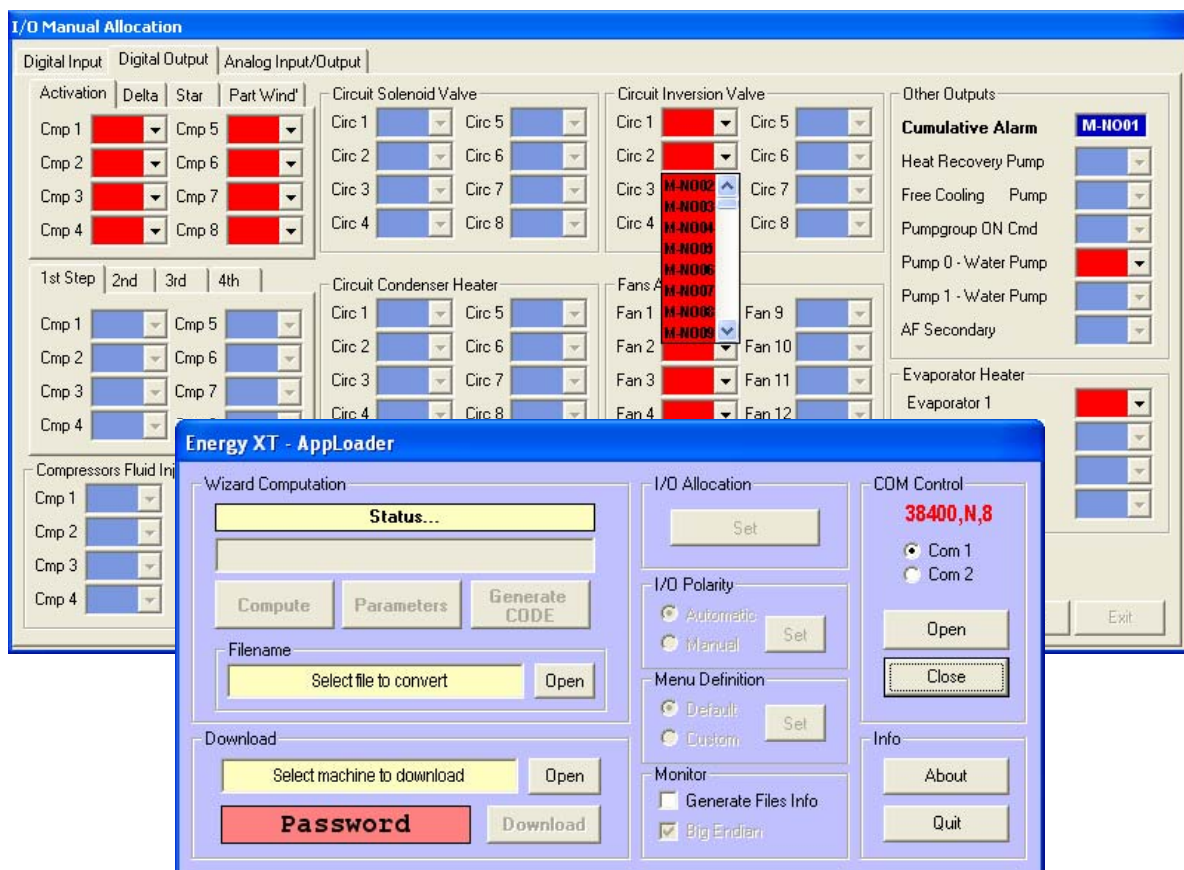




ENERGY XT

Apploader - *Textloader*



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1 USE OF MANUAL

To facilitate use of the manual, customers may find the following useful:

Call-outs

Callout column:

Callouts on the topics described are placed to the left of the text to allow the user to find the desired information quickly.

Cross references

Cross references:

All the words in *italics* are listed in the index along with a reference to the page where they are described in more detail; the text below serves as an example:

"activation of the alarm stops the compressors"

The text in italics indicates that under Compressors in the index there is a reference to the page where compressors are described in more detail.

If the online Help on the PC is used, the words in italics become proper hyperlinks (automatic links activated with a click of the mouse) that connect the different sections in the manual and allow you to navigate through the document.

Highlighted icons

Some parts of the text are highlighted in the callout column using icons that have the following meanings:



Note:

draws attention to a specific topic that users should take into account.



Tip: highlights a suggestion that helps users to understand and use the information on the topic described.



Warning! :

highlights information that may damage the system or place persons, equipment, data, etc at risk if not known. These sections must always be read prior to use.

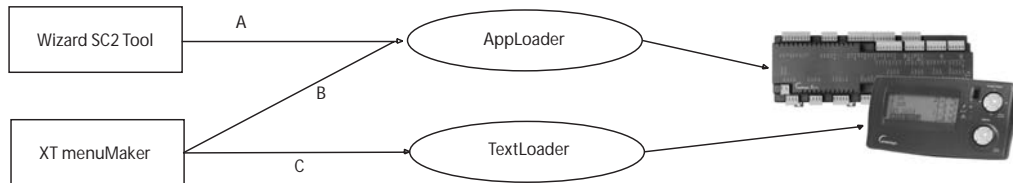
2 DESCRIPTION OF TOOLS

The 2 software tools described in this manual are used to **download** custom machine **configurations** to the Energy XT memories.

