REMOTE CONTROL SILVER
USER MANUAL
Version 1.1.x

Date: 2008/03/31

Audemat SA – Audemat INC

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1. INTRODUCTION

1.1. General information

1.1.1. About Audemat

25 years of experience in the field have enabled the Audemat Group to come up with a complete range of devices, both for monitoring and for measuring AM, FM, TV and DVB.
The range consists of embedded dynamic measurements, broadcast quality and continuity monitoring (managing complex sensors, communication, centralization and interactivity), RDS data encoding and FM and TV signal broadcasting/re-broadcasting.
The Audemat Group only offers products with strong technological value and which integrate functional innovation.

Since 2000, the Audemat Group has won 11 Awards at NAB for its innovative products.

The head office is in Bordeaux Mérignac (France).
The Audemat Group has a subsidiary company in the United States, based in Miami (Florida).

1.1.2. About the Remote Control Silver

The Remote Control Silver, the product you have just acquired, is a system enabling analog and digital input/output monitoring and remote management. Thanks to this device, you will be able to monitor 16 digital inputs, 8 analog outputs AND 8 relay outputs, and have access to one serial port.
All devices linked to the Remote Control Silver are accessible with a single telecommunication line (Ethernet, standard telephone line, GSM…).

It can be integrated into a global system of supervision comprising event centralization with the Broadcast Manager (see site www.audemat.com).
ScriptEasy, the integrated software, offers a user-friendly graphic interface for configuring scripts and managing their automatic action (for more details see the ScriptEasy manual on the website www.audemat.com).

1.2. Before beginning

Make sure that the power supply voltage is the one indicated at the rear of the equipment (100/240VAC)

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2. PRODUCT PRESENTATION

2.1. List of included accessories

In your package, you should have received:

- 1 power supply cable
- 1 straight RJ45 cable (A letter)
- 1 crossed RJ45 cable (B letter)
- 1 folder including a CD-ROM, a quick start, a control quality and a customer survey

2.2. Technical specification

General features:

Dimensions	1U
RS-232	1
USB	4
Port Ethernet	2 (1 reserved for future expansion)
Power Supply	100-240VAC Full range – 47-63 Hz

Operating conditions

Humidity	0 to 95%
Temperature	0° to 45°C; 32° to 113°F

Power supply input of the equipment

Power supply	115-230VAC – 50-60 Hz

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2.3. Front panel

➢ LEDs on the front panel:

- **RUN:**
  On: Normal operation
  Off: the Remote Control Silver is turned off

- **HDD:** hard drive activity

- **ON**:
  On: the Remote Control Silver is turned on
  Off: the Remote Control Silver is turned off

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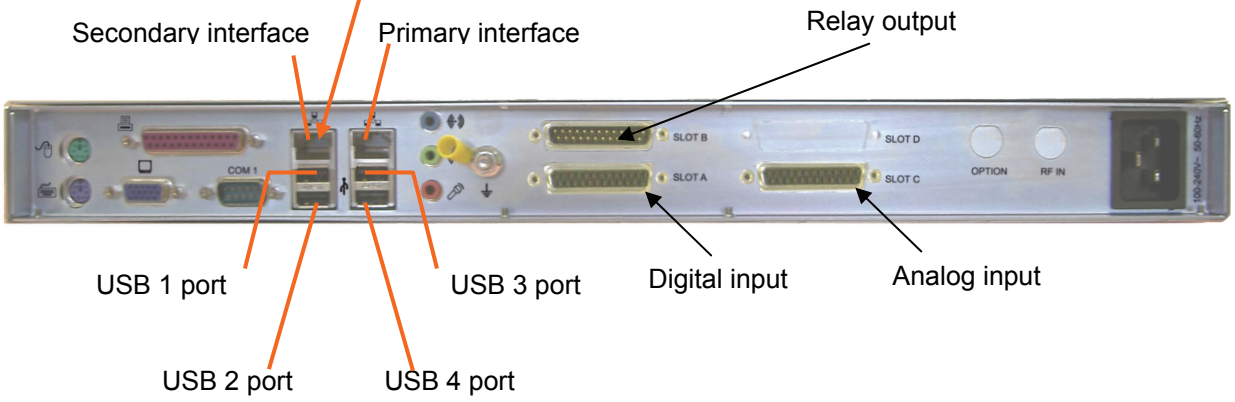
2.4. Rear panel

A Straight RJ45 Ethernet cable: for network
or
B Crossed RJ45 Ethernet cable: for direct connection to PC



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2.5. System

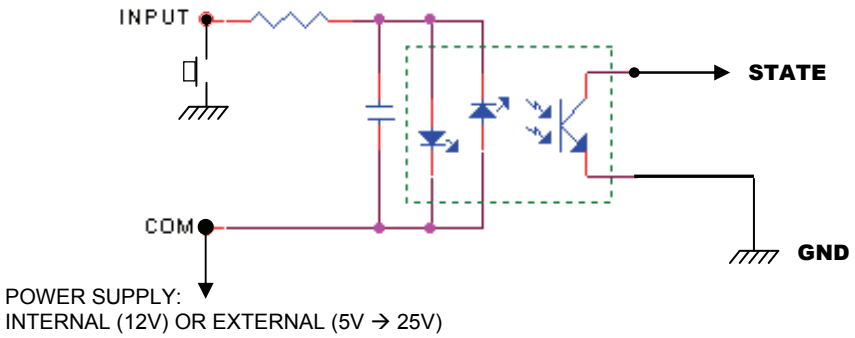
- 12 available slots

Interface type	Analog	Digital	Relay	Port RS232
Number of boards	1	1	1	1
Number of I/O per board	8	16	8	NA

2.6. Hardware configuration

2.6.1. Digital inputs module

This module provides 16 digital inputs on a SUB-D 25 female. Inputs are designed to be supplied with voltages between 5V and 25V in either positive or negative polarity.



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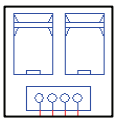
➢ **Internal power supply mode:**

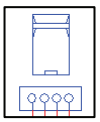
Two jumpers shall be installed on the selected pins. In this configuration, each input's COM signal is connected to internal ground and the external common is connected to internal 12V power supply.



To activate an input, contact has to be established between external common and the input.

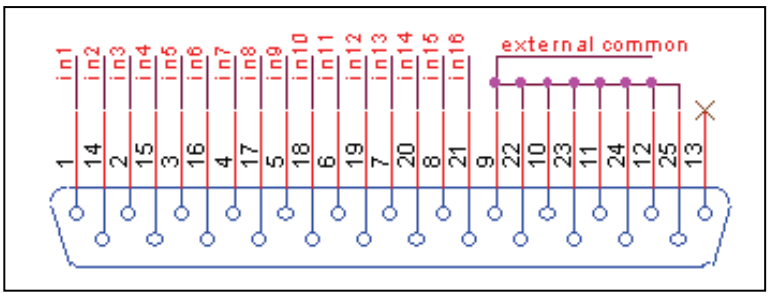
➢ **External power supply mode (from 5 to 25 V):**

Only one jumper in the middle of selected pins. Each input's COM signal is connected to external common



One side of the external power supply shall be connected to external common, the other one on each input to be activated.

➢ **Pin out:**



External common is present on pins 9,10,11,12,22,23,24 & 25.

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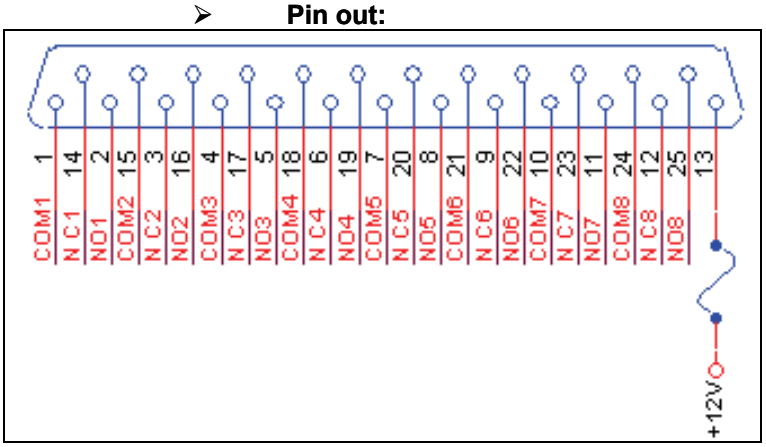
2.6.2. Relay outputs module

This module provides 8 relay closures on a SUB-D 25 male. For each output, common, normally opened and normally closed contacts are provided.
Internal +12V power supply is provided on pin 13.

Each circuit can support 5A@ 125V

➢ **Pin out:**

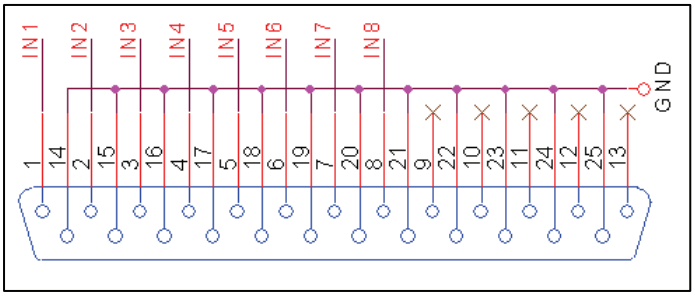


2.6.3. Analogic input module

This module provides 8 analog inputs on a SUB-D 25 female.
Inputs are designed to measure voltages up to 50V. The measurement range for each input is selectable by software within 4 ranges.
For each input, the high level alarm and low level alarm are programmable.

