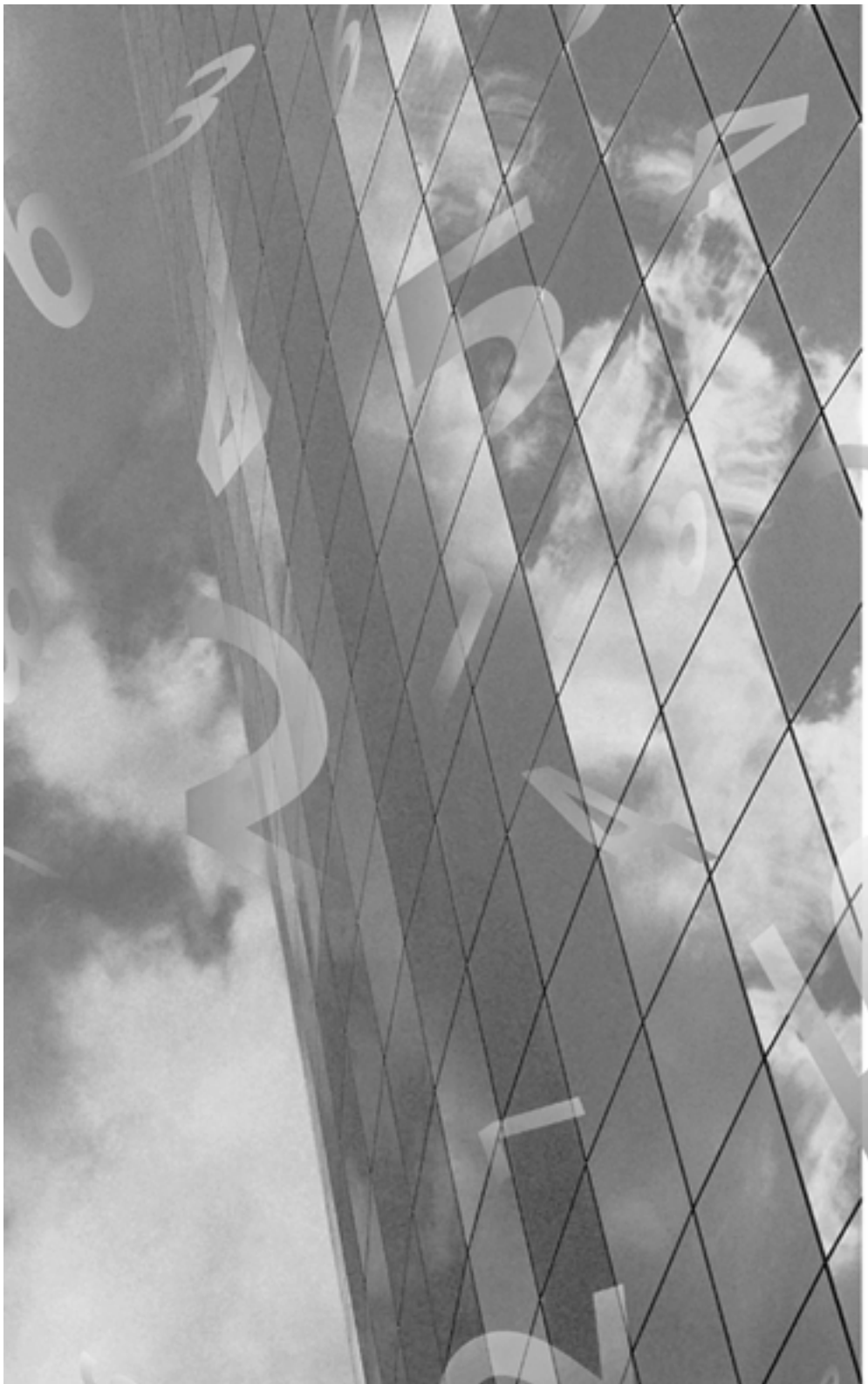
Landis + Gyr EDC-S

User Manual



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Revision History

Revision	Date	Description
	September 2004	First release
a		
b		
c		
d		
e		
f		

Table of Contents

1 Safety aspects

Please read this chapter before proceeding any further!

1.1 Landis+Gyr EDC-S

Purpose

The EDC-S remote meter reading (RMR) central station is a software application for reading out remote terminal units via the telephone network, leased lines or optical interface.

The SCTM and VDEW 2.0 communication protocols are used for remote acquisition, whereas acquisition via the optical interface conforms to EN 61107.

The presentation module permits tariff-based calculations, as well as the display of metering data in the form of graphics or freely-definable reports.

A scheduler function supports round-the-clock automatic operation. The EDC-S may therefore be used as a fully-functioning RMR central station for small to medium-sized systems.

The main functions of the EDC-S are:

- Remote data acquisition from RTUs via the telephone or leased line networks
- Synchronisation of RTUs in the RMR network
- Analysis of metering value status, event messages and communication statistics
- Local read-out of RTUs via their optical interface
- Import of metering values from hand-held units
- Export of metering values to third-party systems
- Numerical reporting of load profiles and billing data
- Graphical reporting of load profiles
- Time-controlled automated operation for the acquisition and reporting of metering values
- Calculation of synthetic load profiles
- Archiving system for the secure storage of billing-relevant data

Users

Personnel that are responsible for configuring and operating the EDC-S must possess appropriate technical qualifications, as well as the necessary authorisation to program and operate the remote meter reading system.

Training

Landis+Gyr offers training courses for EDC-S users.

Courses covering the administration of hardware and operating systems are offered by the relevant suppliers.

It is the customer’s responsibility to ensure that all users receive the necessary training.

1.2 User manual

Documentation concept

User manual and CD with examples

Users

The EDC-S user manual is intended for qualified specialists. Furthermore, some prior knowledge of remote meter reading systems is essential.

Document structure

The EDC-S use manual has been split into nine chapters:

- Chapter 2: Before you start
  Describes the main prerequisites as well as the installation and definitions for the EDC-S.
- Chapter 3: Quick start
  Describes a fast procedure for reading out and displaying metering data.
- Chapter 4: Remote acquisition
  Describes the detailed functions of the RMR system.
- Chapter 5: Optical read-out
  Detailed description of the read-out via the meter's optical interface.
- Chapter 6: Data import
  Describes how to import data from hand-held systems or other RMR systems.
- Chapter 7: Data export
  Describes how to export data to other RMR central stations and billing systems.
- Chapter 8: Data analysis
  Describes the usage of the graphical and numerical processing tools.
- Chapter 9
  Describes the definition and calculation of synthetic load profiles.
- Chapter 10: System administration
  Describes maintenance functions such as archiving or modifying/deleting raw data.
- Chapter 11: Troubleshooting
  Describes solutions to known problems, e.g. during manual acquisition

2 Before you start

2.1 Overview

The EDC-S is an automated remote meter reading central station. It is able to manage up to 500 RTUs, as well as supporting the read-out of billing data.

The EDC-S also features the following powerful functions:

- Local read-out of RTUs via their optical interface
- Import of read-outs from hand-held systems
- Processing of load profile data based on tariff switching periods
- Flexible cross summations and load profile calculations
- Graphic analysis
- Export of processed data in text or graphic files
- Import and export of load profile data in LG-format
- Service functions by means of reading/setting any RTU parameters

NOTE

Should it not be possible to solve a problem using this manual, contact your local Landis+Gyr representative or the Landis+Gyr Helpdesk in Zug for further support.

Select the hyperlink www.landisgyr.cz and include details of the customer name, version and problem description in the e-mail.

2.2 System requirements

Operating system	: WINDOWS 95, 98
	WINDOWS NT 4.0/ 2000/ XP
Processor	: INTEL 486 200 MHz or faster
RAM	: 32 MByte
Free hard disk space	: 500 MByte

2.3 Components

Modem	: functional tests have been performed to check remote acquisition using a EDC-S with the following modem types:
	- Alcatel 1144 (V22, V22bis, V23)
	- Landis+Gyr FKJ 11.1 (V22, V22bis, V23)
	- Siemens M20 (GSM) (V22bis)
	- 3com US Robotics 56k Message Modem (V22bis)
	- ISDN TA Zyxel Omninet
Optical reading head	: -Landis+Gyr FDC3.1

2.4 Installation

The installation program setup.exe guides you through the various installation steps. Start setup.exe from the installation CD. Follow the steps and instructions given by the installation wizard.

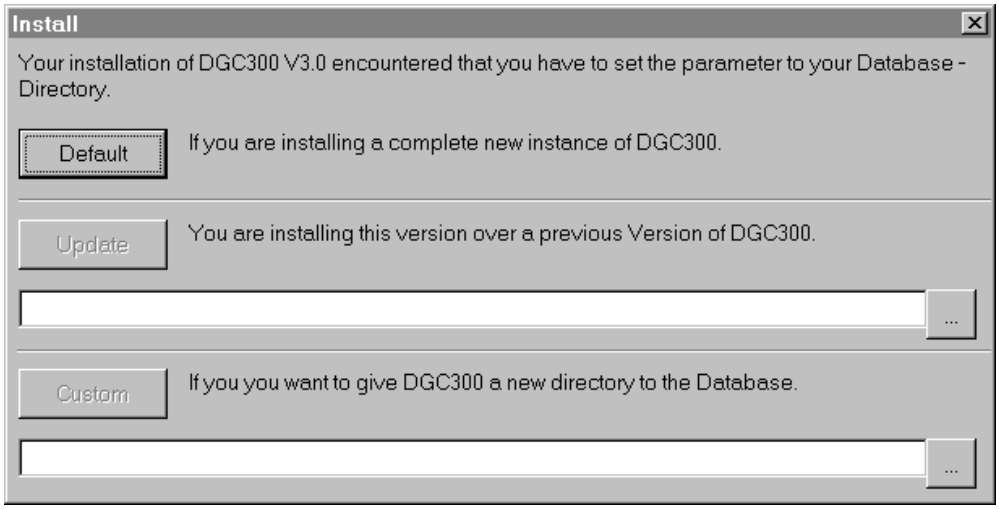
NOTE

If you require 3.5‘‘ diskettes instead of the CD, copy directories Disk1 to Disk5 from the installation CD onto 3.5‘‘ diskettes.

2.4.1 Defining the working directory

All settings, files and directories are retained when installing EDC-S over an existing installation.

If you install EDC-S in a new directory, the working directories are undefined. The following dialogue will appear when running the program for the first time:

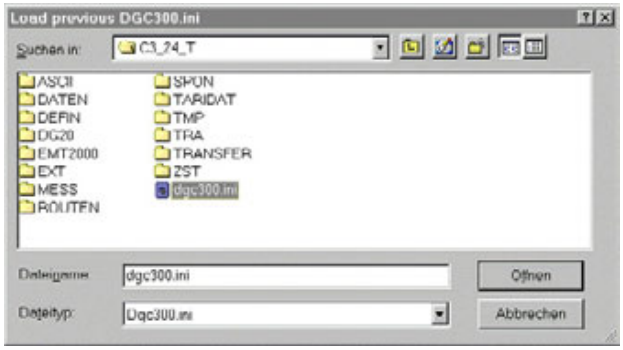


Default:

When completely reinstalling the software, the directory path will be created as described in the next section.

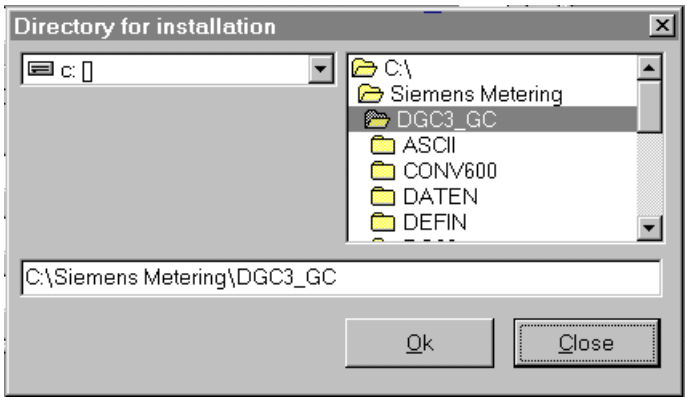
Update:

The directories and files from a previously installed version will be used. Enter the path of the existing installation. Press the button "..." to browse for the path containing the file EDC.ini.



Custom:

Used to select the path if the definitions and settings should be stored in a special directory. Press the button " ... ", after which the following browse window will appear:



Then press the "Custom" button to complete the EDC-S installation.

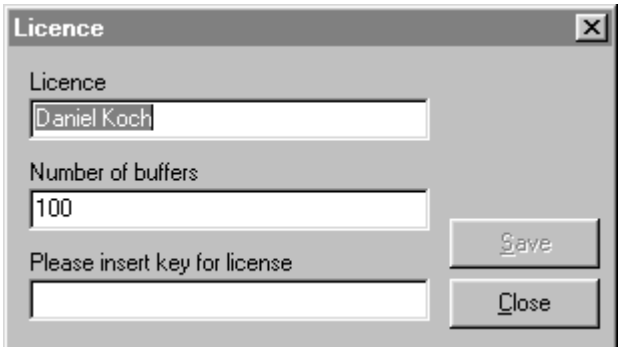
2.4.2 Activating the licence

The EDC-S is supplied as a demo version. To use the program, activate it by entering the licence name, number of periodic buffers and licence key.

The language may be changed following installation. The English and German languages are supplied with the software.

Procedure

Help ⇒ Licence



Modify settings

Save ⇒ Close

Settings

Licence:

Enter the name of the licence.

Number of buffers:

Enter the number of periodic buffers that may be managed using your licence.

Licence key:

Enter the licence key.

NOTE

Ensure that the licence key is entered within 30 days of running the program for the first time, otherwise EDC-S will automatically lock itself once this period has expired.

The time remaining until the program is locked is indicated in the upper part of the window.

2.4.3 Selecting the menu language

The English and German languages are included in the standard package. The language may be changed afterwards.

Procedure

Help ⇒ Language Select language

Save ⇒ Close ⇒ Restart program

Settings

Language:

Select one of the languages listed.

2.4.4 Directories

The following directories are created during a new installation:

Directory	Contents
C:\EDC\ASCII	Load profile data in text format for transfer to other programs (e.g. MS EXCEL, etc.)
C:\EDC\CONV600	Path of the CONV600 program, which is used to convert load profiles from the EKM660 and EKM670 devices.
C:\EDC\DATEN	EDC database. Each file contains the metering values for one month from one load profile register.
C:\EDC\DEFIN	Contains all definitions for RTUs, projects, tariff agreements, acquisition lists, processing lists and reports.
C:\EDC\DG20	Load profile data in LG format for data exchange between central stations Note that DG20 only supports a limited directory length of 8 characters.
C:\EDC\EMT2000	Interface to the EMT2000 load management system
C:\EDC\MESS	Comments to raw data
C:\EDC\ROUTEN	All billing data acquired from meters and from processed load profile data.
C:\EDC\SPON	Spontaneous (event) messages
C:\EDC\EXT	Contains EKM670 switching states.
C:\EDC\TARIDAT	Raw data acquired locally via the optical interface or from hand-held units. This data is deleted after import into the EDC database.
C:\EDC\TMP	Temporary files
C:\EDC\TRA	Directory for the export of graphics (Word Meta Files) and demand values (text file).
C:\EDC\TRANSFER	Data store for read-outs from hand-held units. Completed routes are stored in this directory, ready for import into EDC. These files are not deleted by EDC after the routes have been imported.
C:\EDC\ZST	Meter register values
C:\EDC\SYNLP	Synthetic load profile

2.4.5 General system parameters

Procedure

Start the DGC 300.

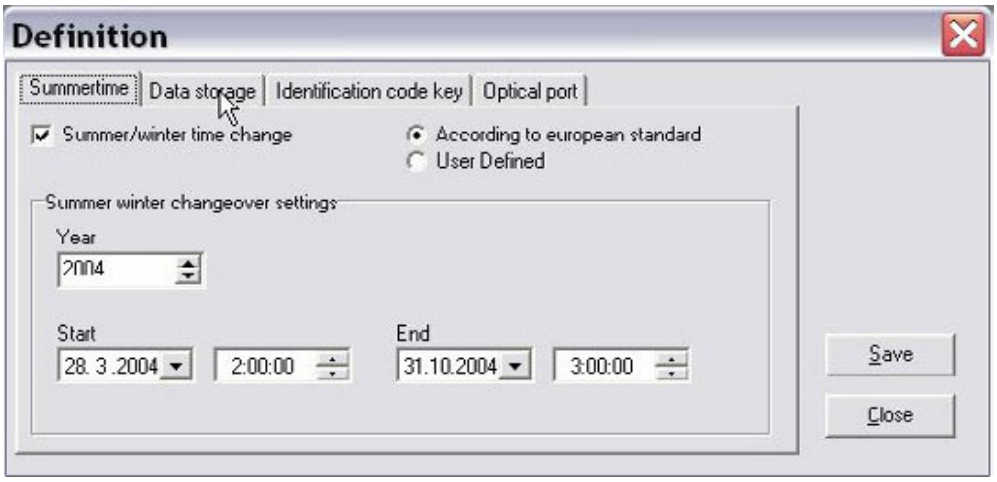
Definitions ⇒ **System** Select settings

Save ⇒ **Close**

Summer time

Enable / disable:

The summer time change over function can be enabled or disabled.



Start / End:

Define the dates/times of the next summer time period. The table below gives the European change-over times for the next few years.

Year	Start	Finish
2001	25. March 02:00	28. October 03:00
2002	31. March 02:00	27. October 03:00
2003	30. March 02:00	26. October 03:00
2004	28. March 02:00	31. October 03:00
2005	27. March 02:00	30. October 03:00
2006	26. March 02:00	29. October 03:00
2007	25. March 02:00	28. October 03:00
2008	30. March 02:00	26. October 03:00
2009	29. March 02:00	25. October 03:00
2010	28. March 02:00	31. October 03:00
2011	27. March 02:00	30. October 03:00
2012	25. March 02:00	28. October 03:00

The above data is only valid if the daylight saving system is not changed in the meantime.

This year / Next year:

Permits the definition of change-over times for the next 2 years.

NOTE

The summer time change-over must be defined before the beginning of the month in which the change-over occurs. The database is prepared for the change-over at the beginning of the month.

Integrating periods will be incorrectly interpreted if the change-over times are missing or incorrectly defined. Subsequent modifications are not possible.

Make a note of when the EDC settings must be changed.

Data storage

Separator:

Defies the separator between two metering values from the same load profile integrating period. The default character is <TAB> (09) HT, however others may be used to support the import of data from third-party systems.

Recording: logging to file / detailed logging:

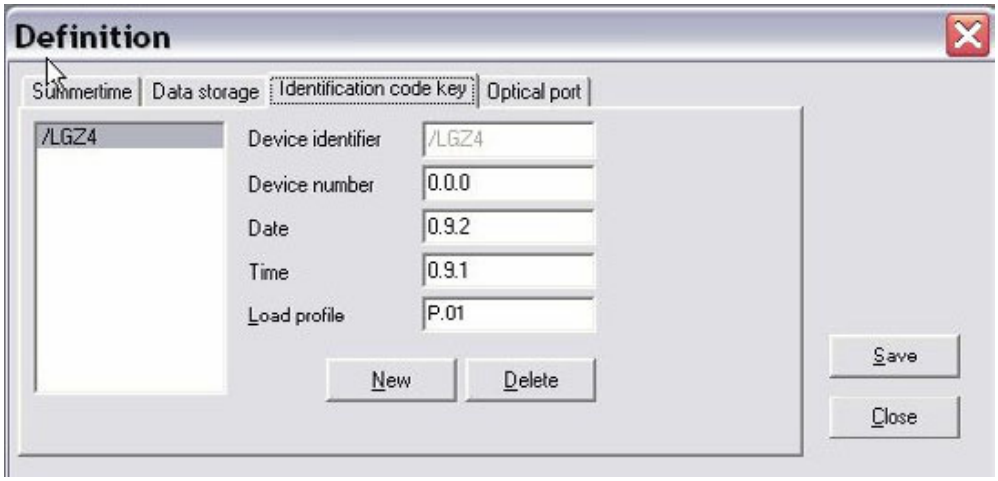
Defines the content of the communication log books. It is recommended that communication details are always recorded in a log book. A file is created for each communication interface.

Detailed recordings are useful for communications specialists, however they should only be used in special cases due to the large volumes of generated data.

Identification code key

Billing data identification codes are used to identify data sets when meters or tariff units are read out via their optical interfaces, or when data is imported from hand-held units.

The following settings may be used for all Landis+Gyr meters and tariff units from Landis+Gyr:



Device identifier:

Each meter manufacturer using the EN 61107 protocol must be able to interpret the device type. For example, the Landis+Gyr ZMB400 uses device code /LGZ4ZMB410CT647.SsF .

A specific identification code set may be defined for each device type. Often it may be possible to use only one ID code set since the ID codes for meter number, date, time and load profile are frequently identical. The device type will then only comprise the first few characters that are valid for all types.

If several ID code sets with differing device IDs are defined, the ID code set with the longest (closest) matching device ID will be used.

The device ID codes for all major manufacturers are given in the table below:

Manufacturer	Device ID
ABB Kent Meters AB	/ABBxxxx
AEG	/AEGxxxx
Danubia	/DANxxxx
Deutsche Zählergesellschaft DZG	/DZGxxxxx
Eurometers Ltd	/EURxxxx
GEC Meters Ltd.	/GECxxxx
Heliowatt	/HELxxxx
Iskraemeco, Slovenia	/ISKxxxx
Landis+Gyr	/LGZxxxx
Schlumberger	/SLBxxxx
Siemens Nürnberg	/SIExxxxx

Device number, date, time:

ID codes for metering data (as displayed on the meter rating plate).

Load profile:

ID code for distinguishing load profile from billing data.

IEC1107

Com port:

Specifies the port that will be used for read-outs via the optical interface.

2.5 Importing archived data and examples

All the examples and data used in this manual are archived on the enclosed CD. To import this archived data, first specify the archive path.

Import the archive from the installation CD to work through the examples given in this manual.

2.5.1 Set archive data path

Data is archived in a specified directory. Per default, drive A is used for archiving purposes, however other paths may also be defined.

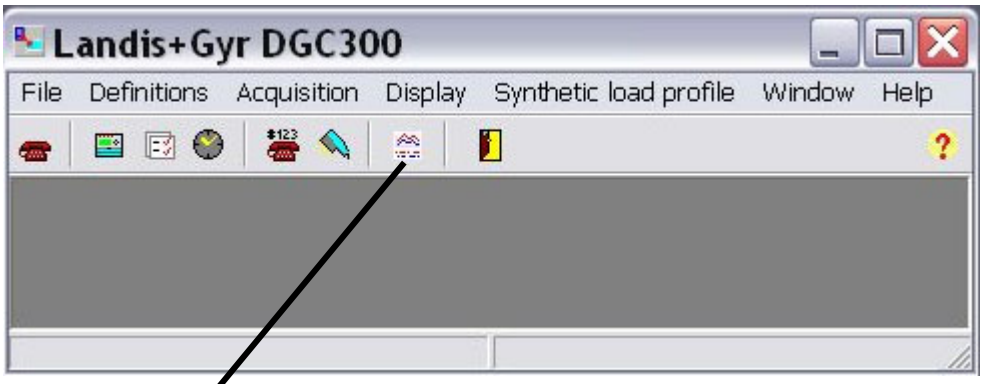
Procedure

1. Exit the EDC
2. Open the file EDC\EDC.ini using Microsoft Editor
3. Modify the path setting **bacdir=A:** in section **[DIRECTORIES]**. To use the sample data on the CD, enter the drive letter of your CD drive.
4. Save the file EDC.ini
5. Restart the EDC

2.5.2 Import archived sample data

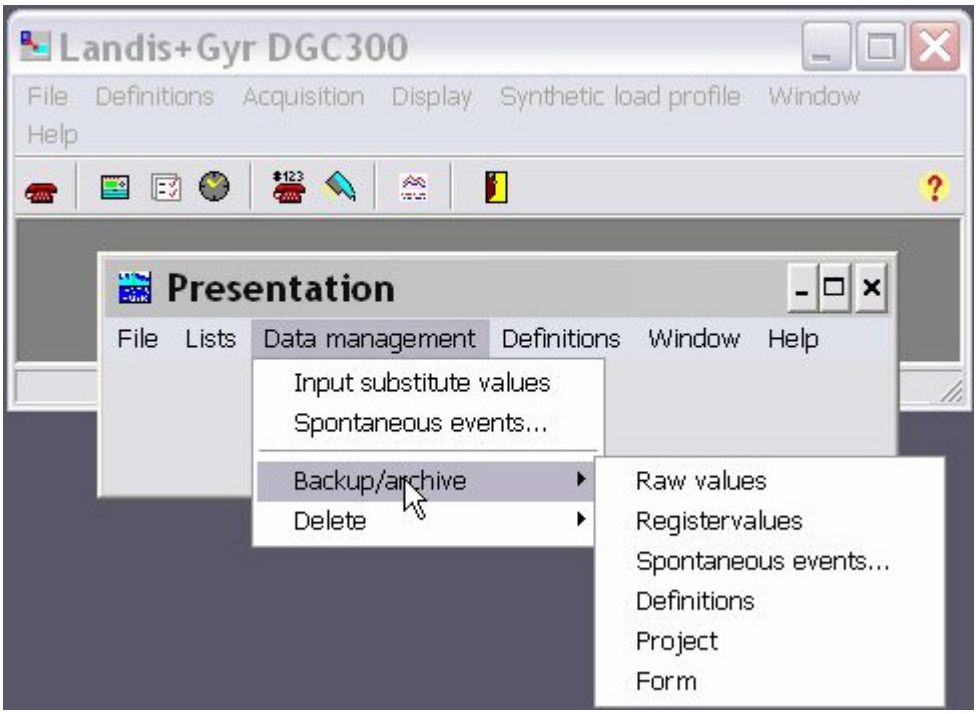
Procedure

1. Insert the enclosed installatation CD in your drive



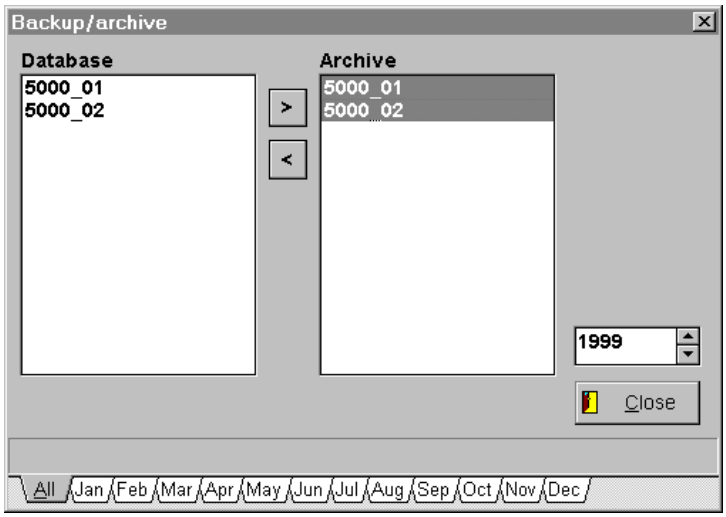
2. Start the EDC
   Press this button to open the presentation window

3. Select the menu “Data management” and sub-menu “Backup/archive”



4. Copy all archived data (raw values, definitions, projects and reports) into the database.

   Note: Select the tab “All” and the year 1999 in the raw data archive.


Backup/archive
Database
5000_01
5000_02
>
<
Archive
5000_01
5000_02
1999
Close
All
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

3 Quick start

3.1 Remote acquisition

This chapter demonstrates the remote acquisition of data using an operational RTU installed by Landis+Gyr.

A prerequisite is successful installation and commissioning as described in section 2 “Before You Start”. The settings and configurations archived on the installation disk will be used for this example.

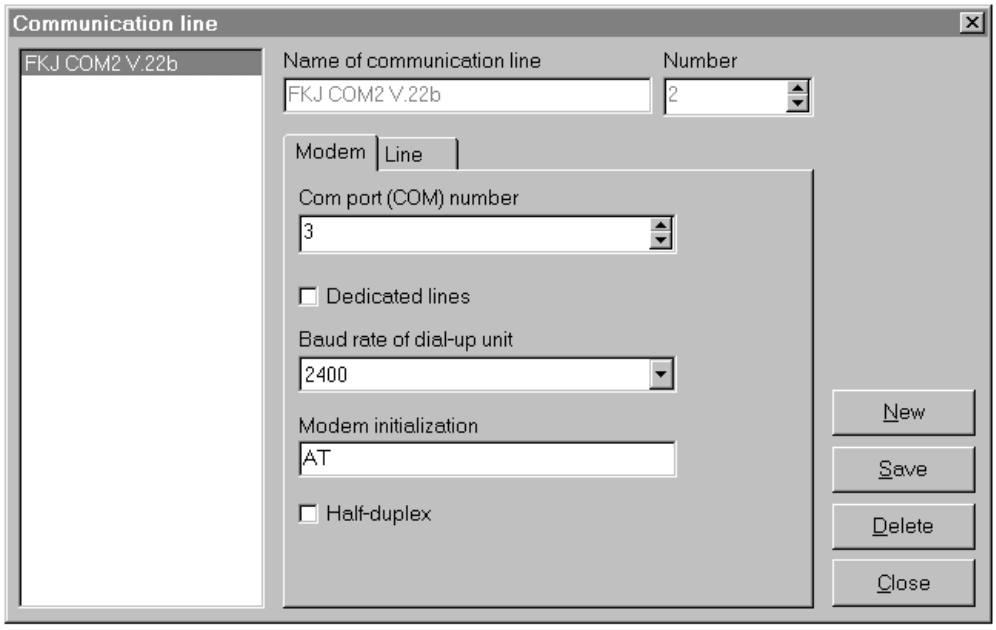
3.1.1 Step 1: Definition of the communication line

A communication line defines the electrical connection between the PC and telephone network. First connect the modem to the PC. Refer to the modem manual for further details.

Procedure

Definitions ⇒ Communication line

Check that the port (COM) number matches the port to which the modem is connected:



If your telephone network utilises tone dialling, use the default settings in the “Line” tab. Deactivate “tone dialling” if this is not the case”.

Confirm these settings using **Save ⇒ Close.**

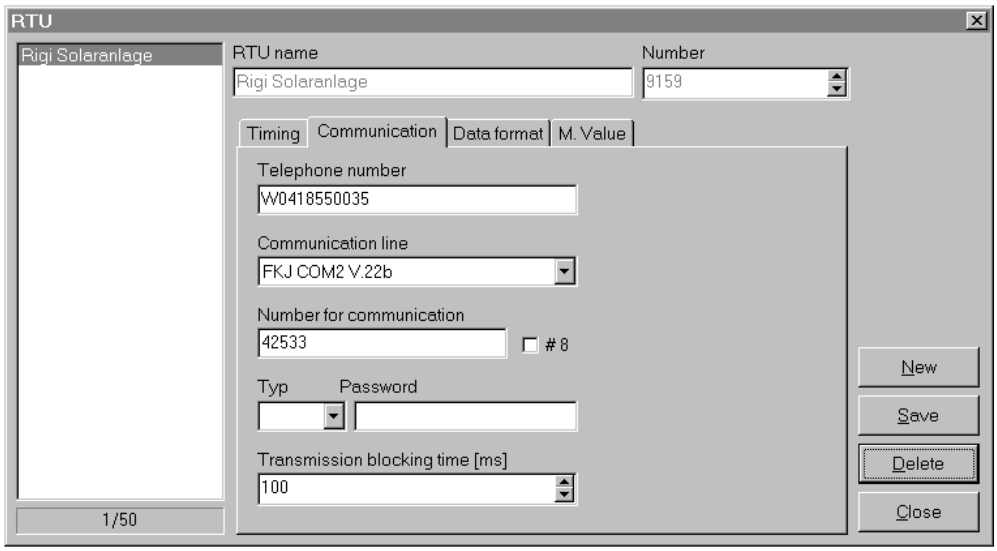
3.1.2 Step 2 : RTU definition

The archive contains a predefined RTU. If the archive has been imported as described in section 2 “Before You Start”, one only needs to modify the telephone number of the metering point.

Procedure

Definitions ⇒ RTU

Select the RTU "Rigi Solaranlage", click on the tab "Communication" and alter the telephone number as shown in the table below.



It may be necessary to add an area or country access code to the telephone number. Add the dial-out prefix (in this example “0”) if a private line is used.

Within CH, connection to public network	W041855035
Within CH, with dial-out prefix	,0W041855035
Outside CH, connection to public network	W004141855035
Outside CH, with dial-out prefix	,0W004141855035

W : The modem does not dial until the dialling tone is detected.

, : The modem waits 2-3 seconds before dialling

Confirm these settings using **Save ⇒ Close.**

NOTE

Verify that the number has been entered correctly. Incorrectly entered numbers could irritate other telephone subscribers.