They are:

- AppLoader
Downloads controller configuration (machine type, I/O, available functions, menu configuration)
- TextLoader (Energy XT glossary, i.e. strings displayed in the different menus)

See the diagram below:



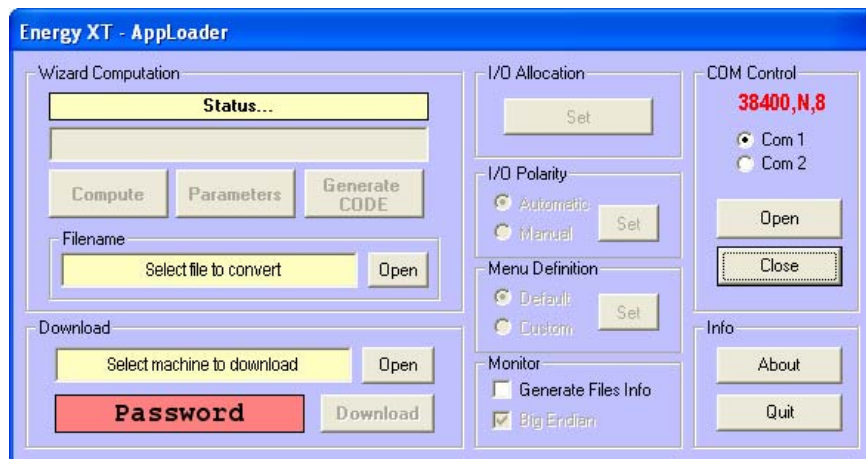
A: machine configuration files (wizard output)	B: menu configuration files (XT MenuMaker output)
C: glossary files (XT MenuMaker output)	

2.1 AppLoader tool

The AppLoader software is used to load the machine configuration previously defined using the Wizard [SC]2Tool and the XT Menu Maker in the ENERGY–XT memory.

The files produced by these two programs form the input data for the tool.

When the application starts, the following screen appears:



Click the 'About' button for information on Release and Build.



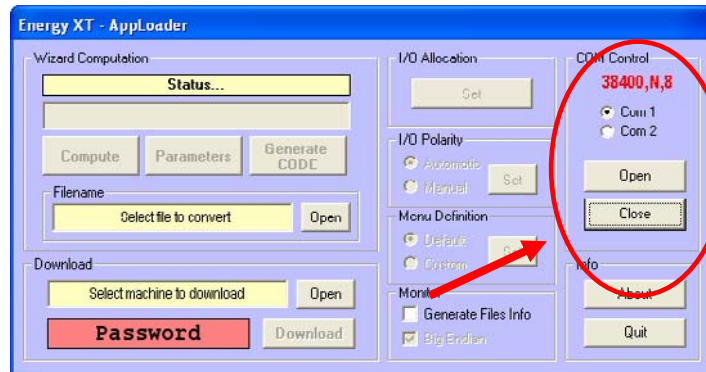
The operations to be followed are described below;

2.2 Opening communication link

In order to [download](#) configuration data, the RS232 type serial connection COM 3 port on the Energy XT must be connected to a serial port on the PC using a nullmodem DB9-DB9 cable.

There are usually two ports of this type on a PC identified as COM 1 and COM 2.

When the port used in the PC (Com Control field) has been selected, the computer-device link can be opened and tested.



The configuration operations described below can be performed without connecting Energy XT to the PC. It can be connected when downloading the [configurations](#).

2.3 ByteCode Generation

.ahx file

Using the output files of [SC]² Tool and MenuMaker, this operation generates an [.ahx file](#) that contains information on machine configuration, menu descriptors and system [parameters](#) for the controller that make up the set of data that is downloaded to Energy XT.

The [SC]² Tool output files are, for example:

- W00M04FERRL002.bc
- W00M04FERRL002.defs
- W00M04FERRL002.lspec
- W00M04FERRL002.meminit
- W00M04FERRL002.memmap
- W00M04FERRL002.par
- W00M04FERRL002.timers
- W00M04FERRL002.xml

The user must place all the files produced by the [SC]² Tool wizard and XT MenuMaker in the same directory.

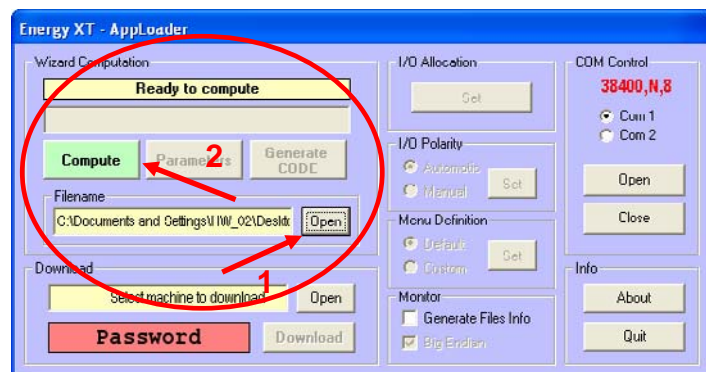
Select the file with extension .bc in the "FileName" field in the specified directory.

Click on **Open** and then **Compute**.

The system will begin processing the output files. This involves coding the bytecodes and all the system and BIOS interface [parameters](#).

When computation has been completed, system configuration (parameterization) must be effected.

Parameterization consists of setting the non-regulation [parameters](#);

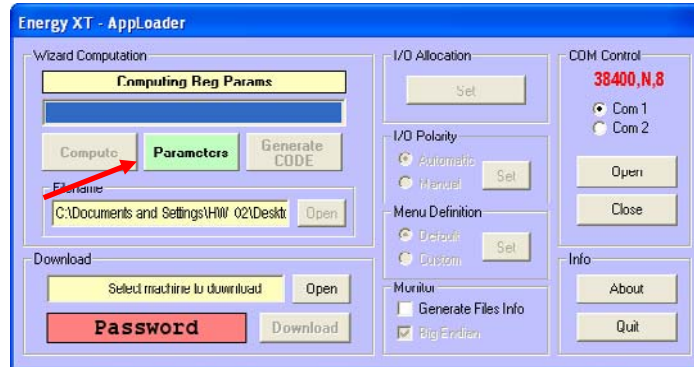


2.4 Configurations

2.4.1 Setting NON-regulation parameters

This operation takes place immediately after computation of the bytecodes and sets all the *parameters* necessary for defining the controller that are not defined during the Wizard [SC]² Tool phase.

