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The Software D2000i



1. Presentation of the software

This software was developed by engineers from AnB in collaboration with professors of a high school of Mons. This software makes it possible to program, parameterize and control the house automation unit D2000.

Recall: some advantages of a house automation system

- ⇒ The opening or the automatic closing of the jealousies and hangings according to desired lighting and/or the external calorific contributions.
- ⇒ The flickering of the lights of the house, in combination with your warning system, in the event of intrusion.
- ⇒ The button " holidays " will simulate a presence when you are on leave.
- ⇒ External lighting is regulated automatically with laying down it and raising it sun.
- ⇒ The management of your lighting, heating and other applications by telephone or computer
- ⇒ Watering if it is necessary.

With Condor, you can try out all these scenarios virtually.

This software will make it possible to the designer (architect, electrician, domotician, user) to study the electric installation house automation and to test all the functions before even the construction of a building.

After agreement with the customer on the installation, the technician will be able to program the central with this same software.

The customer who wishes it will be able also to monitor his installation to him, to visualize his lighting, to regulate his heating...

2. Installation of the software

The password, obligatory for the installation of condor, is used as identifier for AnB.

- *The installation of the software requires a printer. If you do not have any, it is enough to create a fictitious printer by addition of printer.*
- *Opening of Condor: click on : C: \condor\Condor.exe or short cut office.*
- *To open an existing plan, it is initially necessary to carry out Condor then to open the plan.*
- *To create a new plan: file = > new plan.*
- *To record it: file = > to save as...*

This software is not at all competitor with the softwares of architecture as AUTOCAD but allows the insertion of an image of jpeg format like a scanned plan for example.

- Right Click on the plan => to add a basic image.

3. Construction of the plan of the building

3.1. Drawing mode; creation with the screen of the carcass work heavy castings

On the basis of plan of the architect or at the request of the customer, one can create the dwelling or the building in manner is fast (walls, gates, windows, staircase) or very detailed (Idem + opening of the gates, caricatures furniture...)

It is not necessary to take account of the scale because the distances do not have much importance.

It is advised to register the name of each part. (20 names maximum by plan)

- *To modify the text: CTRL + left Click on the text (with inserted button A).*
- *To erase the text: CTRL + left Click on the text (with inserted button A). Then erase the text, then ENTER 3x!!!*
- *To modify working: CTRL + right Click (with inserted button A).*
- *To move the text: SHIFT + left Click (with inserted button A).*

The addition of the cables (220V, 4 wire, telephone...) is not essential but is present for most perfectionist.

3.2. Design mode - programming

It is in this mode that one will insert the in- and outputs and parameterize them.

3.2.1. Definitions of the inputs and outputs

Input what, actuated for the pushbuttons, or stimulated for the detectors, causes the ordering of an output

Ex (of left on the right) cells, pushbuttons, lock, switch, sensor temperature, selector, detector, twilight, radar



Output what is ordered by pressing a pushbutton, the detection of a cell...

Ex Lamps, dimmers, leds, relay, sockets, radiators, valves...