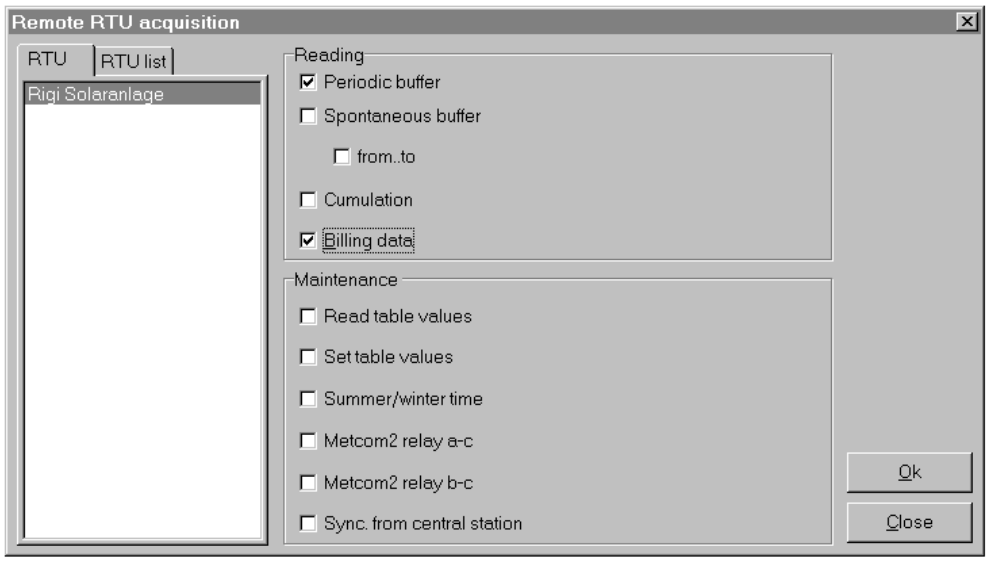
3.1.3 Step 3: Remote acquisition

Start remote acquisition to obtain metering data from the "Rigi" solar station in central Switzerland.

Procedure

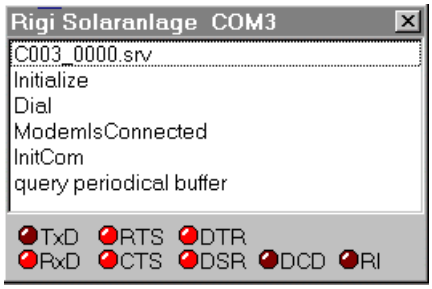
Acquisition ⇒ Remote reading

Select the RTU "Rigi Solaranlage". Activate the options "load profiles" and "billing data":



Confirm these settings using **Ok.**

A status window will appear once communication has started:



If communication was successful, one should see the messages "InitCom" and "query periodical buffer" in the window. Remote acquisition is terminated when the window is closed.

If communication problems occur, remote acquisition is repeated a maximum of 3 times.

NOTE

Refer to the “Troubleshooting” section if there are communication problems.

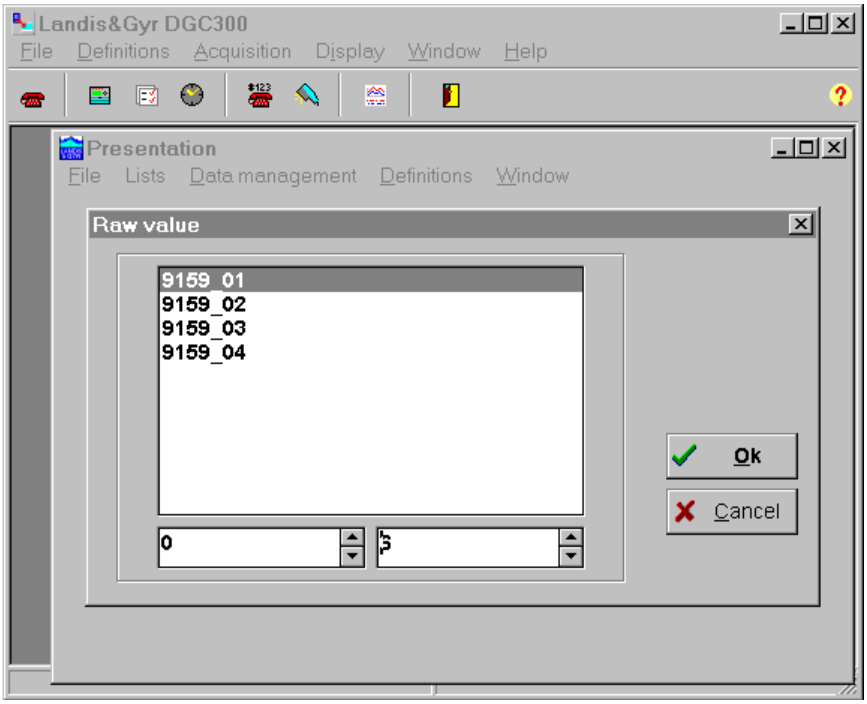
3.1.4 Step 4 : Checking the metering values

Check if the metering values have been stored in the EDC database.

Procedure

Display ⇒ Presentation⇒ Data management ⇒ Input substitute values

A list of all current metering data in the database will be displayed:



At least metering values 1000_01 to 1000_04 should be available.

Close the window by pressing **Cancel.**

3.2 Read-out via the optical interface

The read-out procedure will be illustrated using a meter type Landis+Gyr ZMB310CT647 which contains 4 registers stored in a load profile.

A prerequisite is successful installation and commissioning as described in section 2 “Before You Start”. The interface for reading head FDC3.1 must be configured (section 2.4.5, system parameters).

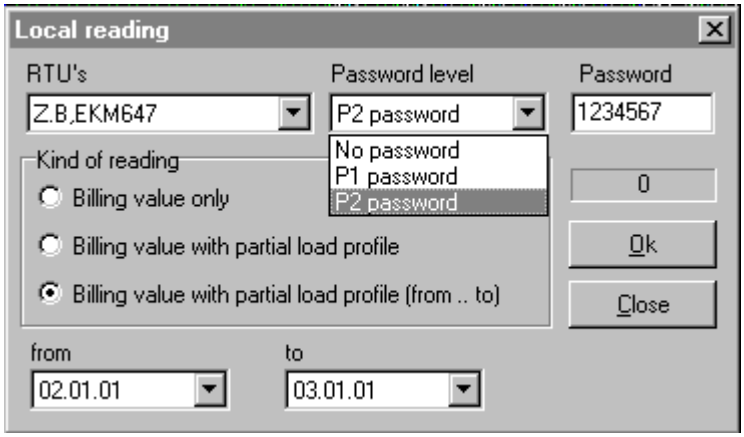
The settings and configurations archived on the installation disk will be used for this example.

3.2.1 Step 1: Reading out a meter

Connect reading head FDC3.1 to the optical interface on the meter.

Procedure

Acquisition ⇒ Local reading



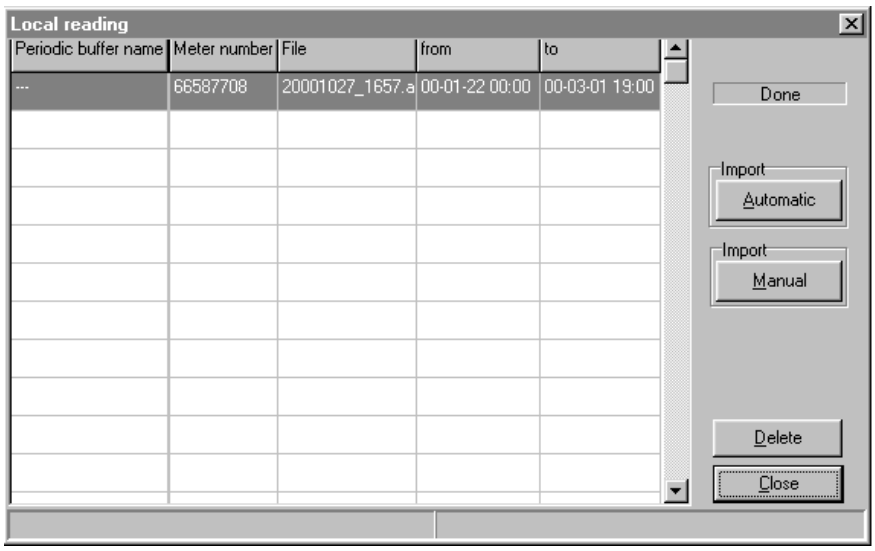
Select the meter type and data to be acquired. Choose a password level and a password if the meter require it to read meter data.

A window will then display a counter indicating the amount of data already transferred.

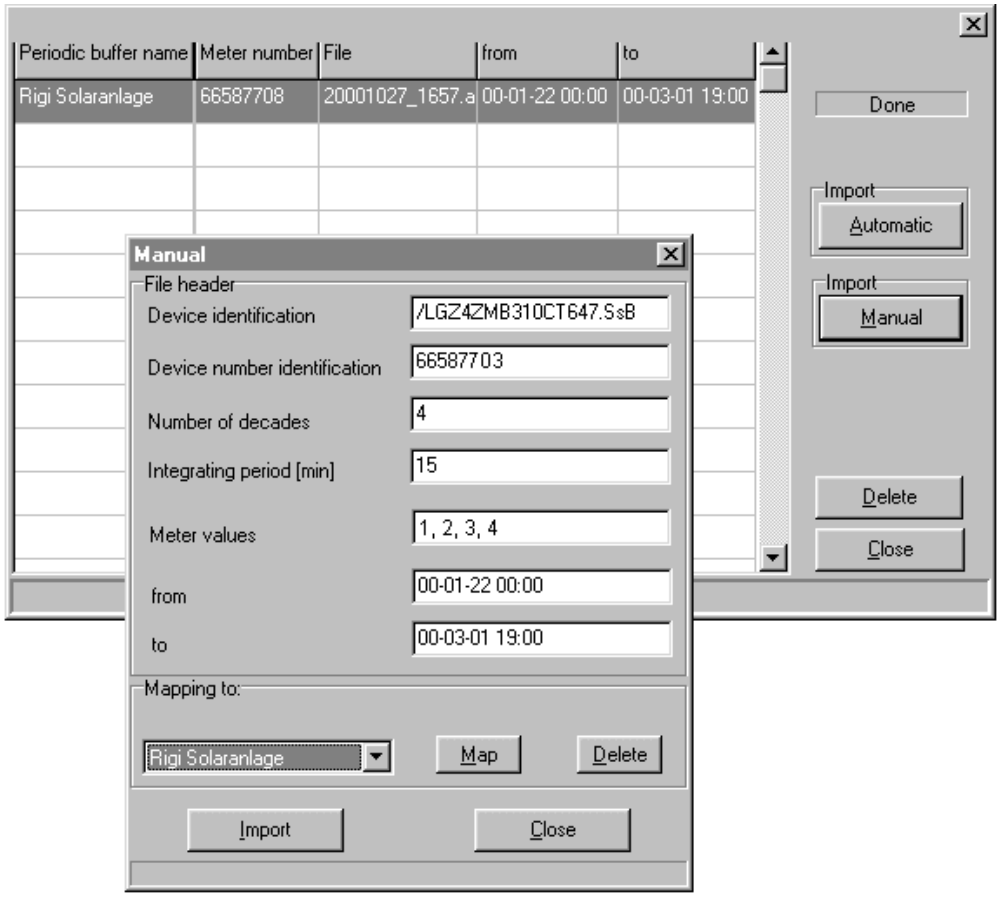
3.2.2 Step 2: Importing the data

Procedure

File ⇒ Import... ⇒ Local Reading



A list of current read-outs is displayed (users should note the load profile time range). Select the read-out and press the button **Import Manual**. A new window then appears:



Select the RTU "Rigi Solaranlage" and map the acquired data to this RTU by pressing **Map**. The name of the RTU will now be shown in the read-out list next to the selected device number. Then press **Import.**

The imported file is subsequently removed from the list.

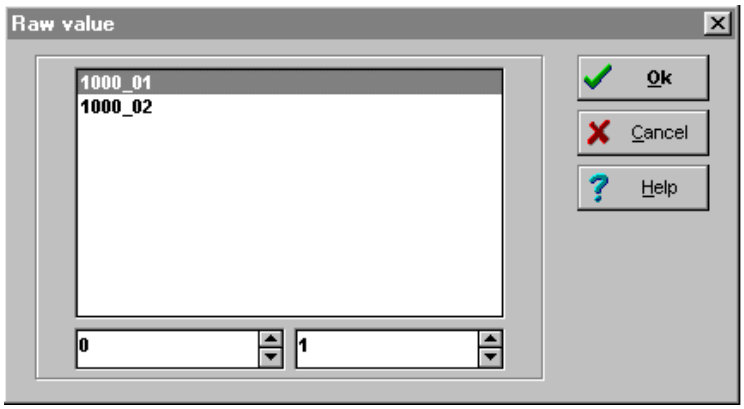
3.2.3 Step 3 : Checking the metering values

Check whether the metering values have been stored in the EDC database.

Procedure

Display ⇒ Presentation ⇒ Data management ⇒ Input substitute values

A list of all current metering data in the database will be displayed:



Change the month and year to the load profile time range that was read out.

The raw value list should contain the values 1000_01 and 1000_02. The number 5000 corresponds to the database reference of the "Rigi Solaranlage“ RTU. The raw value list contains two values if both metering values were imported.

Close the window by pressing **Cancel.**

3.3 Data acquisition from hand-held terminals

Data import will be illustrated using a sample file from a Landis+Gyr NORTI System.

A prerequisite is successful installation and commissioning as described in section 2 “Before You Start”.

The settings and configurations archived on the installation disk will be used for this example.

3.3.1 Step 1: Copying the read-out route

Use the Windows Explorer to copy read-outs from a hand-held unit to the TRANSFER directory.

Procedure

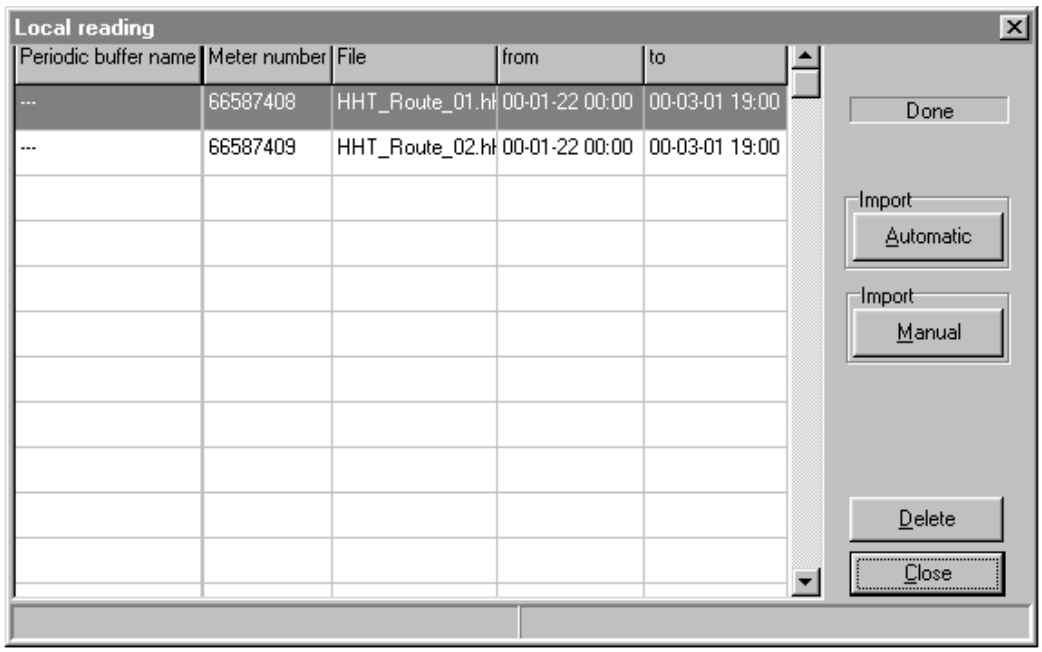
Copy the file "HTT_Route.abg" from the archive on the installation CD to directory C:\ EDC\TRANSFER\.

Users may also employ files from their own read-out system instead of the archived sample file.

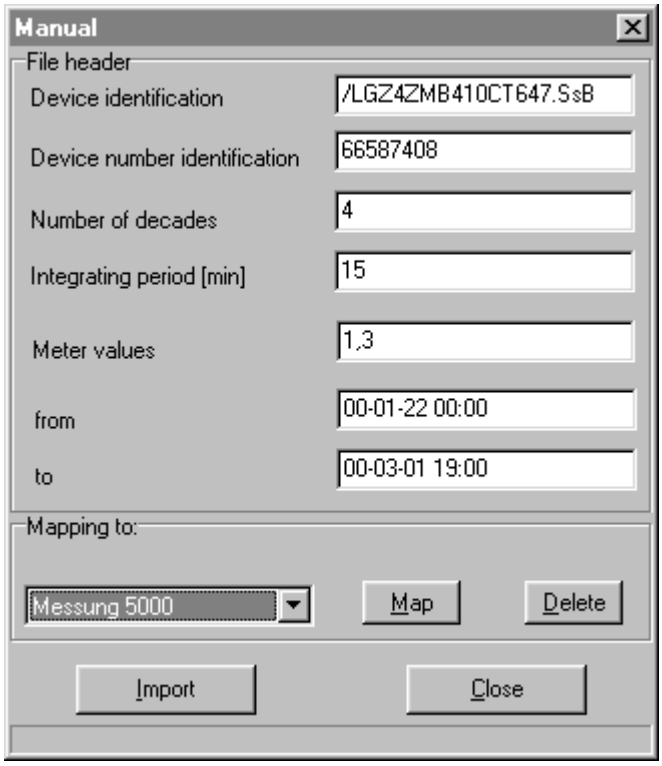
3.3.2 Step 2: Importing the data

Procedure

File ⇒ Import... ⇒ Local Reading



All read-outs stored in the file are displayed in the “Local Reading” window. Press the button **Import Manual**. A new window then appears:



Select the RTU " Messung 5000 " and map the acquired data to this RTU by pressing **Map**. The name of the RTU will now be shown in the read-out list next to the selected device number. Then press **Import.**

The imported file is subsequently removed from the list.

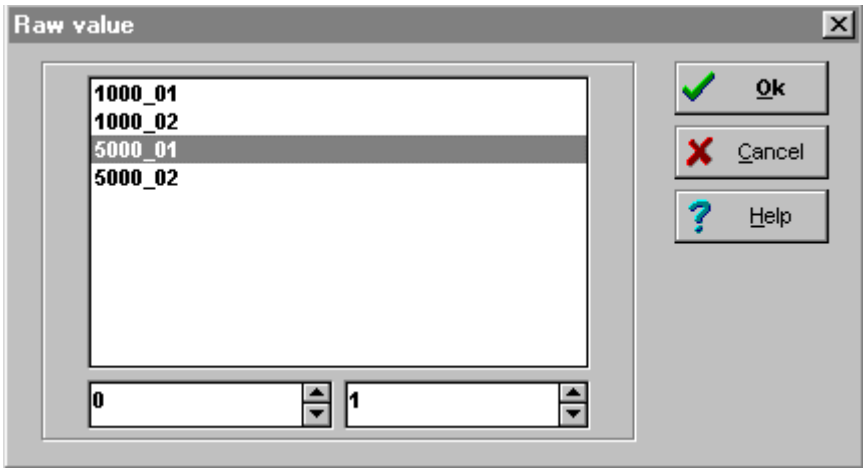
3.3.3 Step 3 : Checking the metering values

Check whether the metering values have been stored in the EDC database.

Procedure

Display ⇒ Presentation ⇒ Data management ⇒ Input substitute values

A list of all current metering data in the database will be displayed:



Change the month and year to the load profile time range that was imported. Set the time to January 2000 when using the archived sample file.

The raw value list should contain the values 5000_01 and 5000_02. The number 5000 corresponds to the database reference of project 5000.

Close the window by pressing **Cancel.**

3.4 Analysing the metering data

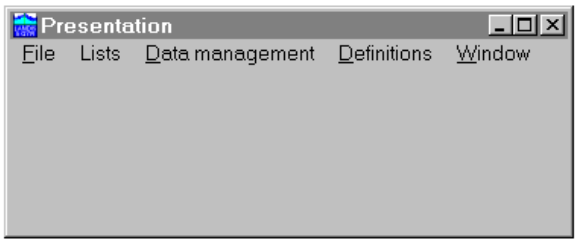
The analysis of load profiles will be illustrated using an example based on archived data.

A prerequisite is successful installation and commissioning as described in section 2 “Before You Start”. The settings and configurations archived on the installation disk will be used for this example.

All processing functions are accessed through one window. The menu items described below always refer to the “Presentation” window".

Procedure

Display ⇒ Presentation



Close this window when processing is complete:

File ⇒ Exit

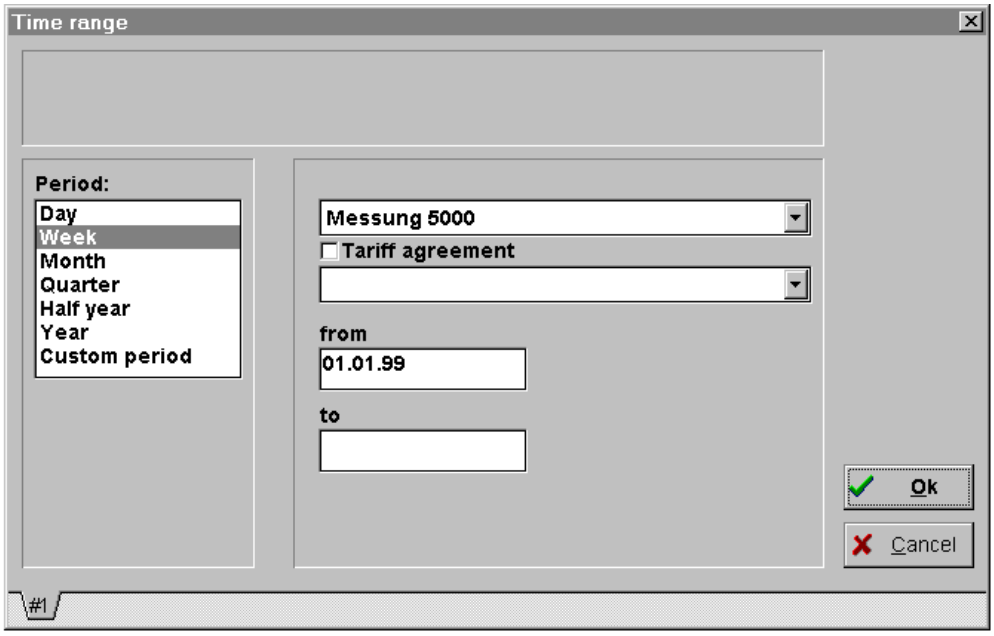
3.4.1 Step 1: Displaying and printing 15-minute values

The metering value for each integrating period may be displayed and printed out.

Procedure

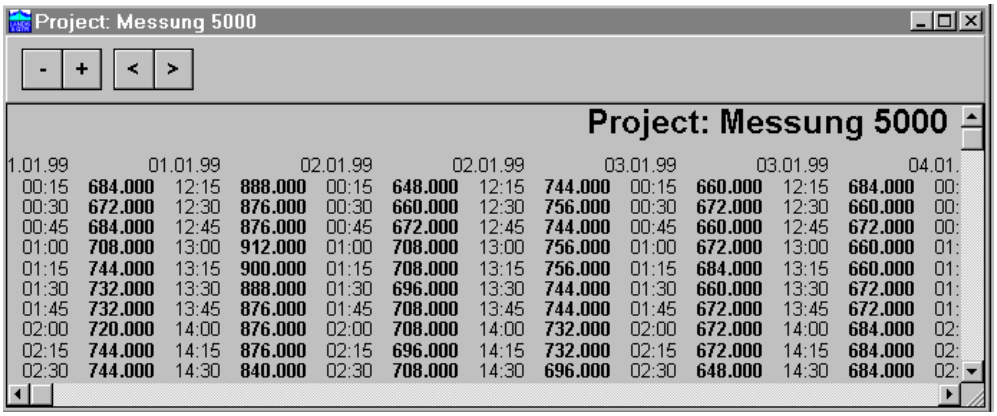
File ⇒ Open ⇒ Show demand values

Enter the settings shown below:



Confirm these settings using **Ok**

The demand values for one week, incl. date/time stamps, will then be displayed:



Click the "+" and "-" symbols to zoom in/out. The ">" and "<" buttons are used to scroll the values.

This view may be printed out:

Procedure

File ⇒ Print

The print-out is in landscape format. Each A4 page holds 5 days worth of 15 minute metering values.

Close the window "Project: Messung 5000".

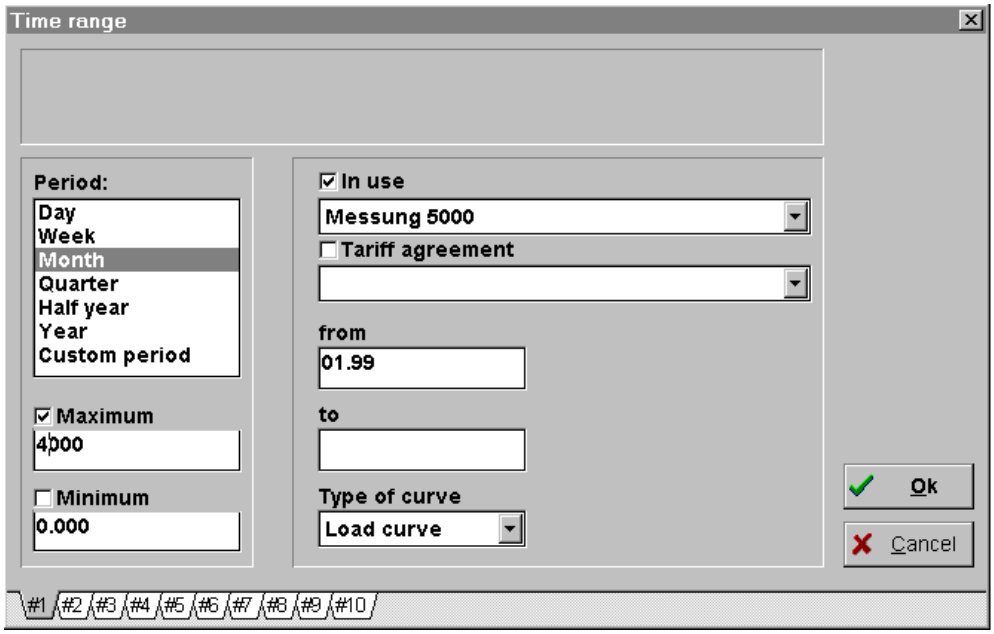
3.4.2 Step 2: Displaying, printing and exporting load curves

The load curve for a particular measurement may be displayed in graphic form.

Procedure

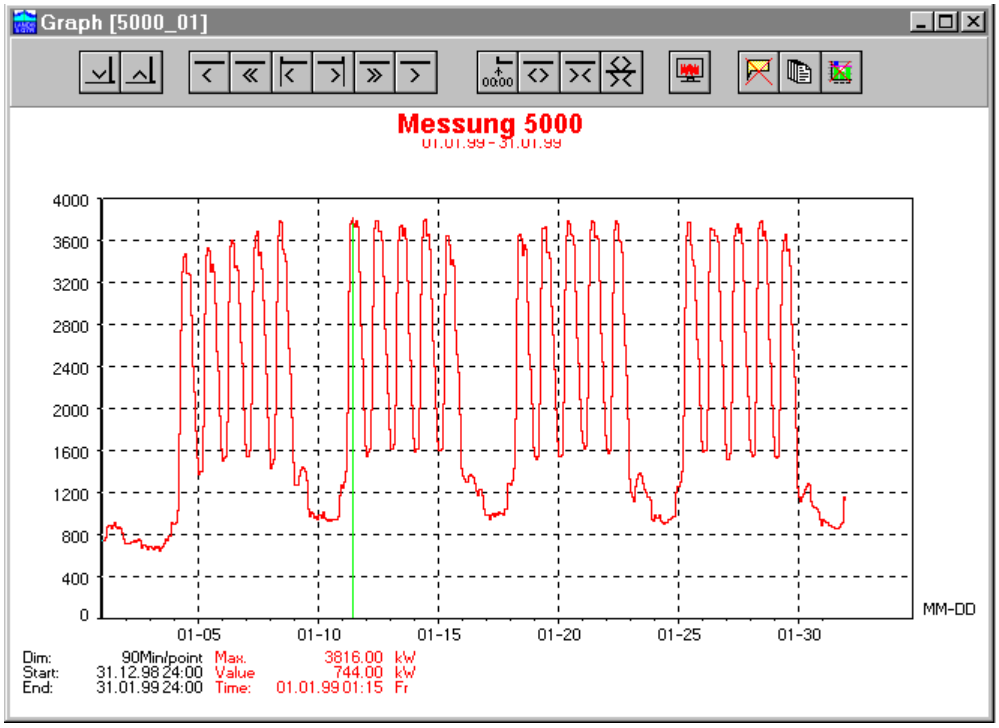
File ⇒ Open ⇒ Graph

Enter the settings shown below:



Confirm using **Ok**

The load curve for one month will now be displayed:



The green line indicates the monthly maximum which is given in the footer of the graph, i.e. 3816 kW.

Use the cursor keys ← and → to move the cursor line across the load curve. The date, time and measured value will then change accordingly.

The various toolbar buttons permit the expansion and compression of the graph.

The graph may be printed out:

Procedure

File ⇒ Print

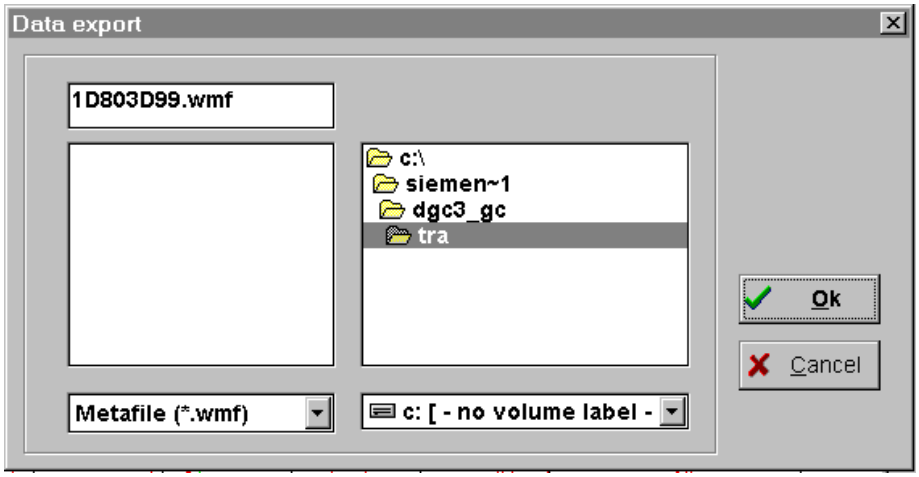
The print-out is in landscape format. Check that the default printer settings (in the Printer menu) are also set to landscape.

The graphic may also be exported as a Word Meta File (file.wmf).

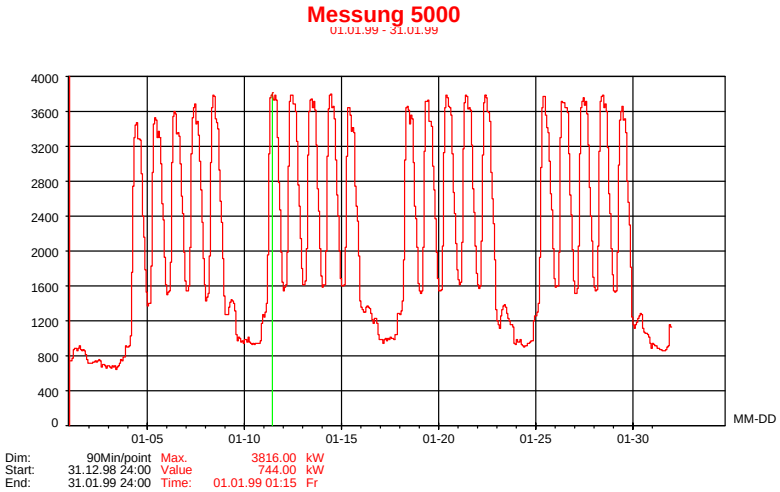
Procedure

File ⇒ Export…

The graphic is automatically assigned a unique name and stored in directory X:\...\EDC\TRA. Another directory and filename may be chosen, if required.



Press **Ok** to start the export. This file can now be pasted into, e.g. a Microsoft Word document using "Insert ⇒ Picture ⇒ From File":

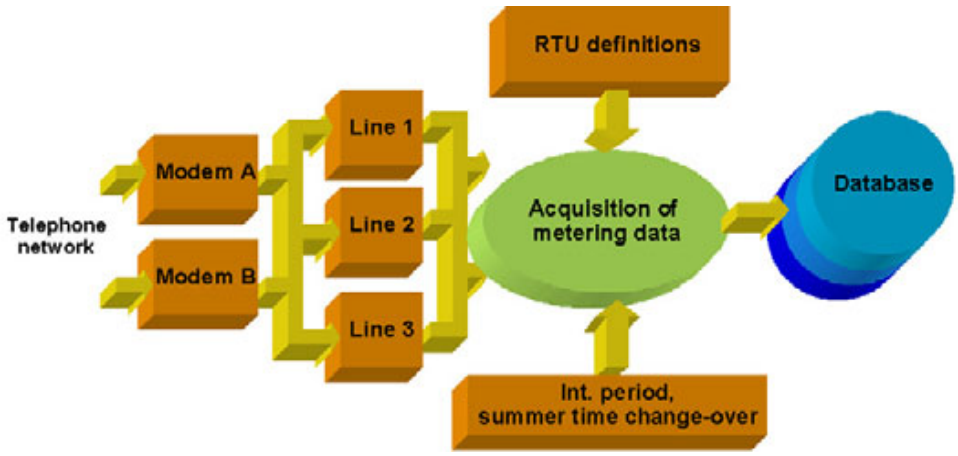


Close the window "Graph [5000_01]".

