# SUPERVISORY SYSTEM

## USER MANUAL

# INDEX

# OVERVIEW

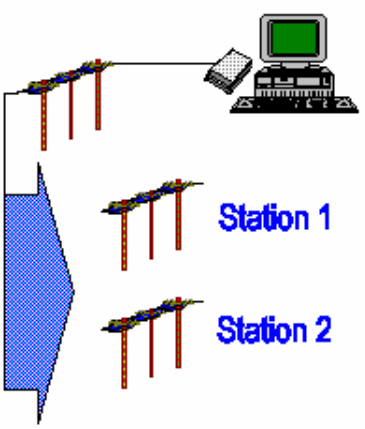
Continued technological advancement has brought about an increase in the complexity of the various broadcast systems. However, sufficient advancement in instruments for control and supervision have not been developed in parallel. The Electrosys Supervisory System (ESS) has been developed to provide all the Supervision and Control requirements for the new Broadcast Systems, while guaranteeing ease of use, thanks to an advanced user interface. This user interface is instrumental in helping the technicians detect hardware failures.

The Electrosys Supervisory System is designed to control one or more transmitters in one or more broadcasting stations. The stations can be located anywhere there is two way communication. The ESS can operate in two modes:

**Local mode,** in which the PC is connected to the Logic with a serial cable (see Appendix A). This mode is very useful when using a portable personal computer (PC).


**Remote mode,** where the PC, located at a remote site, is connected via a standard modem, a cellular modem or a radio link to the station(s) (see Appendix A).

The standard Electrosys modem is DIGICOM, used for the telephone connection at a speed of 9600 baud.




Any station's logic connected to the ESS has the ability to call the system PC should an RF Alarm occur within its associated transmitter. The ESS PC is not continuously connected to the station logic, but in a standby condition awaiting a station logic to contact it. When this happens the ESS PC downloads the transmitter's complete status so the system operator can determine the cause of the problem.
ESS can also ask station state by polling, with different time for any station. Polling can be disabled.

The ESS stores all information acquired from the stations in a database. The database is accessible at any time for reading and printing (with or without a hard line connection). This database also stores all configuration information such as telephone number to call, messages, and colors used for labels and errors. The user

can modify the configuration information in order to personalize the ESS. The database engine used is Microsoft Access 97 ® (DAO 3.51).

The Supervisory System has different password levels to ensure system security.

# INSTALLATION

## 1.1. HARDWARE REQUIREMENTS

PC needs :
- Personal Computer with Pentium III 533MHz CPU or better;
- Video Graphic Color :16 bits (65535) or higher;
- Video Screen Area : 1024x768 pixels or higher;
- OS Microsoft Windows® XP;
- CD drive + Installation CD rom for the Electrosys Supervisory System;
- DIGICOM modem, GSM modem or radio link (for remote mode only);

## 1.2. SOFTWARE INSTALLATION AND CONFIGURATION

- From **CD-ROM**:

to properly install the ESS on your PC insert CD-ROM and run SETUP.EXE from its root folder. After the installation is complete you can start the ESS from the Start menu → Programs → Electrosys Supervisory System → Electrosys Supervisory System.

Note:
- **If the setup procedure remarks a library version conflict (like "*A file being copied is not newer than the file currently on your system*") you have to keep the existing version by clicking YES.**
- **If the setup procedure asks for a 'system restart' you have to accept and after the system reboot you have to repeat the setup procedure manually (by running SETUP.EXE from the ESS CD-ROM root folder).**

The default name for the stations are *Station #* (where # stands for a number), and the telephone number is left to ATD. After installation, the user can change the configuration of the software to meet his needs, if these differ from the default settings (see Database section).

You must configure the logic in the station for spontaneous calling, so it will call the PC when a fault occurs. For the spontaneous calling configuration you must connect the PC to the transmitter logic (in local or remote mode) and choose from the "Options" menu, "Set Spontaneous Call". The Supervisory System will then show a window for configuring spontaneous calling (see related section).

## 1.3. PASSWORD

The ESS has 3 password levels, Level 0, 1 and 2.
Level 0 disables all RS232 communication (local transmitter control only).
Level 1 disables all remote control (ESS can only receive data from the transmitter logic).
Level 2 is the full interactive level where the ESS is able to send and receive data, having complete control of the logic.
If a command is issued with a password of too low a level, and therefore not valid, the ESS will ask you the right password level, and the command is discarded.
Default passwords are: ”00000000”, “11111111” and “22222222” for Level 0, 1 and 2 respectively. Level 1 is the default. Password modification will be discussed later.

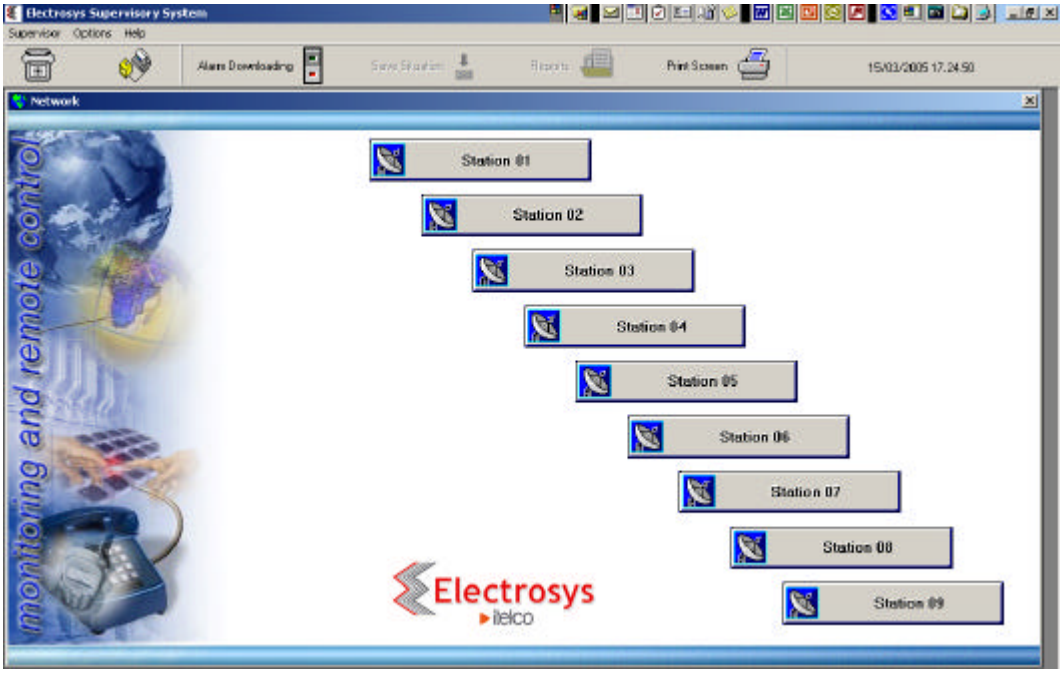
## 1.4. CONFIGURATION FILE: SISSUP32.INI

The file SISSUP32.INI is copied in the supervisor directory at installation time. You can modify this file with an ASCII editor (such Notepad). The default configuration is listed below:

| *Default Setting* | *Description* |
|---|---|
| "9600,N,8,1" | "Comm Settings for the RS232/Modem" |
| 2 | "CommPort RS232" |
| "Res\Net.jpg" | "Network Window Image" |
| "Standard" | "Modem Type: Gsm Radio or Standard" |
| "0000" | "PIN Number for GSM modem" |
| "ATEVB1F0M1L1&D0&K0\N1%C0YX3S0=2&W0S30=3+MS=9,0,9600,9600" | "Modem init string" |
| 3 | "Communication timeout (secs)" |
| "Network" | "Caption of Network Window" |
| "No" | "Alarm Downloading" |
| 5 | "Delta Polling (s)" |
| "Yes" | "Save at Polling" |

*Line 1* fixes the settings for the serial port. The Supervisory System uses 9600 baud, no parity, 8 message bits, 1 stop bit.
*Line 2* identifies the serial port (only comm ports 1-4 are recognized).
*Line 3* sets the name and path for the image of the Network form.
*Line 4* sets the modem type. For both Standard and Gsm modems the line 6 is the init string. For the radio modem the string is ignored.
*Line 5* Pin number for GSM Modem (used only if requested)
*Line 6* is the modem initialization string.
*Line 7* sets the communication timeout.
*Line 8* sets the caption for the Network window
*Line 9* allows automatic alarm downloading when the connection is established.
*Line 10* Is the minimum time between two polling calls.
*Line 11* forces the supervisor to store the station status at every interrogation. If you set this parameter to "Yes" and your polling time is short the Historic Database may become very large.
At the end of the SISSUP32.INI file are listed some initizalization strings for various modem's types (Standard and GSM)

## 1.5. NETWORK WINDOW



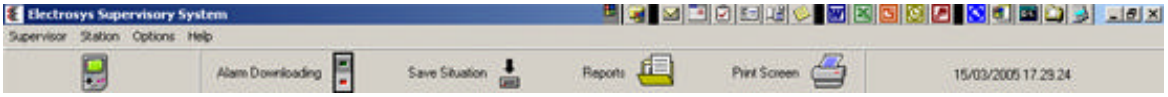

The Network window is the stand-by position of the Supervisory System and it displays the Network situation.

