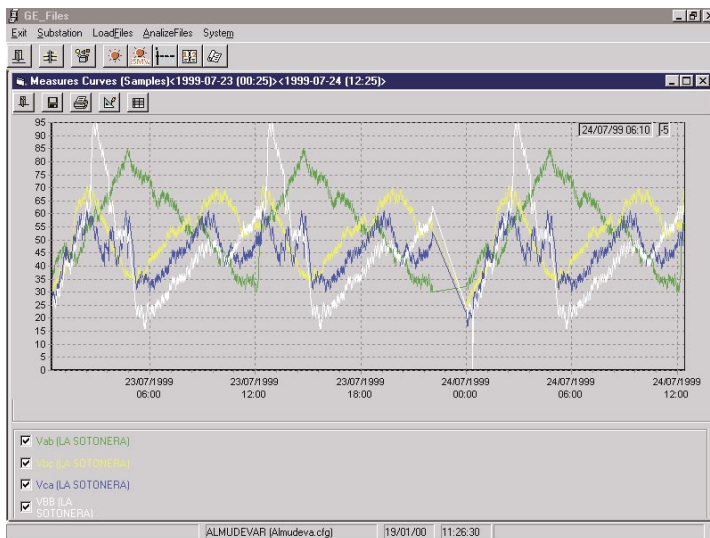




GE Consumer & Industrial
Multilin

GE-FILES

System Recording Configuration
and Analysis Tool
Instruction manual
GEK-106281A



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1. INTRODUCTION

GE_FILES is the software that allows to work offline with the data retrieved by GE_POWER (events, alarms, demand, analog values etc.).

In order to proceed with the study of all these data with the GE_FILES tool, it is necessary to previously retrieve the stored files with the GE_POWER software. The way to achieve this is through an option inside the GE_POWER. Specific instructions are given in the instruction manual.

It is also needed to have a copy of the substation database, plus the configuration files and the individual databases for all the relays part of the system.

With all this information, the user will be able to view all the substation events, alarms, oscillography records, historical list of commands and, finally, reports (both in table and graphical format) of all the analog values.

2. INSTALLATION PROCESS

The GE_FILES installation can be done through either the floppy disks or the CD Rom installation utility. Just execute the "setup.exe" file and then follow the on-line instructions. The default program group is *GE_NESIS*, and the default path "\GE_NESIS".

3. START-UP OPTIONS

There are two ways to work with the GE_FILES program: Off-line and On-line. The first one (Off-line mode) considers the possibility of viewing all the retrieved data offline. Here the user is working on his own computer with no communication link at all with the substation computer. The user can work with data coming from different substations. In order to work in this way the user needs to start the program running the file “*Ge_files.exe*” or clicking on the icon. Once the program is initiated the program will allow the selection of the working substation; this substation may be changed any time without exiting the program.

The second way of operation (On-line mode) assumes the work is done in the substation, using the same computer that is running the GE_POWER program. In this case, to start the GE_FILES we must use one option of the GE_POWER. This option starts the program transferring to it (as a parameter) the database of the specific substation (this can also be achieved executing the program from the command menu: “*Ge_files.exe c:\Ge_nesis\n2\config\BDSubest.cfg*”). In this mode of operation, once the GE_FILES has been started the working substation can not be modified.

Another difference between the two modes of operation is the path, where GE_FILES is going to be searching for the data files.