4 Remote acquisition

4.1 Remote acquisition process

When starting the remote acquisition of metering data, communication is established using the applicable RTU definitions. A line is used to connect to a modem and establish a connection to an RTU. Metering data is acquired once this connection is up.



Monitoring

All the data traffic between metering point and PC is displayed in a monitoring window during read-out. This data is also recorded in a file together with date/time stamps, and may be used for troubleshooting purposes.

Data errors

If checksum errors occur, the read-out of erroneous telegrams will be repeated. The connection to the metering point will be terminated if too many checksum errors occur or the data format is not as expected.

Repeat calls

After a certain time, a repeat call will be made in another attempt to acquire the data. This procedure is repeated until either all the data has been received correctly or the maximum number of permissible repeat calls has been reached.

Data storage

The data is then scaled using the pulse value matching definitions and stored in the EDC database. The metering data is supplemented with status information and is now available for further analysis. The metering data may also be stored in text format at the same time, thus permitting analysis using programs such as MICROSOFT EXCEL.

Time control

Remote acquisition may be started manually or automatically. Automated operation is based on the PC clock, thus permitting the use of cheap communication tariffs.

4.2 The modem

In principle it is possible to use devices from various suppliers, however most product specifications, functionality, timings etc… are changing rapidly.

Remote acquisition of data from new and old telemetering equipment will only function correctly when the modem settings, functions and timing are all known. Landis+Gyr therefore only recommends the following modem types whose functions have been thoroughly tested.

NOTE

In contrast to versions 2.4 or older, EDC V3.0 is able to interpret modem text messages. Configure the installed modems accordingly.

4.2.1 Siemens FKJ 11.1

The FKJ11.1 modem, which is recommended for use with the EDC, is configured so that it may be immediately used for remote acquisition. After commissioning, the unit displays its configured modulation mode.

If the modem should be configured to revert to another modulation mode following a power outage, use the "Hyper Terminal" program to modify the settings.

Start "Hyper Terminal" as described in section 4.2.2 and send the following AT – commands to the FKJ11.1 modem:

Modulation mode following power outage			AT command
V23	Half-duplex	1200 Baud	AT&F0W
V21	Full-duplex	300 Baud	AT&F1W
V22	Full-duplex	1200 Baud	AT&F2W
V22bis	Full-duplex	2400 Baud	AT&F3W

The modem settings are correct if the desired modulation mode is displayed.

NOTE

When ordering the FKJ11.1 modem, ensure that the correct application and modulation mode are specified. The configuration is dependent on the employed central station. Using modems that have not been correctly configured for use with the EDC, can lead to malfunctions.

4.2.2 Using Hyper Terminal

1. Close all open applications, particularly those that may be accessing the modem COM port (e.g. EDC, SW fax devices, ...).

2. Start Hyper Terminal

   Start ⇒ Programs ⇒ Accessories ⇒ Communications ⇒ Hypertrm.exe

   Note: Hyper Terminal may not be installed on your system. If this is the case, install it using:

   Start ⇒ Settings ⇒ Control Panel ⇒ Add/Remove Programs

   Select the "Windows Setup" tab and activate

   ☑ Communication ⇒ Details... ⇒ ☑ Hyper Terminal

3. Enter a name for the connection in the field **Name**. Confirm by pressing **OK**.

4. Enter the COM port to which the modem is connected in the field **Connect using**.
   For example, COM1 would require the selection **Direct to COM1**. Confirm by pressing **OK**.

5. Confirm the dialogue settings using **OK**.

6. Define the following connection parameters:

Bits per second	: 2400
Data bits	: 8
Parity	: None
Stop bits	: 1
Flow control	: Hardware

7. Now enter the command sequence, given in section “Modem Settings”, at the position of the blinking cursor. Confirm by pressing **<ENTER>**. The modem will acknowledge with a "0".

   Note: The entries may not be displayed, indicating that the local echo of the modem has not been activated. In this case enter the commands ‘’blindly”.

8. Exit the Hyper Terminal program.

4.3 Definition of communication lines

Communication lines define the modem control settings for remote acquisition. There must be at least one communication line per modem.

If it is planned to use different transmission modes with the same modem, define a separate communication line for every transmission mode. The modem will then be initialised before each call.

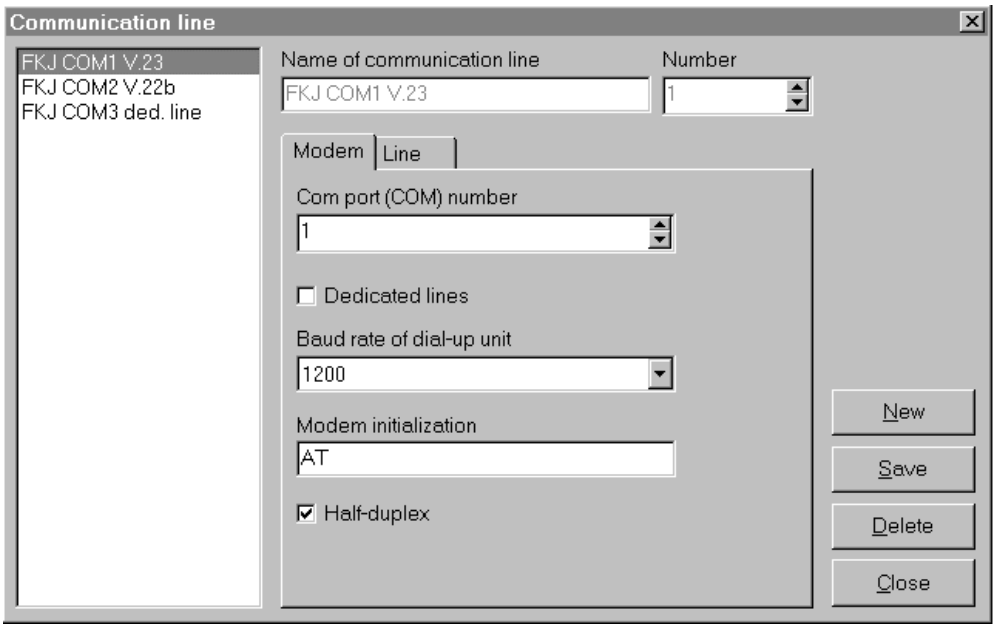
NOTE

The use of several communication lines per modem is only permitted for test purposes or manual operation.

Functional errors may result if more than one transmission mode (communication line) is defined per modem, and power outages or communication problems occur at the metering points.

Procedure

Definitions ⇒ Communication line



Create a new line using **New** or select an existing line.

Naming conventions

Name of communication line:

Specify a name for each line. This name should indicate the connection, transmission mode and (if possible) the communication speed. This simplifies the definition of RTU's later on.

Number:

Each communication line is automatically assigned a number. This cannot be edited.

Modem

COM port number:

Number (1 .. 4) of the serial interface to which the modem is connected.

Modem initialisation

Initialisation is not necessary if a modem is used solely for one transmission mode. In this case only enter “AT” and configure the modem so that it may be controlled without any additional initialisation.

When using different transmission modes, define the transmission mode per line.

The following initialisation strings apply to the FKJ11.1:

Transmission mode			AT commands
V23	Half-duplex	1200 Baud	AT&F0
V21	Full-duplex	300 Baud	AT&F1
V22	Full-duplex	1200 Baud	AT&F2
V22bis	Full-duplex	2400 Baud	AT&F3

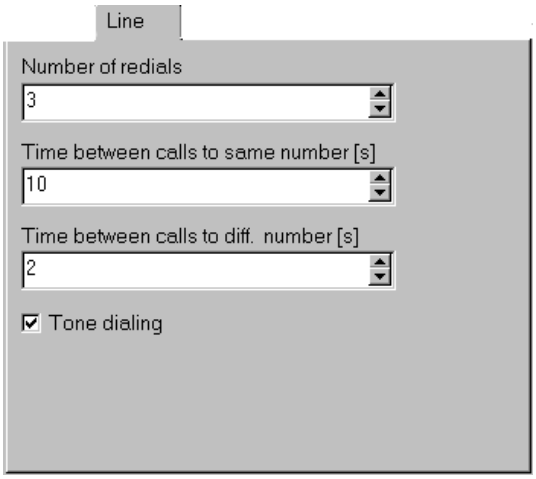
Baud rate of dial-up unit:

Specifies the communication speed between PC and modem. This should match the speed of the selected transmission mode.

Half-duplex:

Activate the half-duplex function when operating the modem in V.23 mode.

Line



Number of redials:

Defines the number of automatic repeat call attempts when remote acquisition was unsuccessful. In most countries it is not permitted to make more than 5 repeat calls attempts.

NOTE

The maximum number of repeat calls is specific to individual countries and is limited by the modem itself. The modem will shut down if the number of automatic repeat call attempts exceed this limit. This results in complete disruption of the automated acquisition process.

Time between calls to same number [s]:

Defines the time between repeat calls when remote acquisition was unsuccessful. This must be set to at least 10 seconds, as the modem will only release the line after a certain delay.

Time between calls to different number [s]:

Defines the delay between the acquisition of data from 2 metering points in automatic operation. This parameter is dependent on the employed telephone exchange, however it is typically set to 2 seconds.

Tone dialling:

All modern telephone exchanges support this faster dialling method. Pulse dialling (slower) will be used if the box is not checked.

Finishing off

Once all settings have been made, press **Save** to store them. The new line will then appear in the list of available communication lines.

Use **Close** to exit the window. All definitions that were not previously applied using **Save** will be lost.

Use **Delete** to delete the line currently selected.

4.4 Definition of RTU's

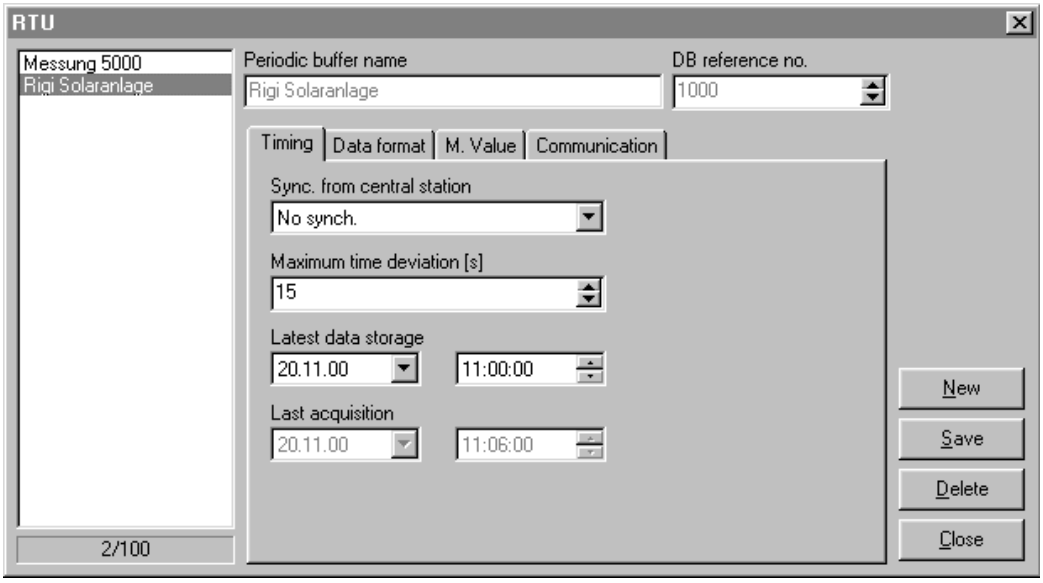
The RTU definition specifies how metering values are acquired and saved, as well as any synchronisation of the metering point by the central station.

Each RTU definition may contain one periodic buffer. If a metering point has several periodic buffers (METCOM MTT3, FAG), define an RTU for each periodic buffer.

Up to 500 RTU's may be defined, regardless of the purchased licence. The current and maximum number of RTU's are displayed in the window "RTU".

Procedure

Definitions ⇒ RTU



Create a new RTU using **New** or select an existing RTU.

Naming conventions

RTU name:

Specify a name for each RTU that clearly identifies it. Incorporate the buffer name when defining RTU's with several periodic buffers.

For example, the metering point for the solar installation at Hotel Rigi-Kulm has been given the name "Rigi Solaranlage".

Number:

Periodic buffers are identified in the database using 4-digit numbers. This number is specified here.

In contrast with earlier releases, version 3.1 permits the definition of buffer numbers that are independent of device numbers. The buffer numbers no longer have a bearing on the import of local read-outs.

Timing

Synchronisation from central station:

Select "Synchronisation" to synchronise the metering point clock to the central station during every acquisition. Synchronisation is only possible when the time drift is max. +/- 1 minute.

Alternatively, use the setting "Synch. resp. time set" to correct larger time drifts. This function will synchronise the metering point clock for drifts less than 1 minute and set the clock for larger drifts.

NOTES:

- Metering points with several periodic buffers should only be synchronised once, i.e. only activate this function in one of the RTU definitions.
- If the metering point clocks are synchronised to the line frequency, the time drifts are typically greater than 60 seconds. In this case, synchronisation by the central station is ineffective.
- If the metering point clock is set, data may be lost.
  Periodic buffers with pulse inputs will lose all their data if the time correction goes beyond the end of the integrating period.
  Periodic buffers with CS interfaces will lose the duplicate integrating periods that result when the clock is corrected backwards.

Maximum time deviation [s]:

Specifies the maximum permissible time difference between central station and metering point. Synchronisation is not performed if the deviation is less than the defined value.

NOTE: Define the maximum permissible difference as large as possible. Each synchronisation requires an average of 30 seconds because synchronisation is always to the full minute. An entry is also made in the status register of the affected metering values.
It is therefore not recommended to specify values less than 5 seconds. Typical values are 10 and 30 seconds for daily and monthly acquisition respectively.

Latest data storage:

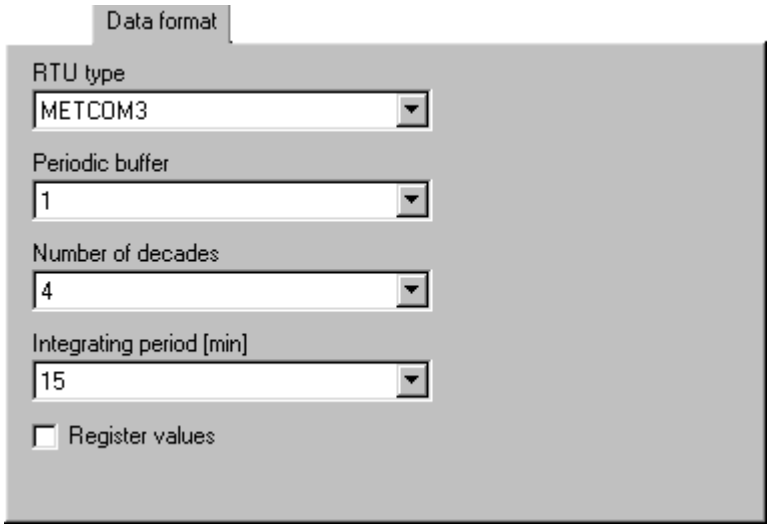
Indicates the last integrating period stored in the central station database. When creating a new definition, this value may be set to a point in the past dependent on the storage capacity of the RTU. The first acquisition may then be performed several days or weeks after commissioning.

Once the first acquisition has been completed, this value changes to the date/time of the last integrating period stored in the database.

Last acquisition:

Indicates the last time that communication with the RTU took place. For new definitions this is set to a default date of 1980.

Data format



RTU type:

Specifies the type of RTU from which data will be acquired.

The RTU type "VDEW" comprises all devices supporting the VDEW 2.0 communication protocol.

The RTU type "ZMC" comprises all devices supporting the DG-COM communication protocol.

Periodic buffer:

Defines the periodic buffer that should be read out. Check the RTU configuration for details.

For example, the following apply to the METCOM3:

Connection to METCOM3	Periodic buffer no.
Load profile on INP 1	1
Load profile on INP 2	2
:	:
Load profile on INP 8	8

Number of decades / register values:

Specifies how many decades of each metering value should be transferred. The number of decades transmitted is determined by the RTU configuration, which is dependent on the measurement accuracy and integrating period.

The following settings are typical for an integrating period of 15 minutes:

Integrating period	Register values	No. of decades	Accuracy of meter
5 .. 20 Min.	no	4	0.5 .. 2 %
		6	0.1 .. 0.5 %
	yes	8	0.1 .. 2 %
20 .. 60 Min.	no	4 or 6	0.5 .. 2 %
		6	0.1 .. 0.5 %
	yes	8	0.1 .. 2 %

Integrating period:

The integrating period of the RTU is defined in minutes.

NOTE

RTU's may also be deleted. Any previously acquired data associated with this RTU must also be deleted – refer to section 9.1.4 " Deleting archived files".

Metering value

M. Value

	Number	A	/B	*10^C
M. Value 1	1	1	1	-2
M. Value 2	2	1	1	-2
M. Value 3	3	1	1	-2
M. Value 4	4	1	1	-2
M. Value 5	0	1	1	0
M. Value 6	0	1	1	0
M. Value 7	0	1	1	0
M. Value 8	0	1	1	0
M. Value 9	0	1	1	0
M. Value 10	0	1	1	0

Number:

Every periodic buffer stores one or more metering values, each of which has an identification number and may be scaled individually.

All metering values in the periodic buffer must be identified by a number ≠ 0. If this number is missing, an error will occur when communicating with the RTU.

The number used has no effect on the storage of data, i.e. the first value is always stored with number xxxx_01, the second with xxxx_02 etc… .

A/B *10^C:

Pulse value matching is achieved by multiplying the metering value with **A**, dividing it by **B** and weighting it with exponent **C**.

The pulse value matching function in the RTU definition modifies the values when they are stored in the central station database. Subsequent changes to these factors could lead to misinterpretation of the metering data. It is recommended that the following calculations are used when wishing to scale pulse values as described below :

1. **Inserting the decimal point**
   The metering values are always stored in the periodic buffer without decimal points and are interpreted by the central station as kW values.
   Compare the billing and load profile data and adapt the metering value to match the value displayed on the meter.

Displayed demand on meter	Exponent C
0.000 kW	-3
00.00 kW	-2
000.0 kW	-1
0000 kW	0
0.000 MW	1
00.00 MW	2
000.0 MW	3
0000 MW	4

The Project definition also contains a pulse value matching function (see section “Presentation”). This should only take into account the reading factor that is used when manually reading the meter.

2. **Converting energy advance values to demand**
   The central station interprets all values as average demand. If the RTU stores its periodic buffer values as energy advance instead of demand, these values must be converted. Use multiplier **A** for this purpose. Divisor **B** should be set to 1:

	Integrating period in minutes				
	10	15	20	30	60
Conversion from energy advance to demand values	A = 6 B = 1	A = 4 B = 1	A = 3 B = 1	A = 2 B = 1	A = 1 B = 1

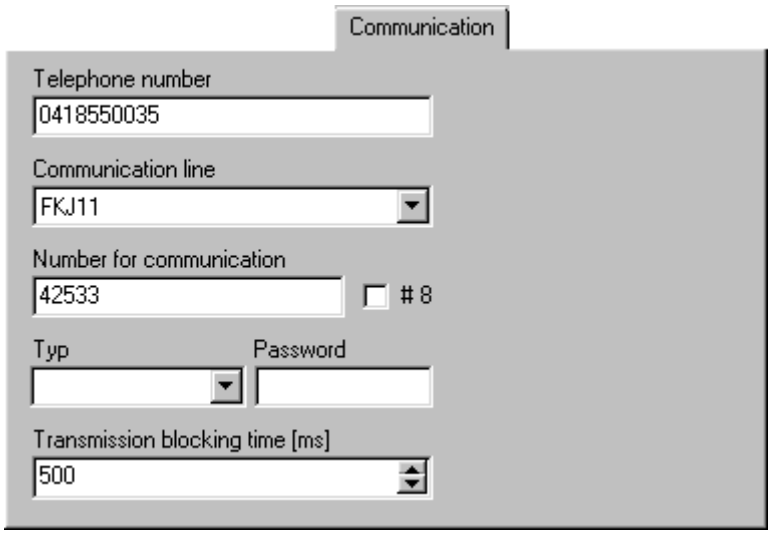
NOTE: It is recommended that reading factors and measurement transformer factors are NOT included in the RTU definition. Any changes in the measurement transformers cannot be corrected for past data.

Finishing off

Once all settings have been made, press **Save** to store them. The new RTU will then appear in the list.

Use **Close** to exit the window. All definitions that were not previously applied using **Save** will be lost.

Use **Delete** to delete the RTU currently selected.



Communication

Telephone number:

Specifies the telephone number of the RTU. Permitted are digits as well as the characters ',' (standard waiting character) and 'W' (wait for dialling tone).

Do not enter a number when using leased lines.

Communication line:

Specify the communication line which should be used with this RTU.

Number for communication:

Specifies the RTU address: 5 and 8 digit RTU numbers are supported.

Type, Password:

The METCOM3 RTU includes a password protection function which prevents unauthorised access to the metering point.

Set the password **Type** to **"none"** for all other RTU types and when not using the METCOM3 password protection function.

The following settings apply to the METCOM3:

Setting under “Type”	Corresponds to METCOM3 user
"P1"	"System manager"
"P2"	"User 1"
"P3"	" User 2"
"P4"	" User 3"
"P5"	" User 4"

Access to the METCOM3 is configured using these settings. Verify that the settings in the central station match those in the METCOM3.

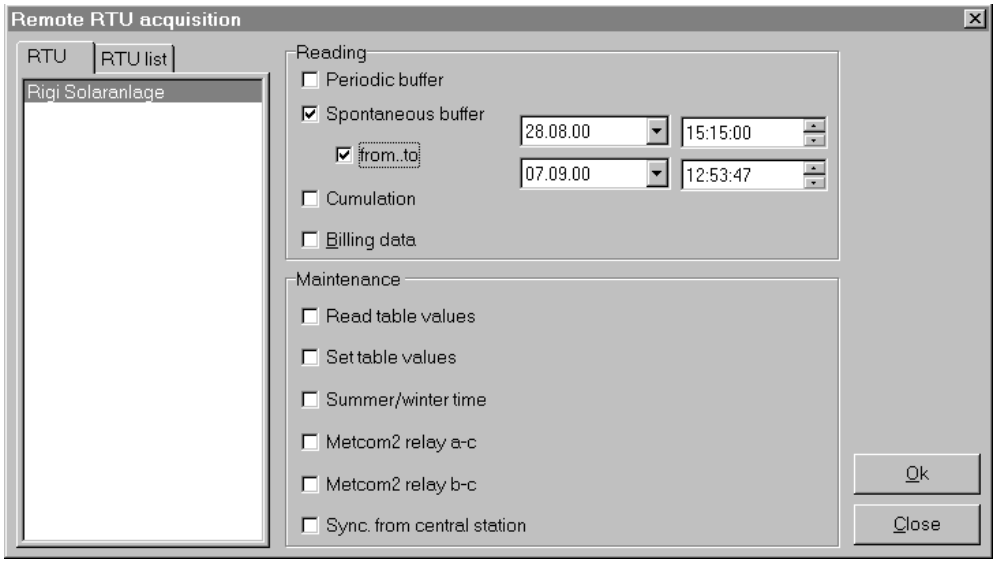
Transmission blocking time:

This blocking time prevents communication errors when using half-duplex communication. Its value is dependent on line quality and length. Typically, a value of 500ms is recommended.

4.5 Manual remote acquisition

Procedure

Acquisition ⇒ Remote reading



Communication

Select an RTU or RTU acquisition list. Then define which data should be acquired. Press **Ok** to start the acquisition for the selected RTU or acquisition list.

Settings

Periodic buffer / from .. to :

When selecting periodic buffers, the time range between the last integrating period stored in the database to the current time is automatically read out.

Checking the box **from .. to** permits the user to acquire periodic buffer data over any time range. This is particularly useful for testing and avoids long communication times.

Spontaneous buffer / from .. to:

When selecting spontaneous buffers, the time range between the last integrating period stored in the database to the current time is automatically read out.

Checking the box **from .. to** permits the user to acquire spontaneous buffer data over any time range. This is particularly useful for testing and avoids long communication times.

Billing data / remote cumulation:

If both functions are selected, the cumulation is performed before the acquisition of new billing data.

Read table values:

To query details of the RTU configuration, first create a **table** containing the relevant SCTM addresses. The addresses are given in the corresponding product manuals.

The result of the query may be displayed by selecting

Display ⇒ Read table - result

Set table values :

RTU settings may also be modified providing this is permitted by the RTU access rights. All addresses and modified settings are defined in a **table**. The addresses and settings are given in the corresponding product manuals.

The result may be displayed by selecting

Display ⇒ Set table result

Summer/winter time:

Activate this option to copy the current summer time settings from the central station to RTU.

This function is not supported by the following instruments:

FAG, FAF10, FAF20

Metcom2 relays a-c /b-c:

Controls the position of the METCOM2 relay contacts.

Synchronisation from central station:

The current central station time is compared with that of the RTU. Should the time discrepancy exceed the maximum permissible limit, the RTU is synchronised or the RTU clock is set by the central station. The activation of the synchronisation and time setting functions is individually defined for each RTU.

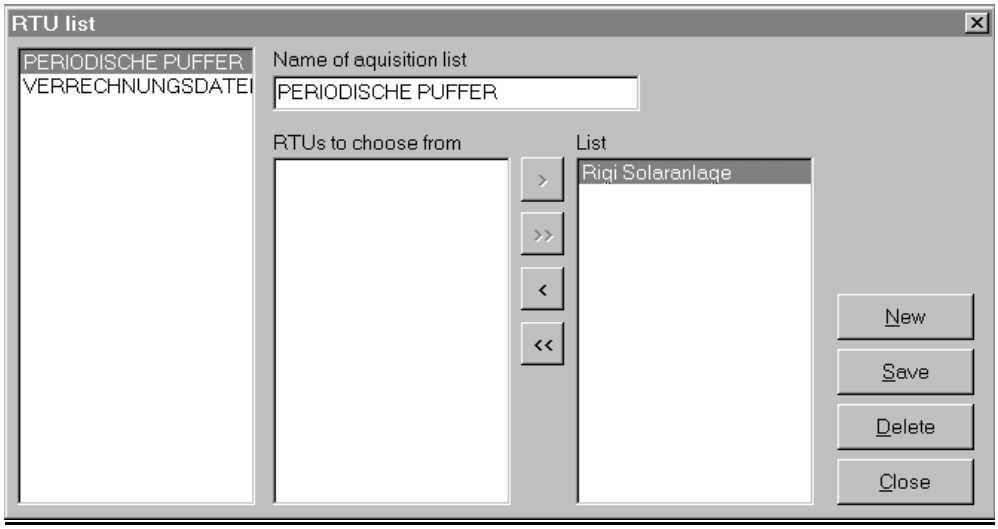
4.6 Automatic Acquisition

RTU's may be grouped into acquisition lists to automate the remote acquisition process. The scheduler ("Automatic Operation") is used to manage the periodic acquisition of data for individual RTU's or whole acquisition lists.

4.6.1 Acquisition lists

Procedure

Definitions ⇒ Automatic mode ⇒ New



Settings

Name of acquisition list:

Used to specify the name for a group of RTU's that should be acquired collectively, e.g. the grouping of all RTU's with periodic buffers makes sense as they are read out more frequently than RTU's with billing data.

RTUs to choose from:

List of RTU's not yet included in the acquisition list.

List:

List of RTU's included in the acquisition list.

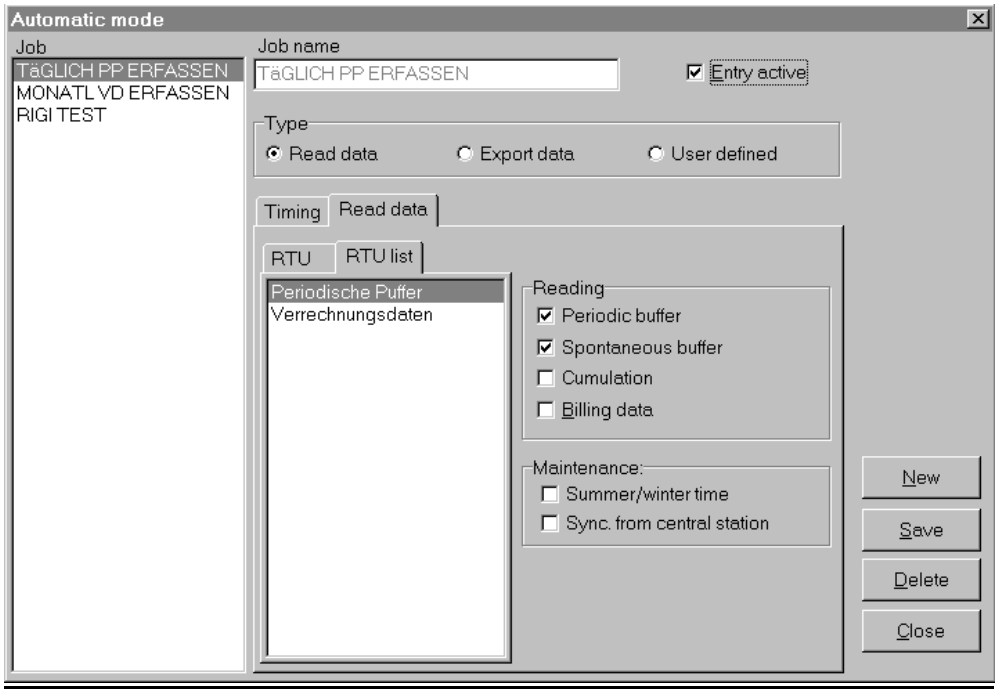
NOTE

Only group RTU's using a common communications protocol in each acquisition list. Create separate lists for VDEW2.0 or ZMC meters.

4.6.2 Definition of automatic operation

Procedure

Definitions ⇒ Automatic mode ⇒ New



Settings

Job:

List of previously defined actions.

Job name:

Used to specify the name for an action, which should run periodically, e.g. daily acquisition.

Type:

Select the option “Read data” for remote acquisition.

Read data:

Define whether the action applies to a single RTU or a complete acquisition list.

Reading:

Select the data to be acquired. When selecting both "Cumulation" and "Billing data", the cumulation is performed first followed by acquisition of the new billing data.

Maintenance:

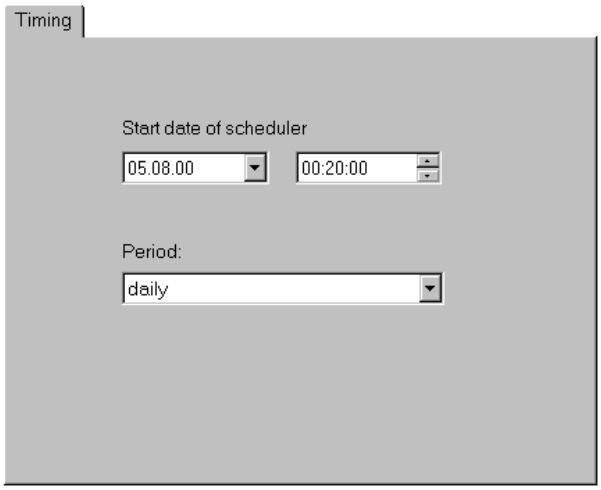
"Summer/Winter time" is used to program the summer time change-overs in the RTU’s based on the settings in the central station.

“Synchronisation from central station” authorises the central station to adjust the clocks in the RTU’s. The master clock is the central station.

NOTE

Ensure that the PC clock is sufficiently accurate. It may be necessary to synchronise the PC using a GPS or DCF77 receiver.

Inaccurate clocks may result in RTU data being lost.



Timing:

Select the date and time when the action should first be executed. Depending on the chosen period, the action may be executed at intervals ranging from 5 minutes to every year.

4.6.3 Starting automatic acquisition

Automatic operation is started by clicking the red telephone on the toolbar.

The status bar at the bottom of the window indicates the date/time when the next acquisition will take place.

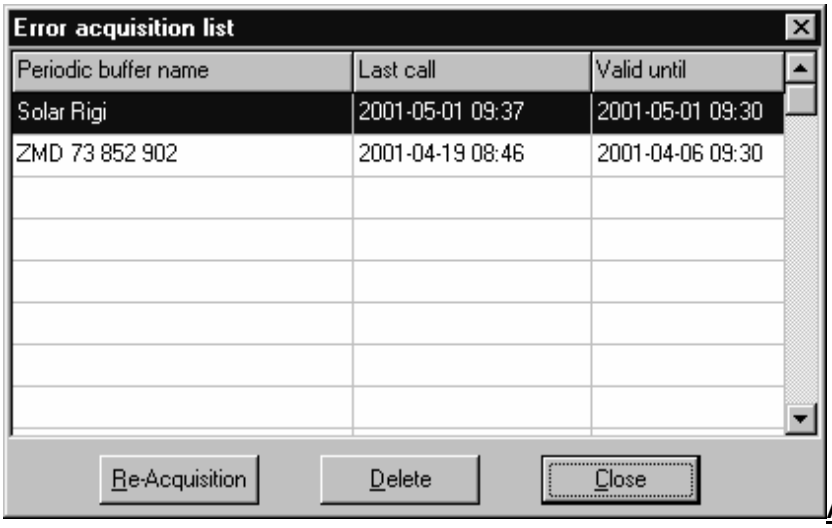
NOTE

If the start time is set in the past, acquisition will automatically commence once automatic operation has been enabled.