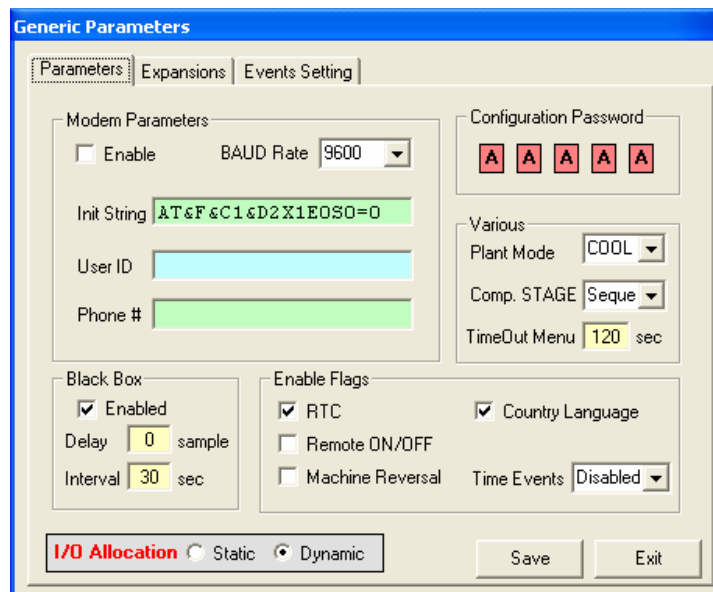
After pressing the *Parameters* button, the main panel divided into three subpanels appears:



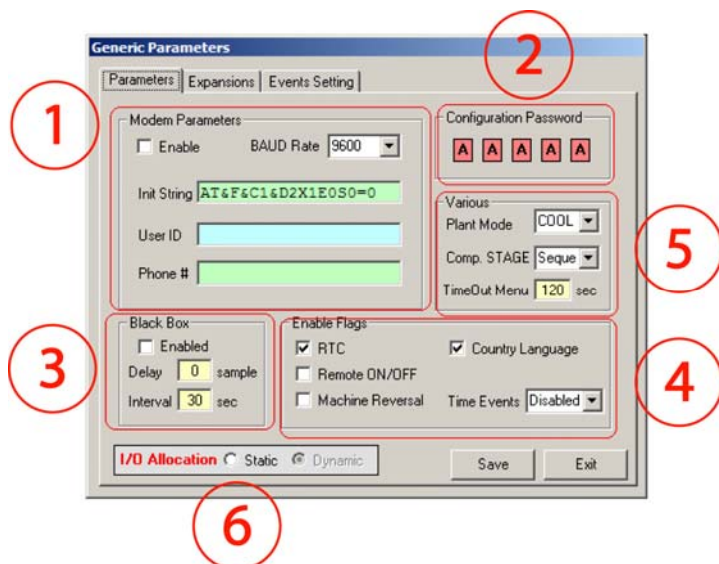
Generic *Parameters* – *Parameters*

The first, called “*parameters*” is used to set all the non-regulation *parameters*:

Parameters



In detail:

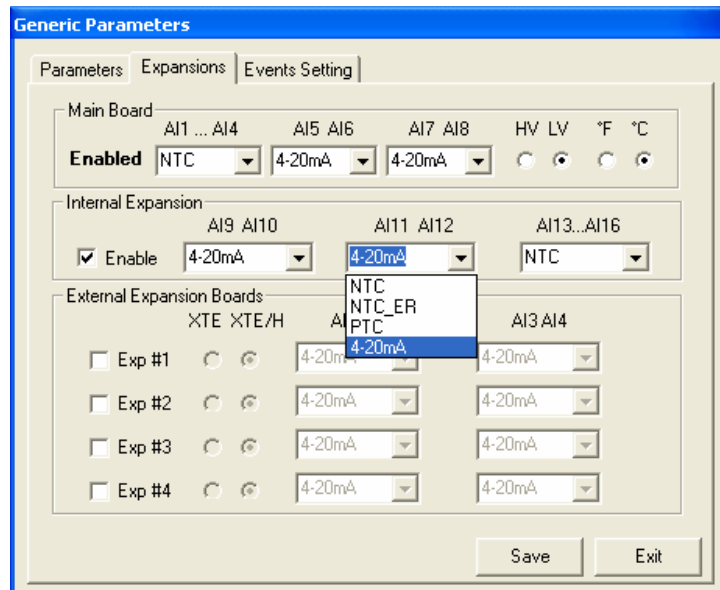


1. **Modem Parameters** Enabling and setting modem
Used to enable alarm signalling using a telephone line
 - **Enable** Enabling
 - **BAUD Rate** (modem speed)
 - **Init String** Initialisation string: a default string is present, but can be changed
 - **User ID** User Identifier (used to identify alarm signalling in an alarm monitoring centre) usually left free
 - **Phone #** Telephone number: number to be called in case of alarm
2. **Configuration Password** Password Configuration
Password for accessing protected menus and settings. Default 'AAAAA'
3. **Black Box** Black Box
Represents the blackbox, and therefore its enabling or not, and configuration in relation to
 - **Interval** interval between samplings in seconds and
 - **Delay Sample** length of sampling period (refer to the chapter Black Box manual 8MA00058 /8MA10058 XT Communication Protocols).
4. **Enable Flags** Enabling hardware such as RTCs, remote ON/OFF, etc.
It concerns general enabling, such as:
 - **Time events** time bands,
 - **Country language** the source language of menus or foreign language (default - not selected),
 - **RTC** Real Time clock
 - Remote ON/OFF
 - **Machine Reversal** type of machine: chiller or a reversible machine.
5. **Various** Various *parameters* such as the way the system starts (for reversible machine), type of capacity step, keyboard menu timeout.
 - **Plant Mode** Informs on how the control will start (cold or hot),
 - **Time Out menu** which is the timeout menu, i.e. after how many seconds the menus return to the default menu (automatic escape function),
 - **Comp stage**, characterises the compressors - hermetic/semihermetic or screw.
 - a) "Sequence" means control of screw compressors;
 - b) "Steps" means control of hermetic/semihermetic compressors
6. **I/O Allocation** avvisa se si fara' l'allocation statica o dinamica (automatica).
If static allocation is selected, refer to the following paragraph.