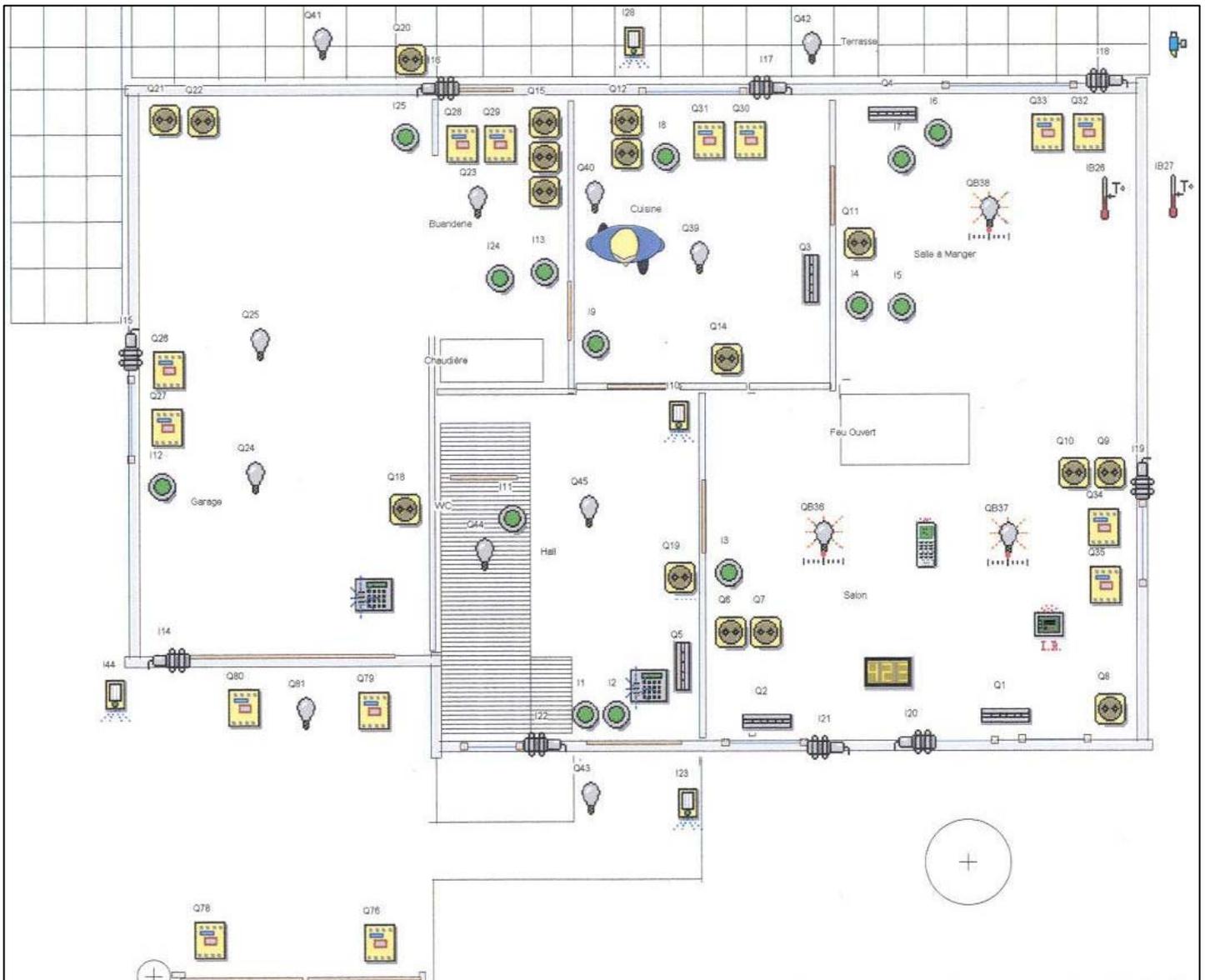


3.2.2. Placement of the tools (inputs-outputs)

Slip each element of each part at the adequate place on the plan. No cable is necessary.

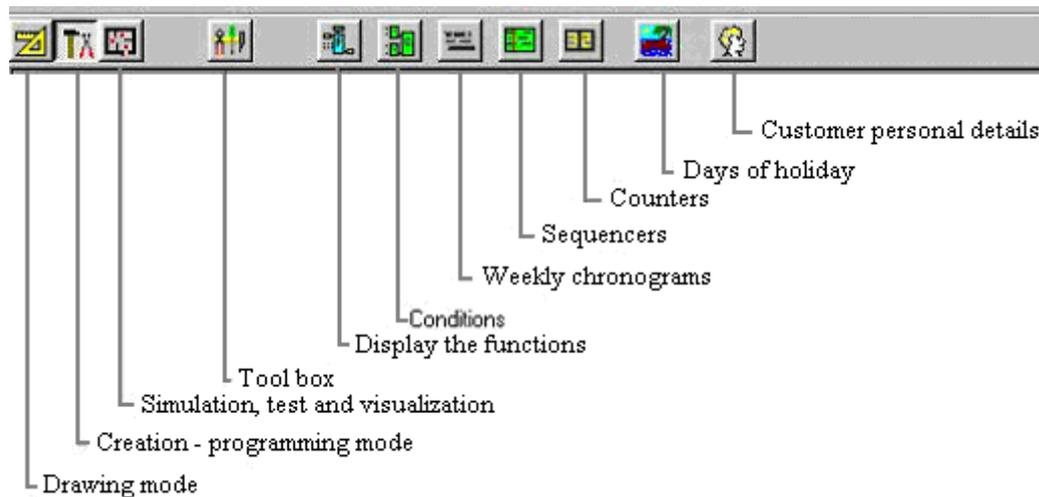
- *To deposit an object on the plan: SHIFT + left Click on the object to be deposited.*

3.2.3. Example of realization



3.3. Programming mode of the house automation installation

- ⇒ 512 steps of program
- ⇒ 24 possible functions (flickers, signal inversion, delay, extended signal...) with degree of priority.
- ⇒ 10 ambiences
- ⇒ 10 groups of outputs
- ⇒ 10 weekly chronograms
- ⇒ 20 ranges of holidays
- ⇒ 3 sequencers of 30 min at 24 hour
- ⇒ 11 counters
- ⇒ 64 conditions on functions



3.3.1. - 512 steps of program

Largely sufficient to manage in the manner the most complex any house automation installation. The program is limited only by the imagination of its user. How it is for the management of a dwelling, of a sauna or of an industrial building, Condor is with the height!

3.3.2. - 24 possible functions

To control each output, it will be necessary to allot a function to the inputs: what orders? Under which time? With which conditions?

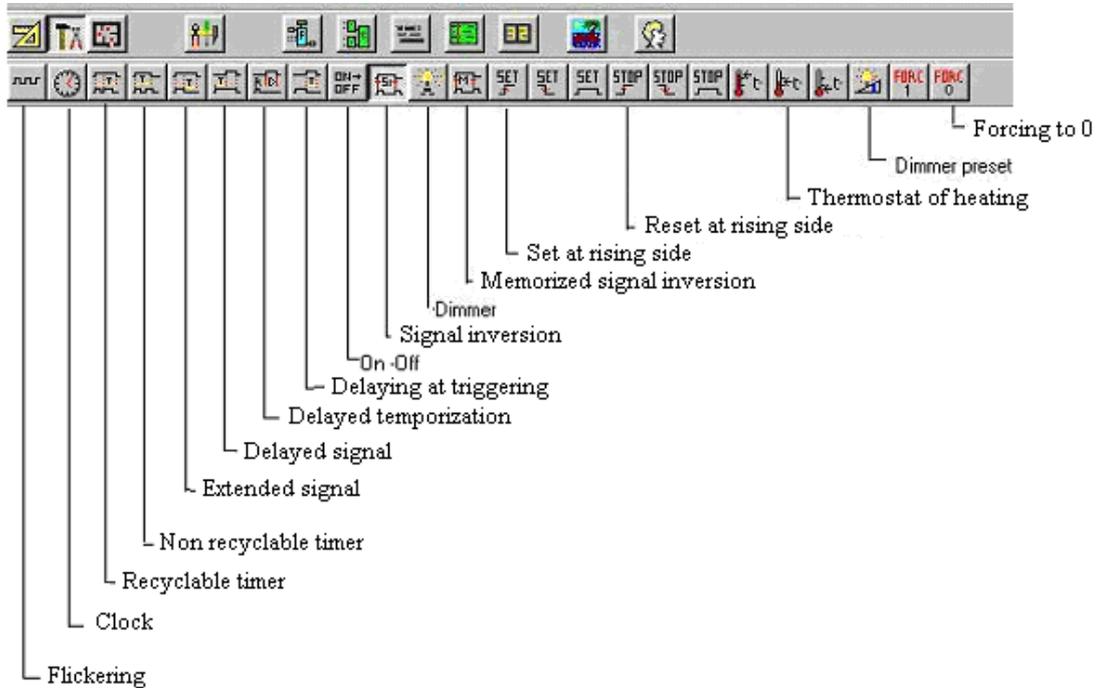
- *To reach the functions, click on the button: Post/hide functions of the bar of tools.*