- In the *on-line* working mode (or transferring to the program as an argument the database name), GE_FILES is looking for the files in the same place where GE_POWER stores them. This is because it is assumed that there is only one working PC. This path is “*\Ge_nesis\n2\Ge_power\files*” and the directories under it: *Events*, *Oscillos*, *Alarms*, *Historic* and *Demand*, that is:

“*\Ge_nesis\n2\Ge_power\files\Events*”

“*\Ge_nesis\n2\Ge_power\files\Oscillos*”

“*\Ge_nesis\n2\Ge_power\files\Alarms*”

“*\Ge_nesis\n2\Ge_power\files\Historic*”

“*\Ge_nesis\n2\Ge_power\files\Demanda*”

- In the *off-line* mode, (no switch argument is transferred), a new set of directories is created under the previous ones. One per substation, in such a manner to allow working at the same time with more than one substation without mixing the data. As an example, in order to work with a substation with a database named *BDSubest.cfg*, GE_FILES will create the following directories:

“*\Ge_nesis\n2\Ge_power\files\Eventos\BDSubest*”

“*\Ge_nesis\n2\Ge_power\files\Oscillos\BDSubest*”

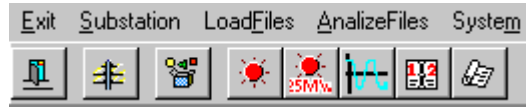
“*\Ge_nesis\n2\Ge_power\files\Sucesos\BDSubest*”

“*\Ge_nesis\n2\Ge_power\files\Historic\BDSubest*”

“*\Ge_nesis\n2\Ge_power\files\Demanda\BDSubest*”

4. PROGRAM MAIN MENU

Once the GE_FILES is started, the main menu shows up, also a toolbar appears with the most commonly used options pictured as icons.



The main menu options are the following:

Exit: allows leaving the program

Substation: allows choosing a particular substation database.

LoadFiles: loads in the proper paths the data files.

AnalyzeFiles: allows the analysis of the data files.

System: presents the different system options.

The working process will be as follows. Once the program has started, the main window shows up with the main menu. If the substation database name has already been transferred as an argument in the command line, then the **Substation** and **LoadFiles** options will be disabled. If this is not the case, then we have to select the working substation first and afterwards (if we do not have them already) we have to load the data files by clicking on **LoadFiles**. Now we can view all the different data types retrieved in the substation by the GE_POWER software. To do this just click on the menu option **AnalyzeFiles**. If the substation needs to be changed, assuming the option is enabled (*off-line mode*), it can be selected through the **Substation** option.

In the bottom part of the screen you will see a label with the current substation name and the associated database.

Now we will review the different menu options in detail.

4.1. SUBSTATION




Once this icon is selected (or the main menu associated option), a dialog box appears on the screen allowing us to select the substation database. Once this choice is made, all the paths are fixed so the program knows where to find the data files.


4.2. LOADFILES



Once this icon is selected (or the main menu associated option), a dialog box appears on the screen allowing us to select the path where the data files are going to be retrieved from.



The events screen is shown in the figure. In the screen top some icons allow to perform the different functions.


-  **Exit**

-  **Open an event file:** the list of all the available files in the working directory appears, allowing the selection of the particular file to be viewed. The format for the file name is

yyyymmdd.eve

being *yyyy*, *mm* and *dd* the year, month and day when the file was created.
Selecting files from a different directory is not permitted; this is to avoid opening files retrieved from a different substation, which will not be coherent. To view these files coming from a different substation we have to leave this screen, and select from the main menu option *Substation* the database.

-  **Alphabetical order:** all events will be ordered following the device names
-  **Date order:** all events will be ordered by date, being the first of the list the most recent one.

-  **Print:** the event list is printed for all the opened files.

In the middle of the screen, just below the function icons, the event list is shown for the selected file.

In the bottom part of the screen a list of the different bays of the substation is presented. In this list the bays can be selected, taking into account that only the events of the selected bays will be displayed.



Clicking on this icon, or in the corresponding menu option **AnalyzeFiles-Logs**, we will access the logs screen.

