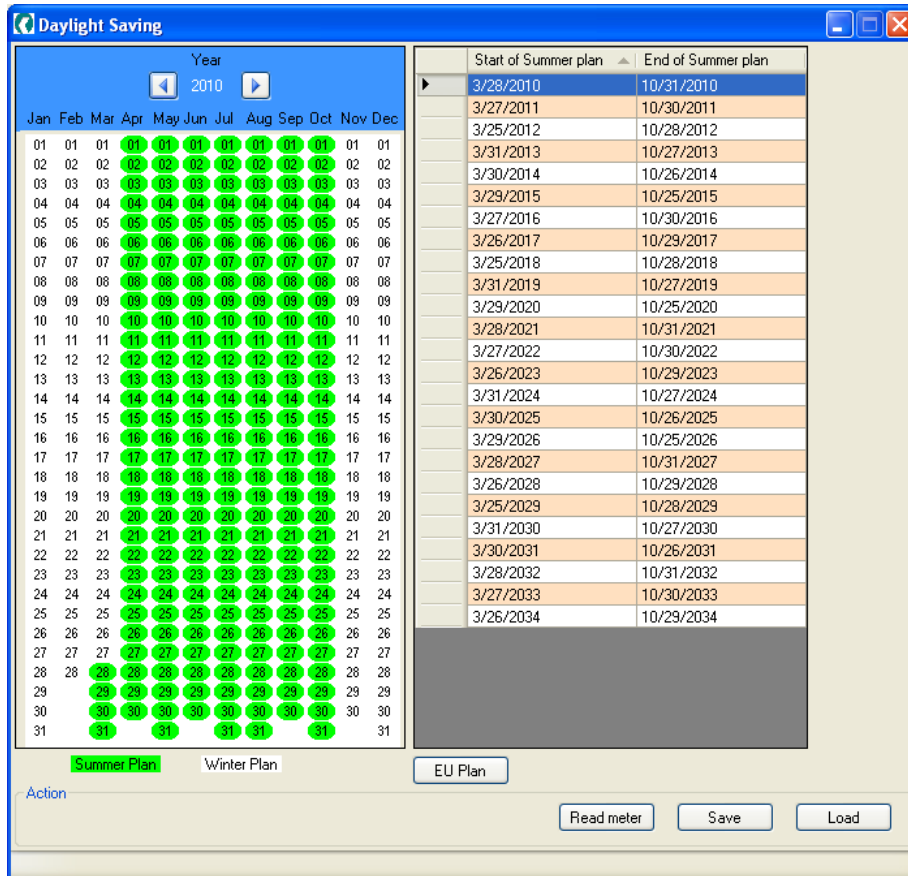
The verification mode is selected simply by selecting one or more of the four verification registers. When one register is selected, the value is shown in the display with the [3.4] resolution.

If more than one register is selected, you can switch between the registers by pushing the button on the meter front panel. The meter returns to Operation mode if the push button has not been activated for 16 hours.

With METERTOOL, you can return to operation mode by clicking the Operation mode tab on the Verification menu.

### 3.5.3 Tools Menu → Daylight Saving

It is possible to set the Daylight saving plan for the clock in the meter. The current daylight saving plan in the meter is shown by clicking the **“Read meter”** button. The European daylight saving plan is predefined in METERTOOL and can be selected by clicking the **“EU Plan”** button.

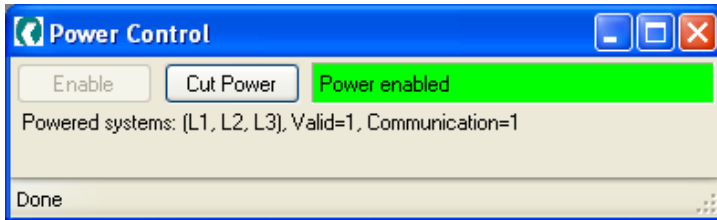


**Figure 38: Daylight saving plan**

The way to create, save and download a customized daylight saving plan is similar to the way to change the tariff plan as explained in 3.5.7.