a) General rule

For the whole of the functions, if a condition is required, it becomes essential for the action of the requested function. If a stop is required, it is during the cycle in progress that it is effective and not with the following cycle.

b) Priorities

The priority of the action is determined by the free choice of the functions. Here functions by set of priorities. Forcing to 0 having the undeniable priority.



c) types of push

Three types of push exist:

1. The Normal push
2. The Short push
3. The Long push

If no long push is required during the programming, all the functions behave normally (normal push).

On the other hand, if a long push were programmed for a push button, this one is effective when the signal lasts more than one second. The normal push becomes short push and is generated if the signal lasts less than one second.

All the functions launched by short push will always react to the downward side from the command. The request for a long push modifies the behavior of the functions basically.

The following functions are not taken into account by the choice of the long push on the command: Clock, ON/OFF, Forcings, extended temporization and thermostatic functions.

d) Tricks and easy ways of the functional block

- *To obtain a list of choice of inputs, outputs or conditions when a function is programmed: double click on white space*

- To put an output Q or an internal bit in input: CTRL + left click on the element
- To have a straight access and to modify an existing function, click doubles on the gray space of the building block. Idem to return behind.

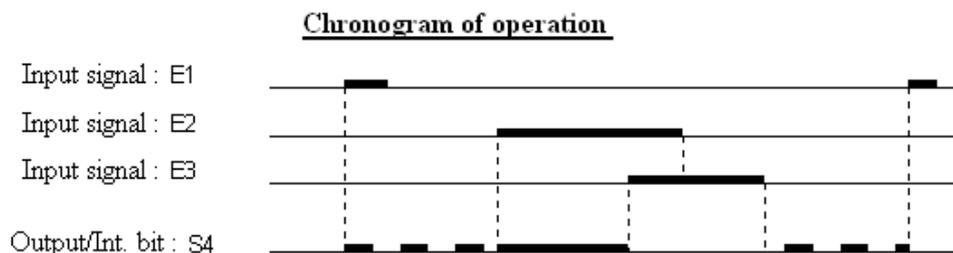
3.3.2.1. The function " Forcing to 0 "

As its name indicates it, the outputs programmed for the function of forcing will pass at the logical level desired "0" or "1". The functions of forcing have priority on all the other functions.

There are two types of forcing: Forcing to "1" and forcing to "0". By security, the function of forcing to "0" of the outputs has priority on the function of forcing to "1". This priority command is undeniable.

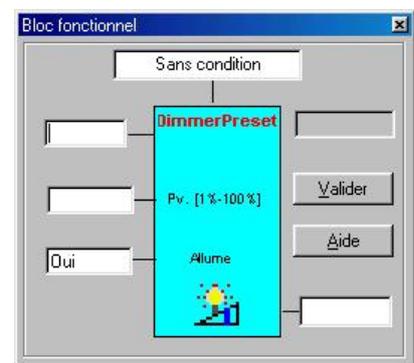
The software does not react to the long push, forcing is active as of the rising side of the request for execution of the function.

Example: Three different functions must be interpreted by a light signal S4. An input signal E1 acts on a twinkling function for a quite precise situation. The signal E2 will maintain the output S4 active as long as its signal is true (forcing to "1"). Forcing to "1" has quite priority on the twinkling function. On the other hand, if the signal E3 is true, it must imperatively bring the output S4 to the logical level "0". Having priority on all the functions, even if the signal E2 is true, the output S4 will not be active.



3.3.2.2. The function " Dimmer Preset "

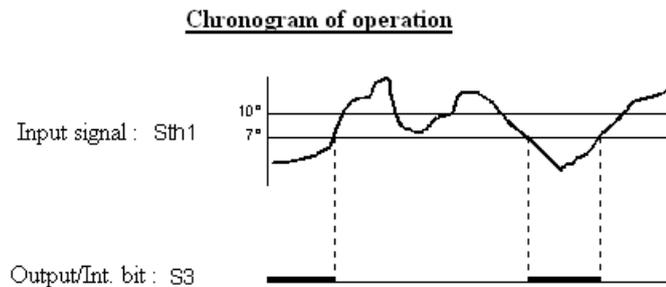
The function dimmer preset makes it possible to control the light intensity of the dimmer at a determined rate given expressed as a percentage. One determines the percentage of light intensity (1 to 100%). The option "lights (Allume)" authorizes the function to light or not the lamp. If the box "lights (Allume)" is NOT, the push on the button will regulate the intensity with the preset value, without lighting the lamp.



3.3.2.3. The function " Temperature lower than the low limit "

In this case, the thermostatic function reacts when the temperature virtually recorded on the screen of the PC, or practically on didactic hardware, is lower than the parameter of the programmed temperature.

Example : Whatever the operating mode of a boiler, this one must always be active for a temperature lower than 7°. The thermostatic probe Sth1 will act on the output S3 operating the ordering of the boiler.