Expansions

Generic *Parameters* – *Expansions*

The second subpanel, called “*Expansions*”, is used for enabling and configuring internal and external *expansions*. *Parameters* like the type of analogue input (NTC, PTC or current), unit of measurement of temperature (Celsius or Fahrenheit) and high voltage (HV) or low voltage (LV) digital inputs (only those actually configured) can be selected. For external *expansions*, you can select the XTE or XTE/H model.



The analogue inputs are divided into blocks:

- AI1..AI4
- AI5..AI6
-

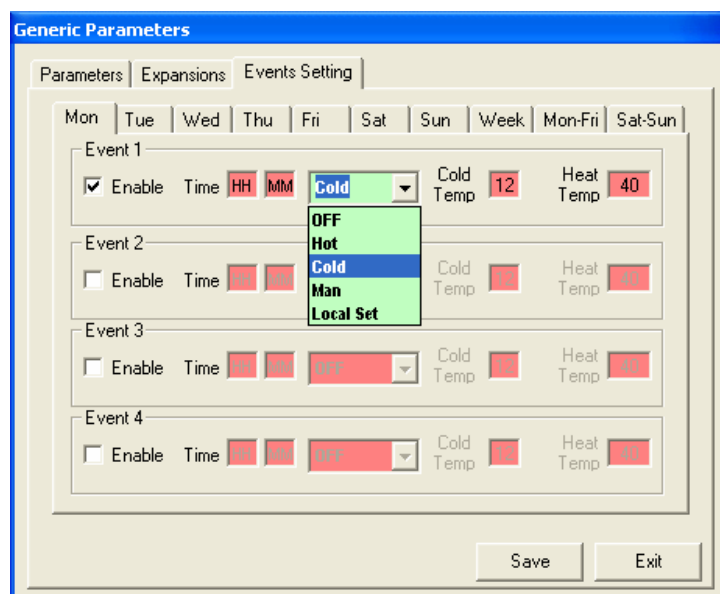
Event setting

Generic *Parameters* – *Event Setting*

In the third panel, called “*Event Setting*”, you can select individual events in the time bands for

- each day
- from Monday to Friday
- Saturday and Sunday
- all week

A maximum of four events are available for each day.



For each time event you can set

- Enabling
- Activation time (hours and minutes)
- Mode (OFF, Cold, Man, Local Set)

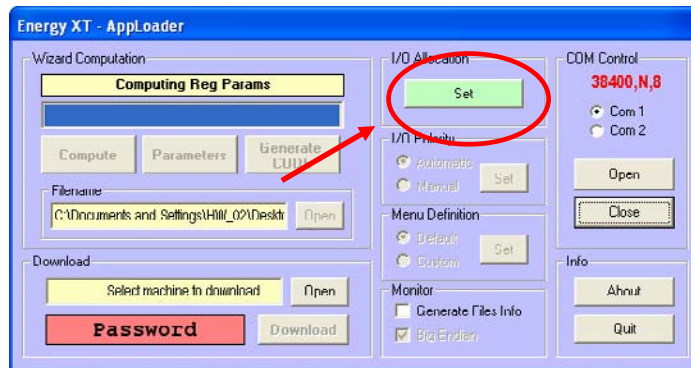
- Cooling Set Point
- Heating Set Point

Once you have saved the data by pressing “Save”, press “Exit” to return to the main menu.

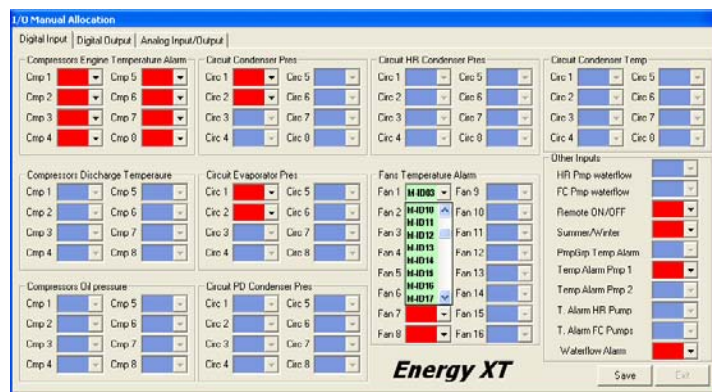
2.4.2 Selecting type of I/O allocation

When the NON-regulation *parameters* have been configured, if static I/O allocation has been selected (see previous chapter) you can now configure the I/Os. Just press the SET button.

If dynamic allocation has been selected, then pressing the set button concludes the operation and takes you to the screen for type of I/O polarity selection:



If static allocation has been selected, pressing the set button takes you straight to the following screen:



Here there are three submenus for

- digital inputs
- digital outputs
- analogue inputs
- analogue outputs.

Here a physical I/O (terminal) on Energy XT must be associated with every enabled I/O logic variable (logical variables are automatically enabled during [SC]2 Tool wizard processing).

Special care must be taken in analogue I/O allocation: the type has already been “configured” in the menu for NON-regulation *parameters*; there can therefore be NTC, PTC and/or 4-20mA “current” type inputs. Special care must be taken to allocate the logical variables to the correct physical inputs: “pressure” logical variables (associated with pressure transducers) must only be allocated to inputs configured as 4-20mA “current” inputs.

The static allocation of I/Os, after the definition of the family of controllers with the Wizard, should be performed taking into account the rule that the logical controller uses to identify the components.

This operation must be performed carefully when the unit being defined is a sub-unit of all the units available for the family specified.