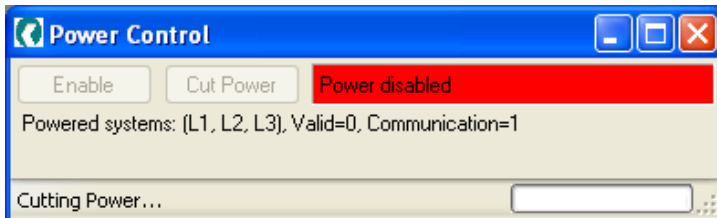
### 3.5.4 Tools Menu → Power control

This option is only available for meters with integrated breakers and allows the user to control the breakers directly independent of any smart disconnect settings.



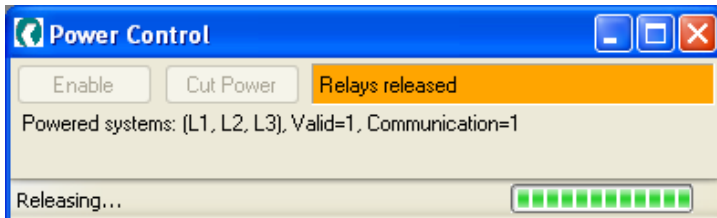
**Figure 39: Power enabled**

When clicking the "Cut Power" button, the breakers disconnect. This is also indicated with a red LED on the meter front panel.



**Figure 40: Power disabled**

When clicking the "Enable" button again, the breakers/relays will be released, and afterwards, they will be enabled again.



**Figure 41: Breaker/relays are released**

Every time the status has been changed, the power control is locked for 1 minute to avoid rapidly on-off control of the breakers.

### 3.5.5 Tools Menu → IEC1107 request

IEC1107 is available for 162 and 382 meters generation BCDE and for generation J, software revision L1 and newer software versions, and generation K and never generations.

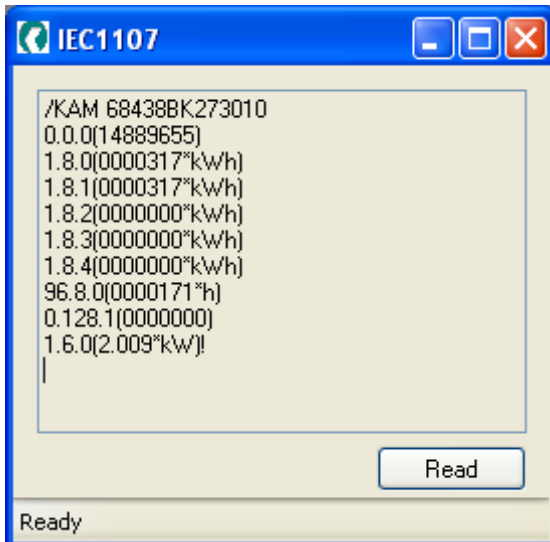


Figure 42: IEC1107 Read-out view for 162 and 382 meters

IEC1107 is also available for 351B.

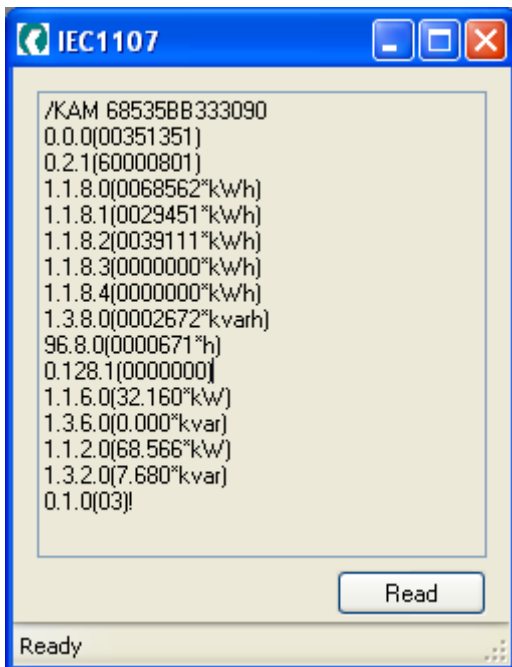


Figure 43: IEC1107 Read-out view for 351B meters

Only the values shown in **Figure 42** and **Figure 43** are available in the IEC1107 read-out.