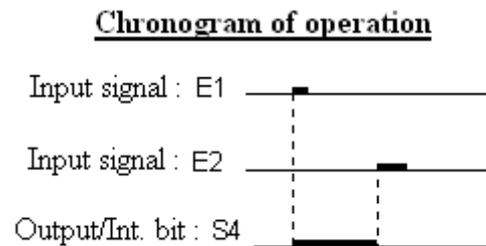


3.3.2.4. The function " Stop (reset) on rising side "

The passage of the logical level "0" towards the logical level "1" of an input signal will result in to activate the Reset function on rising side, this one acting on an output signal.

The output S4 being put at "1" by an unspecified function, the signal E2 carries out the setting to "0" of the output signal at the time of its passage at the logical level "1", that is to say with the rising side.

Example: Automatic opening of a gate (Set on rising side by E1). A race end, represented by E2, will carry out the setting to "0" of the output S4 at the time of its passage to "1" with the rising side. The gate will be thus at stop.



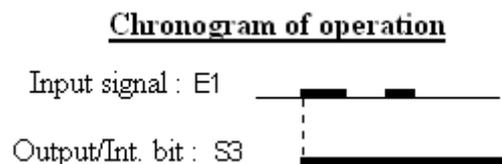
3.3.2.5. The function " Set on rising side "

The passage of the logical level "0" towards the logical level "1" of an input signal will result in to activate the Set function on rising side, this one acting on an output signal. The disappearance of the condition does not involve the setting to "0" (reset) of the output signal.

Setting to "1" of a signal at the time of the passage of the logical level "0" towards the logical level "1" of the input ordering the function.

The function of setting to "1" does not react any more on the same output as long as another function of desactivation was not carried out (avoids the redundancies).

Example: By simple push on the button E1, to activate the output S3 which will act on the opening of an automatic gate.



3.3.2.6. The function " Memorized signal inversion "

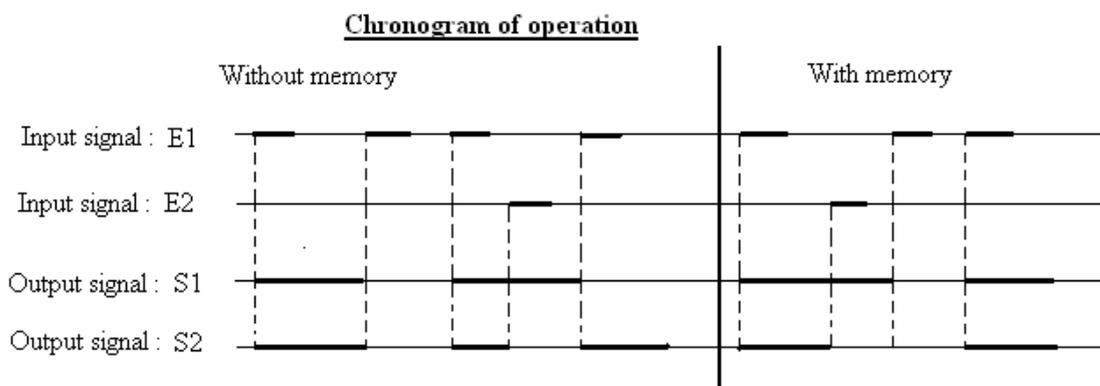
With each rising side of the input signal, one reverses an internal storage, and one recopies it on the controlled output. What implies that if this output were lit by another

ommand, the action on the push button fulfilling the function telebreaker on memory cuts or lights this output according to the last action carried out since this push button.

Example: A push button E1 controls at the same time the outputs S1 and S2. The push button E2 controls only the output S2.

- ➔ push on E2 (signal inversion): S2 switches on
- ➔ push on E1 (signal inversion): S1 switches on and S2 switches off !
- ➔ push on E1 (signal inversion): S1 switches off and S2 switches on ...

- ➔ push on E2 (signal inversion): S2 switches on
- ➔ push on E1 (memorized signal inversion): S1 and S2 switch on
- ➔ push on E1 (memorized signal inversion): S1 and S2 switch off



3.3.2.7. The function " Dimmer "

The function dimmer allows the ordering of an output whose light intensity will vary according to the analog result obtained with the central (or virtually on the screen). This function is designed to receive in parameter of input a push button of the type NO or any other impulse signal.

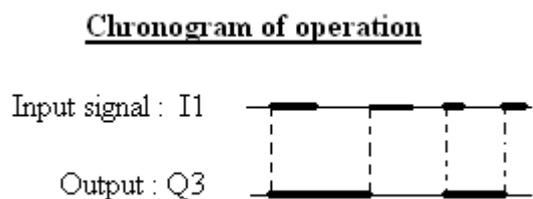
A short pressure on the key makes it possible to switch on or off the light (the dimmer functions like a telebreaker). A long push orders the luminous variation of the output.

The duration of the cycle is of more or less 8 seconds for the tuning of the lamp, then the smell of luminous variation is reversed.

Without preset, the dimmer engages lighting with the last controlled value. The last level of illumination was memorized.

3.3.2.8. The function " Telebreaker " or "Signal Inversion"

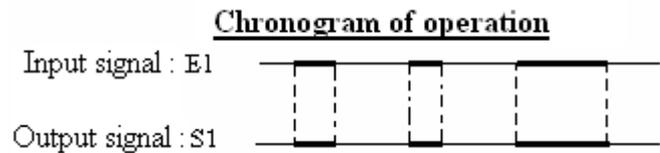
Function successively allowing switching on and off a point of lighting starting from one or more places. With each rising side of the input signal, one reverses the controlled output. What implies that if this output were lit by another command, the action on the push button fulfilling the function telebreaker cuts this output.



3.3.2.9. The function " ON - OFF "

The function On - Off is not related to equality, but reacts to the rising and downward sides from the input which orders it. Nevertheless, it seems to react as being a traditional unipolar switch.

