Galileo/Galstar PC Software Operation Manual

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F. Galileo/Galstar PC Software Operation Manual

Note: This manual is designed to provide a guide for installation, setup and maintenance of the Galileo soft wares on a PC computer. Therefore it is mainly designed for the technical personnel who install and maintain the system rather than the operators. For information about the different applications please refer to the appropriate manual (Green House, Open Field, Galstar Etc.)

A. Preface:

1. **Advantages of PC Use**: Although all programming and operation can be carried out directly via the controller keyboard it is also possible to connect the controller to a PC. Connecting the controller (Gal Star or Galileo) to the PC has several advantages:
   - **a) Remote Control**: All actions that can be carried out via the controller panel in the field can also be carried out via the central PC that can be located a large distance away from the controller.
   - **b) Environment:** The operator can work from the comfort of his office as opposed to working out in the field in the hot/cold noisy environment.
   - **c) Large and Graphic Presentation:** It is much easier to program and understand the controller activity via the large display of the computer screen. Hundreds of parameters can be seen in comparison with a maximum of 15 parameters in the controller display. The computer's graphic presentation makes it easier to navigate and become orientated.
   - **d) Alarm Messages:** It is possible to send SMS text messages from the computer which is connected on-line with the controller.
   - **e) Controller Network**: It is possible to connect more then one controller to the same PC. In this case the computer may serve as a mediator for transferring data from one controller to the other. For example you can create a condition that if a valve connecting to controller No. 1 opens, the water pump in controller No. 2 starts.
   - **f) Cellular Control:** A special system that is installed on the computer and connects your cellular phone to the controller. You can open and close valves through your cellular phone and carry out many other operations.

2. **Galileo PC Software Programs:** Galileo Center includes several programs:
   - **a) Galileo Center (The operational programs):** Upon clicking the Galileo Center Icon, two programs open alongside:
     1) **Galileo Client:** The Galileo Client is the MMI (man machine interface) through which you access the system elements, program the controller and receive information from the controller**.**
     2) **Galcon Server** is a program that runs alongside the Galileo Client and connects the Galileo Client with the controller. It is mostly used for setup.

b) The Data Acquisition Programs: The program **Galcon Server** is responsible for downloading data such as Sensor Readings, Flow Rate Readings, Accumulations, Irrigation Information and more. The data is concentrated in a database called Galileo.mdb (an "access" type data base). There are two programs that can extract reports from the database:

1) Galileo Data

2) Gal-graph

Another multi file database is also created in the "Eldar" folder in the root directory. The program that reads and presents the data from these files is:

3) WinMan

c) My Field: A program that is included in the "Open Field" application package. "My Field" is a drawing program that enables drawing a presentation of your field and assigning the elements according to their geographical locations.

d) Alarm Messenger: A program that that enables sending text alarm messages (SMS) in accordance with the controller activity. Hundreds of types of messages can be defined**.**

e) GRC (Galileo Remote Control): A program that converts the computer connected to the Galileo controller to a server mediating between your cellular phone and the controller.

B. <u>Installation and Setup of Galileo Center (operational programs):</u>

1. Prior to installing the software make sure that you have the following items:

a) Software kit including:

1) A **CD** with all Galileo programs - Version 11.
2) **HASP** protection plug (Dongle) - USB.
3) **Flat cable** with RJ45 mail plugs, length: 2m.
4) A '**Direct**' RJ45 to 9 pin female adapter plug
5) RS485 RJ45 to 9 pin female adapter plug

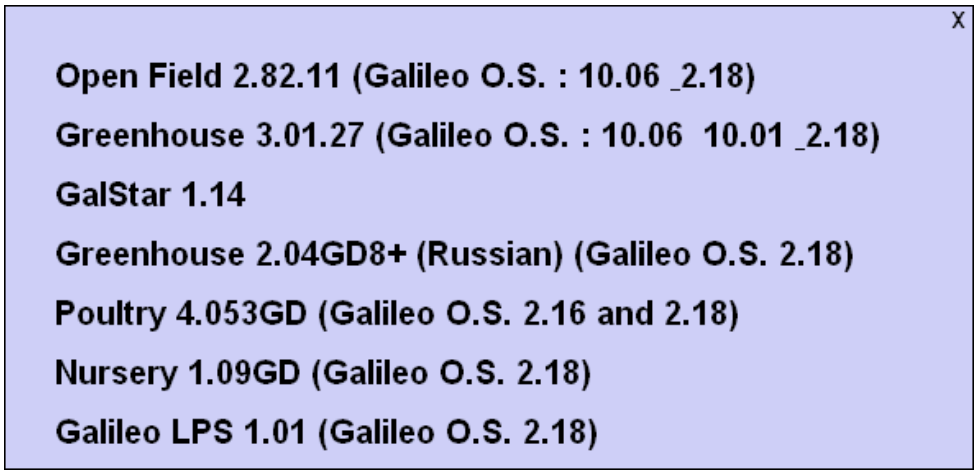
b) <u>Controller to PC Connection</u>:

1) Connect the software protection plug to the USB port.
2) Connect the communication connection to the serial port. Make sure that you know the port number (the port number can be: COM1 - COM4). Connect the other side of the flat cable to the controller's socket (direct) or the L485 adapter.

2. **Insert the installation disk** into the computer the following screen should appear automatically (if this does not occur browse the disk and click "browser.exe"):

a) **<u>Installing the PC Center</u>**: The "Center" program should be installed first. This program installs the **Galileo Client** and the **Galcon Server** programs and serves as a platform for the different applications such as Open Field, Green-House etc.. Click "Center" and then choose **Galileo Center 8.00 (for HASP 4)** – for Galileo only (this program is designated for old HASPs), or **Galileo Center 8.00 (for HASP HL)** for the program including Galileo and Gal Star. The current available HASPs include HASP for both Galileo and Gal Star and HASP for Gal Star only. The program is the same (**Galileo Center 8.00 for HASP HL)**. Whilst running the program with HASP for Galstar only, the program does not allow communication with Galileos.
Follow the on-screen instructions during the installation.

b) **Installing the application**: There are two types of applications: Metric system (green house icon) and US system (grain icon). Click the required type of application and select one of the required application for installation.

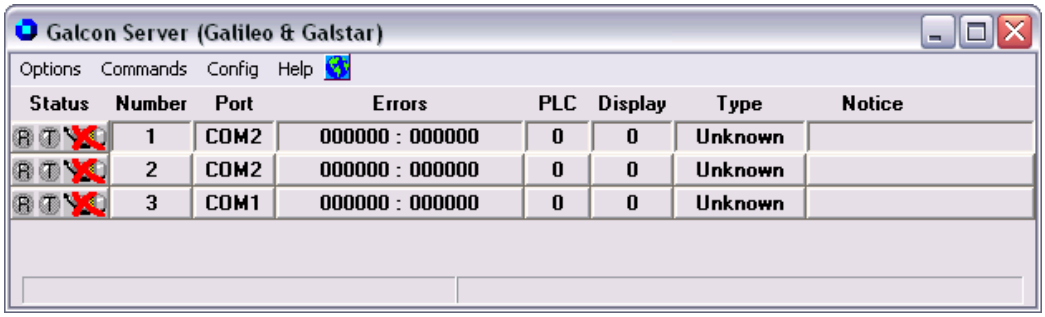


Follow the on-screen instruction during the installation.
Repeat the installation of all the necessary applications.

3. **Galileo Center - First Operation:** After the installation you should have several new icons on your desk top. Double click 

to run the Galileo Center. Actually the Galileo Center runs two programs: **Galileo Client** and **Galcon Server**. As previously explained **Galcon Server** makes the communication between the **Galileo Client** and the **Controller**. When the programs open the Galcon Server is automatically minimized. Click on it's icon 

in the taskbar in order to open it.
4. **Galcon Server Setup:**

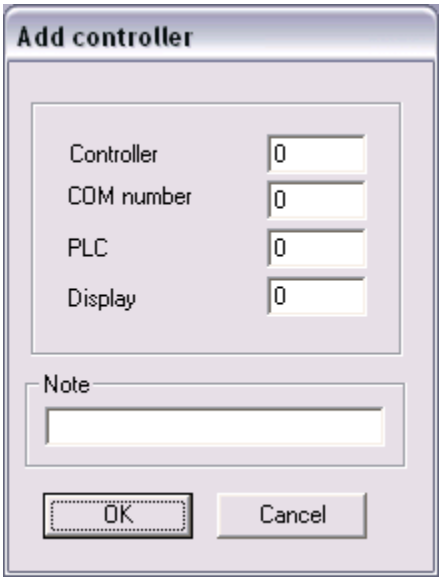


a) **Screen Layout**: Each row on the above screen represents a different controller in which each row shows from left to right:

1) Receiving Indicator – green means communication okay, red means error.
2) Transmitting Indicator– green means communication okay, red means error.
3) Communication Activation – click on top of the red X in order to activate the communication (the red X disappears) and click again to stop communication (the red X reappear). The hour glass symbol appears during communication loss. The communication to this controller will be disconnected for one minute.
4) The number of the controller.
5) The number of comm. port.
6) The number of communication errors since the last reset (the left number shows the number of single communication errors, the right number shows the number of double communication errors).
7) The number of PLC (a program that can be sent from the computer to the controller – see below).
8) The number of Display (see below).
9) The type of controller (El Gal, Galileo, Gal Star)
10) Notice – free text.

b) **<u>Change Settings</u>:** In order to change the settings click Options>Login, enter the pass word "**su**".

1) **Adding a Controller:** Click Options>Add Controller to open the following:

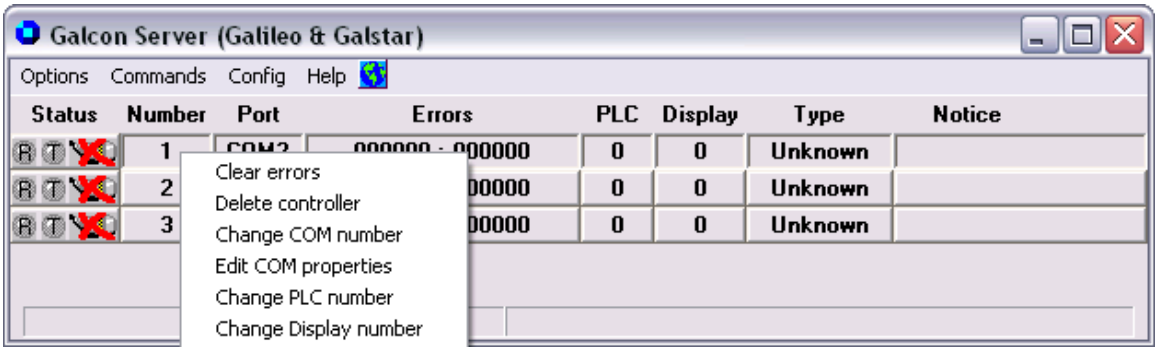


- Enter the controller number
- Enter the Comm. Port No.
- Enter PLC to send to the controller (see below)
- Enter Display Number to send to the controller (see below)
- Enter a Note (the name of the lot etc.)

After clicking OK a new row with the data entered in the Galcon Server is added.

2) **Deleting a controller**: Mark the controller to be deleted by clicking on top of the row representing it. Click Options>Delete controller and confirm. The marked row disappears.

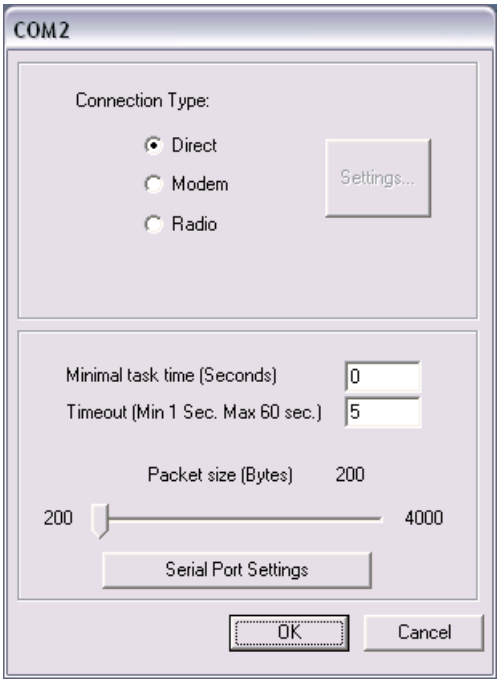
Right clicking the row opens the following menu:



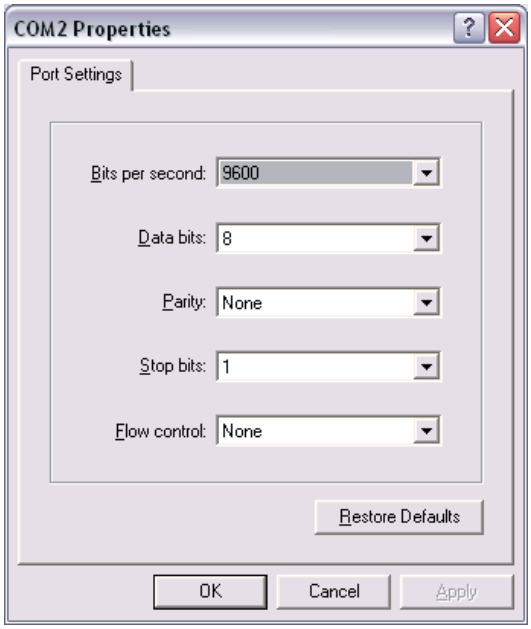
In this menu you can:

3) Clear Errors – reset (to zero) the counter errors.
4) Delete a Controller – as explained above.
5) Change COM number – type the number of the comm. port used for communication with the controller. If you don't know the comm. number look at the device manager – right click "My Computer" choose properties and then Hardware>Device Manager. Click the "+" sign of Ports (COM & LPT). A list of comm. ports installed in your computer is displayed. It is especially useful when installing a USB to Comm. adapter.

6) Edit Com. Properties: Choosing this option opens the following screen:



- The lower part of the above dialog box is for general definition. Clicking the **Serial Port Settings** button, opens the following:



- Choose the Baud Rate (Bits Per Second). The rate should be the same here and in the controller. The recommended rate for Galileo is 9600 and for the Gal Star it is 115200.
- If you are not knowledgeable in RS232 communication protocol it is recommended to leave the rest of the parameters as they are. You can click the Restore Default button.

(a) **The slider** on top of the serial port setting (in the "edit comm.properties" screen) is for selecting the packet size of each transmission. Choose the minimum for the Galileo especially when communication errors occur. For the Gal Star a larger size can be chosen.

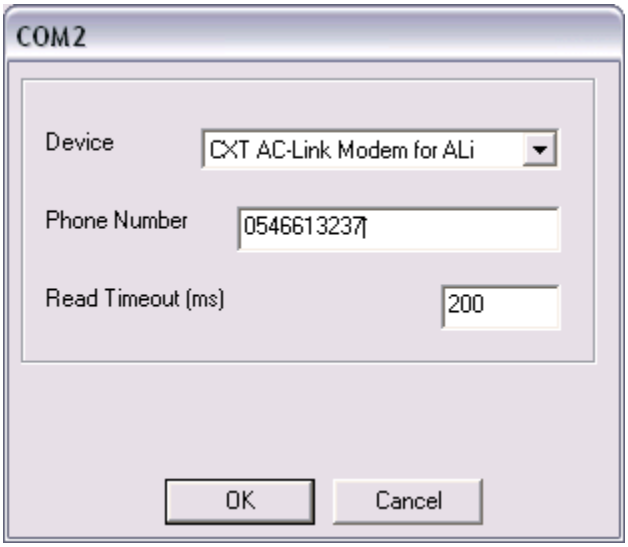
(b) **Time Out** is the maximum waiting time between the transmission and the answer. When the answer is not received for more than this time an error is received and another transmission is initiated.

(c) **Minimal Task** Time is the waiting time between the reception and the new transmission.

(d) **The upper part** of the dialog box contain three communication options:

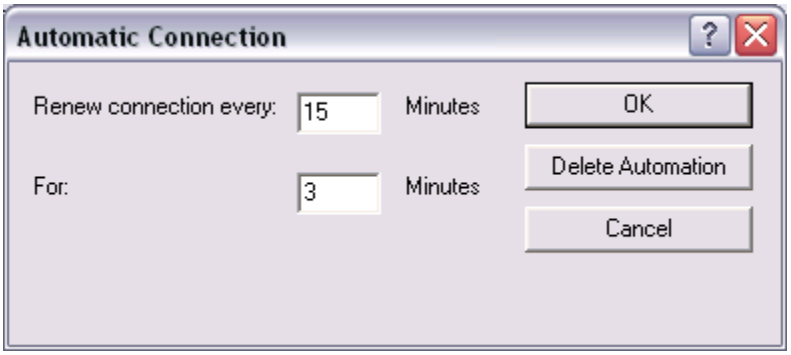
(1) Direct: The communication is active all of the time and transmits and receives only according to the parameters explained above. It is designed mainly for a direct connection.

(2)Modem: This option is for dial up connection. choosing this option enables entering setup by clicking the "settings" button on the right. The following screen opens:



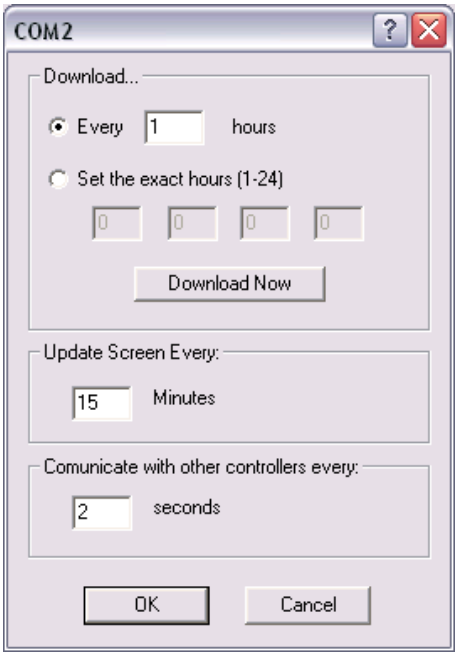
- Choose the device using for dial up. If it is an internal telephone modem choose it by its device name.
- Enter the controller modem dialing number.
- Enter the timeout in milliseconds. If you experience communication problems try increasing this number.

(3)**Automatic Modem Connection:** Working via telephone network is costly. In order to minimize the costs it is possible to connect every certain period of time for a few minutes and then disconnect. In order to define this return to the Galcon Server Screen. The last option after right clicking is Automatic Connection. Selecting it opens the following:



Enter the parameters: "Renew Connection Every" and "For"

(4)Radio: When the communication is via radio it is not advisable to work in direct mode because as explained the communication works continuously and transmits and receives all of the time. In many cases it is illegal to occupy the "air" all the time especially when the operator is not in front of the PC and there is no need for communication. When choosing this option the PC only initiates communication when a new screen opens or upon pressing the F6 button. In addition it is possible to define other parameters. Clicking the "Settings" button opens the following:

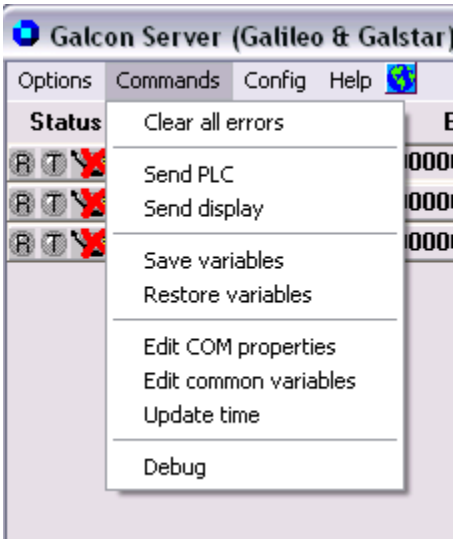


- At the top of the screen the data acquisition time is entered. It is possible to enter the value time interval or specify up to 4 separate hours.
- In the center of the screen you can define the time interval for screen updating. This assures that when you return to the PC the displayed data is up to date.
- The last parameter is for

use with a controller network. Define the time interval for transferring data from one controller to another.

7) **Change PLC and Display Numbers:** It is possible to change the application and its menus (as seen on the controller screen simply by sending a special program from the PC to the controller. When the command initiating this process (see below) is started the PC sends a file according to the number defined here. For every application and every language there are different numbers for example Open field in English for wide screen – PLC = 40 and Display = 42.

c) <u>The Command Option</u>: Clicking command at the Galcon Server opens the following pull down menu:

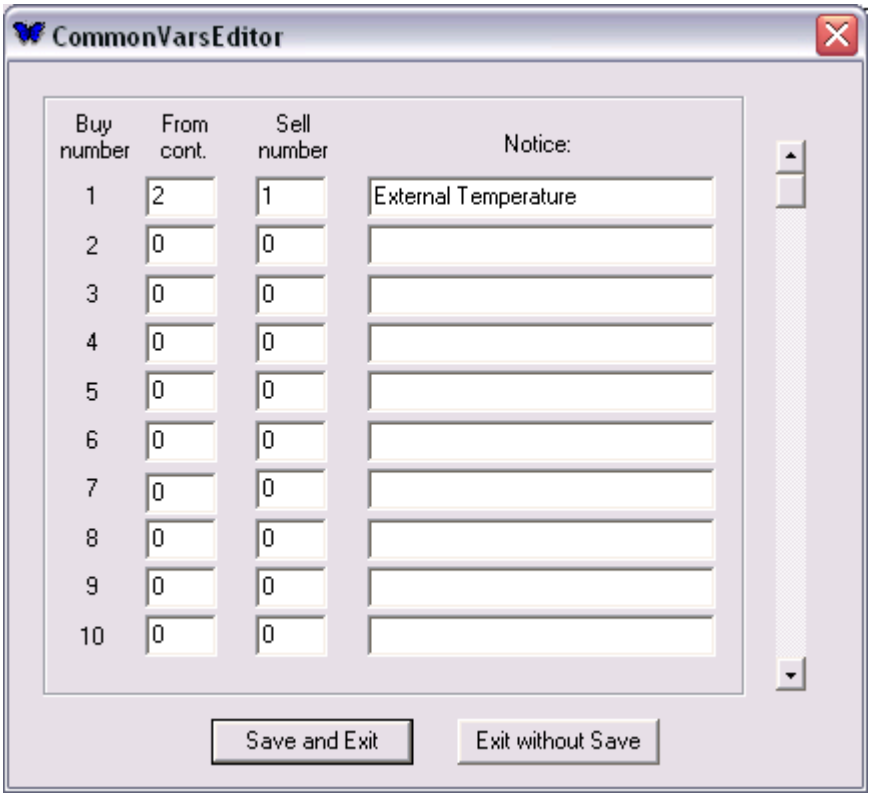


1) **Clear all Errors**: resets all the errors of all the controllers.
2) **Send PLC**: As previously explained, in order to send the application program to the controller you send PLC. Upon choosing this option a dialog box with the number of the controller and the number of the PLC opens. If the number of the PLC was defined previously (see above) it appears here but can be changed.
3) **Send Display**: Similar to the PLC.
4) **Save Variable**: It is possible to save all the programmable parameters of the controller to a file for back up purposes or for sending it to Galcon's service staff. Choosing this option opens a dialog box in which you state the name of the file and where to save it. After choosing the file name the file is downloaded. This process takes a few minutes. The percentage of download completed is shown on the bottom line of the Galcon Server program.
5) **Restore Variables**: Choose this option when you wish to restore from a back up file or you receive a file with data that you want to upload to the controller. Select the location and the name of the file in the dialog box that appears. Upon choosing the file the file is uploaded. The percentage of upload completed is shown on the bottom line of the Galcon Server program.
6) **Edit COM Properties**: See explanation above.
7) **Edit Common Variable**: Transferring data from one controller to the other involves several steps:

<u>Step 1</u>: The Sell Number is defined in the Sell Table of the controller's application. (See Open Field or Green House manuals).