### 3.5.6 Tools menu → Tariff Plan

METER TOOL offers the possibility of defining a customized tariff plan 25 years ahead. The tariff table can be created on three different levels:

**Season plan level:** It is possible to define a summer/winter calendar for each year in the plan. See **Figure 44: The tariff plan on the season plan level** where the green area indicates the summer plan and the white area the winter plan. By clicking on a certain date, it can be set to either a new start date or a new end date for the (green) summer plan. The season plan must not be seen as the daylight saving plan, even though it is possible to select the EU daylight saving plan as the summer/winter plan. The daylight saving plan must be configured separately, as explained in 3.5.3 Tools Menu → Daylight Saving

- **Holiday plan level:** Holidays and national holidays can be defined separately from one year to another. Clicking on a specific day will change the color to green and the day will be seen as a holiday in the tariff plan. Sundays are automatically considered as holidays.
- **Day plan level:** 8 different tariffs can be set during the day and can be defined with a resolution of 15 minutes. The tariff plan operates with weekdays, Saturdays and holidays.

A tariff plan can be defined 25 years ahead from present time. When a tariff plan is created, it can be saved, and by using the Configurations Number menu, it is possible to download the tariff plan to the meter.

In the following section, it is exemplified how you can create your own customized tariff table, saved in a file and finally downloaded to the meter for use in tariff control metering.