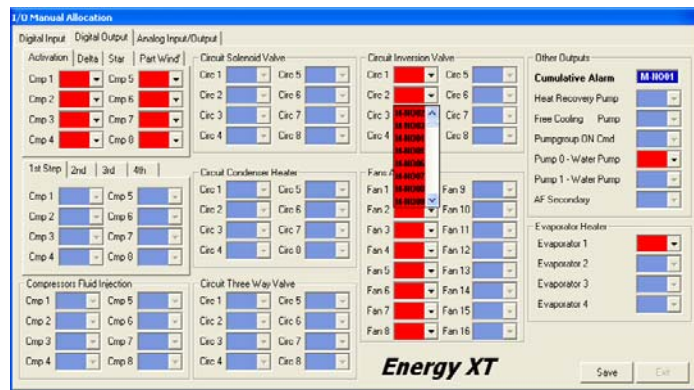
The example described refers to the digital outputs used to start the compressors and to the solenoid valves of a family of units that comprises a maximum of 2 evaporators, 2 circuits per evaporator and 2 compressors per circuit with related solenoid valve.

The total number of compressors can be calculated with the formula:

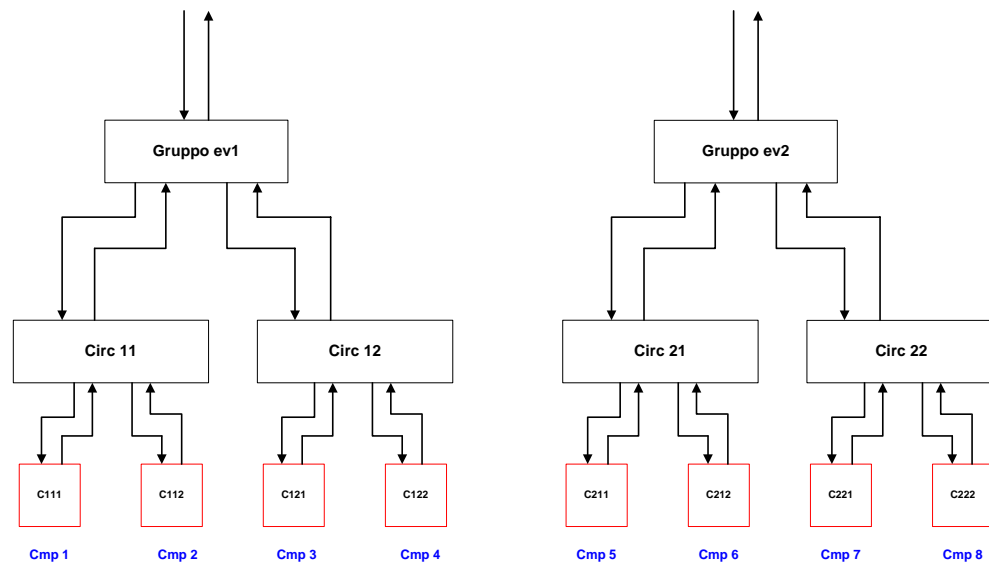
EVAPORATORS_MAX_NO * CIRCUITS_MAX_NO * COMPRESSORS_MAX_NO

Where these *parameters* represent the maximum limits of FIXED *parameters* applicable to the number of evaporators, circuits per evaporator and compressor per unit circuit.

Thus, if default *parameters* EVAPORATORS_NO, CIRCUITS_NO, COMPRESSORS_NO acquire the maximum available value, i.e. 2, 2, 2 in the example, the page related to static allocation of digital output will show 8 digital outputs for the 8 compressors that need to be allocated and 4 solenoid valves to allocate, i.e. one for each circuit:



Schematically, this corresponds to the logical controller.



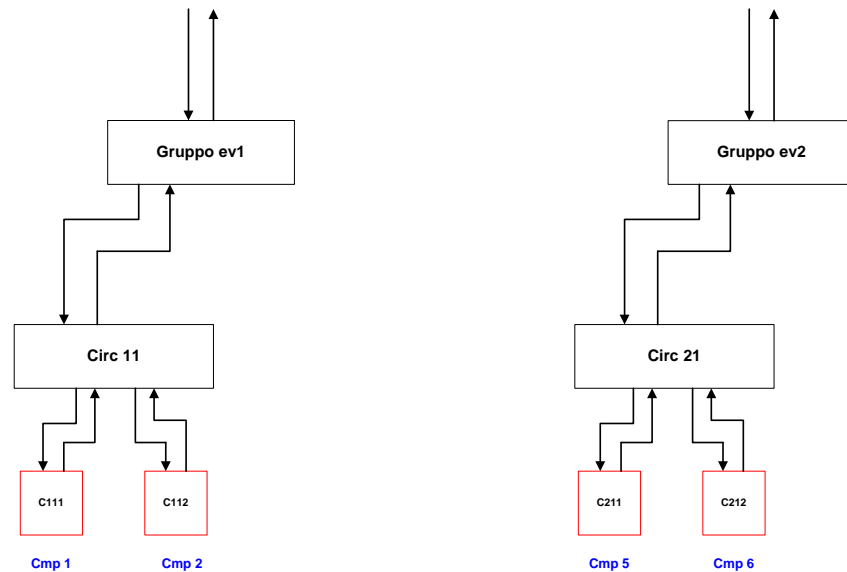
Where all the digital outputs made available by the Apploader are allocated:

The screenshot shows the 'I/O Manual Allocation' window in the Energy XT software. The 'Digital Output' tab is active. The window is divided into several sections for allocating digital outputs to various system components. The 'Activation' section shows 8 compressors (Cmp 1 to Cmp 8) allocated to digital outputs M-N002 through M-N009. The 'Circuit Solenoid Valve' section shows 4 solenoid valves (Circ 1 to Circ 4) allocated to M-N010 through M-N013. The 'Circuit Inversion Valve' section shows 4 inversion valves (Circ 1 to Circ 4) allocated to M-N014 through M-N017. The 'Circuit Condenser Heater' section shows 4 condenser heaters (Circ 1 to Circ 4) allocated to M-N018 through M-N021. The 'Fans Activation' section shows 16 fans (Fan 1 to Fan 16) allocated to M-N022 through M-N037. The 'Compressors Fluid Injection' section shows 4 fluid injection points (Cmp 1 to Cmp 4) allocated to M-N038 through M-N041. The 'Circuit Three Way Valve' section shows 4 three-way valves (Circ 1 to Circ 4) allocated to M-N042 through M-N045. The 'Other Outputs' section includes a 'Cumulative Alarm' (M-N001), 'Heat Recovery Pump', 'Free Cooling Pump', 'Pumpgroup ON Cmd', 'Pump 0 - Water Pump', 'Pump 1 - Water Pump', 'AF Secondary', and 'Evaporator Heater' (Evaporator 1 to Evaporator 4). The 'Energy XT' logo is visible at the bottom center, and 'Save' and 'Exit' buttons are at the bottom right.