Bay	Date	Time	Log
LA SOTONERA	09/04/99	09:32:18598	Coil 2 continuity failure
LA SOTONERA	09/04/99	09:32:18598	Coil 1 continuity failure
LA SOTONERA	09/04/99	09:32:17615	Coil 2 DC supply failure
LA SOTONERA	09/04/99	09:32:17615	Coil 1 DC supply failure
LA SOTONERA	09/04/99	09:32:17601	Ground directional pickup
LA SOTONERA	09/04/99	09:32:17601	Phase C directional pickup
LA SOTONERA	09/04/99	09:32:17601	Phase B directional pickup
LA SOTONERA	09/04/99	09:32:17601	Phase A directional pickup
LA SOTONERA	09/04/99	09:32:17601	Active table 1
LA SOTONERA	09/04/99	09:32:17601	Default table 3
LA SOTONERA	09/04/99	09:32:17601	Default table 2
LA SOTONERA	09/04/99	09:32:17601	Recloser blocked
LA SOTONERA	09/04/99	09:32:17601	Program initiate
LA SOTONERA	09/04/99	09:32:17600	Coil 2 continuity failure
LA SOTONERA	09/04/99	09:32:17600	Coil 1 continuity failure
LA SOTONERA	09/04/99	09:32:16617	Coil 2 DC supply failure

Bays	Status	Measures
<input checked="" type="checkbox"/> LA SOTONERA	<input type="checkbox"/> Inicio de programa	I2 0.00
<input checked="" type="checkbox"/> HUESCA N.	<input type="checkbox"/> Cambio ajustes	Ia 0.00
<input checked="" type="checkbox"/> RENFE-TARDIENTA	<input type="checkbox"/> Escritura contadores	Ib 0.00
<input checked="" type="checkbox"/> ALTA DE TRAF0	<input type="checkbox"/> Cambio configuración	Ic 0.00
<input checked="" type="checkbox"/> BARRA DE ALTA	<input type="checkbox"/> Trigger externo	In 0.00
<input checked="" type="checkbox"/> BARRA DE BAJA	<input type="checkbox"/> Trigger comunicaciones	Vab 0.00
<input checked="" type="checkbox"/> AUXILIAR DE TRAF0	<input type="checkbox"/> Orden bloqueo 79	Vbc 0.00
<input checked="" type="checkbox"/> RUBBER	<input type="checkbox"/> Orden desbloqueo 79	Vca 0.00
<input checked="" type="checkbox"/> ALMUDEVAR	<input type="checkbox"/> EP 14	

In the upper part of the screen there is a number of icons. The functionality is exactly the same as explained for the events: **Exit, Open files, Alphabetical order, Date order and Print**.

The format for the file name is identical to the one of the event files but with the *suc* extension.

yyyymmdd.suc

being *yyyy*, *mm* and *dd* the year, month and day when the file was created.

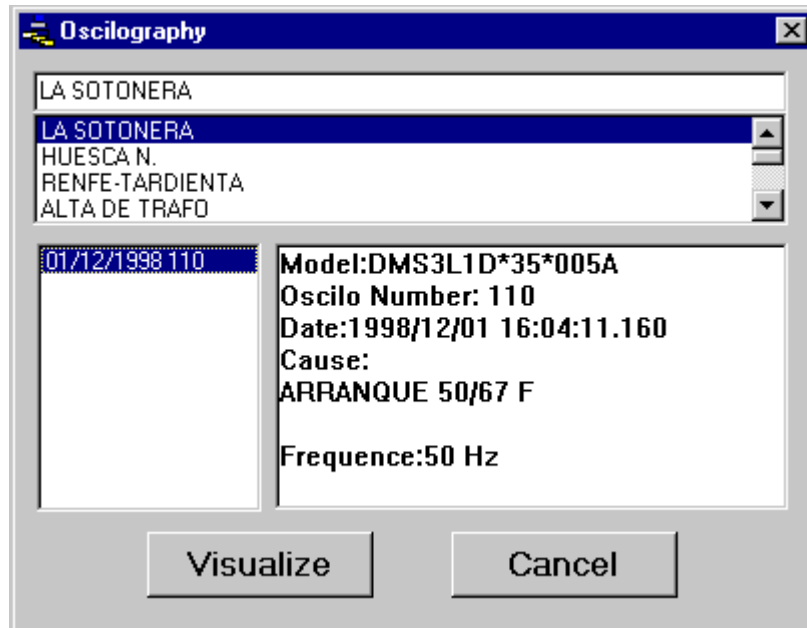
In the middle of the screen, just below the function icons, the event list is shown for the selected file.