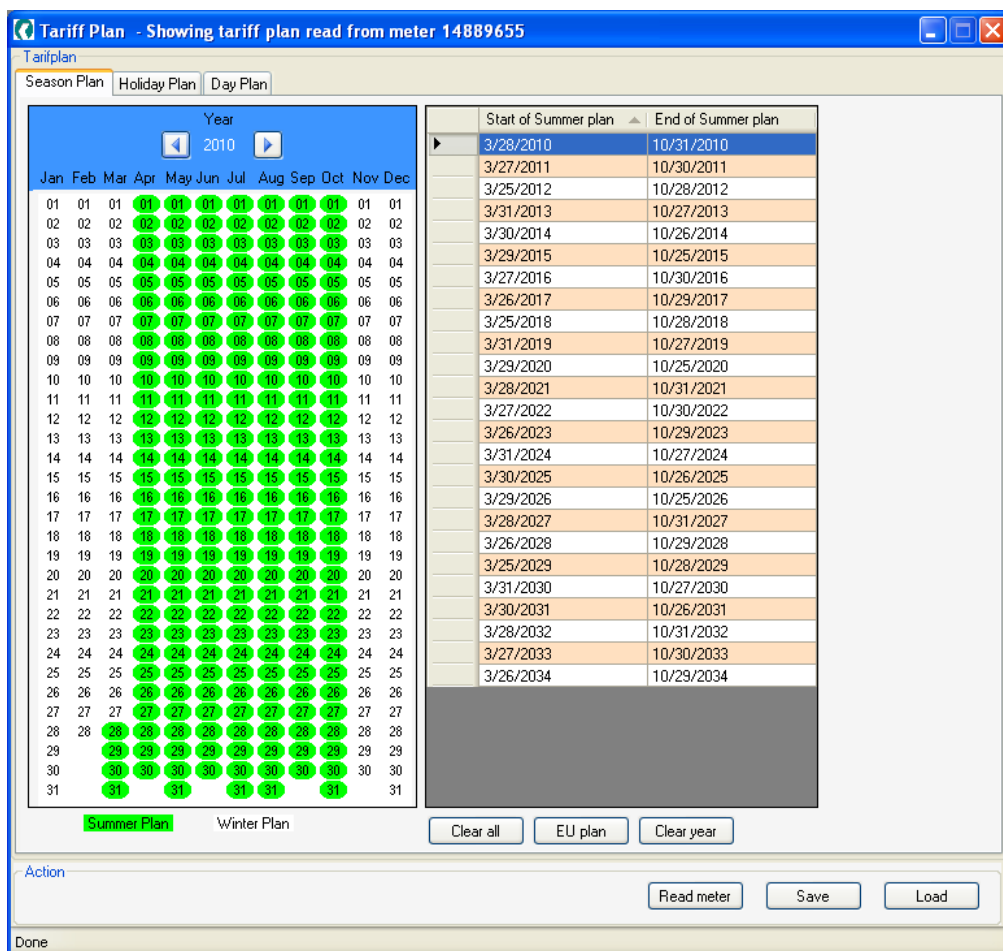


Figure 44: The tariff plan on the season plan level

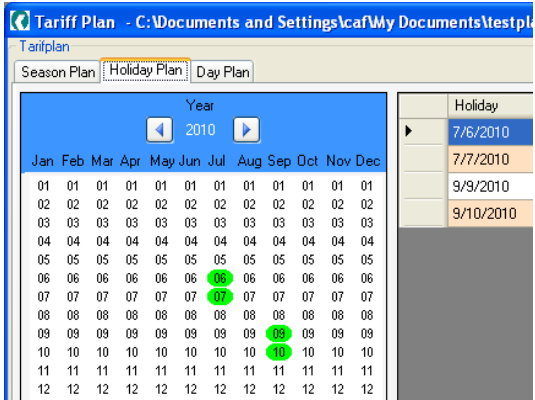


Figure 45: Tariff plan on the holiday plan level

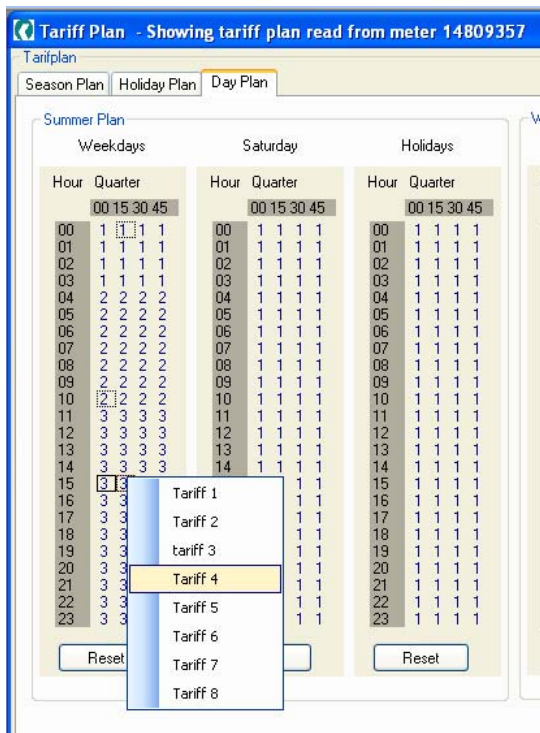


Figure 46: Tariff plan on the daily plan level

### 3.5.7 Example: How to create, save and download a customized tariff table

The following five-step procedure explains in details how to change the tariff plan in the meter to a customized plan also created with METERTOOL.

1. When the tariff plan is made according to the explanation in the previous section, the plan must be saved on the user's local laptop drive in .xml format.
2. Open the menu "Configuration → Configuration Numbers" and click the "Read" button.
3. Set the "OOO"-code: "Tariff control tables" to "999: User-defined".

NN	Unit pulse input	0: 00 None	▼
OOO	Tariff control tables	999: User defined	▼
PPP	Day light saving table	0: None	▼

4. Open the file for the saved tariff plan in the **User-Defined Files** field.

User Defined Files		Action
FFF	C:\Documents and Settings\caf\My Documents\displaycode\1.FFF.dat	Read
JJ		Program
OOO	C:\Documents and Settings\caf\My Documents\testplan.ooo.xml	<input checked="" type="checkbox"/> Set time
PPP	C:\Documents and Settings\caf\My Documents\test.ppp.xml	

5. Click the "Program" button to download the tariff plan to the meter.

The sequence is similar for the three other User-defined Files, i.e. FFF-, JJ- and PPP-codes.