The window shows all stations connected to the Electrosys Supervisory System using a label with the station name.

After initialization (when hourglass cursor disappears), the ESS goes into the stand-by mode. Stations are not connected, but the network is active, and waiting for a station to call.
If an alarm occurs and the spontaneous call on that station is enabled, the station will call the ESS (this icon appears next to the station ). The ESS will download and save the actual state of the station in its resident database, disconnect the call and give an alarm. The station label will then blink red.
The blinking red station label will continue to blink until the ESS is commanded to call the station.
When polling made (if polling is enabled) an icon appears near the polled station ( ). If station doesn't answer an alarm occurs.

## 1.6. TOOLBAR AND STATUS BAR

The Toolbar, the Status bar and the Menu bar are always visible.




Tools in Toolbar are:

- *Phone* (for remote mode) and *Serial* (for local mode): you can drag them onto the label of the station you want to call.
- *Alarm Switch:* To Enable/Disable the alarm downloading
- *Save* Button: enabled only when connected, is used to store the current station's situation (all values of all ports).
- *Report* icon: drag the icon onto the station you wish to see the history of in the database.
- The *Print Screen* button makes a hardcopy of the actual screen.
- The last panel displays the date and hour information.

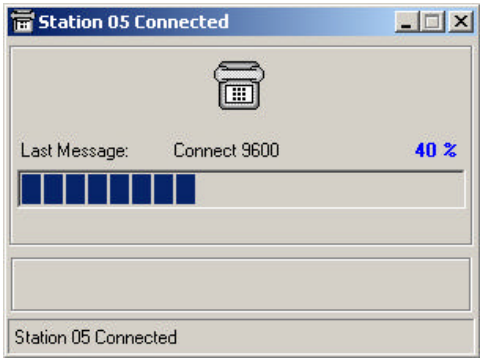
Status bar is the little bar in the bottom of the screen.


The *left* section is used for messages. All messages appear here. Abnormal condition are red, information are black. Error are underlined with a beep to force the eye to look here.
The *central* section is used as progress bar.
The *right* section is used only when connected. The panel on the left is used for the port currently displayed on video, the right panel for the background polling of other ports. For any connected port there is a led: the color of the leds can be:

- **green** for communication OK
- **red** for communication error
- **gray** for no port answer
- **black** for no multiplexer answer
- **darkgray** while waiting an answer from the port
- **yellow** while checking the port for hardware type.

### 1.6.1. PHONE (REMOTE MODE)

To call a station in remote mode, drag the phone icon into the station label. The communication window will then be displayed.




The connection window shows the station name you are calling, connection mode (local or remote), last modem error and the time elapsed.

The Supervisory System will try to connect up three times.

The "Cancel" button will terminate the call.

### 1.6.2. SERIAL (LOCAL MODE)

As above, but used for a local RS232 connection.

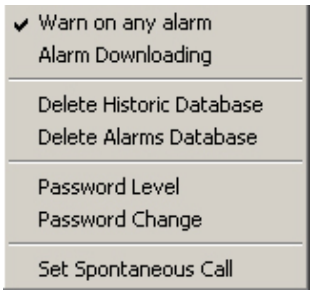
## 1.7. MENU BAR

### 1.7.1. SUPERVISOR/END

*End* will terminate the Supervisory System program. Is possible to stop the ESS only if not connected.

### 1.7.2. OPTIONS

The "Options" menu contains 4 sections: the first deals with the alarm window, the second with deleting the databases, the third with passwords and the fourth with spontaneous calls.
In the "Stand-by" mode, only the first and third sections are available.



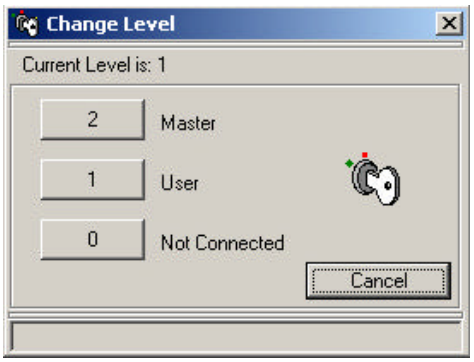

- ***Alarm Window Section***

By selecting the option "Warn on any alarm" you can show or hide the alarm window. The presence of check mark (✓) means the alarm window is activated.
By selecting the option "Alarm downloading" you can choose to download all logic alarms (the same functionality is available via the switch on the toolbar). If not selected no alarm will be downloaded. The presence of check mark (✓) means that downloading is activated. Default is to not download and you can change this default in the SISSUP32.INI.

➢ ***Password Section***

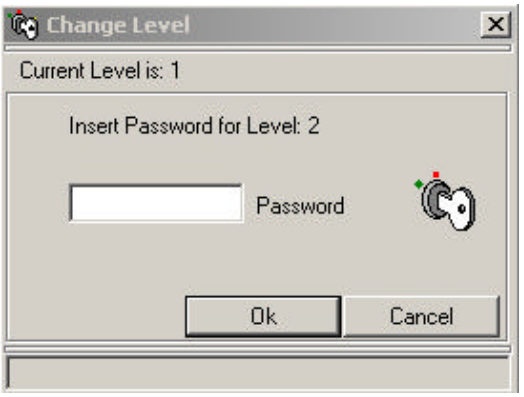
This section has two choices: "Password Level" and "Password Change".

The Supervisory System has 3 different password levels. Level 0, Level 1 and Level 2. At Level 0, RS232 communication is disabled. At level 1, you are able to see all the logic status, but you can not issue commands to control it. At Level 2 you have complete control of all the transmitter functions.




By choosing the "Password Level" menu, you can change your access level.

To modify a password, choose the "Password Change" menu. You will be prompted for your current password and then asked to enter your new password.

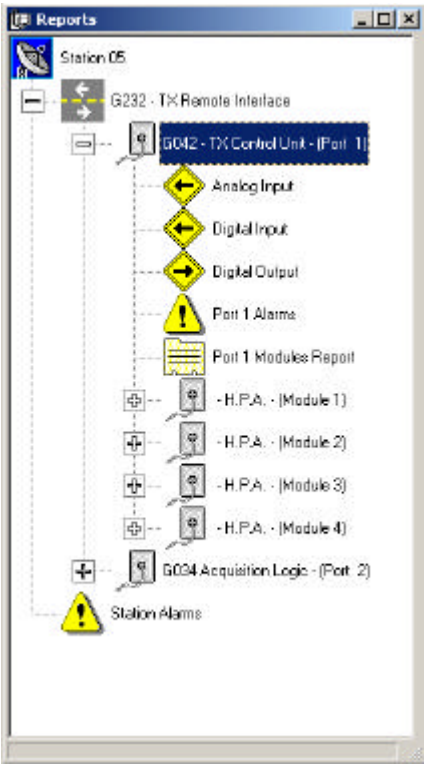



You can select the level of the password you want to change. However, you can only change the password of a level lower than yours. Remember that you have entered the password first. You will be asked to enter the new password two times to avoid errors.

Only asterisks will appear (*) for each character, as you type in your password.

### *1.7.3. REPORTS*

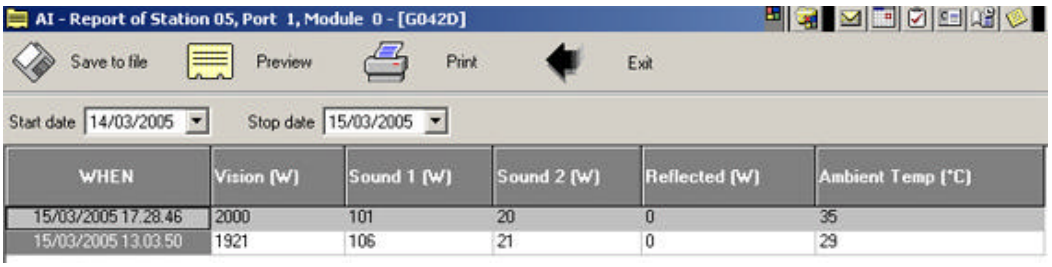
In the "Stand-by" mode, you can access the Report menu by dragging the Report icon onto the station you wish a report on. In the Connected mode, you can access the Report menu by clicking on the Report icon.
The report menu will look like the one that follows:




From here, by double clicking the items with the red arrow, you can access the reports.
There are two different types of reports: The first one is the Values Report of Analog/Digital Inputs and Digital Outputs of the logic and the second one is the Alarm Report.

### *1.7.4. VALUE REPORTS*

The Value report shows all the database entries of the selected station, from “Start Date” to “Stop Date”. The default “Stop Date” will be the current date (the “Start” one day before).

