EnergyLink400
User's Manual

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DAE Instrument Corp.   http://www.DAEinstrument.com/

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Notice

1. Before using this software please make sure that the installation was made properly, if any problem was encountered during installation please refer to the EnergyLink400 installation guide, if any problems remain unresolved please contact DAE or any of its authorized dealers for assistance.

2. Since this software is designed to run continuously for 24 hours a day, please turn off or disable the auto sleep mode or power down mode of the host computer in both the OS and the firmware. Otherwise the software won't be able to perform its function to collect data in the background.

3. This software automatically collects data from the devices, saves the data and displays it on the screen; this data also forms the basis for billing computation.
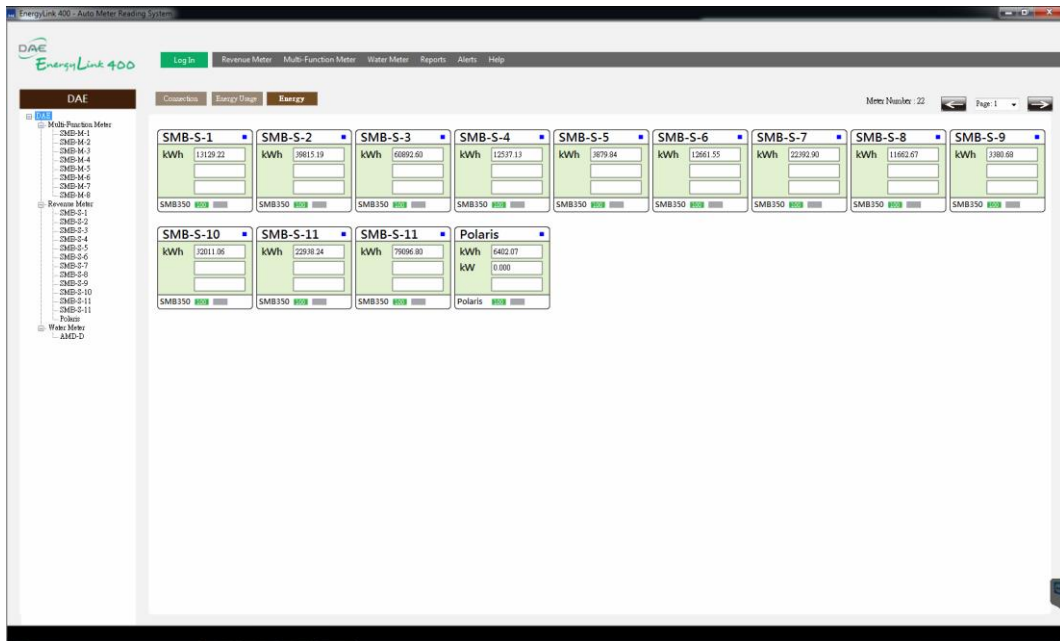
# CONTENT

1. Screen Introduction

1.1. Main Screen

When the software starts up, the screen below is displayed:

The left side of the screen shows an outline of the current layout of the building or campus, which is prearranged according to the preference of the facility manager by building, floor or zone for ease of finding the desired meter.

The outline is prearranged when the system was initially designed and commissioned, it cannot be changed by the operator. If changes need to be made, please contact a DAE representative to send a trained technician make the changes.
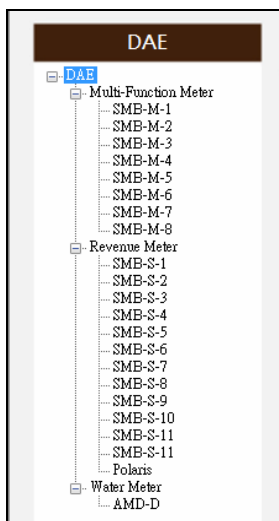
The top of the screen shows the function menu, including <Log In>, <Revenue Meter>, <Multi-Function Meter>, <Water Meter>, <Reports>, <Alerts>, and <Help> items.
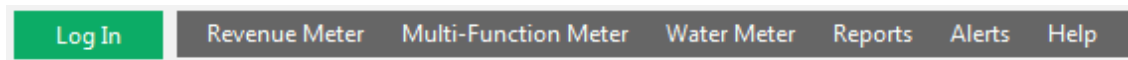

The function of each item is described below:

- Log In: Allows the user to login as an operator or as an administrator, once logged in, an addition item called <System Setting> will appear on the menu. Selecting this item will allow system setup and related operations.

- Revenue Meter: Displays the revenue meters and their relevant data, including the total kWh, kWh for today, kWh for yesterday, and the kWh for the month.

- Multi-Function Meter: Displays the multi-function meters and their relevant data, including the kWh, kWh for today, kWh for yesterday, kWh for the month, voltage for each phase, current for each phase, power, and frequency.

- Water Meter: Displays the water meters and their relevant data, including the water meter reading, and consumption for the month.

- Reports: Displays the various types of reports, including detailed reports, billing reports, activity reports and alerts.

- Alerts: Alerts such as communication disruption between the computer host and the metering devices are all shown here.

- Help: Help information regarding the meters and about this software including version information.

The menu will change in accordance with the actual devices present; for example, if there are no water meters then the water meter menu item will not be present.
The top right corner is for page selection, if there are too many meters to display on one page, the other meters will be on subsequent pages, the left and right arrows can be used to flip to the previous or the next page respectively, or the desired page number can be entered to jump directly to that page.
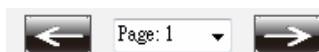
The following sections will describe each of the aforementioned item in detail.

1.2. Revenue Meter Menu Item

This menu item opens the kWh meter screen which displays information for the single function meters, and primarily is meant to show the kWh reading.
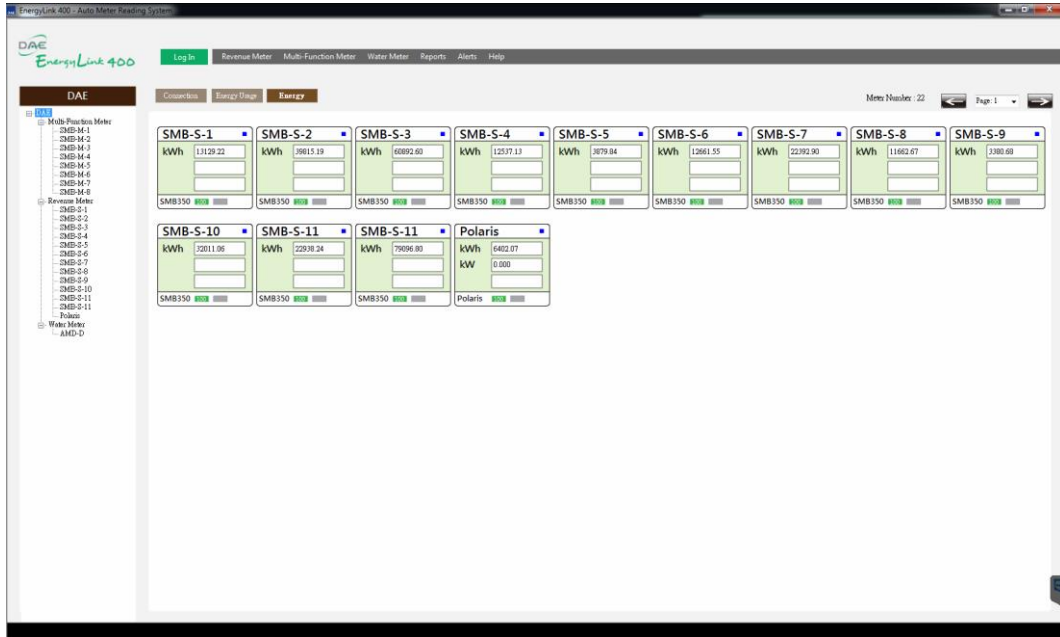
Each block represents a single meter, the number of meters display will depend on the screen size. Each page will have 3 tabs that contain various type of information regarding the meters, these are <Connection>, <Energy Usage> and <Energy>.