### 3.5.8 Tools Menu → Period Plan

In 162 and 382 of the generation L, the Tariff Plan is replaced by a Period Plan. The reason for this is that the behavior of the two plans is different.

In generation L meters it is possible not only to control the tariffs but also to control two load outputs. Therefore you can consider the tariff plans as divided into tree independently plans.

Before making a plan, different things has to be considered:

- Working days – Non working days
- Period change time (often the same as summer time – normal time, now called Period A and Period B. This with a resolution of 1 minute)
- Tariff changes (up to 8 changes per day is possible. This with a resolution of 1 minute)
- Exception days (previous called holydays)
- Load control 1
- Load control 2

Below and on the next pages is shown an example of a plan.

Making your own plan and store it in a meter is done the same way as in 3.5.7.

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Workingday	Workingday	Workingday	Workingday	Workingday	Workingday	Nonworkingday

Figure 47: Working days - Non Working days

Period		Exceptiondays	
Period A	start date: Month= 4 Day= 1	Period B	start date: Month= 11 Day= 1
Working day	Number of changes 1	Working day	Number of changes 2
hh 0 mm 0 Tariff 1		hh 7 mm 0 Tariff 2	
		hh 22 mm 0 Tariff 1	
Non working day	Number of changes 1	Non working day	Number of changes 1
hh 0 mm 0 Tariff 1		hh 0 mm 0 Tariff 1	

Figure 48: Period change time

Periodplan Exceptiondays

Exceptiondays

Number of exceptiondays 23

Exceptionday 1	25-12-2011	Exceptionday 2	26-12-2011	Exceptionday 3	01-01-2012	Exceptionday 4	06-04-2012
Exceptionday 5	08-04-2012	Exceptionday 6	09-04-2012	Exceptionday 7	30-04-2012	Exceptionday 8	17-05-2012
Exceptionday 9	27-05-2012	Exceptionday 10	28-05-2012	Exceptionday 11	25-12-2012	Exceptionday 12	26-12-2012
Exceptionday 13	01-01-2013	Exceptionday 14	29-03-2013	Exceptionday 15	31-03-2013	Exceptionday 16	01-04-2013
Exceptionday 17	30-04-2013	Exceptionday 18	09-05-2013	Exceptionday 19	19-05-2013	Exceptionday 20	20-05-2013
Exceptionday 21	25-12-2013	Exceptionday 22	26-12-2013	Exceptionday 23	01-01-2014		