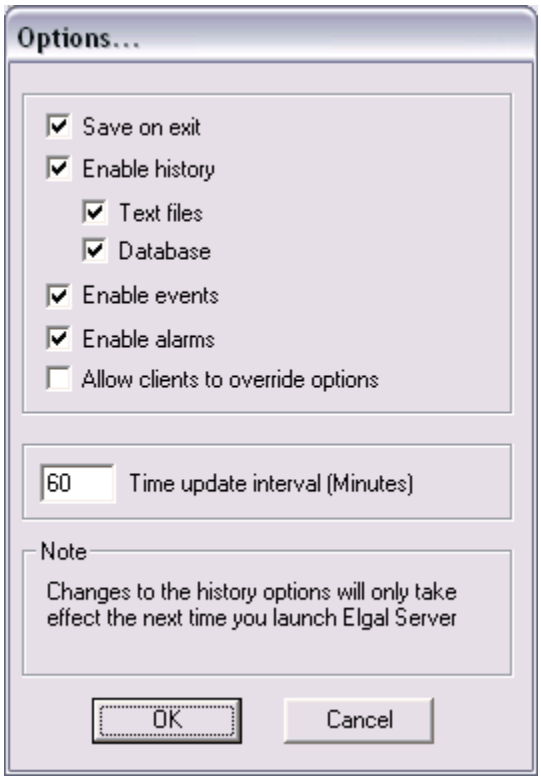
Step 2: The Controller number and the Sell number are defined in the Common Variable Table (see below).
Step 3: The Buy number (the common variable number) is defined for the wanted element in the controller "buying" the data.

Upon choosing this option the following table opens:



- For every "Buy Number" enter the number of the controller from which the data is transferred, the "Sell Number" and a remark (notice) describing the variable.
- **Update Time:** Choosing this option updates the time of all the controllers currently communicating with the PC.
- **Debug:** Opens a screen in which all of the actions of the programs are registered.

d) Configuration: Clicking on this option the following:



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- Check the boxes for the following features:
  - **Save on Exit:** To save parameters when closing the program (recommended).
  - **Enable History**: As mentioned the program transfers the data from the controller into the PC and stores it in two types of databases. One is the traditional Text File – read by the program Winman. The other is an Access type Database read by Galileo Data and Galgraph. You can decide not to download data at all or allow each of the database types.
  - **Enable Events/Alarms:** The Galileo diary is stored in the PC. When you open the diary from the application program, the program does not communicate with the controller as usual but rather shows you the data from the database stored in the computer PC. In order to enable the downloading of the Alarms and Events check these boxes.
  - **Allow Clients to override:** In some cases (when working with the Eldar Access Server – for cellular control) this option is in use (normally uncheck it).
  - **Time Update Interval:** The number of minutes after which the PC updates the time of all of the controllers connected to it.
  - **In order to be sure of saving the settings, please close the client (the server closes with it), rerun it and check the changes.**

5. Galileo Client Setup

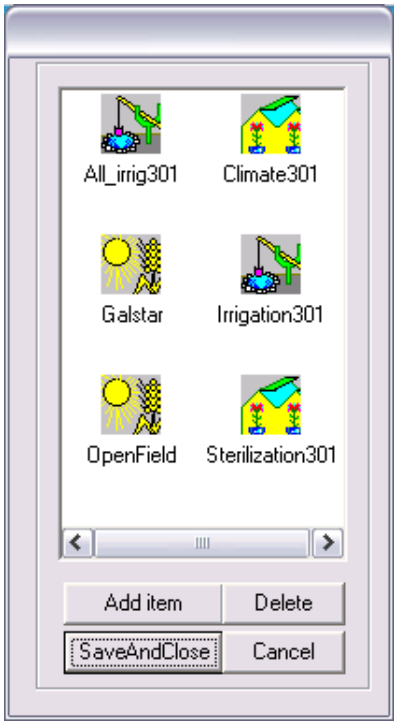
The Galileo Client program includes a small elongated Set Up window (upper left hand corner of the desktop) and Application Modules. Each application module is the starting point for a different application system. The Open Field program contains one system only whilst the Green House program can have up to 5 systems (1 irrigation + 4 Climate control). Access the Galcon Client program by double clicking the Galcon Center Icon 

. It will also actually run the Galcon Server minimized. At the upper left corner the following window opens:

Click Options>Log On and enter the password: "su".

a) Adding and Removing First Application Modules

Click "Edit"> "Add Remove Elements" to open the following:



The icons appearing in this screen depend on the application software installed on the computer. Choose the type of application for the system and click **Add Item.** Drag and drop the new module to the location that suits you.
In order to delete a module (item) mark the module (by clicking on the upper bar), then press **Delete.** When you have finished adding and deleting all of the application modules click **SaveAndCLose.** In order to save the changes close **Galileo Client –** by clicking the red X on the right hand side of the window and confirm, and then reopen it.

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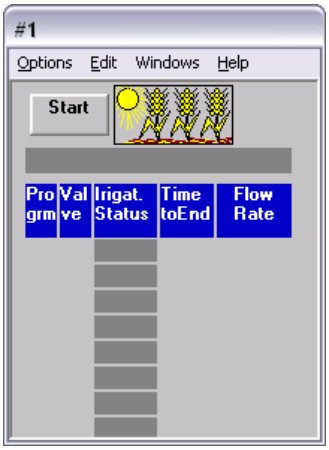
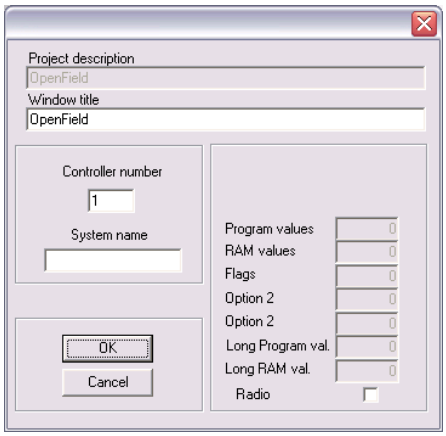
b) Defining the First Application Modules:

If you have already logged on (by entering the password – "su") then you can skip to the next step otherwise re-enter the password.

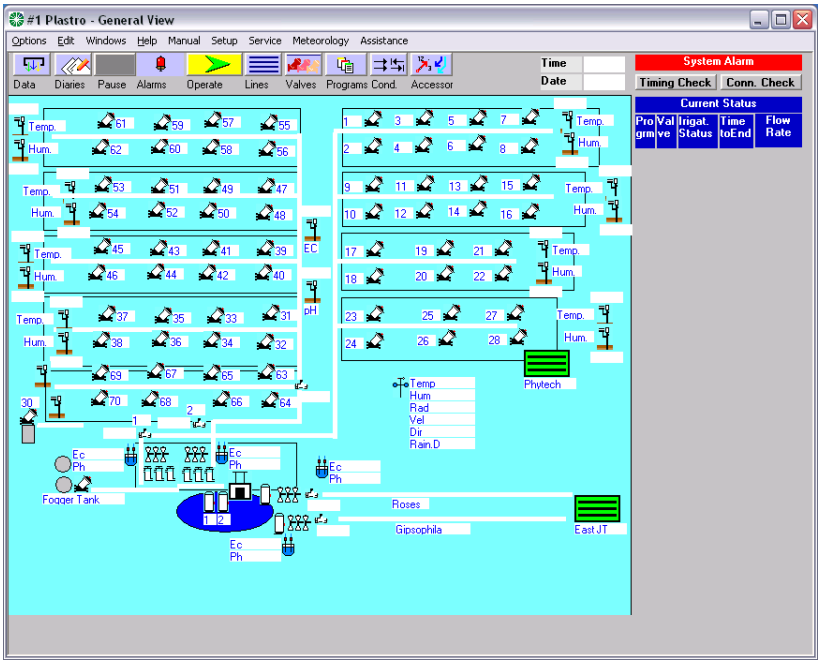
1) **Setting "Open Field" Application Module**:
   Click "Options">"Change Settings"



The following screen opens:
Enter the number of the controller (the same number as defined in the controller number). You can also enter a name for the system, this name will appear on the top bar of all of the screens of the system. The checkbox "Radio" makes the Client only update the active window. In order to make a window active click on its top bar. If the "Radio" is not checked the client program updates all open windows. Please consult Galcon's technical staff before using this option.



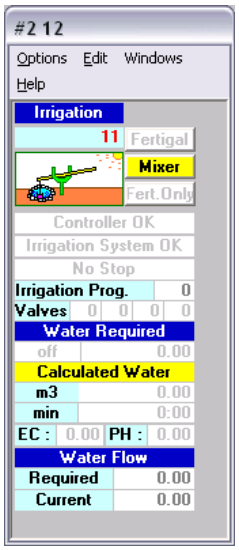
After confirming the definition clicking on "Start" on the above module will open the "Main Screen" of the **Open Field** program as drawn by the "**My Field**" program:



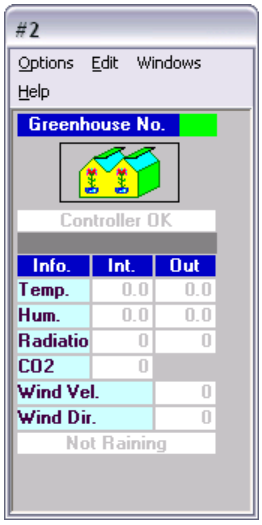
Please see more (including the instruction of using "**My Field**" program) in the **Open Field Operating Manual.**

2) **<u>Green House Modules:</u>** As previously described the Galileo Green House is capable of running simultaneously one Irrigation System + four Climate Control Systems. For each of these systems the first application module must be defined.

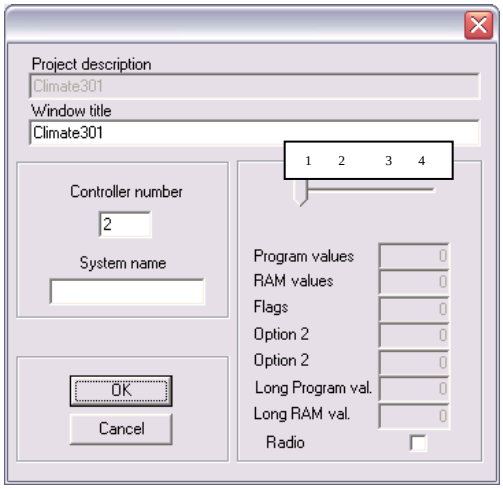
GH Irrigation First Module



GH Climate First Module



Defining the number of controller and name of the system is similar to the method described for the "Open Field". However since there are up to four Climate Systems in one controller (remember that for every system a first module must be defined, this means the a Green House Controller can have up to 5 First Modules) every Climate System requires a different offset setting (out of four possible sets). When clicking "Change Setting" the following set up climate screen opens:



Please note the slider on the right hand side of the screen. The slider defines the offset of the system. The slider can be in one of four positions. Every system should be allocated a different position. The table below the slider shows the first parameter number of each type of parameter that this module starts with.
After finishing the definition of the first modules clicking the Greenhouse picture opens the first screen of the Climate control and clicking one of the three buttons "Fertigal", "Fertimix" or "Fert. Only" open one of the first screens of the GH Irrigation. Please see more in the Green House Operating Manual.

C. Data acquisition programs

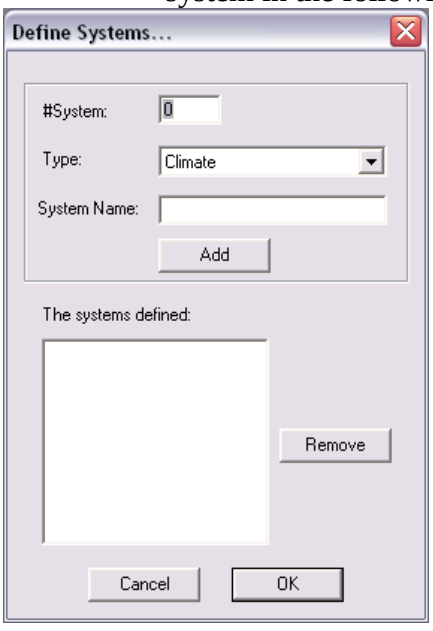
1. Gal Graph:

Data Acquisition is one of the most important features you can get from your equipment. It enables receiving information about the water and fertilizers, follow up on the operation of the system, graphs of sensors and flow rates, calculation of special functions depending on sensor calculation models such as Penman and more. The data acquisition in Galileo is made via the Galcon Server and is based on the database Elgal.mdb located in C:\program files\eldar\elgal center\db. It is an Access type database. Galcon (as part of its software package) supplies two programs in order to create reports from this same database.

a) **Installation:** Click "Management Programs" and then choose Galgraph in order to install the program. Follow the on-screen instruction for the installation.

b) **Running the first time:** Double click the Galgraph Icon 

to run the program. You'll be asked first to give some information about the system in the following screen:



- Fill in the system number
- Choose the system type: Climate, Irrigation (Green House), Open Field, Nursery or Poultry (not in use).
- The System Name is free text.
- Press "Add" to add the system to the system list available for data acquisition.
- If you want to remove a system from the list mark it with the mouse and then click "Remove".

When adding a system it appears in the "Tree View" on the left hand side of the main screen. To the left there is a small "+" sign. click the "+" in order to view and edit the properties of the different reports. In each report (set) – which is marked by the sign  there are several fields. You can access the properties of these fields by pressing the "+" of the report and then right clicking and choosing "properties". Upon defining a system the program creates the default fields according to the type of project. You can use these as a basis for your setting. Delete any unwanted reports or fields. You can also delete every thing and define your own reports from scratch as follows:

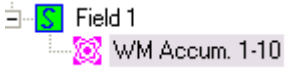
1) Define a System as described previously.
2) Close it (it shouldn't appear in the "Tree View").
3) Enter the directory C:\program files\ galcon\galgraph\system# (the # is the number of the system you created).
4) Erase all the files from this directory.

c) <u>Making a new Report</u>:

1) Mark the system you created (by clicking it)
2) click "new" on the tool bar to create a new report of your system.

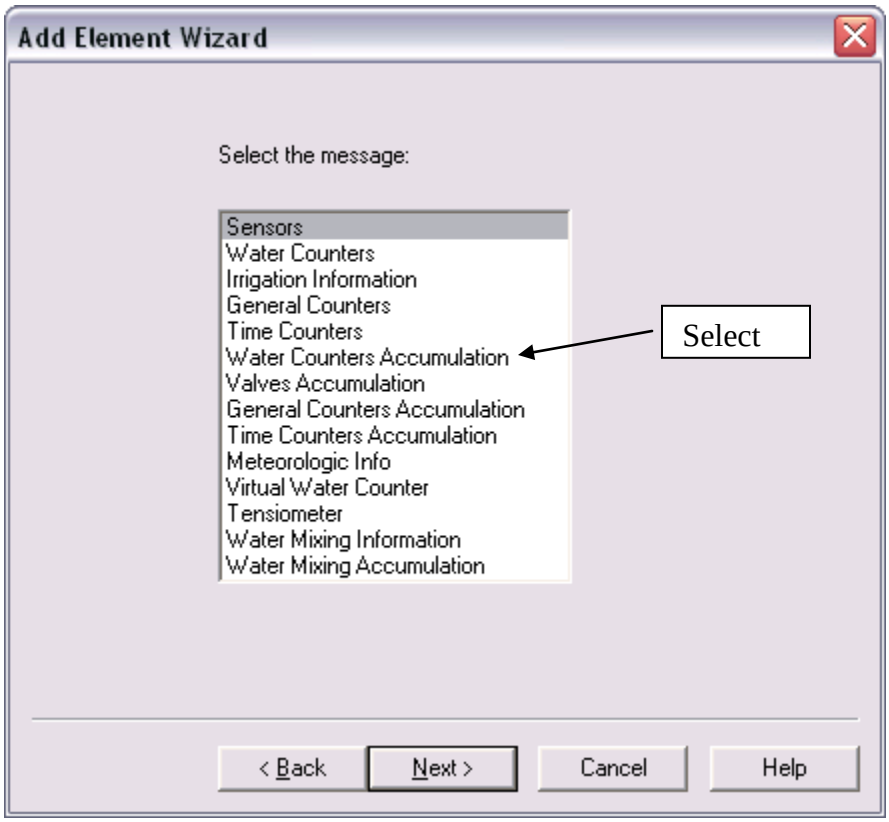
3) Click the "+" of the system to see the title of the report.

4) In order to change the name "Set1.gal" as in the example, mark it, click on "File">> "Save As" and then give it the required name. For example: if you have several water meters and you want a report of the accumulation of the first 10 meters:

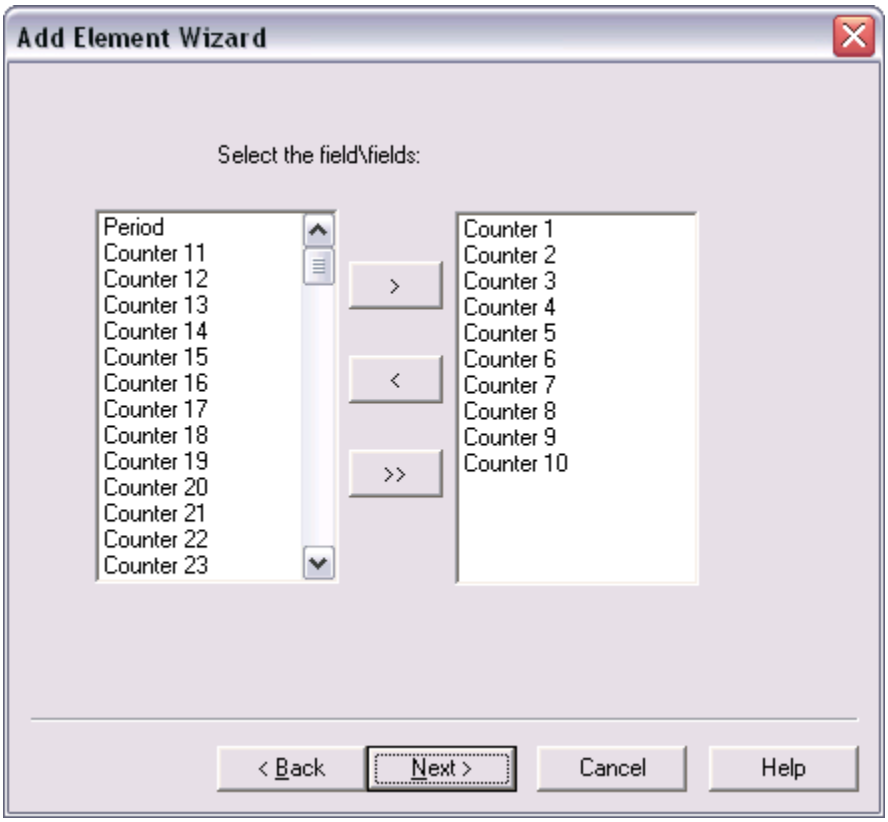


5) In order to add fields into this report, mark the report name and then click the  from the tool bar. A screen with the lists of the defined system appears. Choose the name of the required system and press "Next".

6) In the next screen choose one of the options (The options are according to the type of system chosen for the system). In the case of this example choose "Water Counter Accumulation".



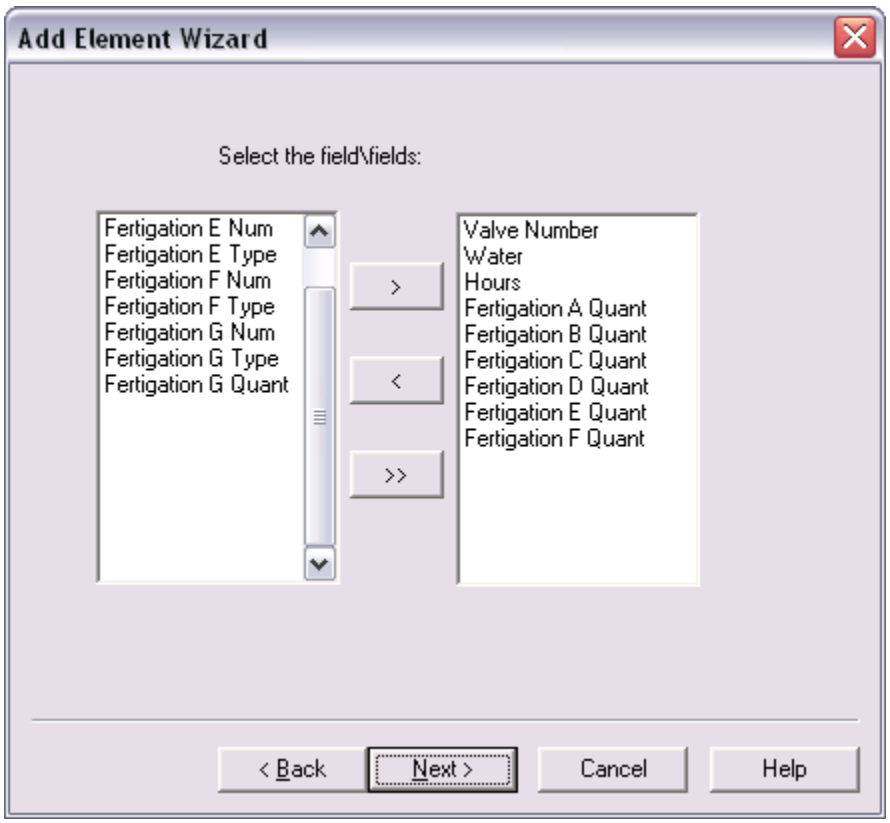
7) Click “Next” to open the following

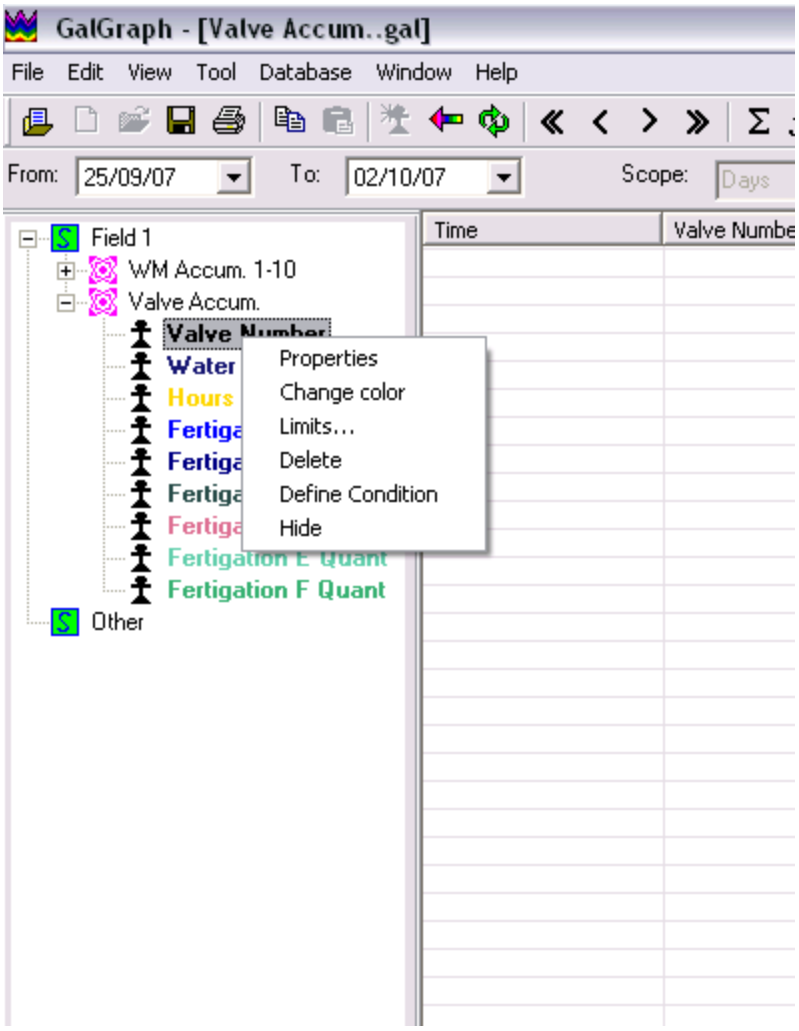


On the left side all of the available fields appear. Mark the required ones and click the right arrow button in order to move them to the left side in which the fields to be presented at the report appear. Click "Next".