Input's impedance: 100Kohms
Ranges: 0-5V, 0-10V, 0-25V & 0-50V.
ADC's resolution: 12 bits

➢ **Pin out:**



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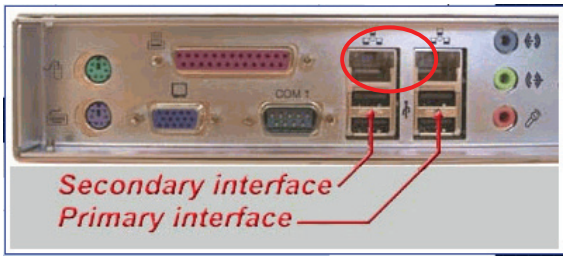
3. STARTING UP THE STAND ALONE REMOTE CONTROL SILVER

3.1. Connection

Connect the equipment to the power using the power supply cable.

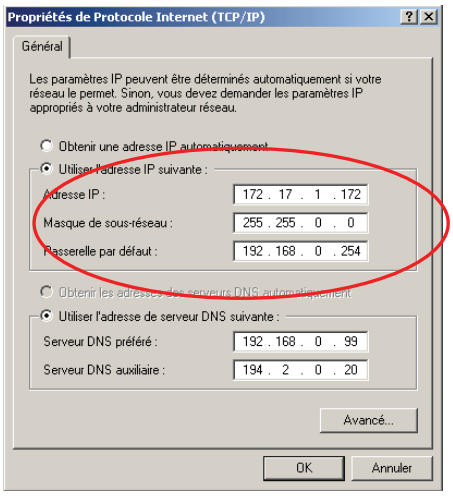
Connect the Ethernet cable on the rear panel (crossed for direct connection) of the Remote Control Silver by connecting it on the secondary interface of the equipment; use a straight cable for a switched connection.



Configure the PC IP address in the 172.17.2.xx range (for instance 172.17.2.1)/ Netmask 255.255.0.0

- This is done by navigating to:
  Control panel/Network and Dial-up connections/local area connection/ Properties

- Click on “Internet Protocole (TCP/IP)” in the list and click on “properties”, then enter a PC address.



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3.2. Configuration

⇨ **From now on, the configuration can be done using the embedded website over Ethernet and Internet networks.**

Open a web browser (Internet Explorer, Mozilla…) and enter the address 172.17.2.172.
The default login and password are “Admin” and “admin”.

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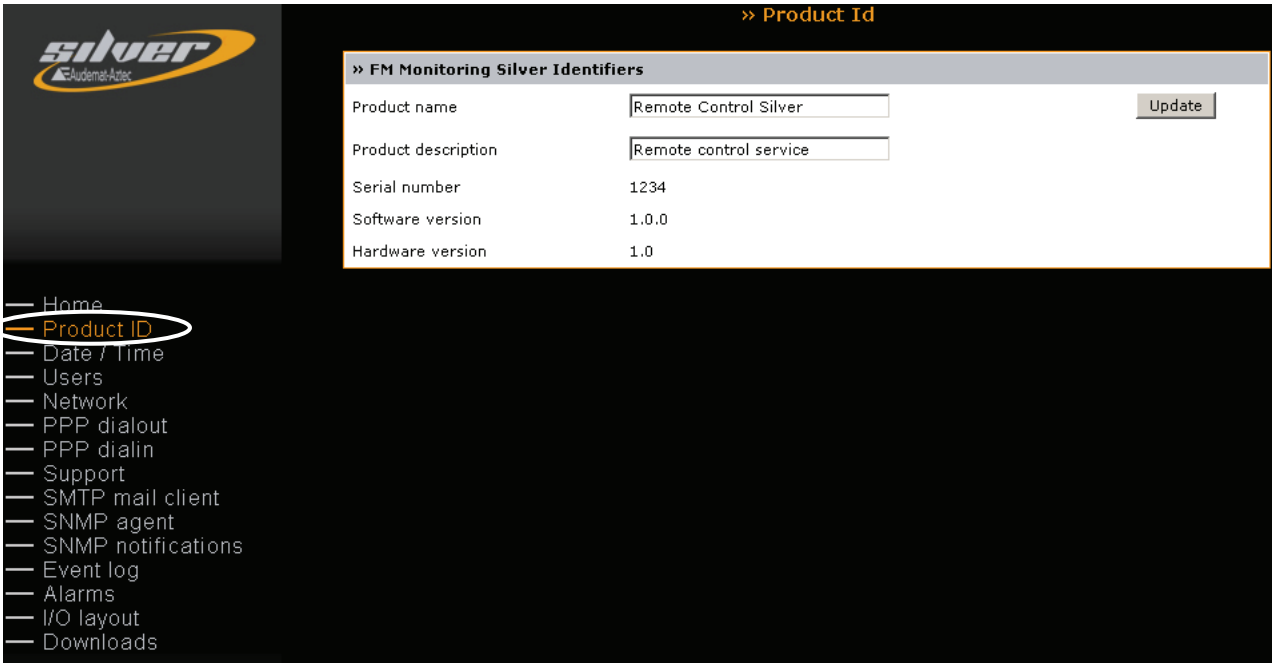
4. THE EMBEDDED WEB SITE

The quick links on the left side of the page will enable easy navigation to the areas you want to change or analyze.

4.1. Product Id's



On this page of the embedded website, the user can:

- Configure:
  - Product name: it can be used for connecting to the equipment from the java application. It is therefore recommended to use a unique and easily recognizable name.
  - Product description (optional)
- View:
  - Serial number
  - Software version
  - Hardware version

Note: whenever the user enters new parameters, he/she must click on "Update" to save the changes. This applies to all Remote Control Silver parameters.

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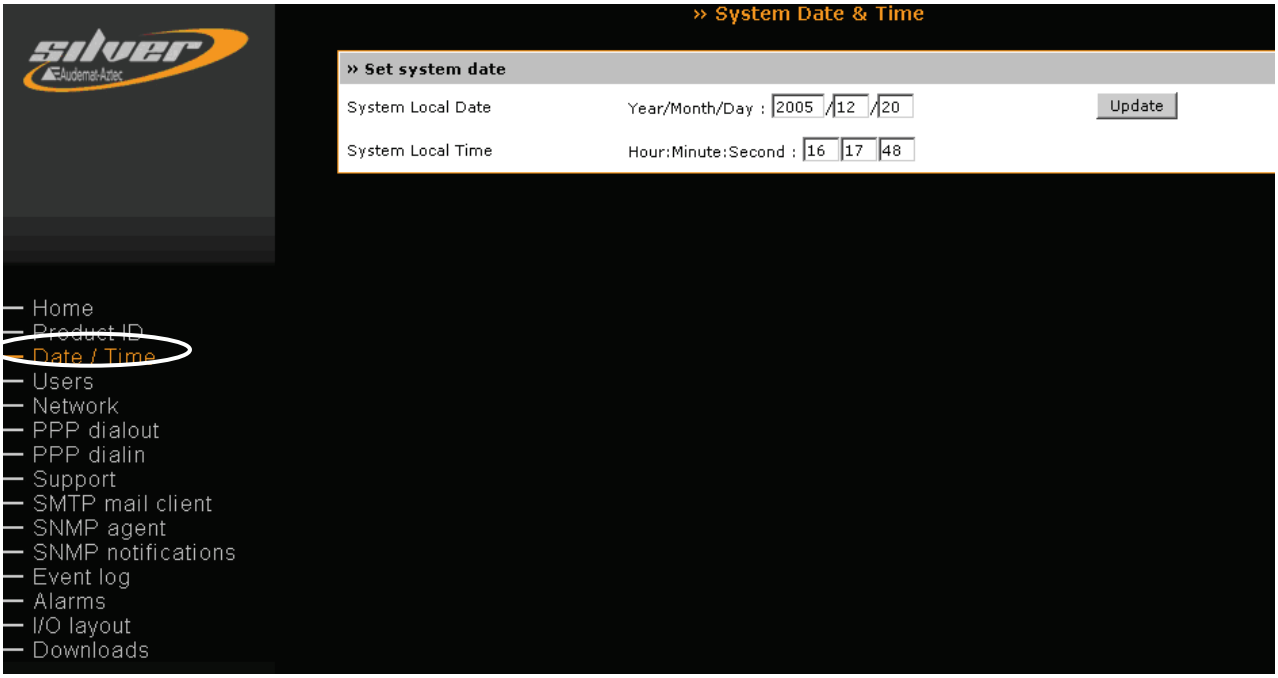
4.2. Date / Time



- "Set system date": date and time update.

The user may enter the date (year/month/day) as well as the time (hour/minute/second).

- "Set system time zone": updates the geographical time zone

The user selects the geographical zone from the list. Important to have this set correctly when using an NTP server.