4.7 Service Functions

4.7.1 Error acquisition list

The error acquisition list represents an overview of all not successful acquired RTU's. The error acquisition list valid for manual- and automatic remote acquisition.



Acquisition

⇒ **Error acquisition list**

The following information are recorded:

Periodic buffer name:	RTU, which could not be acquired.
Last call:	Last attempt to call the RTU.
Valid until:	In the central station the data are valid until the shown date and time.

Re-acquisition:

All listed RTU's will be re-acquired. If the re-acquisition is successful then the corresponding list entry will be removed.

Delete:

If an RTU has not to be acquired because of any reasons, then the RTU can be deleted.

4.7.2 Monitoring functions

It is possible to display the communication traffic.

A prerequisite is that the recording has been enabled as described in section 2.4.5, "General System Parameters, Data Storage.

4.7.3 Recording the communication

The data exchanged with the modem is stored in a file. Each interface (COM port x) has its own file with the name SCTMx.LOG. If the file size exceeds 1 MByte, the file is renamed OldSCTMx.LOG and a new file SCTMx.LOG is created.

Similarly, the communication with VDEW devices is recorded in the files VDEWx.LOG.

These files may be displayed:

Display ⇒ Display comm. logfile…

The following data is recorded:

Messages

Starting RTU acquisition:

```
Message:
L&G Bau 17 PP3 started at: 24.02.00 11:19:11
```

Comments to the acquired data:

```
Message:
Periodic Buffer: Start: 23.02.00 15:30:00 End: 24.02.00
11:00:00
Periods: 79  Dec: 4  Points: 3  bytes collected: 1758
estimated: 1758

Message:
amount of bytes collected ok, data accepted
```

Terminating RTU acquisition:

```
Message:
L&G Bau 17 PP3 ended at: 24.02.00 11:19:46
```

Data transfer

The recorded data is divided into two types according to its direction:

"Transmit" implies the data sent from PC to modem.

"Receive" implies the data sent from modem to PC.

This means that the communication between RTU and PC as well as between PC and modem is recorded. Non-printable characters are represented as hexadecimal ASCII codes in square brackets. The following control characters are used:

Representation	Abbreviation	Description
[00]	NUL	Empty data
[01]	SOH	Start of header
[02]	STX	Start of text
[03]	ETX	End of text
[09]	HT	Tab
[0A]	LF	Line Feed
[0D]	CR	carriage return
[0E]	SO	??

The data traffic between modem and PC is normally based on AT commands. The significance of these commands is given in the appropriate modem product manuals.

The connection between modem and RTU is set up using the following commands:

```
Transmit:                          Initialisation of the modem
ATV1[0D]

Receive:                           Acknowledgement by the modem
O

Transmit:
ATDT0123456789[0D]                 Dial command for tel. no.
                                   0123456789

Receive:                           Acknowledgement of connection by
K[0D][0A]CONNECT[0D][0A]           modem
```

The acquisition of load profiles is as follows:

```
Transmit:                          RTU address
[01]1036890?000:[03]               Nr. 03689

Receive:                           Acknowledgement by RTU
[01]003689000004[03]


Transmit:                          Read command for load profile
[01]103689100271[02]E6030002231515000224111 9[03]|

Receive:                           Load profile data
[01]203689112433[02]000223153000022411000000017900008300000000
0000017200008200000000000000174000083000000000000017400008500000
0000000001720000850000000000000163000080000000000000016500008200
0000000000000165000086000000000000016100008200000000000001640000
8300000000[03][0A]
```

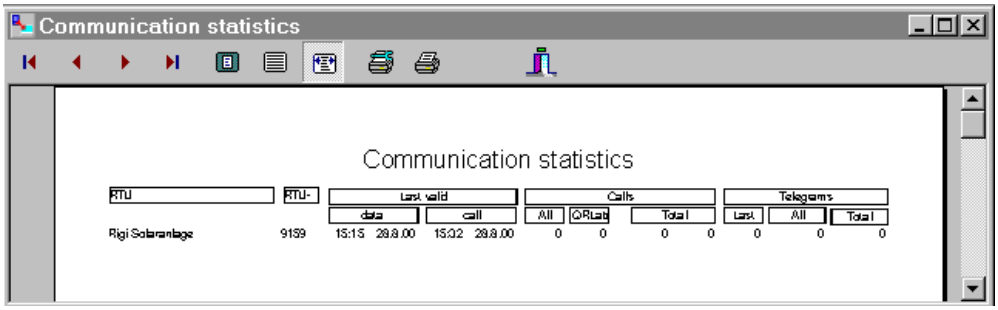
Interpretation

Specialised knowledge in the areas of “modem communication” and the “SCTM protocol” are needed to analyse this file. These files are an important aid to specialists when troubleshooting connection problems between RTU and central station.

4.7.4 Communication statistics

The communication statistics indicate which RTU's experience the most communication problems. To display these statistics, select:

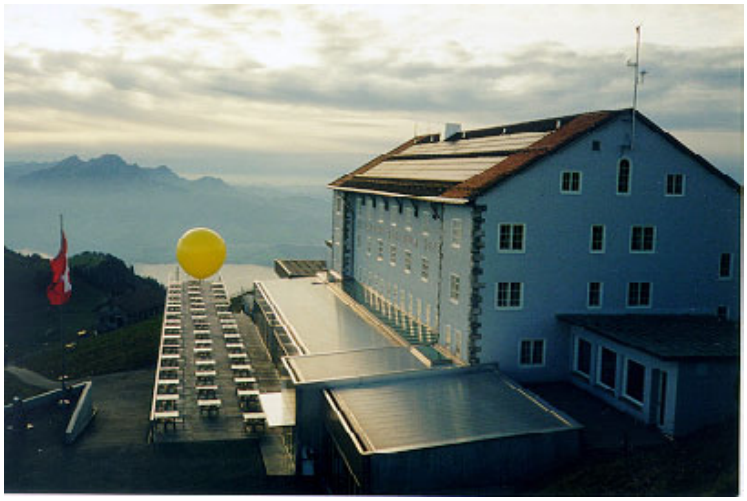
D*i*splay ⇒ S̲tatistics



The data indicates how many successful calls have been made per RTU.

4.8 Rigi Solar Station

All examples in this manual are based on the remote acquisition of data from the photo-voltaic installation at the Hotel Rigi Kulm in Switzerland, which is operated by the "Rigistrom" cooperative. This organisation is known for its public work in promoting the use of solar energy, and has kindly provided Landis+Gyr access to the measurement data.



The photovoltaic station at Hotel Rigi Kulm has been in operation since 1st April 1997. The generated electricity is fed into the public grid.

The installation has a surface area of 138 m^2 and a rated power of 13.6 kW (DC). It is located at 1780 m above sea level and has an annual production of approximately 13'500 kWh, which equates to the annual consumption of 4 households.

Settings

The energy is measured by a meter type ZMB310CT647. A METCOM MTT3A/E2A is used to read out the metering data. The following settings are required for remote acquisition:

Communication:

Telephone number	+41 (041) 855 00 35
SCTM number	42533
Transmission mode	V.22bis, 2400 Baud

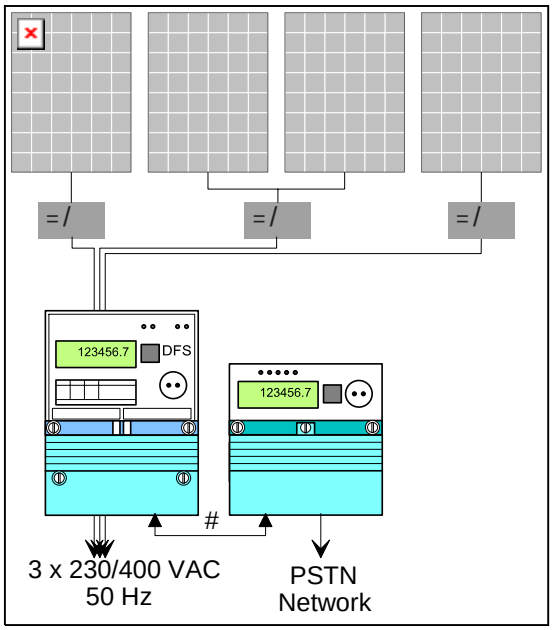
Metering data acquisition:

Integrating period	15 Min.
Register format	4 digits energy advance

Periodic buffer 1:

Metering value 1, Sum of all 3 phases,	XX,XX kW
Metering value 2, Phase 1,	XX,XX kW
Metering value 3, Phase 2,	XX,XX kW
Metering value 4, Phase 3,	XX,XX kW

Configuration:



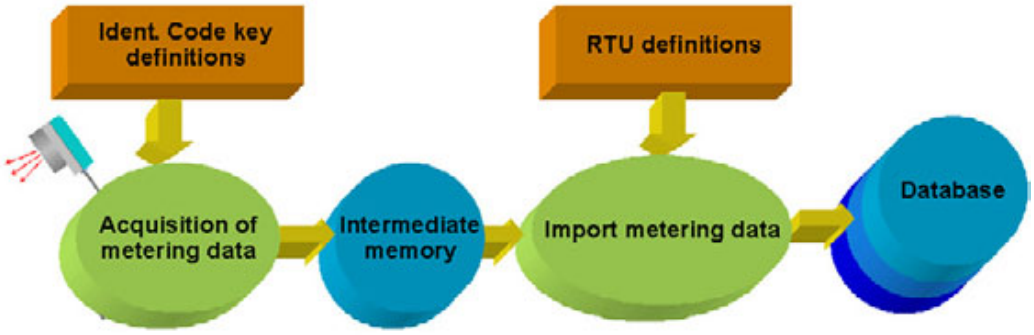
NOTE

Various central stations from several time zones access this metering point. In order to prevent the metering data from being modified during remote acquisition, it is not permitted to use functions such as remote cumulation, remote setting of parameters, time setting or synchronisation.

5 Optical read-out

5.1 Optical acquisition process

Data read out via the optical interface is identified using ID codes and stored in an intermediate buffer.



The read out data is then imported and assigned using the same RTU definitions as for remote acquisition.

Read-out

The active data traffic over the optical interface is displayed during acquisition. All meters having an optical interface may be read out, however the import of load profile data is only supported for the product lines ZMBxxxT647, EKM647 and METCOM MxT3 devices.

Formatted commands

Instead of reading out the last 40 days of load profile memory, it is also possible to acquire data for single days or a specific time range. This permits the subsequent acquisition of data from instruments like the EKM640 for up to a year in the past.

Mixed acquisition modes

Existing load profile data stored in the database will be supplemented and not overwritten by new read-outs. A combination of modem and optical acquisition is fully supported.

5.2 Definition of decoding sets

Decoding sets are used to define the significance of the ID codes found in billing data. The device number, which is contained in the billing data acquired from meters and tariff units, is used to assign a decoding set to the acquired data.

Define the decoding set as described in section 2.4.5, " General System Parameters ".

5.3 Definition of the communication interface

Specify the COM port as described in section 2.4.5, "General System Parameters".

5.4 RTU definitions

To import data acquired via the optical interface, first define its structure and pulse value matching factors.

All settings are described in section 4.4 „ Definition of RTU's“.

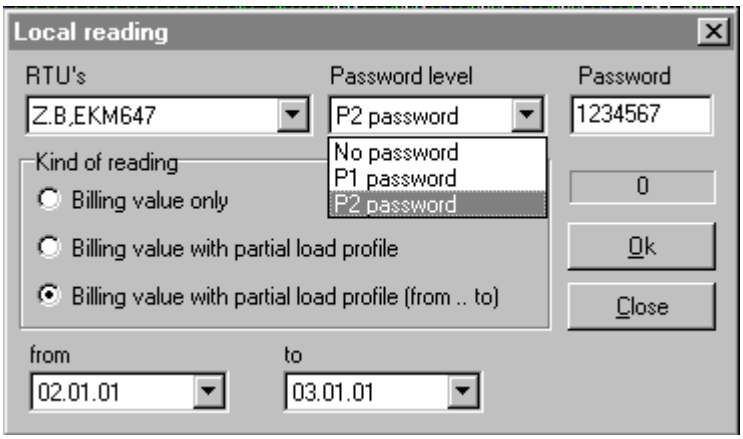
NOTE

The settings in the "Timing" and "Communication" tabs are of no importance if RTU data is only being acquired over an optical interface.

5.5 Data acquisition

Procedure

Acquisition ⇒ Local reading



Settings

Device type:

Specify the type of device to be read out. Optical read-out is supported for Landis+Gyr ZMB meters and Landis&Gyr METCOM MxT3 telemetering units.

The dialogue window will then display the available acquisition modes.

Password level and password:

If the meter requires a password to read out data, choose the password level and type in the password.

Type of read-out:

Several acquisition modes are supported. The various load profile settings differ in the volume of data that is read out.

NOTES

The load profile memory of the Z.B, EKM640 products is approximately 600 kByte. The read-out of „Billing data and load profiles“ will therefore take approximately 20 minutes at a speed of 4800 Bit/s.

Whenever possible, only acquire partial load profiles (typically the last 40 days) or from a defined time range (from... to...).

Should the read-out take longer than ca. 30 minutes, there is a problem with the meter or tariff unit:

- The connection between tariff unit and modem (CS interface) should be disconnected whilst acquiring data over the optical interface.
- The load profile data may be inconsistent. Such a situation could arise when large time jumps or configuration changes have taken place and the load profiles were not subsequently deleted. This can result in endless loops occurring.
  It may still be possible to acquire data over specific time ranges from such devices, however in the majority of cases it will be necessary to delete the load profiles.

Communication

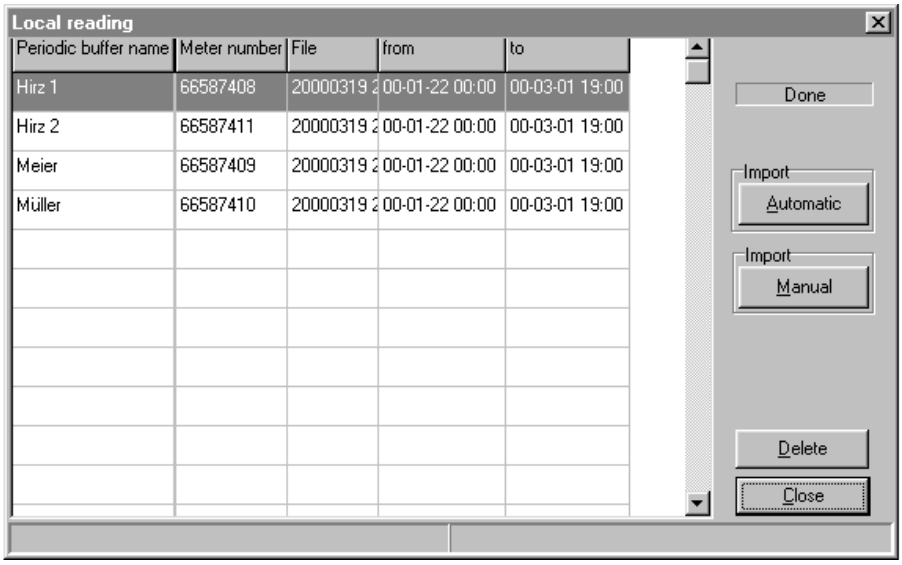
Press **Ok** to start the acquisition.

The acquired data is stored in TARIDAT. The filename is composed of the date and time.

5.6 Data import

Procedure

File ⇒ Import... ⇒ Local reading



All recognised read-outs are displayed in the window.

During the import process, all metering data is transferred from the local read-outs and assigned to the corresponding RTU in the database. The metering values are scaled according to the pulse value matching definitions and stored as raw values in the database. If metering data is already available from earlier read-outs, only the data for the missing integrating periods is saved.

If the read-outs include billing data, this data is stored in a separate file in directory ROUTEN.

Successfully imported files are deleted from the directory TARIDAT and hence no longer appear in the list.

NOTES

The file identification data (device no., filename, load profile time range) can only be displayed if a suitable identification code key is defined first (see section 2.4.5 „General system parameters“).

- **No files displayed:**
  The system cannot find an identification code key matching the device ID in the read-outs.
- **Incomplete file data in list:**
  The identification code key does not include the ID code for the device number or load profile.
- **No periodic buffer names listed:**
  The assignment between device numbers and RTU’s, as described in section 5.6.1, has not been performed.

Functions

Import, Automatic

Used to import all files whose RTU, device number and load profile time range are known.

Import, Manual:

Used to assign acquired data to RTU’s, and manually import the data.

Delete:

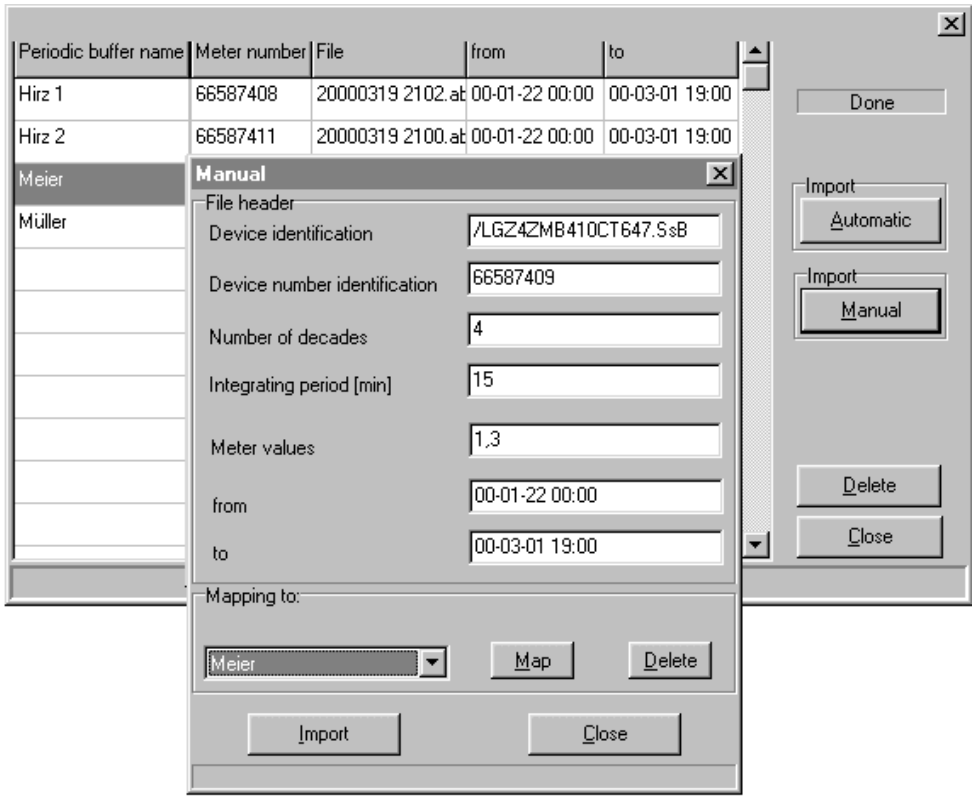
Used to delete files without importing them. This command removes the selected files from directory TARIDAT.

5.6.1 Assigning devices to RTU's

Load profile data may only be imported if it is first assigned to an RTU.

Procedure

File ⇒ Import... ⇒ Local reading⇒ Import Manual



Functions:

File Header:

Device number ID:	Device number appearing in the billing data string
Number of decades:	No. of decades - load profile data
Integrating period [min.]:	Integrating period of load profile data
Metering values:	Register numbers recorded in load profile data: no's 1 and 3 correspond to P-registers 1 and 3 in a ZMB meter.
from .... to:	Time interval of the read out load profile

Mapping to:

Select the RTU to be assigned to the device.

Map:

Activates the mapping between device number and RTU. The link is then displayed in the "Periodic buffer name" column for the selected device.

Import :

The data of the selected read-out is transferred to the EDC database.

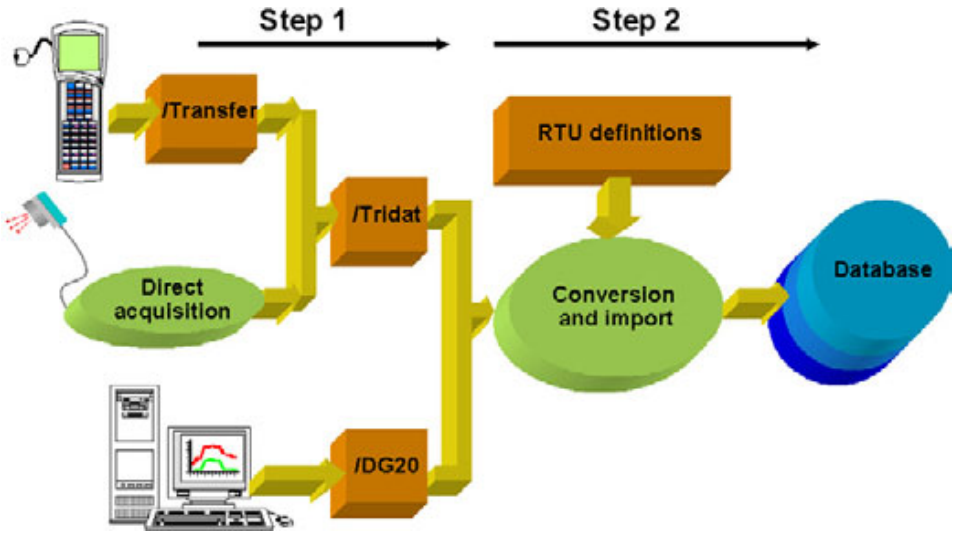
6 Data import

6.1 Data import procedure

Data is imported in two steps:

1. **Identification and separation**
   EDC recognises the format and content of a file by its directory location and ID code key set.
   Large route files from hand-held terminals are separated into several smaller files, one for each read-out. This makes the conversion and import into the database more manageable.
   This first step is automatically performed when selecting the import function.

2. **Conversion and import**
   In order to successfully import data, each file must have a corresponding RTU in the EDC database.
   The various files are then converted into the EDC database format. The subsequent import fills the gaps in the existing database records.



Automatic Import

Files in LG-format are automatically assigned to the correct RTU. These files contain the RTU name and RTU database reference in addition to the actual load profile data.

Files obtained from hand-held terminals do not include any details about RTU names etc…, hence it is necessary to assign each device number to an RTU during the first import. Subsequent data imports for this device number are automatically assigned to the correct RTU.

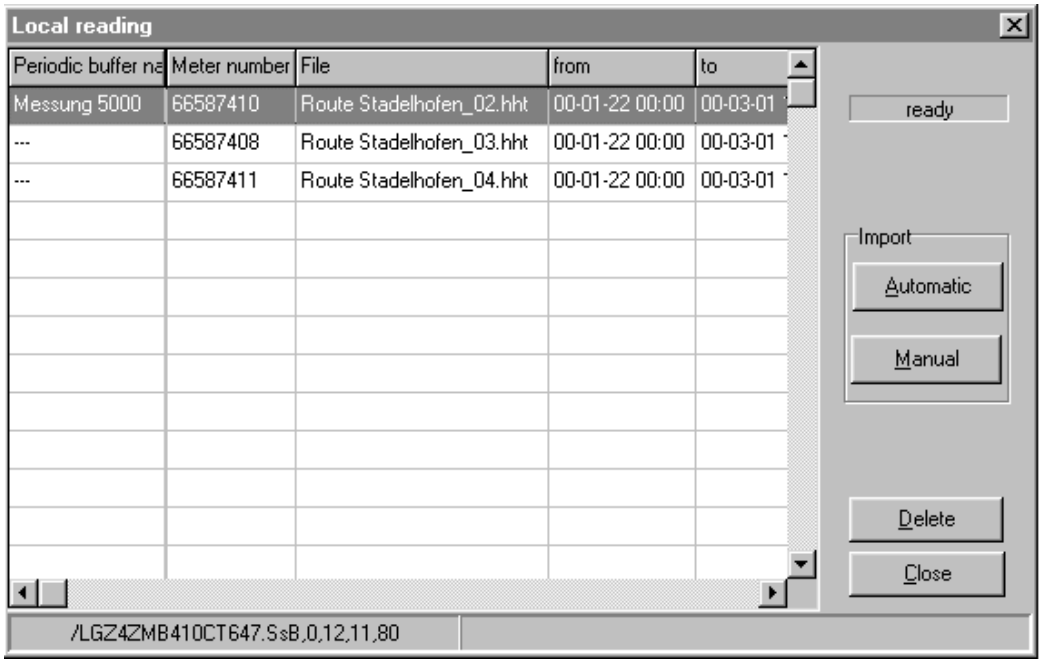
6.2 Data import from hand-held terminals

Procedure

Copy the completed read-out routes to directory ...EDC/TRANSFER.

File ⇒ Import… ⇒ Local reading

When selecting this function, all the read-outs from directory ...EDC/TRANSFER are separated into individual files and stored in directory...EDC/TARIDAT. These files are displayed in the window:



During the import process, all metering data is transferred from the local read-outs and assigned to the corresponding RTU in the database. The metering values are scaled according to the pulse value matching definitions and stored as raw values in the database. If metering data is already available from earlier read-outs, only the data for the missing integrating periods is saved.

If the read-outs include billing data, this data is stored in a separate file in directory EDC/ROUTEN/.. .

Successfully imported files are deleted from the directory TARIDAT and hence no longer appear in the list.

NOTES

The file identification data (device no., filename, load profile time range) can only be displayed if a suitable identification code key is defined first (see section 2.4.5 „General system parameters“).

- **No files displayed:**
  The system cannot find an identification code key matching the device ID in the read-outs.
- **Incomplete file data in list:**
  The identification code key does not include the ID code for the device number or load profile.
- **No periodic buffer names listed:**
  The assignment between device numbers and RTU’s, as described in section 6.2.1, has not been performed.

Functions

Import, Automatic

Used to import all files whose RTU, device number and load profile time range are known.

Import, Manual:

Used to assign acquired data to RTU's, and manually import the data.

Delete:

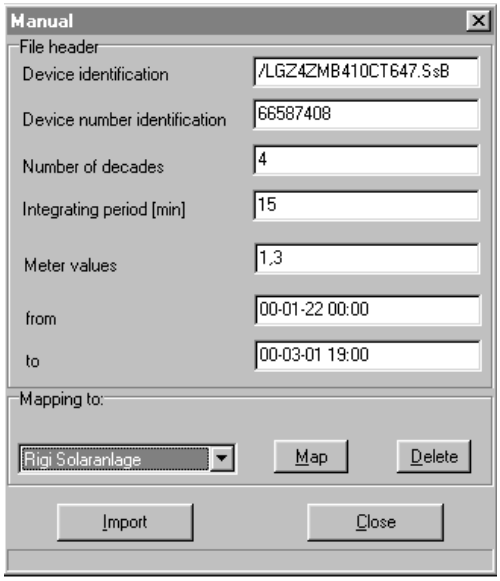
Used to delete files without importing them. This command removes the selected files from directory TARIDAT.

6.2.1 Assignment of devices to RTU's

Load profiles may only be imported if they are first assigned to a previously defined RTU.

Procedure

File ⇒ Import… ⇒ Local Reading ⇒ Import Manual



Functions:

File Header:

Device number ID:	Device number appearing in the billing data string
Number of decades:	No. of decades - load profile data
Integrating period [min.]:	Integrating period of load profile data
Metering values:	Register numbers recorded in load profile data: no's 1 and 3 correspond to P-registers 1 and 3 in a ZMB meter.
from .... to:	Time interval of the read out load profile

Mapping to:

Select the RTU to be assigned to the device.

Map:

Activates the mapping between device number and RTU. The link is then displayed in the "Periodic buffer name" column for the selected device.

Import :

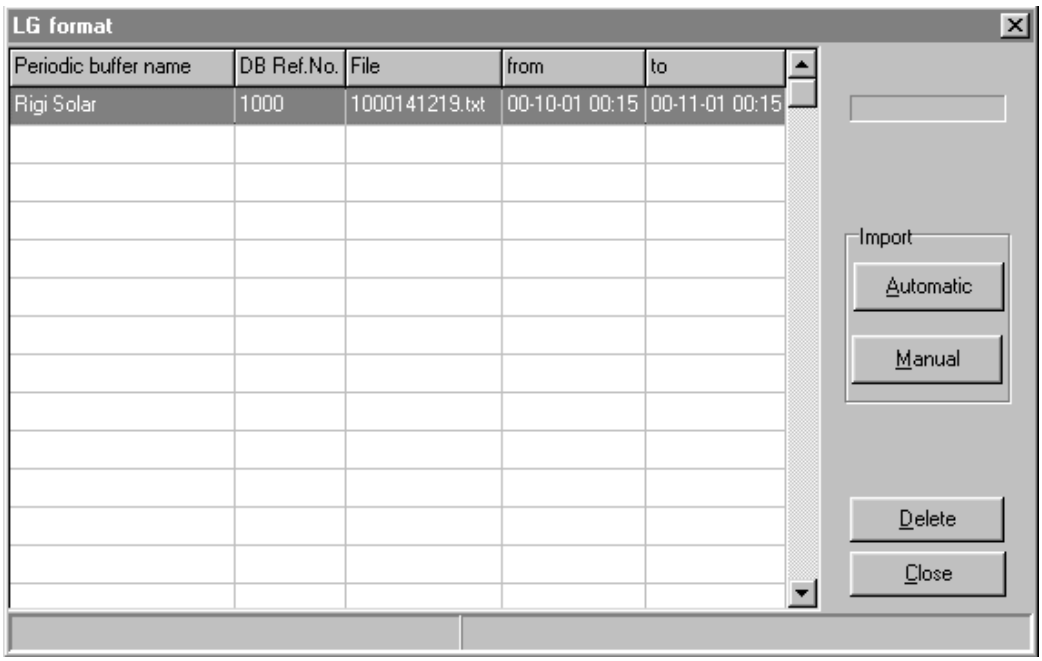
The data of the selected read-out is transferred to the EDC database

6.3 Files from Landis & Gyr central stations

Procedure

Copy the files to directory ...EDC/DG20.

File ⇒ Import… ⇒ LG Format



This window displays all files in directory /EDC/DG20/. If metering data is already available, only the data for the missing integrating periods is saved.

NOTES

The periodic buffer name and th DB ref. No. can only be displayed if a suitable RTU is defined first.

- **No periodic buffer names listed:**
  The assignment between files and RTU's, as described in section 6.3.1, has not been performed.

Functions

Import, Automatic

Used to import all files whose periodic buffer name and DB ref. no. are known.

Import, Manual:

Used to assign files to RTU's, and manually import the data.

Delete:

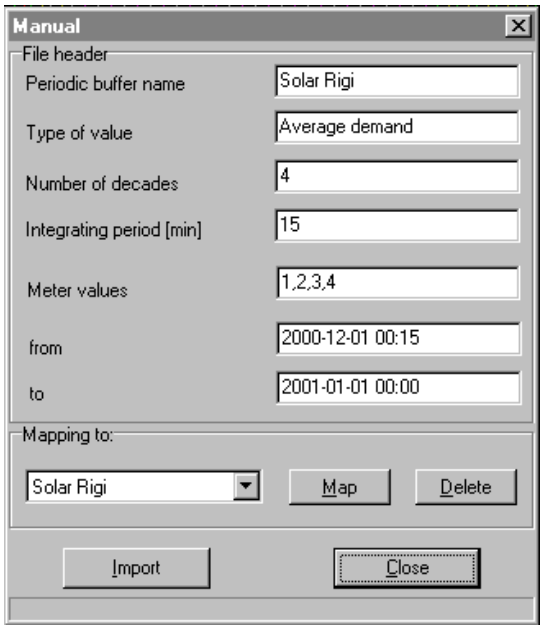
Used to delete files without importing them. This command removes the selected files from directory EDC/DG20/.

6.3.1 Assignment of files to RTU's

LG files may only be imported if they are first assigned to a previously defined RTU.

Procedure

File ⇒ Import… ⇒ LG - Format ⇒ Import Manual



File Header:

Periodic buffer name:	Name of periodic buffer (proposal from LG file)
Type of value:	Format of metering values
Number of decades:	No. of decades - load profile data
Integrating period [min.]:	Integrating period of load profile data
Metering values:	Register numbers of load profile data.
from .... to:	Time interval of the read out load profile

Mapping to:

Select the RTU to be assigned to the file.

Map:

Activates the mapping between file and RTU. The link is then displayed in the "Periodic buffer name" column for the selected device.

Functions:

Import :

The data of the selected read-out is transferred to the EDC database

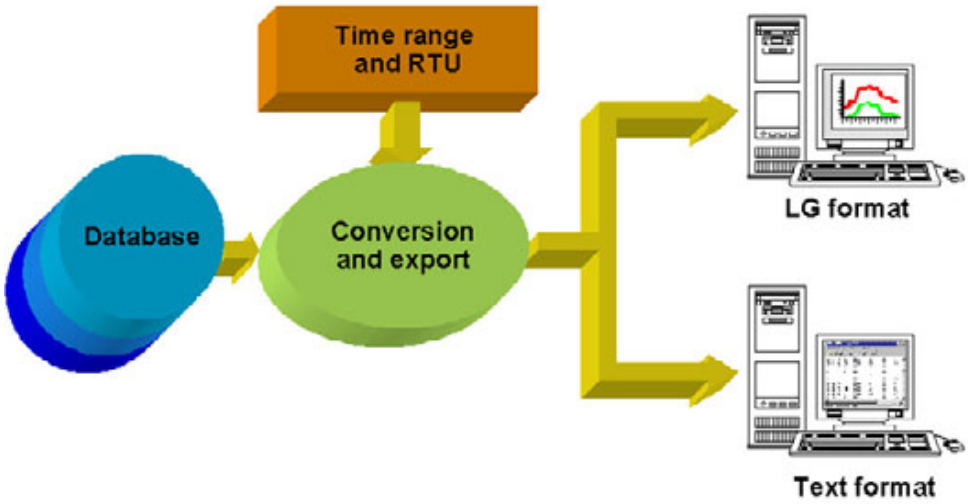
7 Data export

Several program modules support data export functions. All export functions for the presentation module are described in section 8 "Data analysis".