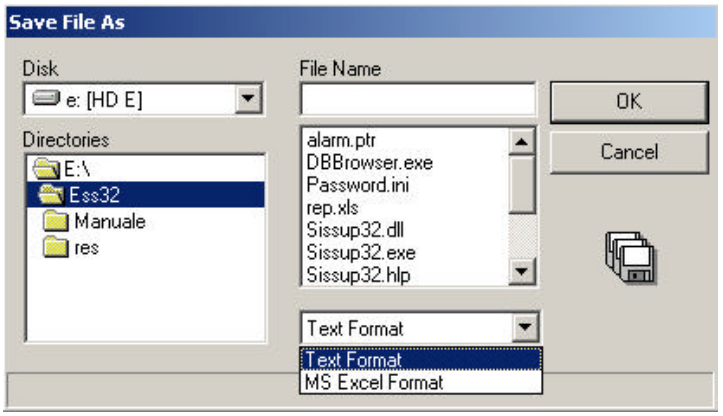



| WHEN | Vision (W) | Sound 1 (W) | Sound 2 (W) | Reflected (W) | Ambient Temp (°C) |
|---|---|---|---|---|---|
| 15/03/2005 17.28.46 | 2000 | 101 | 20 | 0 | 35 |
| 15/03/2005 13.03.50 | 1921 | 106 | 21 | 0 | 29 |

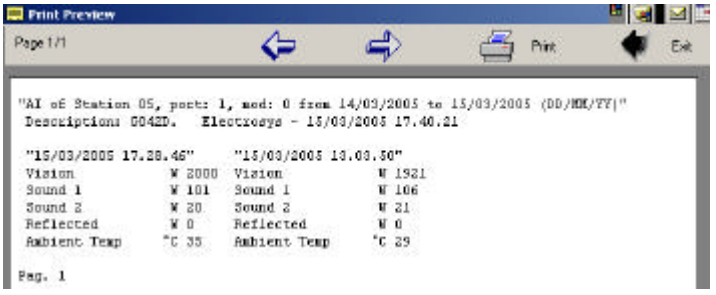
The report period can be manipulated by setting Start/Stop Date.

A complete set of data (analog and digital) is stored in the database whenever a connection occurs or the transmitter logic detects a change in a parameter that meets the criteria in “Relevance” or “Relevant Change” field of the database. A digital input variation will cause a record to be stored if the respective “Relevance” field contains “Yes”. Analog variations will cause a record to be stored if the “Relevant Change” field is exceeded. In this way the operator can set the thresholds at which a record will be stored. See section DATABASE for a description of the database fields.

In the Report menu you can choose among printing the report to printer (“Print”), printing report to screen (“Print preview”) and save your report to a file in Text or Excel format (“Save to file”). In last case you have to input report name.



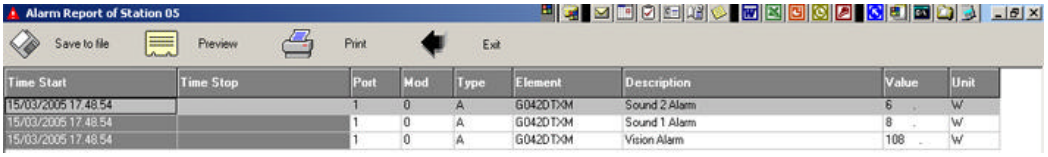

If you choose the Print Preview option the preview window appears. After the report is printed to screen you can print it to printer or exit by choosing the buttons in the bottom of the window.
With arrows buttons you can change report page.




***Global Report of Modules***

This kind of report is available only if you have a logic with H.P.A. modules. You can access this report by the *Port # modules report* item on the menu tree; the report lists all analog data of the modules connected to the port, in a table that allows you to easily compare currents, powers, etc. of modules. If more that one record is stored for each module the most recent is used.

### 1.7.5. ALARM REPORT




The Alarm Report shows all stored alarms. The most recent Alarms appears at the top of the list.

Field Definitions:

| *Field Name* | *Description* |
|---|---|
| Time Start: | When alarm occurs |
| Time Stop: | When alarm ends |
| Port: | Port Number |
| Mod: | Module Number (0 for TXM) |
| Type: | C : communication alarms<br>D: Digital Input alarm (see annex)<br>A: Analog Input alarm (see annex)<br>G: General alarm (see annex) |
| Element: | Element connected to specified Port/Module. |
| Description | Alarm description |
| Value | Analog value that caused alarm (only for Analog alarms) |
| Units | Units of “Value” |

A *Print* menu is at the top of the Window:
The *Print*, *Print Preview* and *Print To File* menus allow you to print a report to the screen, to the Printer or to a file.

### *1.7.6. PRINTING A SAVED REPORT*

You can read and print the saved reports in two different ways:

- Text format:

If you use a common Windows editor (ex. Notepad.exe or Wordpad.exe) to print a report saved to file in text format you can see all the report and print it correctly using the settings:

*font*: Courier New, 8pt.

- MS Excel format:

Opening the alarm report file with Microsoft Excel you can see the report, modify it, and print it like you prefer.

## 1.8. INSIDE STATION

The appearance of the station windows is tied to the station elements. Each logic has it's own window and you can switch between them via the building window (if any) or by the modules buttons. After connection the main panel of the station is displayed on the screen.

All analog data on the window can be viewed in the Multimeter dragging and dropping the icon (  ) onto the measure.

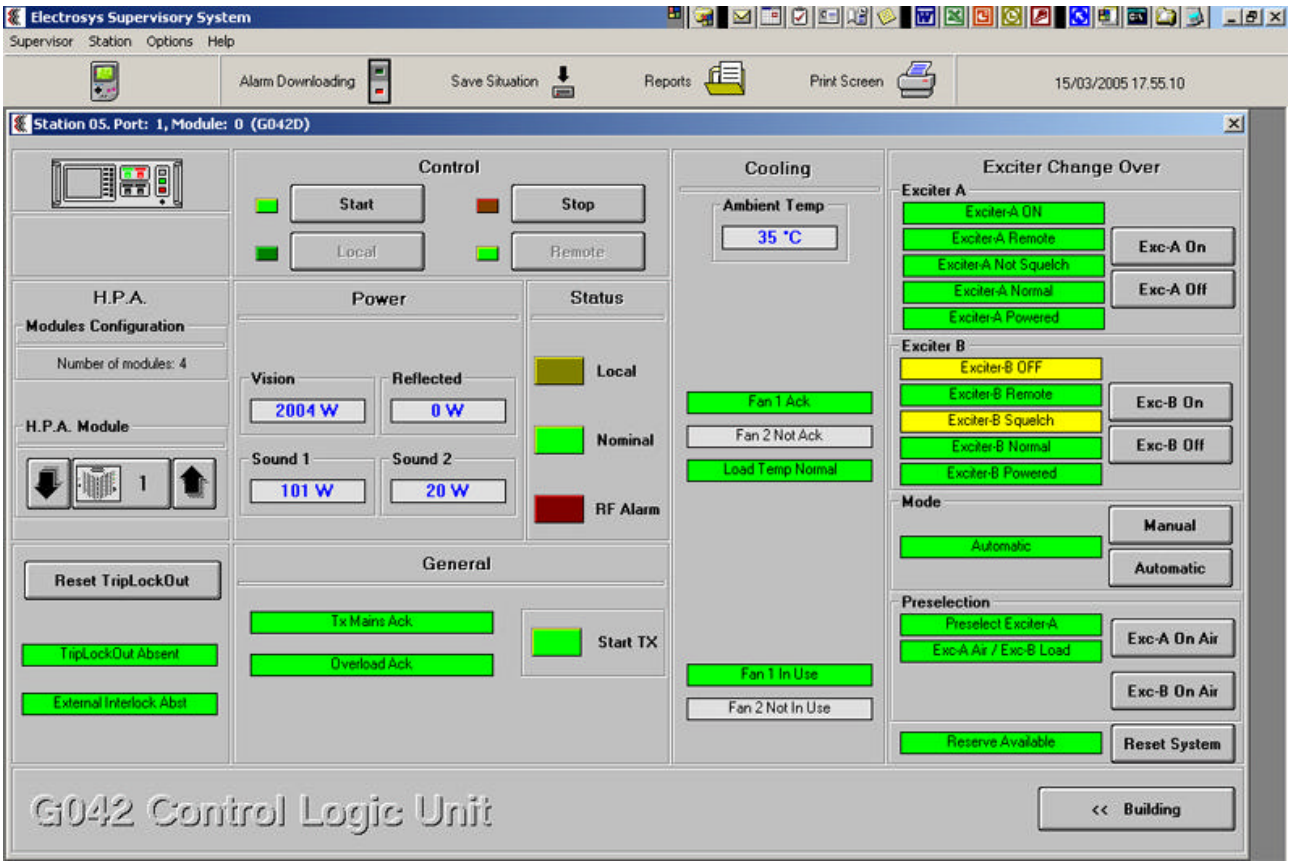
If an analog input alarm occurs, a red mask on the label blinks.

When you connect to the station and you have more than one port, the first window displayed is the Building; this window summarizes the status of the station in a graphical way and it shows a flashing red label for logics that have open alarms (if alarms downloading is enabled). It also has buttons that allows you to switch between the windows in a simple and quick way.