- "Network Time Protocol": NTP update

The user can enter a time server address to update the equipment's internal clock automatically.
Example: 192.88.30.1

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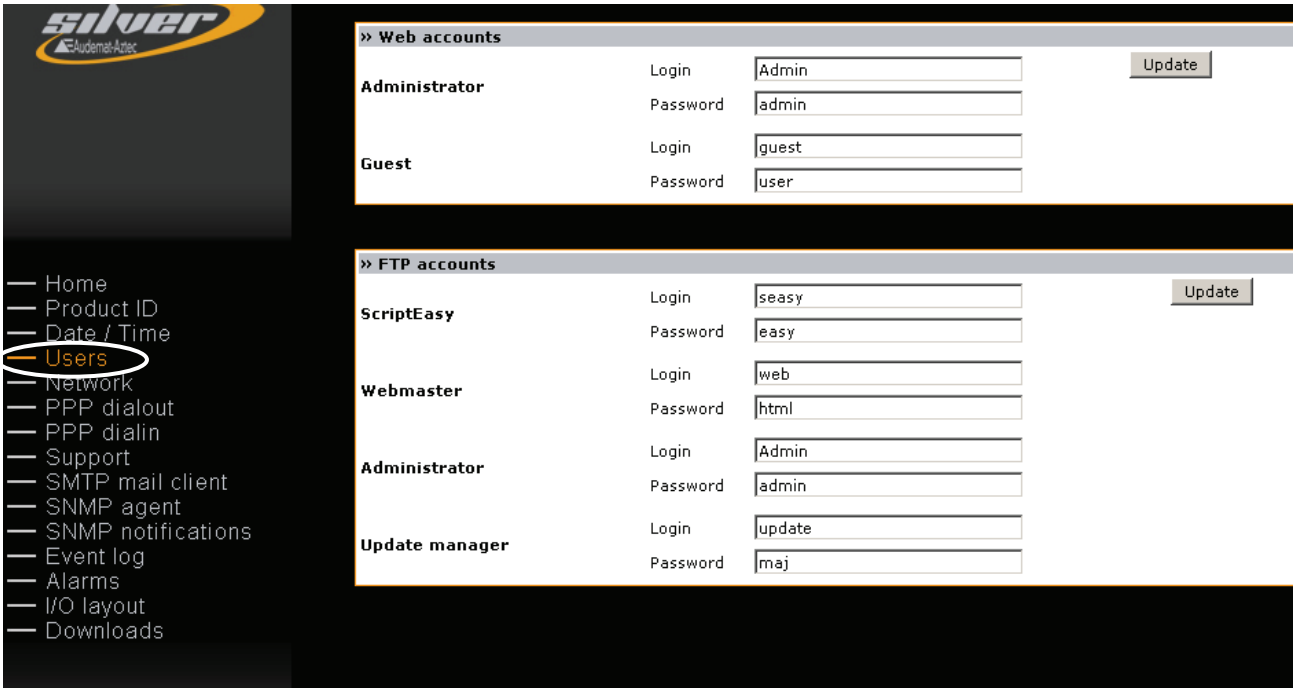
4.3. Users



- **Web accounts:** there are 2 user levels on the equipment: Administrator and Guest.
  - "Administrator": any user with the Administrator level has the possibility of changing any of the parameters.
  - "Guest": a user connected with the Guest level will be able to view measurements and settings but will not be able to change any configuration or settings.

- **FTP accounts**:
  - "ScriptEasy" account: access to downloading a script into the device with ScriptEasy.
  - Webmaster account: access to HTML pages. The Webmaster can personalize the embedded web pages (for example, by inserting company logos).
  - Administrator account: access to the equipment's entire directory.
  - Update Manager account: access to the equipment's update directory.

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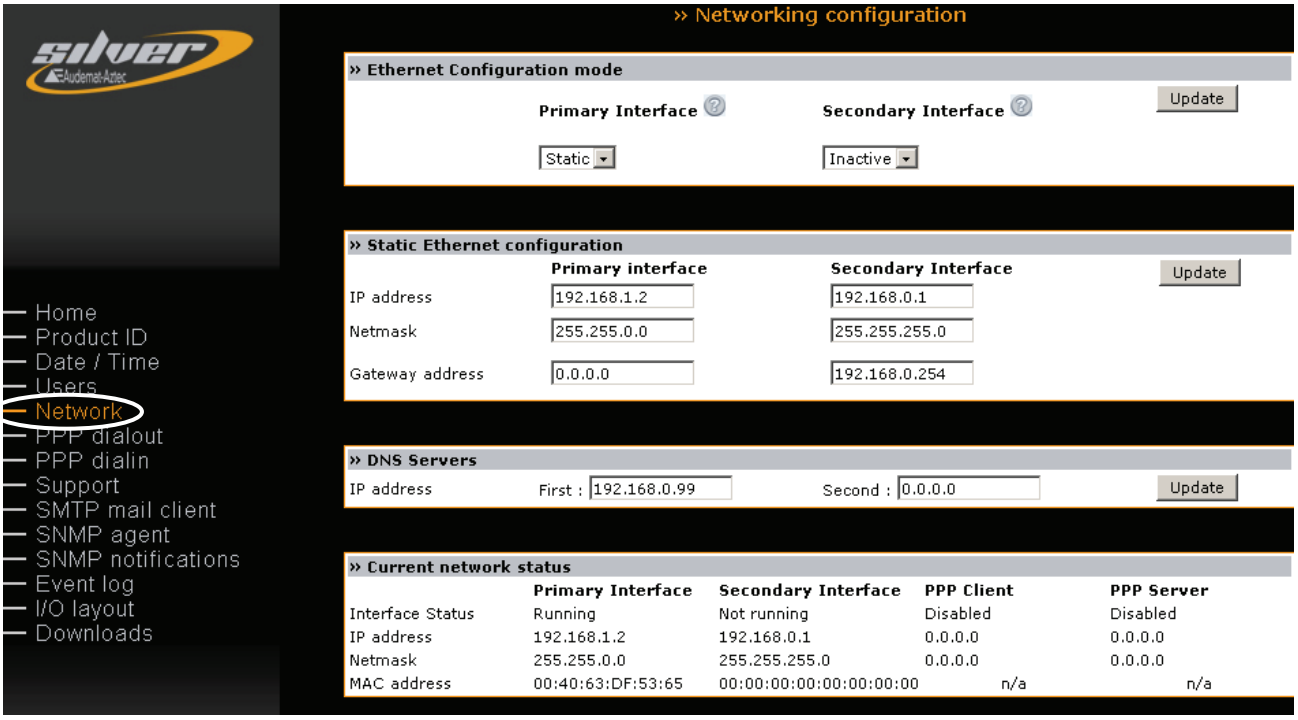
4.4. Network



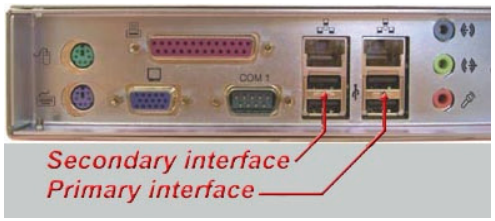
➢ Ethernet configuration mode
The interface can be configured for dynamic or static IP.

➢ Static Ethernet configuration
If the IP address is a static address, enter the parameters in this window.

➢ DNS Servers: DNS configuration.

➢ Current network status: present network table.

Note: the help button shows the diagram for the primary and secondary interface slots.



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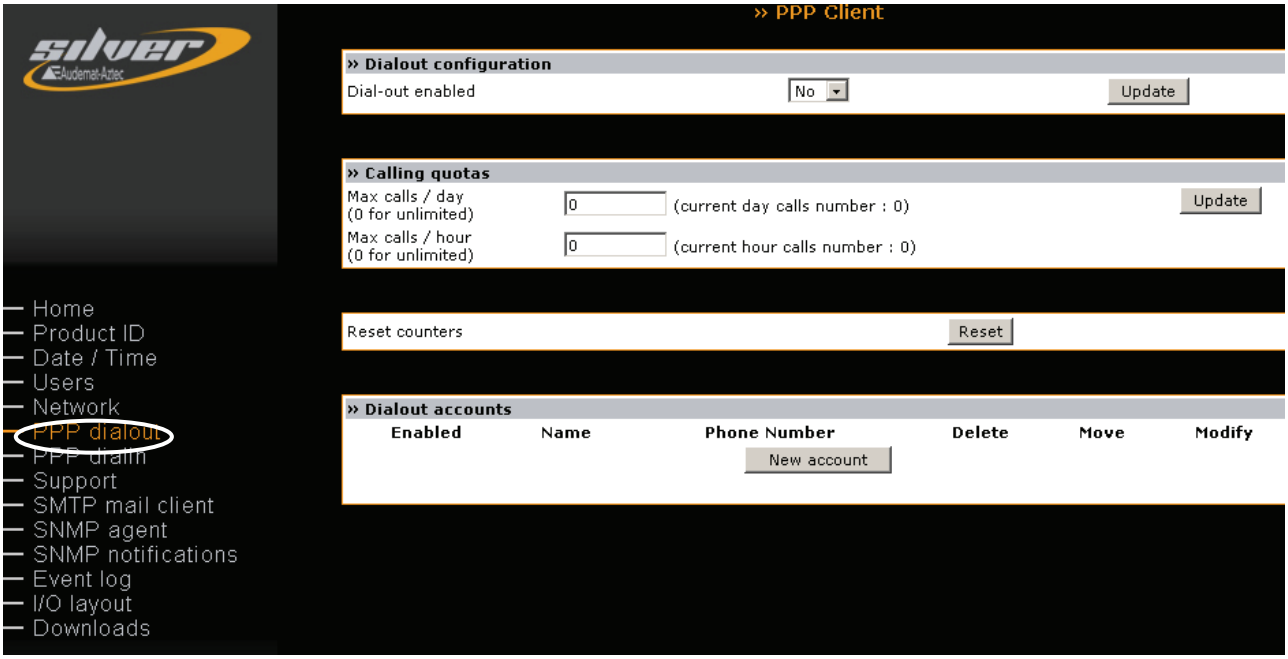
4.5. PPP dialout



➢ **To configure outgoing calls:**

- Dialout configuration: installation of “outgoing calls" functions.