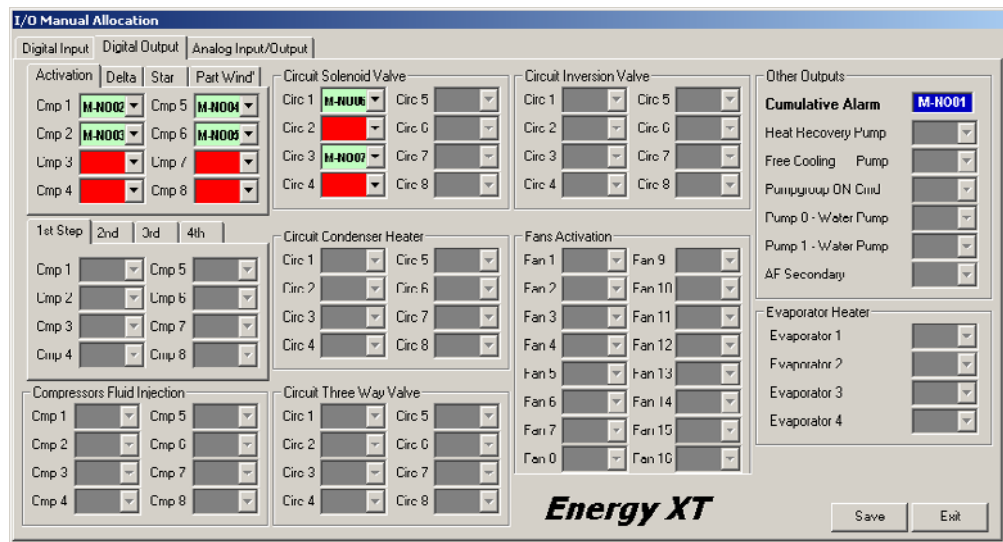
If we consider a sub-family of the example described, i.e. an example in which the default [parameters](#) EVAPORATORS_NO, CIRCUITS_NO, COMPRESSORS_NO respectively acquire the values of 2, 1, 2, the page related to the static allocation of digital inputs shows 8 digital outputs referred to the 8 compressors that need to be allocated and 4 solenoid valves to allocate, or, in other words, the same situation as above:

This screenshot is identical to the one above, showing the 'I/O Manual Allocation' window in the Energy XT software. The 'Digital Output' tab is active. The window is divided into several sections for allocating digital outputs to various system components. The 'Activation' section shows 8 compressors (Cmp 1 to Cmp 8) allocated to digital outputs M-N002 through M-N009. The 'Circuit Solenoid Valve' section shows 4 solenoid valves (Circ 1 to Circ 4) allocated to M-N010 through M-N013. The 'Circuit Inversion Valve' section shows 4 inversion valves (Circ 1 to Circ 4) allocated to M-N014 through M-N017. The 'Circuit Condenser Heater' section shows 4 condenser heaters (Circ 1 to Circ 4) allocated to M-N018 through M-N021. The 'Fans Activation' section shows 16 fans (Fan 1 to Fan 16) allocated to M-N022 through M-N037. The 'Compressors Fluid Injection' section shows 4 fluid injection points (Cmp 1 to Cmp 4) allocated to M-N038 through M-N041. The 'Circuit Three Way Valve' section shows 4 three-way valves (Circ 1 to Circ 4) allocated to M-N042 through M-N045. The 'Other Outputs' section includes a 'Cumulative Alarm' (M-N001), 'Heat Recovery Pump', 'Free Cooling Pump', 'Pumpgroup ON Cmd', 'Pump 0 - Water Pump', 'Pump 1 - Water Pump', 'AF Secondary', and 'Evaporator Heater' (Evaporator 1 to Evaporator 4). The 'Energy XT' logo is visible at the bottom center, and 'Save' and 'Exit' buttons are at the bottom right.

Schematically, this situation corresponds to the logical controller.



In this case, the digital outputs related to the logical controller are not the first ones of the sequence, as it would be logical to assume, but symmetrical sub-groups of the whole group as specified in the rules described in the figure below:



This rule must be extended to all components and types of I/Os.

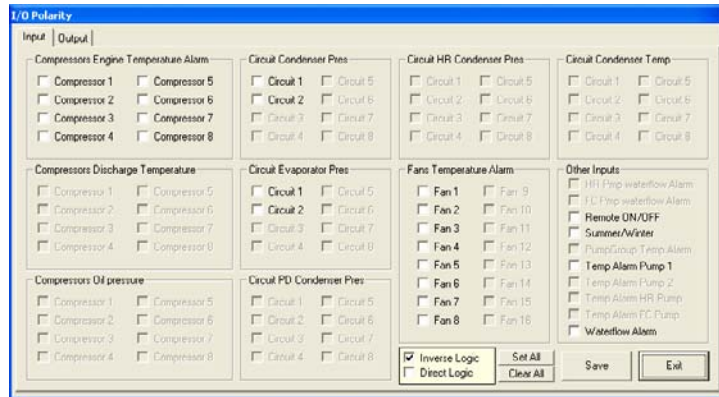
Notes

- The number of star-delta start relays cannot exceed 5 (which means that the maximum number of compressors permitted is 5). If this rule is not followed, the XTM base unit generates a configuration error.
- The BIOS can perform an OR function on several regulators (logical outputs) belonging to the same relay output, provided that they have the same polarity. This does NOT apply to part windings and to star-delta relays. The tool cannot be used for OR functions.
- External *expansions* must have a continuous and incremental addresses (i.e. without "gaps"). Tool AppLoader regards all expansion modules (including the internal one) as present, even if the Enable parameter is set to 0.