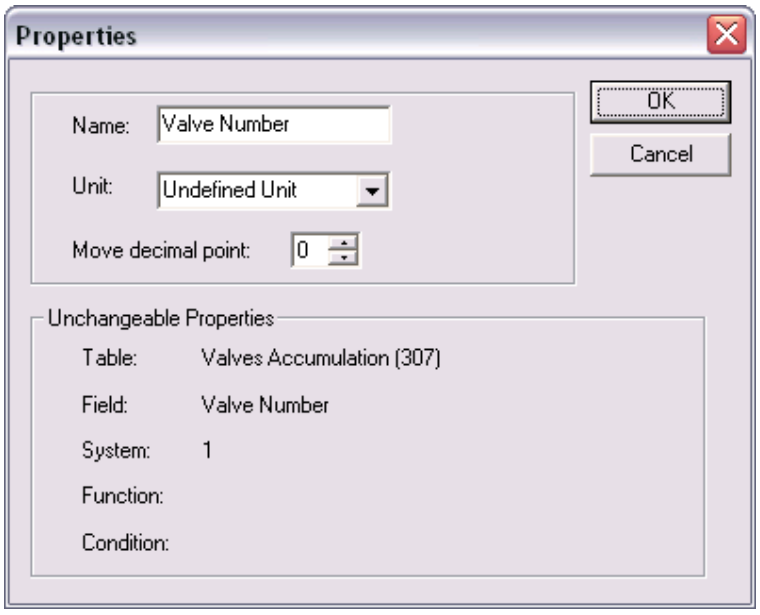
8) Choose the optional function needed. "None" will show all the records found in the range of dates of the accumulations of Water Meters 1-10. If you want to show in each row the total according to Days, Weeks or Months choose Summary. If it is required to show the Minimum, Maximum or Average for these periods select the required function.
9) In case of any function (other then none) checking the "Make a Group" box sums up the total of all the fields for every row and shows it in one column only.
10) When the report has many fields double clicking it will show a table where the rows are the time and under every column (field) you can see the values of the accumulation.
11) In the same way you can make a report of Sensor or Accumulation reading.
12) One of the most important reports is Valve Accumulation. When you select the fields it is recommended to only select the following fields: Valve No., Water, Hours, and the Quantity of all the

fertilizers required. (The other fields of the fertilizers are useless in this program).



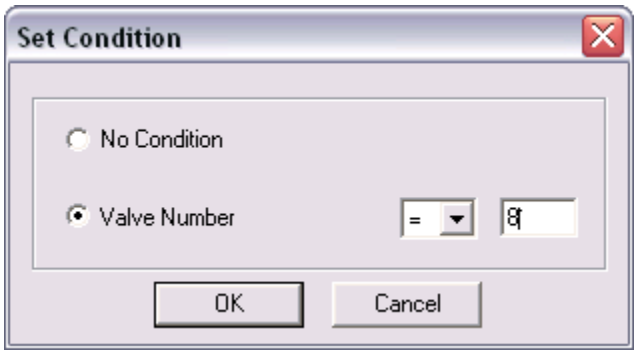


13) After creating a report it is possible to change the properties of its fields. Open the report field list by clicking the "+" sign on the right of the report name and then right click the required field.
14) Selecting "Properties" will open the following:



(a) In the screen above you can change the name of the field (the headline of the column), you can select the units (it is shown when graph format is selected) and you can select where the decimal point appears.

(b) Selecting Define Condition when right clicking the field will open the following:

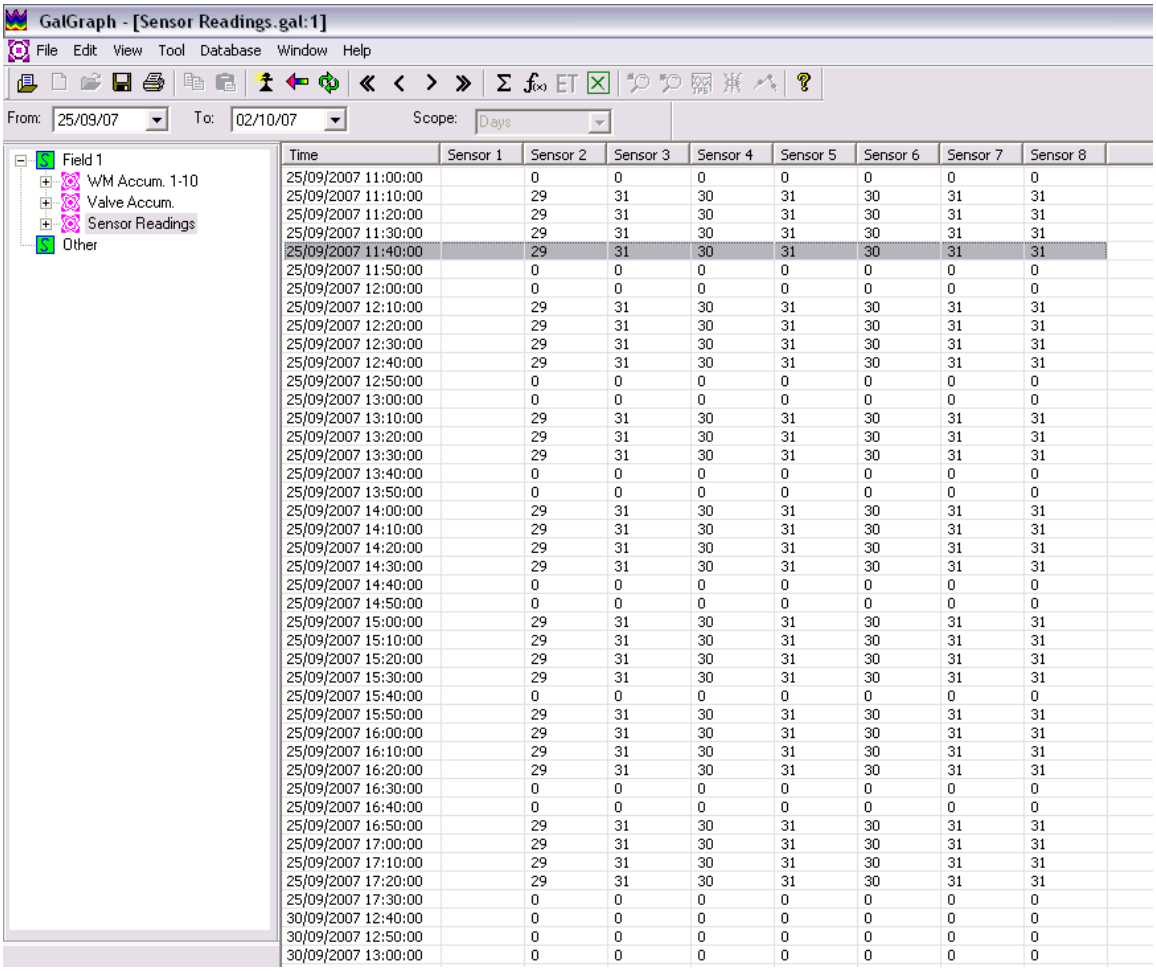


You can set a condition for the data to be sown. For example: In case of the Valve Accumulation report it shows all of the valves defined in the controller in the same report. If you need a report for a specific valve only you can make a condition on the field Valve Number and define that it is equal (=) to a certain valve number. Only the data for this valve will be shown. Please note that a condition is saved and the next time you open the report this condition will also take affect. If it is only necessary for a one time presentation don't forget to change it after the presentation is over.

(c) Some other properties such as the color for the graphic presentation of the field and the limits (in order to avoid fluctuating readings) are available too.

(d) You can also delete or hide unnecessary fields.

d) **<u>Presentation of a Report</u>**: Double clicking on top of the report name will create the report in the main area. The normal view of the report is a table in which the rows (records) are always the chronological time points as appear in the first column. The rest of the columns (fields) are the properties of the report. For example in the report of Sensor Values apart from the time each column represents a different sensor with its reading for every time.



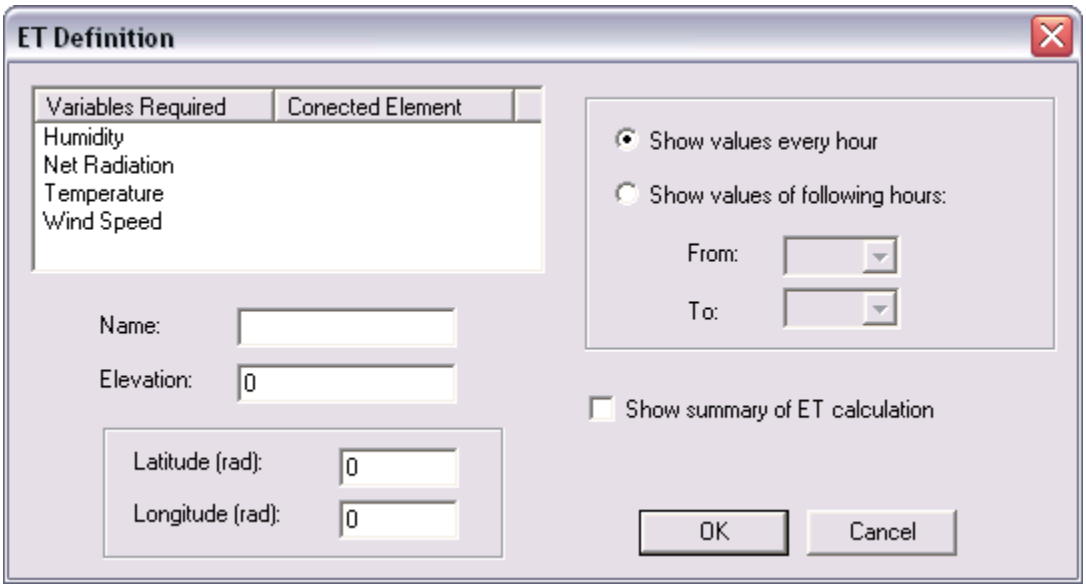
Time	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7	Sensor 8
25/09/2007 11:00:00		0	0	0	0	0	0	0
25/09/2007 11:10:00		29	31	30	31	30	31	31
25/09/2007 11:20:00		29	31	30	31	30	31	31
25/09/2007 11:30:00		29	31	30	31	30	31	31
25/09/2007 11:40:00		29	31	30	31	30	31	31
25/09/2007 11:50:00		0	0	0	0	0	0	0
25/09/2007 12:00:00		0	0	0	0	0	0	0
25/09/2007 12:10:00		29	31	30	31	30	31	31
25/09/2007 12:20:00		29	31	30	31	30	31	31
25/09/2007 12:30:00		29	31	30	31	30	31	31
25/09/2007 12:40:00		29	31	30	31	30	31	31
25/09/2007 12:50:00		0	0	0	0	0	0	0
25/09/2007 13:00:00		0	0	0	0	0	0	0
25/09/2007 13:10:00		29	31	30	31	30	31	31
25/09/2007 13:20:00		29	31	30	31	30	31	31
25/09/2007 13:30:00		29	31	30	31	30	31	31
25/09/2007 13:40:00		0	0	0	0	0	0	0
25/09/2007 13:50:00		0	0	0	0	0	0	0
25/09/2007 14:00:00		29	31	30	31	30	31	31
25/09/2007 14:10:00		29	31	30	31	30	31	31
25/09/2007 14:20:00		29	31	30	31	30	31	31
25/09/2007 14:30:00		29	31	30	31	30	31	31
25/09/2007 14:40:00		0	0	0	0	0	0	0
25/09/2007 14:50:00		0	0	0	0	0	0	0
25/09/2007 15:00:00		29	31	30	31	30	31	31
25/09/2007 15:10:00		29	31	30	31	30	31	31
25/09/2007 15:20:00		29	31	30	31	30	31	31
25/09/2007 15:30:00		29	31	30	31	30	31	31
25/09/2007 15:40:00		0	0	0	0	0	0	0
25/09/2007 15:50:00		29	31	30	31	30	31	31
25/09/2007 16:00:00		29	31	30	31	30	31	31
25/09/2007 16:10:00		29	31	30	31	30	31	31
25/09/2007 16:20:00		29	31	30	31	30	31	31
25/09/2007 16:30:00		0	0	0	0	0	0	0
25/09/2007 16:40:00		0	0	0	0	0	0	0
25/09/2007 16:50:00		29	31	30	31	30	31	31
25/09/2007 17:00:00		29	31	30	31	30	31	31
25/09/2007 17:10:00		29	31	30	31	30	31	31
25/09/2007 17:20:00		29	31	30	31	30	31	31
25/09/2007 17:30:00		0	0	0	0	0	0	0
30/09/2007 12:40:00		0	0	0	0	0	0	0
30/09/2007 12:50:00		0	0	0	0	0	0	0
30/09/2007 13:00:00		0	0	0	0	0	0	0

1) Choose the date range you want to see in the report.
2) When the options of Summary, Average, Minimum or Maximum are chosen (see above) you can select the resolution of the report (Scope: days, months or years).
3) Clicking  updates the data

4) You can transfer the data to an excel file for further analysis by clicking  in the tool bar and then providing the file name and folder.
5) Clicking  will sum up all the fields. The results are shown at the bottom of the report.
6) The button  allows multiplication of the data by a constant.

e) **<u>ET Calculation</u>**: ET (Evapo Transpiration) can be calculated according to four sensors: Temperature, Radiation, Wind Speed and Radiation. It is used in the calculation of the amount of water for irrigation.

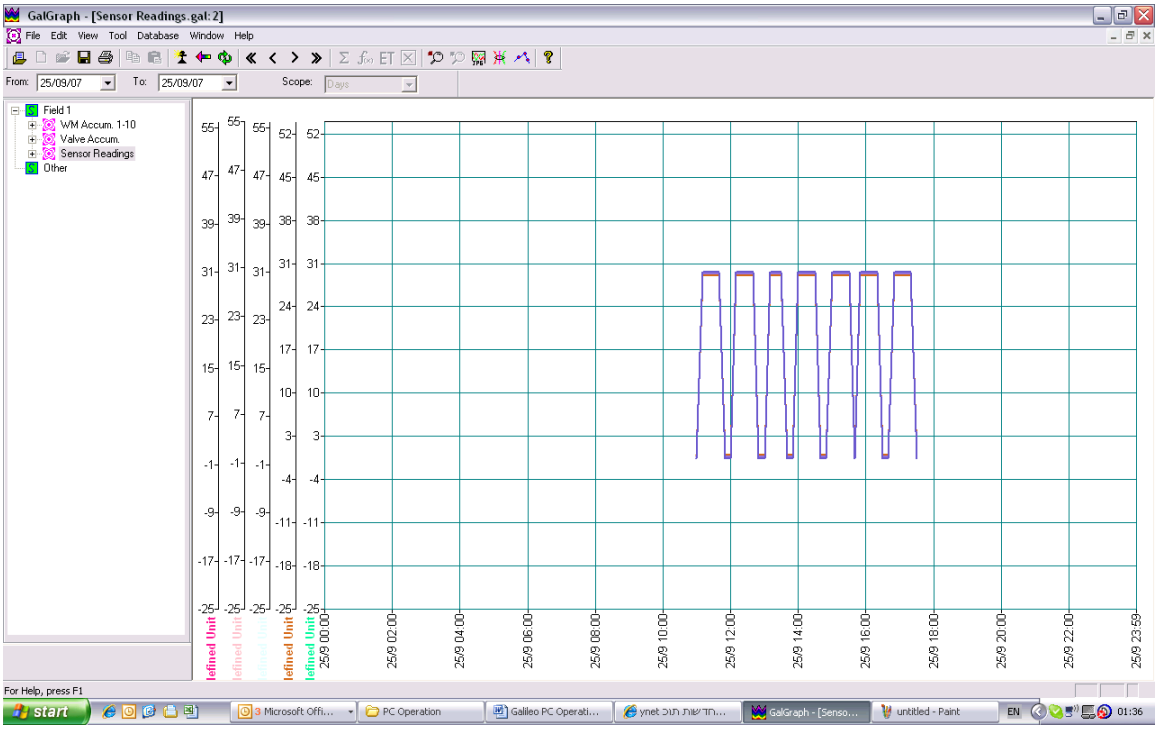
1) Marking the headline of the project (for example Field 1) and clicking ET in the tool bar opens the following:



2) First – define for each required variable its element. Double clicking on the variable's name will open a wizard to define this element (one element each time).
3) Insert a name for this ET calculation.
4) Set the elevation from sea level, this is a constant value.
5) Set the latitude and longitude of your meteorological station. These are also constants.
6) You can choose in which terms you want to get the calculation:
   (a) Show Value Every Hour.
   (b) Show Values of following hours – if you select this option, enter the start & end hour of the term.
7) In addition you can receive the summary of a whole day or for the hours you select.
8) Click "OK" to save your definitions \ changes.

9) Important! By defining an ET calculation you create a set with 5 elements: 4 of them are "real" elements connected for specific data from the controller and the fifth is the calculation of the ET, depending on those 4 variables. You should not delete or add any element to this set.
10) When you display the ET value, it may take a while because it first calculates the 4 variables value and than the ET value, so please be patient.
11) If you want to make changes in an ET set, right click on the set and select the "ET Definitions" from the menu. You cannot make changes in the elements themselves.

f) **<u>Changing the View:</u>** You can change the view to graphical view by clicking  :



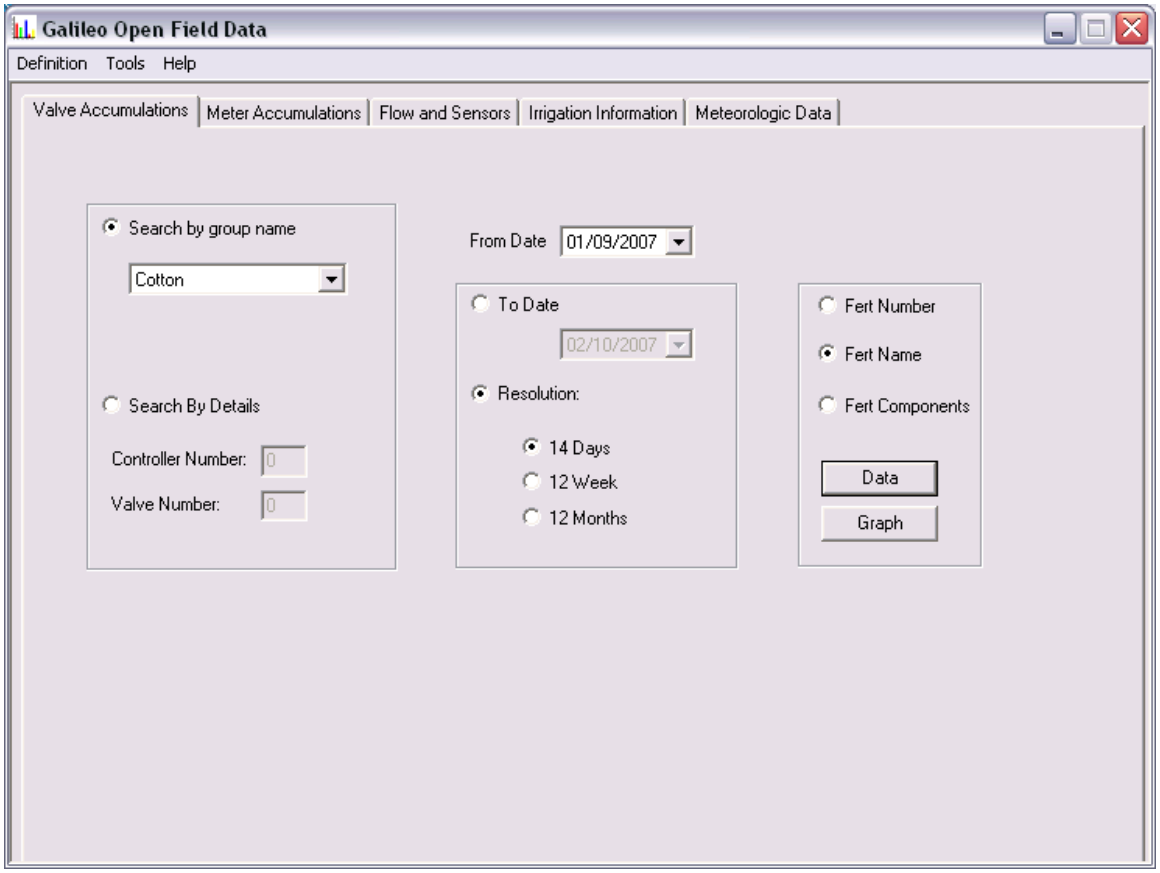
1) Moving with the < > arrows will move the date range one day ahead or back. Using the >> or << will move it by a whole week.
2) Double clicking the report name opens all of the report fields (graphs) if you want to turn off one of the fields, enter the report fields by clicking the "+" and then double click the field you want to turn off. Double clicking it again will return the presentation of it.
3) To zoom in on the graph you can mark the area to be enlarged with the mouse or you can use 

4)  - save the graphic picture in a JPG file.
5) When creating a graph report of elements with a different range the y-axis will be different for every graph. Sometimes it is convenient to make the y-axis common for all (easier for comparison) – click  .
6)  - Shows the reading point on the graph.

2. Galileo Data

For Open Field applications the report program Galileo Data is available. Galileo Data can show report types that currently can't be achieved by the Galgraph program. Upon installing the Open Field application the Galileo Data is also installed. Double clicking the Icon 

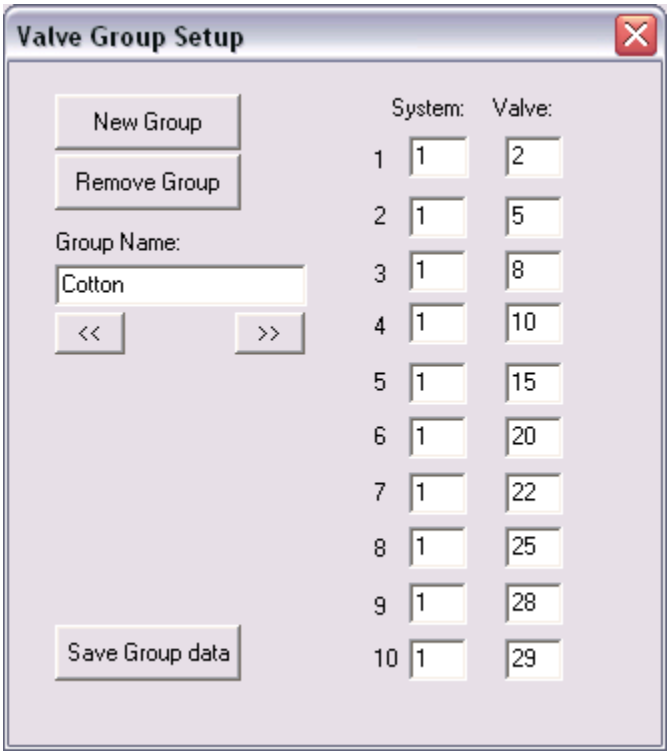
opens the following:



The above screen has several tabs each showing a different type of report. The most important one is the Valve Accumulation.

a) **Valve Accumulation Reports:** The first step is selecting the valves for the reports (on the left hand side of the screen). It can be done in two ways:

1) **A One Valve Report:** Check the radio button "Search By Details" and then choose the controller number and the valve number for the report.
2) **A Valve Group Report:** Since the accumulation elements are the valves, making a valve group of the same characteristics such as the same crop or the same field or the same area you can set up a report of water and fertilizers for the group required. In order to set up a valve group click "Definition" and select "Valve Group" the following opens:



(a) Enter up to 10 valves (Controller No. (System) and Valve Number), enter the Group name and click "Save Group Data".

(b) You can make as many groups as you wish.

(c) After making the group you can select it by checking the radio button "Search By Group Name" in the previous screen and select the group you created.

3) **Selecting the Time Range:**

(a) Enter the start date (From Date).