♣ Connection (Connection Quality): Displays the communication success rate between the computer host and a given energy meter, on the bottom of the block there is a color bar to represent the current connection quality, a green bar indicates a better than 70% success rate, an orange bar indicate a 1 to 69% success rate, and a red bar indicates there is no communication at all. Special notice should be given to a red bar as it may mean that there may be something wrong with the physical cable or link, which may require servicing or repair.
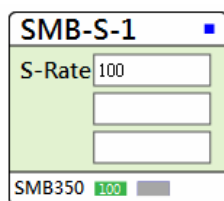
- Energy Usage: Displays the energy consumption for the day before, for today and for the month.

  Yesterday: Computed as the difference between the consumption from midnight to midnight yesterday.

  Today: The consumption for up to now starting from midnight yesterday.

  This Month: The consumption for up to now starting from the midnight between the last day of the previous month to the first day of the current month.

  Note that when the software first starts operating, there is no historical data recorded and the data for yesterday, today, and this month will all register zero, this is normal behavior, once the software has had enough time to collect sufficient data, the usage data will become normal.

- Energy(kWh Reading): Displays the current kWh reading, this value reflects the same displayed value on the meter itself; however, since the software polls the meters in turn, this value may be slightly off from the actual meter value and should resynchronize after one full polling cycle, normally within 30 seconds.

1.3. **Multi-function Meter Menu Item**

This will display the multi-function meter screen showing not just the kWh reading, but also the voltage, current and other parameters.

The multi-function meter menu item has 6 tabs of information available, these are <Connection>, <Energy Usage>, <Energy>, <Voltage>, <Current> and <Power>

The same information is displayed for the <Connection>, <Energy Usage> and <Energy> screen. Please refer to section 1.2 Revenue Meter for details.

➕ Voltage: Displays the voltages measured by the multi-function meter. For the PM210 model, the software will automatically detect its phase/wire configuration as being 3p3w or 3p4w and display the appropriate voltage type.
A phase/wire configuration of 3p4w will show the phase voltages as VA, VB and VC; while the 3p3w will show the line voltages as VAB, VBC and VAC. The unit being volts with one decimal place.

- Current: Displays the currents measured by the multi-function meter for each of the 3 phases A, B and C. The unit being amperes with 3 decimal places. For a single phase meter or channel, only one current value will be displayed.

SMB-M-1	■
IA	10.484
IB	10.030
IC	11.145
SMB350	100

- Power: Displays the power (kW), power factor (PF), and frequency (Hz) data. The power unit is kW with 3 decimal places. The power factor is a dimensionless ratio with 3 decimal places. The frequency is in Hertz with one decimal place.

SMB-M-1	■
kW	7.060
PF	0.990
Hz	60.0
SMB350	100

1.4. Water Meter Menu Item

This menu item will show the water meter screen showing the cumulative consumption reading for each water meter.
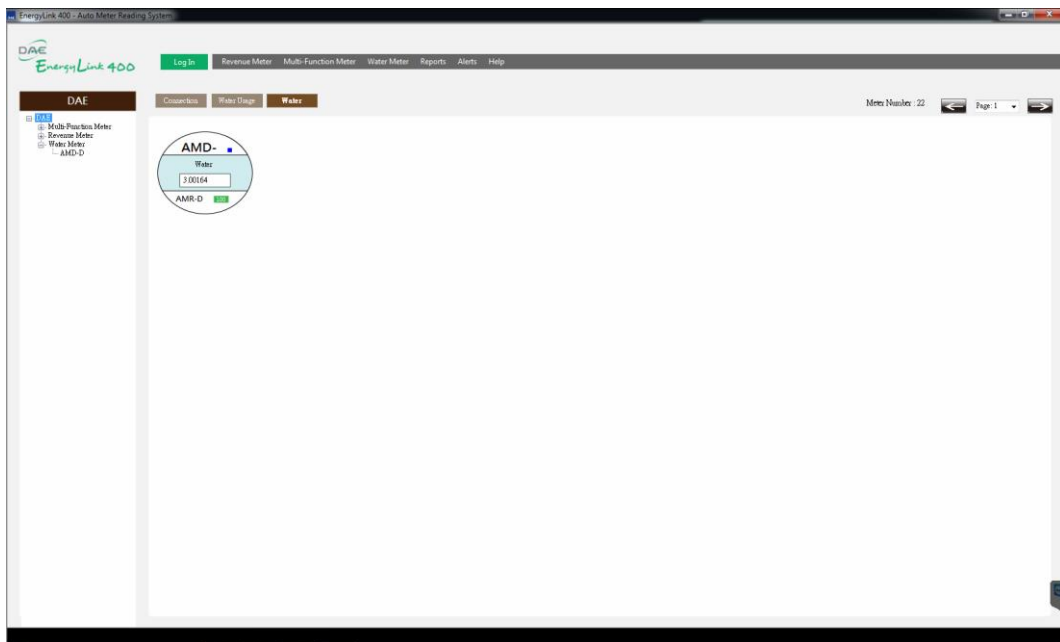
There are 3 tabs of information on the water meter screen, these are <Connection>, <Water Usage> and <Water>.

➕ Connection(Connection Quality): Displays the communication success rate between the computer host and a given water meter, on the bottom of each circular block there is a color bar to represent the current connection quality, a green bar indicates a better than 70% success rate, an orange bar indicate a 1 to 69% success rate, and a red bar indicates there is no communication at all. Special notice should be given to a red bar as it may mean that there may be something wrong with the physical cable or link, which may require servicing or repair.
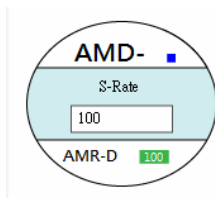
➕ Water Usage: Displays the water consumption for the current month.
This Month: The water consumption for up to now starting from the midnight between the last day of the previous month to the first day of the current month.

Note that when the software starts operating, there is no historical data recorded and the data for this month will show as zero, this is normal behavior, once the software has had enough time to collect sufficient, the data will display normally.
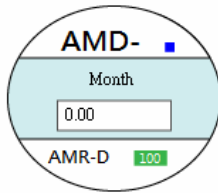

➕ Water(Water Reading): Displays the current water meter reading, this value reflects the value displayed on the actual meter register; however, since the software polls the meters in turn, this value may be slightly off from the meter register value and should resynchronize after one full polling cycle, normally within 30 seconds.
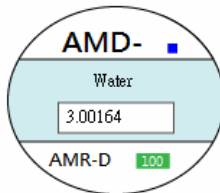
1.5. Alert Menu Item