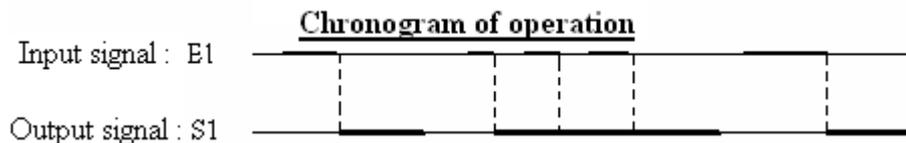
The output is set to 1 at the rising side of the input. It remains true as long as the input is true. It falls down to 0 at the time of the downward side of this same input. The priority commands remain of application for the activation or the deactivation of the output.



3.3.2.10. The function « Delaying at triggering »

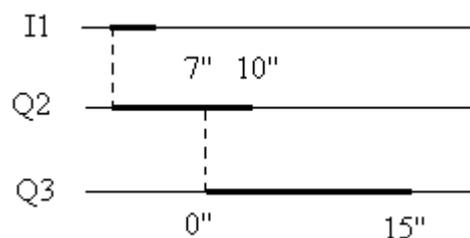
It makes it possible to activate a signal as from the moment when the state of the input signal ceases being true. The output is then activated for the memorized duration.

Example : extractor toilet : one wishes to ventilate the WC during a certain time whereas the occupant left and that there is no more lighting. The input E1 represents the state of the switch and the output Q3 represents the operating condition of the extractor ordered by the above mentioned function.



3.3.2.11. The function " delayed Temporization "

The function of delayed temporization which can be recycled makes it possible to activate a signal if time is higher or equal to the beginning of the temporization programmed for the delay to the interlocking. The duration is then activated for the memorized duration. If the input is reactivated during the operating time of the temporized output, this one will take into account the state of the input signal and will prolong the operating time of the output by effect which can be recycled. The unit of time is the second (0 to 999).

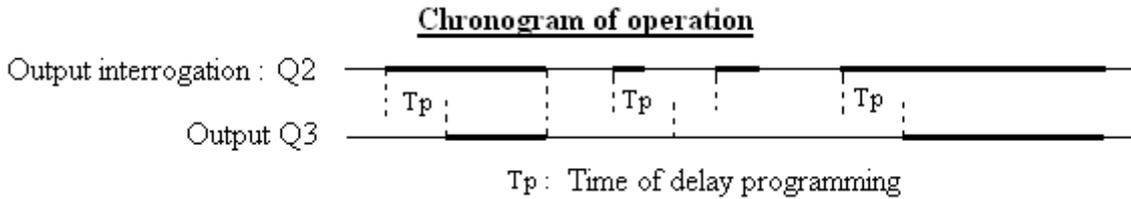


Example : for the lighting of a long corridor, one activates a lamp (Q2) by a push button (I1) during 10 seconds. Further in this corridor, another lamp (Q3) must be activated 7 seconds after having lit the first lamp (to have a recovery of lighting) and must die out 15 seconds later.

3.3.2.12. The function "Delayed Signal"

The function of marking time delayed with the interlocking makes it possible to activate a signal after a certain time and to maintain active it as long as the input is itself activated.

Example : for the lighting of a long alley, one activates by telebreaker a lamp represented by Q2, itself must order with delay one second lamp Q3 placed further in this alley. These two lamps will remain lit as long as the extinction of the first is not required.



3.3.2.13. The function " Extended Signal "

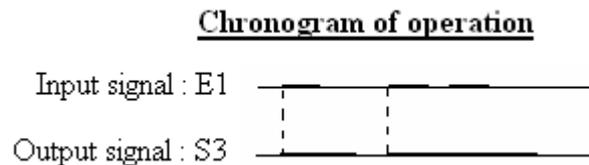
The function of extended signal allows as its name indicates it to prolong the duration of the input signal during a parameterized time.

The output is put at "1" as long as the input is true. With the downward side of this input, the memorized duration is decremented. The signal falls when programmed time is past.

If the input is reactivated during the operating time of the temporized output, this one will take into account the state of the input signal. In this case, the end of the duration of marking time will be decremented starting from the last downward side of the input.

The unit of time is the second [0 to 999]

Example Let us use the infra-red detector of alarm to light a part automatically when a person penetrates there. Lighting should not die out when the person leaves the part for a few minutes or possibly when it remains motionless there. In order to ensure the correct operation of lighting, it is enough to prolong the signal of the detector during a few minutes.

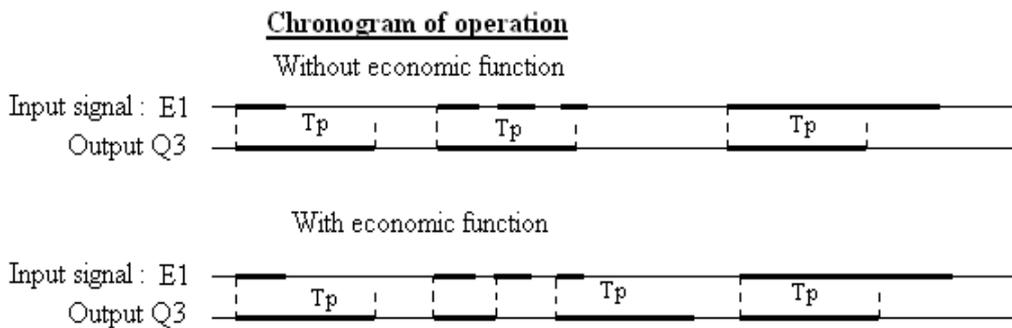


The input E1 represents the state of the detector and the output S3 represents the operating condition of the lighting ordered by the above mentioned function.

3.3.2.14. The function "Non Recyclable Timer"

The function Non Recyclable Timer allows as its name indicates it to activate a signal for one given duration but it does not allow the prolongation of the signal by new push on the input which orders it. On the other hand, one can program it in an economic and no economic way.