(b) There are two report options:

(1) **Selecting End date:** Check the radio button "**To Date"**. The report will show the total of water and fertilizer for

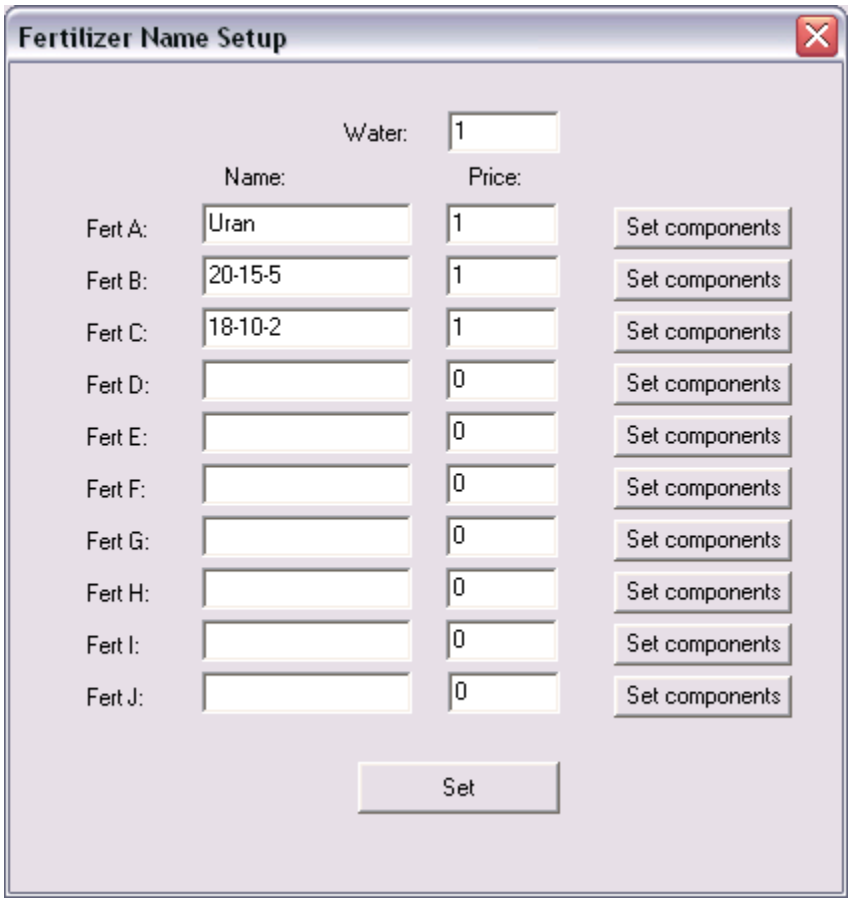
the entire period. In the case of a group the total of each valve is shown.

(2) **Resolution:** Checking the radio button "Resolution" and then selecting **14 days**, **12 Weeks** or **12 Month** will show a multi row report showing the accumulation of the selected resolution starting from the starting date. In the case of a group it shows the total of the group for each row.

4) **Selecting the mode of Fertilizer:** The Fertilizer in the report can be shown in different ways (Check the required radio button options on the right hand side of the screen):

(a) Fertilizers According to Pump Numbers: The accumulation of the fertilizer for each valve is according to the fertilizer pump number.

(b) **Fertilizers According to Fertilizer Name:** The fertilizer name range from A-J is defined in the fertilizer pump definition. The report shows the fertilizer according to the name assigned to the pump during fertilization. It is possible to set the real names to the A-J definitions. To do so click

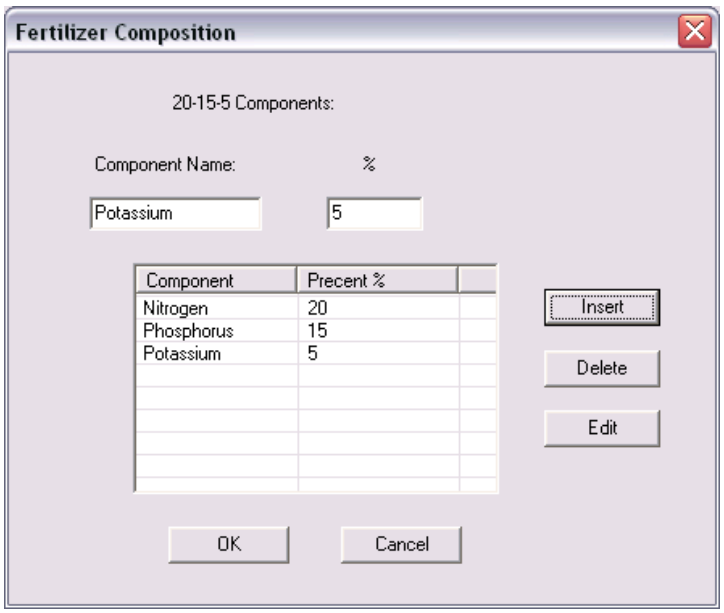


"Definition" in the pull down menus and select "Fertilizer Name" the following opens:

- For each of the fertilizer A-J set a name. The price supposed to be the price for each liter enabling a report of expenses for fertilizer and

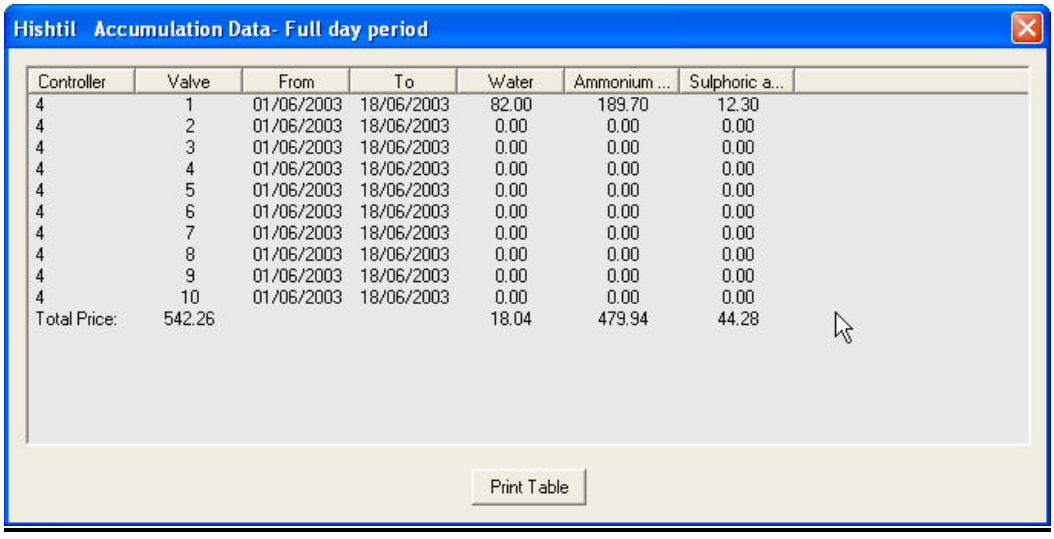
water. If the price is not required it is recommended to set it to 1 so the report will show the total of liters for the fertilizer and M³ for the water.

(c) Fertilizer According to Component: Each of the fertilizer names can be sub divided into its components. Clicking the "Set Components" button beside the fertilizer name opens the following:



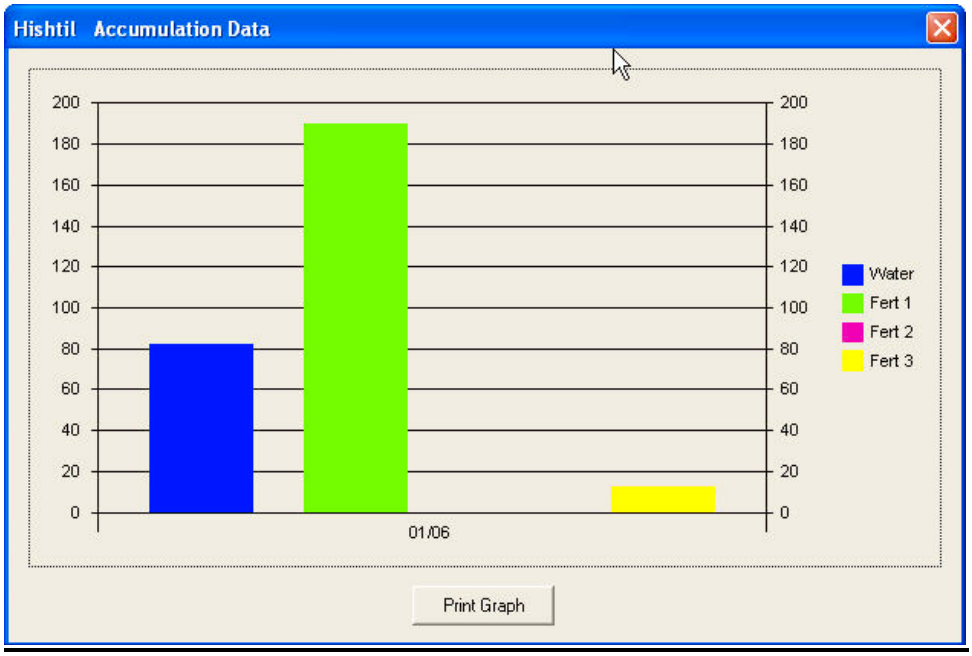
- Set the name of the component and the percentage in the solution of the material and press "Insert" to add it to the list.
- Repeat the last action for all of the components.
- The report will show the Kg of the Element material applied to the valve for the set period.

5) **<u>Viewing the Report:</u>** Having completed all of the dialog boxes of the valve accumulation report clicking "Data" on the left side of the screen opens a data sheet with the data required. Clicking "Graph" will open a screen with a bar graph of the water and the first 3 fertilizers.

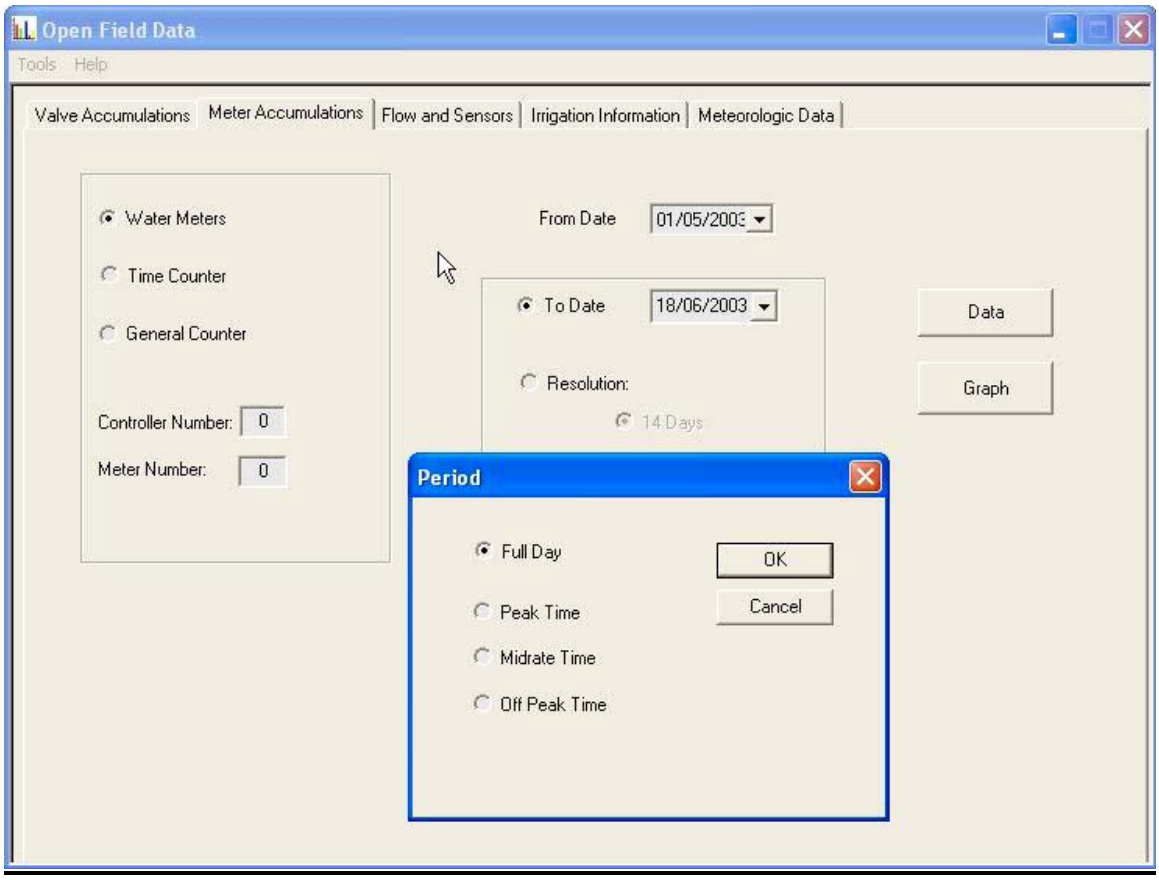


Controller	Valve	From	To	Water	Ammonium ...	Sulphoric a...
4	1	01/06/2003	18/06/2003	82.00	189.70	12.30
4	2	01/06/2003	18/06/2003	0.00	0.00	0.00
4	3	01/06/2003	18/06/2003	0.00	0.00	0.00
4	4	01/06/2003	18/06/2003	0.00	0.00	0.00
4	5	01/06/2003	18/06/2003	0.00	0.00	0.00
4	6	01/06/2003	18/06/2003	0.00	0.00	0.00
4	7	01/06/2003	18/06/2003	0.00	0.00	0.00
4	8	01/06/2003	18/06/2003	0.00	0.00	0.00
4	9	01/06/2003	18/06/2003	0.00	0.00	0.00
4	10	01/06/2003	18/06/2003	0.00	0.00	0.00
Total Price:	542.26			18.04	479.94	44.28

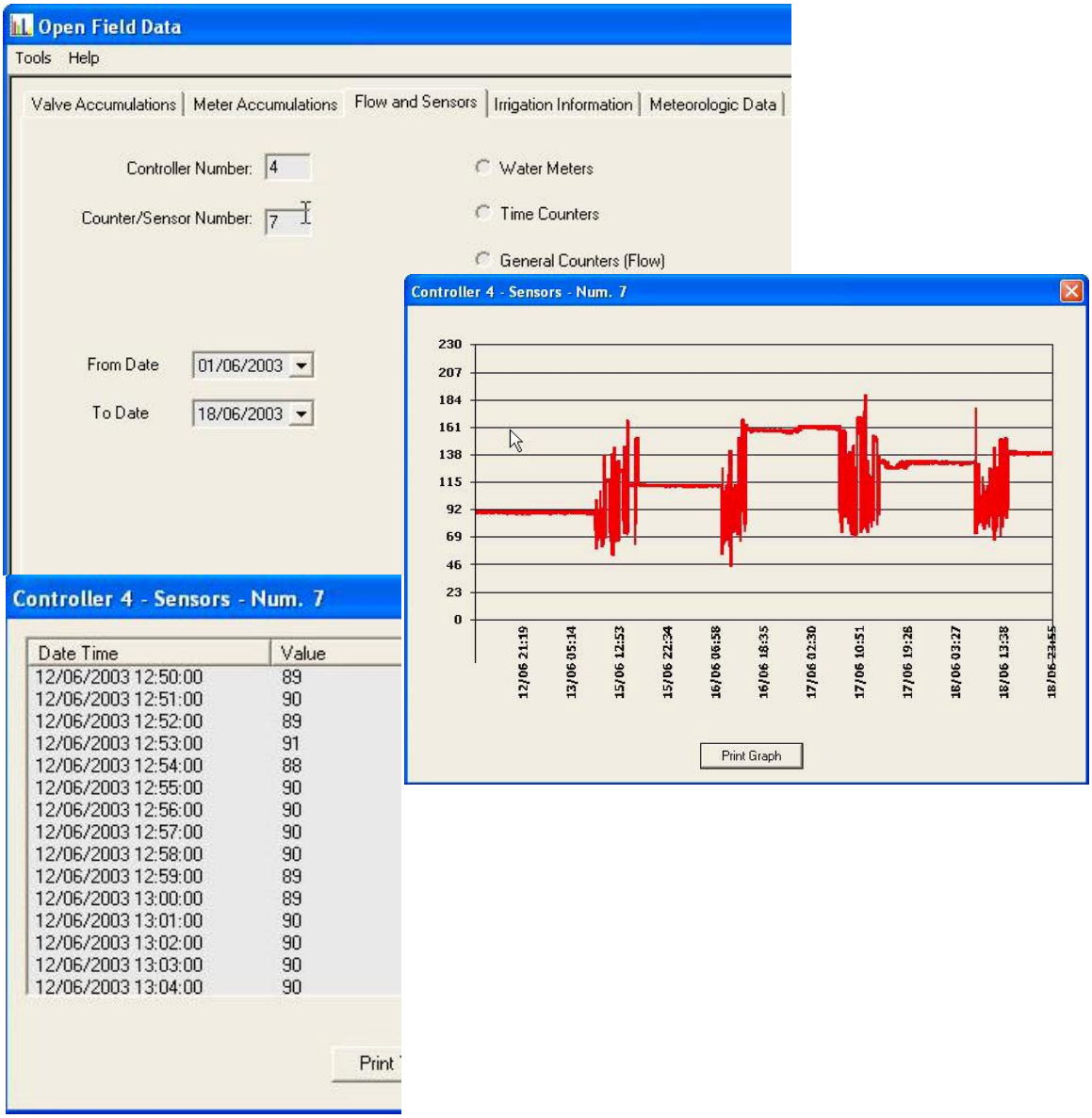
Clicking “Graph” will open a screen with a bar graph of the water and the first 3 fertilizers



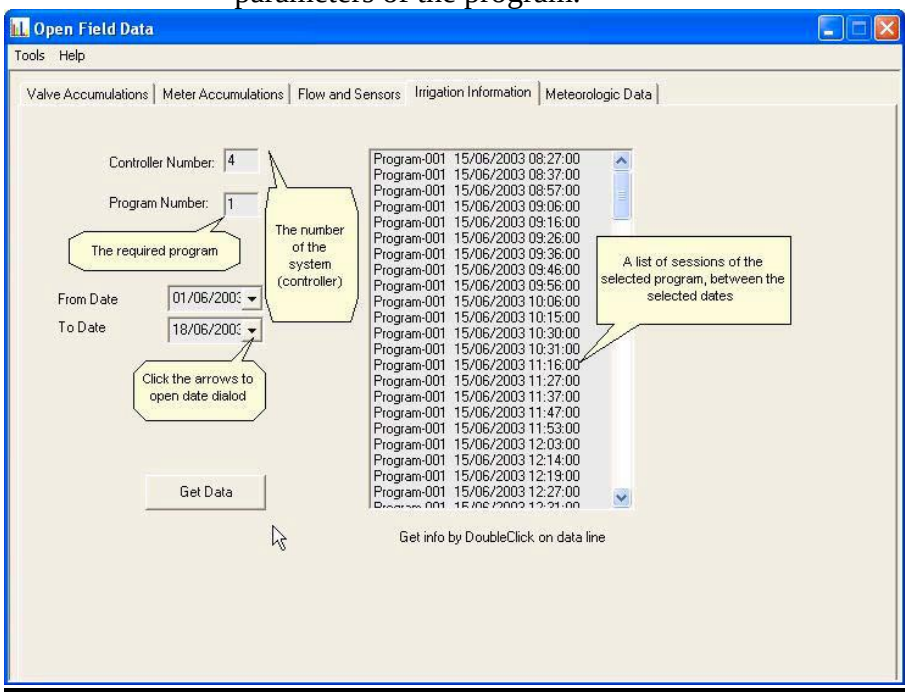
b) **Meter Accumulation Reports:** Just like the valves you can also create a report for Water Meter, Time Counter or General Counter. The report will show one number for each counter in every time point. Select the radio button of the required meter enter the number of controller and the number of the meter, select the time range (the same way as in the valves) and execute the report (the same way as in the valves).


Open Field Data
Tools Help
Valve Accumulations
Meter Accumulations
Flow and Sensors
Irrigation Information
Meteorologic Data
Water Meters
Time Counter
General Counter
Controller Number: 0
Meter Number: 0
From Date 01/05/2003
To Date 18/06/2003
Resolution:
14 Days
Data
Graph
Period
Full Day
Peak Time
Midrate Time
Off Peak Time
OK
Cancel

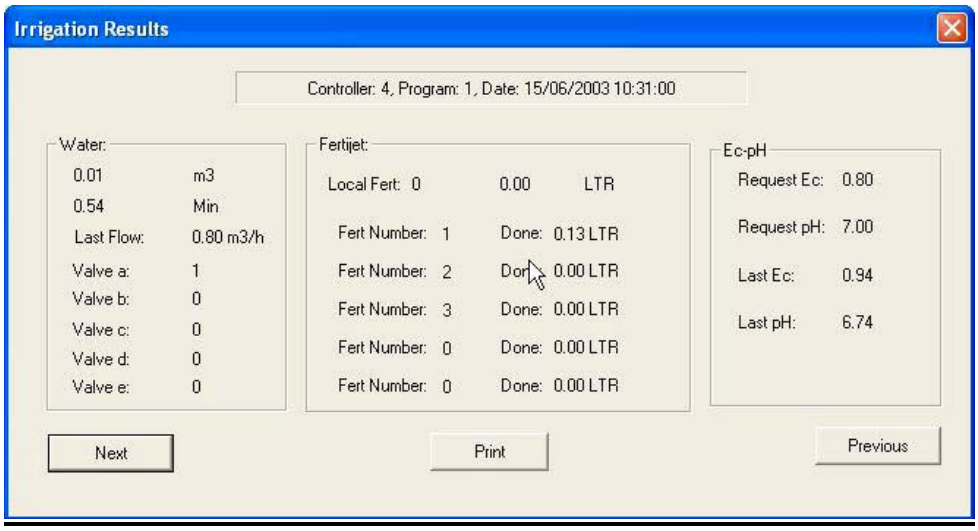
c) <u>Flow and Sensor Graphs/Reports:</u> In general the Galileo data is not the best tool for creating graphs (the Galgraph program is better) so for continuously reading data (best shown by a graph) it is advisable to use the Galgraph program. If you want to use the graphs here select the type of meter/sensor out of: Water meters (Flow Rate), Virtual Water Meters (Flow Rate), Time Counter (Temp. working minutes), General Counters (Flow), General Counters (Quantity/Segment) or Sensor. Select the required option, the number of controller and the number of the meter/sensor, the range of dates and press "Data" to receive a numeric report or "Graph" to receive a graph.



d) **<u>Irrigation Information:</u>** Select the controller number and optionally the program number, the range of date and click the "Get Data" button in order to receive a list of the programs ending time within the range of dates. If the number of the program is not entered all of the programs ending in the range of the dates are shown. Double clicking on top of each of the program in the list opens a screen showing all the parameters of the program.