Alerts refer to communication failures with remote devices.
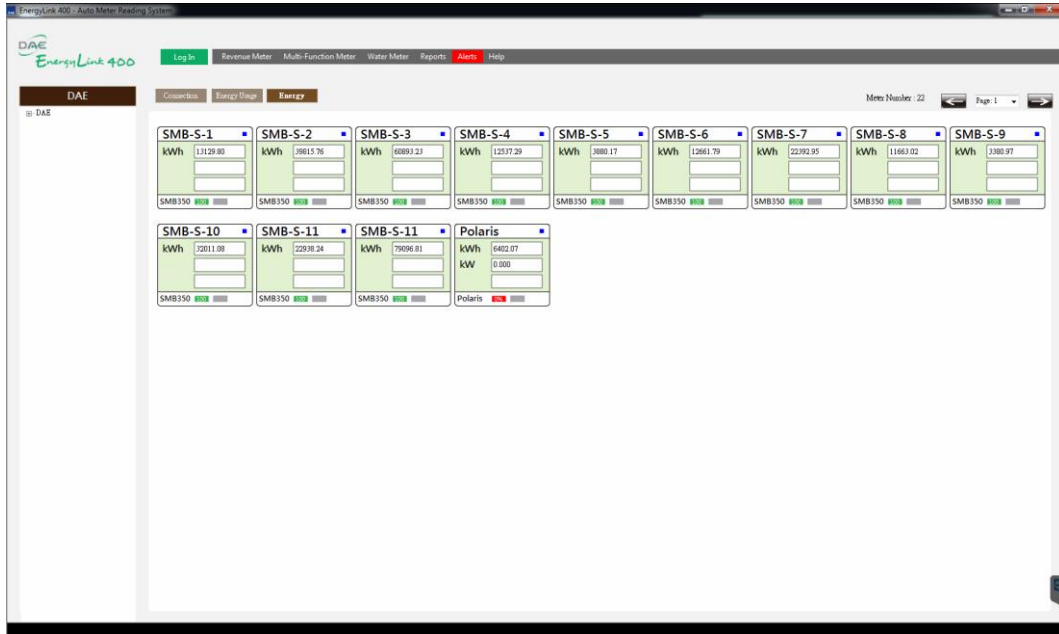
When the software is unable to communicate with a device, the software will cause the <Alert> menu item to flash and also issue a sound alert if an audio device is present. When this happens, click on the <Alert> menu item to inspect the cause of the alert, and dismiss the flashing and alert sound. A sample alert window is shown below:
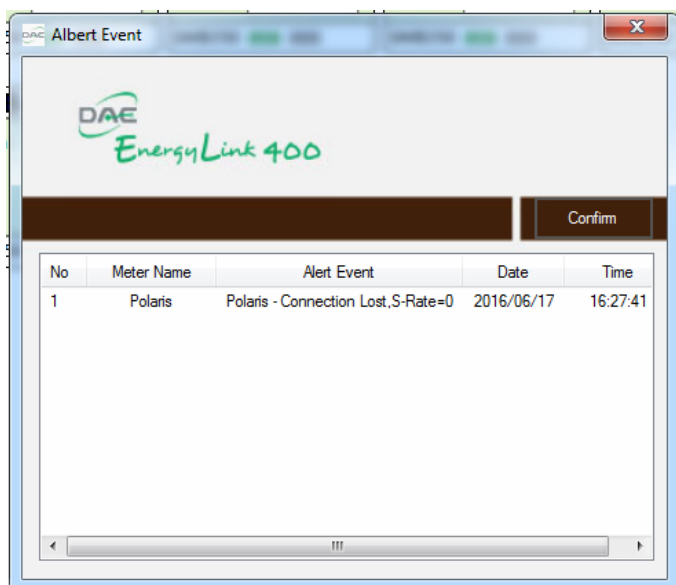
Description of each field in the report:

Item No.	Field Name	Description	Notes
1	No	Alert number	
2	Meter Name	The meter affected by the alert	
3	Alert Event	Description of the alert, connection failure, success rate=0	
4	Date	Date when the alert occurred	
5	Time	Time of day when the alert occurred	

If the communication link with a meter is broken and the link has not yet been restored, the software will not register the same alert. But if the communication has been restored and another communication failure occurs, a new alert is issued.

When the <Confirm> button is clicked, the alert window will be dismissed, and the software will no longer cause an alert for those alerts which have already been acknowledged.

If the alert window is closed through the <X> button on the top right of the window, the alert will continue flashing, since the alert has not actually been acknowledged but simply dismissed.

1.6. Help Menu Item

This menu item includes both the <Help> and <About> windows.

Clicking on the <Help> menu item will pop up a window describing the meter information box. It is context sensitive and will by default show information regarding the type of meter that is currently being shown, if information about another type of meter needs to be viewed, simply click on buttons corresponding to the desired meter type on the top left of the window.
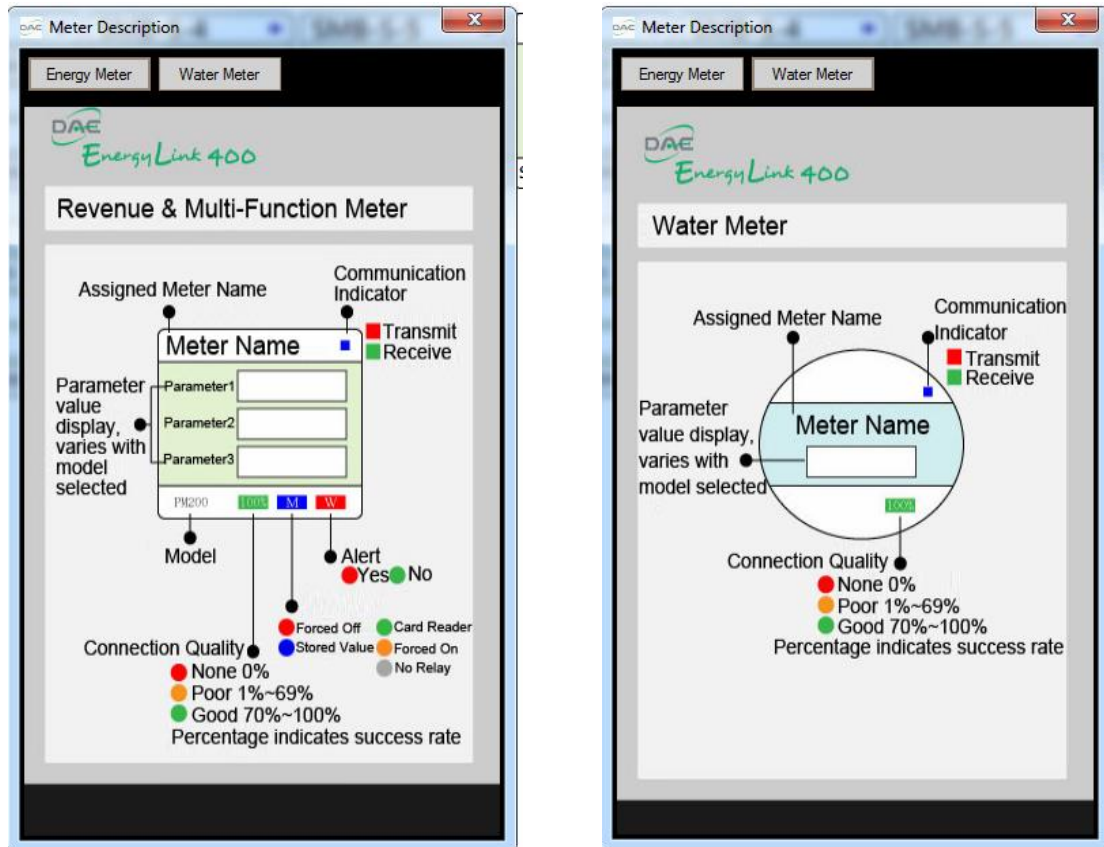
Clicking on the <About> menu item will pop up a window showing information about this software, its version number and other miscellaneous information.