2.4.3 Selecting type of I/O polarity

The next step involves setting digital I/O polarity (remember that there is no polarity on analogue I/Os).

If "Automatic" is selected, then by pressing the "Set" button each I/O is considered implicitly with "direct" or "active high" logic and you are taken straight to the section of [menu definition](#) (see next paragraph). If manual polarity is selected, the following screen is displayed:



For each I/O you can therefore decide whether to operate using the default logic (active high) or an inverse logic (active at "low" level).

By pressing the two buttons "select all" and "deselect all" you can quickly decide whether to "select" or "deselect" all the checkboxes by pressing one button.

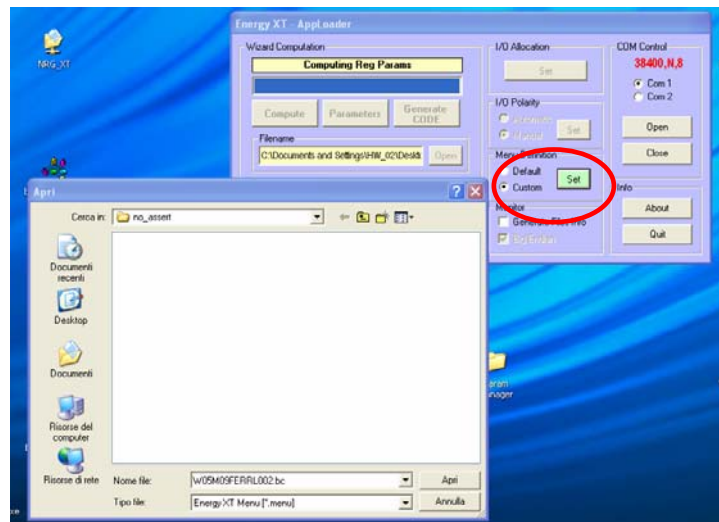
A small window with a white background reminds the user that if the box is checked "inverse" logic is used whereas if the box is NOT checked direct logic (default) is used.

2.4.4 Menu definition.

Menu definition

If the user decides to load the standard menu structure (supplied with Energy XT by the manufacturers) the "Default" radio button is enabled.

If, on the other hand, the user has built a custom menu using the MenuMaker tool, the "Custom" button must be selected. The user is asked to load a .menu file that was previously defined using the "Menu Maker" program (refer to relevant manual)



There are 2 operations to be performed when downloading a custom menu:

- Downloading of structure
This operation is performed in the step above when the machine configuration is downloaded
- Downloading of glossary
Refer to the [TextLoader](#) chapter

2.5 Download

This operation loads the previously generated information contained in the [.ahx file](#) in Energy XT.

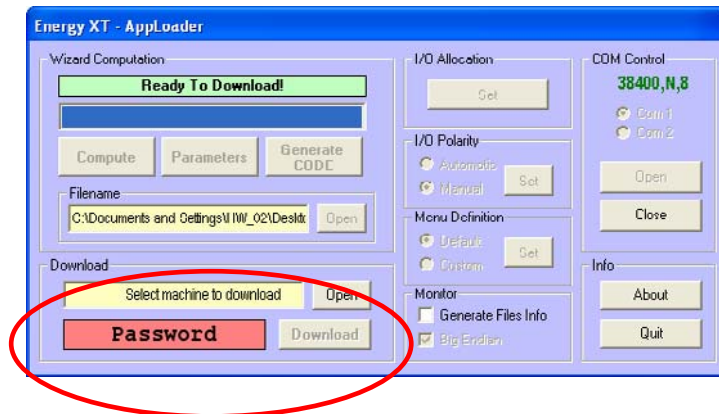
To begin writing, select the [.ahx file](#) using the "Open" button and type the password that enables operations.

2.5.1 Downloading an application developed by third parties

To use Apploader to [download](#) an application developed by third parties, the "application.ahx" and "application.epx" files must be supplied; these must be saved in the same folder (see generation ByteCode, file .ahx) before being downloaded with Apploader

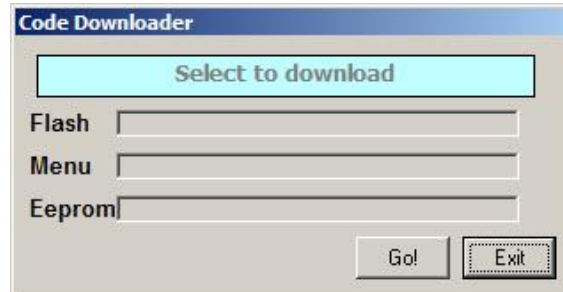
The password preset by the manufacturers is

NRG-XT



When the [Download](#) button is pressed, a window is opened to [download](#) the Flash, Menu and eeprom configuration in the XT memory.

- Flash: contains all the data/codes for the machine that has just been developed
- Menu: contains all the menus for the machine that has just been developed
- Eeprom: contains all the [parameters](#), both regulation (set points, active functions etc) and otherwise (time bands, modem strings etc).



Just press "Go!" to [download](#) the data or "exit" to quit.

Formatting will begin on sectors S0, S1, S2, S3 and S4 followed by programming.

When the operation has been completed, an operation completed message will appear.

IMPORTANT: At the end of the operation, wait about 75 seconds to allow Energy XT to programme the flash. After this time a system error will appear (refer to the chapter First Starting)

IMPORTANT: If the connection is interrupted during the data [Download](#) operation, the system must be restarted, switching Energy XT off and on again.