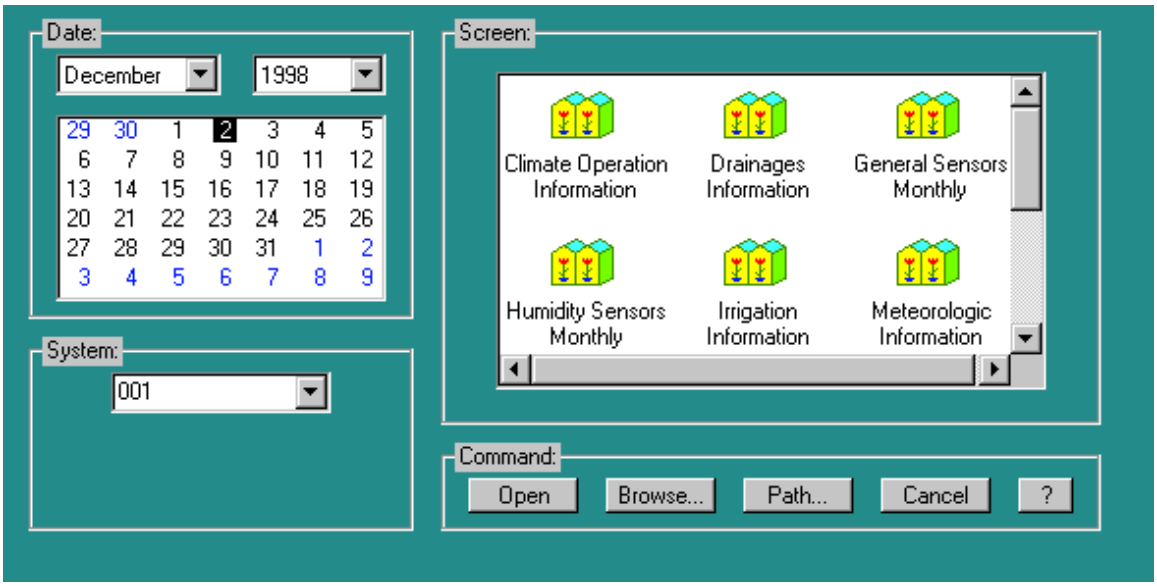
Clicking on top of one of the item from the list of irrigations above opens the following:



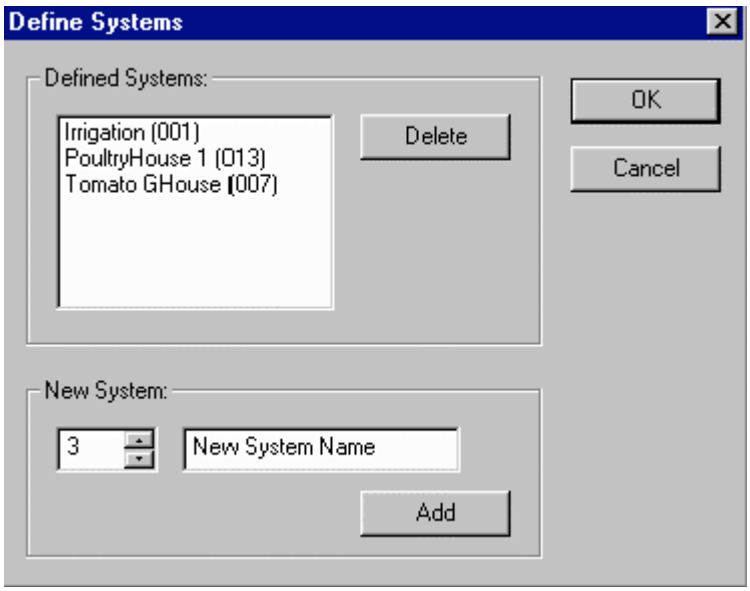
e) **Meteorological Data:** Works in the same way as the Flow and Sensors reports. You can receive a graph for each of the following metrological sensors: Temperature, Humidity, Radiation, Wind Velocity, Wind Direction and Rain.

3. WinMan.

The Winman program is a tool designed to generate clear and easy-to-read reports from the data files created on the PC by the control system. The Winman program contains two separate modules: Winman and Screen Setting. The Winman module retrieves the data from the PC. The program itself contains a comprehensive and interactive online help and therefore this manual will not describe it in detail. On launching the program the "welcome screen" appears. This screen, among other things, provides a set of pre-defined reports that are the most common reports.



The first step to take in order to prevent confusions in your future work is to define your existing systems with a descriptive string.
Click Tools and Systems on the top menu. The systems dialog box will open:



You have to register your existing systems one by one with descriptive names. The numbers you select on the left box refer to digits 5-7 of the file name. These 3 digits in the file name, in case you have forgotten, are given by the system number as defined in the controller (Code <521> and <532(n)11>) or the

controller number in Open Field system. Providing each system with a name is important, because in a greenhouse project, the reports set includes both irrigation and climate reports. It is a common mistake to retrieve an irrigation report with a climate system number or vise versa. In both cases the information received will be irrelevant.. After clicking OK, click "Cancel" to close the screen, and  to reopen it. The systems appear in the drop down list. Click a system, click a date, click a report and then click "Open". If the data file exists on your PC a table report will be displayed.

What can you do with a report?

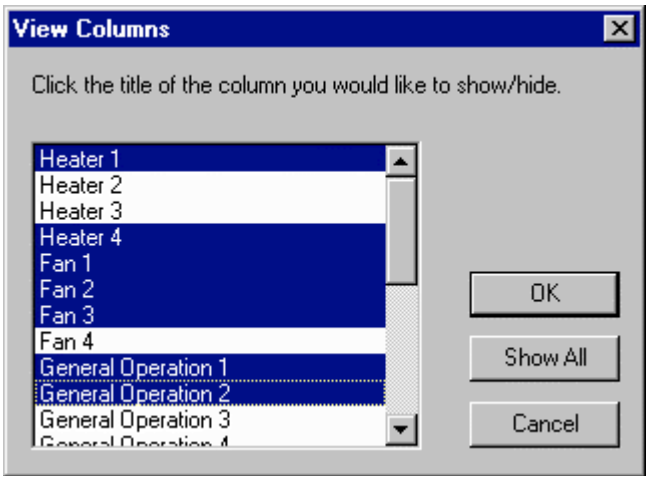
- **Exclude and re-include columns.**
- **Export to Excel file.**
- **Make chart**

a) Exclude and include columns

When you view one of the pre-defined reports, you will often have empty columns. For instance: if you only have 3 fertilizer pumps, but the report allocates 8 columns for all 8 possible fertilizer pumps. Those excess columns make a great deal of scrolling necessary to view the important data.

Use the  button to decide which columns to view.

The column view dialog box opens:



Hold the "Ctrl" button down and click the columns you want to view. Clicking turns it blue (display) and a second click makes it blank (do not display). Click OK to approve. This change will only take place during this session. The next report of that kind that you will open will display all the columns again.

b) Export to Excel. Exporting to Excel is useful when you have to manipulate data or you want to make a report that includes several days that is based on a daily report.

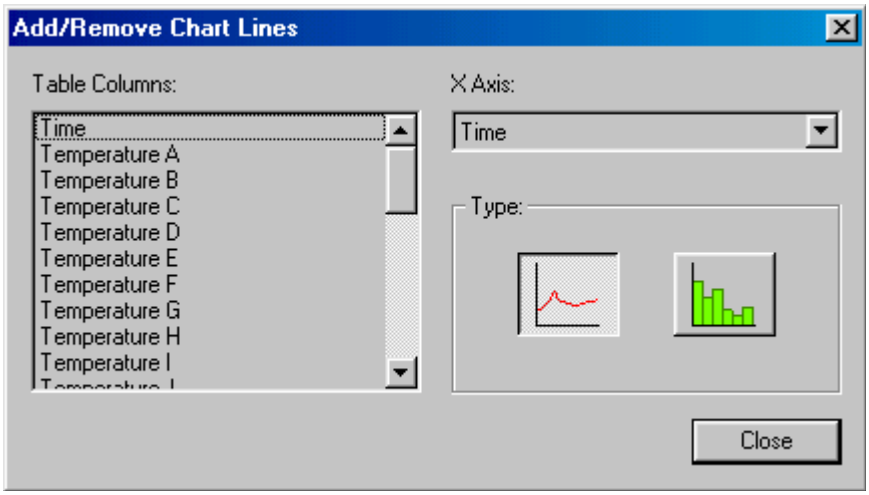
The Excel must be launched on your PC before attempt to export a file. Click  the button and chose the template suitable to your needs. The process takes about 20-30 seconds, when this process finishes the Winman automatically switches to the Excel environment.

c) ***Make chart***

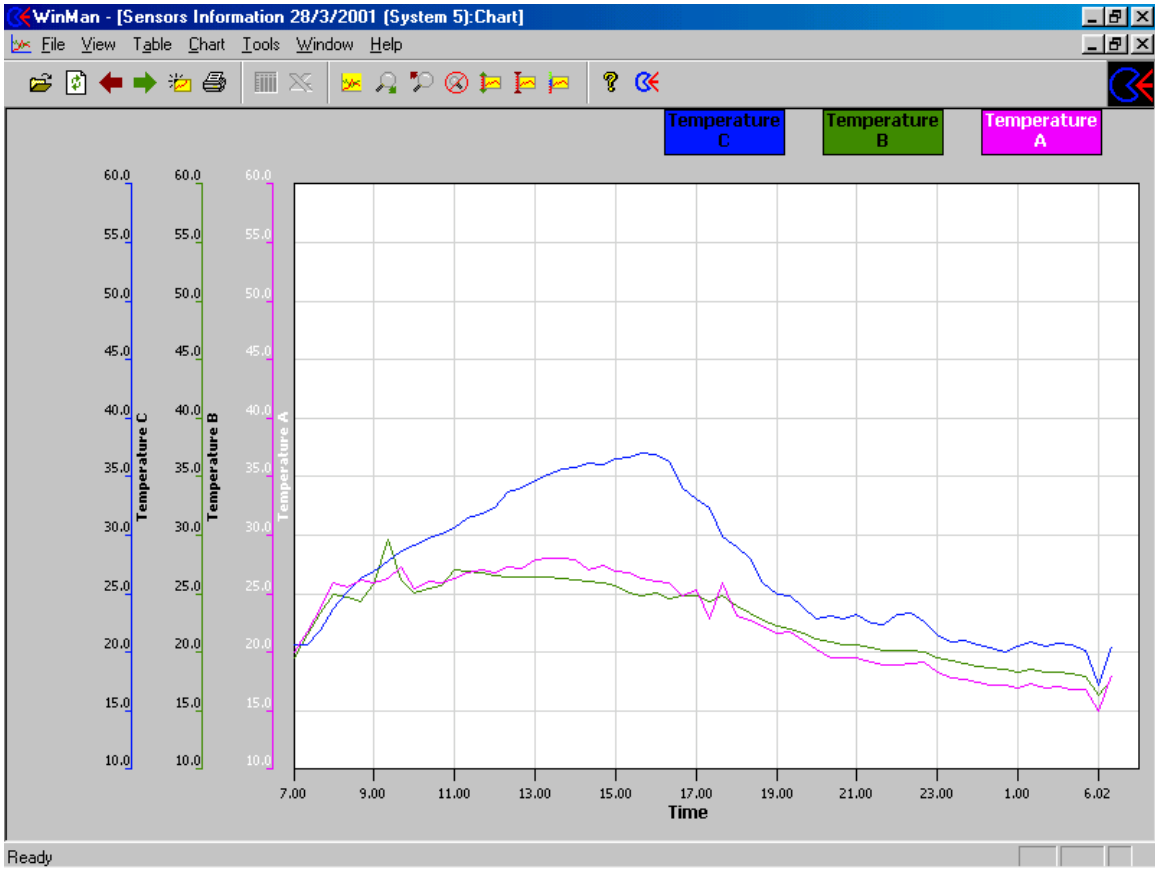
Charts are the easiest way to see a quick overview of large amount of data. You can get daily or monthly values of sensors in a graphic way and visually compare the charts.

While viewing the report, click the chart tool  on the menu bar. You will be asked to select up to 4 columns to view from the current report. Each column you select will be displayed in a different color.

Winman enables you to display various types of data on the same chart, attention must be paid to the Y-axis. Each column will have a different range. The range is automatically optimized according to the highest and lowest values.



If the differences are not too large – you can use the equalize tool  to shrink all Y-axis to the size of the smallest Y-axis.

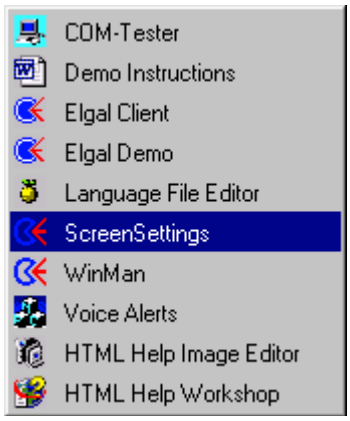


Clicking on a chart legend enables you to use  and  . Carry on using these buttons until you receive the whole display as you want it. At this point, if you want to view the previous or the next day, click  or  instead of retrieving the report and then generating the chart.

d) Screen setting.

The standard reports refer to one system and one type of data for each report. But what if you have 5 greenhouses and you want to view their temperatures in one report? What if you want to compare it to solar radiation?

The answer to that is the Screen setting application. Click the Start and go to "Programs" and to the group where you installed the Winman. Click the "Screen setting". The application shows you all the existing report on the left side of the screen.

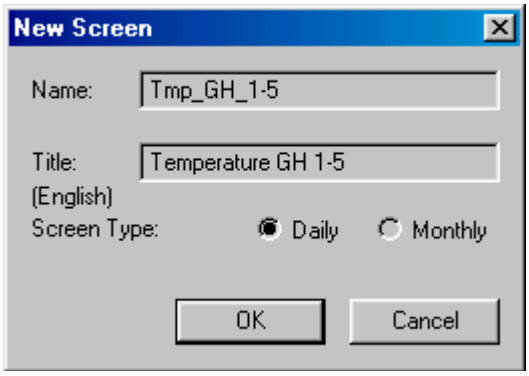


The first step is to study the content of each report. Open the reports containing the information you want and note the code number and the column number of the data that you need.

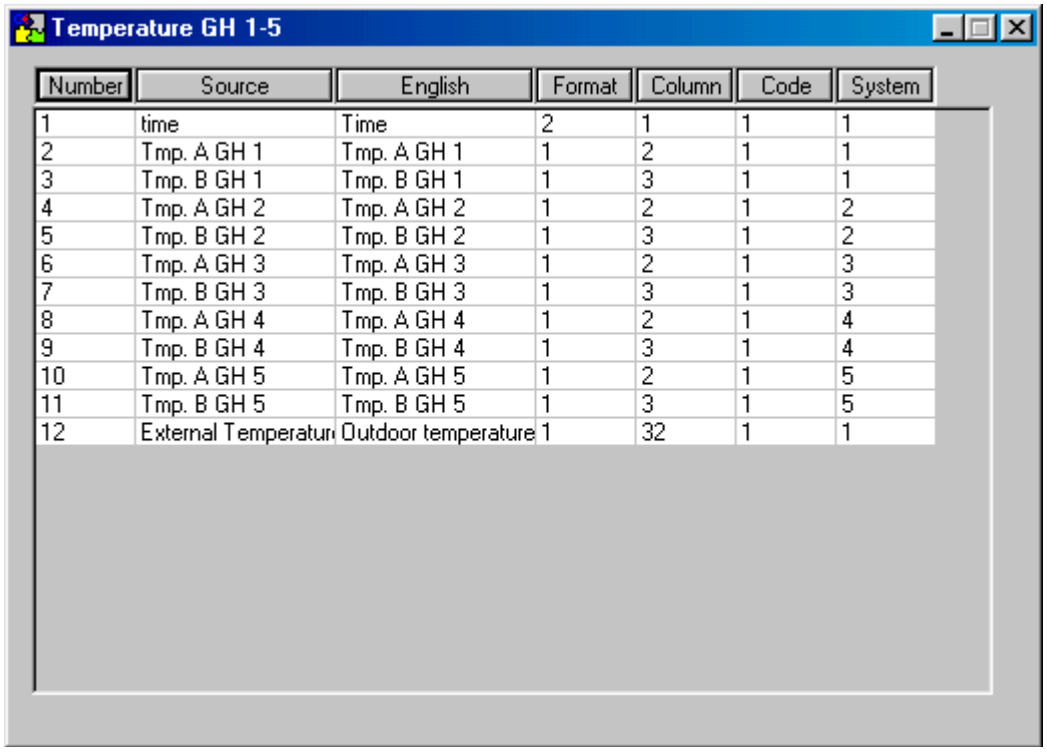
Now you are ready to generate your own report.

Click the new report button and give the report a name and a title. A blank report window opens.

Use the 'add record' button repeating this for as many columns as you are going to need. Do not forget the time column – mostly placed in the first column.



Source: the column title in your own language.
English: the column title in English.
Format: the position of the decimal point.
Column: the order number of the column that you want to display in the source file.
Code: the file code (see table below).
System: the system (greenhouse etc.) number as defined in the controller.



Number	Source	English	Format	Column	Code	System
1	time	Time	2	1	1	1
2	Tmp. A GH 1	Tmp. A GH 1	1	2	1	1
3	Tmp. B GH 1	Tmp. B GH 1	1	3	1	1
4	Tmp. A GH 2	Tmp. A GH 2	1	2	1	2
5	Tmp. B GH 2	Tmp. B GH 2	1	3	1	2
6	Tmp. A GH 3	Tmp. A GH 3	1	2	1	3
7	Tmp. B GH 3	Tmp. B GH 3	1	3	1	3
8	Tmp. A GH 4	Tmp. A GH 4	1	2	1	4
9	Tmp. B GH 4	Tmp. B GH 4	1	3	1	4
10	Tmp. A GH 5	Tmp. A GH 5	1	2	1	5
11	Tmp. B GH 5	Tmp. B GH 5	1	3	1	5
12	External Temperatur	Outdoor temperature	1	32	1	1

The table is automatically saved. The next time you launch the reports window you will see it there. If you specify a number in the “system” field in the screen setting – you won’t have to specify it in the report window.

Please note! When you combine a report from several systems, make sure all the systems have the same data collection cycle (in minutes). Different cycles will result in a report that will make no sense. The time column will be taken only from one system and it may not fit the other system timing.

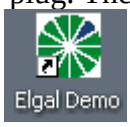
Table 1: Data codes.

Code	GH irrigation	Climate	Open field	Poultry
1	Sensors daily	Sensors daily	Sensors daily	Summary daily
2		Meteorology +	Meteorology	Data + sensors
3	Irrigation	Windows and Outputs	Irrigation session	Data + Sensors
4	Valves daily	Day Tmp. monthly	Sensors monthly	Scales distribution
5	Drainage info.	Day Hum. Monthly		
6		Day Gen. Sns.		
7		Night Tmp. monthly	Water flow	Scales every hour
8		Night Hum. Monthly	Valves	Scales daily
9		Night Gen. Sns.		
0	General counters daily			

Table 2: Data codes in versions with database support

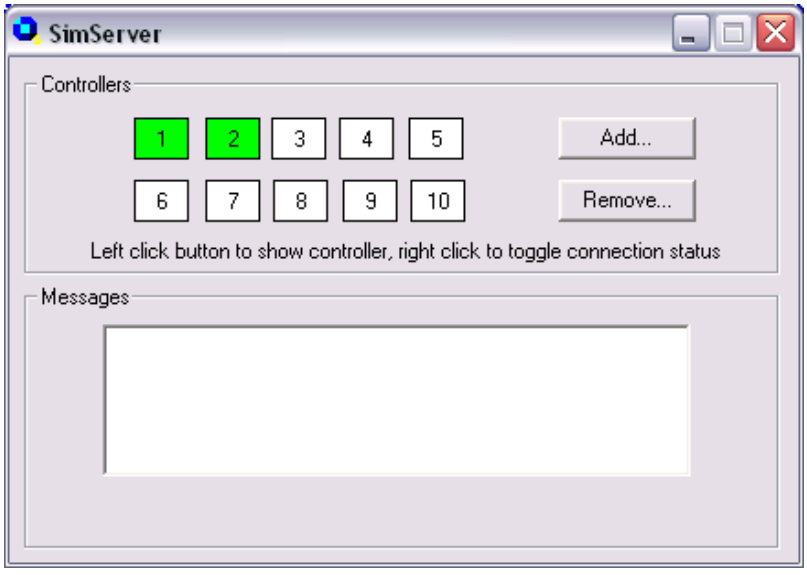
Code	System	Report content
201	GH irrigation	Sensors daily
203		Irrigation session
4		Valves daily
205		Drainage information
0		General counters report
101	Climate Chamber	Sensors daily
2		Meteorology + outputs monthly
103		Windows and Outputs oper. Daily
4		Day Tmp. Monthly
5		Day Hum. Monthly
6		Day Gen. Sns. Monthly
7		Night Tmp. monthly
8		Night Hum. monthly
9		Night Gen. Sns. Monthly
0		General counters daily
301	Open field	Sensors report
303		Irrigation session
304		General counters report
306		Water counters period report
307		Valves period report
308		General counters period report
309		Operate time period report

D. The Galileo Simulator Program:

The Galileo software package includes a program that enables making all of the definitions of the system internally on your PC and running the program as if it was connected to the controller. The controller in this program is simulated by an internal program on the PC but reacts in the same way as a real controller. Another advantage of the program is that you can run it without the need of the HASP (the software protection) plug. The Galileo Simulator is installed together with the Galileo Center. The 

icon is shown on your desk top. Double click it in order to open the program. The Galileo Client will open just the same as in the real center (please refer to the Galileo Client installation and setup to set it up). The Galcon server will not open but another program "Sim Server" will open instead. The Sim Server can simulate up to 10 controllers internally in the PC. The Sim Server includes I/O elements such as Outputs, Inputs and Analogs (Analogs Out also appear but are currently not supported by the client program). Each of the I/O elements has a number. This number is used in the application setup (the Client Program). For example the input of a water meter in the Open Field program which is represented by digital input No. 1 is defined 0.0001 (RTU definitions such as 1.0011 are not allowed). In the same way a sensor input No. 1 in the Sensor Names table in Green House application will be defined as No. 1.

1. **Setting Up the Sim Server:** Clicking the Sim Server icon in the task bar opens the following:



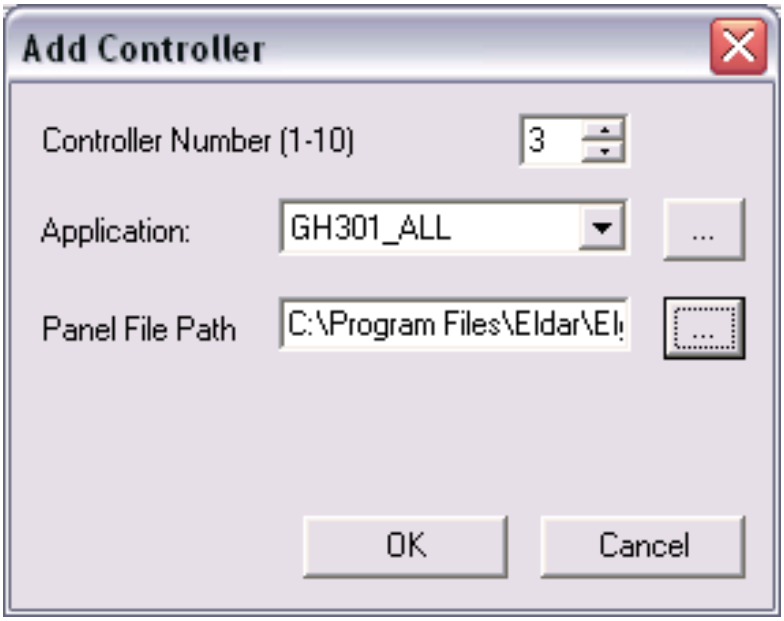
Each of the numbered squares represents one virtual controller. The status of the communication with the virtual controller is marked by colors:

- White – Controller is not defined.

- Green – Controller is defined and communication is OK.
- Red – Controller is defined but there is some definition error (in order to change the definition, first remove it and then reinstall).

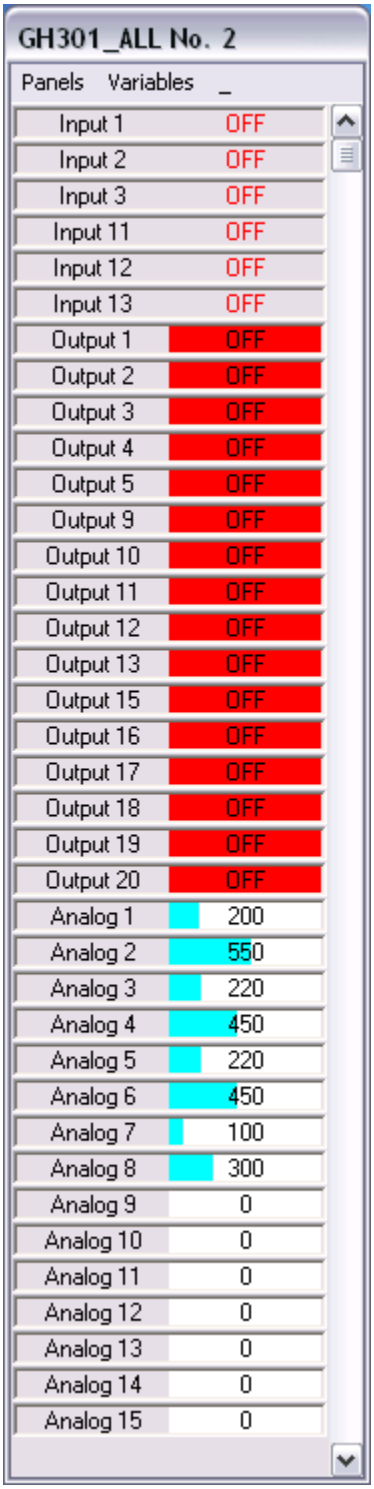
It is recommended to start when all the controllers are white. In order to remove a controller (make it white) click the “Remove” button, you will be prompted with a screen with the numbers of controllers currently installed, select the controller to be removed and confirm by OK.