- Ethernet ↔ PPP backup configuration

The Ethernet ↔ PPP backup configuration allows to switch to the PPP interface to send alarms if the primary Ethernet interface (eth0) doesn’t answer anymore (it’s the case if an IP reference address doesn’t answer to a ping).
This verification is done regularly and can be changed by the user: it can be the case if the network cable is disconnected or defective, if the equipment associated to the IP address doesn’t answer or doesn’t correspond to an equipment on the network.

To activate the PPP backup modem, in the "Dial out enabled" section, select "yes only if Ethernet goes down".

⇨ Enter a reference IP address in the field "Ping this address to test Ethernet connection"
⇨ Configure a PPP account

- Calling quotas: number of calls
  - The user can limit the number of daily outcalls. He/she should put 0 if this service is not required.
  - The user can limit the number of hourly outcalls. He/she should put 0 if this service is not required.
  - The user can reset to put the calling counter back to zero.

Dialout accounts: the user can add a new customer account. For this, click on “account” and enter parameters for the new customer account (name, number, login, password…) and then click on “add”. The Remote Control Silver can manage several accounts.

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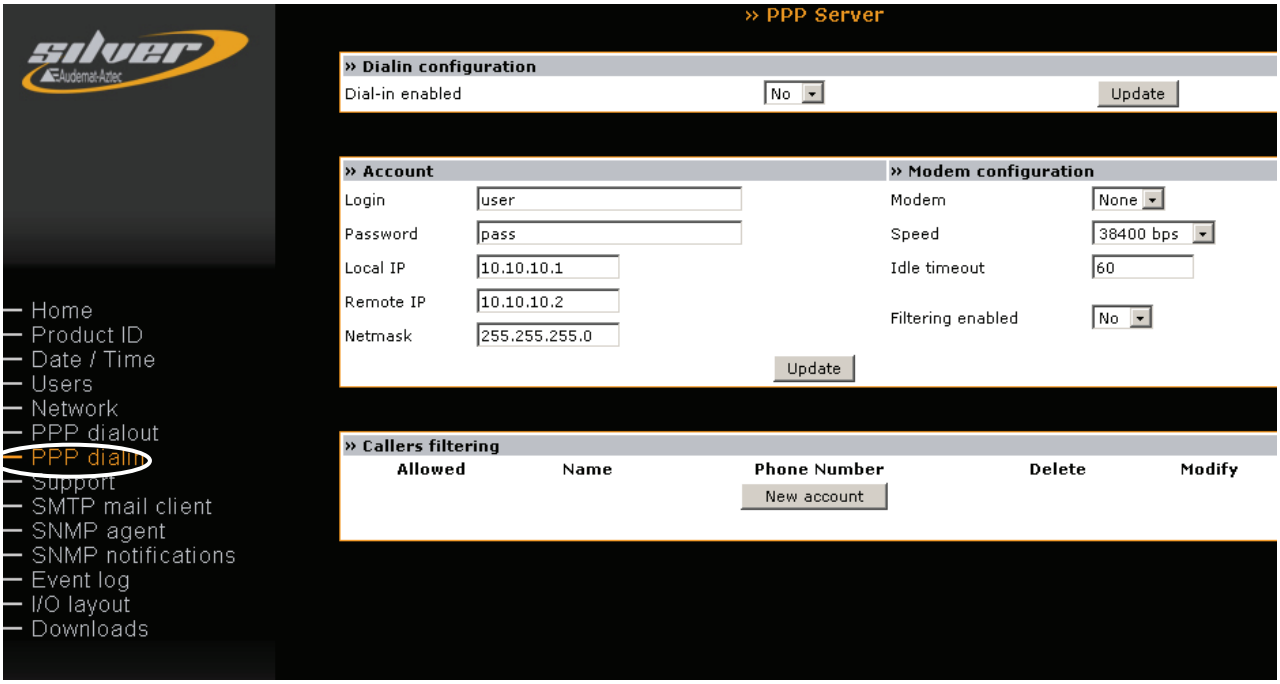
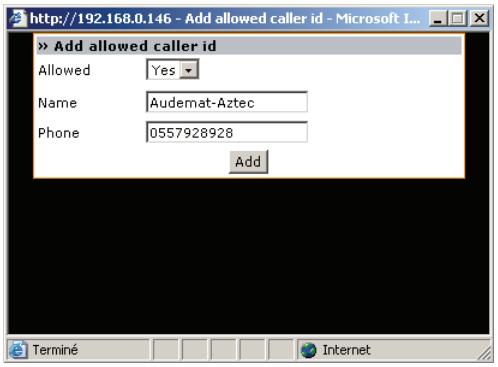
4.6. PPP dialin



➢ **To configure calls coming from the server:**

- Dialin configuration: installation of “incoming calls" functions.
- Account: the user configures account information.
- Modem configuration: the user selects the modem (if necessary) and its features.

  The “filtering enabled" function enables incoming calls to be filtered (the incoming telephone line must be set for this).
- Callers filtering: the user can enter a new account by clicking on “new account" and entering its parameters. This enables authorized or non authorized incoming calls to be managed.



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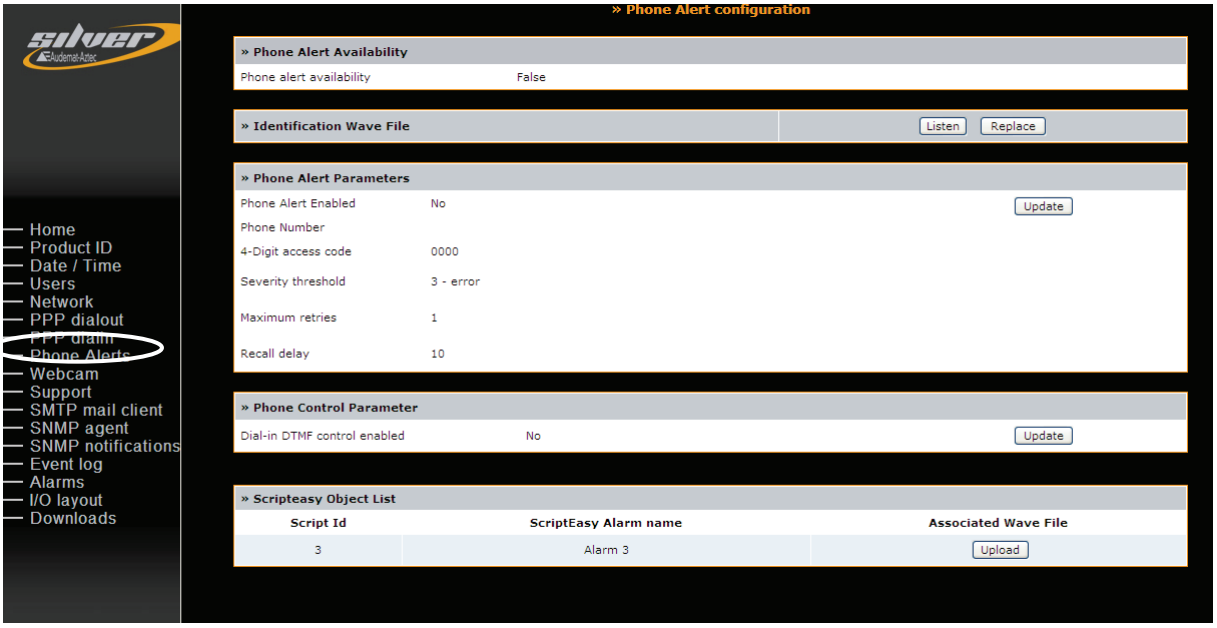
4.7. Phone Alerts (OPTION)

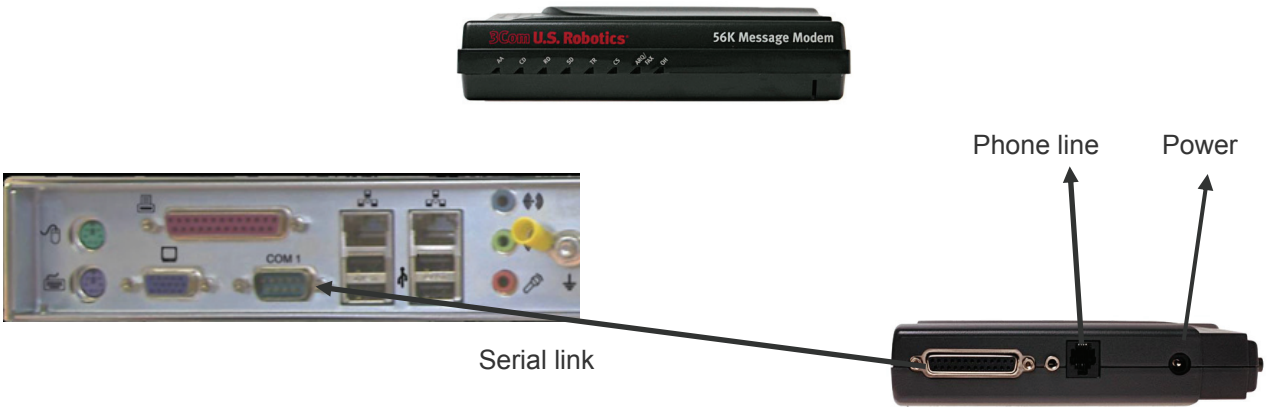


Activation of the option
1/ First contact the sales department to activate this option.

Before calling, prepare the MAC ADDRESS of the equipment (from the “Network” page). They will need it to send you the “.lic” file to activate the option.

2/ Connect the modem:

You will find in the packaging the following modem with its accessories.