The export of raw values and billing data is covered by this chapter.

7.1 Exporting load profile data

Analysis or periodic buffer data may be exported from the DGC300 database at any time, either as text files or in LG format.



LG format	LG format is used to exchange periodic buffer data between Landis+Gyr central stations. These files contain RTU definitions in addition to the actual load profile data.
Text format	Text format export files may be imported into standard spreadsheet programs. These files are structured as tables and do not contain any supplementary information about RTU's.
Manual export	It is possible to manually export files for single RTU's or RTU groups (acquisition lists).
Automatic export	The export function may also be used in automatic mode.

NOTE

The exported load profiles are derived from the raw values in the DGC300 database. These raw values represent either energy advance or average demand.

The export of register values is not supported.

7.1.1 Text format

When exporting periodic buffer data in text format, files are created in directory ..\DGC300\ASCII\. The filenames are dependent on how the files are created:

Filenames in automatic mode:

The filename YYYYZZDDPPPP.txt is determined by the date of the first integrating period, the time span, and the number of the periodic buffer.

YYYY : Year

ZZ : 01 .. 12 corresponds to the months January .. December
13 .. 16 corresponds to the 1st .. 4th quarter
17 .. 18 corresponds to the 1st .. 2nd half-year

DD : Applies to time spans: days, months, quarters, half-years and years,
01 ..31 indicates the day of the first integrating period

PPPP : Number of the periodic buffer

NOTE

When exporting using a time span of "1 week", it is not guaranteed that a unique filename will be created. The export for 1 day (e.g. 1. August) and 1 month (e.g. August) creates the same filename in both cases.

- The export of "Month" and "Day" in the same target directory will result in the loss of data.
- The export of "Weekly" data will overwrite any older files in the same directory.
- To prevent such mishaps, define a target directory for each time span. Exported data should be transferred to their target systems before new files are created in automatic mode.

Filenames for manual export

The filename YYYYMMPPPP.txt is determined by the date of the first integrating period, and the number of the periodic buffer.

YYYY : Year
MM : Month
PPPP : Number of the periodic buffer

Each month has a separate file.

Data content

The following extract from a text file shows four metering values from a periodic buffer:

```
 :  :          :      :          :      :          :      :          :  :
00.11.01 09:15  0.05  00000000  0.04  00000000  0.01  00000000  0  00000000
00.11.01 09:30  0.05  00000000  0.04  00000000  0.02  00000000  0  00000000
00.11.01 09:45  0.06  00000000  0.03  00000000  0.02  00000000  0  00000000
00.11.01 10:00  0.05  00000000  0.05  00000000  0.01  00000000  0  00000000
 :  :          :      :          :      :          :      :          :  :
```

Each line contains the date/time of the integrating period closure, followed by the metering values in the periodic buffer. The default separator between values is the tabulator character, however alternative characters may be defined under

Definitions ⇒ System ⇒ Data storage ⇒ "Separator"

The metering values are represented identically to the raw values in the database:

- No units
- Decimal places are only present if the acquired values were modified using the pulse value matching function.
- The date/time stamp format is YY.MM.DD hh:mm. The separator between the date and time is a space " 32 (space)". This cannot be modified.
- Metering values 1 to n from a periodic buffer are displayed from left to right.

Status information

- In addition to the metering values, 8 status information digits are displayed. Each digit represents a status bit, having the following significance

  1000'0000 → Value changed in RTU
  0100'0000 → Partial power outage
  0010'0000 → Value or start/end of int. period missing
  0001'0000 → Value suspect or invalid
  0000'1000 → Summertime
  0000'0100 → Reserve
  0000'0010 → Value affected by time change
  0000'0001 → Value was manually changed in the central station

  Combinations of these bit patterns may occur, e.g. 0010'1000 implies -> this value was affected by a power outage at the start or end of the integrating period.

  The following extract from a text file shows for one meter value the winter – summer time change over.

```
     :        :        :          :
01.03.25 01:45      24       00000000
01.03.25 02:00      74       00000010 Value affected by time change
01.03.25 02:15      0        00100000 value or start/end of int. period missing
01.03.25 02:30      0        00100000 value or start/end of int. period missing
01.03.25 02:45      0        00100000 value or start/end of int. period missing
01.03.25 03:00      0        00100000 value or start/end of int. period missing
01.03.25 03:15      44       00001000 Summertime
01.03.25 03:30      54       00001000 Summertime
01.03.25 03:45      65       00001000 Summertime
  :        :        :          :
```

The following extract from a text file shows for one meter value the summer – winter time change over.

:	:	:	:
01.10.28 01:45	24	0000**1**000	Summertime
01.10.28 02:00	74	0000**1**000	Summertime
01.10.28 02:15	0	0000**1**000	Summertime
01.10.28 02:30	0	0000**1**000	Summertime
01.10.28 02:45	0	0000**1**0**1**0	Value affected by time change
01.10.28 03:00	0	00000000	
01.10.28 02:15	44	00000000	
01.10.28 02:30	54	00000000	
01.10.28 02:45	65	00000000	
01.10.28 03:00	60	00000000	
:	:	:	:

NOTE

Dependent on the protocol and the device type not all status information are supported. The shown example is valid for the device Metcom3, acquired via SCTM protocol.

7.1.2 LG format

The export of periodic buffer data in LG format creates files in directory ..\DGC300\DG20\.

Filenames

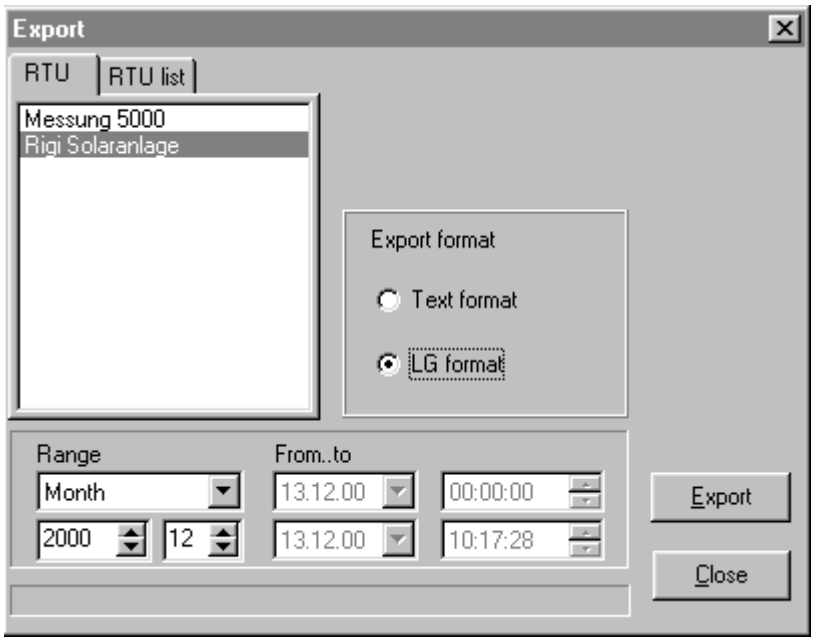
The filename PPPPhhmmss.txt is composed of the periodic buffer number and the current time.

PPPP : Number of the periodic buffer
hhmmss : Time when the data file was stored

7.1.3 Manual export

Procedure

File ⇒ Export



Press **Export** to start the process, which is complete when the message "done" is displayed.

RTU

Select one RTU to export specific metering values.

Export format:

Select the required format.

Time range:

Specify the required time range. If metering values are not available for the specified time range, their value is set to zero when exported.

RTU list

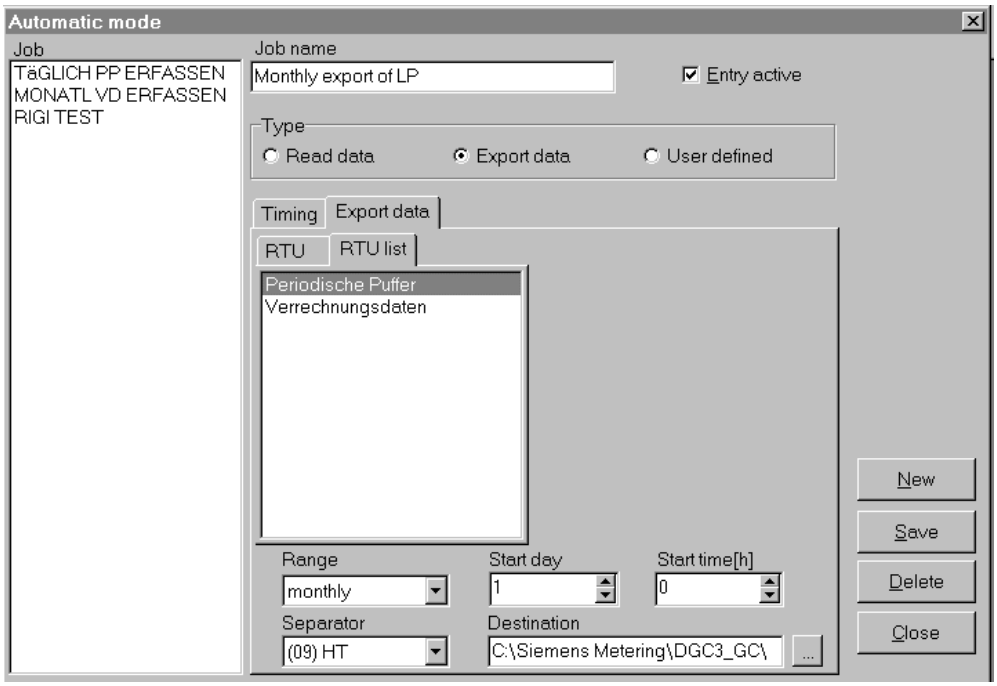
Data from RTU's, which have been grouped into acquisition lists, may be exported in one step. The settings are identical to those when exporting data for individual RTU's.

7.1.4 Automatic export

In automatic mode, RTU's are grouped into acquisition lists and periodically read out. Use the automatic export feature if the read-out data is required in text format.

Procedure

Definitions ⇒ Automatic mode ⇒ New



Settings

Job:

List of previously defined tasks.

Job name:

Specify a name for the periodic task, e.g. daily acquisition or monthly export.

Type:

Select the "Export data" option when wishing to export.

Entry active:

Deactivate this box to disable automatic mode for this particular task.

Export data:

Specifies whether the export applies to a single RTU or a whole acquisition list.

Range:

Defines the time range to be exported. Exported files may contain between one metering value and metering values for a whole year.

Start day:

Defines the start day for the export. When exporting one week, 1 = Monday, 2 = Tuesday etc…. When exporting data from a single day or a whole month, the start day refers to the date of the first exported day.

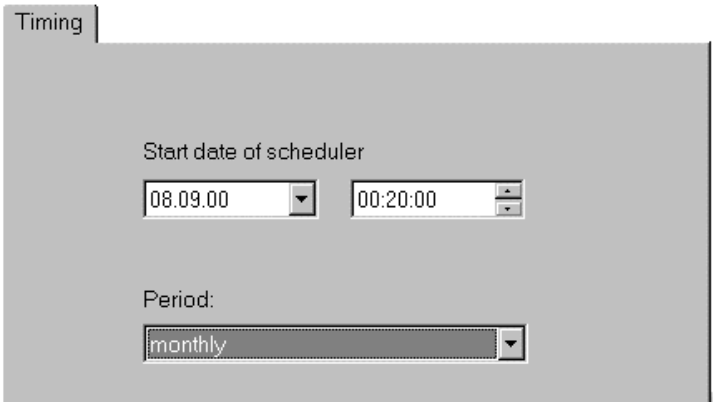
Separator:

Tabulator "(09) HT" is the standard separator between metering values. Another character may be selected.

Destination:

The default path for storing text files is DGC300\ASCII. Use a different directory for each time range (month, day …).

Timing:



Start date and Period:

Select the date and time when the action should first be executed. Depending on the chosen period, the action may be executed at intervals ranging from 5 minutes to every year.

Starting automatic mode

Press the red telephone button on the toolbar to start automatic mode.

The status bar at the bottom of the window indicates the date and time when the next export will start. The definitions of filenames, directories and data format are described above.

NOTE

If the start time is set in the past, the export will automatically commence once automatic operation has been enabled.

7.2 Exporting billing data

Billing data is treated specially by the DGC300. Such data is generated in tariff units and separated from load profile values during acquisition (remote, local or via import of reading routes). The billing data is then stored in DGC300\Routen\datei.abg.

Billing data can also be derived from load profile values using the DGC300 analysis module. The results of reports (refer to section 8.4 ff) may be stored in DGC300\Routen\datei.abg, similarly to the billing data from tariff devices.

Export

There is no actual export function. The target system must retrieve the files from directory DGC300\Routen\...

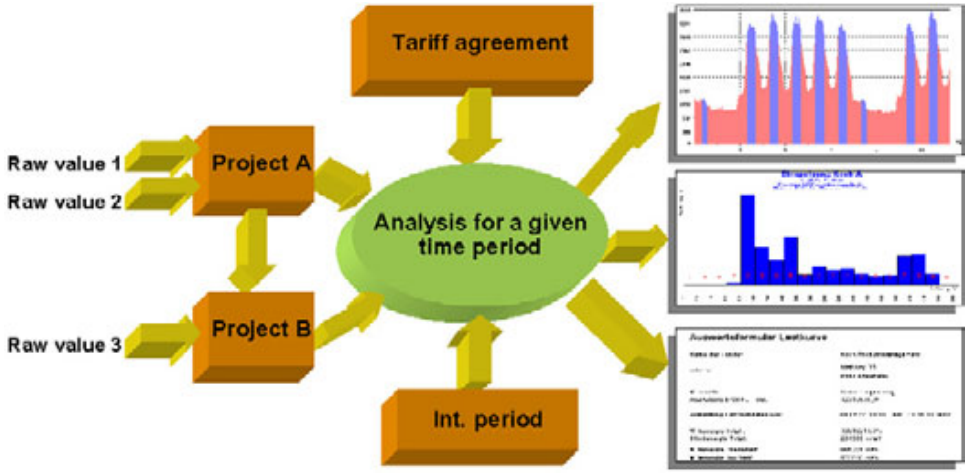
Data is identified by means of the file content and not the filename. The device number and read-out date contained in the billing data are used to uniquely identify all files.

Data maintenance

The DGC300 does not automatically delete the files in directory DGC300\Routen\.. It is therefore imperative that the target system or system administrator periodically archives or deletes these files (refer to section 9.1.5 Billing data maintenance).

8 Data analysis

Data analysis is performed in a separate window and is independent of data acquisition. It is based on the use of „projects“, that are linked with tariff agreements and integrating periods for the time period under analysis.



The analysis results are stored in graphic or text format and displayed on-screen. Results may also be printed out or exported.

Features

- **Graphic analysis**
  Load curves, load duration curves, histograms, application of tariffs.
- **Numerical analysis**
  Energy tariffs, maxima, contribution to maximum function, presentation of billing data.
- **Reports**
  Freely-definable reports incl. use of embedded graphics.
- **Operation**
  User-friendly, several simultaneous display modes, variable time spans for analysis.
- **Interfaces**
  Data export in text format, as Word Meta File or in LG-ASCII format.

Procedure

Display ⇒ Presentation

Open the "Presentation" window as described above.

1. Define the general system parameters.
2. Define a project.
3. Perform numerical or graphic analysis.
4. Export or print-out the analysis.
5. Return to the main window using **File ⇒ Exit**.

8.1 System definitions

Several global parameters must be set before using the presentation module for the first time.

Procedure

Definitions ⇒ System ⇒ Status display...

Definitions ⇒ System ⇒ Integrating period...

Definitions ⇒ System ⇒ Identification code key...

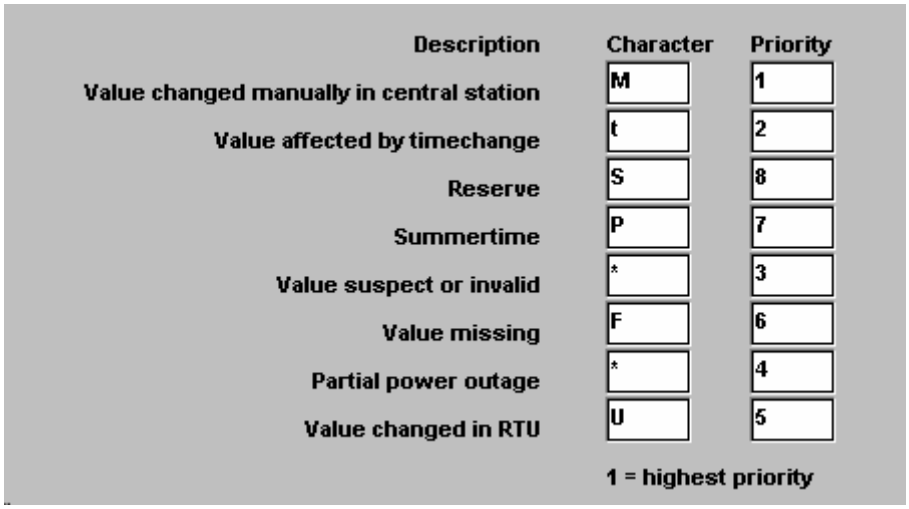
8.1.1 Status display

The validity of each metering value is indicated by its metering value status, which comprises 6 different status indicators. This status information is stored together with the raw values.

The status is displayed during numerical analysis of the metering data as well as when entering substitute values (menu item "Input substitute values"). The status message with the highest priority is displayed should several status messages occur simultaneously.

The display and priority of the metering value status may be defined.

Input dialogue



Procedure

1. Specify a character for each status message. Status messages are displayed using this character.
2. Specify a priority for each status message.

NOTE

The character and priority settings shown above are identical to the standard settings used in the DGC2000.

8.1.2 Integrating period

The integrating period used in data analysis may differ to that in the RTUs.

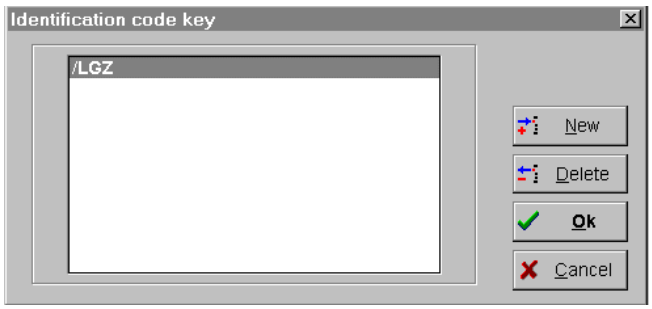
- **Int. period for data analysis = Int. period of acquired metering values**
  No conversion takes place.
- **Int. period for data analysis < Int. period of acquired metering values**
  The metering values are evenly divided:
  The two metering values 1264 kW and 1351 kW with an integrating period of 30 minutes are converted to the values 1264 kW, 1264 kW 1351 kW and 1351 kW with an integrating period of 15 minutes.
- **Int. period for data analysis > Int. period of acquired metering values**
  The metering values are added:
  The two metering values 1264 kW and 1351 kW with an integrating period of 15 minutes are converted to a value of 1307.5 kW with an integrating period of 30 minutes.

8.1.3 Identification code key

Identification code keys must be defined in order to analyse the metering data. Apart from defining the date, time etc… as described in section 2.4.5, "General system parameters", also specify the ID codes corresponding to the other meter registers and data.

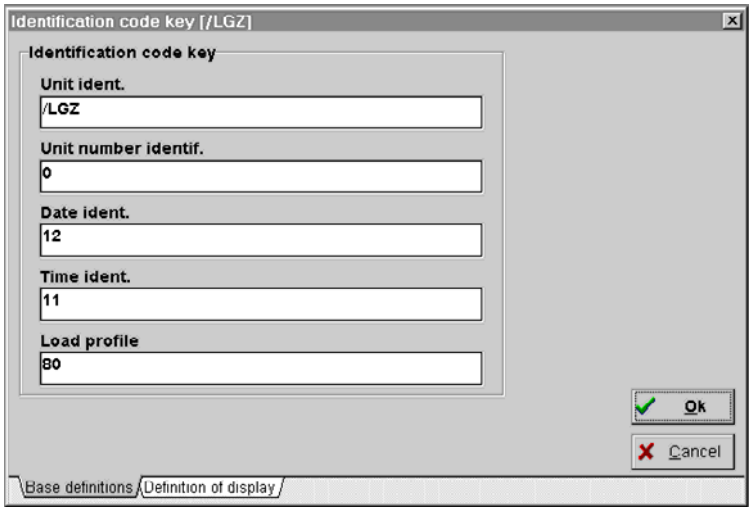
Procedure

Select an existing key and press **open,** or define a new key by pressing **new**.

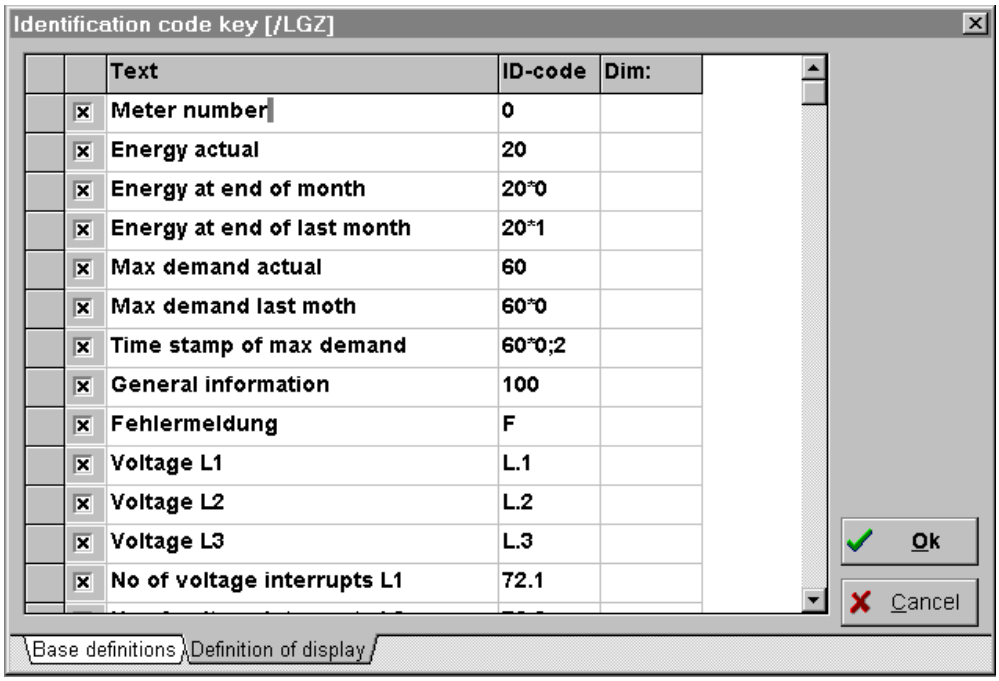


Base definitions

These definitions are identical to those made in section 2.4.5, "General system parameters".



Display definitions



Specify the ID code and text for each register that will be used for analysis:

Syntax

The ID codes must be specified exactly as they are stored in the billing data. The acquired ID codes and registers may be checked by looking at the files in directory EDC\ROUTEN***.ABG.

Exceptions are the previous (stored) values and maxima time stamps:

- **Previous values:**
  The position in the read-out order is specified and not the index number for the stored value:
  8.1*0 corresponds to the stored value for Register 8.1 at the end of last month
  8.1*1 corresponds to the stored value for Register 8.1 at the end of the month before last
  8.1*2 etc
- **Maxima time stamps:**
  Maxima time stamps are acquired without the use of individual ID codes. These time stamps are filtered out in a special way:
  6.1;2 implies the time stamp for register 6.1
  6.1*0;2 implies the time stamp for the latest stored value for register 6.1

Text and empty lines may be created by entering values in the “ID-code” field that do not correspond to any real data.

NOTE

There are numerous different ID-code numbering systems, depending on the applied standard as well as the application. ID-code definitions should be checked by the staff responsible for meter configuration.

- The ID-codes and their significance are usually documented in the service software and meter configuration sheets.
- The metering point "Rigi Solar" uses non-standard ID-codes. Most of the register data will not be displayed if the ID-code definitions from the enclosed archive are used.

8.2 Definition of projects

Graphic analysis is based on so-called cross summations and projects. Projects are used to supplement metering data with information used for the analysis.

Projects are used to specify details such as the customer address, device identification, scaling of units and the calculation of metering data. The combination of several values into one result is also supported.

Procedure

Definitions ⇒ Project

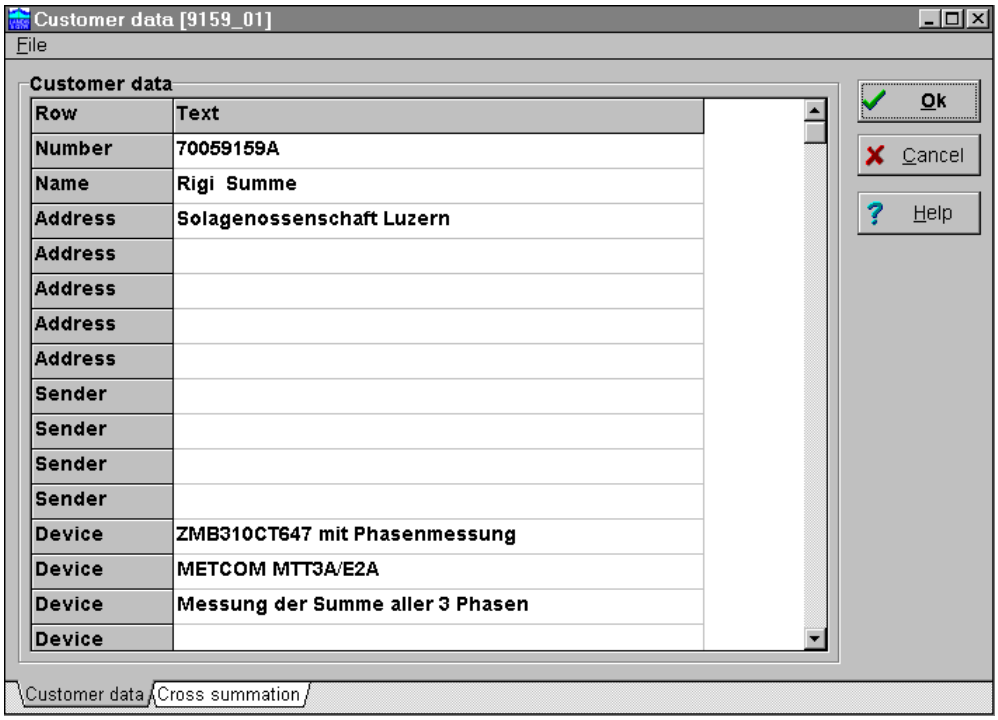
1. Enter the project name in the "Customer data" tab.
2. Enter at least one command line in the “Cross summation” tab.
3. Press **Ok** or **File ⇒ Save** to save the project. The name should have maximum 8 characters.

NOTE

The EDC links the "storage name" of a project with comments in the periodic buffer, provided that the periodic buffer and “storage name” are identical.

- Specify a separate project for each metering value. Use the number of the raw value as the “storage number”,
  e.g.:
  The project "Rigi Summe" was created for metering value 9159_01. This value may be found in the first row of the “cross summation” tab. The project "Rigi Summe" is saved under the name 9159_01.
- The comments may be viewed, if graphic analysis is performed for projects with a single metering value.
- Projects, consisting of several metering values, may be assigned arbitrary names and numbers, however the comments cannot be displayed.

“Customer data” tab



- **Number**
  Enter the meter number, customer number or project number. When using the meter number, the project name will be shown when displaying the billing data.
- **Name (always specify)**
  Project or customer name
- **Address**
  Customer address
- **Sender**
  Name of sender in the analysis department
- **Device**
  Name of devices (text) used at the metering point.
- **Text**
  Any comment relating to the project
- **Status input**
  Designations for status inputs 1 to 8 (only for EKM670)
- **Constant**
  Used to enter pulse value matching data for read-outs made via the optical interface (EKM647and EKM670).

  W = Transformer constant
  I = Pulse value
  U = Revolutions / kWh (only for meters using a reading head on the Ferraris disc).

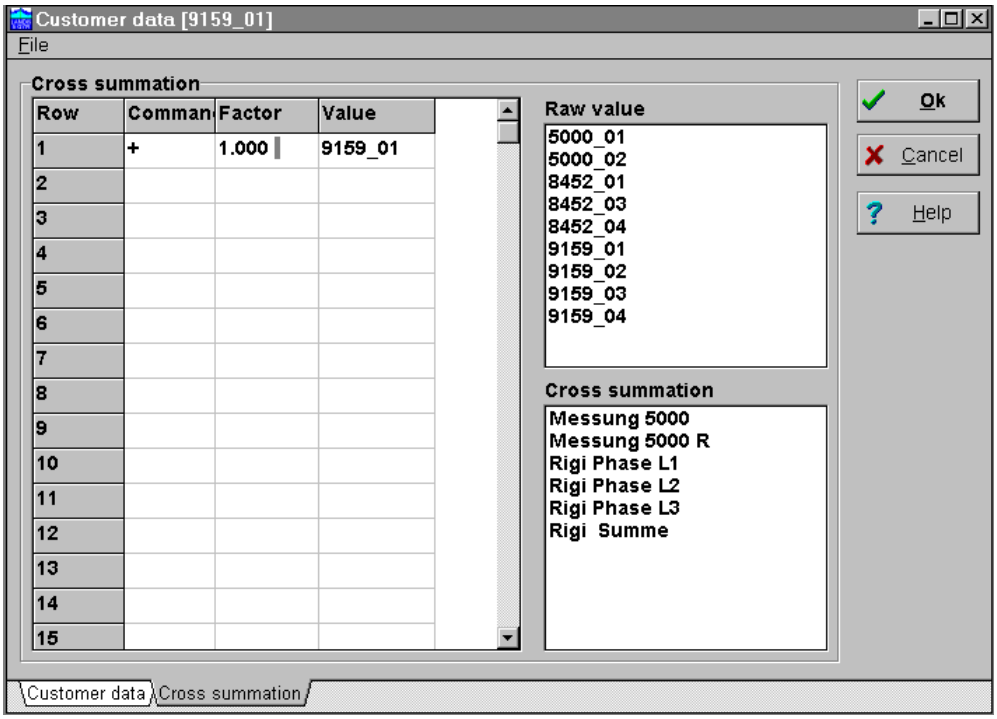
- **Internal**
  The default units displayed are kWh and kW. These units may be replaced by any sequence of characters:
  E = kvarh indicates that the units kvarh will be used instead of kWh for graphic analysis. P=kvar indicates that the units kvar will be used instead of kW for graphic analysis.

“Cross summation” tab

Cross summations are used to combine or convert raw values or other cross summations. The calculated results are stored under the name of the new cross summation.

In addition to the basic arithmetic operators + - x / , comparison functions are also supported. Special functions used for analysing energy values (apparent energy, tariff-based functions) may also be included in cross summations.

Dialogue



Procedure

1. Enter the operator + or S+ on the first line under “Command”.
2. Under “Factor” enter a multiplier that should be applied to the metering value
3. Under "Value" enter the identifier of the raw value or cross summation. Alternatively, double-click the desired value in the list of raw values or cross summations.
4. Enter further command lines as required.
5. Once the "Customer data" tab is complete, save the new project by pressing **Ok** or **File ⇒ Save**.

The command lines are processed in the specified sequence. The result of the last command line is saved as the cross summation value under a new name.

NOTES

- The analysis of metering data is always based on cross summations. Direct analysis of raw values is not possible.
- Cross summations are initialised with null values. The first command line with + or +S is used to add a value to this null, after which further calculations are possible on the subsequent command lines.
- Cross summations are re-calculated during every analysis. The results are not stored as new “raw values”.
- Divisions by zero are set to zero.

Row	Comman	Factor	Value
	+	1.000	9159_02
	+	1	9159_03
	*	10	

- Mathematical rules, such as multiplication before addition, are not supported:
  In the above example, the result is calculated (Value 9159_02 + Value 9159_03) x 10 and not Value 9159_02 + (Value 9159_03 x 10).
- Calculations are made per integrating period.

8.2.1 Basic operations

Commands using constants

A constant will be applied to the result of the previous command line:

Command	Factor	Value	
+	5.000	[empty]	Addition of 5
-	5.000	[empty]	Subtraction of 5
*	5.000	[empty]	Multiplication by 5
/	5.000	[empty]	Division by 5

Commands with raw values

A raw value, multiplied by a factor, will be applied to the result of the previous command line:

Command	Factor	Value	
+	5.000	[Raw value]	Addition of (Raw value x 5)
-	5.000	[Raw value]	Subtraction of (Raw value x 5)
*	5.000	[Raw value]	Multiplication by (Raw value x 5)
/	5.000	[Raw value]	Division by (Raw value x 5)

Command using cross summations

A cross summation, multiplied by a factor, will be applied to the result of the previous command line:

Command	Factor	Value	
+S	5.000	[cross sum]	Addition of (cross sum x 5)
-S	5.000	[cross sum]	Subtraction of (cross sum * 5)
*S	5.000	[cross sum]	Multiplication by (cross sum * 5)
/S	5.000	[cross sum]	Division by (cross sum * 5)

Example

The electric supply to an office building comprises a common incoming supply and several outgoing feeder circuits supplying different areas of the building. The incoming supply as well as each feeder circuit are metered. The metered values for the incoming supply (raw value 4645_01) should be compared with the sum of the outgoing circuits (3645_01, 3646_01, 3650_01, 3652_01) and the discrepancy between them calculated as a percentage of the incoming value.