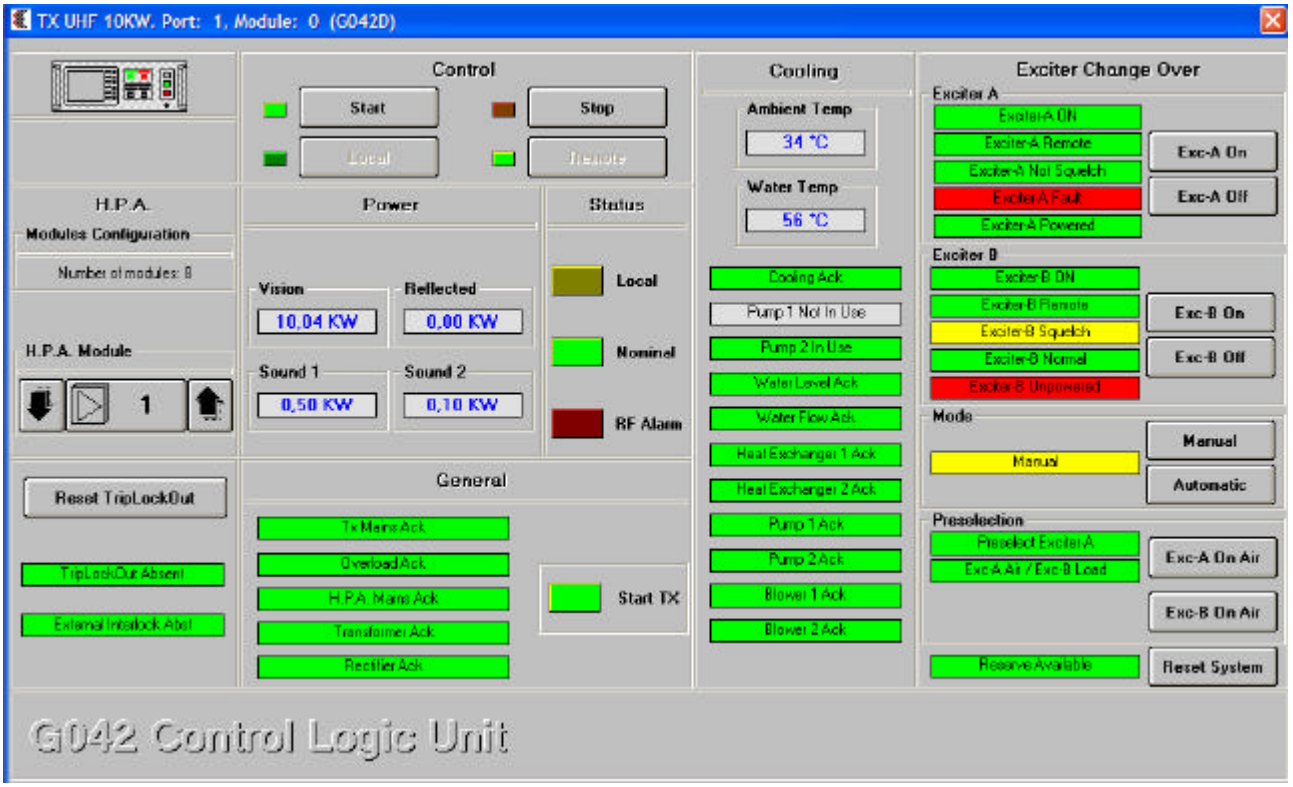
From the program's forms you can control and set all parameters of the units. With command buttons on each form you can send commands to the transmitter from the remote site.

# TYPICAL TX STATION

The main form for the Tx Air Cooling G042 logic follows:

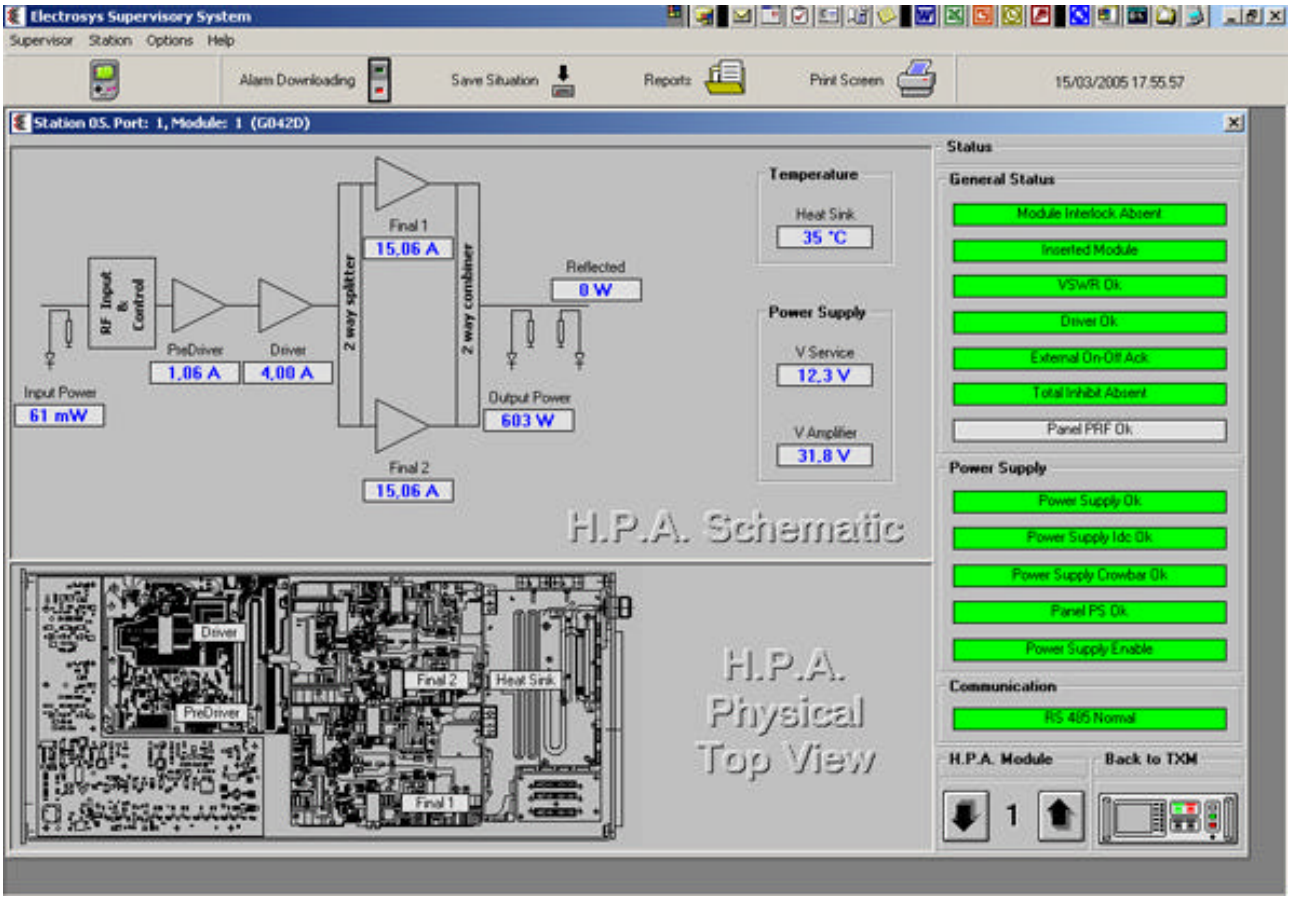


The main form for the Tx Liquid Cooling G042 logic follows:

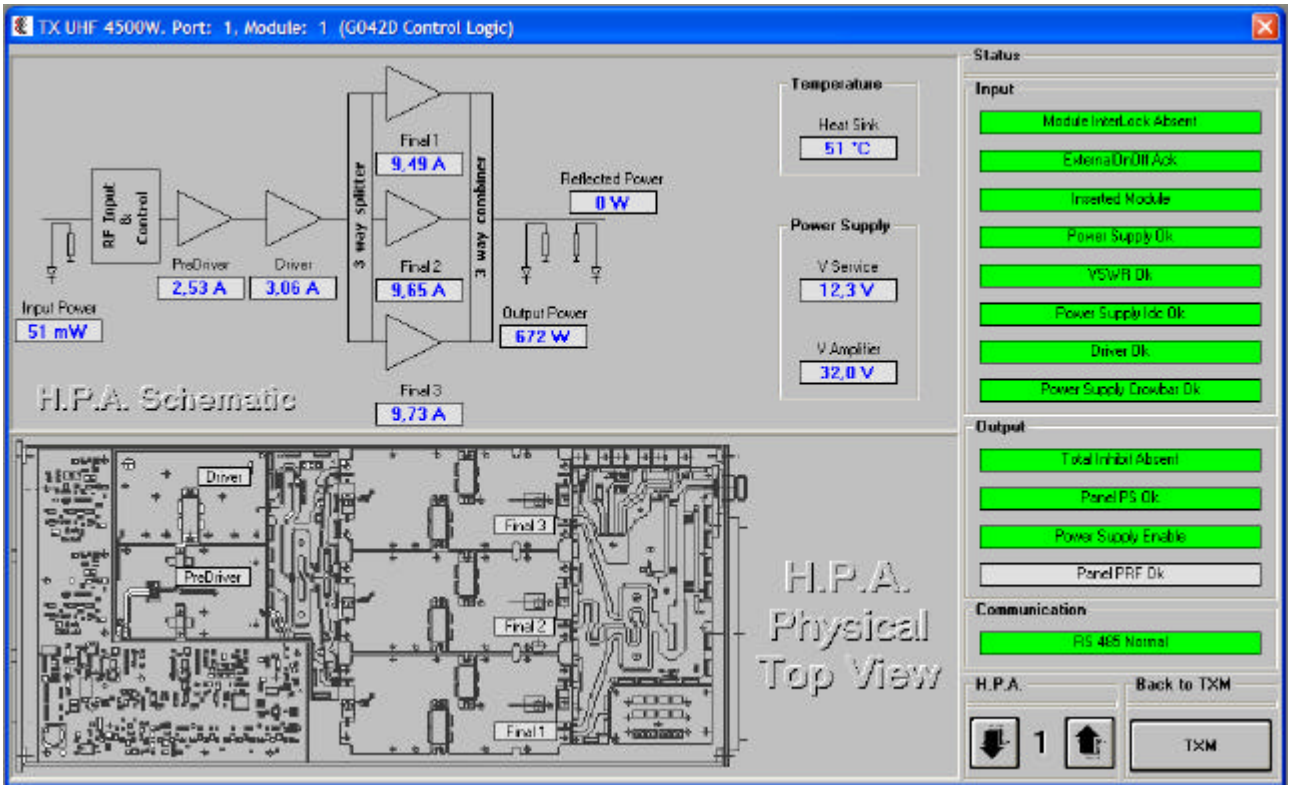


The *module number* button brings up the H.P.A. windows. Each H.P.A. has three views (Physical, Circuit and Status); here you can see the Status:

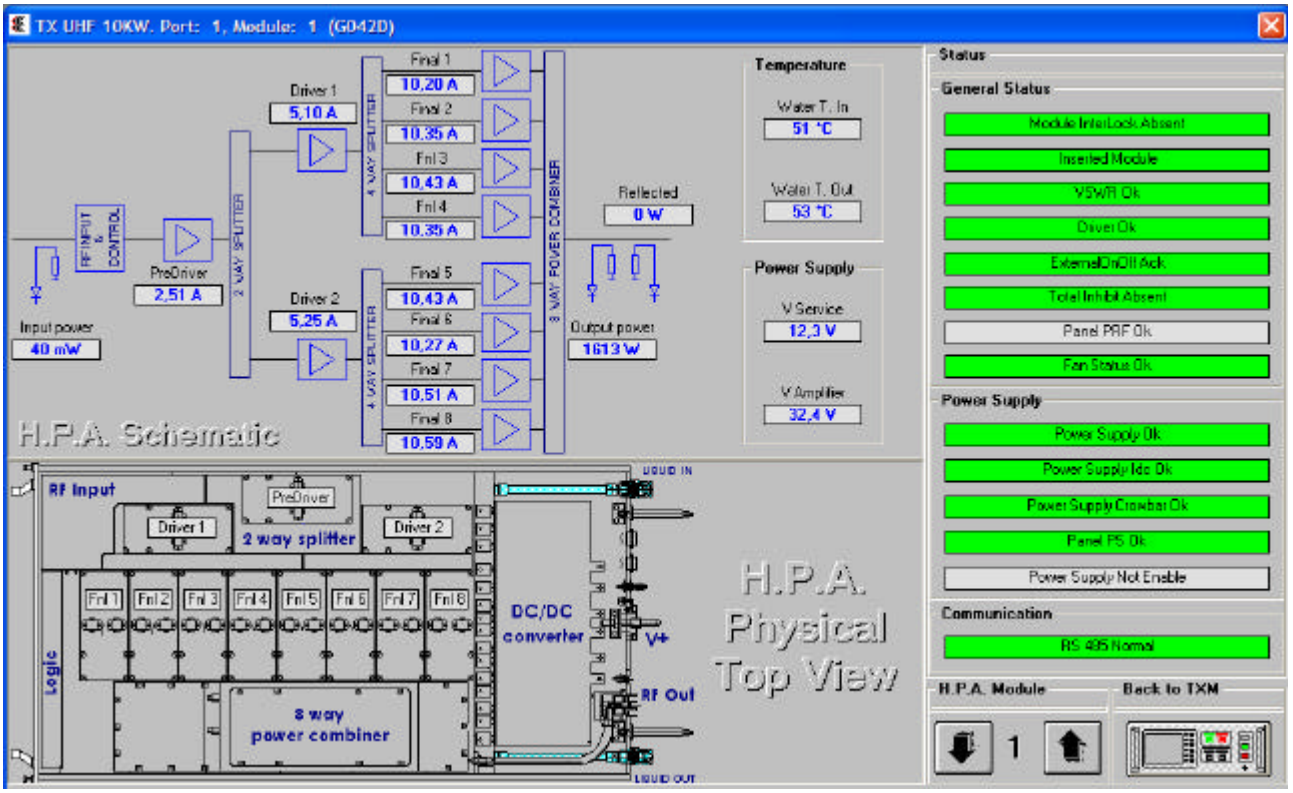
(VHF air cooling)



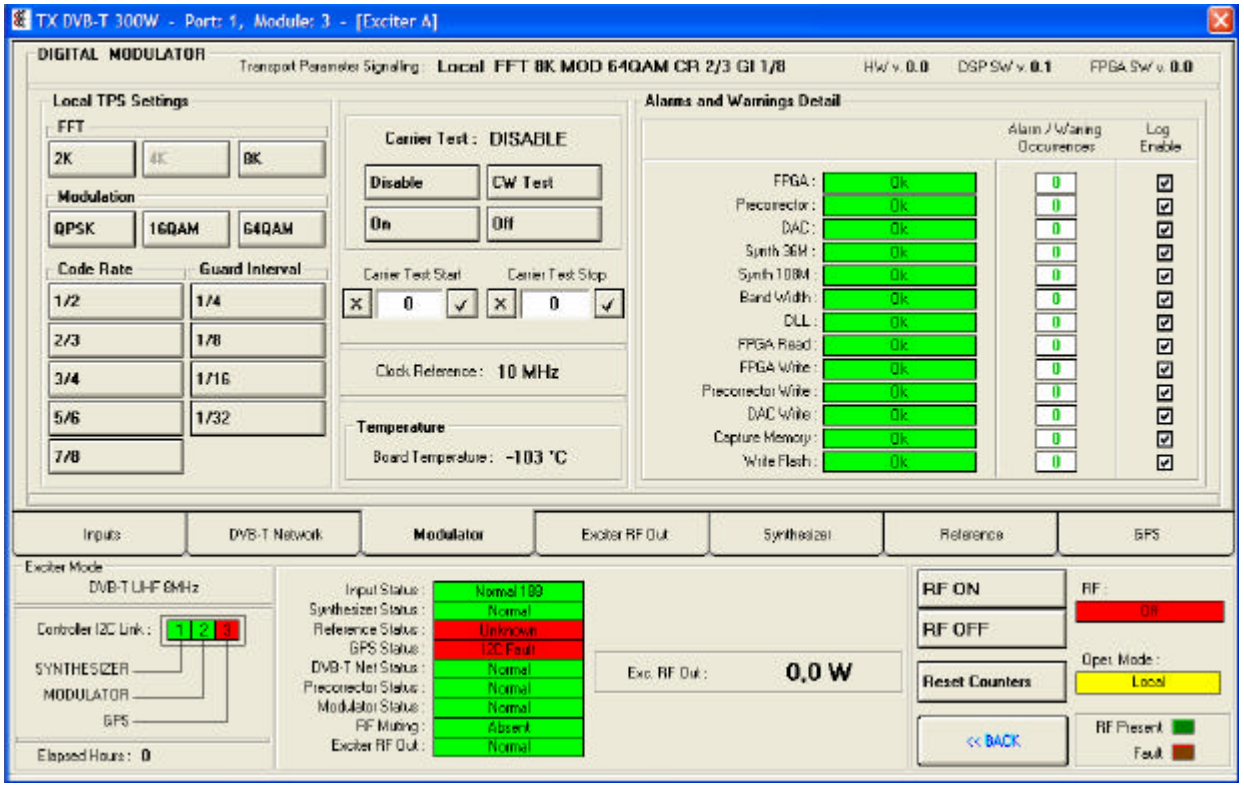
(UHF air cooling)