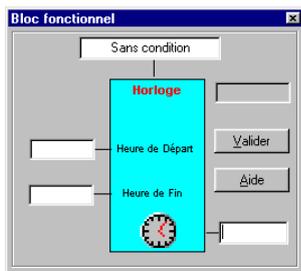
Example: One wishes to light a lamp Q3 during a programmed time. In no case the operating time may be modified. It will be necessary to await the extinction of this one before being able to renew the command by the push button. With the economic function, another impulse on the input will activate the economic function and the lamp will die out.



3.3.2.15. The function "Recyclable Timer"

The function Recyclable Timer makes it possible to activate a signal for a programmed duration and it allows the prolongation of the signal by new push on the input which orders it.

3.3.2.16. The function " Clock "

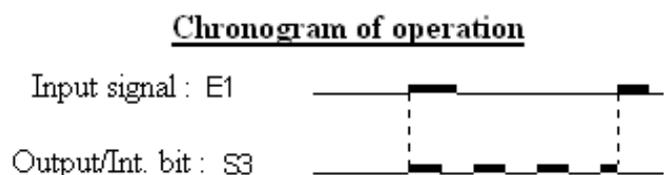


Set of the chosen output at the definite hour with or without conditions.
Reset of the output at the definite hour or by priority command.

3.3.2.17. The function "Flickers"

Allows to activate and deactivate alternatively an output in the near future.

Example: One wishes to make flicker the lamps when alarm starts. The input signal E1 is the interlocking of alarm. As of the interlocking, the lamps start to flicker until the code of alarm is introduced.



3.3.3. - 10 ambiances

This option determines ambiances and figures or scenarios of command. It reacts like an internal bit, but it can be ordered by the keyboard.

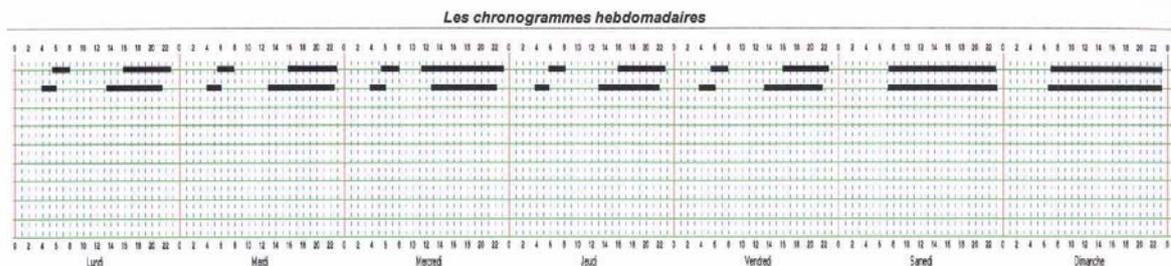
3.3.4. - 20 groups of outputs

One can group the outputs so as to light several lamps or all the radiators at the same time. The first ten groups can have a role ON-OFF; the ten other groups are only resetting's. They have the same priority as a telebreaker. An output can belong to several groups.

3.3.5. - 10 weekly chronograms

One defines in it the time ranges which will engage the weekly bits.

- To create a weekly chronogram, left click on Weekly1, then to select the time ranges.
- To select a time range, right click on this range.



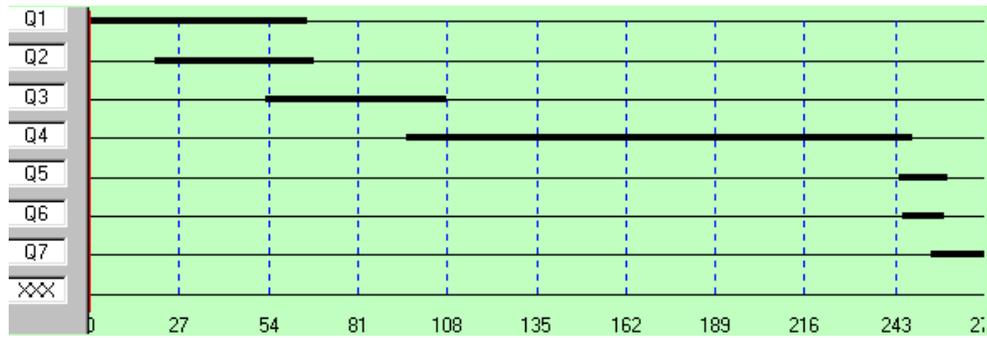
In this **example**, one defined 2 weekly ranges, which will be useful for the heating: the first is appropriate for a schedule of work from 7h30 till 16h; the second from 6h till 14h.

3.3.6. - 20 ranges of holidays

One will be able, after having chosen the dates, automatically to carry out the sequences during the days of holidays. That makes it possible to annually program the various vacations of the users.

3.3.7. - 3 sequencers of 30 min at 24 hours

The best example is the simulation of presence (when one misses...). One creates a sequence of lighting of the lamps in the editor of sequences. By pressing a pushbutton with a function clock and/or the condition of twilight, the sequencer will engage at the preset hour and will begin the canned lighting of the lamps. The function ON – OFF will make it possible to put an end to the sequence if one is back with the end of sequence. By defect, the sequence is 180 minutes.



- *To select the outputs to be controlled: right click on white space, then left click on same space.*
- *After definition of each time range, not to forget to validate this range.*
- *To select an already definite time range: right click on this range.*

In this **example** one notices in X-coordinate time (in minutes) and in ordinate the outputs to be ordered. Here, it is a sequence of lighting of lamps: thanks to the function timer, one engages it at 18h32 and that during approximately 269 minutes. One notices the successive lighting of the lamps of the kitchen (Q1), the dining room (Q2), of the living (Q3), the small lamp of the living (Q4), the hall (Q5), the bathroom (Q6) and finally of the bedroom (Q7). It is a real situation: the kitchen is occupied and the dining room until 19h40, one passes then in the living for a small evening TV until 22h35. One passes by the hall to the bathroom and finally the bedroom. One falls asleep at 23h01...