Formula:

$$\text{Discrepancy} = \frac{\text{Sum of the outgoing feeders} - \text{Incoming supply}}{\text{Incoming supply}} \times 100$$

Entering the cross summation:

Row	Comman	Factor	Value
	+	1.000	3645_01
	+	1.000	3646_01
	+	1.000	3550_01
	+	1.000	3652_01
	-	1.000	4645_01
	/	1.000	4645_01
	*	100	

8.2.2 Comparative operators

The result of the previous command line is compared with a constant, raw value or cross summation. The following operators are supported:

<	less than
=	equal to
>	greater than
<=	less than or equal to
>=	greater than or equal to
<>	not equal to

Command	Factor	Value	
>	5.000	[empty]	Comparison with the constant 5
>	5.000	[Value]	Comparison with a raw value * 5
>S	5.000	[cross sum]	Comparison with another cross sum * 5

If the result of the comparison is true, the value is carried over to the next operation. If it is false, the result is set to zero.

Example:

A customer has a tariff contract whereby reactive energy is paid when power factor cos φ is worse than 0.707. Reactive and active power are both metered (values 5000_02 and 5000_01 respectively.

Formula:

If Reactive power – active power > 0 -> reactive power – active power is billed
Reactive power – active power = 0 -> 0
Reactive power – active power < 0 -> 0

Entering the cross summation:

Row	Comman	Factor	Value
	+	1.000	5000_02
	-	1.000	5000_01
	>	0.000	

8.2.3 Active and reactive calculations

Apparent power and cos φ calculations are only possible by means of cross summations. The direct use of raw values is not possible.

Cos phi

Command	Factor	Value
+S	1.000	[Active cross sum]
COS	1.000	[Reactive cross sum]

Apparent power

Command	Factor	Value
+S	1.000	[Active cross sum]
VA	1.000	[Reactive cross sum]

[Active cross sum] refers to the active power, [Reactive cross sum] to the associated reactive power.

Example:

Apparent power is a better indication of the load on a distribution network than active power, hence calculate the maximum apparent power (instead of using the maximum active power 5000_01).

Formula:

Apparent power = $(\text{Active power}^2 + \text{Reactive power}^2)^{1/2}$

Entering the cross summation:

Row	Comman	Factor	Value
	+S	1.000	5000_01
	VA	1.000	5000_02

The cos φ curve is used to advise larger consumers. It should be displayed graphically.

Formula:

$$\cos\varphi = \frac{\text{Active power}}{\text{Apparent power}} = \frac{1}{(1 + (\text{Reactive power}/\text{Active power})^2)^{1/2}}$$

Entering the cross summation:

Row	Comman	Factor	Value
	+S	1.000	5000_01
	COS	1.000	5000_02

8.3 Definition of tariffs

The analysis of load profiles may be extended by means of freely-definable tariff agreements. A tariff agreement is a combination of weekly programs (tariff variants).

Tariff variants define the time-based control of active tariff registers during one week (similar to a tariff switching program). An "eight weekday" defines the tariff structure for public holidays that may occur during the normal weekly sequence.

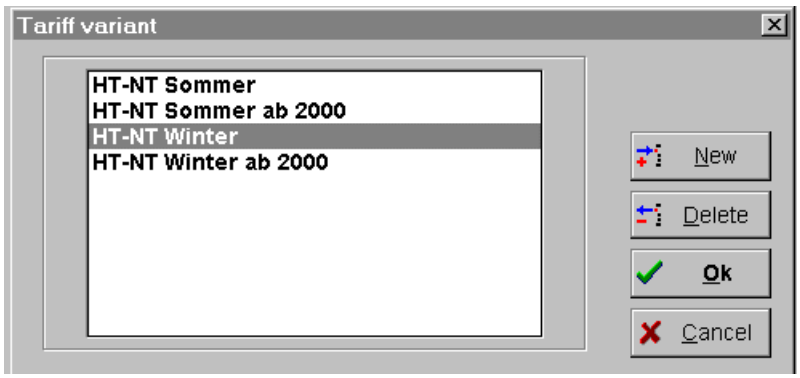
Features

The following configuration features are supported:

- Flexible linking of tariff agreements to load profile data.
- Definition of tariff agreements with limited validity periods.
- Use of public holidays.
- Maximum of 12 tariff variants per tariff agreement.
- Maximum of 12 tariffs per tariff agreement.
- Maximum of 24 different switching times.

Procedure

Definitions ⇒ Tariff ⇒ Tariff variant...



1. First create the different tariff variants.
2. Create a tariff agreement, which is based on one or more tariff variants.
3. Optionally, define any public holidays and special days that may be applicable and have an effect on the tariff variants.

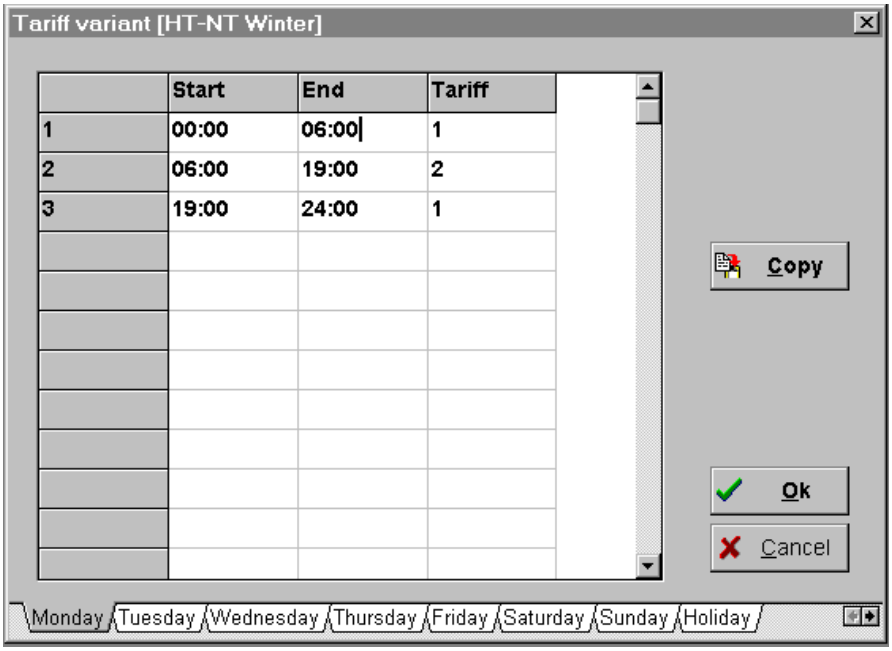
8.3.1 Tariff variants...

Name

Select a neutral name that permits the use of the tariff variant in several tariff agreements.

Dialogue

Editing is performed using 9 tabs, one for each day of the week, and two for special days and public holidays.



Procedure

1. Select the tab for the day requiring editing.
2. Specify the times and tariffs. A daily program is complete if the last tariff finishes at midnight (24:00).
3. Press **Ok** to confirm the entries and proceed to the next tab.
4. When all 9 tabs are complete, press **Ok** to conclude the tariff variant definition.

NOTES

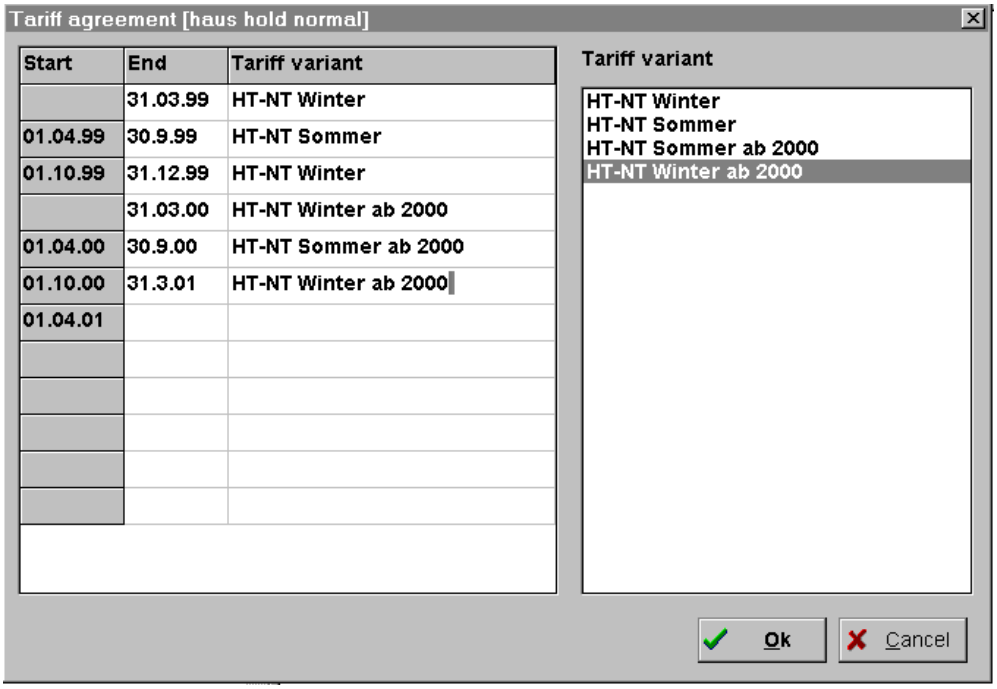
- Use the **Copy** function to duplicate previously defined programs for another day.
- Tariff number 0 may be used for special days and public holidays. The number 0 indicates that the given tariff variant does not take into account special days or public holidays.
- Tariff variants may be deleted or modified, even if the tariff variant is used on one or more tariff agreements. It is therefore advisable to check that changes in the tariff variants have not resulted in errors to the tariff agreement.

8.3.2 Tariff agreements...

Name

Specify a name relating to the customer tariff contract. If possible, incorporate the validity period when using limited tariff agreements.

Dialogue



Procedure

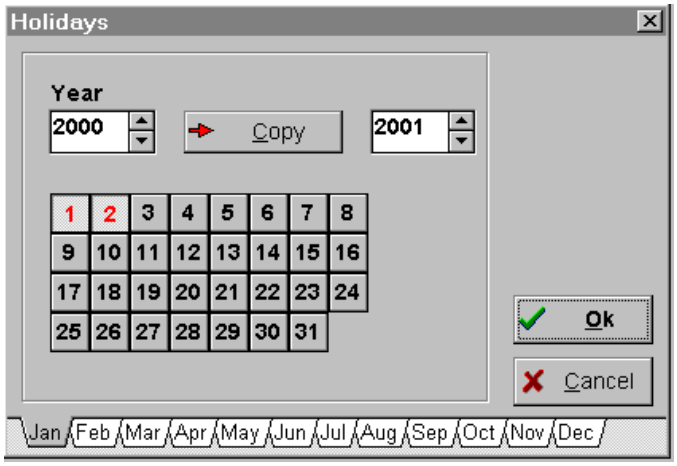
1. Enter the date until which the first tariff variant is valid under "End".
2. Double-click the mouse to select the first tariff variant.
3. Enter the date until which the second tariff variant is valid under "End". Repeat from step 2.

NOTES

- Tariff agreements must always be defined, even if only one tariff variant is used.
- Tariff agreements always start on January the 1st .
- If a tariff variant finishes on December 31st , no data is indicated for the start of the next tariff variant (1st January).
- Entering two ** instead of the year indicates that the agreement should repeat every year. In this case the last tariff variant must finish on 31.12.**.

8.3.3 Holidays...

Dialogue



Procedure

1. Enter the year to which the public holidays should apply.
2. Select the tab for the month to be edited.
3. Activate the public holiday(s) by clicking on the date(s).
4. Copy any public holidays that repeat every year on the same date.

NOTES

- Press Copy to copy the specified public holidays to another year.
- There is no automatic date adjustment when copying public holidays to another year. The user must maintain this data on a periodic basis.

8.3.4 Special days...

Special days have the same significance as public holidays. They are used to differentiate between two types of public holiday.

Examples:

- They may be used to differentiate between half-day (24th December) and full-day (25th December) public holidays, each of which have different tariff switching times.
- They may be used to differentiate between annually recurring holidays that always occur on the same date (1st January, 25th December, ..) and other special days (Easter). hence only the dates of the special days must be maintained by the operator.
- They may be used to differentiate between statutory holidays and special days on which energy is sold at a reduced rate.

8.4 Definition of reports

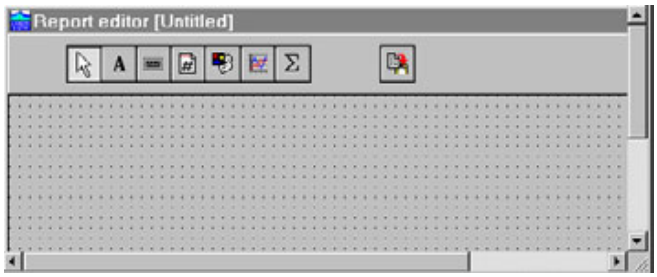
Numerical analysis is based on the use of reports that contain calculation results. A report may be used to analyse any number of projects. The report format is designed using a report editor which permits the integration of texts, graphics or project information.

Features

- Flexible report layout
- Insertion of several maxima
- Use of tariffs
- Insertion of billing data
- Insertion of text, project information
- Embedding of graphics

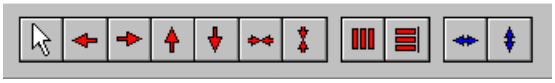
Procedure

Definitions ⇒ Define report...



The "Report editor" window then appears.. The menu bar of the “Presentation” window is supplemented with an additional menu entitled "Edit".

1. Maximise the "Report editor" window.
2. Select "**File**" ⇒ "**Open**" to open the STANDARD report or another previously defined report.
3. Open the dialogue window by double-clicking on an existing or when inserting a new field.
4. Modify the configuration of the field in this window.
5. A new toolbar appears when making multiple selections of fields (hold down the "Shift" key and make multiple selections using the mouse).



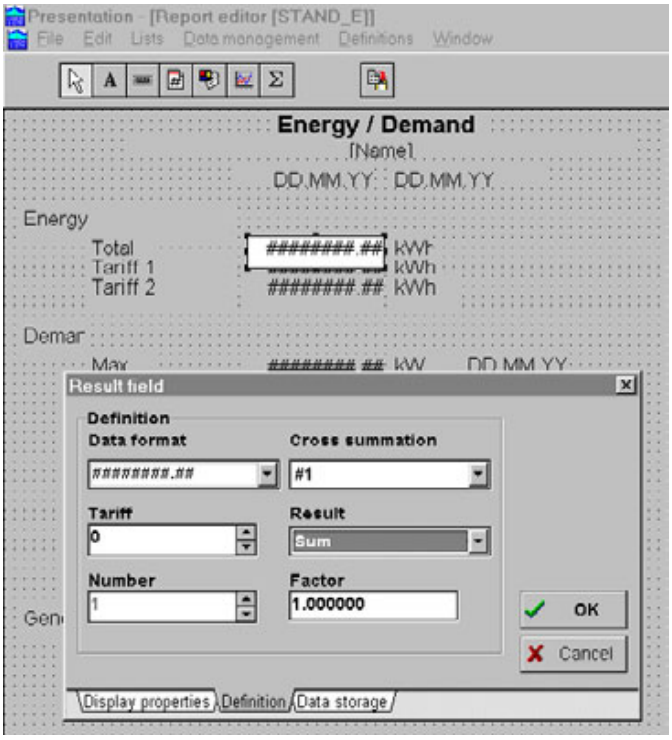
These functions are used to align the highlighted fields in the report.

6. Save the report under a new name.

NOTES

- The report editor is operated solely using the mouse. Keyboard operation is not supported.
- The "Report editor" does not have a text bar. The "Report editor" menus are integrated in the menu bar of the "Presentation" window.

Dialogue



The following function keys are available on the report editor toolbar:

Pointer
Used to mark report fields, either individually or as a group.

Text field
Used to create fields with fixed information content, e.g. header, comments.

Result field
Used to create fields containing calculation results, e.g. max., min., summations, tariff, data.

Customer field
Field for inserting customer information from project definitions, e.g. name, address.

Bitmap
This feature is not supported.

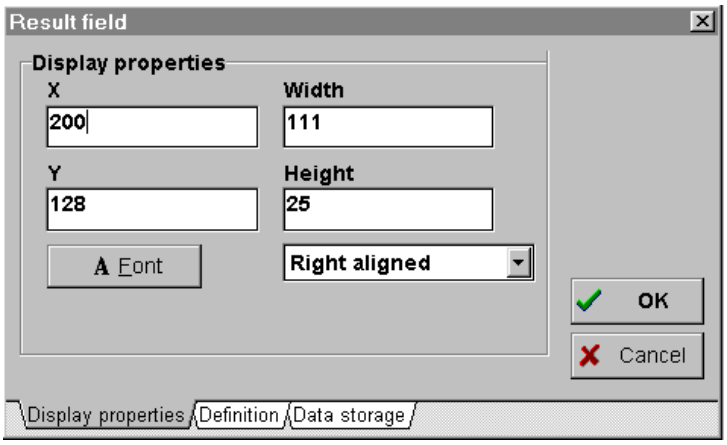
Day graphic
Simple graphic depicting the load curve on the day the maximum occurred.

General definitions
Used to define the step size for sliding maximum calculations. For example, enter 4 if an hourly sliding maximum should be formed from 4 consecutive 15 minute values.

8.4.1 Definition of fields

Each report field is defined using 3 tabs.

Display properties

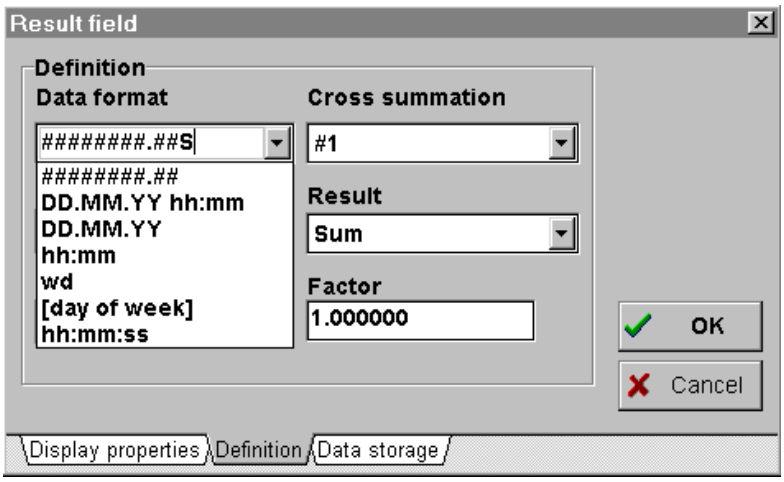


The position of the field (upper left corner) and its dimensions are defined in $^{1}/_{100}$ inch increments. 10 centimetres more or less corresponds to the number 394.

The font and its alignment in the field may be defined.

Definition

The ”Definition” tab contains settings that vary depending on the type of field.



- **Cross summation #1, ... (for graphics and result fields)**
  The cross summation number refers to registers #1..#10. They are used for print-out purposes.
- **Results in result fields**
  The following results may be calculated for load profile data and displayed in a result field:

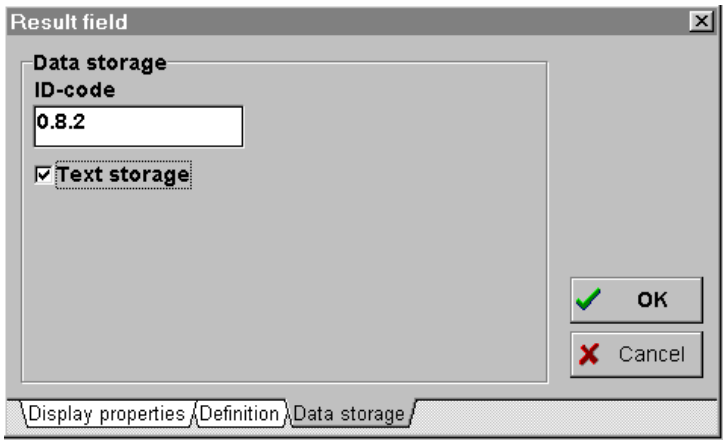
Sum	Energy that was metered for a given tariff and analysis period.
Max, Min.	Minimum or maximum power that was registered for a given tariff and analysis period.
Sliding max., min.	Averaged maximum/minimum over several integrating periods for a given tariff and analysis period.
Avg. demand	Average demand (power).
Load factor	Ratio between the average and maximum demand.

Start/end register value	Meter register values at the beginning/end of the evaluation period (only possible when acquiring meter register values).
Evaluation date	Date on which calculations were made.
Start/end date	Begin and end of reporting period.

- **Element (customer info field)**
  All elements that were defined for a project can also be displayed in a report.
- **Factor (result fields)**
  Numerical results may be scaled using a factor.
- **Format (result fields)**
  Various result and time formats are supported. Results based on load profile calculations may be supplemented with status information (format ########.##S). Should a metering value with a set status bit be used in the given analysis period, the result will be marked with the appropriate status letter (see section "System definitions").
- **Tariff (graph and result fields)**
  If a tariff number between 1 and 12 is selected, the result is only calculated for this tariff.
- **Number (result fields)**
  Used to display several maxima/minima (2 = second highest, 3 = third highest, ..).
- **Number (customer info field)**
  Applies to customer details spanning several rows. Specifies the row number to be displayed (address, ..).

Data storage

This tab specifies any text or labels to be used as a prefix. This prefix is used to determine the filename when storing the report results.



This result field is stored in a file ********.abg in directory EDC\Routen. In the above example, the filename would be 0.8.2 (xxxxxx).

8.5 Numerical analysis

Numerical analysis is based on the use of reports. In addition, there are three other functions for displaying metering values:

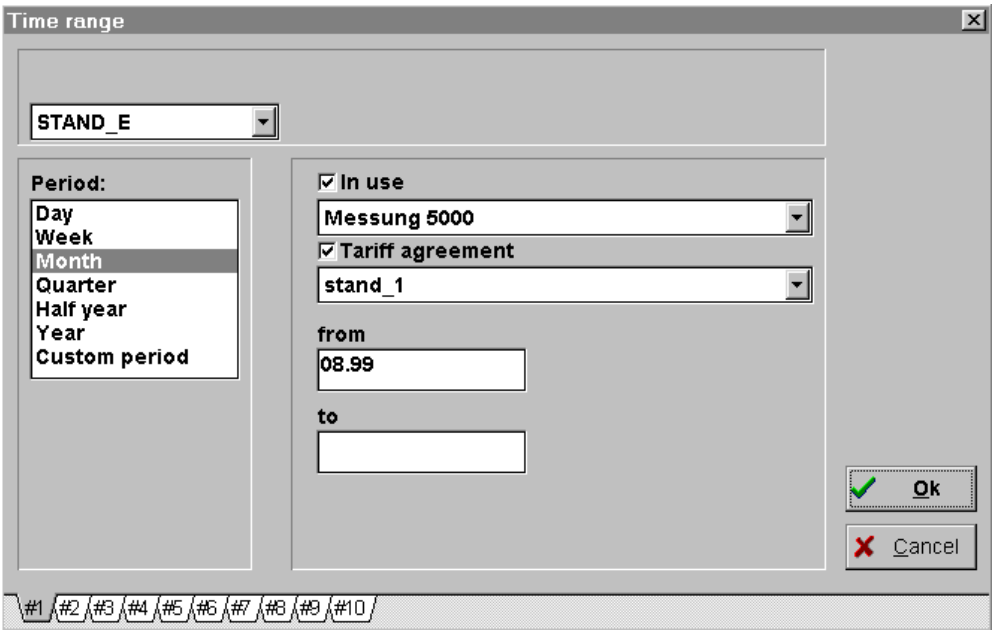
- The listing of all acquired metering values.
- The contribution to maximum analysis for several measurements, illustrated using one load curve.
- The presentation of billing data acquired from devices with an integrated tariff unit..

Each report is displayed in a separate window and can be printed out. Several graphics and numerical reports may be displayed simultaneously.

Procedure

File ⇒ Open ⇒ Display report

1. Select the desired report type.
2. In the dialogue, enter the project and time span to be analysed. Specify the report and tariff agreement that should be used for the analysis.
3. Confirm the entries by pressing **Ok**.



- **Tabs #1, #2, ...**
  Specify one project per tab if a report should include several projects.
- **In use**
  Select the project to be displayed.
- **Tariff agreement**
  The report reflects the selected tariff agreement.
- **Period**
  Specifies the time span for the report.
- **from**
  Specifies the start date for the report.
- **to**
  Specifies the end date for the report. Only specify when using a "Custom period".

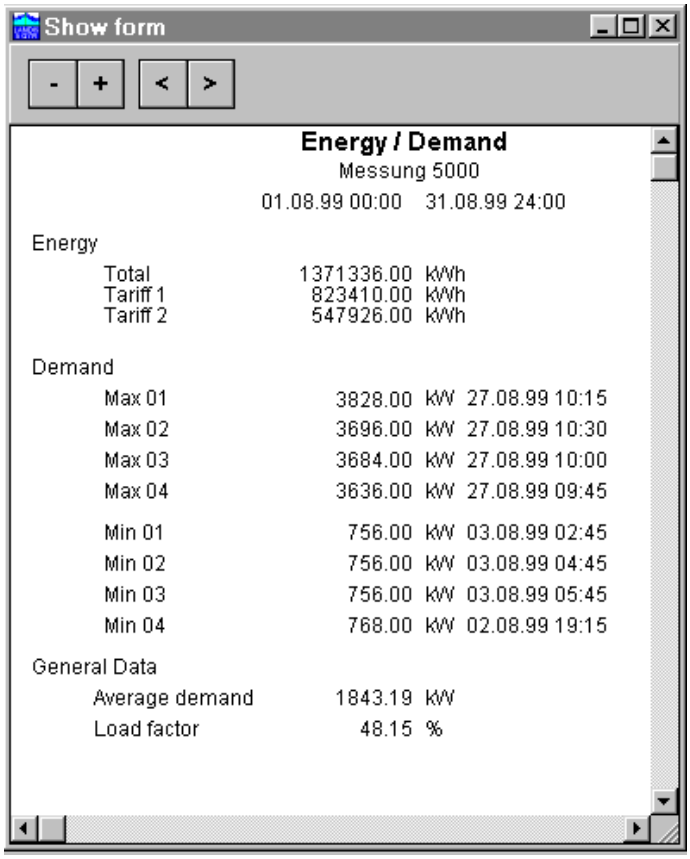
- **Report:**
  Specifies the report type.

NOTE

Report result fields are linked to the definitions in the various tabs. Before running an analysis, check that the tabs are linked to the correct projects.

8.5.1 Display report

The selected report is displayed in its print-out format (print preview).



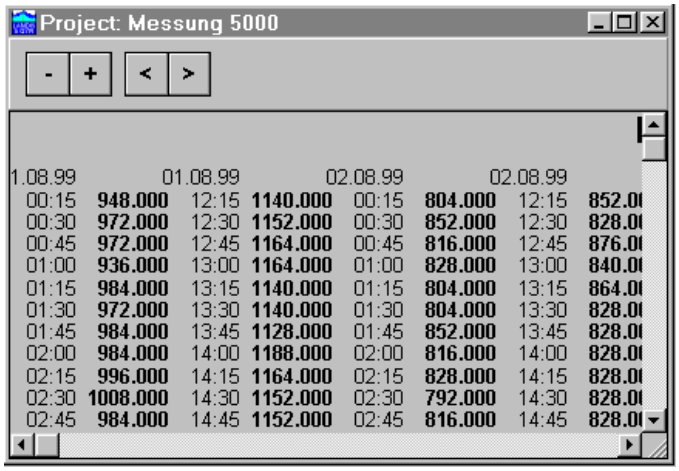
The toolbar buttons have the following function:

Zoom buttons for enlarging/reducing the picture.

Page scrolling keys. Used for reports spanning several pages.

8.5.2 Show demand values

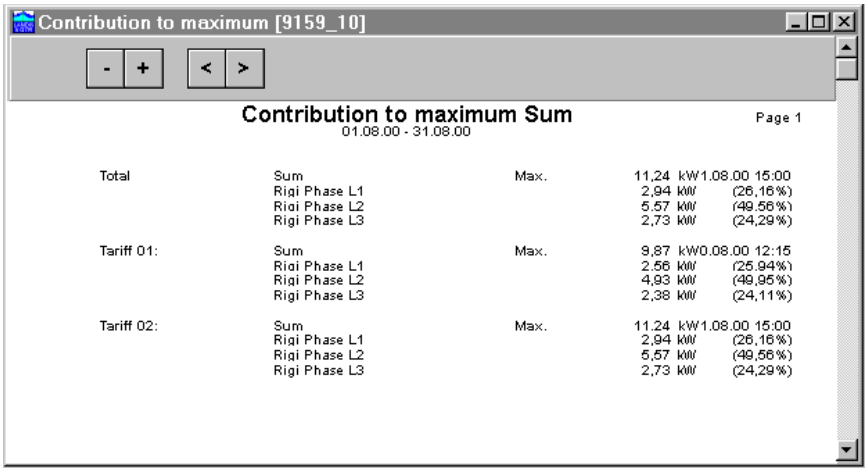
Use this report type to verify and compare metering values with locally displayed values at the metering point. One A4 page has space for 3 ½ days worth of 15 minute metering values.



The toolbar functions are identical to those for “Display report”.

8.5.3 Contribution to maximum

Used in configurations where a common measurement (metering point) may be broken down into several sub-measurements. This report determines the contribution of each sub-measurement to the maximum of the common measurement.



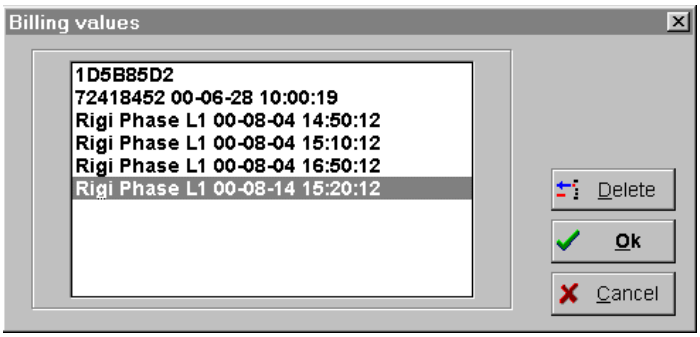
The toolbar functions are identical to those for “Display report”.

8.5.4 Billing values

In contrast to load profile data, billing data is not administered using projects. The analysis procedure therefore differs slightly from the other report types.

Procedure

File ⇒ Open ⇒ Billing values



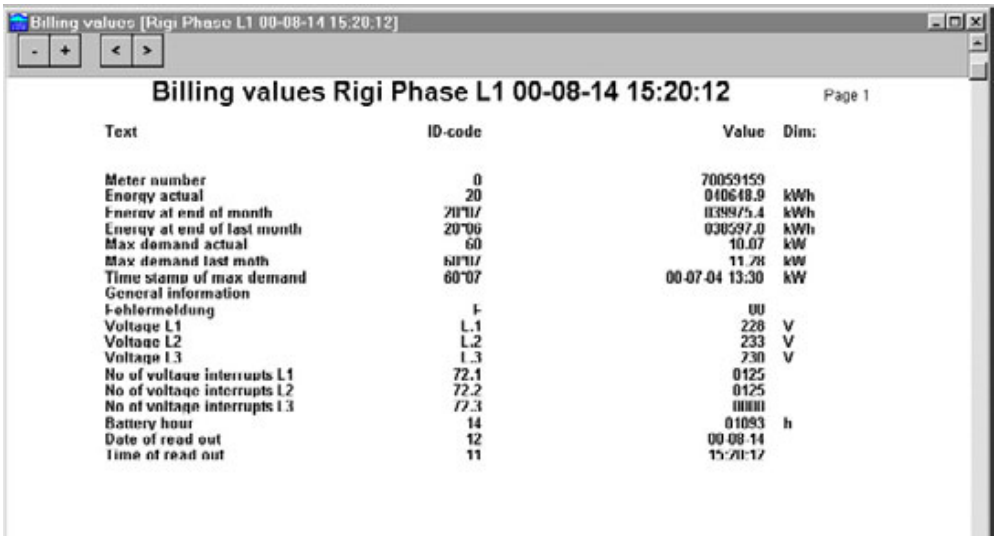
1. Specify which meter read-out should be analysed. The dialogue window displays the meter number, read-out date and time. Regularly archive and delete old data to keep the list manageable.
2. Confirm the entries by pressing **Ok**.

NOTE

The displayed data is dependent on the configured ID code keys and projects:

- The filename is displayed if neither the meter number nor the read-out date/time can be determined from the billing data using the basic ID code key. In the above example, this is the case for the file 1D5B85D2.
  The billing data cannot be displayed. A new ID code key must be defined for this meter type.
- The meter number and date/time are displayed if the read-out date/time were determined from the billing data using the basic ID code key, and there is no project using this meter number as its project number. In the above example, this is the case for meter number 72418452.
- The project name and date/time are displayed if the read-out date/time were determined from the billing data using the basic ID code key, and there is a project using this meter number as its project number.