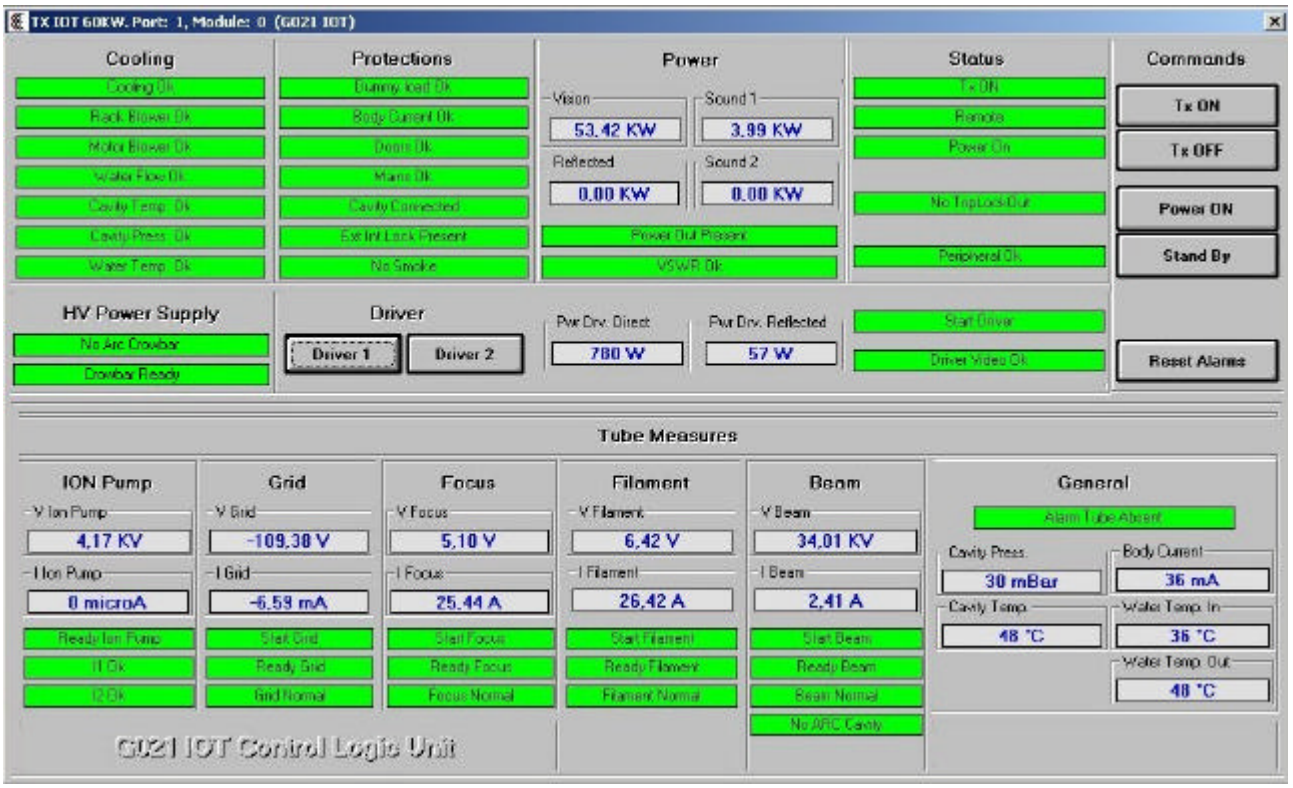
(UHF liquid cooling)



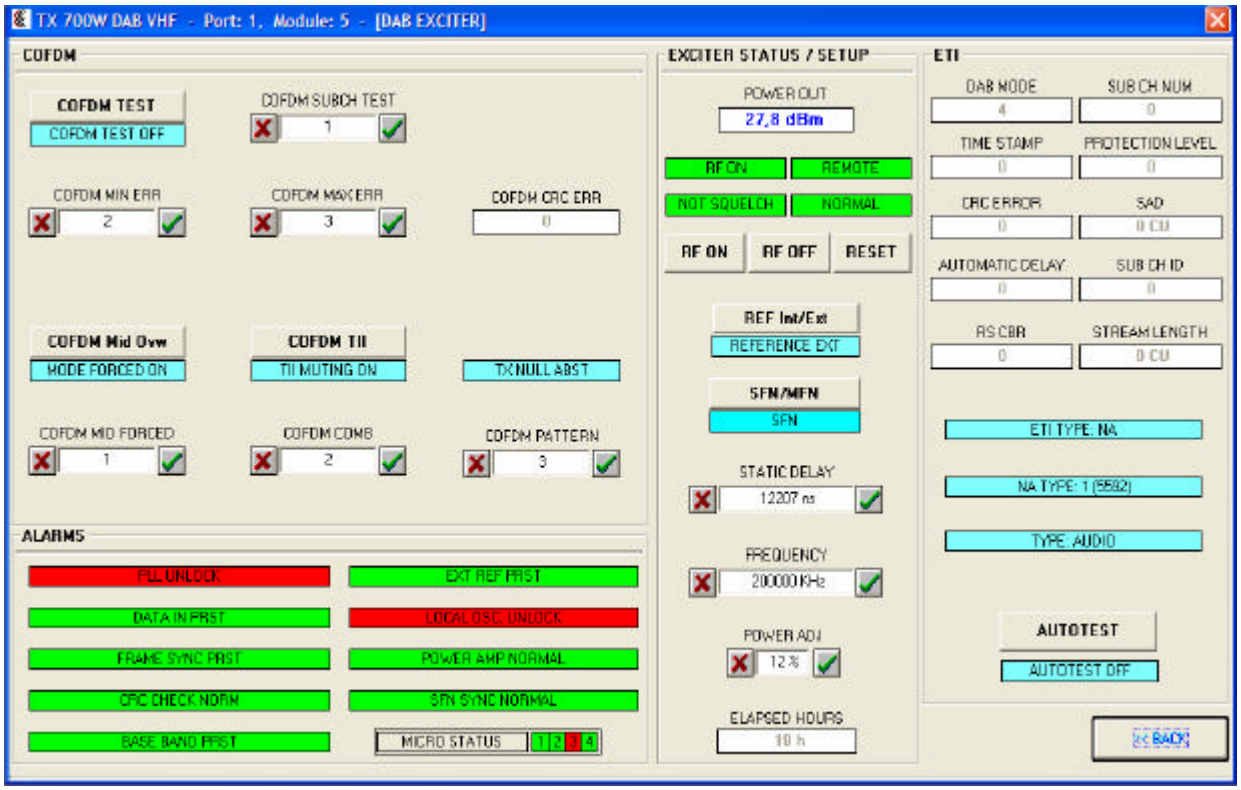
(Multimode Exciter : DVB-T mode)



(G021 – IOT TX Control Logic Unit)

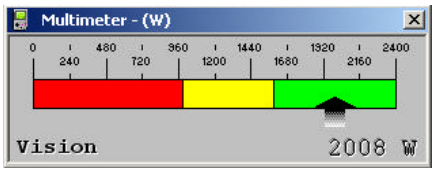


(DAB Exciter)




## 1.9. STATION'S TOOL BAR

After connection, the phone and local connection icons disappear from the toolbar and a new one replaces them: the *Multimeter(*  *)*. Dragging and dropping it on any analog measure an analog Multimeter can be displayed with colored thresholds like here:




A new tool is active only with connection present: *Save*. Clicking on it you cause an immediate complete storage of all values in the database.

## 1.10. STATION'S MENU

### 1.10.1. SUPERVISOR/END

You cannot terminate ESS if you are connected to the station. If you wish to terminate the ESS you must first terminate the station connection.

### 1.10.2. STATION

- ***Close Communication***

Closes station connection (local or remote).

- ***SaveSituation//Print Screen/Station Report***

This commands are the same that you can find on the toolbar.

### 1.10.3. OPTIONS

Options is the same as seen before. Here you can use all four sections. See §1.7.2 for sections 1 and 3.

- ***Historic Delete Section***

This section has two choices: *Delete Alarm Historic* and *Delete Value Historic*.

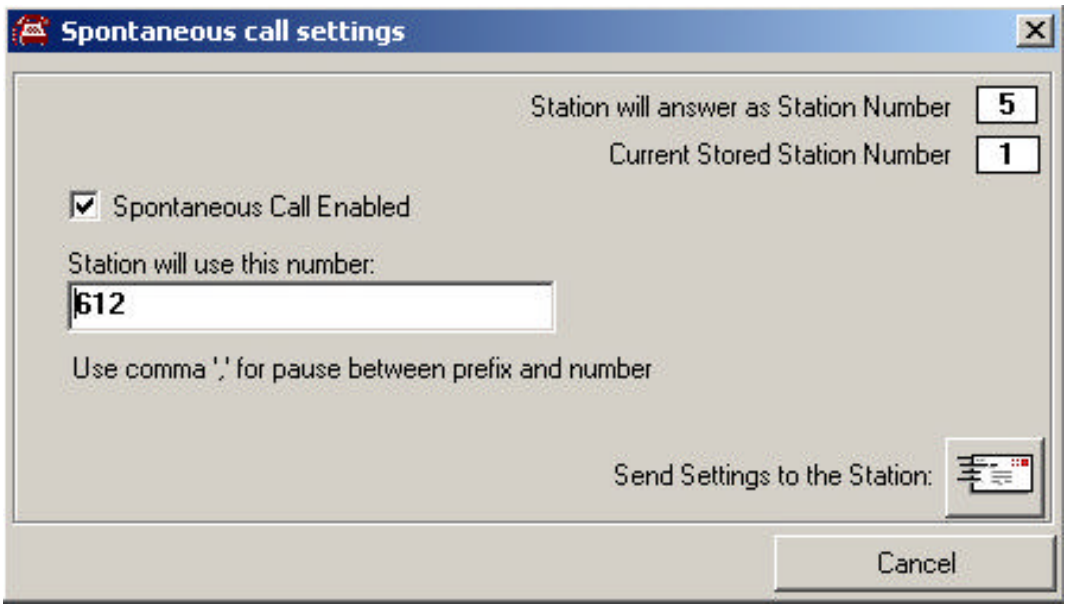
Through the first choice, you may delete the alarm table of the connected station. The second choice deletes the historic table of the connected station.