2. **<u>Installing a Virtual Controller:</u>** Click the "Add" button to open the following:

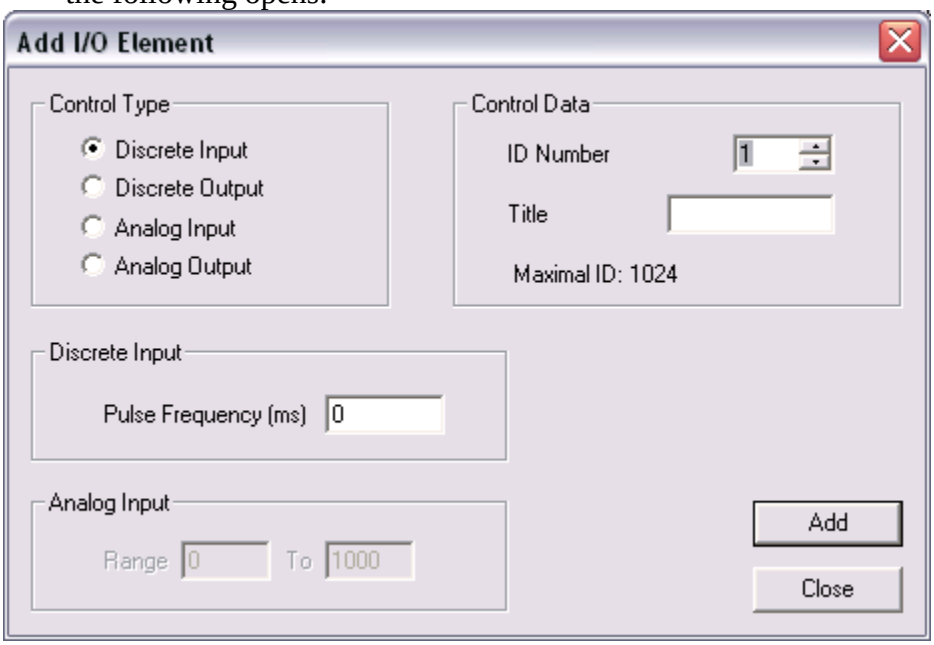


a) Select the controller number
b) Select the type of application:
   1) Open Field (according to version)
   2) Green House (according to version)
   3) Galstar
c) Select the Panel File Path – according to the type of application selected.
d) Click "OK".

Upon clicking "OK" a screen representing the virtual controller opens:



- Each cell of the screen shows one I/O.
- The order of appearance is: Discrete Inputs, Outputs, Analogs.
- The status of the I/O is shown.
- In order to create a new I/O click “Panel”>>”Add I/O element” the following opens:



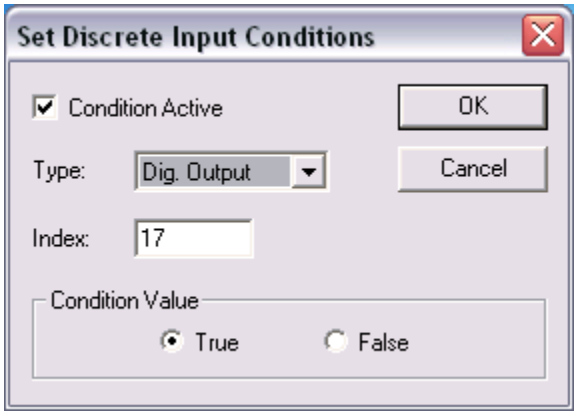
- Select the type of element on the left hand side of the screen.
- Select the number of the I/O on the right. (If the number already exists a message will appear and the process is halted).
- Enter a free text title. Although in the default the name of the component are set for the I/O, it is recommended to enter titles like Input 3 or Output 10 according to the number and type of the I/O just like the real controller.
- Click “Add” to add the I/O element to the virtual controller.

3. **<u>Editing An I/O Element:</u>** After creating the I/O element right clicking it enables you to delete it and to change its properties (which includes the number and the name). Discrete Inputs and Analogs can have more features to edit.

   a) **Editing Discrete Input:** Right clicking the input allows accessing, in addition to the mentioned properties, the Auto Pulse and Conditions.

      1) Setting the **Auto Pulse** to a certain time will send a pulse (simulation of a contact) to the Client program. The setting time is in milliseconds of either the close contact or the open contact thus the duration of the pulse is double the time set.

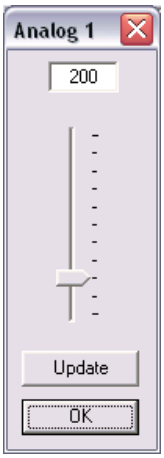
      2) **Setting the Conditions:** When setting the auto pulse without a condition the virtual controller sends pulses all of the time creating in some cases (when it is connected to water or fertilizer meters) unwanted alarms of uncontrolled water/fertilizer. In order to prevent this alarm a simulation of flow is wanted only if the valve or main valve is open. The program allows you to condition sending of pulse by another I/O element such as output. In this case only when the output is open the input starts sending pulses to the controller. In order to set it up right click the Input element and select conditions. The following opens:



- Check the "Condition Active" box.
- Select the type of I/O element upon which the condition is set. The options are: Flag, Digital Input, Digital Output.
- Select the number of the I/O element.
- Select whether the condition is when the conditioning element is in On or Off (True or False) status.
- Click "OK"

For example: When setting a Fert. Pump whose output is number 7 and its fertimeter is input number 10, right click input No. 10 and set a condition that only if output No. 7 is On (True) the input sends pulses.

   b) **Setting the Analogs:** The analogs in the simulator program send the reading to the Client program. It is impossible to set the sensors in the program as in the case of the real system. The only setup in the client is assigning the number of Analog input to the required sensor. In order to set the reading of the sensor click the cell in the virtual controller, the following opens:



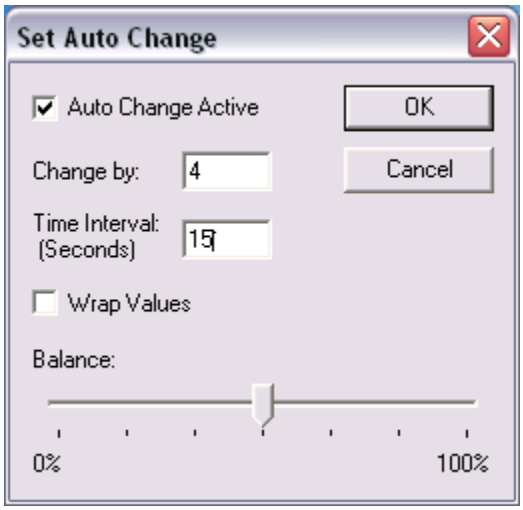
      1) Slide the slider up and down to set the require reading.

      2) Click "Update" to save the reading.

3) Click “OK” to finish.

4) The reading appears in the sensor defined with this Analog.

5) Right clicking the Analog element lets you also set the Data Limits in the same way as setting up a sensor in the client in the real system. Another option is Auto Change. Some times it is useful to show the data changing as in the real world. Selecting this option opens the following:



- Check the “Auto Change Active” box.
- Enter the value by which the reading changes when it changes.
- Enter the number of seconds after which the reading changes.
- You adjust the balance to make it more unstable or stable.

E. Alarm Messenger

1. Introduction

Galcon specializes in developing control and communications solutions

The ***Alarm Messenger,*** is a software program that enables you to receive real-time alarms from your control system to your cellular phone.

Being a modular system, independent of your control system, ***Alarm Messenger*** allows you to receive alarms on malfunctions from your control system, without interrupting the routine work of the control system.

a) Potential Uses

Multiple versions of a variety of agriculture-controllers manufactured by Galcon.

b) System Capabilities

1) Sending messages to an e-mail or SMS recipient
2) Sending daily messages.

c) System Requirements

1) Internet or cellular modem connection. In case of an Internet connection a fixed IP address is required.
2) Connection to the control system.
3) Runtime version of NET Framework.
4) Galcon's Elgal server software.

d) Installation Instructions

1) Insert the CD to your hard drive. The Start window automatically opens. Follow the instructions in the subsequent dialog boxes.
2) Select the folder in which you wish to save ***Alarm Messenger***.
3) When installing the software, it automatically creates shortcuts on your desktop and in the "Start Menu".
4) When opening the software (for the first time), you are requested to define a number of properties.

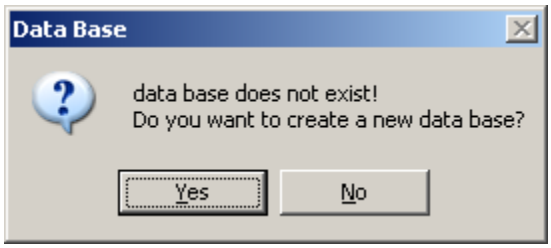
e) Glossary:

1) Server: name of the server to be indicated on messages (Galcon default).
2) Controller: any type of a controller connected to the Elgal Server.
3) Address: controller's register address.
4) Alarm: a certain status of the Controller that prompts a message when it exists.
5) Element: all items related to the alarms tree (servers, controllers and alarms).
6) Message: SMS or E-mail message sent when a certain alarm occurs.
7) User: an employee who receives messages sent by the system.
8) Department: a group of users.

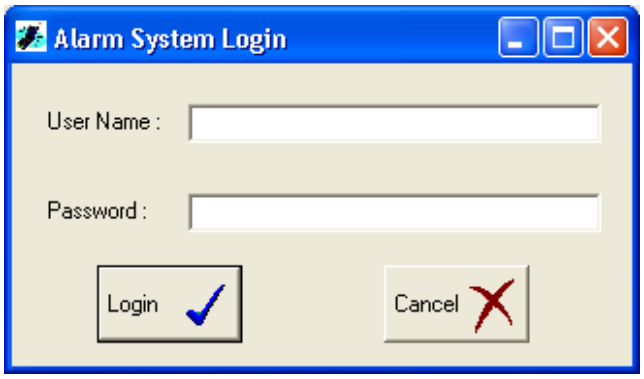
2. Starting Alarm Messenger

Starting the program consists of 3 stages:

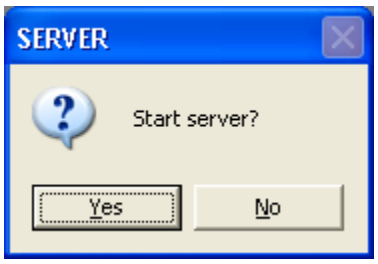
When starting the program for the first time, you need to define a database. ***Alarm Messenger*** can automatically create an empty database as shown in the following screen.



The program uses 3 authorization levels. User & Admin login using a user name and a password. In order to log onto the system without username and password, click the CANCEL button. The system opens and the server is automatically activated.



When logging into the system, you are asked whether to activate the Server. Activating the server starts the program. Click YES to start the program. If you are in the process of defining the database, it is recommended not to activate the server at this stage.

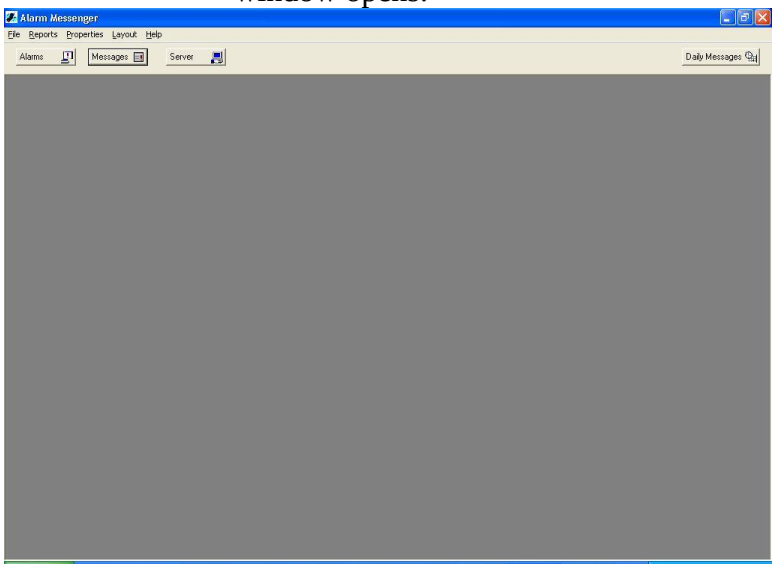


3. Overview

The program screen is divided to 3 sections.

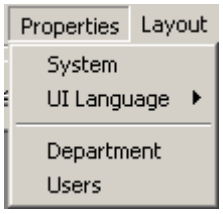
- **a)** Menus: are used to define general properties, users, departments; to print reports and to change the current authorization level.
- **b)** The Tool Bar: is used to open the 4 main documents of the program: Alarms, Messages, Alarms Server, and Daily Messages.

c) The Working Area: is occupied by the different windows when a window opens.



4. Definitions

The Definitions menu enables you to change and add definitions of Cellular Operators, to change General Definitions, as well as managing Users and Departments.

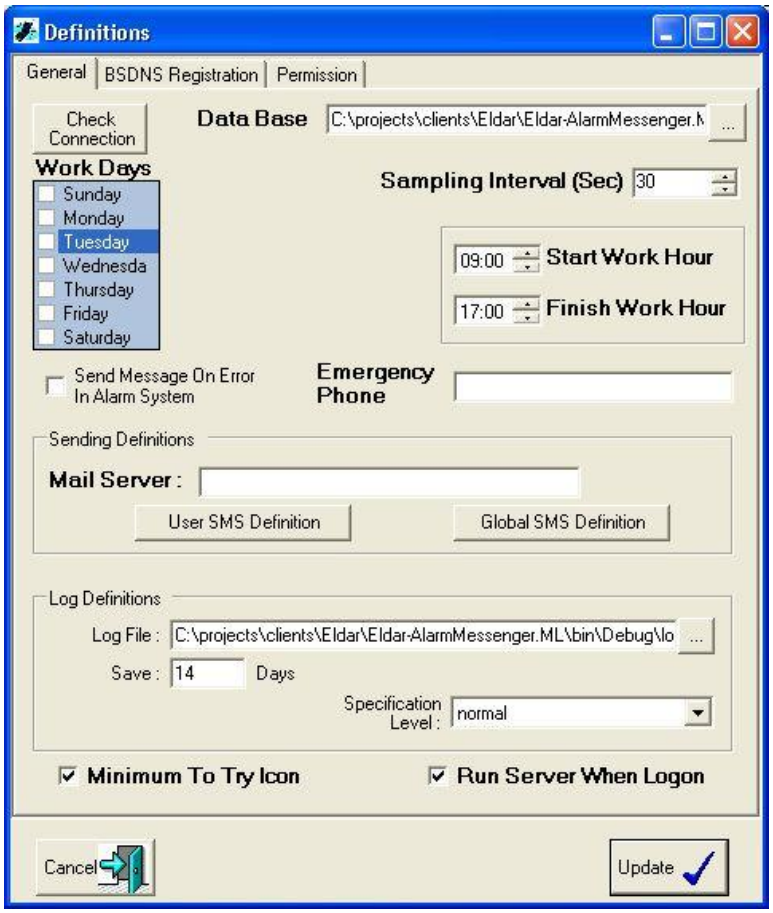


a) System Definitions

System Definitions include all of the general definitions of the system – the location of the database, saving the log, additional authorizations, and an optional feature enabling checking the connection to the BacSoft server, available only if the Remote Server is installed. The System Definitions include 3 main sections:

1) General: general system definitions.
2) Authorizations Management:
3) BSDNS registration: an optional feature that offers a connection to the BacSoft server in case the PC hosting the program collapses, preventing the ability to send messages. In which case a number defined during the registration receives an alert on the system failure.

1) General System Definition



Screen Capture 1

(a) Data Base: first you need to define a database in the .mdb format. The database includes all of the information that exists in the program, apart from the System Definitions. When activated for the first time, the system offers to create an empty database, and refers the program to use it. Located in the same folder as the program, the empty database that is automatically created is named Alarm Messenger.mdb. You can check the connection to this database using the button located left to the field.

(b) Sampling Interval: the time elapsing between 2 dial-up sessions (during each session data is received from the Controller, you check whether any alarms occurred, etc.). During the interval the process operating the dial-up is not active, i.e. no action is taken. The object of the interval option is to prevent overloading the network and the Controller, provided that the user can tolerate a slightly delayed alarm. (30 seconds delay, for example).

(c) Work Days: weekly business days. When adding a message, you can set the time on which the message will be sent, i.e. during times that were defined as normal business hours, on a business day.

(d) Working Hours: hours that are defined as business hours (see working days).

(e) Send message on error : in case the system fails to connect to the Controller, or fails to read data from the Controller, for any reason

whatsoever, the message is recorded in the database and on a list included in the alarms server form (under Communication Malfunctions). The user can choose whether the system malfunction message is sent to the System Administrator.

(f) Emergency Phone: the phone number of the System Administrator (to which a system malfunction message is sent).

2) <u>Authorizations Management</u>

(a) Mail Server: IP or URL address of the network mail server.

(b) Global SMS Definitions: SMS messages properties, including information of all the Israeli cellular operators. These definitions are managed by the System Administrator only.

(c) User SMS Definitions: personal preferences of a User – sender name, and where a username and password are required are managed by the System Administrator only.

(d) Log File: location of the file containing information received by the Server.

(e) Save: defines how far back data remains logged.

(f) Specification level: the system offers 4 levels:

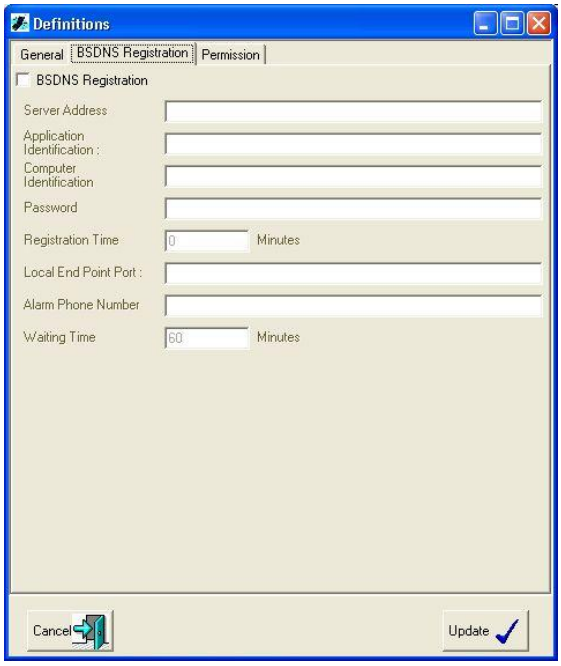
(g) Debug: similar to Verbose, except for very specific details that are irrelevant to the user and therefore not displayed.

(h) Normal: sends messages on malfunctions, at the beginning/end of the alarms reading process, as well as on the activation or shut down of the server.

(i) Errors Only: refers to malfunctions only.

(j) Note: the text that appears on the server screen is identical to the text that is saved in the log file.

3) **BSDNS Registration**



Screen Capture 2

BSDNS (BacSoft Domain Name Service): an optional feature that initiates registration to the BacSoft server on fixed dates. On the first registration, the BacSoft server receives the telephone number and the dial-up interval. Thereafter, in case the program fails to contact the server as scheduled, a message is sent from the BacSoft server to the number defined during registration.

(a) Server Address: IP or DNS address of the PC that runs the BSDNS server.

(b) Application Identification, Computer Identification, Password: the registration data of a customer (for a current program installation). Customer must obtain the data from BacSoft.

(c) Registration Time: defines the time, in seconds, between two dial ups of the application to the BSDNS.

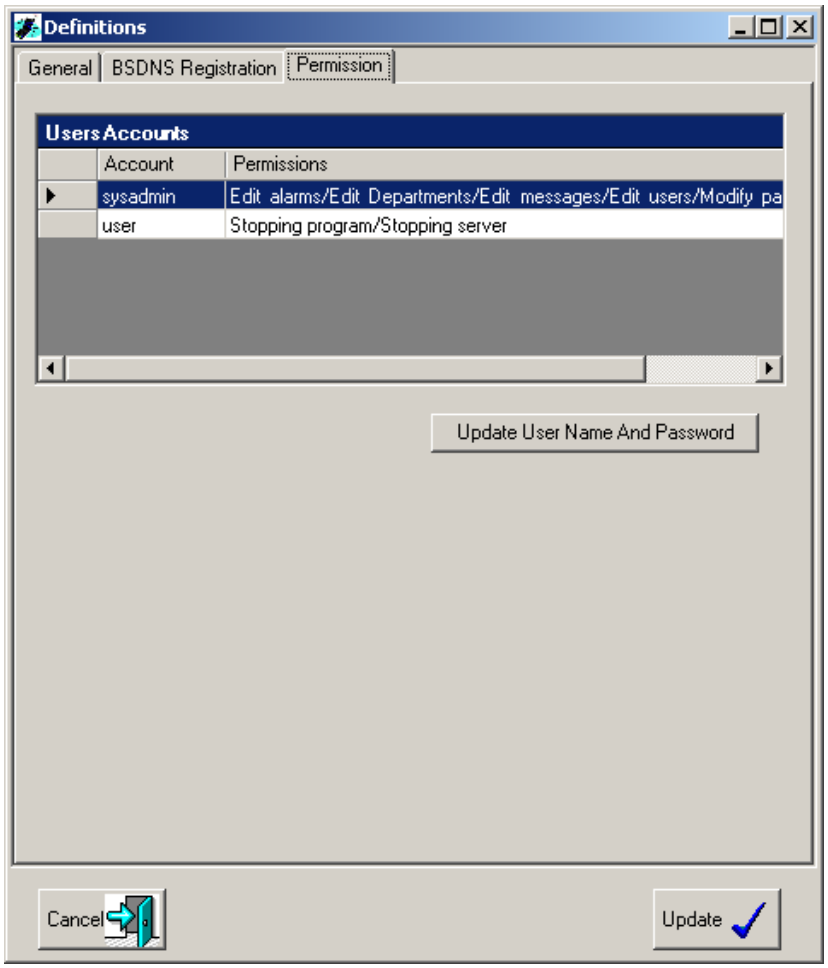
(d) Local End Point Port: In case the customer's PC includes a firewall, that limits the exit ports, you are required to enter the number of the requested port in this field. This field can frequently be left empty.

(e) Alarm Phone number: the phone number to which an alert is sent in case of a system failure.

(f) Waiting time: time elapsing between a failure of the application registration and the initiation of an SMS message to that effect.

(g) Note: Phone Number& Waiting time are sent to the BSDNS server, where they are saved to the database.

5. Permission

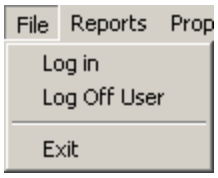


Alarm Messenger supports 3 authorization levels: User, Administrator & Logged Out. The following table demonstrates the options open for each level.