The billing data is displayed using the appropriate ID code definitions.



The toolbar functions are identical to those for “Display report”.

NOTE

It is only possible to display billing data if the decoding set (ID code key) is configured correctly. Refer to section 8.1.3 "Identification code key" for more details.

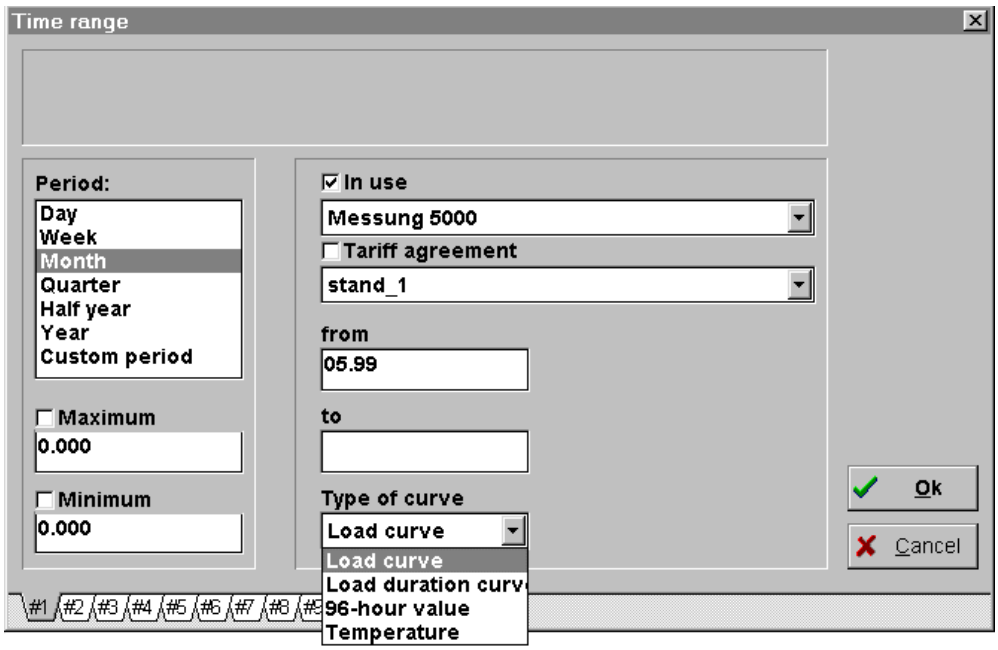
8.6 Graphic analysis

There are several graphics for detailed analysis of load curves and tariffs.

Each graphic is displayed in a separate window and can be printed out. Several graphics and numerical reports may be displayed simultaneously.

Procedure

File ⇒ Open ⇒ Graph



- **Tabs #1, #2, ...**
  Define one curve per tab if a graph should include several curves.
- **In use**
  Select the project to be displayed.
- **Tariff agreement**
  The colour graphics reflect the selected tariff agreement.
- **Period**
  Specifies the time span for the graphic.
- **from**
  Specifies the start date for the graphic.
- **to**
  Specifies the end date for the graphic. Only specify when using a "Custom period".
- **Maximum**
  By activating this field, the specified value is set as the upper limit for the Y-axis. If the metering values exceed this limit, the highest metered value is used as the limit instead.
- **Minimum**
  By activating this field, the specified value is set as the lower limit for the Y-axis. If some metering values are below this limit, the lowest metered value is used as the limit instead.
- **Type of curve**
  Specifies the type of graphic (see next section).

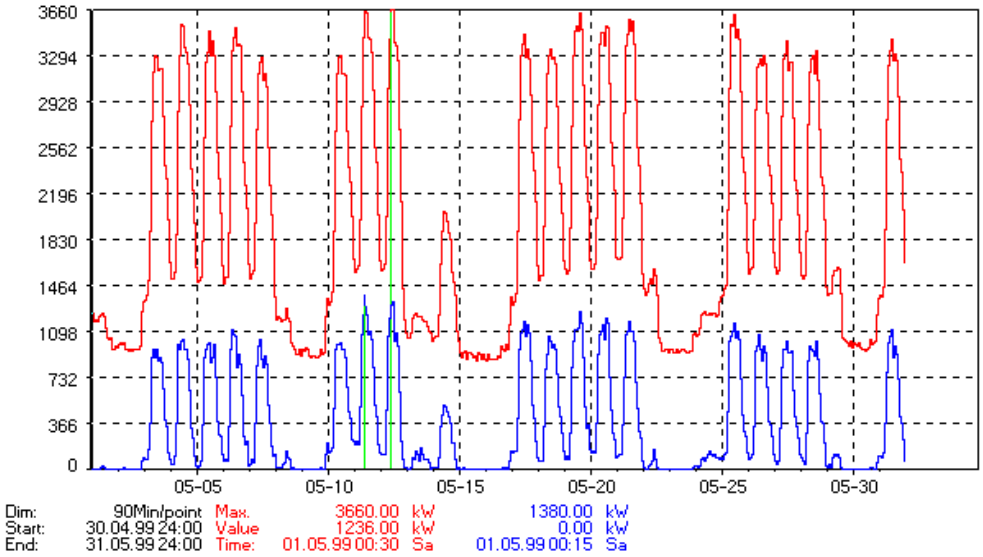
NOTE

Define a maximum value if several curves should be displayed on the same graph, or when wanting to compare different graphs. Load curve analysis is simplified when using the same scale.

8.6.1 Curve types

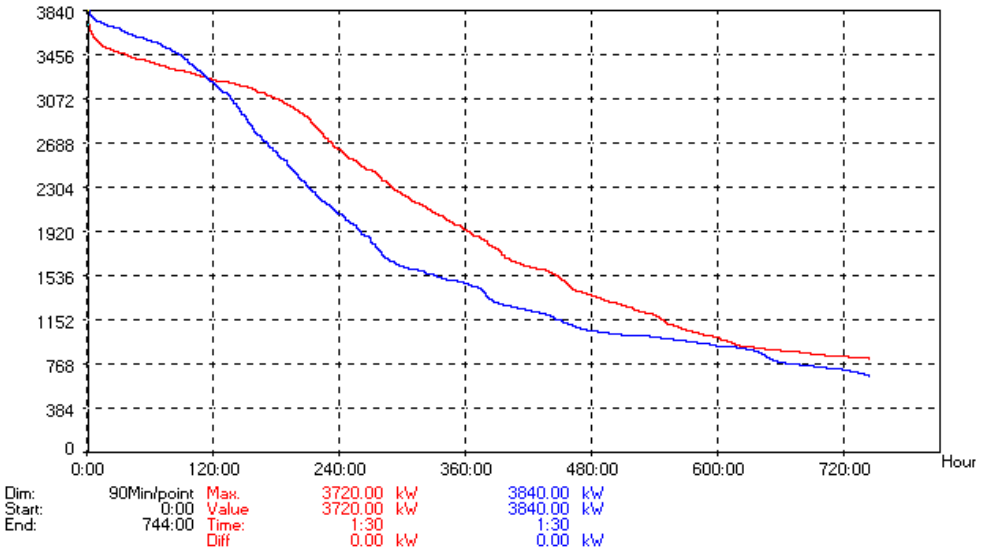
Load curve

The load curve depicts the time and energy consumption on the x- and y- axes respectively. Load curves are usually of a periodic nature. Any changes in their periodic behaviour quickly become apparent.



Load duration curve

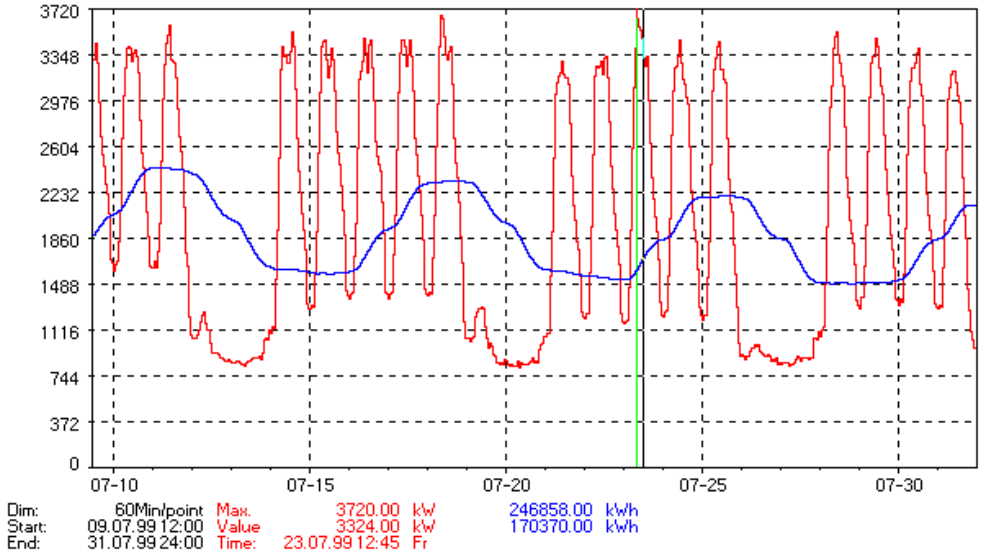
Load duration curves indicate the duration (x-axis) that a certain demand level was exceeded (y-axis). An arbitrary analysis period may be chosen.



Load duration curves are used for the qualitative assessment of energy consumption. A typical consumption profile with high peak demand and relatively low continuous consumption is shown in blue, whereas the red curve corresponds to profiles with a fairly constant consumption level.

96-hour values

The 96-hour tariff is used to determine the maximum energy consumption in the last 96 hour period. The graphic depicts the energy consumption in the last 96 hours for each hour of the analysis period. This results in a smoothed curve which generally reaches its peak towards the end of the working week.



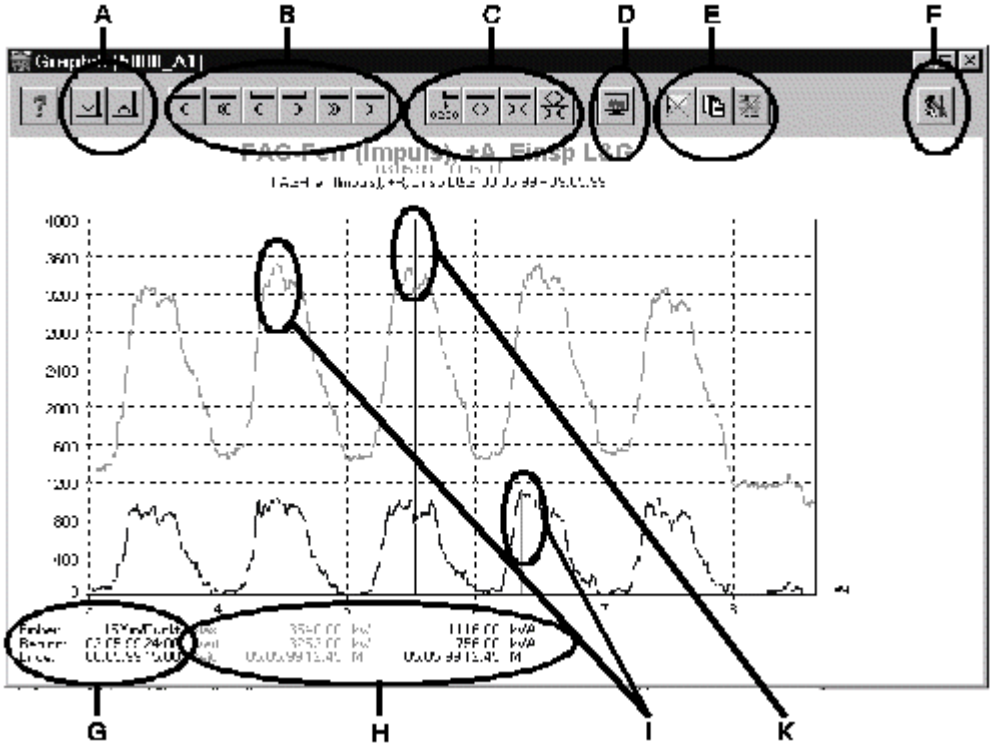
In the above example, the load profile and 96-hour values are shown as light and dark curves respectively. The 96-hour curve data is automatically calculated from the demand values.

Temperature

This graph has a y-axis which is automatically set to ± 50 °C. Otherwise, the curve is identical to that for the “Load curve” graphic.

8.6.2 The graphic window

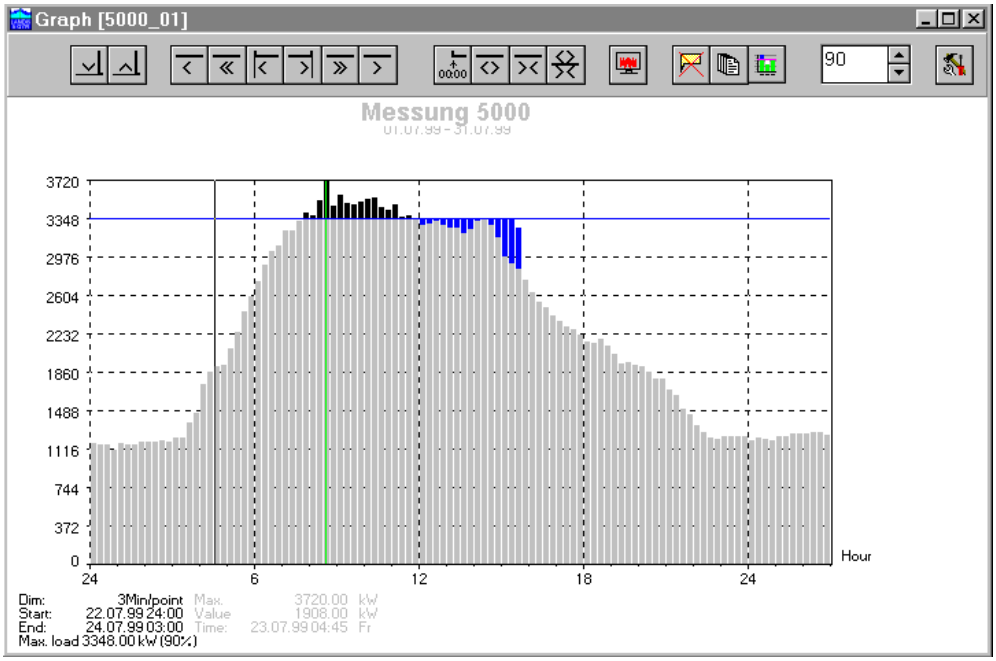
The graphic window has the same basic structure for all types of curve. A toolbar with various functions is provided for the user. Each graphic is supplemented with additional information to help localise maximums or other metered values.



The following information and functions are provided in a graphic:

- **A : Expand the value axis**
  Use these functions to expand/shrink the value axis by 10%. The lowest values may become hidden.
  For a value range of 0 .. 4000 kW the display range will be reduced by 10% i.e. 400 kW every time the axis is expanded. After the first zoom, the value range will be 400 to 4000 kW, after the second 800 to 4000 kW etc…. Zooming out has the exact opposite effect.
- **B : Move cursor**
  Use the keyboard cursor keys to move cursor line K. The 6 other function keys may be used to move the cursor line more quickly or to position it at the edge of the graph.
- **C : Expand the time axis**
  Use these 4 buttons to expand/shrink the time axis. Expansion or compression of the graph is always centred around cursor line K.
  Use the justification function to set the time at the left edge of the graph to 00:00.
- **D : New content**
  Press this button to open the dialogue "Select cross summation". All graph settings may now be modified.

- **E : Notes, dialogue and demand limit**
  Use the button "Display notes" to display/hide comments to the raw values. Press the button "Notes" to display a list of all notes for this metering data.
  The “demand limit” function provides an auxiliary line that simulates a load management system. The demand above this line is shifted to later integrating periods The position of this line may be adjusted in percentage steps.



This graphic gives a quick indication on the potential effectiveness of a load management system in reducing peak demand.

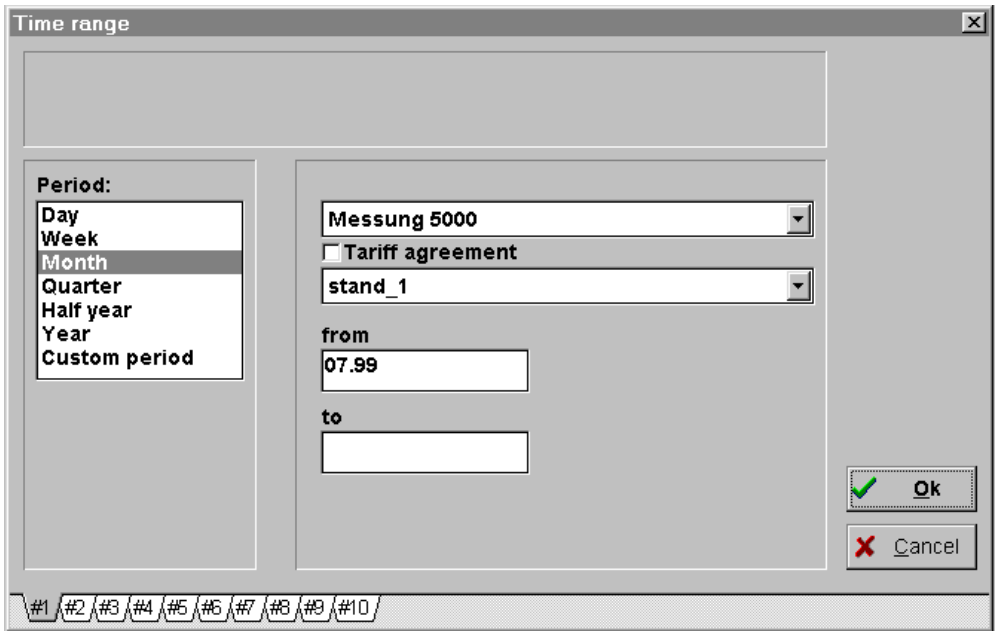
- **F : Colour**
  Use this function to change the colour settings for the graphic.
- **G : Graph data**
  Press this button to show the current display resolution and analysis period.
- **H : Curve data**
  The maximum and its time of occurrence are displayed for each curve next to cursor line K in the same colour as the curve.
- **I : Maximum mark**
  The maximum of each curve is marked by a coloured line. Its numerical value is given in footer H.
- **K : Cursor line**
  The cursor line may be moved to any point on the graph. The current metering value and time stamp are given in footer H.

8.7 Histograms

Histograms are used to show the number of integrating periods within a given demand band. They are used to determine the typical (average) demand level of a consumer. The data is displayed both graphically and numerically.

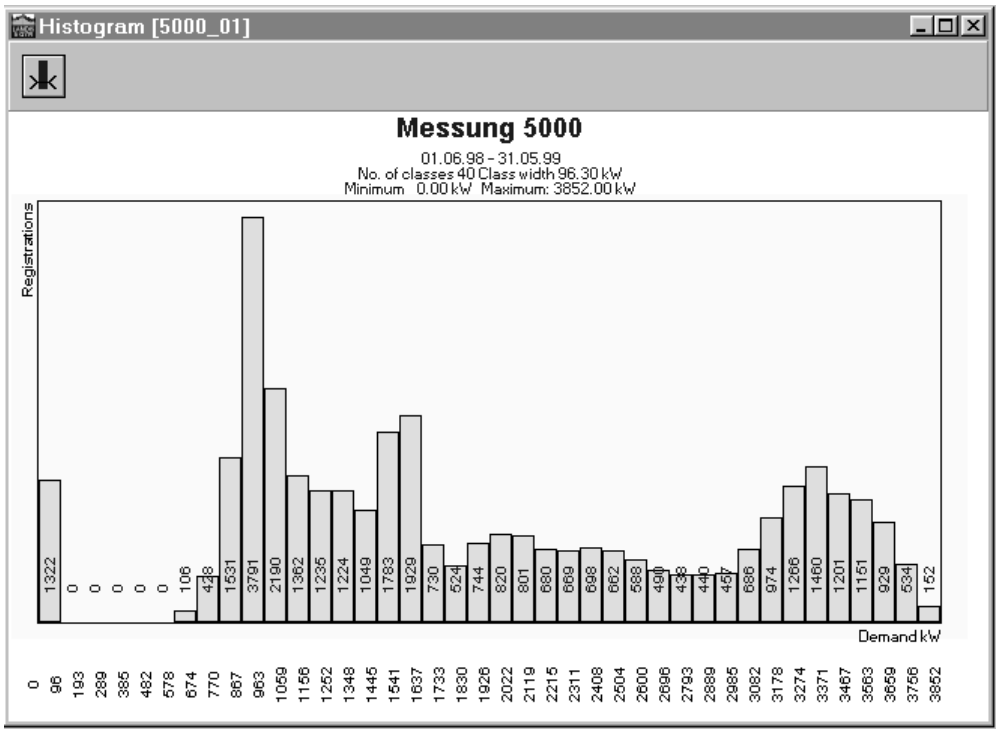
Procedure

File ⇒ Open ⇒ Histogram



1. Select the analysis period.
2. Select a project.

The histogram

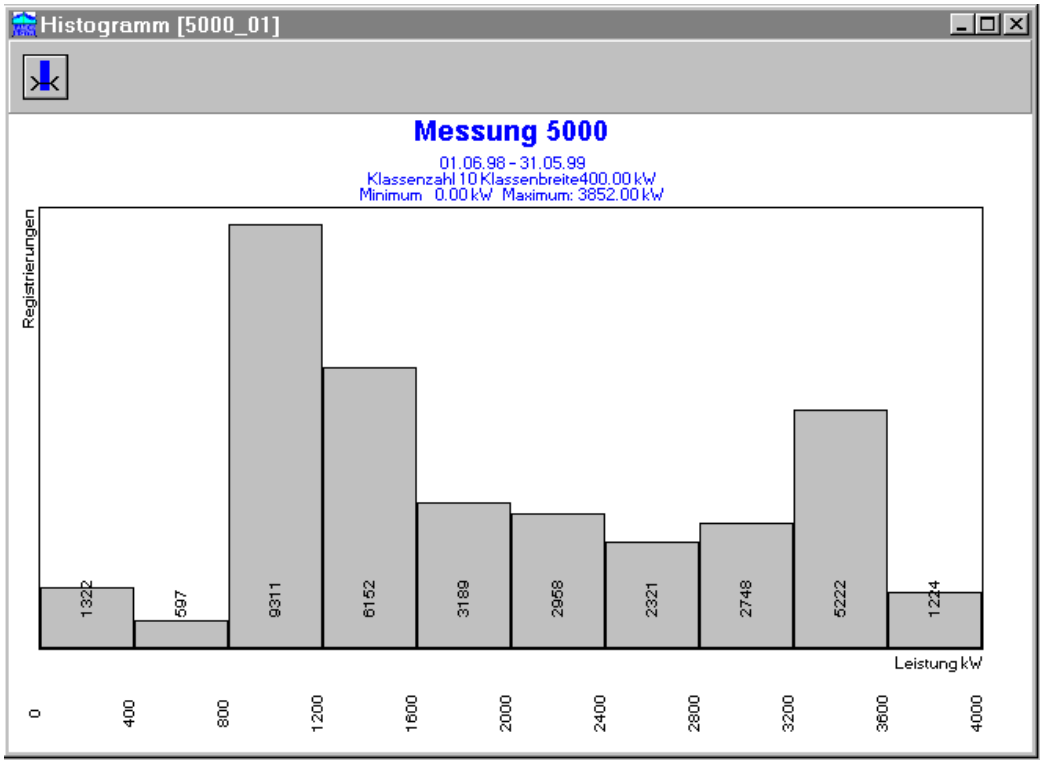


The graph clearly shows that the energy consumption falls into four distinct bands. Interpreting this data together with the load curve leads to the following conclusions:

- **Demand 0 .. 100 kW**
  Data was not acquired for almost a whole month, hence there are numerous integrating periods with a demand of zero.

- **Demand 800 .. 1100 kW**
  During weekends the demand drops to this level.
- **Demand 1400 .. 1700 kW**
  Corresponds to the demand level on weekday nights and Saturday mornings.
- **Demand 3000 .. 3900 kW**
  Corresponds to the demand between 8 a.m. and 5 p.m. on working days.

Press the  button to select the class width and demand range for each bar on the chart.



Increasing the class width to 400 Watts per bar gives a clearer indication of the load bands 800 - 1200 Watts and 3200 - 3600 Watts.

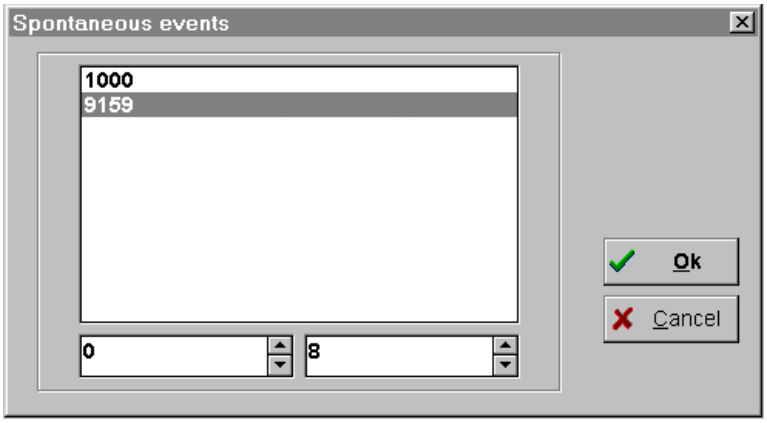
8.8 Analysing spontaneous events

Most RTUs store any abnormal events in a so-called spontaneous buffer. The contents of this buffer may be acquired and analysed.

Procedure:

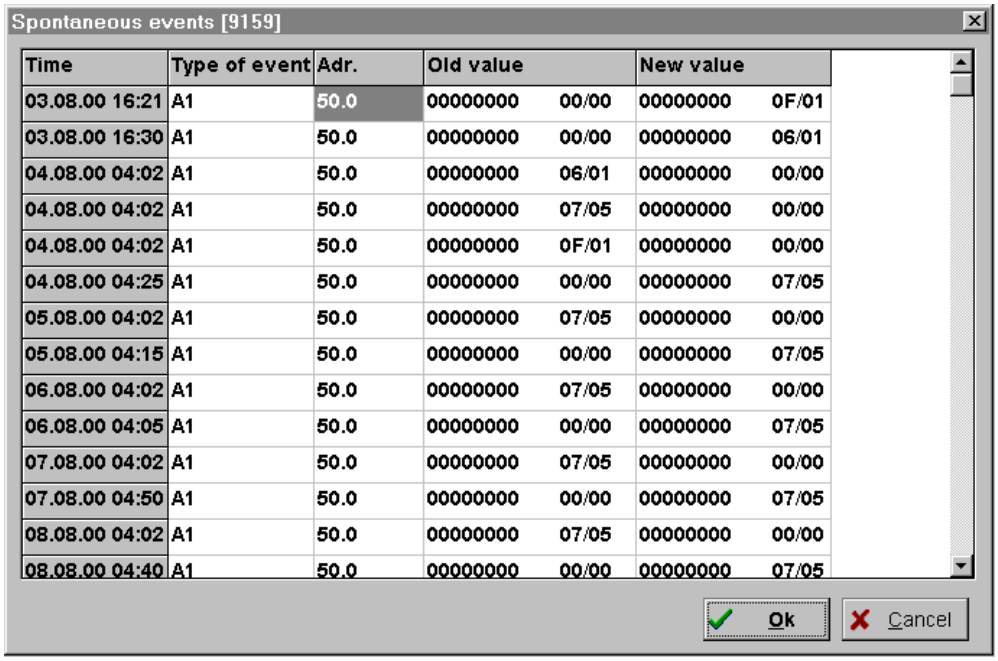
Display ⇒ Presentation

Data management ⇒ Spontaneous events…
Select an RTU



⇒ OK

Display



Time:

Time that the event occurred

Type of event, Old value, New value:

The significance of the status information varies from RTU to RTU. Please consult the relevant product manuals for a precise interpretation.

The above example shows the spontaneous buffer contents of a METCOM MTT3A, whose time has been set several times.

9 Synthetic load profile

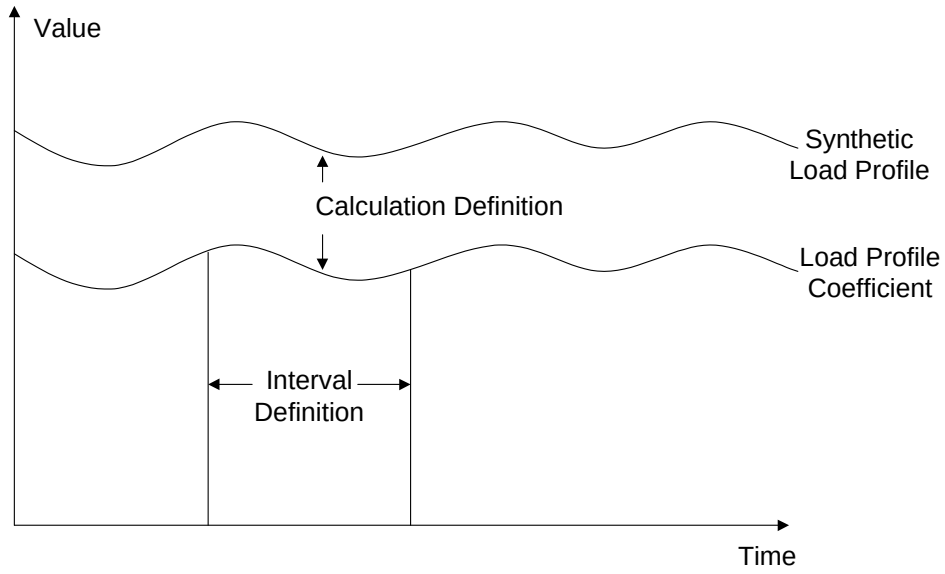
9.1 Purpose

A synthetic load profile is a manually constructed load profile. If a measured load profile exists for each type of customer, e.g. bakery, restaurant, household, a synthetic load profile can be defined for each type of customer based on the measured load profile. The defined synthetic load profile can then be used, together with the acquired billing values, to calculate a synthetic load profile for each individual customer.

The advantage of using synthetic load profiles is that not every premise has to be fitted with an expensive load profile meter. The majority of premises can be fitted with a simpler, less expensive billing meter.

9.2 Synthetic load profile definitions

A synthetic load profile definition comprises interval definitions and a calculation definition.



Each synthetic load profile coefficient must be a complete year. Year definitions are made up of week definitions. Week definitions are made up of day definitions. Day definitions are made up of typical energy values for each integrating period.

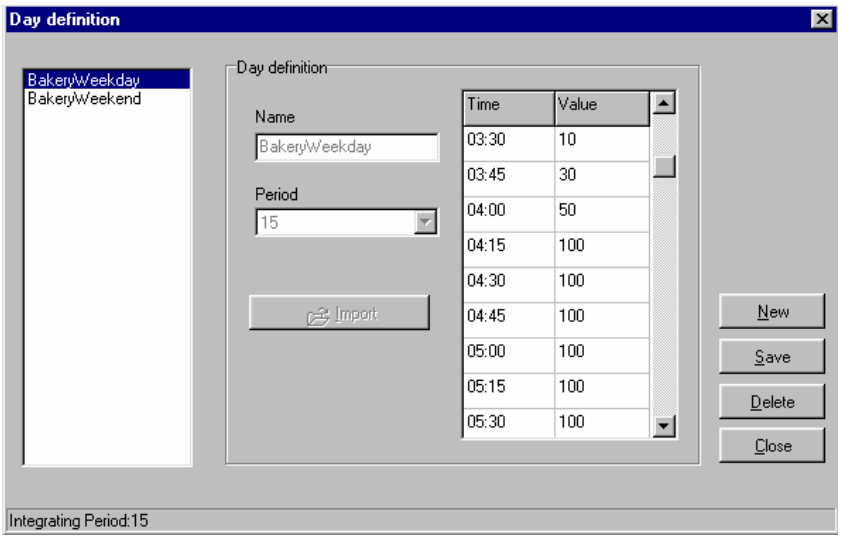
A calculation is defined for each RTU. The RTU must already be defined in EDC. The calculation references the defined synthetic load profile and the billing values from the chosen RTU and calculates the synthetic load profile.

9.2.1 Day definition

To define a day definition:

Procedure

Synthetic load profile ⇒ Definition ⇒ Day



Click **New** to define a new day definition

Enter the **Name** of the day definition.

Import load profile

Click **Import** to import an existing load profile. In this case, the integrating period is determined by the selected file. The load profile may already have been exported from EDC in text format. The default file location is EDC\SYNLP.

How to export data is described in the Data export chapter.

Enter load profile manually

Select the integrating period from the **Period** list.

Manually enter a value for each integrating period.

Click **Save** to save the day definition. The definition is entered in the list.

Click **Delete** to delete the selected definition.