In the bottom part of the screen a list of the different bays of the substation is presented. In this list the bays can be selected, taking into account that only the events of the selected bays will be displayed.

Finally, and also in the bottom part of the screen two more element columns appear: Status and Measures. Once a log is selected, both element columns show the associated status and the measured values with the actual value at the time the log was generated.



Clicking on this icon, or in the corresponding menu option **AnalyzeFiles-Oscillography**, we will access the waveform capture screen.



The window shows three different boxes:

- The substation bay list.
- The oscillography record list of the selected bay, with the format “date + *oscillography record number*”.
- The oscillography record header.

There are two buttons in the screen. If clicking on the *Visualize* button then the GE_OSC visualization software starts. If pressing the *Cancel* button then we leave the screen.



Clicking on this icon, or in the corresponding menu option **AnalyzeFiles-Operations History**, we will access to the following screen. In the upper part of the screen there is a number of icons. The functionality is exactly the same as explained for the events and logs: **Exit**, **Open files**, **Alphabetical order**, **Date order** and **Print**.

The format for the file name is identical to the one of the previous cases but with the *hst* extension.

yyyymmdd.suc

being *yyyy*, *mm* and *dd* the year, month and day when the file was created.

Once the file is selected, a list of commands performed in the substation appears. Each command includes the user identification.

Date	Time	Description
01/03/99	14:25:38.035	STOP CONCENTRADOR
01/03/99	19:24:51.331	START CONCENTRADOR
01/03/99	19:25:18.990	START N2 User 00000 NIVEL_ACCESO 00
01/03/99	19:25:32.159	POS:11 CPU:1 N2 MANIOBRA ESCRITURA 04 CORRECTO
01/03/99	19:25:33.661	LOGIN User -0003 NIVEL_ACCESO 00
01/03/99	19:27:09.159	POS:11 CPU:1 N2 MANIOBRA CONFIRMACION 04 INCORRECTO
01/03/99	19:27:41.946	START CONCENTRADOR
01/03/99	19:27:59.421	START N2 User 00000 NIVEL_ACCESO 00
01/03/99	19:28:12.039	POS:11 CPU:1 N2 MANIOBRA ESCRITURA 04 CORRECTO
01/03/99	19:28:13.291	LOGIN User -0003 NIVEL_ACCESO 00
01/03/99	19:29:32.705	POS:11 CPU:1 N2 MANIOBRA CONFIRMACION 04 CORRECTO
01/03/99	19:29:55.458	POS:11 CPU:1 N2 MANIOBRA ESCRITURA 03 CORRECTO
01/03/99	19:30:05.612	POS:11 CPU:1 N2 MANIOBRA CONFIRMACION 03 CORRECTO
01/03/99	19:30:21.435	STOP CONCENTRADOR
01/03/99	19:44:07.924	START CONCENTRADOR
01/03/99	19:44:30.486	START N2 User 00000 NIVEL_ACCESO 00
01/03/99	19:44:47.581	LOGIN User -0003 NIVEL_ACCESO 00
01/03/99	19:48:48.036	START CONCENTRADOR
01/03/99	19:50:07.431	STOP N2 User 00000 NIVEL_ACCESO 00
01/03/99	19:50:52.325	START CONCENTRADOR
01/03/99	19:51:09.980	START N2 User 00000 NIVEL_ACCESO 00
01/03/99	19:51:23.951	LOGIN User -0003 NIVEL_ACCESO 00
01/03/99	19:52:25.810	POS:13 CPU:1 N2 MANIOBRA ESCRITURA 04 CORRECTO
01/03/99	19:52:27.061	POS:13 CPU:1 N2 MANIOBRA CONFIRMACION 04 CORRECTO
01/03/99	19:52:32.539	POS:13 CPU:1 N2 MANIOBRA ESCRITURA 03 CORRECTO
01/03/99	19:52:33.791	POS:13 CPU:1 N2 MANIOBRA CONFIRMACION 03 CORRECTO



Once the icon is selected, or the corresponding menu option **Analyze Files-Measurement History**, the following menu shows up.