Option	Administrator	User	Logged Out
Server Suspension	+	+	-
Server Restore	+	+	+
Server Window Shut Down	+	+	-
Changing Definitions	+	-	-
Adding or Removing Users	+	-	-

Adding or Removing Departments	+	-	-
Changing Reports Format	+	-	-
Printing Reports	+	+	+
Viewing Data	+	+	+
Adding / Removing Alarms	+	-	-
Adding / Removing Messages	+	-	-
Adding / Removing Daily Messages	+	-	-
Shutting Down the Program	+	+	-

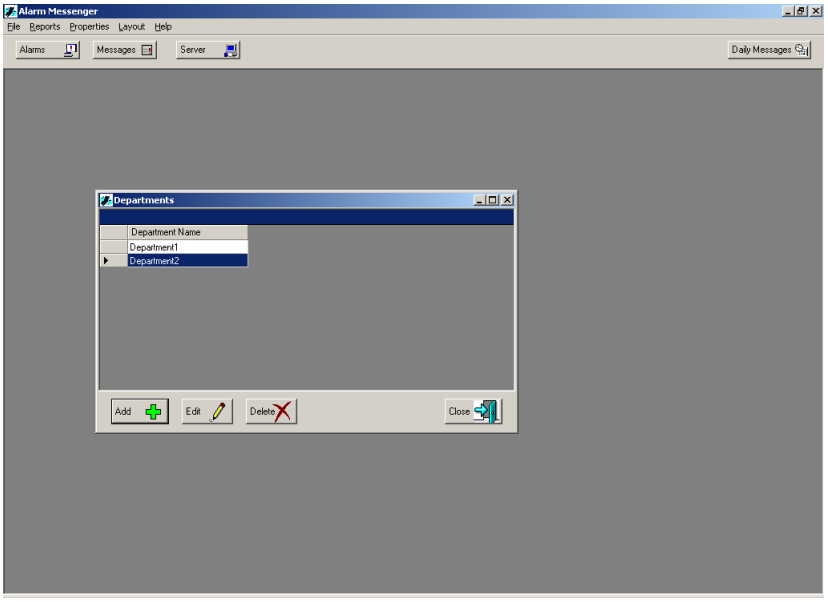
6. Transition between Authorization



To enter the system as a User or Administrator, select the "enter" option from the menu,and then enter username & password in the Logging In window in accordance with the name & password defined in the Authorizations Screen. As a default, the Administrator username & password are: sysadmin, and the User's default name & password are: user. For the Logged off option, select "log off User", or alternatively, when entering into the system, click the CANCEL button in the Logging In screen.

7. Departments Management

Departments Management is done using the 'Departments' window. From the Tables menu select 'Departments'. The following window opens:

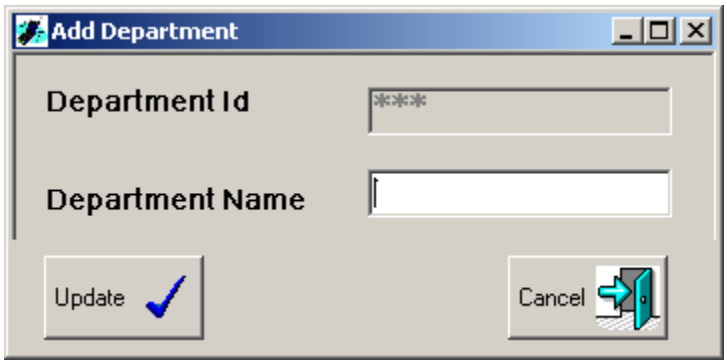


Departments are groups of users that are used in order to send selected messages to a list of users. . One Department is defined as Example Department.

Use this window to add, change or delete Departments.

a) Adding a Department:

Click the ADD button. The following window opens:

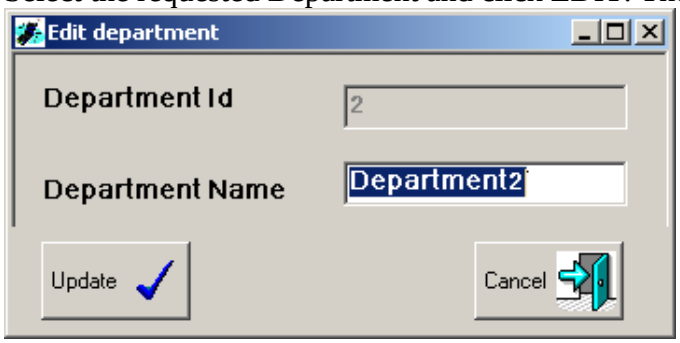


Enter the requested Department Name and click UPDATE. To abort adding a Department click CANCEL.

Note: the Department Id is a reference number that is used by the application, and cannot be changed.

b) Updating the Department properties:

Select the requested Department and click EDIT. The following window opens:



Screen Capture 3

Insert the Department name and click UPDATE. To abort the name change, click CANCEL

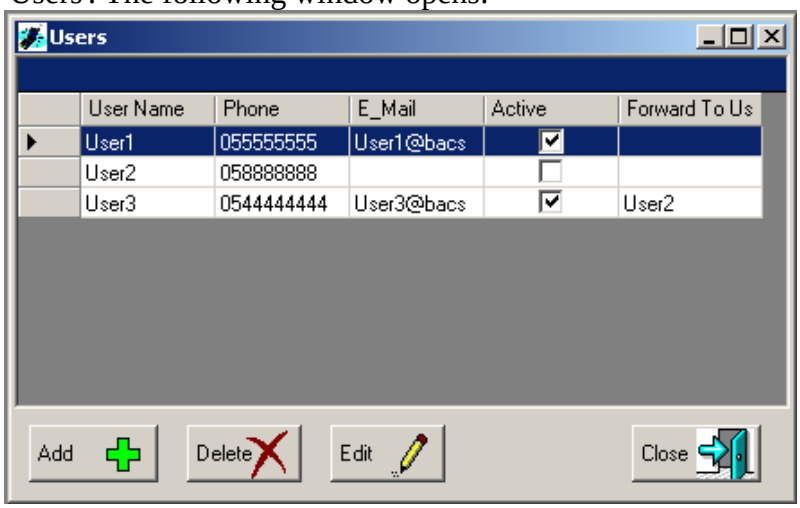
c) Deleting a Department

Select the requested Department, and click the DELETE button. A dialog box requesting to confirm or cancel the action opens.

Note: you can only delete a Department that includes no user.

8. Managing Users

Users' management is done using the "Users Window". From the Tables menu select 'Users'. The following window opens:

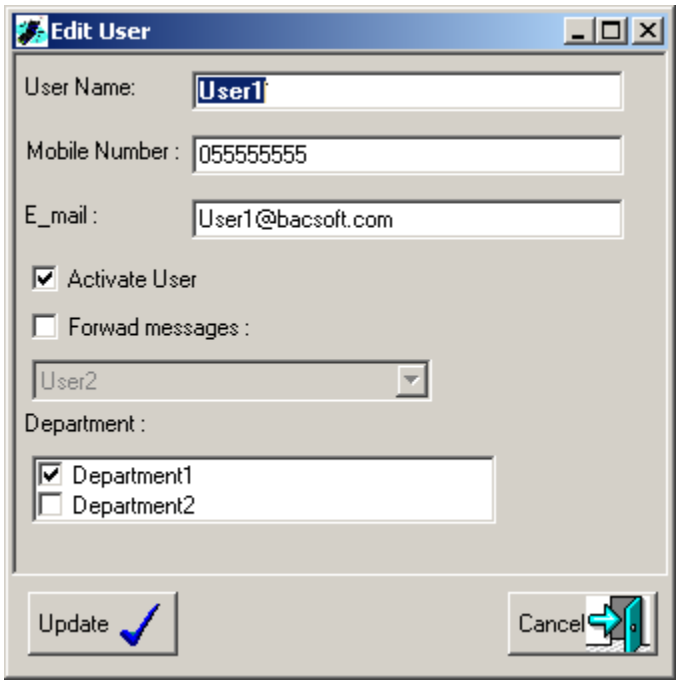


Screen Capture 4

A user is an employee who receives e-mail or SMS messages.

a) Adding a User

Click the ADD button. The following window opens:



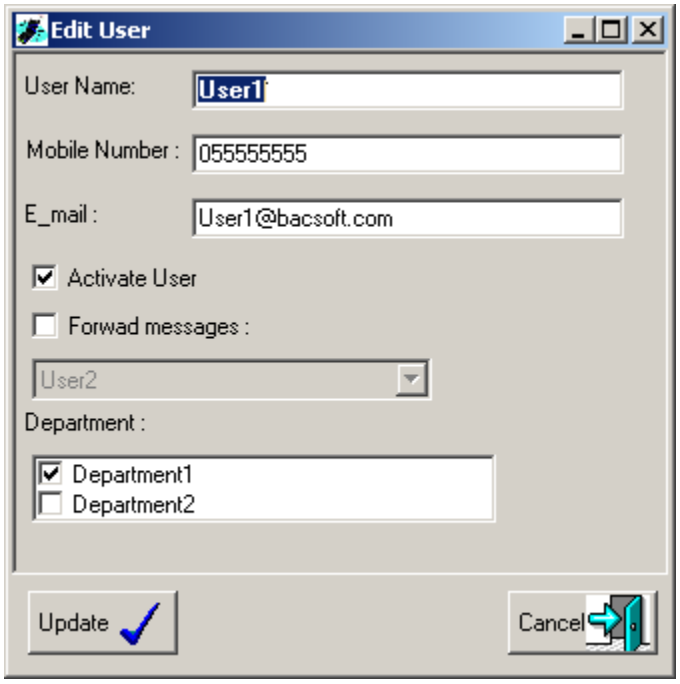
Enter the User's name, the cellular phone number and E-mail address to which messages will be sent, select a Department (each user can be assigned to more than one Department), then click UPDATE.

You can deactivate a user, in order to prevent the user from receiving messages. Additionally, you can forward a user all the messages that were previously sent to a different user. To do that, check the "Forward Messages" check-box, and then select the User you wish to forward these messages to.

To cancel the user addition, click the CANCEL button.
Note: The "Mobile number" and "e-mail " fields are not mandatory fields .You can add a user without specifying the cellular phone number and E-mail address.

b) Updating User Properties

Click the EDIT button. The following window opens:



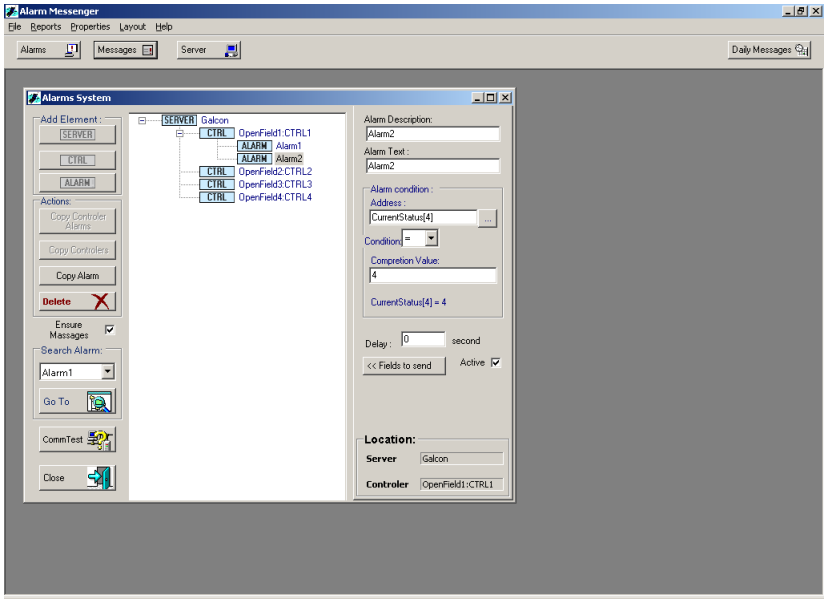
Update the requested data, and then click UPDATE. To abort updating the User Properties click CANCEL.

c) Deleting a User

Select the requested User, then click DELETE. A dialog box requesting that you confirm or cancel opens.
Note: Deleting a User omits the User from the Department Employees List the user previously belong to.

9. Alarms Management

Alarms management is done using the "Alarms" window. To open the Alarms Window, click the ALARMS button on the Main Window. The following window opens:



a) Adding an Element:

The "Add" icons are located on the left hand side of the window. You can add a Server from any screen. A Controller can only be added if one of the servers is selected. You can add an Alarm for a Controller or for a Server (in case there is no communication with the Server, for example).

b) Adding a Server

Server Name: the name of the server as appears in the alarms and messages tree.

c) Adding a Controller

Controller description: the name of the controller to appear in the alarms and messages tree.

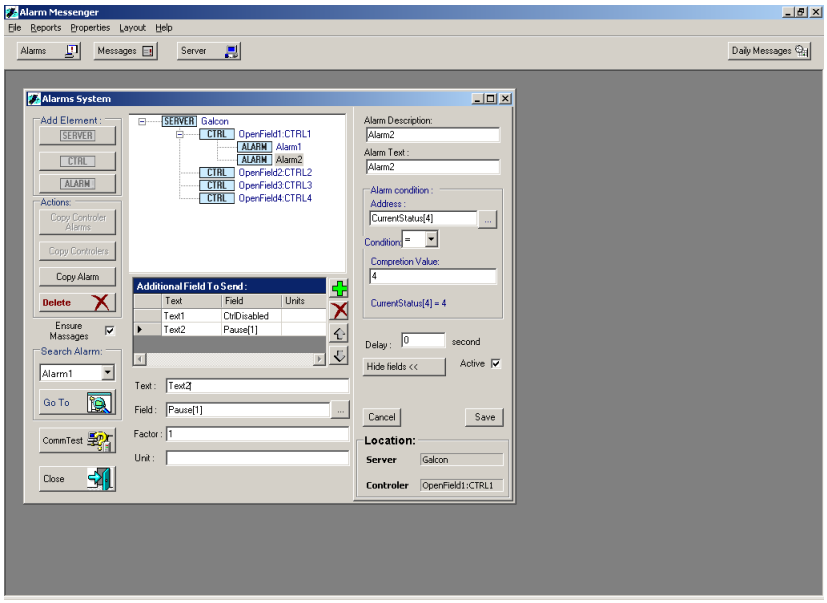
1) Active: is the Controller active or disabled.
2) Controller Address: Controller type (Open Field etc.,) and the Controller's reference number on the Elgal Server.

d) Adding an Alarm: Alarm Description: text to appear in the tree
Alarm Text: text to be included in the message (optional).

1) Register: location on the Controller from which data is collected (as defined in the Controller's Definitions File).
2) Condition: the Alarm condition. All common values are applicable (=,<, etc.)
3) Comparison Value: the value to which the data in the address is compared.
4) Delay: time elapsing until the message is sent (in case the alarm is located on a bit that changes for a short while from time to time).
5) Activation: is the alarm active or not.

e) Additional Fields: you can add additional fields from the Controller to the message (for example, you can add an additional field that displays,

in case of an excessive capacity, the current capacity as well). Clicking the ADDITIONAL FIELDS button opens the following window:



You can add, edit and change the location of the field in a message. In order to add a field, click the green plus sign located on the left hand side of the window. In order to delete a field, click the red sign located below the green plus sign. To change the field location, select the field line and click the appropriate arrow from the arrows located below the red X. The update process is as follows: select a line in the table, use the fields under the selected line in order to change the line's data, and then click SAVE to save the changes.

1) Text: Text to be displayed before the field data.
2) Factor: a value by which the data is multiplied. (default:1). Use when you need to convert a value from one unit to a different unit.
3) Units: the text that follows a value in the message.
4) Hide Fields: Shuts down the "Add Fields" window.
5) Note: there are a number of mandatory fields (description, address, etc.). The system prompts a warning when a mandatory field is left empty. Failure to fill a mandatory field prevents you from saving the new element. Once you have finalized inserting the new data, click the SAVE button, or else the new data will be lost, as will fields that were added.

f) Deleting an Element

Select the element you wish to delete, than click the DELETE button.

g) Changing the Properties of an Element:

Select the Element you wish to change, and insert the new data in the window's left hand side.

Note: a right click on the mouse prompts a menu enabling you to add and delete elements in the exact same manner as adding and deleting elements using the buttons located on the window's left hand side.

h) Searching an Alarm

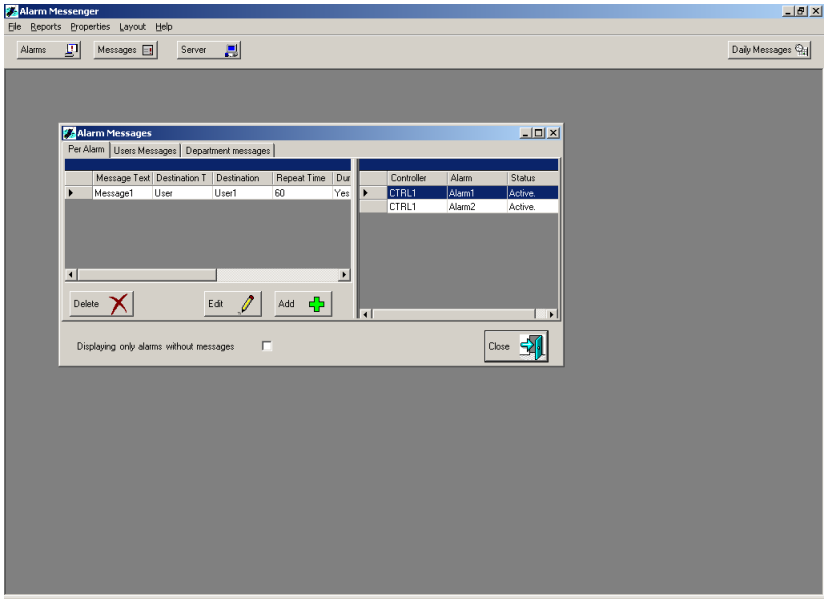
The search area is located on the Window's left hand side. In the empty field you can view all of the existing alarms (Description Field). Typing a letter brings the cursor to the first alarm starting with the letter you typed. Clicking the FIND button brings the cursor to the alarm typed in the 'Find' dialog box. The searched alarm appears in the tree in the center window, while its properties appear in the right hand side of the window.

i) Communication Check Up:

Enables the user to initiate a test in order to verify that the Server or the Controller can be connected, rather than waiting for a scheduled dial-up (For example, after resetting the system).

10. Managing Messages

Messages management is done using the Messages window. To open the 'Messages' window, on the main window click the MESSAGES button. The following window opens:



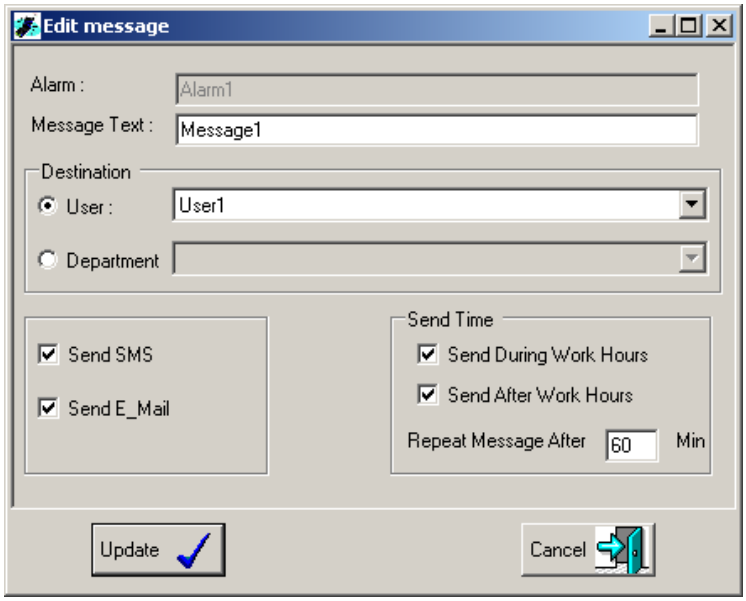
a) Alarm-Adjusted Messages

Enables you to add, delete and change messages in accordance with the alarm included in the message. The list of defined alarms is displayed on the window's right hand side. The list of messages corresponding to the selected alarm is displayed to the left of the alarms list.

b) Adding / Editing an Alarm Message:

Select the alarm the message of which you wish to edit, or to which you wish to add a message. To edit an alarm's message select the requested message from the messages list

on the left side, and click the EDIT button. The following window opens. To add a new message to an alarm, click the ADD button. The same window opens. The window, now titled "Adding a Message", includes an empty field captioned "Message Text".



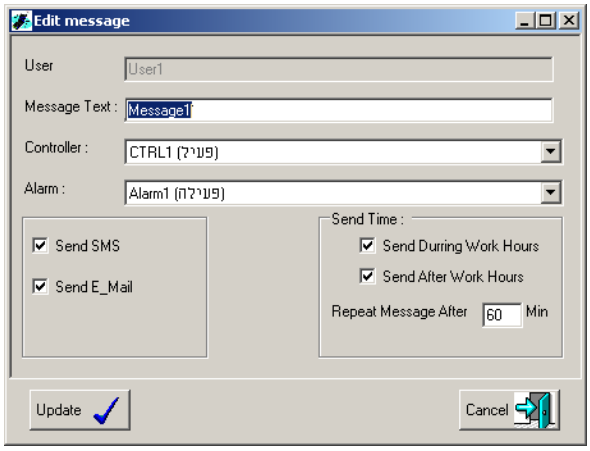
The alarm which prompts a message is displayed on the window's upper section. The message text is the text that would be sent by e-mail or SMS. The recipient can be either a Department or a User, never both. You can decide whether a message is sent during or outside working hours. Defining working hours is done by the System Administrator, using the General Definitions (working days and working hours, see the General Definitions chapter). Additionally, the time of re-sending when an alarm is shut down. On the lower left side of the window you can select the message format (e-mail, SMS or both).

c) Deleting a Message:

Select the requested message and then click the DELETE button.

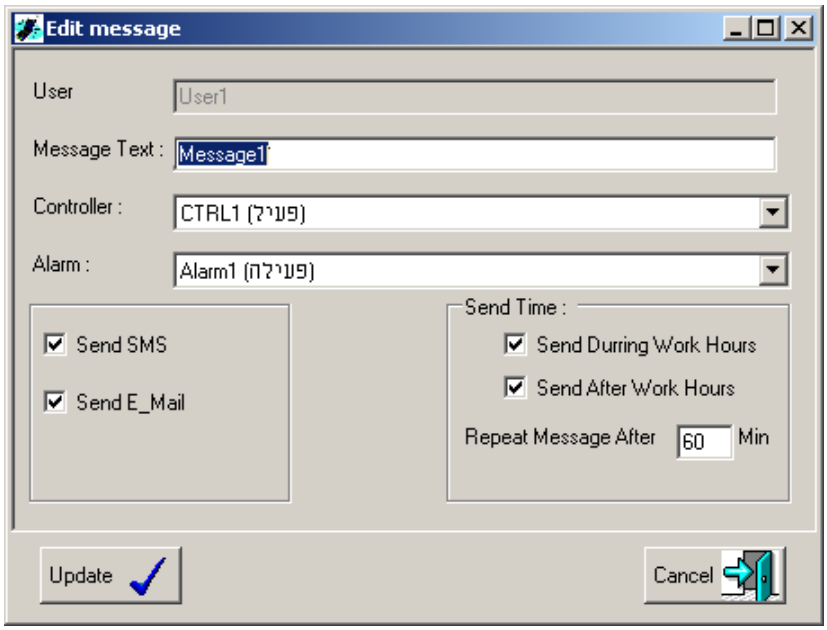
11. User-Customized Message

Management enables adding, deleting and changing messages and is based on the User defined as the recipient.



a) <u>Adding / Editing a Message</u>:

Select the User whose message you wish to edit or delete (right hand side). To edit a message, select a message from the list on the left, and click the EDIT button. The following window opens. To add a new message, click the ADD button. The same window opens. The window, now titled "New Message", includes an empty field captioned "Message Text"



The selected User is displayed on the window's upper section. The message text is the text that would be sent by e-mail and/or SMS. The alarm is the alarm which prompts the message. You can decide whether a message is sent during or outside working hours. Defining working hours is done by the System Administrator, using the General Definitions (working days and working hours, see the General Definitions chapter). Additionally, the frequency of re-sending the same message until the alarm is shut down.