Figure 49: Exception days

Tariff control Load control 1 Load control 2

Period Exceptiondays

Period A start date: Month= 4 Day= 3				Period B start date: Month= 11 Day= 3			
Working day		Number of changes 8		Working day		Number of changes 8	
hh 1	mm 0	Relay	<input type="radio"/> Active <input checked="" type="radio"/> Inactive	hh 2	mm 0	Relay	<input type="radio"/> Active <input checked="" type="radio"/> Inactive
hh 2	mm 23	Relay	<input checked="" type="radio"/> Active <input type="radio"/> Inactive	hh 3	mm 23	Relay	<input checked="" type="radio"/> Active <input type="radio"/> Inactive
hh 3	mm 45	Relay	<input type="radio"/> Active <input checked="" type="radio"/> Inactive	hh 4	mm 45	Relay	<input type="radio"/> Active <input checked="" type="radio"/> Inactive
hh 4	mm 0	Relay	<input checked="" type="radio"/> Active <input type="radio"/> Inactive	hh 5	mm 0	Relay	<input checked="" type="radio"/> Active <input type="radio"/> Inactive
hh 5	mm 0	Relay	<input type="radio"/> Active <input checked="" type="radio"/> Inactive	hh 6	mm 0	Relay	<input type="radio"/> Active <input checked="" type="radio"/> Inactive
hh 6	mm 30	Relay	<input checked="" type="radio"/> Active <input type="radio"/> Inactive	hh 7	mm 30	Relay	<input checked="" type="radio"/> Active <input type="radio"/> Inactive
hh 7	mm 0	Relay	<input type="radio"/> Active <input checked="" type="radio"/> Inactive	hh 8	mm 0	Relay	<input type="radio"/> Active <input checked="" type="radio"/> Inactive
hh 8	mm 59	Relay	<input checked="" type="radio"/> Active <input type="radio"/> Inactive	hh 9	mm 59	Relay	<input checked="" type="radio"/> Active <input type="radio"/> Inactive
Non working day		Number of changes 8		Non working day		Number of changes 8	
hh 3	mm 0	Relay	<input type="radio"/> Active <input checked="" type="radio"/> Inactive	hh 4	mm 0	Relay	<input type="radio"/> Active <input checked="" type="radio"/> Inactive
hh 4	mm 23	Relay	<input checked="" type="radio"/> Active <input type="radio"/> Inactive	hh 5	mm 23	Relay	<input checked="" type="radio"/> Active <input type="radio"/> Inactive
hh 5	mm 45	Relay	<input type="radio"/> Active <input checked="" type="radio"/> Inactive	hh 6	mm 45	Relay	<input type="radio"/> Active <input checked="" type="radio"/> Inactive
hh 6	mm 0	Relay	<input checked="" type="radio"/> Active <input type="radio"/> Inactive	hh 7	mm 0	Relay	<input checked="" type="radio"/> Active <input type="radio"/> Inactive
hh 7	mm 0	Relay	<input type="radio"/> Active <input checked="" type="radio"/> Inactive	hh 8	mm 0	Relay	<input type="radio"/> Active <input checked="" type="radio"/> Inactive
hh 8	mm 30	Relay	<input checked="" type="radio"/> Active <input type="radio"/> Inactive	hh 9	mm 30	Relay	<input checked="" type="radio"/> Active <input type="radio"/> Inactive
hh 9	mm 0	Relay	<input type="radio"/> Active <input checked="" type="radio"/> Inactive	hh 10	mm 0	Relay	<input type="radio"/> Active <input checked="" type="radio"/> Inactive
hh 10	mm 59	Relay	<input checked="" type="radio"/> Active <input type="radio"/> Inactive	hh 11	mm 59	Relay	<input checked="" type="radio"/> Active <input type="radio"/> Inactive

Figure 50: Load control 1

Tariff control		Load control 1		Load control 2	
Period		Exceptiondays			
Period A start date: Month= 4 Day= 1		Period B start date: Month= 11 Day= 1			
Working day Number of changes 2		Working day Number of changes 2			
hh 7	mm 0	Relay <input type="radio"/> Active <input checked="" type="radio"/> Inactive	hh 7	mm 0	Relay <input type="radio"/> Active <input checked="" type="radio"/> Inactive
hh 22	mm 0	Relay <input checked="" type="radio"/> Active <input type="radio"/> Inactive	hh 22	mm 0	Relay <input checked="" type="radio"/> Active <input type="radio"/> Inactive
Non working day Number of changes 2		Non working day Number of changes 2			
hh 7	mm 0	Relay <input type="radio"/> Active <input checked="" type="radio"/> Inactive	hh 7	mm 0	Relay <input type="radio"/> Active <input checked="" type="radio"/> Inactive
hh 22	mm 0	Relay <input checked="" type="radio"/> Active <input type="radio"/> Inactive	hh 22	mm 0	Relay <input checked="" type="radio"/> Active <input type="radio"/> Inactive

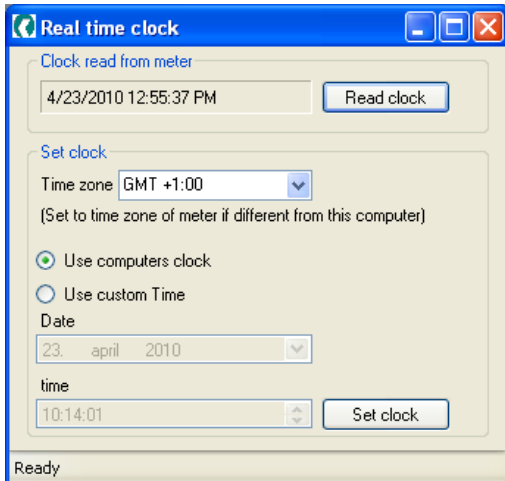
**Figure 51: Load control 2**

The Tariff plan layout looks equal as the Load control plans.