To improve performance it is useful to delete periodically, historic and alarm tables in the database. Together with cleaning table is useful periodically to COMPACT database (use Microsoft ACCESS 97 ® to make it).

- ***Spontaneous Call Section***

You can set the transmitter logic to automatically call Supervisor if a critical alarm occurs.

Choosing the «Options» menu, after station connection does automatic call setting.




When this window is open, it displays the actual settings of the logic.

Here the station number is displayed (*Station will answer as Station Number:*). The Supervisor in case of station spontaneous call, to determine which station is calling uses this number.

Commas may be inserted in the telephone number to pause between different number sections.
The “Cancel” button allows you to close the window without changes.

## 1.11. REPORTS

By clicking on the Reports icon in the toolbar, you can see the historic and alarm reports for the connected station.

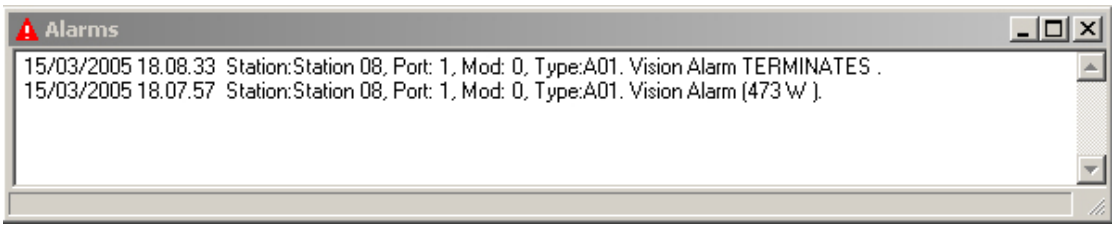
## 1.12. ALARM WINDOW

The alarm window is where the alarms are displayed on the fly. If the station is connected, you will see all alarms of the transmitter logic only with Alarm Downloading feature enabled.

In addition to the logic alarm there are:
The *Drop Line* Alarm, if line drops during a call.
The *No RS232 answer* Alarm, if the transmitter logic does not answer the Supervisor RS232 communication.

When an alarm occurs, the Alarm Window opens itself (if minimized), and opens up on top of all other windows (also if other applications are running together).

Hit F8 key to clear alarms from this window.
Note: this operation does not clear the relative records from the history database.



# DATABASE

The Database is where all the information needed by the ESS is stored, such as stations names and configurations, historic tables, logic parameters and so on.

*Warning*

Incorrect data in the Database may cause the ESS to not work properly or to crash. You can modify every table, but be extremely careful.

The Database default file is SISSUP32.MDB. You can see or modify it with Microsoft Access 97 ® Or Electrosys DB Browser (a special software provided by Electrosys that allow the addnew, update and delete of the database table records but not the updating of the database structure).
ESS uses the database to manage input/output configuration of any connected logic. That information are static: you can insert or modify it before ESS starts.
ESS uses the database also to store System dynamical evolution. It makes that storing alarms in 'Station ## Alarm History' table and values in 'Station ##' table (## is a two digits number. See §1.13 for explanation).

Values are graphical representations of all analog and digital values read by ESS at a single time. Criteria of storing value records in database is to store a complete set of measurements (analog and digital) when a measure variation occurs. If a Digital Input or Output variation occurs, a new record is added only if the "Relevance" (see later) field of the Digital Input varied is "Yes", otherwise no record is added in database. For Analog Input or Output you can set the minimum variation of the measure that cause storing a new record in historic database, field name is "Relevant Change" (see later).

The following is the description of the basics tables of the database. The tables names and numbers may be different depending on your logic type(s) and station configuration.
The fields with the name on a gray background don't need to be modified by user. Be careful changing this fields.

## 1.13. NAMES CONVENTIONS

There are two main types of tables in the database: the first one is present for every logic type and station configuration (and it have a fixed name); the second one is "network-dependent" (and the name is "network-dependent" too).

The fixed tables are:

- Alarm Table
- Building
- Element Config
- Network Table
- Station ## (Only if you have not changed the name of the station)
- Station ## Alarm History (Only if you have not changed the name of the station)
- Station Elements Config

The name of other tables depends on the configuration of the network that you want to control. The general structure is shown below (each rectangle represents one character):

Elements with modules


Elements without modules


The *logic type* is the identifier of the logic (the same that appears in the table Element Config. Then, only for TXM (transmitter) tables that ends with letters "AI" or "TH", there is the *logic number* (Station ID+Logic port number see §1.13.2, note 1). At the end of the name there are two letters:
TH – thresholds used for the multimeter zones
AI – Analog input
AO – Analog output (never used)
DI – Digital input
DO – Digital Output
(only for DAB exciter there is one more table with the extension "MISC")

### *1.13.1. FIXED TABLES*

- Alarm Table

The Alarm Table Stores all the alarm codes and descriptions for every logic. You don't need to modify this table:

| | |
|---|---|
| Alarm Code | The code is unique for any alarms of an element type. See Annexes.<br>In addition there are code 100 for “No RS232 answer”, 101 for “Drop Line”, 102 for “Station don’t answer” in case of a polling error. |
| Alarm Type | C=Communication, D=Digital, A=Analog measures. |
| Alarm Position | Position of alarm in the logic |
| Element Type | Type of element |
| Description | Alarm description |

- Building

The Building table stores all the parameters needed to define the building window (if any). This window is present only if you have more than one logic on the same station (as in station 3):

| | |
|---|---|
| StationID | Number of the station |
| ButtonId | Number of the button on the building window |
| Xposition | X Position of the button (pixels) |
| Yposition | Y Position of the button (pixels) |
| Xwidth | X Width of the button (pixels) |
| Ywidth | Y Width of the button (pixels) |
| PictureName | Name of the picture displayed on the button (“Not Used” for no picture) |
| Port | Port number tied to the button |
| Module | Module number tied to the button |
| ToolTip | Tooltip displayed when the mouse passes over the button |

- Elements Config

This table lists all parameters of every logic:

| | |
|---|---|
| Element Type | Logic or module type:<br>By ex. G032TXM or G032MOD |
| ADC Bit | ADC bit number |
| ADC Offset | =0 for Unipolar,<br>=ADCResolution/2 for bipolar center zero ADC |
| Power Max Factor | =1 if max power to FS,<br>=5/4 MaxP=4V with 5V FS<br>=10/9 MaxP=9V with 10V FS |
| DAC Bit | DAC bit number |

- Network Table

Network description. This is a list of all stations in the network, with their telephone number and position of station label in the “Network” window.

| | |
|---|---|
| Station ID | Station number. |
| Station Name | Station name. It is what will be displayed in station label in “Network” window. |
| Y Label Position | y (left) position of label. |
| X Label Position | x (top) position of label. |
| Phone | Complete Hayes command to call the station:<br>“ATDT” or “ATDP” for tone or pulse dial, followed by phone number. Commas can be used for pause between numbers. |
| Location Name | Complete station name. Ignored by Supervisor. |
| Polling Interval days | Time between polling. If both Polling fields empty or zero means no polling. |
| Polling Interval minutes | Time between polling. If both Polling fields empty or zero means no polling. |


**Note:** If you change the station name you must also change the name of the two tables of the database linked to the station: the *[Station Name]* table and the *[Station Name] Alarm History* table.

- Station Elements Table

Station description. Here is description of all elements in the station.

| | |
|---|---|
| Station ID | Station Number |
| Port ID | Transmitter Number |
| Path | Sequence of the ports if there is more than one multiplexer |
| Element Type | Name of element as listed in Element Config table |
| Module ID | Module number in specified Transmitter |
| Polling % | Percentile of interrogation of any logic.<br>Only for Module 0 and Port>0. Station sum **MUST** be 100. |
| Other info | Used to select the configuration for G011 logic if the station has an N+1 system |

- Station ##

Historic table for the station ## (where ## stands for the Station ID and the port number). Here are stored values from logic if a *relevant* variation occur. If you change the name of the station you must change the name of this table also

| | |
|---|---|
| Time | Date and time of storing (double) |
| Status String | All measures |
| Port ID | Port number |
| Module ID | Module number in specified Transmitter (0 for TXM) |

- Station ## Alarm History

Alarm historic table. Stores all station and communication alarms for the station ## (where ## stands for the Station ID and the port number). If you change the name of the station you must change the name of this table also

| | |
|---|---|
| Alarm ID | Alarm unique identifier. |
| Time Start | When the alarm occurred. |
| Time Stop | When the alarm ended. |
| Port ID | Transmitter number |
| Module ID | Module number in specified Transmitter (0 for TXM) |
| Alarm Type | C=Communication, D=Digital, A=Analog measures. |
| Alarm Code | Pointer to “Alarm Table” table for description. |
| Alarm Value | Value of analog measures that caused the alarm. |
| Alarm Position | Position of alarm in the logic |
| Units | Units for Alarm Value |

### *1.13.2. Network-dependent tables*

All the tables that are not listed in the previous section are network-dependents, i.e. they may be present or not and they may have names that slightly varies depending of your network configuration. By example for the G021 logic there are the following tables:

- G021##AI[1]

Analog input parameters. Fields description:

| | |
|---|---|
| Var ID | Analog input number |
| Description | Description |
| Max | Maximum value |
| Min | Minimum value |
| Units | Unit of measure |
| Relevant change | Variation over which store value in historic (in Units) |
| IsPower | If is a power (not a linear input) |
| Significant change | Set the number of digits to display (1=integer, 0,1=one decimal digit and so on) |

- G021AO

  Not Used

- G021DI

[1] The ## stands for the station ID and the port number. E.g. for the logic on station 1 and port 3 ##=103 (StationID*100+PortNumber). This method allows you to configure every single logic. E.g. you may have two logics with two different powers.