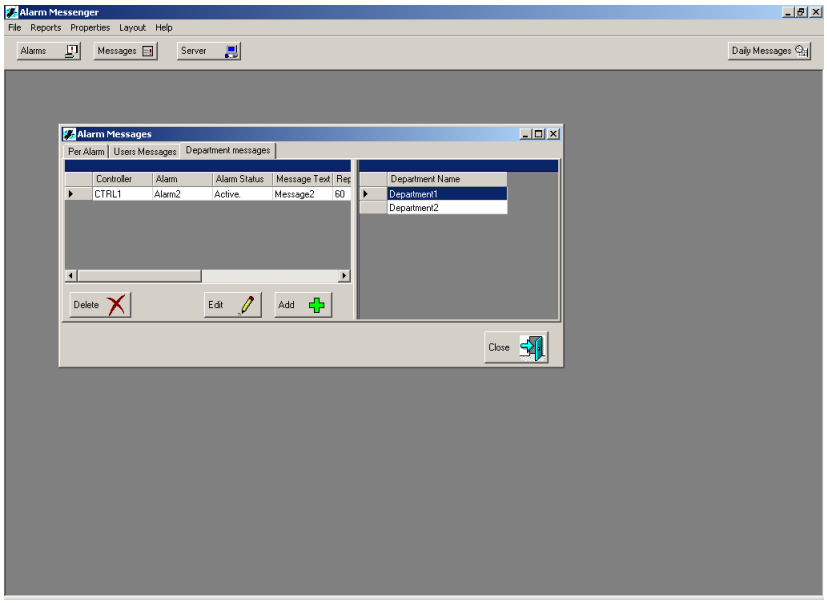
On the lower left side of the window you can select the message format (e-mail, SMS or both).

b) Deleting a Message:

Select the requested message, and then click the DELETE button.

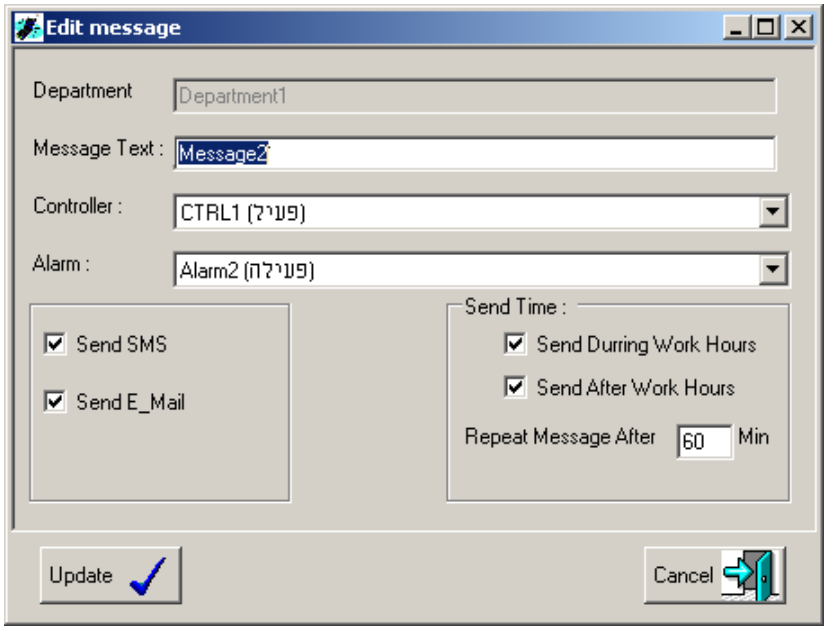
12. Department-Customized Message Management

Enables adding, deleting, and changing messages adapted to the receiving Department. This option in utilized by selecting "Department Messages", as shown in the following drawing:



a) Adding / Editing a Message:

Select the Department that is defined as the recipient of the message you wish to edit or add (right hand side). To add a new message, click the ADD button. The following window opens. To edit a message, select a message from the list on the left, and click the EDIT button. The same window opens, now titled "Edit Message", displaying the details of the selected message.



The recipient Department is displayed in the upper section of the window. The Message Text is the text to be sent by e-mail and/or SMS. The alarm is the alarm that prompts the message. You can decide whether a message is sent during or outside working hours. Defining working hours is done by the System Administration, using the General Definitions (working days and working hours, see the General Definitions chapter). Additionally, the frequency of re-sending the same message until the alarm is shut down. On the lower left side of the window you can select the message format (e-mail, SMS or both).

b) Deleting a Message:

Select the requested message and then click DELETE.

Note: When using the Department customized management format, messages sent to Users are not displayed. Likewise, when using the User-customized management, messages sent to Departments are not displayed.

13. What do Messages look like?

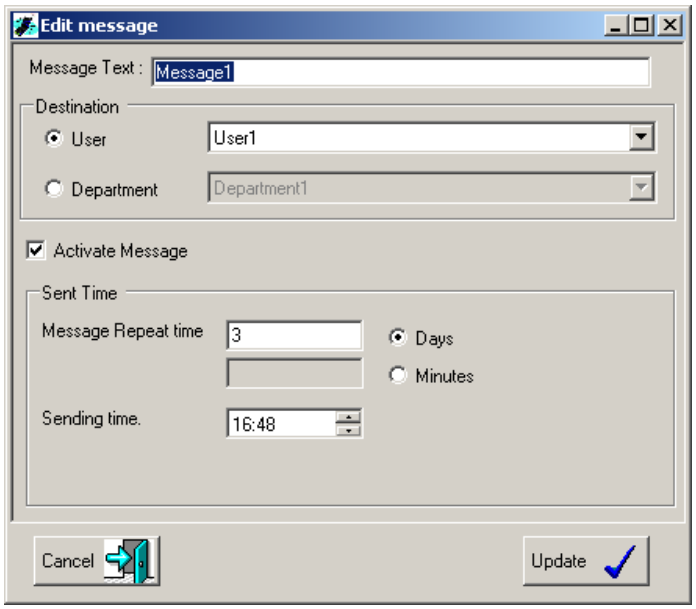
a) SMS Message Format: Name of the Sender: Changes in accordance with the properties defined under: User SMS Definition, and in accordance with the sending method. (SMS Config).The text is comprised from: "Message Text: Server Name: Controller Description: Alarm Text [next line] Field Text: Field Value: Units

b) E-mail Message Format:

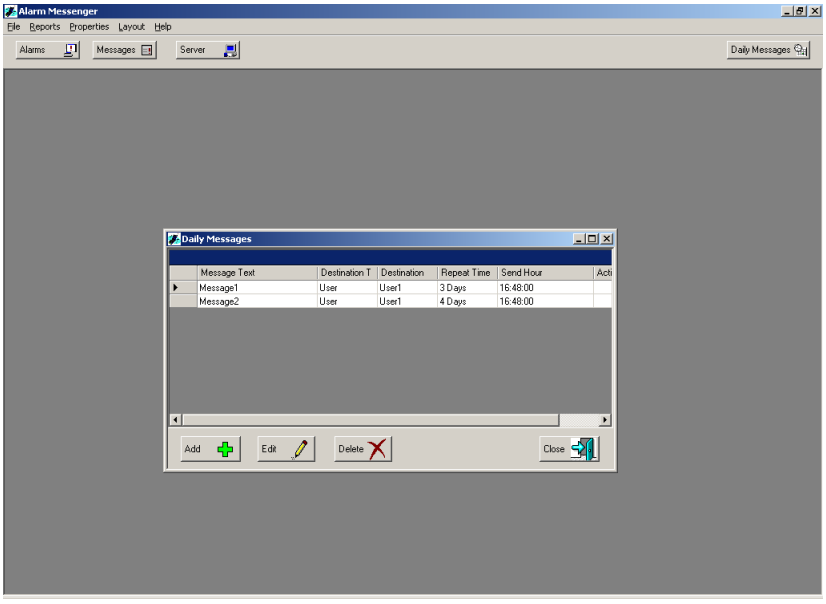
1) Name of the Sender: "Mail Server@AlarmMessenger" (the Mail Server is defined in the System Definitions Window, see chapter on page)
2) Subject: Alarm Text
3) Message Body: Message Text [next line] Server Name: Controller Description: Alarm Text [next line] Field Text: 4 units.

14. Management of Daily Messages:

Daily Message is a routine message that is not invoked by an alarm, but rather scheduled by the System Administrator. In order to manage Daily Messages, click the DAILY MESSAGES button. The following window opens:



a) **Adding / Editing Daily Messages**: To add a Daily Message, click the ADD button. The following window opens. To edit a Daily Message, select the requested message, and then click the EDIT button. The same window opens, displaying the fields as previously defined for the message you wish to edit.



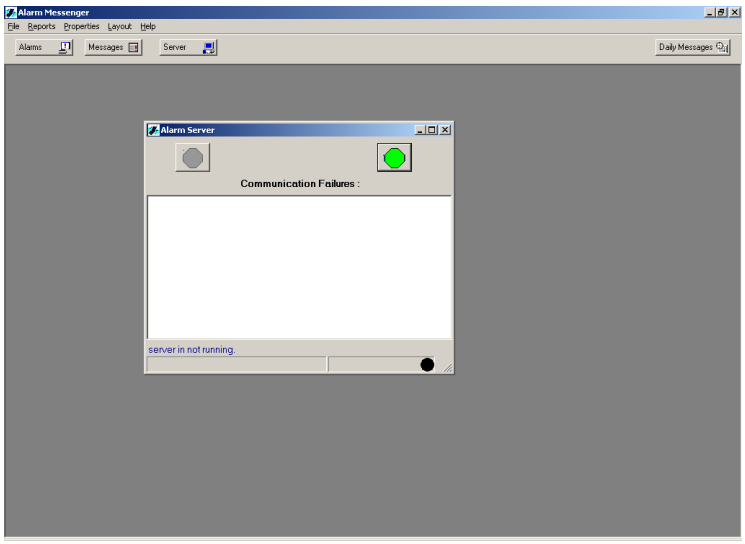
The message text is the text to be sent by SMS / E-mail. The Recipient is the Department or User receiving the message. The frequency of re-sending can be defined in days or in hours. When sending on a daily basis, you need to define the time on which to send the message. The number of days fix the number of days elapsing between re-sends of the message. (To send the message every day, define the number of days as "1"). Under Minutes, you define the range of hours during which a message is re-sent, and the frequency of re-sends during this range of time (for example, every 5 minutes between8:00 – 8:30).

b) Deleting Messages:

Select the requested message, then click the DELETE button.

15. Messages Server:

The Messages Server operates the communication with the defined servers (Remote Servers), and displays communication failures. When the server is shut down, there is no communication with the remote servers, no alarms are received, and therefore, no messages are sent. To restore the Server, on the main window click the ALARM SERVER button. The following window opens:

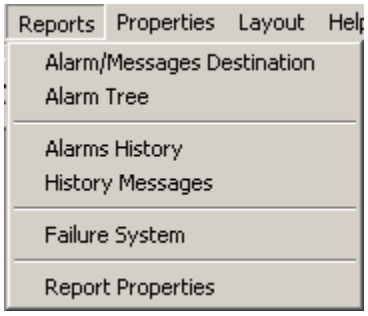


To restore the server click the RESTORE button. To shut down click the SHUT DOWN button. The black circle turns green. The status of the communication with the server and the controllers is displayed next to the green circle. In case of a malfunction, the circle and the text next to it turns red, as does the text in the log window. On the lower left section of the window, a copy of the last line (of the status description) is displayed (in fact, this line describes the current status of the system).

Note: Do not shut down the server while working. Shutting it down stops the server operation (and therefore, sending messages).

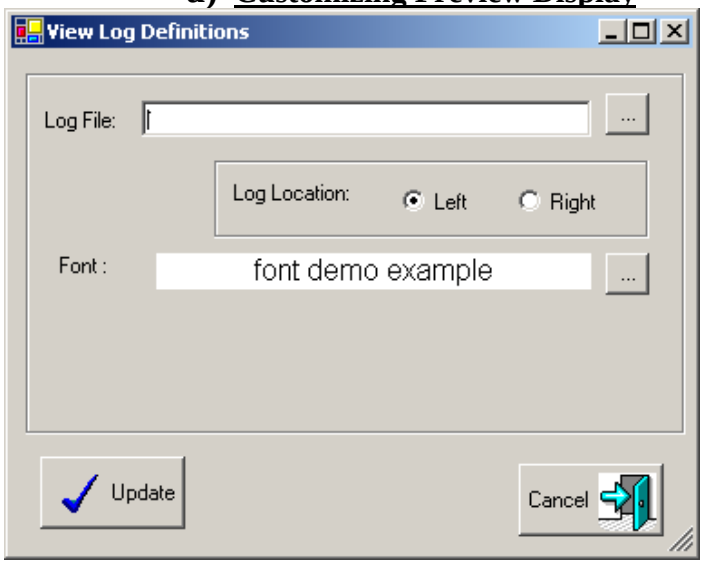
16. Reports

Management of reports is done using the Reports Menu:



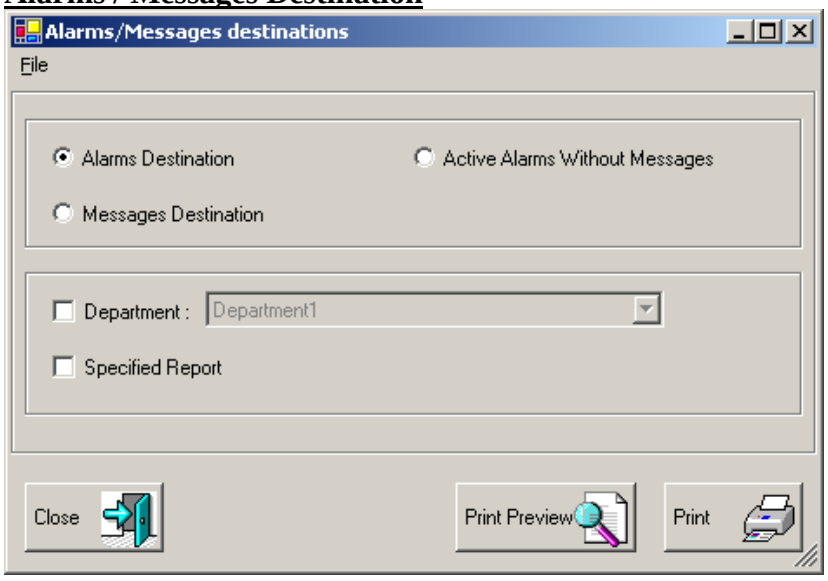
All the reports can be viewed on the screen in Preview Display, or printed directly. Additionally, you can define the report format and the reports preview display.

a) Customizing Preview Display



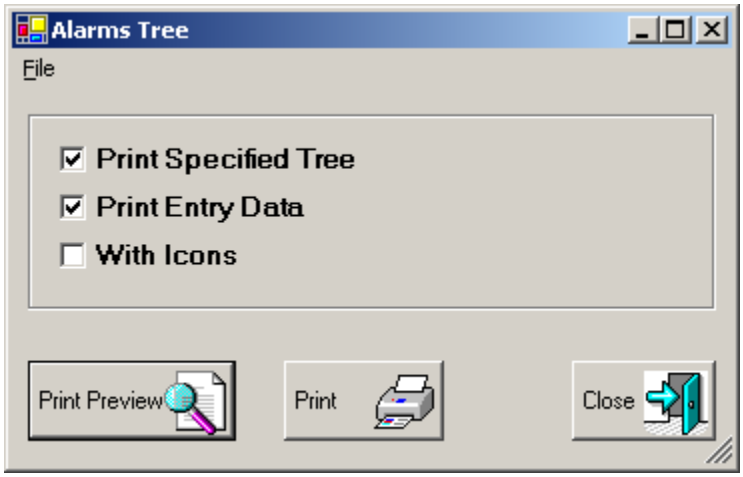
1) Logo file: a picture file that is printed on each & every report issued.
2) Logo location: page header.
3) Font: formats report's text fonts.

b) Alarms / Messages Destination



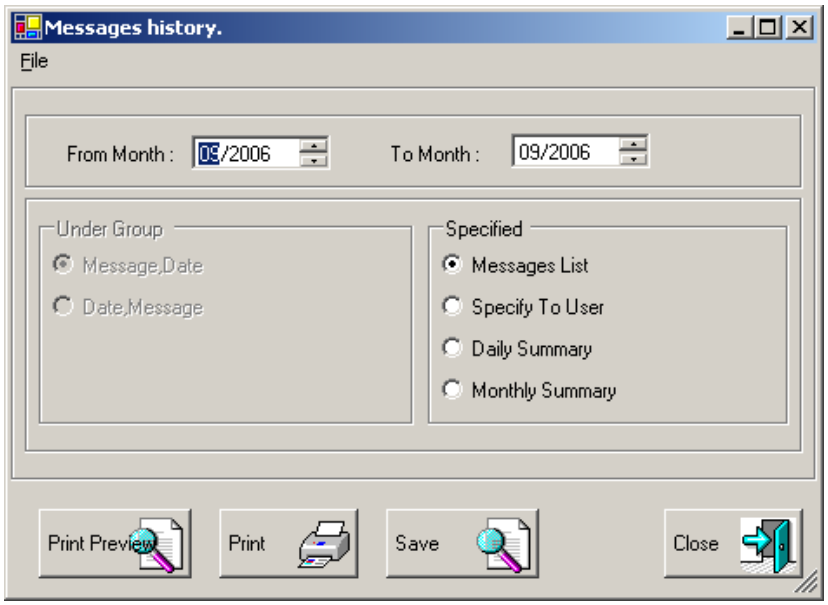
1) Alarms / Messages Destination: specifies the list of messages or alarms sorted by recipient (Department or User).
2) Alarms Destination: a list of alarms sorted by the recipient of the alarm's corresponding messages.
3) Messages Destination: a list of messages sorted by recipient.
4) Active Alarm without Messages: a list of alarms to which no messages were assigned (and therefore cannot be sorted by recipient).
5) Department: display of messages or alarms destined to a specific department only.
6) Specified report: adds to the report the name of Controller and field from which an alarm was read.

c) Alarms Tree Report



1) A report displaying the Alarms Tree.
2) Print Specified Tree: includes data on the server and controller as well.
3) Print Entry Data: adds the user name, the controller login password, and the as well as the server location.
4) With Icons: prints the tree including the icons – Server, Controller, Alarm
5) Print Preview: using the Files menu you can display a preview of the report, print it, close down the window and customize the page setup.

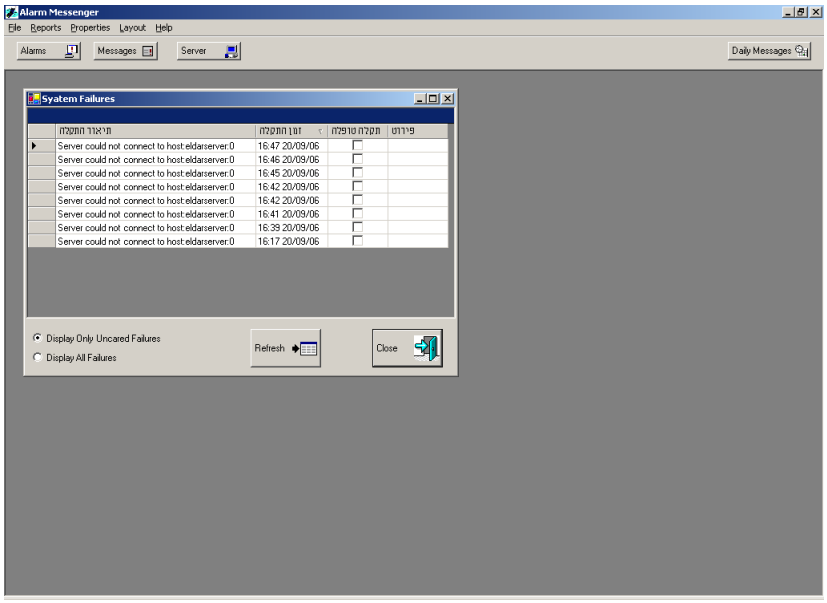
d) <u>Alarms History Report</u>:



The Alarms History Report details the alarms that occurred on messages that were already sent.

1) Detailed Report: A full report sorted by dates.
2) Daily Summary: the data is displayed per day.
3) Monthly Summary: the data is presented per month.
4) Data Collection by: the format of data collection every day/months.
5) Print Preview: using the Files menu you can display a preview of the report, print it, close down the window and customize page setup.

e) System Failures Report:



The Failures Table displays the history of system malfunctions (problems related to communication with the Controller, and the Controller definitions). For each malfunction, the report specifies description, time, and an indication as to whether the malfunction was solved. You can choose to print all malfunctions or only malfunctions that were solved. The Solved/Unsolved status can be changed in this table.

f) Failures List Filter

On the lower right section of the window, you can choose whether to see all the malfunctions, or only unsolved malfunctions. This is done using the lower right- hand side of the window.

g) Solved Failure Marking

On the left column of the table ("Solved Malfunction"), a checked check box indicates that the malfunction was solved. To mark the malfunction as solved, check the check box pertinent to the requested malfunction.
Note: When in Unsolved Malfunctions display, marking a malfunction as solved omits the malfunction from the filtered list. In order to view the malfunction again you now have to switch to the All Malfunctions display.

17. Advanced Options

a) Parameters:

A number of optional parameters can be added to the command line when starting the program, and by doing so, to change the program options:

Description	Command Line Text	Default	Details
Automatically activate server	/auto[+| -]	-	Opens & Activates the Server upon program start-up
Activation in minimized display	/min[+| -]	-	Open the program in minimized display. See Chapter 8.2.
Display Login Window	/splash[+|-]	+	The login window is not displayed when starting the program using the 'Automatically Activated Server' option, or when starting in a minimized display mode.
Activation in Server or User mode	/server[+|-]	+	On Server mode, all options are applicable, whereas on the User mode, you cannot open the Server Window, and you cannot change General Definitions and definitions of Cellular operators.
Setting Definition File	[Parameters File Name]		Used to assign the file from which the program definitions are read. (General Definitions and Cellular Operators). See Chapter 7.1 "Definitions".

b) Working in Minimized Display

When you minimize the program window while the program is still working, the Alarm Messenger icon is removed from the active applications section of the task bar, and is displayed along with icons of other applications that run in the background. The following table shows the various statuses of Alarm Messenger:

Status	Display
Maximized	
Minimized, server inactive	
Minimized, server active	

c) Restoring Server while in Minimized Display

To activate the server when in minimized display, right-click the Alarm Messenger icon located in the task bar. The following menu opens:
[Screen Capture]

From the menu, select 'Restore'. To shut down the server while in the minimized display, from the same menu select 'Shut Down'.

d) Maximizing the Display

Double click the Alarm Messenger icon on the task bar. Alternatively, you can right-click the icon, and from the menu select 'RESTOR'.

18. Routine Operation

Now that you have installed Alarm Messenger (see the installation chapter), defined all the Users, Departments, Alarms and Messages, all that is left is to activate the server. Once the server is active, you can add and delete alarms without interfering with the normal operation of the program. Shutting down the Messages Server stops alarms from being read, and therefore stops messages being sendt.

19. Maintenance

It is recommended to define a daily message to the system administrator which enables you to verify that the program runs smoothly and that the system is working properly. Additionally, we recommend that you connect a UPS to your PC so that in case of electricity shortcut a message will be sent to the system administrator.

20. Trouble Shooting

a) SMS message fails to be sent:

If the problem occurs with all Cellular Operators, check whether you can access the internet.

If the problem occurs with a single Cellular Operator only, check the account data as defined in the Cellular Operators (see chapter 7.1.2 – Cellular Operators).

Try to send an SMS message from a regular cellular phone. In case of a failure, contact the Cellular Operator.

b) E Mail message fails to be sent:

If the problem occurs when sending to a certain User only, check the User definitions (see chapter 7.7 – Managing Users).

If the problem occurs with all the users, check the definitions of the mail server (see chapter 7.1.1 – Definitions / General).

c) No Communication with the Controller:

1) Check the communication with the Controller (see chapter 7.2.5 – Communication Test).
2) Check the Host address (see chapter 7.2 – Alarms Management).
3) Make sure that the computer is connected to the network.
4) Verify that the Controller is active.

This product left our company in working order. In case of damage to equipment while using this product, please contact our representatives, and we shall gladly assist you in solving any problem pertinent to our products.