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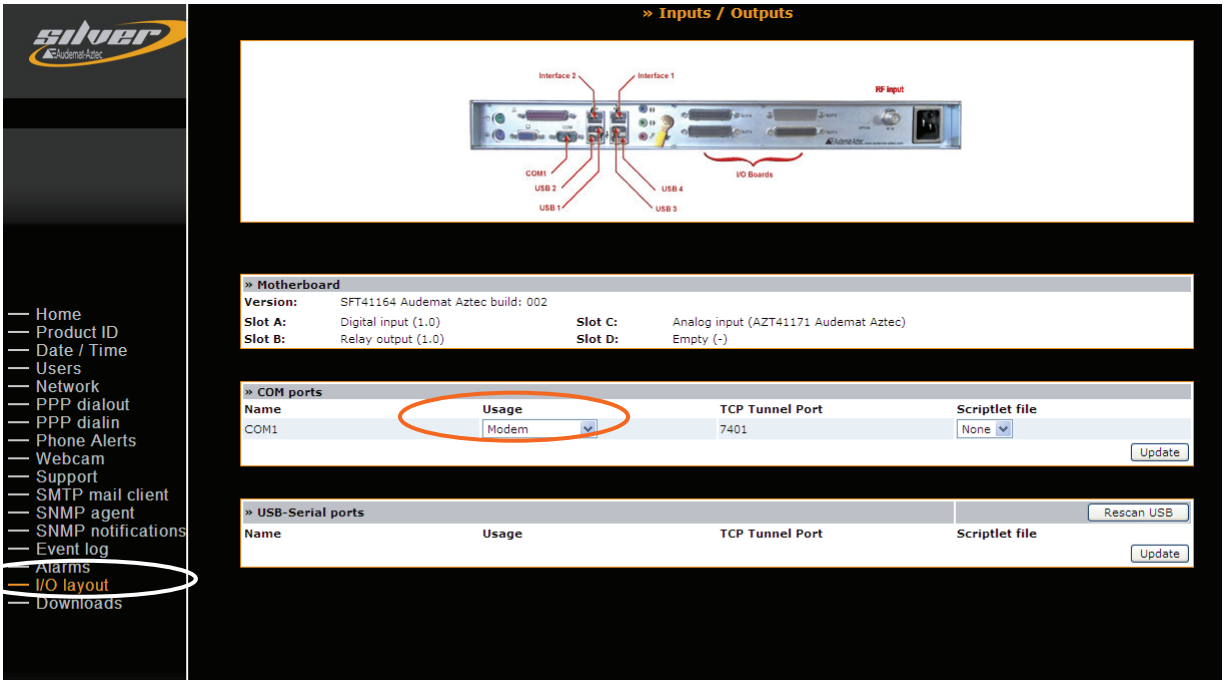
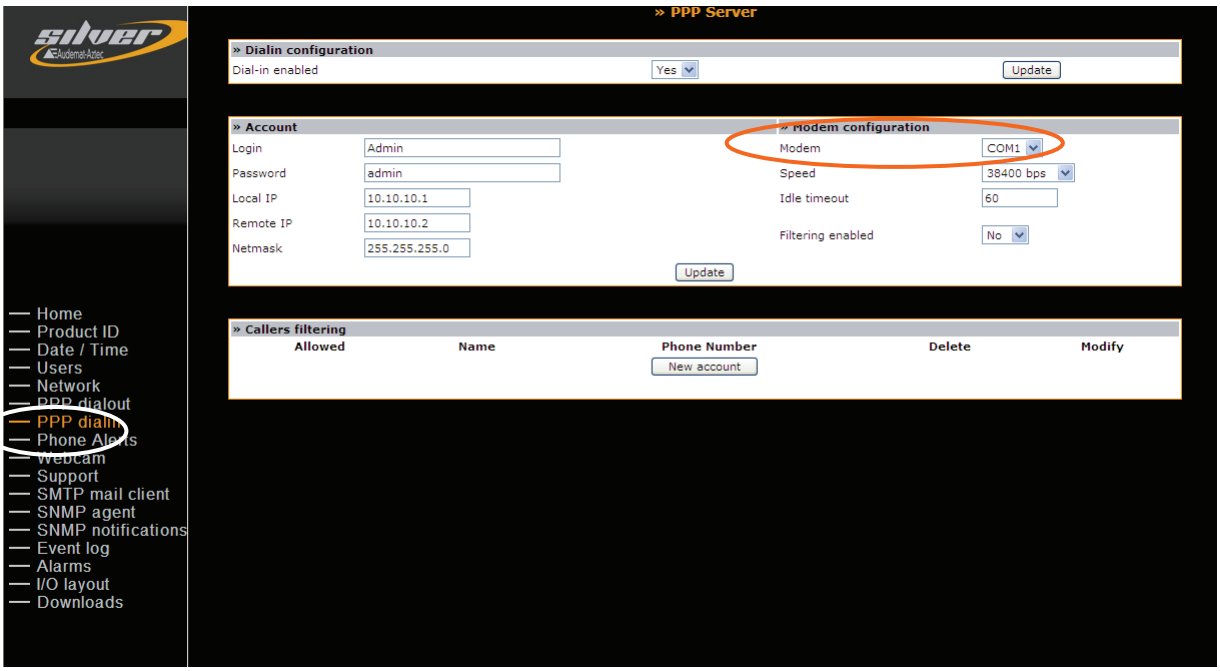
3/ Configuration

➢ Go in the “I/O Layout” page and select “modem” from the COM1 pull-down menu:



➢ Go in the “PPP Dialin” page and select ”COM1” from the Modem pull-down menu:



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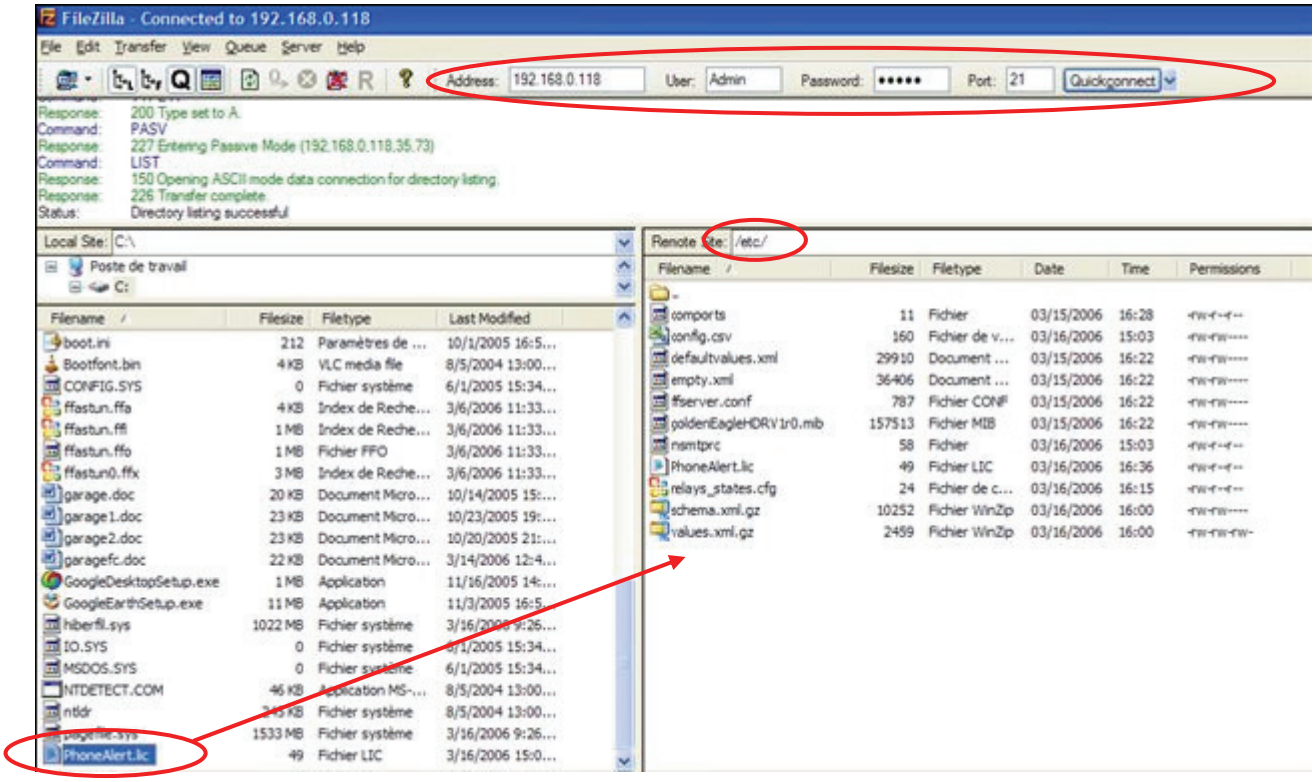
4/ Launch the FILEZILLA application (or any other FTP application). It is located on the Silver CD provided in the folder.