If any problem is encountered during the use of this software, please contact DAE and provide the software version number and serial number.

2. Reports

Clicking on the <Reports> menu item will show the reports screen; viewing the reports screen does not require logging in as operator or administrator.

The type of reports available will depend on the type of meters installed. Not only can the reports be viewed from the screen but they can also be printed by clicking on the <Print> button [icon]. They can also be exported by clicking on the <Export> button [icon]; they can be exported as Word, Excel of PDF files.
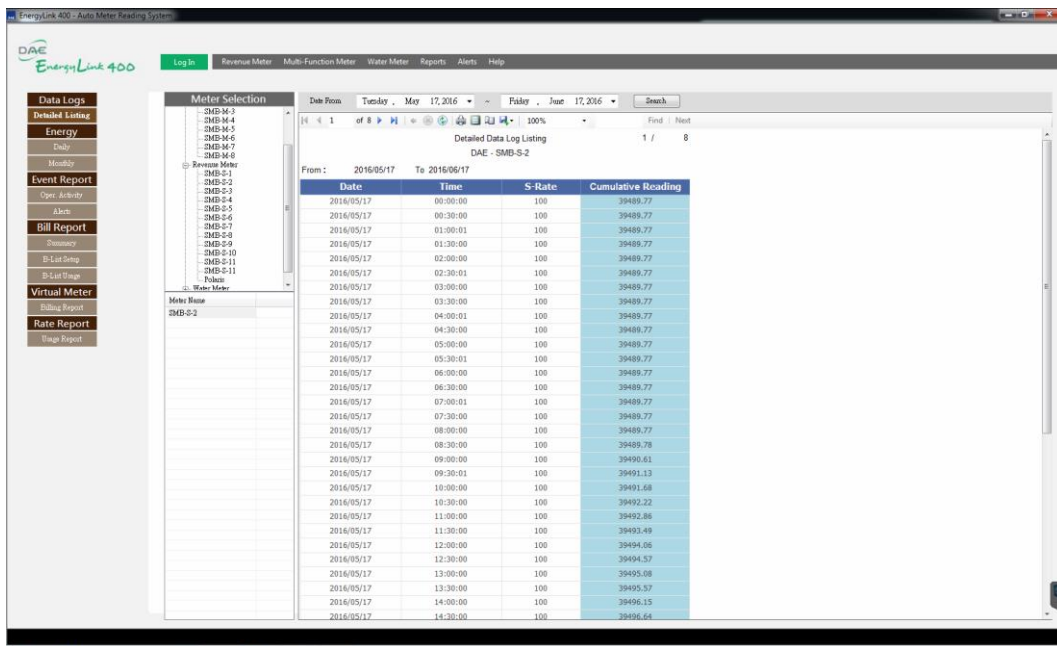
2.1. Data Logs

2.1.1. Detailed Listing (By Time)

The detailed listing report shows the logged data for a given meter, a data point is recorded every 30 minutes. This applies to both electricity and water meter.

To get the detailed listing report for any given meter, note down the name of the meter, then when in the detailed listing report, select the meter name from the meter selection outline, then click on the meter name below the outline.
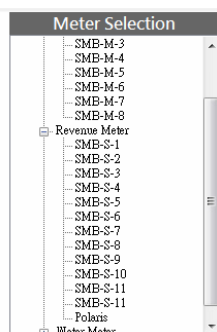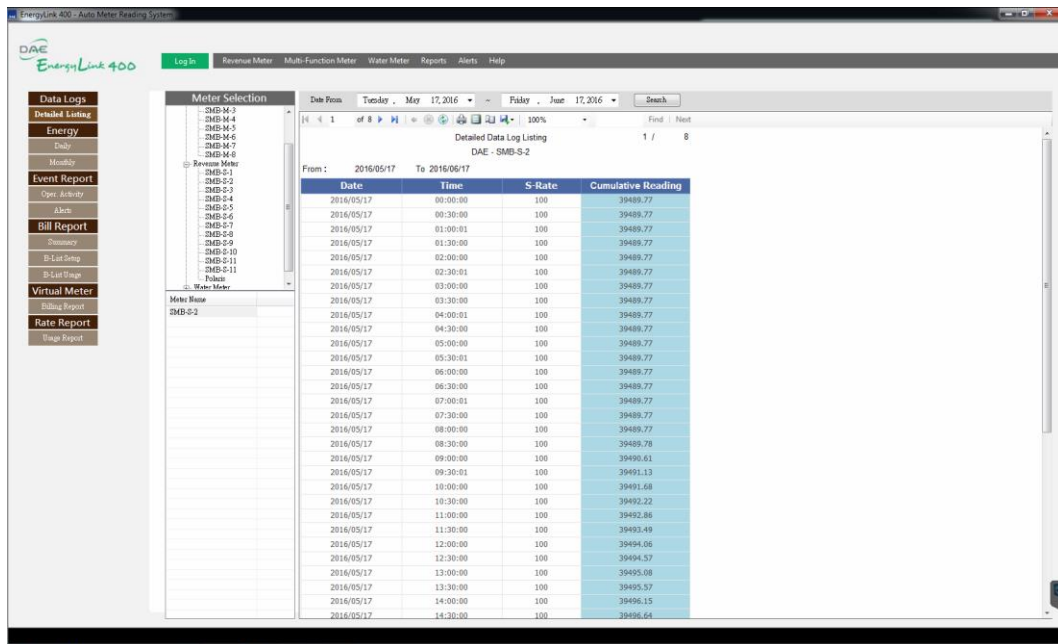
The <search> button will only work if the meter name is selected and will not work when only the meter in the outline is selected.
After the meter name is selected, set the starting and ending dates.

Once both the meter name and dates are selected, click on the <Search> button to generate the listing.

Description of each field in the report:

Item No.	Field Name	Description
1	Date	Date the data was recorded (yyyy/mm/dd)
2	Time	Time the data was logged (hh:mm:ss)
3	S-Rate	Connection success rate when the data was obtained
4	Cumulative Reading	The kWh data reading

A data point highlighted light red means that the data was logged when the connection quality was not at 100% and should be suspect, data highlighted with blue means that the data point is certain.

A sample listing for a multi-function meter is shown below:

On top of the report listing is a row of buttons for navigating the report.

The button functions are as follows:

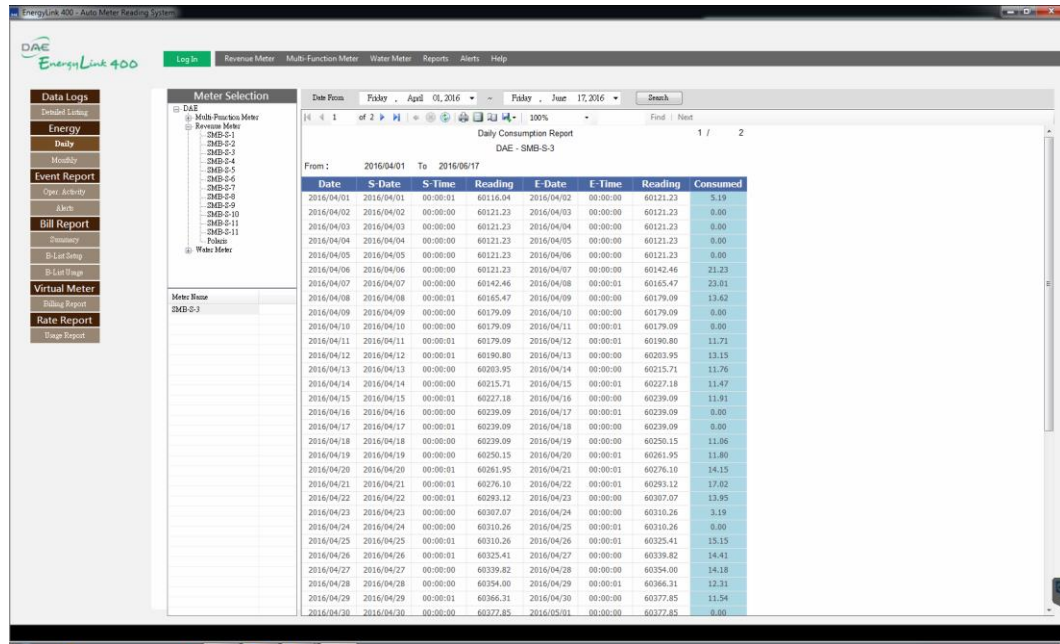| Item No.	Icon/Image	Description
1		go to first page
2		go to previous page
3		go to next page
4		go to last page
5	1	current page number
6	31	total number of pages
7		go up to parent report
8		abort report generation
9		refresh
10		print
11		display full page
12		print page setup
13		export as Word, Excel or PDF file
14	100%	displayed proportion
15	Find	keyword search
16	Next	next report

2.2. Consumption Reports

2.2.1. Daily

The Daily Consumption Report shows the daily reading and total consumption for each day within a given range of dates for any given meter. Each day starts and ends at midnight. If there is no data for that day, then the software will search back to the nearest day with data.

The process for creating the report is the same as that for the Data Log Detailed Listing. Only one meter can be selected for each report. Daily consumption data highlighted with light red indicates that the time span is not for a full day and should be treated with suspicion.

Description of each field in the report:

Item No.	Field Name	Description
1	Date	Date of consumption (yyyy/mm/dd)
2	S-Date	Starting date (yyyy/mm/dd)
3	S-Time	Starting time (hh:mm:ss)
4	Reading	kWh or water reading of starting date
5	E-Date	Ending date (yyyy/mm/dd)
6	E-Time	Ending time (hh:mm:ss)
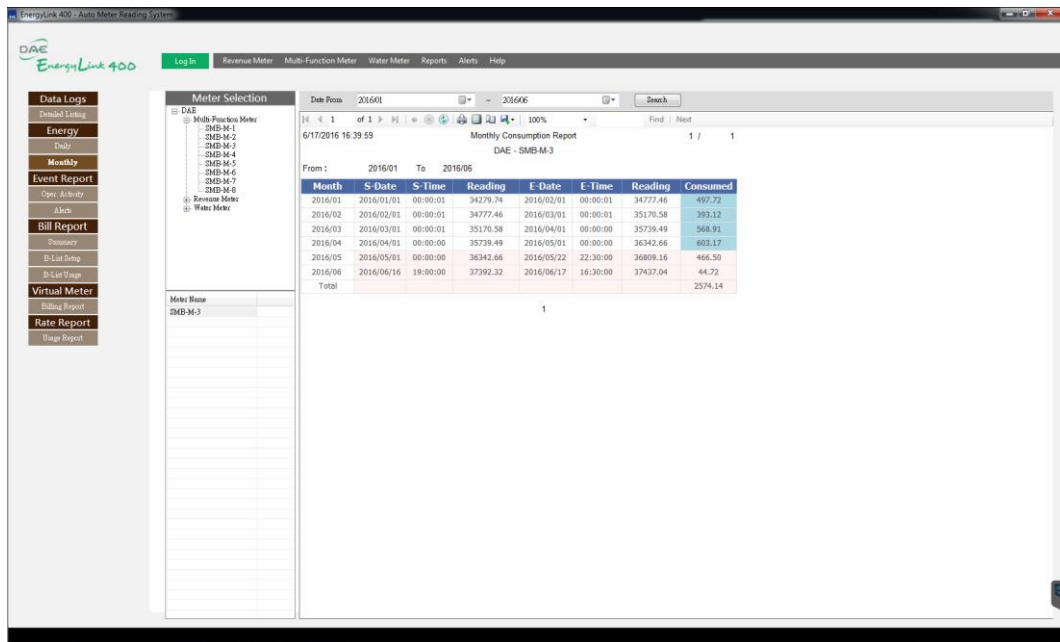
7	Reading	kWh or water reading of ending date
8	Consumed	Total consumption for that day (Ending kWh - Starting kWh)

2.2.2. Monthly

The monthly consumption report shows the consumption of a given meter arranged by month from within a specified date range.

The consumption for each month is measured from the midnight of the last day of the previous month to the midnight of the last day of the given month. If no data is found on the start date, then the data from the nearest date prior to the start date is used. If no data is found on the end date, then the data from the nearest date prior to the end date is used.

The process for creating the report is the same as that for the Data Log Detailed Listing. Only one meter can be selected for each report. Daily consumption data highlighted with light red indicates that the time span is not for a full month and should be treated with suspicion.

Description of each field in the report:
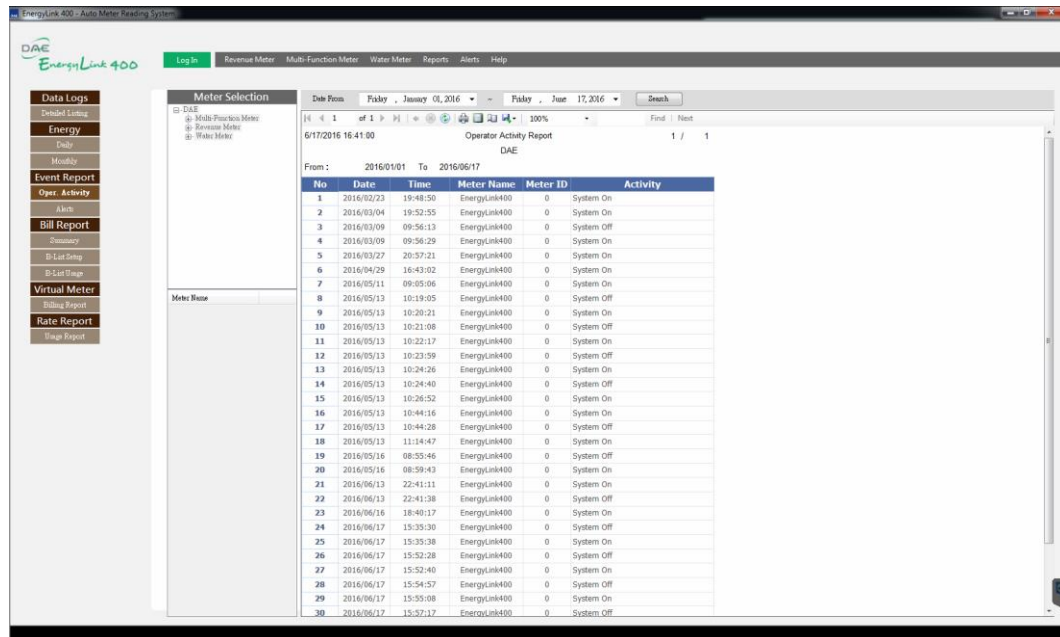
Item No.	Field Name	Description
1	Month	Month and Year of consumption (yyyy/mm)
2	S-Date	Starting date (yyyy/mm/dd)
3	S-Time	Starting time (hh:mm:ss)