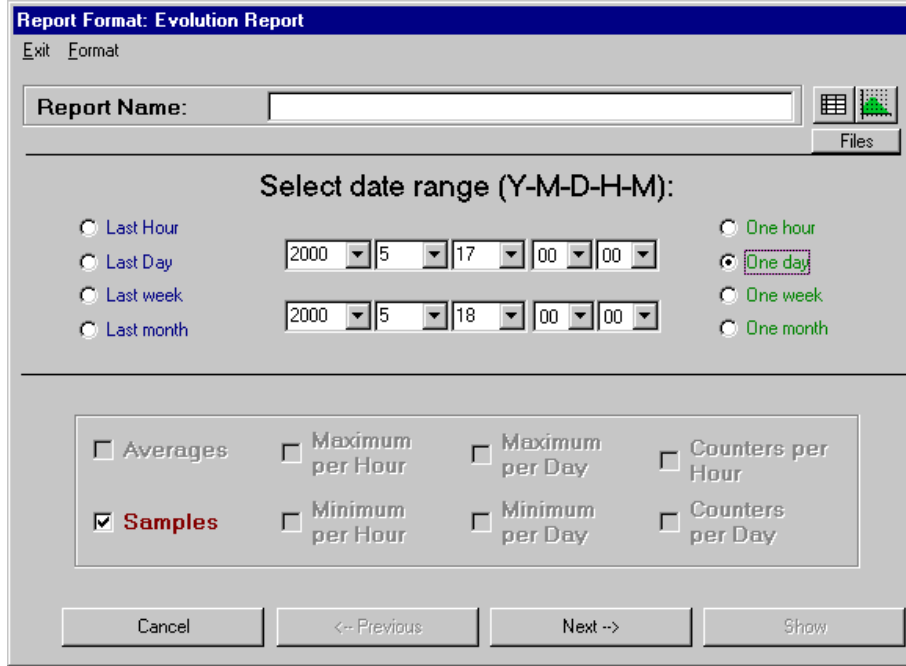
Evolution in Time
Operation Times


With the first option **Evolution** we can present in the screen, either as a table or as a curve, the different values that a particular analog value has taken during a period of time. With the second option **Time** we can have an idea of how much time a specific analog value has been within a certain magnitude range. It is presented in the screen in a table format.

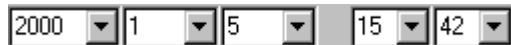
4.3.5.1 EVOLUTION IN TIME

As mentioned before this option presents in the screen, either as a table or as a curve, the different values that a particular analog value has taken during a period of time.

Once selected, a window appears allowing the selection of the different parameters to configure the setup details for the report generation.



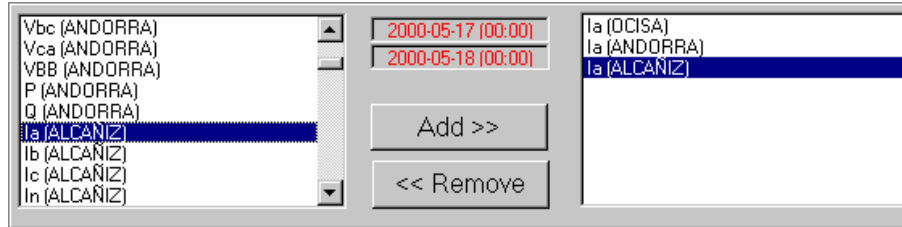
- **Report Name:** file name.
- **Report Type:** possibility of viewing the report either as a table or as a curve by clicking on the icons 
- **Date Range:** a valid date range must be selected in order to view the metering report. There are a number of boxes where the start date can be picked (upper boxes) and also the end date (lower boxes). From left to right, we can choose: year, month, day, hour, minute.