- Insert your IP Address, the user and password, select port “21” and click on “quick connect”
- Select the file “.lic” (previously delivered by Audemat) and put it in the “etc.” directory



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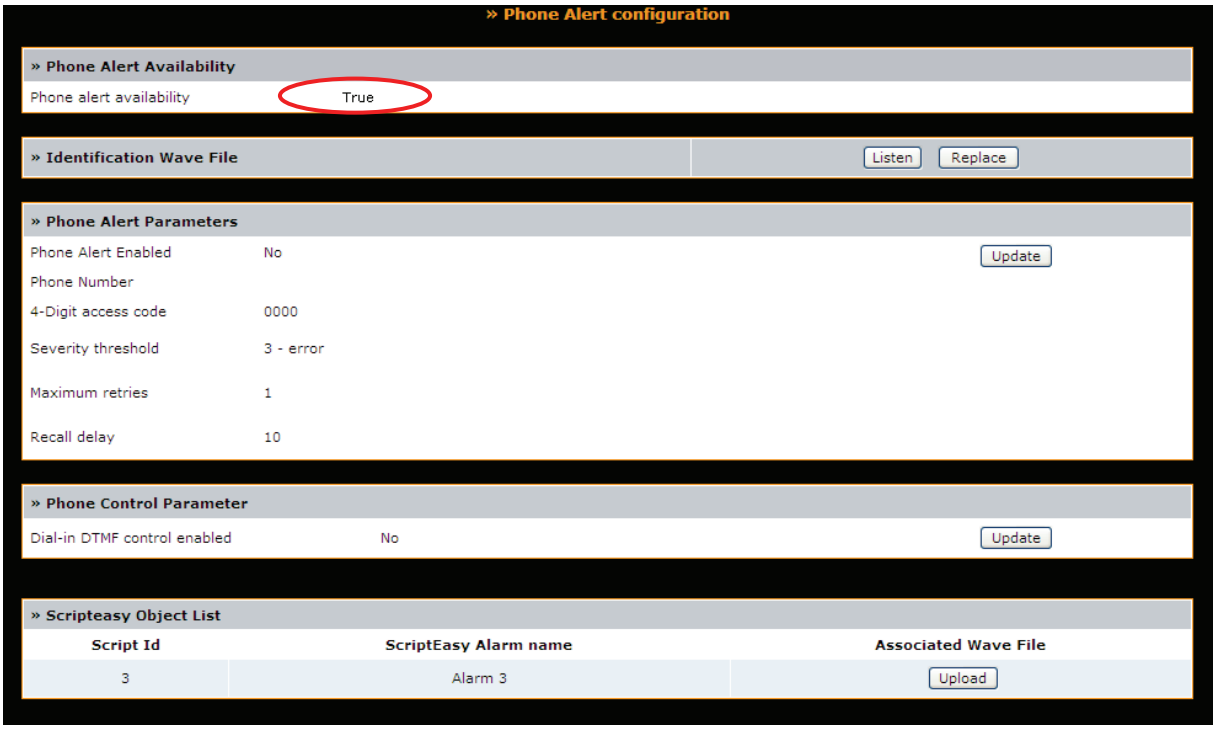
5/ Reboot the equipment from the “support” page of the embedded website.

6/ The “Phone alert availability” status is now “TRUE”.



Page description:

- **Phone Alert Availability**

True: option is activated
False: option is not active

- **Identification Wave File**

It concerns the identification of the product.

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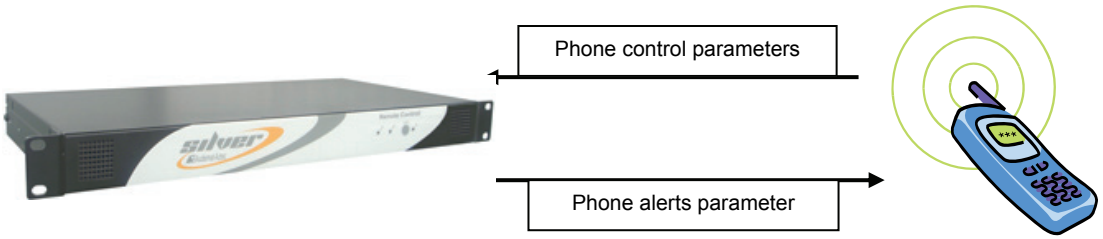
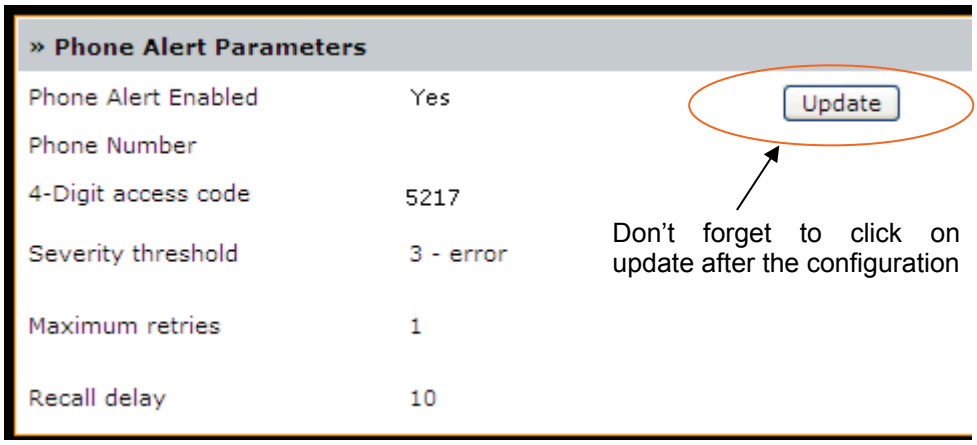
➢ Phone Alert Parameters :

Settings for the alarm management via the phone can be modified on this page.

- You can enable or disable alerts by phone.
- Enter the telephone number to be dialed in case of an alarm.
- The 'Severity threshold' is used to filter alarms according to their priority.
- Set the maximum number of retries in case the first attempt does not go through.
- Set the delay between retry attempts (in minutes).

The maximum number of retries is 20. Maximum interval between the retries is 60 minutes.
It is therefore impossible to receive a voice alarm after 20 hours, this being sufficient considering that voice alarms are designed for emergency situations.
The time given in messages is always in relation to the last 24 hours.





1) On the Remote Control Silver configuration page, activate the dial-out function in alarm and enter the number to be called. Leave the other parameters on their default settings.

2) Launch ScriptEasy Software (provided on the CD-Rom), create a script and send it to equipment (see ScriptEasy user manual). Come back to the "Phone alerts" page.

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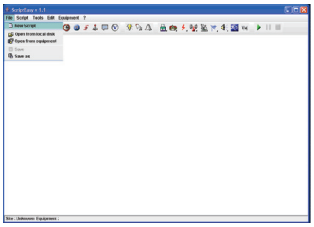
Quick start with the Creator module : create a new script

In order to use following pages, JAVA runtime environment is necessary. You will find it on the CDROM.

Launch “Scripteasy”:

- “File” menu → “New script”

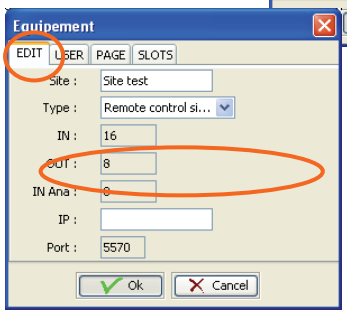


TAB EDIT :

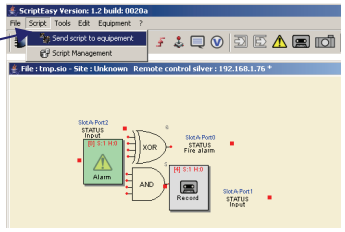
- Enter the site name
- Select “Remote Control Silver” in the Type list

Note: Password and login are automatically inserted

TAB EDIT : Then, enter “IP address”



You can now create a new script and send it to the equipment:
Go to the “Script” menu → “Send script to the equipment”.



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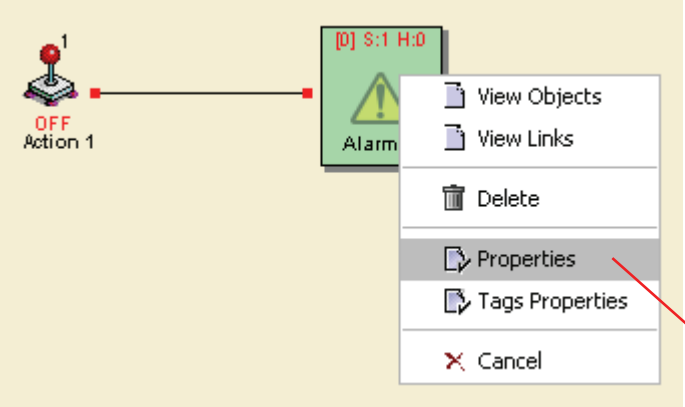
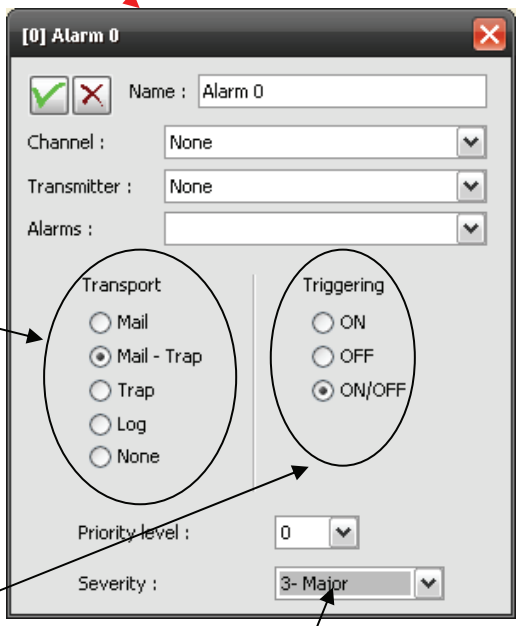
Example: click on the 'ON' button: the alarm is activated and so is the relay.



To choose the way the alarm is to be sent:

- Mail : sends an email
- Trap : sends an SNMP TRAP
- Log : writes in the log.

In every case, the phone alarm is sent as well.
With 'none', no alarm will be sent, including the phone alarm. .