3.3.8. - 11 counters

The editor of counters gives you the possibility of programming a counter which was placed beforehand on the plan. It is a significant element if one wants to create several ambiances with one pushbutton. Only the conditions worked out in the editor of conditions make it possible to parameterize the counter. For **example** :

Push 1 on button: one lights the lamps of the living at 40%

Push 2: 70%

Push 3: the lamps of the living are switched off.

- *You must use the conditions if one wants to parameterize a meter.*
- *To visualize the functional state of an existing counter : double click on this one (in the block " operations on the counters")*

And at any time, one can, by long push on a button with a traditional function " dimmer ", regulate the light intensity of these lamps and by short push, to light and extinguish those.

3.3.9. - 64 conditions on the functions

The editor of conditions allows to read and program any logical equation. He also makes it possible to check and visualize the truth table of an equation. The principal conditions are taken again there : and, or (non)-exclusive, equivalence... One can put these conditions cascades about it (to 8 overlapping inputs) and insert them in any function. This function will be effective only if the condition is true.

- *To carry out a condition, it is necessary to be in programming mode*
- *It is impossible to erase a validated condition, but you can modify it.*

3.4. Simulation, tests and visualization mode

- *In simulation mode, one can directly visualize the functions related to an object on the plan: CTRL + right click on this object.*

3.4.1. Interactive virtual tests

The program can be conceived and simulated in the environment of Condor, without connection preestablished with the central. Thanks to the simulated hour, one can advance until the desired hour for a faster visualization of the weekly chronograms...

3.4.2. Intuitive addressing and transfer of the program in the house automation main unit

The designation of the elements of inputs is enough to carry out addressings (no need for location and complex identification).

On the structure of addressing (parameters = > addressing structure) are the icons of inputs-outputs. They all are vertically aligned. The inputs will be placed in the left-hand column and the outputs in that of right-hand side.

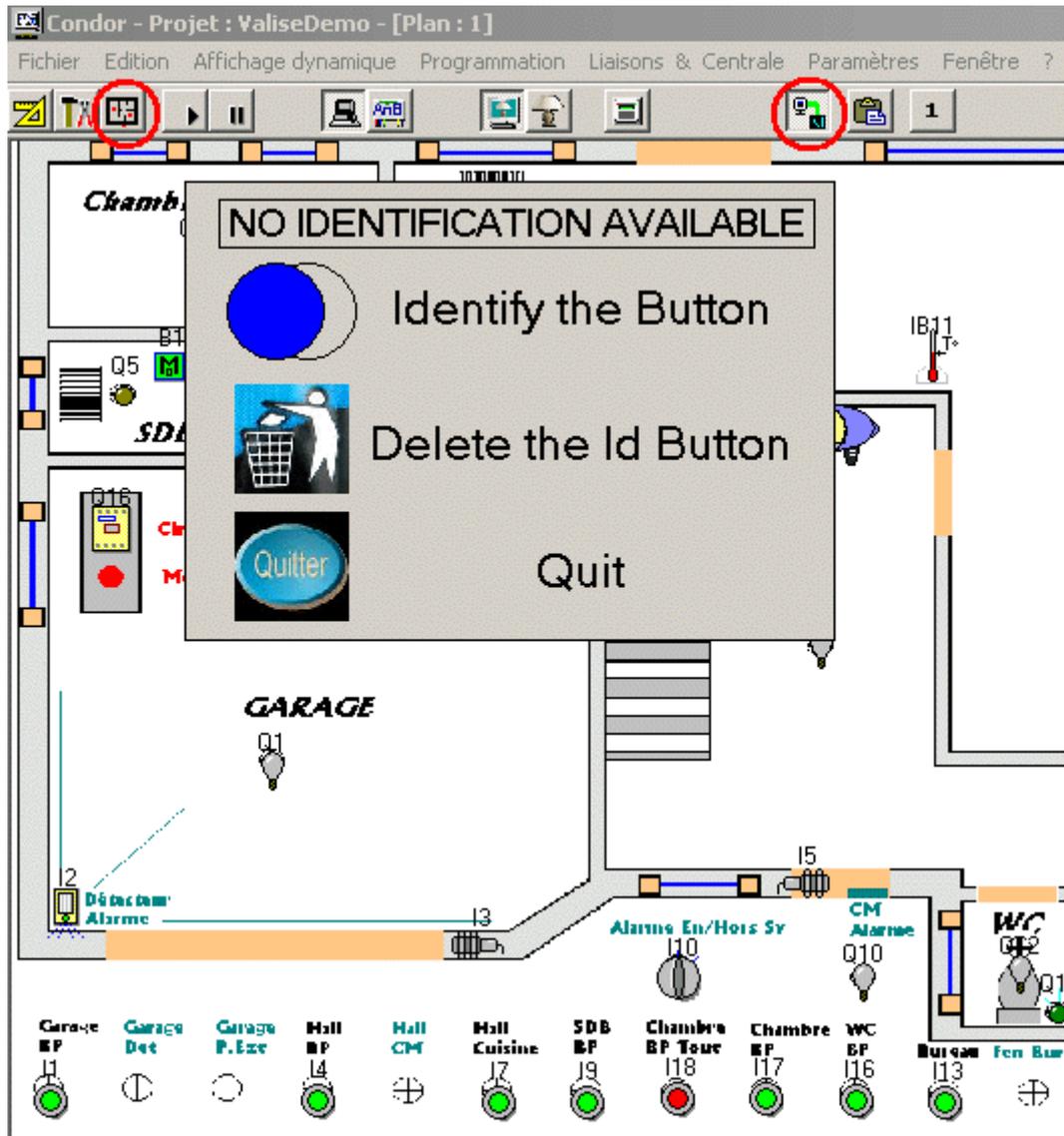
One must initially start with the addressing of **alarm** : all the magnetic contacts, detectors... must be in the addressing of alarm. It is then necessary to accept while clicking on "end of the addressing of alarm".