4	Reading	kWh or water reading of starting date
5	E-Date	Ending date (yyyy/mm/dd)
6	E-Time	Ending time (hh:mm:ss)
7	Reading	kWh or water reading of ending reading
8	Consumed	Total consumption for that day (Ending kWh - Starting kWh)

2.3. Event Reports

2.3.1. Operator Activity

The operator activity report is a log of the actions made to each meter by the operator; actions include changing the name of the meter, resetting the meter to zero and other similar actions.
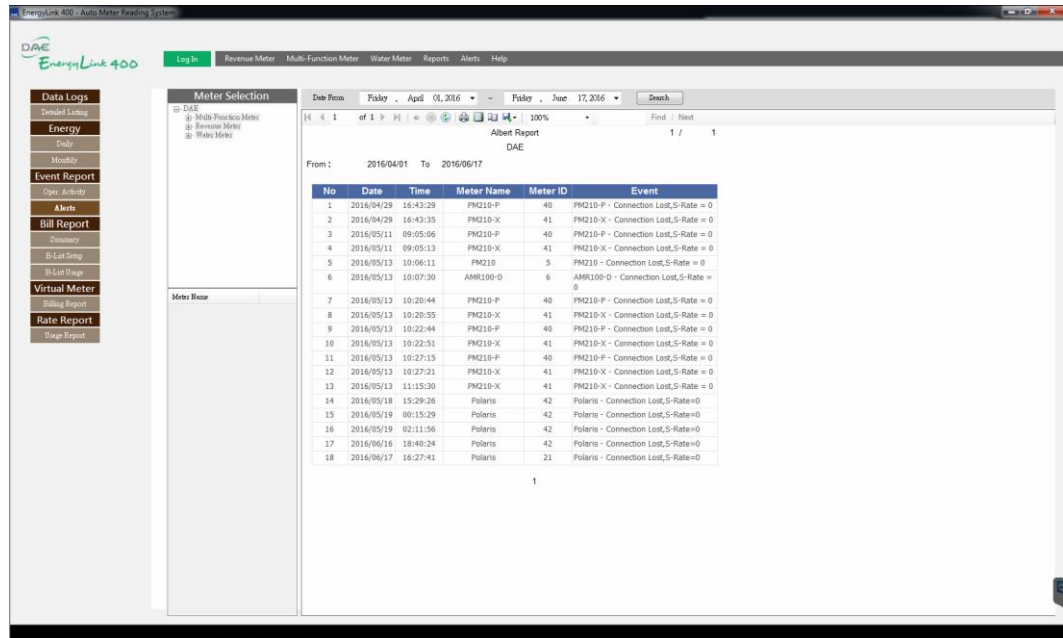

Description of each field in the report:

Item No.	Field Name	Description
1	No.	Sequencing number for each record generated by the software
2	Date	Date Logged (yyyy/mm/dd)
3	Time	Time Logged (hh:mm:ss)
4	Meter Name	A name assigned to the meter by the operator
5	Meter ID	A number identifying the meter make and model
6	Activity	Description of the action taken

2.3.2. Alerts

The alert report is a record of all the alert warnings that have occurred, alerts include events such as communication failure between the software and a meter device.

Description of each field in the report:

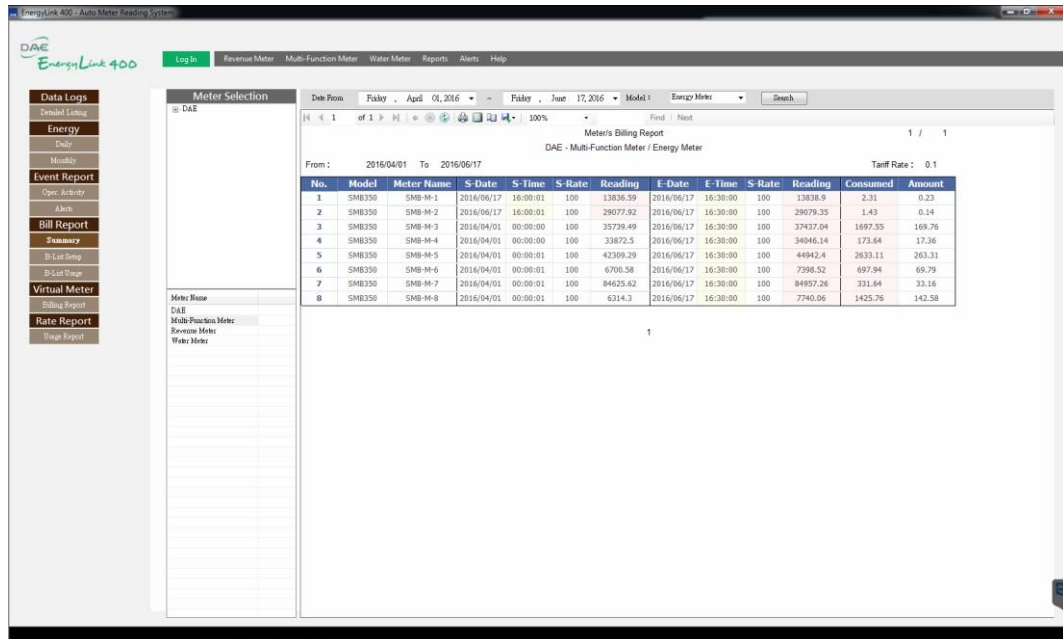| Item No.	Field Name	Description
1	No.	Sequencing number for each record generated by the software
2	Date	Date Logged (yyyy/mm/dd)
3	Time	Time Logged (hh:mm:ss)
4	Meter Name	A name assigned to the meter by the operator
5	Meter ID	A number identifying the meter make and model
6	Event	Description of the condition that caused the alert

2.4. Billing Report

2.4.1. Meter Billing Report

The Meter Billing Report can be generated for the period specified by the operator, and for the meter type, which can be either electricity or water.

The meters to include in the report can be selected from the meter outline and meter name window on the left side of the report. To select a meter, select the meter from the outline, then click on the meter name in the meter name window. If multiple meters need to be selected, first select the group in the outline, then select the group in the meter name window. Then click the <Search> button to generate the report.

If there is no data on the start date, then the data from the nearest date prior to the start date is used. If there is no data on the end date, then the data from nearest date prior to the end date is used.

Description of each field in the report:

Item No.	Field Name	Description
1	No.	Sequencing number for each record generated by the software
2	Model	Meter model
3	Meter Name	A name assigned to the meter by the operator
4	S-Date	Starting date (yyyy/mm/dd)
5	S-Time	Starting time (hh:mm:ss)

6	S-Rate	Communication success rate on the start date when reading the kWh
8	Reading	kWh reading on the starting date and time
9	E-Date	Ending date (yyyy/mm/dd)
10	E-Time	Ending time (hh:mm:ss)
22	S-Rate	Communication success rate on the end date when reading the kWh
23	Reading	kWh reading on the ending date and time
24	Consumed	Total consumption for the given month (kWh End - kWh Start)
25	Amount	Billed amount for month (Consumed * Tariff Rate)

3. System Operation

Changing system settings require permission as an operator or administrator.