If necessary, choose whether the alarm should be sent at the beginning (ON), or at the end (OFF) or both at the beginning and end (ON/OFF).

Finally, set the same severity as in the Remote Control Silver dans le FM monitoring Silver ('Severity threshold' menu in the 'Phone Alert Parameters' section of the "Phone Alert" page).

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3) The alarm display in Scripteasy Object list

***Note** : only alarms are listed here (no relay).*

4) You can associate a wav file to the alarm. Listen to check

5) Launch ScriptEasy play mode and activate the alarm.

6) The Remote Control Silver should dial the configured number and give the hour and the content of the associated wave file. Deactivate the alarm in ScriptEasy.

➢ **Phone Control Parameter**

As the control system via DTMF and the pppd server use the same module (vgetty) , the working of the control system and of PPP Dialin have to be validated together.

1) Put “Dial in enabled” on “no” and “Dial in DTMF control enabled” on “no”. A Dial out of the Remote Control Silver should not work.
2) Put “Dial in enabled” on “no” and “Dial in DTMF control enabled” on “yes”. The DTMF menu should be accessible.
3) Put “Dial in enabled” on “yes” and “Dial in DTMF control enabled” on “no”. The connection on the Remote Control Silver is possible via a PPP connection.
4) Put “Dial in enabled” on “yes” and “Dial in DTMF control enabled” on “yes”. The menu DTMF is accessible and the connection on the Remote Control Silver via PPP connection too.

Validate the DTMF menu: numbers from [0] to [9] and symbols [*] and [#] are the DTMF signals to use.

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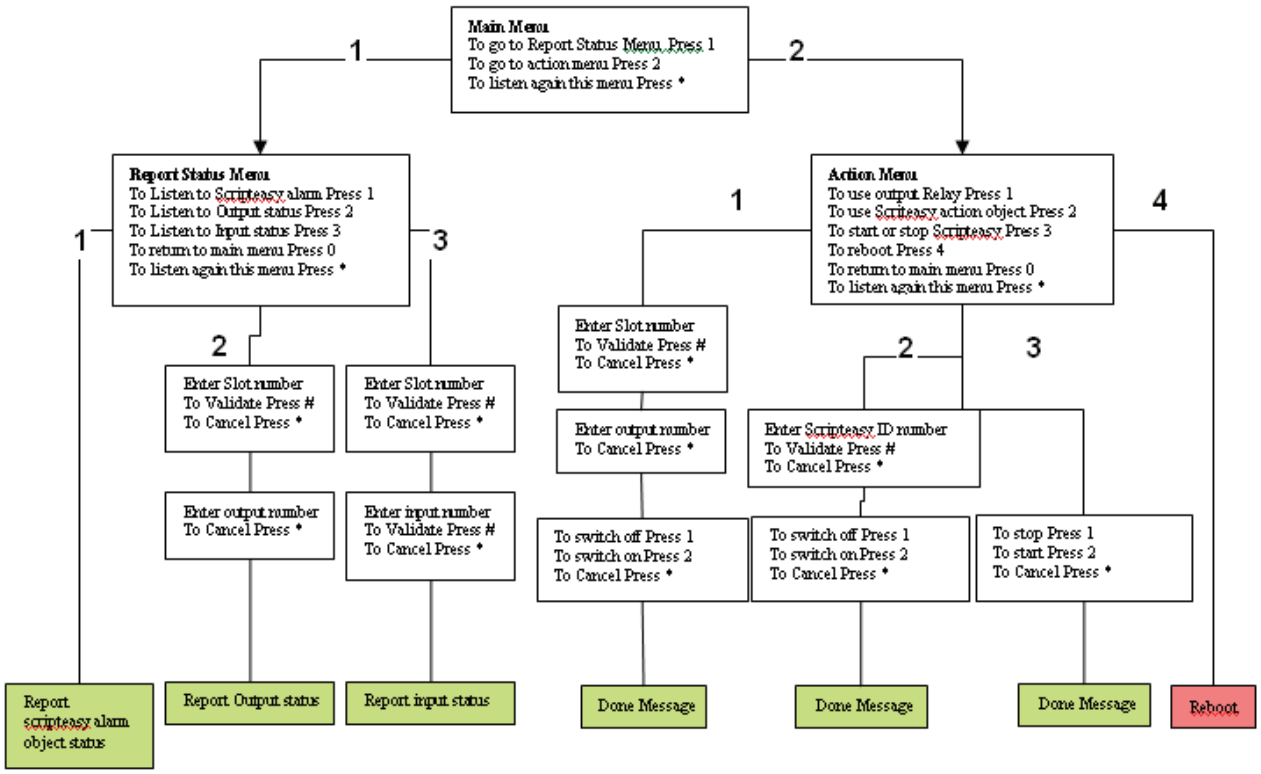
DTMF menu diagram: DTMF menu process steps



Check that an invalid value for the ScriptEasy action object sends a non validity message.
Check that the equipment sends a non reception message after waiting or proposes choices again (if no answer after 3 times, the equipment disconnects automatically).

Voice messages indicate, by default, the alarm number corresponding to the associated object identification number in ScriptEasy (Script Id) as well as the event time.

List and contents of the audio files; these files can be downloaded by an administrator from the FTP server (/spool/voice/prompts):

This list corresponds to the different messages in the DTMF menu.

"ActionDone.wav"	The action has been completed
"ActionFailed.wav"	The action failed
"ActionMenu1.wav"	To use an output relay, press 1
"ActionMenu2.wav"	To use ScriptEasy action object, press 2
"ActionMenu3.wav"	To restart ScriptEasy, press 3
"ActionMenu4.wav"	To reboot, press 4
"alarm.wav"	Alarm
"AlarmReportGreetings.wav"	This is an automatic alarm report from
"blank.wav"	“”
"CantConnectScriptEasy.wav"	Warning, cannot connect to ScriptEasy
"CommandNotReceived.wav"	I’m sorry, I don’t understand that command
"EnterInputNumber.wav"	Enter Input number
"EnterOutputNumber.wav"	Enter Output number
"EnterScriptEasyIDnumber.wav"	Enter ScriptEasy ID number
"EnterSlotNumber.wav"	Enter Slot Number
"Goodbye.wav"	Goodbye
"happened_at.wav"	Happened at
"IncomingGreetings.wav"	Welcome to
"InputNumber.wav"	Input number
"InvalidInputSlot.wav"	That is not an input slot
"InvalidNumber.wav"	Invalid Number

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"InvalidOutputSlot.wav"	That is not an output slot
"InvalidScriptEasyID.wav"	That is not a valid ScriptEasy object ID
"IsOff.wav"	Is off
"IsOn.wav"	Is on
"MainMenu1.wav"	To go to the report status menu, press 1
"MainMenu2.wav"	To go to the action status menu, press 2
"NoAlarm.wav"	No ScriptEasy alarm object is defined
"NoScriptEasyActionObject.wav"	No ScriptEasy action object is defined
"OnSlotNumber.wav"	In slot number
"OutputNumber.wav"	Output number
“PressStarToBegin.wav”	press star to begin
"RebootingNow.wav"	Rebooting now
"ReportMenu1.wav"	To hear the ScriptEasy alarm, press 1
"ReportMenu2.wav"	To hear the output status, press 2
"ReportMenu3.wav"	To hear the input status, press 3
"ToCancelPressStar.wav"	To cancel press star
"ToListenAgainPress1.wav"	To repeat, press 1.
"ToListenAgainPressStar.wav"	To listen to this menu again, press star
"ToListenMessagePressStar.wav"	To listen to the message, press star
"ToReturnToMainMenuPress0.wav"	To return to the main menu, press 0
"ToSwitchOffOn.wav"	To switch off, press 1. To switch on, press 2.
"ToValidatePress#.wav"	To confirm press pound.

The audio files are in wav 8000 Hz, 16 bits, mono format.

To generate the hours of the alarms, store the audio files of all numbers between 0 and 59 and the numbers between 0 and 23 following by “hours”.

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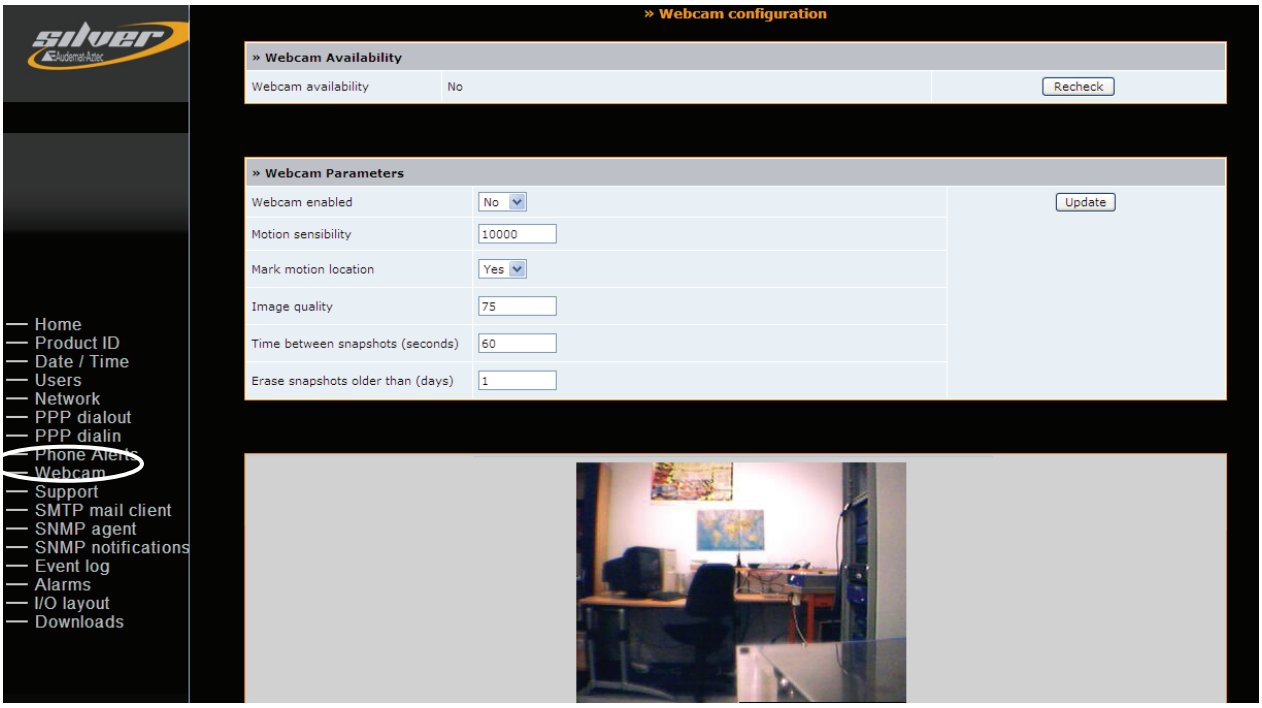
4.8. Webcam