When Energy XT has been restarted, the keypad display will show the following error screen:

```
Err[3]
Err[4]
SELECT P=UCNET-TLV
SELECT P=BOOT
```

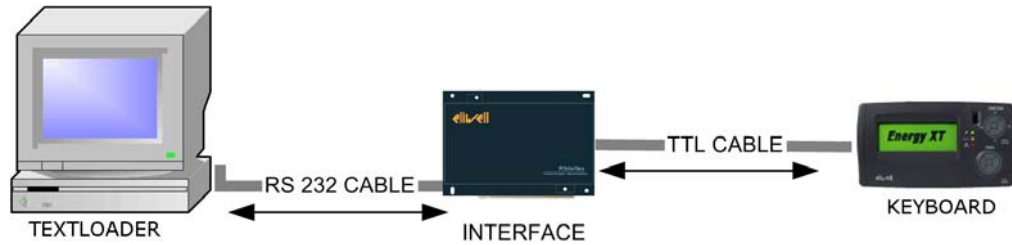
The user must select the line " SELECT P=UCNET-TLV " and press ENTER to return Energy XT to normal operating conditions. The usual procedure can then be carried out to [download](#) data.

2.6 TextLoader

This Tool is used to [download](#) the glossary for the menu structure to the memory of the XT Energy keyboard.

To do this, a 2150 PC interface is necessary;

- Connect the serial output of the PC (RS232) to the corresponding serial input on the PC interface with cable DB9-DB9.
- Connect the TTL output of the PC interface to the relative input on the back of the XT Energy keyboard

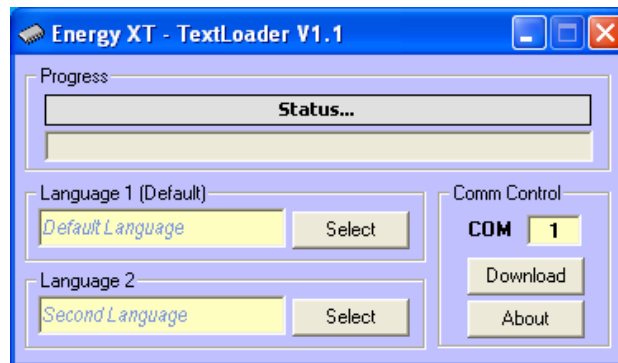


TEXTLOADER : PC with TextLoader application	INTERFACE: 2150 line PC Interface
RS232 : DB9-DB9 connection cable.	KEYBOARD: Energy XT keyboard



If we consider the back of the keyboard as in the diagram the TTL connection to use (of the 2) is the top one.

- Launch the [TextLoader](#) application



- Select the glossary file for the first language: "split1_Glossary.bin"
- Select the glossary file for the second language: "split2_Glossary.bin"
- Select the serial port (COM) used by PC
- [Download](#) the glossary using the "[Download](#)" button



3 START-UP

System Error Internal EEPROM

Downloading EEPROM [parameters](#) with AppLoader causes the deletion of all previous [configurations](#) (stored in the EEPROM memory). At the end of programming with AppLoader or after first starting of XT following programming with AppLoader, the system detects that the configuration of [parameters](#) is not congruent with the existing one, it warns the user thereof by generating a resettable System Error (**SYSTEM ERROR - INTERNAL EEPROM**)

To reset this alarm, it is sufficient to open the configuration menu (after entering the necessary password), enable and disable the configuration mode and exit from the menu.

External expansion modules

After the AppLoader result has been successfully downloaded to the Energy XT memory, it is necessary to verify whether the expansion modules are internal or external (XTH, XTE1 or XTE1/H). Expansion modules must in fact be provided with configuration data on the "types of probes" (NTC, PTC or 4-20mA pressure transducers), the bottom scales of the probes and the unit of measurement of temperature (°C or °F) used. After making sure that all the expansion modules are powered, correctly linked by means of the related dip switches (the address of each expansion module must be unique) and connected to Energy XT by means of the CAN connection, it is necessary to perform one of the following two operations:

- Establish a serial connection with tool ParamManager 3.0, force the writing of [parameters](#) after reading them, then switch Energy XT and all the connected expansion modules on and off.
- Use the keyboard to confirm all the probe, bottom scale and temperature unit [parameters](#), being careful NOT to select the configuration mode. After entering the correct password, enable and disable the configuration mode. Then, wait approximately fifteen seconds before turning the whole system off and on.

Replacing an expansion module

To replace a faulty expansion module, disable the regulation function (by holding key ON/OFF down for at least two seconds), then switch Energy XT off by disconnecting it from the power supply, after checking that all the safety timings have been met. Replace the faulty expansion module with a new one and reconnect the whole system to the power supply, after carefully verifying that all the electric connections are correct. At this point, it is necessary to transmit to the new expansion module the correct I/O configuration. This can be done by following the instructions given above or, in other words, by confirming all the configuration [parameters](#) of the replaced expansion module through the keyboard or re-writing the system [parameters](#) with Param Manager (provided that these are enabled to perform this operation and that the parameter reading/writing password is available).

Disconnect the replaced card from the power supply and reconnect it after approximately ten seconds.

Restart the regulation function by pressing holding key ON/OFF down for approximately two seconds on the keyboard.

4 STANDARDS

4.1 Standards

The product complies with the following European Union Directives:

- EU Directive 73/23/EEC and subsequent amendments
- EU Directive 89/336/EEC and subsequent amendments

and is compliant with the following harmonized *standards*

- LOW VOLTAGE: EN60335, where applicable
- EMISSIONS: EN50081-1 (EN55022)
- IMMUNITY: EN50082-1 (IEC 1000-4-2/5/8/11)
EN50082-2 (IEC 1000-4-3/4)

5 LIMITED LIABILITY

ELIWELL CONTROLS srl shall not be liable for damages originating from the installation/use of the software that do not comply with the instructions of this manual.

While reasonable efforts have been made in the preparation of this document to assure its accuracy, ELIWELL CONTROLS srl assumes no liability resulting from the information contained herein.

To the maximum extent permitted by the law, ELIWELL CONTROLS srl assumes no liability for special, accidental, direct or indirect damages (including, without any whatsoever limitation, the loss of income or profits, interruption of work, loss of data or income) originating from the use of the software or from the failure to use it, and from the supply or failure to supply technical support, even when informed of the likeliness of said damages.

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