To help in the date range selection there is a number of options. The ones in the left: *Last month*, *Last week*, *Last day* and *Last hour*, start from the actual system date and time, assume this is the end date, and calculate the initial date depending on the selected option.

The ones from the right: *One month*, *One week*, *One day* and *One hour*, take into account the initial date configured in the upper boxes, and then calculate the final date depending on the selected option.

- **Value types:** type of value displayed on the screen. The choice is between *Averages*, *Samples*, *Maximum per hour*, *Minimum per hour*, *Maximum per day*, *Minimum per day*, *Counters per hour*, *Counters per day*. There would be information in the files only for those values stored by GE_POWER previously in the substation. By the same token GE_POWER only stores those types of values previously configured inside GE_CONF.



In the bottom part of the screen only two buttons are enabled: *Cancel* to leave this screen and go back to the main window, and *Next* to go to the following configuration screen.

In this new screen we have, in the middle of the screen, a list of all the analog values found in the data files. Those analog values are time stamped within the selected date ranges and are stored under the *Value Type* selected in the previous window. In the next figure we have in the left side a list with all these analog values.

There are two buttons that allow to add metering values to the list of the right side (being this the list of the selected analog values that we want to include in the report) or to remove them from the same list. Besides those there are text boxes showing the initial and final selected data ranges.

	Minimum	Date	<= 0	<= 20	<= 30	<= 50	<= 70	> 70	Maximum	Date
Vab (OCISA)	31.78	17/05/2000 21:26	0	0	0	337	0	0	32.39	17/05/2000 19:57
Vab (ANDORRA)	31.48	17/05/2000 21:26	0	0	0	337	0	0	32.14	17/05/2000 19:57
Vab (ALCAÑIZ)	31.46	17/05/2000 21:26	0	0	0	337	0	0	32.03	17/05/2000 19:39

Under those lists we have in the screen the following elements:

- In case of selecting the presentation type as *Table*: the template for the report, with the analog values names for the column headers.
- In case of selecting the presentation type as *Curve*: three buttons to choose between the graphic type (curve, columns, points) and other choice to view the report in 3D format.

The upper part menu presents two different options: *Exit*, to go back to the main screen, and *Format*. This one has two other options: *Select Format* and *Save Format*. This is used to save in a file the report configuration template (report name, value type and analog values list) and then be able to retrieve the data later (with the *Select Format* option) without entering all the data again.

In the bottom part we have the following enabled buttons: *Cancel*, to go back to the main window; *Previous*, to go to the report configuration window and *View*, to go to the visualization report screen.

In case the choice is to view the report as a table, this report will look like the following figure:

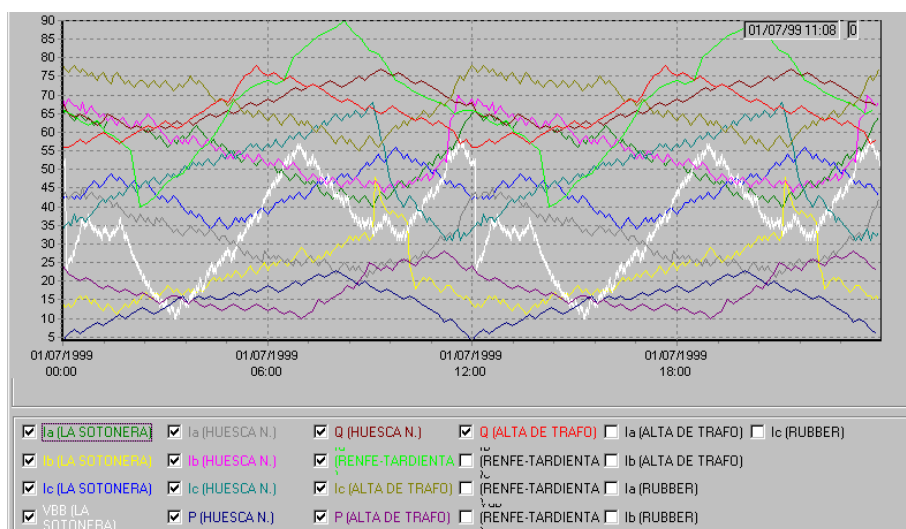
PROGRAM MAIN MENU

	Ia (LA SOTONERA)	Ia (HUESCA N.)	Ib (HUESCA N.)
01/07/1999 00:55	62	43	66
01/07/1999 01:00	63	42	65
01/07/1999 01:05	62	43	64
01/07/1999 01:10	61	42	65
01/07/1999 01:15	62	41	64
--	--	--	--

Each column represents the analog values described in the column header. Each file shows a specific value for a certain date and time. All files are in chronological order.

Some cells may be empty, this depends on the scanning time interval defined inside GE_CONF in order to store each value.

In case of selecting the curve (graphical) mode, we will have in the screen a representation of the analog values. The values may be shown as curves, points of bars depending on the operator choice. Here we have a graphical screen representing curves:





In the bottom part of the screen we have a list of the analog values stored in the files within the selected data ranges. The values represented in the diagram are the ones selected with the tick symbol , the color is represented here too.

To add another analog value to the graphic, just click with the mouse in the corresponding box. The same process is valid for deleting another value.

In the top of the screen we have the following icons:

- , to *Exit* from this screen;
- , to *Save* the data in an Excel format file;
- , to *Print* the table.

In the case of graphical representation, two more buttons appear:

-  , to show the control editor used for curve representation;
-  , to view in the bottom part of the screen the available analog value list (as shown in the previous figure) or to view the values represented in a table.

4.3.5.2 WORKING TIMES

With the option *Times* we present a table in the screen that gives us an idea of how much time an analog value has been between different value ranges.

Once the choice is made, a similar screen to the one of the previous option is presented. Here we can configure all the report characteristics: report name, data ranges and also the band limits.

The final report includes the time each analog value has been between the limits of a particular band. For example, if we configure the band limits as in the next screen (0, 20, 30, 40, 50 y 60), we will know how many minutes a particular analog value has had a value under 0, between 0 and 20, between 20 and 30 etc.

By pressing the button *Next*→, we jump into the another screen similar to the one in the previous point, *Time Evolution*. Here we can select which analog values will be part of the report.

Finally clicking on *View*, we can see in the screen a table with all the selected analog values with the following format:




	Minimum	Date	<= 0	<= 20	<= 30	<= 50	<= 70	> 70	Maximum	Date
Vab (DCISA)	31.78	17/05/2000 21:26	0	0	0	337	0	0	32.39	17/05/2000 19:57
Vab (ANDORRA)	31.48	17/05/2000 21:26	0	0	0	337	0	0	32.14	17/05/2000 19:57
Vab (ALCAÑIZ)	31.46	17/05/2000 21:26	0	0	0	337	0	0	32.03	17/05/2000 19:39

This figure shows three different types of analog values, each one in a different row. The names for each value are indicated in the first column. The second and third columns indicate the minimum value within the date ranges, and also the specific date and time when that happened.

The following columns represent the number of minutes when the analog value was between the selected limits. Minutes with the analog value under 0, minutes with a value between 0 and 20 etc.

Finally, the last two columns represent the maximum value taken by the selected analog value and the specific date and time when that happened.

In the upper part of the screen we have a number of icons:

- , to *Exit* from this screen;
- , to *Save* date in an Excel format;
- , to *Print* the table.

4.4. SYSTEM

This option allows to select the language between the following ones: Spanish, English, French, Portuguese, German and Italian.