Click on the <Log In> button on the upper left, the log in window will appear, enter your operator or administrator login name and password then click <Accept> to be allowed access to the system operations screen.
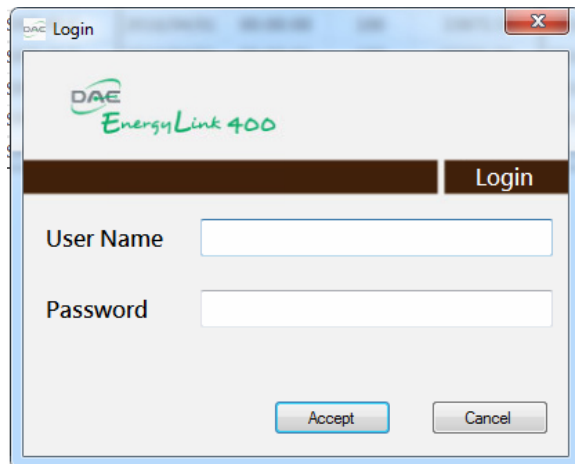
The privileges of an operator and an administrator are as follows:

Capability	Administrator	Operator
Account management	●	
Change user name	●	●
Reset meter to zero	●	●
Change tariff rate	●	●

Once logged in, the <Log In> button will change it text to <Log Out> and will begin flashing, this is to remind you to log out immediately once you finish making changes as an operator or administrator and prevent unauthorized persons from having access to the system.
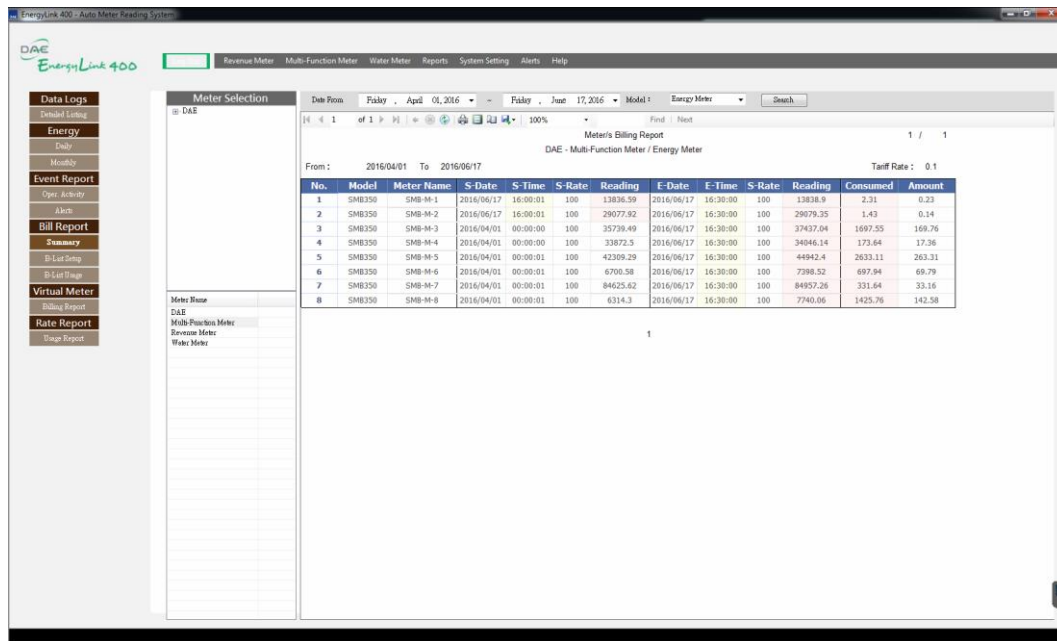
If there is no user activity 300 seconds after logging in, the system will automatically log you out.
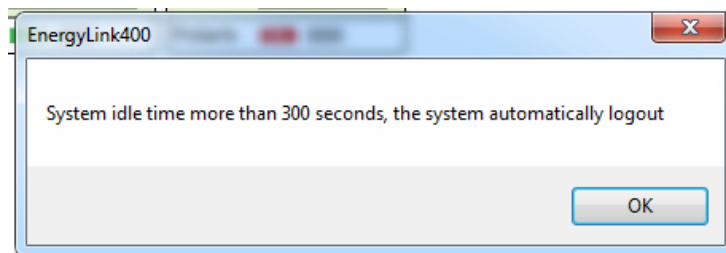
3.1. Account Management

3.1.1. Account Setup

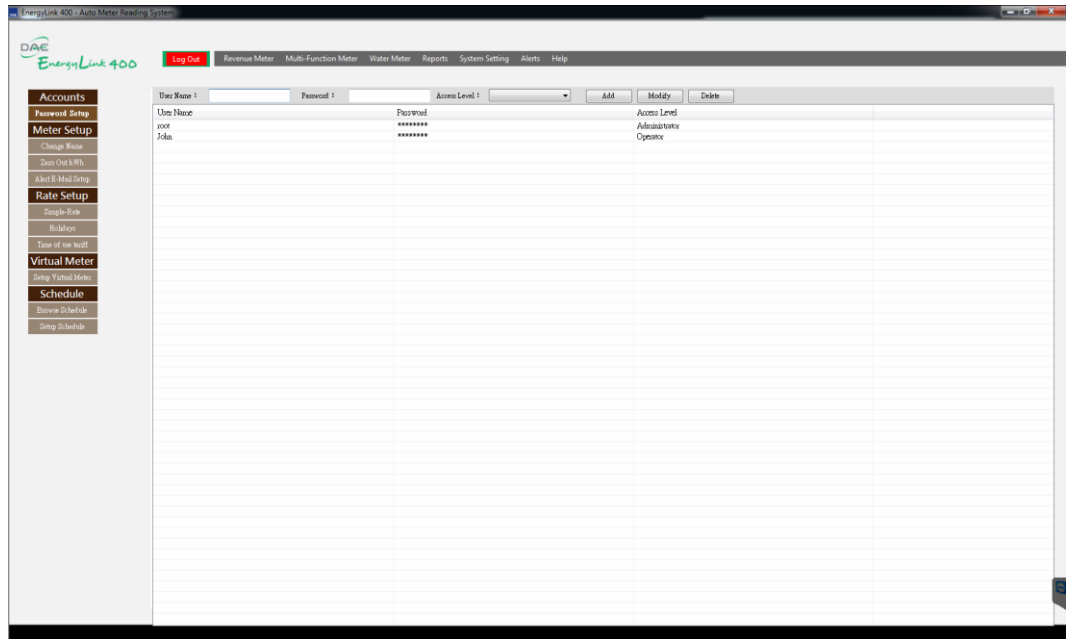Account management allows the administrator to setup accounts and access levels. The administrator may add new accounts, modify existing accounts or delete accounts.


To add a new account, enter the new account name, password and access level in the account edit fields found near the top of the page. Then click on the <add> button to create a new user account.

To make changes to an existing account, click on the account from the account list, it will then appear in the account edit fields, make the desired changes then click on the <Modify> button.