### 3.5.9 Tools Menu → Set time

The current Real-Time Clock in the meter is shown by clicking the “**Read Clock**” button.

The RTC can be set to the PC clock or a customized clock. It is also possible to set a specific time zone.



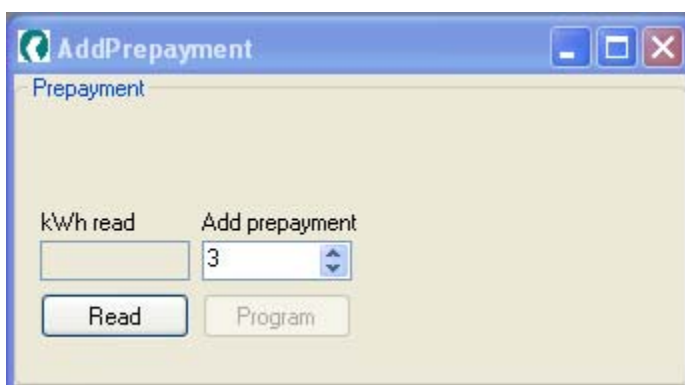
**Figure 52: Settings for the Real-Time Clock**



Note that most laptops automatically follow winter/summer time, which is not necessarily the case in AMR systems.

### 3.5.10 Tools Menu → AddPrepayment

It is possible with Metertool to add some extra kWh for meters used as prepayment meters. In **Figure 53** 3 kWh is added to a meter.



**Figure 53: AddPrepayment**



Add Prepayment can only be done via the module port

### 3.5.11 Tools Menu → Neutral fault setup

In 382 generation L there is a neutral fault logger. Meters with breakers can be configured to switch off the supply when a logging occurs. Both this and the other settings can be done with Metertool.

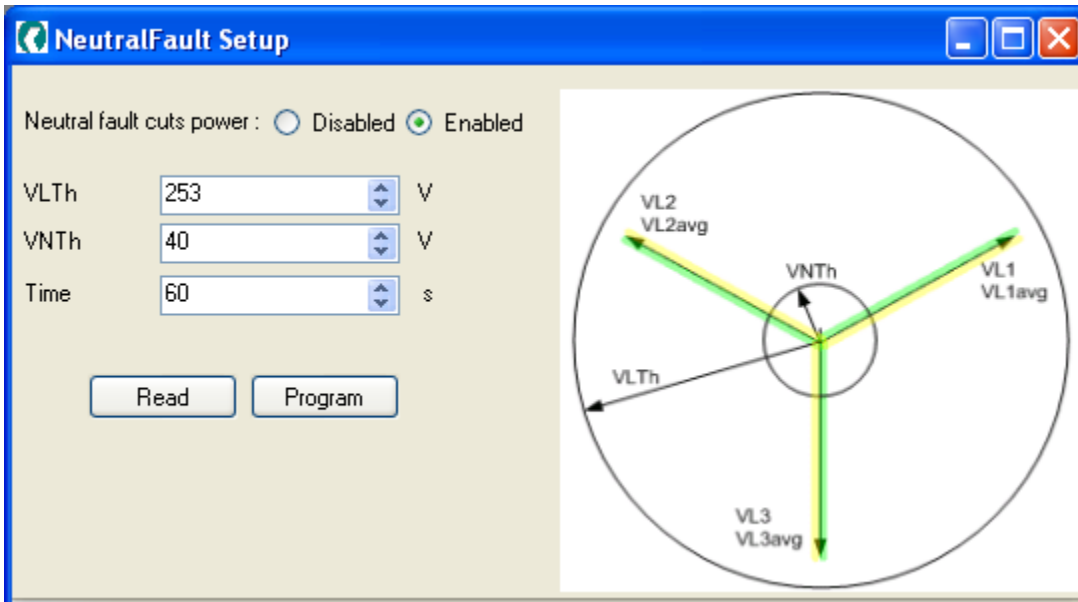


Figure 54: Neutral fault setup

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