For the inputs on bus RS485 n°1 (EXIBUS for temperature sensors or EXI-16CT for sensors, day/night sensors...), one places oneself in "intuitive mode on site" (connection & central = > intuitive addressing on site). This mode makes it possible to display any variation of the system in the program by boldfacing the stimulated input. One will press on each pushbutton of the building. For each push, the program recognizes it and blackens the physical position that it occupies. The pushbutton for example was cabled in EXI 2 input 5. One then will slip the pushbutton corresponding present into Condor in the second input card at position 5. And so on for the remainder of the pushbuttons. Similar step for the detectors. They are excited and they are directly recognized by the program, if they were well cabled.

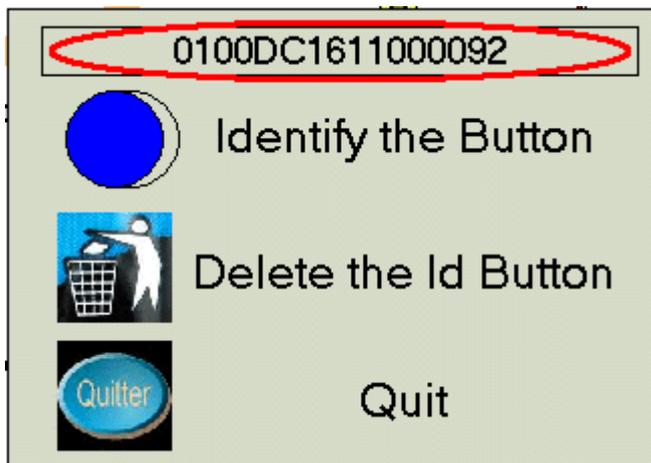
For the inputs on bus RS485 n°2 (EXICENT for push buttons), you must leave the intuitive addressing and be positioned like this :

Be placed in « Test Simulation and Visualisation », be in connexion with the panel. And to address the push buttons, push CTRL + LEFT CLICK on a button from the plan, a window opens, then you have to push on the button of the installation corresponding with the one programmed.

See infra.

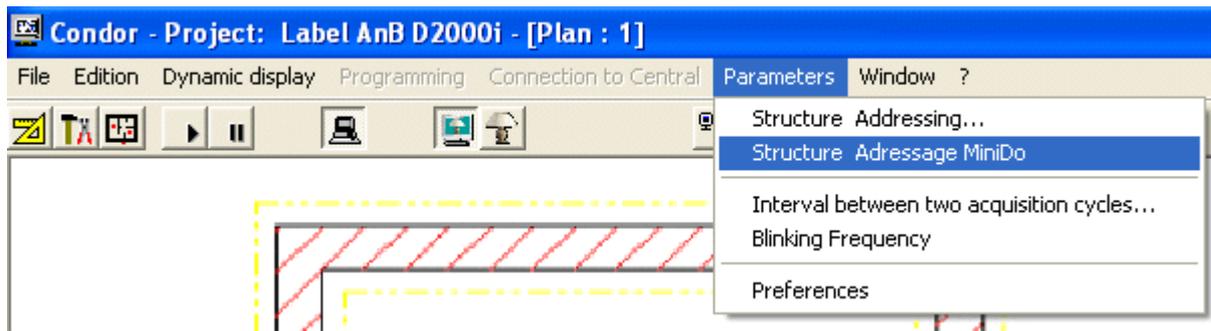


Afterwards, when you come back CTRL+ LEFT CLICK on an addressed button :



You can now see the full identification of the button. You can delete this identification or close the window with « Quitter ».

It is also possible to display the completed addressing of the push buttons :



It is advised to leave free approximately 2 inputs per card for an unspecified future addition.

Concerning **the outputs**, a right click on "Supply and central" enables us to add a card of output. As for the input cards, one will leave 1 or 2 outputs of free per card for the future. One will gather dimmers (EXO-DIM), the "normal" lamps (EXO8-220), the relays of shutters (EXO8-DOMO) ...

- *Before transferring the program towards the central, **do not forget to erase the unused functions**. If there is more than 4 functions not used of at a stretch, the program could not function correctly; indeed, it will stop at this precise place and will not continue (Menu programming = > erase the unused functions).*
- *It is advised to carry out a complete erasure of the house automation main unit before returning the program inside. A time of waits 10 seconds is recommended.*
- *The sending in the central takes approximately 60 to 90 seconds.*
- *It is essential to test the pushbuttons after the sending in the central to note the possible programming errors.*

3.4.3. Technical management and interactive supervision

Condor carries out an interactive supervision of the installation by making it possible to you to take of it control (parameter setting, programming, and breakdown service).

Condor files the behavior of the installation by offering to you the possibility of an intelligent management of energy on the basis of real statistical observation and allows predictive maintenance.

3.5. Constitution of the file customer

Once the program is finished and the checking is simulated, it is possible to give to the customer a true file on his future house automation installation. This impression includes/understands inter alia the plans, the list of the sorted functions, the list of the hardware and the estimate (it is advised to print the plans with share). The customer will give his assent by affixing his signature. For a possible change of system requirements house automation, one will be able to make pay the customer the hours spent to the reprogramming.

It is also a very good tool for the installer who will be able to very easily locate thanks to the data "customer" and with the structure of addressing. It will be able to constitute a file for each customer, guaranteeing the agreement of the two parts relating to the estimate.