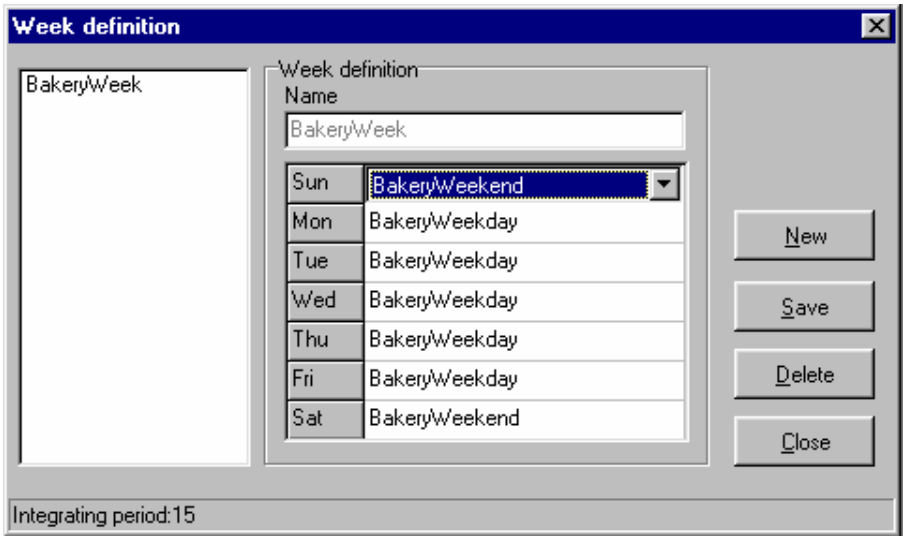
Click **Close** to close the window.

9.2.2 Week definition

The day definitions must already exist before a week definition can be defined. How to define a day definition is described in the previous paragraph.

Procedure

Synthetic load profile ⇒ Definition ⇒ Week.



Click **New** to define a new week definition.

Enter the **Name** of the week definition.

Select a day definition for each day from the drop down list.

Click **Save** to save the week definition. The definition is entered in the list.

Click **Delete** to delete the selected definition.

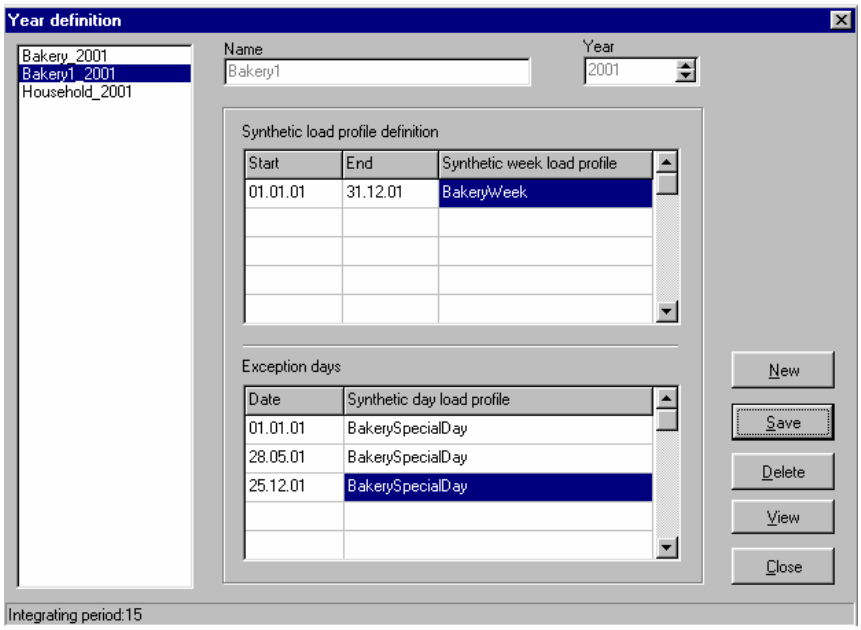
Click **Close** to close the window.

9.2.3 Year definition

The week definitions must already exist before a year definition can be defined. How to define a week definition is described in the previous paragraph.

Procedure

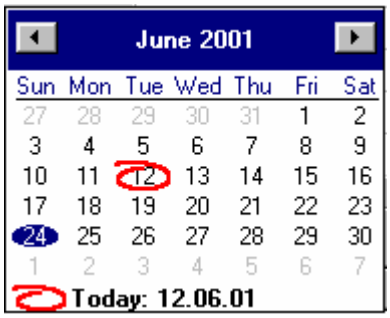
Synthetic load profile ⇒ Definition ⇒ Year.



Click **New** to define a new year definition.

Enter the **Name** of the year definition.

The **Start** date is set to the 1st of January of the current year. The **End** date is selected using the calendar.



Step forwards and backwards through the months using the arrows, then click the desired date. If an end date is selected that is less than a complete year, the start date of the next period is entered automatically.

Select a week definition for each period from the drop down list.

NOTE

Each synthetic load profile coefficient must be a complete year. It is, therefore, not possible to save the definition if the year is not complete.

Click **Save** to save the year definition. The definition is entered in the list.

Click **Delete** to delete the selected definition.

Click **View** to display the synthetic load profile values. A **Search** function enables you to display the value on a specific day at a specific time.

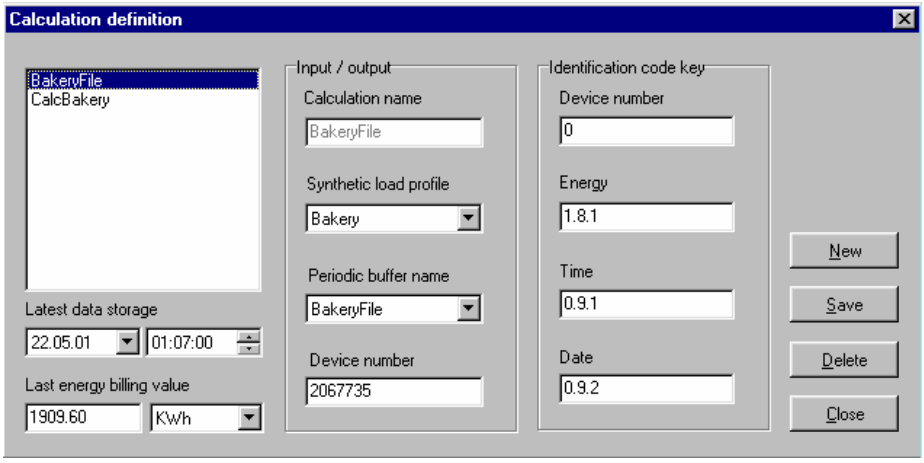
Click **Close** to close the window.

9.2.4 Calculation definition

RTU and synthetic load profile definitions must already exist before a calculation can be defined for that RTU.

Procedure

Synthetic load profile ⇒ Definition ⇒ Calculation.



Click **New** to define a new calculation definition.

Select the **Latest data storage** date from the calendar. This is the last time data from this meter was stored in EDC. The default is the current date.

Enter the **Last energy billing value**, i.e. the value stored at the date selected above.

NOTE

The **Latest data storage** and **Last energy billing value** are automatically updated when a calculation is made.

Enter the **Name** of the calculation definition.

Select the desired **Synthetic load profile** from the list.

Select the desired **Periodic buffer name** from the list. Periodic buffers are defined in **Definitions ⇒ RTU.**

Enter the **Device number**. This is the number of the meter whose billing values are used to calculate the synthetic load profile.

NOTE

The device number must be managed by the user. EDC does not check whether the number is valid.

Enter the **Identification code key** of the meter in each field. The default is the identification code for the ZMB meter.

Click **Save** to save the day definition. The definition is entered in the list.

Click **Delete** to delete the selected definition.

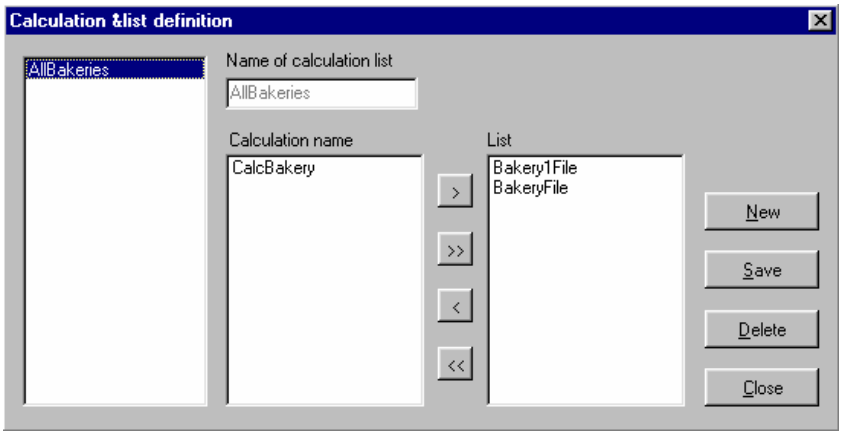
Click **Close** to close the window.

9.2.5 Calculation list definition

To help you calculate a number of calculations quickly, they can be grouped into lists.

Procedure

Synthetic load profile ⇒ Definition ⇒ Calculation list.



Click **New** to define a new calculation list definition.

Enter the **Name** of the calculation list definition.

Click > to add the defined calculations sequentially to the list. To add individual calculations to a list, select the desired calculation then click >>.

Calculation can be removed sequentially from the list using < or selectively using <<.

Click **Save** to save the calculation list definition. The definition is entered in the list.

Click **Delete** to delete the selected definition.

Click **Close** to close the window.

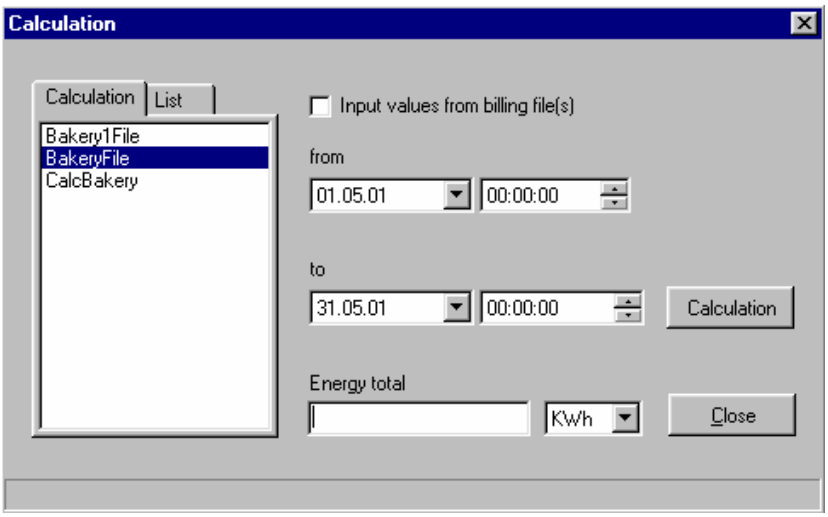
9.3 Synthetic load profile calculation

When the synthetic load profile definitions (day, week, and year) and calculation definition have been made, the synthetic load profile can be calculated. The synthetic load profile may be calculated from the billing value file acquired by EDC or from a billing value entered manually.

Single calculation procedure

Synthetic load profile ⇒ Calculation.

Select the desired calculation from the list.



From file

Click the **Input values from billing file(s)** checkbox to use data acquired by EDC. The period of billing starts from latest data storage and ends with the newest date and time in EDC\Routen*.abg file whose device number matches the device number in the calculation definition. The billing values are also taken from this file.

NOTE

If the latest data storage is the same or more recent than the newest date and time in the *.abg file, EDC will advise you that new billing values are needed to perform the calculation.

Click **Calculation** to perform the synthetic load profile calculation. When the calculation is complete, the Calculation button is dimmed.

or

Manual entry

Set the calculation period and time in the **from** and **to** fields using the calendar.

Enter the billing value for the entered period in the **Energy total field**.

Click **Calculation** to perform the synthetic load profile calculation. When the calculation is complete, the Calculation button is dimmed.

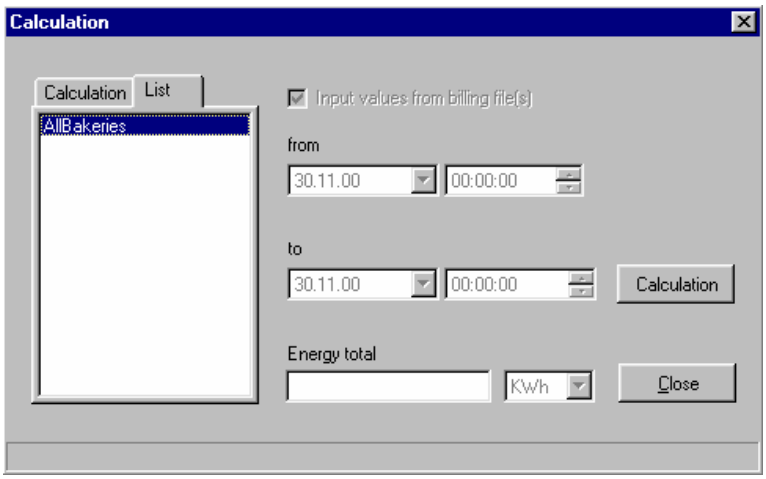
The synthetic load profile data can now be processed the same as other load profile data.

List calculation

Synthetic load profile ⇒ Calculation.

Click the **List** tab.

Select the desired list.



The **Input values from billing file(s)** option is automatically selected and the other fields disabled.
The period of billing starts from latest data storage and ends with the newest date and time in EDC\Routen*.abg file whose device number matches the device number in the calculation definition. The billing values are also taken from this file.

NOTE

If the latest data storage is the same or more recent than the newest date and time in the *.abg file, EDC will advise you that new billing values are needed to perform the calculation.

Click **Calculation** to perform the synthetic load profile list calculation. When the list calculation is complete, the Calculation button is dimmed.

The synthetic load profile data can now be processed the same as other load profile data.

10 System administration

10.1 The archiving system

EDC performance (response time) reduces with increasing data volume, however this is not the only reason for archiving old data. The archiving of data and definitions is also recommended when making changes to definitions or at the end of each business year.

Changing the archive directory

The default archive path is A:, however it may be modified to another drive and/or directory. If this is necessary, modify the file EDC.ini located in the EDC working directory as follows:

Default settings:

```
[DIRECTORIES]
      :
zstdir=C:\SIEMEN~1\DGC3_GC\ZST\
setupdir=A:\
bacdir=A:\
      :
```

The row marked in bold type specifies the working directory. It may be changed, for example, to a network directory:

```
[DIRECTORIES]
      :
zstdir=C:\SIEMEN~1\DGC3_GC\ZST\
setupdir=A:\
bacdir=G:\arch300\1998\
      :
```

NOTE

The archiving feature is based on the use of diskettes. The administration of different directories is not supported.

If you do not wish to use diskettes, use the following archive directory structure to simplify the procedure:

- One directory per year for metering values, e.g.
  ..\Archiv\Messw\1998\...
  ..\Archiv\Messw\1999\...
- For definitions, one directory per archiving operation, e.g.
  ..\Archiv\Definitionen\1998-08-03\...
  ..\Archiv\Definitionen\1998-11-27\...

The archive may also be located on the network. If one can ensure that only the central station is able to store and administrate data in this archive, several workplaces may be configured to access this data (read-only access).

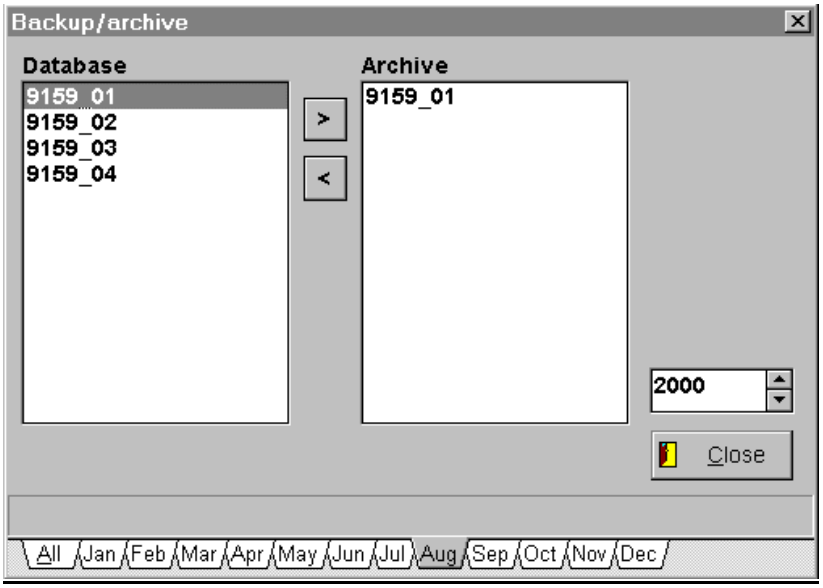
10.1.1 Archiving metering values

Periodic buffers, spontaneous events and meter register values are all archived in the same way.

Procedure

Display ⇒ Presentation

Data management ⇒ Backup/ archive ⇒ Raw values
Data management ⇒ Backup/ archive ⇒ Register values
Data management ⇒ Backup/ archive ⇒ Spontaneous events...



Database:

Lists all metering values that have data in the EDC database for the selected time range.

Archive:

Lists all metering values that already been archived for the selected time range.

Year:

Select the year to be archived .

Tabs (months):

Select individual months to archive monthly data or **All** to archive data from the whole year.

< >:

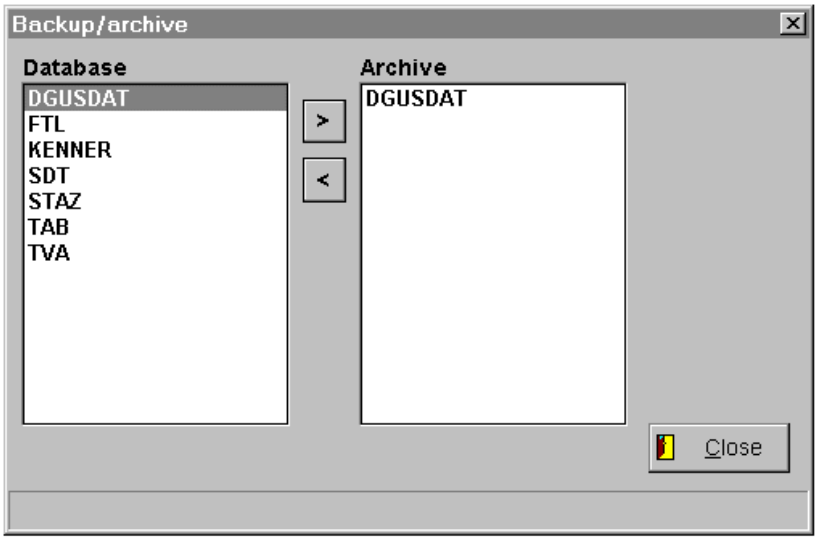
Press buttons **>** and **<** to copy the selected metering values from the database to the archive and vice-versa respectively.

10.1.2 Archiving definitions

Procedure

Display ⇒ Presentation

Data management ⇒ Backup/ archive ⇒ Definitions



Database:

List of all available definitions in the EDC database.

Archive:

List of all archived EDC definitions.

Filenames:

DGUSDAT	RTU definitions
TAB	Tariff agreements
TVA	Tariff variants
FTL	Holidays
SDT	Special days
KENNER	ID code keys
STAZ	Status display

Older versions of EDC may also have the following archive files:

USER	User list for access management
PW	User password list
ZMBPW	Password for read-only access via the optical interface

< >:

Press buttons **>** and **<** to copy the selected definitions from the database to the archive and vice-versa respectively.

NOTE

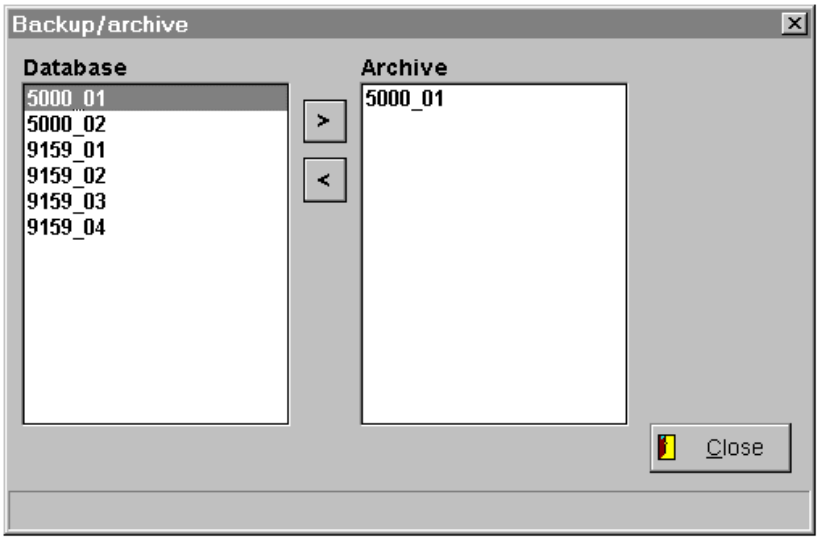
Existing archive files will be overwritten when starting the archiving procedure ! Therefore always use new diskettes or define a new directory before archiving.

10.1.3 Archiving projects and reports

Procedure

Display ⇒ Presentation

Data management ⇒ Backup/ archive ⇒ Project
Data management ⇒ Backup/ archive ⇒ Form



Database:

List of all available projects in the EDC database.

Archive:

List of all archived EDC projects.

Filenames:

The filenames correspond to those specified when saving the projects and forms (save as).

< >:

Press buttons **>** and **<** to copy the selected projects from the database to the archive and vice-versa respectively.

NOTE

Existing archive files will be overwritten when starting the archiving procedure ! Therefore always use new diskettes or define a new directory before archiving.

10.1.4 Deleting archived files

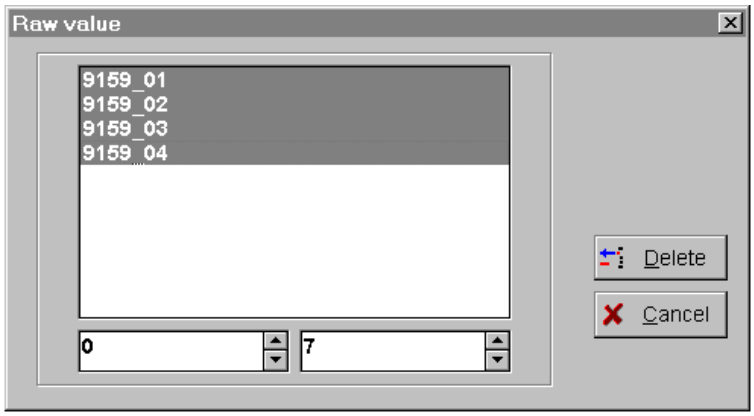
Once archiving has been performed, one may delete metering data and projects no longer required.

Procedure

Display ⇒ Presentation

Data management ⇒ Delete ⇒ Raw values..
Data management ⇒ Delete ⇒ Register values...
Data management ⇒ Delete ⇒ Spontaneous events...
Data management ⇒ Delete ⇒ Projects

Select file
⇒ **Delete**



Year:

Select a year between 0 and 99.

Month:

Select a month between 1 and 12

NOTE

The delete action cannot be undone, i.e. the restoration of files is not supported.

- Always archive files before deleting them.

10.1.5 Billing data maintenance

Billing data is stored in the directory EDC\ROUTEN. This directory is intended as the interface to higher-level systems. Such systems periodically transfer the data and subsequently delete the files in directory EDC\ROUTEN.

These files must be manually deleted if there are no higher-level systems performing this task.

Procedure

Display ⇒ Presentation

File ⇒ Open ⇒ Billing data
Select file
Delete

10.2 Editing periodic buffers

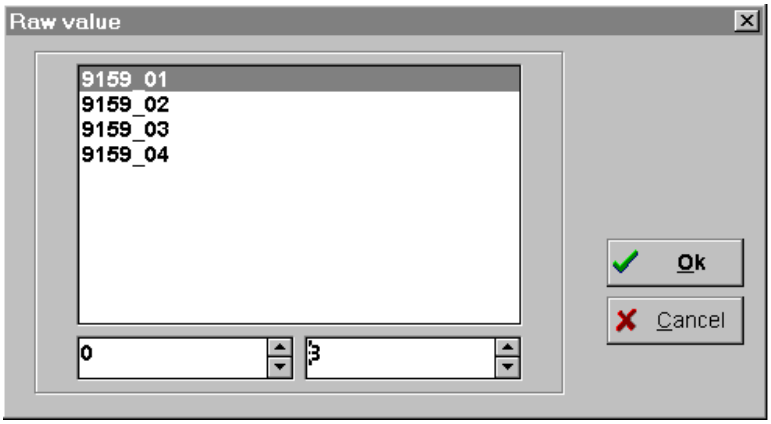
Periodic buffer data may be edited. This is particularly useful when metering data could not be acquired due to maintenance work or outages at the metering point.

Every modified value is flagged with a status bit. Comments on the changes may also be stored with the value directly in the database.

Procedure

Display ⇒ Presentation

Data management ⇒ Input substitute values
Select a metering value
⇒ **OK**



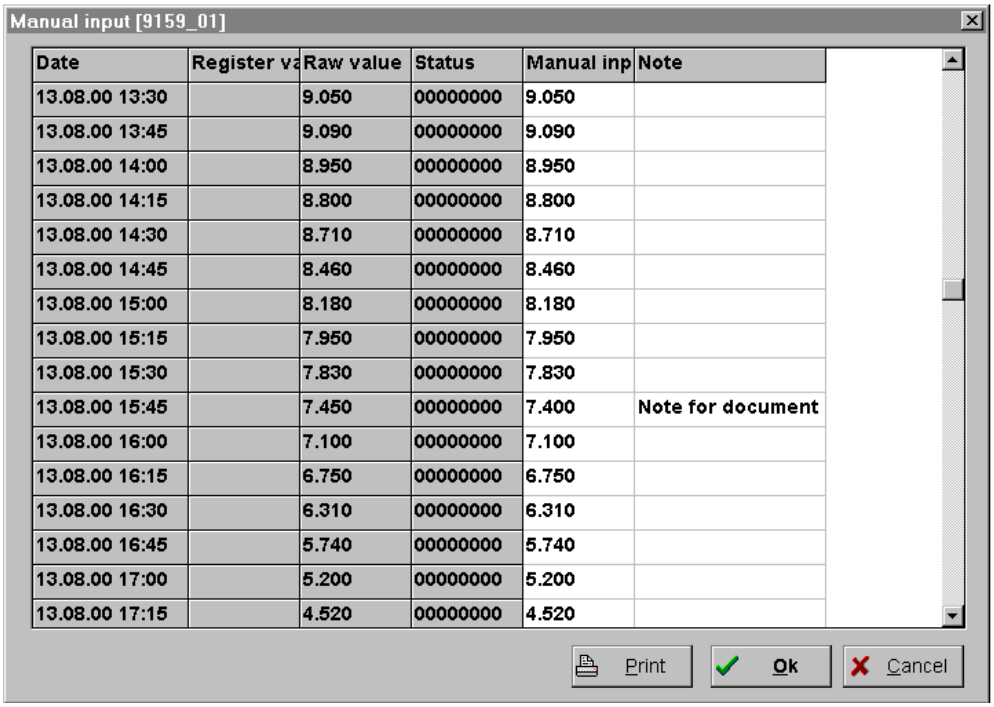
Year:

Select a year between 0 and 99.

Month:

Select a month between 1 and 12

Dialogue



Date:

Date and time of integrating period closure.

Register value:

Meter register value (only displayed if such values have been acquired)

Raw value:

Metering value in periodic buffer.

Status:

Status information in the form of a bit pattern, followed by the character that should be displayed (defined under "Definitions" - "Status indication").

Manual input:

Dialogue window for new metering values.

In the above example, the acquired value of 7.450 must be replaced by 7.400 as the comparison with the billing data indicated a discrepancy caused by a measurement error.

Note:

Used for noting the change in metering value or any other comment.

Once the manual change has been made, the original data cannot be restored, however the new value is marked with a status bit:

13.08.00 15:45		7.400	00000001	7.400	Note for document

NOTE

The manipulation of metering values may result in the misinterpretation of load profiles and can lead to discrepancies between the billing and load profile data.

- Modifications should only be made by authorised personnel.
- The original values are lost once the changes have been made. Archive the values before making any changes or enter the original value in the “Note” field.

11 Troubleshooting

11.1 Licence, Language

Keyword	Problem:	Proposed solution:	Procedure:
Licence	Where should I enter the licence?		Menu Help ⇨ About: Press licence and enter the licence details: i.e. licence, no. of periodic buffers, licence key
Licence, RTU Definition	It is not possible to create any new RTUs .	Your licence is limited to a maximum number of RTUs.	Please contact your local Landis+Gyr representative.
New language	How can I add a new language?	Use the EDC Language Translation Tool to add new languages. Note: The Language Translation Tool is only intended for use by local group companies.	1. Start the EDC Language Translation Tool (Lang.exe) Open library Tvstrcon.pas using menu File ⇨Open Add a new language using menu Edit ⇨ New Language Perform the translation based on an existing language. Use the search and replace functions to assist in the translation. Export the language using menu Edit ⇨ Export (*.str) Archive the new library using menu File ⇨ Save as..
Changing language	How can I change the language?		Press the language button in the dialogue and select a new language. Restart the EDC.

11.2 Troubleshooting modem installations for remote acquisition

Preparations:

If required, EDC can store all the data traffic in a file. Activate the data recording function:

Definitions ⇒ System ⇒ Data storage

There are two available settings:

Logging to file:

Suited to technically skilled EDC users who wish to solve any modem and communication problems.

Detailed logging:

This provides a lot of detailed information and is intended for support by EDC software engineers.

For troubleshooting select the “Logging to file” setting.

Keyword	Problem:	Proposed solution:	Procedure:

Modem, Initialise	Modem cannot be initialised.
	The recorded file contains the message:
	`Transmit:`
	`ATV1[0D]`**`Message`**`:`
	`Mt. Rigi Demo` **`ended`**
		Check the modem connection and the communication line definition.	1. Is the modem connected to the PC by a modem cable?
			2. Is the port number (COM) correct?
			3. Is the baud rate correct?
			4. Is the modem initialisation correct?
			FKJ11.1: AT&F3
			ZyXEL: AT
			Logem: AT&V0

Modem, Dial	Modem does not detect a line. The recorded file contains the message: `Receive:` `OK[0D][0A]ATDT0w8550035[0D][0D][0A]`**`NO`**`[20]`**`DIALTONMessage`**:	Check if the modem has been connected to the telephone socket.	1. Has the modem been connected to the telephone socket? 2. Is the dialling mode correct? (tone or pulse) 3. If you are not using an original modem cable, it may be that RX and TX are reversed. Check the configuration e.g. with an RS232 test adapter or with an existing application that you are familiar with.

Keyword	Problem:	Proposed solution:	Procedure:
Modem, Dial	Telephone number cannot be dialled. The recorded file contains the message: `Receive:` `OK[0D][0A]ATDT0w8550036[0D][0D][0A]`**`NO`**`[20]`**`CARRIEMessage:`**	Using a telephone, check if the dialled number really exists and is attainable.	1. You should hear modem noises. 2. Is a prefix necessary? Z.B. **0** 8550035 3. Enter the character “w” if one has to wait for a dialling tone. e.g. 0**w**8550035 4. If possible, attempt to dial the number using another telephone, e.g. using a mobile telephone. 5. Check with the responsible authorities that the telephone number is not blocked by the in-house exchange (PBX) or public network operator (PSTN).

Modem, InitCom	Data could not be acquired even though the modem connection was established.
	The recording shows that the EDC attempted to initialise the RTU 5 times.
	`Message:`
	`InitCom`
	`Transmit:`
	`[01]1425340?000:[03][01]1425340?000:[03][01]1425340?000:[03][01]1425340?000:`
	`[03][01]1425340?000:[03]`
		Check the RTU communication number, the password and the communication protocol.	Check the menu settings under Definitions ⇨ RTU:
			1. Communication number
			2. Password
			3. Has the correct protocol been selected for the RTU? e.g. V22, V22bis, V23
			The recording will show the connection parameters.
			`Receive:`
			`OK[0D][0A]ATDT0w8550035[0D][0D][0A]`**`CONNECT`**`[20]`**`2400/V.22b`**`[20]`**`2400/NONE`**`[0D][0A]`
			Check the settings with the department responsible for RTUs.

Keyword	Problem:	Proposed solution:	Procedure:

Modem, no data	The data is acquired but not saved.
	
	`Message:`
	`Periodic Buffer: Start: 30.05.00 12:00:00 End: 31.05.00 11:45:00`
	`Periods: 96 Dec: 4 Points: 3 bytes collected: 2708 estimated: 2132`
	
	`Message:`
	`Wrong amount of bytes collected, data dismissed`
		Check the data format and RTU configuration.	EDC checks the amount of transferred data against the RTU definition. If they do not correspond, the message „Wrong amount of bytes collected, data dismissed“ appears in the recorded file
			
			Check the menu settings under Definitions ⇨ RTU:
			1. RTU type
			2. Periodic buffer
			3. No. of decades
			4. Integrating period
			5. Metering values
			6. Check the settings with the department responsible for RTUs..
			The message „amount of bytes collected ok, data accepted“ will appear in the recorded file if acquisition and storage were successful.

11.3 Local read-out

Keyword	Problem:	Proposed solution:	Procedure:
Local read-out	The message „Windows NT required“ appears.	Note: Local read-out is not supported by Windows 95.	Solve the problem as follows. 1. Install EDC under the Windows NT operating system. 2. If you have an older version, e.g. V2.4, use it in this case.
Identifier is not defined Ident. codes	The locally read-out load profile cannot be imported.	The ident. codes still need to be defined.	Check the menu settings under Definitions ⇨ System and define the ident. codes, e.g. 1. Device ID: /LGZ 2. Device number: 0 3. Date: 12 4. Time: 11 5. Load profile: 80
Missing local read-out	The dialogue under menu File ⇨ Import ⇨ Local reading Does not display all local read-outs stored in the \Taridat directory.	Note: EDC only shows semantics of acceptable local read-outs. Also see file: Index.tmp	Delete the file \Taridat\Index.tmp