Digital input description table.

| Var ID | Digital input number |
|---|---|
| Off State | Bit 0 meaning |
| On State | Bit 1 meaning |
| Relevance | Yes if the variation cause a store in the historic table |
| Color Off Back | Background color if bit is 0 |
| Color Off Fore | Foreground color if bit is 0 |
| Color On Back | Background color if bit is 1 |
| Color On Fore | Foreground color if bit is 1 |
| Visibility Off State | Yes if Off State label is to be displayed |
| Visibility On State | Yes if On State label is to be displayed |
| Create Alarm | If the Off State has to create an alarm |

- G021DO

Digital output description table

| Var ID | Digital input number |
|---|---|
| Off State | Bit 0 meaning |
| On State | Bit 1 meaning |
| Relevance | Yes if the variation cause a store in the historic table |
| Color Off Back | Background color if bit is 0 |
| Color Off Fore | Foreground color if bit is 0 |
| Color On Back | Background color if bit is 1 |
| Color On Fore | Foreground color if bit is 1 |
| Visibility Off State | Yes if Off State label is to be displayed |
| Visibility On State | Yes if On State label is to be displayed |

- G021##TH

Linked with the AI table by “Var ID” field, this table stores the thresholds and alarm for analog inputs.

| Var ID | Link to the AI table |
|---|---|
| Multimeter Bottom | Bottom limit of the multimeter |
| Minim | Value under which there is an alarm condition |
| Low | Between Low and High value is OK |
| High | Between Low and High value is OK |
| Maxim | Value over which there is an alarm condition |
| Multimeter Top | Top limit of multimeter |
| Create Alarm | If Yes, AI over Maxim or under Minim creates an alarm |

**Note:** The multimeter color is RED between Bottom and Minim, YELLOW between Minim and Low, GREEN between Low and High, YELLOW between High and Maxim, RED between Maxim and Top.

# APPENDIX A (CONNECTIONS AND WIRING).

## 1.14. LOCAL MODALITY.

In local modality PC can be directly connected to the logic, on RS232 J18 connector. If you have a G232 multiplexer you must connect the cable into the master port. Use a serial cross RS232 cable (null modem) with this pinout (shield cable is preferred):


| 9 pin (PC Side) | 9 pin (RS232) Logic Side |
|---|---|
| 2 | 3 |
| 3 | 2 |
| 5 | 5 |

## 1.15. REMOTE MODALITY

For the remote modality you can choose between standard modem, GSM Modem or Radio Link.

**Standard Modem:**
Connect the DIGICOM modem provided by Electrosys with the serial port of the PC. Use a standard serial cable with this pinout:

| Modem | 1 | 2 | 3 | 5 | 6 | 7 | 8 | 12 | 20 | 22 |
|---|---|---|---|---|---|---|---|---|---|---|
| PC COM | 5 | 3 | 2 | 8 | 6 | 5 | 1 | NC | 4 | 9 |

To optionally share modem and phone use a 'T' phone line splitter.
To connect modem to telephone line use a standard phone cable.

**GSM Modem**
Connect the serial port of the PC with the 9 pin connector on the GSM Modem, using a flat cable. Place your antenna and test the signal quality with the *Gsm Modem Setup* software provided by Electrosys.

**Radio Link**
Connect the TRIAD Radio Modem provided by Electrosys to the serial port of the PC. You must use a flat cable. The Radio modem must be set up for the modality that you want (point to point or multipoint).

# APPENDIX B (MODEM SETUP)

## 1.16. Standard Modem

The standard Electrosys modem is DIGICOM. For proper connection you must set your SISSUP32.INI file for “Standard” modem type and you must provide the init string that follows:
"ATEVB1F0M1L1&D0&K0\N1%C1YX3S0=2&W0S30=3+MS=9,0,9600,9600"

For a standard Robotics modem the init string must be:
"ATE0V0X3F1L2M1&D2&H0&I0&R1&S0&A0&K0&M0&N6S0=2&W0"

For the Lucent modem (56K):
"ATEVB1F0M1L1&D0&K0\N0Q0S37=9&W0

Standard AGERE Modem string:
"ATEVB1M1L1N1&D0&K0&G0\N1%C0YX3S0=2s6=6S7=60s95=2&Q0&W0S30=3+MS=V32,0,9600,9600"

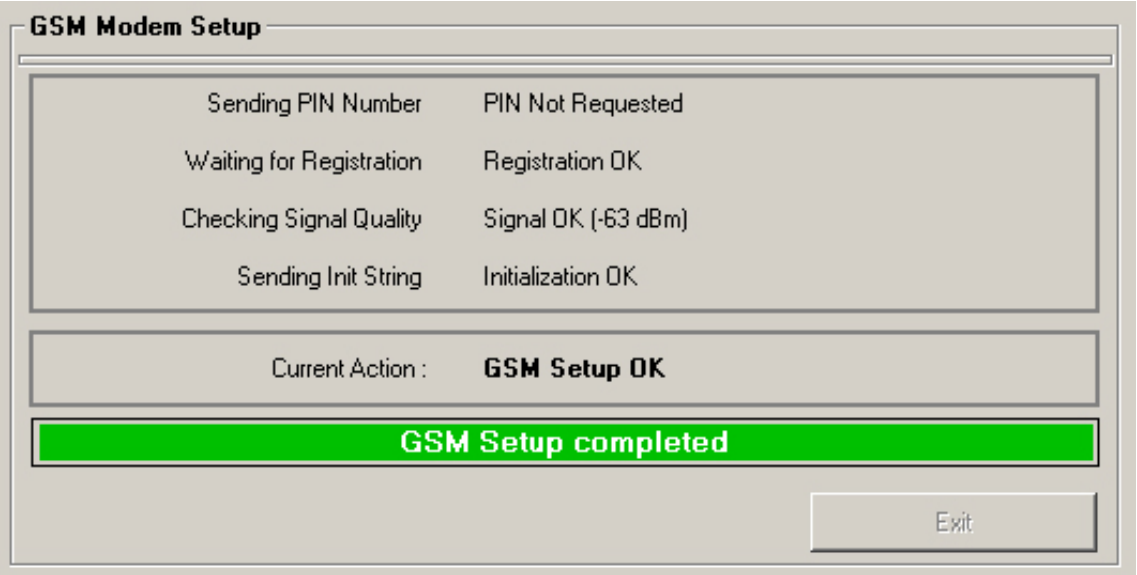
How to set AT commands for ESS modem init string :

- (E0) No Echo
- (V0) Numeric Result Codes
- (B1) Standard modulation (Bell)
- (M1) Speaker on durimg call establishment, but off when receiving carrier.
- (L1) Low Speaker volume
- (&D0) Modem ignores DTR
- (&K0) No flow control
- (\N1) Disable error-correction mode
- (%C0) No data compression
- (X3) Busy detection reporting is enabled
- (S09=2) Answer after 2 ring
- (S30=3) Inactivity time online
- (+MS=V32,0,9600,9600) Modulation selection : V32 at 9600 bps and no automode.

The modem must be powered before you start the Supervisory System

## 1.17. GSM MODEM

GSM modem needs specific initialization when powered on. This initialization is automatically provided by the Supervisory System. When you put the “Gsm” modem type in the SISSUP32.INI file you must also put the init string in the proper line. Each command of the init string must be followed by a minus (“-“) sign.
When the Supervisory System starts a window pops up to let you follow the various initilization steps:




The steps performed are:

- **Step 1**: Modem presence and security password (PIN) if requested. If the modem is present and it needs a security password the supervisor sends the number that you put in the SISSUP32.INI file. If something goes wrong (i.e. you have provided a wrong PIN number) the initialization will be stopped to avoid the SIM card lock (it happens after three wrong PIN numbers).
- **Step 2**: Network registration. The modem waits for the signal from the network operator; this phase is repeated up to ten times.
- **Step 3**: Signal quality check.Low Signal : -79 dBm.
- **Step 4**: Initialization of parameters. In this step the commands specified in the init string will be sent to the modem.

At the end of the initialization the result is showed and it stays on the screen for 2 seconds, then the window disappears and the Supervisor starts.
You can stop the sequence by pressing the *Cancel* button at any time.

## 1.18. RADIO MODEM

To operate your radio modem you must set up the proper modality from a terminal emulation software before you connect the modem to the Supervisory System
Radio modem don't need setup when the supervisory System starts, so you must only put "Radio" on the right line of the SISSUP32.INI file.