To delete an existing account, click on the account from the account list, it will then appear on the account edit fields, click on the <Delete> button to delete the account, the system will pop up a dialog to ask for confirmation, if the deletion was done on purpose, click on <Yes> to confirm. A deleted account cannot be restored.
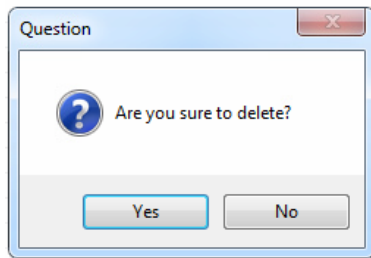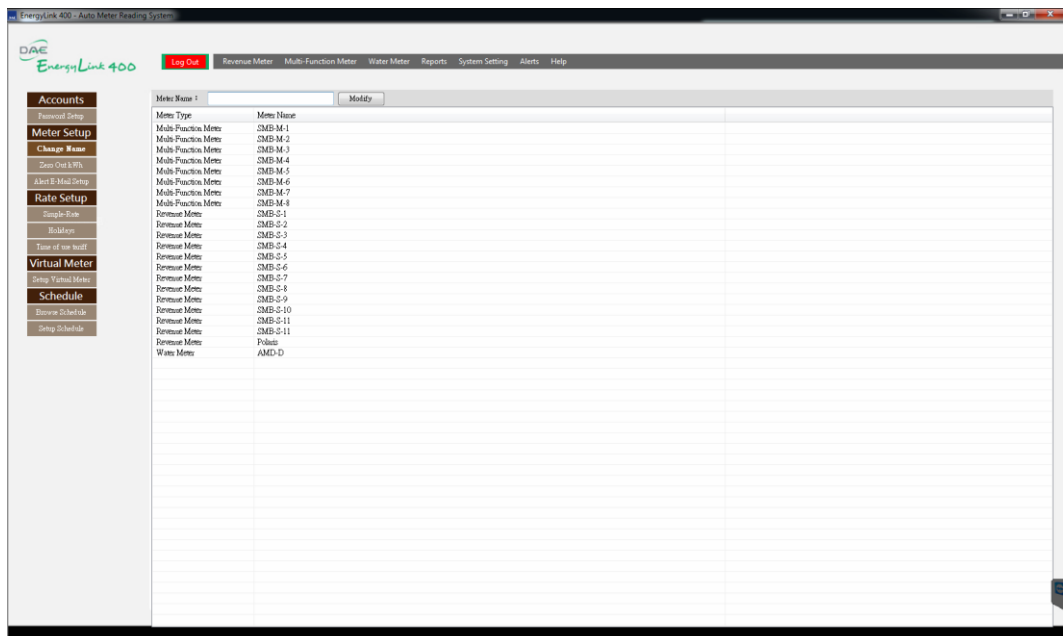
Note that the password is masked with "*" when entered, if the user forgets their password then the account must be deleted then recreated. The root account can neither be changed nor deleted.

3.2. Setup

3.2.1. Meter Renaming

Each meter can be assigned a user designated name.

To change the meter name, click on the meter in the list, the meter name will above in the meter name field above the list, change the meter name as desired then click on the <Modify> button to save the name change.


When the name change has been made successfully, the system will pop up a screen to indicate success.
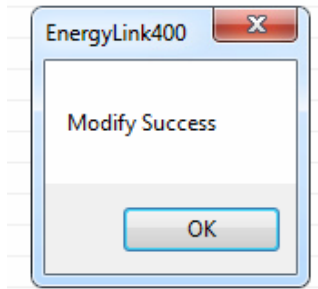
Note that when changing the meter name, make sure that the name used is not a duplicate of an existing name to minimize the potential for confusion.

3.2.2. Reset to Zero

This software allows the operator or administrator to reset the cumulative reading of a meter to zero.
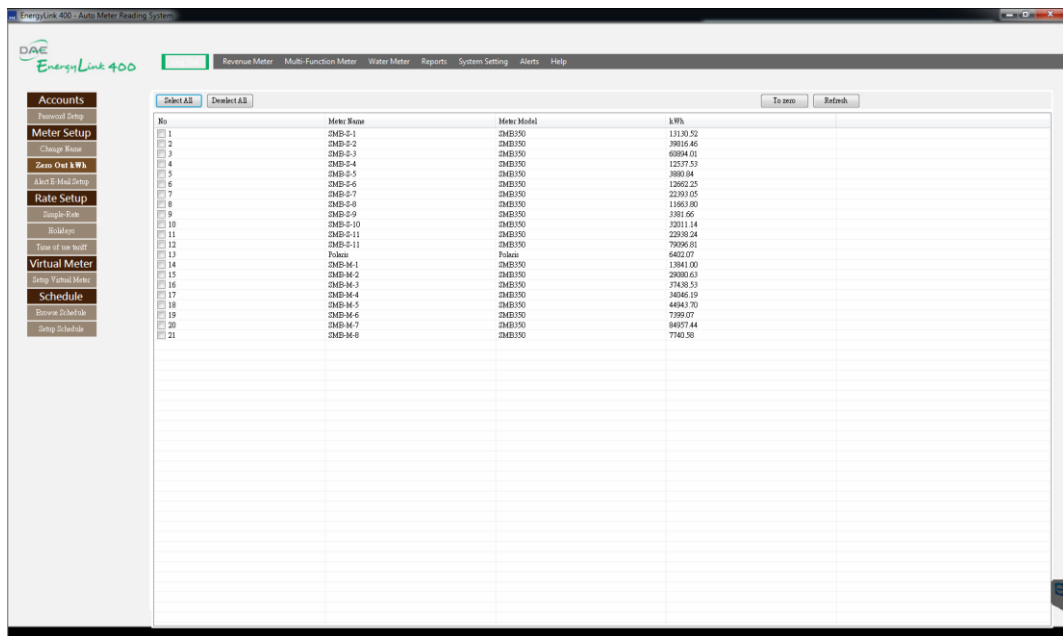
To reset the cumulative reading of a meter to zero, select the meter from the list then click on the <To zero> button on the upper right of the page. Note that resetting the meter to zero is permanent and cannot be undone.


Clicking the <Refresh> button refreshes the status information of the meters.

3.3. Setting the Tariff Rate

3.3.1. Flat Tariff Rate

The flat tariff is used for computing the billed amount in the billing report, the billed amount is computed based on the total consumption for the given range of dates.

Electricity and water meters each have their own separate tariff rates. The tariff rate appropriate to the meter type will be used when computing the billing amount.
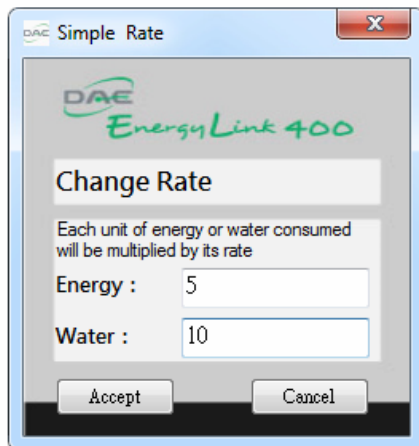
After entering the tariff rates and clicking <Accept>, the software will ask for confirmation. Clicking <OK> on the confirmation dialog will cause the new tariff rate to be saved to the database.
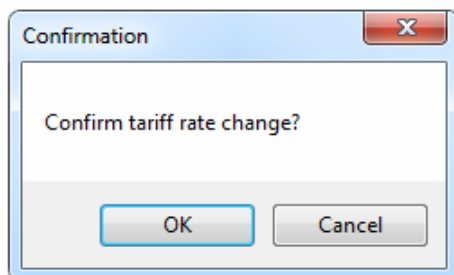
4. System Specifications

4.1. System Requirements

- Compatible with Windows XP (SP3 or better), Windows 7, Windows 8; 32 or 64 bits.
- Database MySQL.
- Memory: 4GB or more; Disk Storage: 10GB or more.
- The database should be backed up regularly and a UPS should be installed to provide backup power for the host computer and communication equipment.

4.2. Products Supported

DAE Product Models:

- Electricity Meters: Polaris 1500, Polaris 2500, Polaris 3000, PM200
- Water Meter AMR Modules: AMR100-D, AMR-D
- Multi-function Meters: PM210, SMB350

4.3. Meter Data Acquisition

The software continuously polls each of the meters in turn and displays the data on the screen, and it will log the meter data every 30 minutes. The logged data is then used when creating a report.