The webcam support is only compatible with webcams sold by Audemat. The webcam is detected on start up. Click on the “Recheck” button to force a re-detection after connection.

The different options are available:

- Webcam enabled: activate or deactivate the webcam support.
- Motion sensitivity: sensitivity of movement detection from 1000 to 32000 (“1000” is the highest sensitivity).
- Mark motion location: circles the zone with a red frame (where the movement has been detected)
- Image quality: from 50 to 100 (100 is the best quality).
- Time between snapshots: minimum time between 2 savings of snapshots.
- Erase snapshots: purge files automatically (in days).

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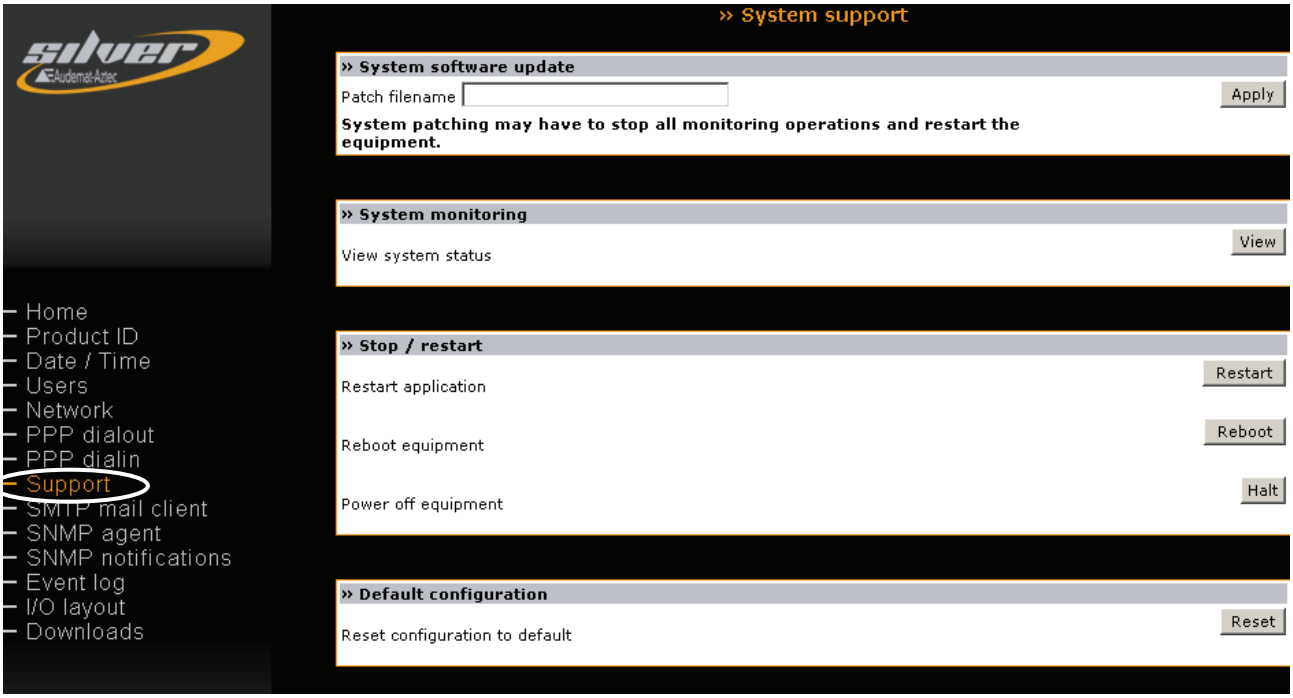
4.9. Support



- System software update: To update the equipment with the latest software versions. The user will put the name of the patch file in the window: by clicking on “apply”, the update is automatic.

- System monitoring: by clicking on “view”, the user can check the system status table (temperature, date, ram disk, etc.).

- STOP/Restart:
  - Restart application: this function causes an application restart to re-initialize the parameters.
  - Reboot equipment: this function causes a total reboot of the equipment.
  - Power off: turns the equipment off remotely.

NOTE: it is not possible to turn on the equipment on remotely.

Default configuration: Restores the original default configuration.

Caution: All configuration (except network settings) will be deleted!

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4.10. SMTP Mail client

➢ Email configuration:

- Set email account and addresses (sender and recipient).
- Set how often messages are sent in the “Send mail every” zone: messages will be sent every “X” minutes. The Digiplexer will stock messages in the meantime.
- Ask the network administrator for setting information.
- The “Send test mail” will send a trial e-mail.
- The “Mark all pending mails as deleted" deletes e-mails which are on hold in the outbox.

Note:
If a text address is set, DNS must be configured so as to ensure proper name resolution.
Check that the configured gateway can reach this server (Network page, Gateway option).

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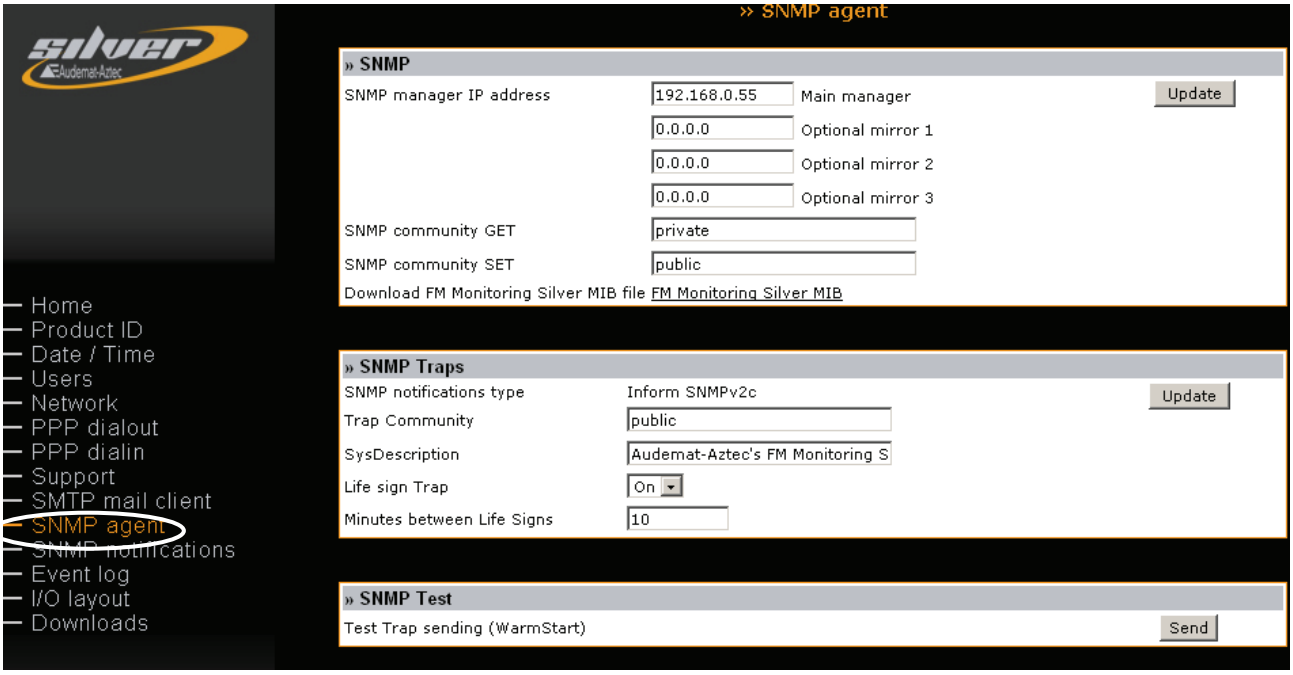
4.11. SNMP agent



- **SNMP parameters**: The user has the possibility to download the Digiplexer's "MIB".

1. **Configure SNMP Traps** that the user chooses to send. Traps can be sent to 4 addressees (Main Manager and optional mirrors). ***
    - SNMP notification type (see section 4.7.2 below)/ Trap community/ SysDescription: trap parameters
    - Life sign Trap/ Minute between life signs: sending life sign trap every "X" minutes.
    - Test Trap: to carry out a test according to the trap setting.

**** CAUTION:***
With the Digiplexer, multiple addresses may be configured for notifications. However, only the Main Manager has the authority to acknowledge notifications. In the case of INFORMS messages, secondary managers' automatic replies are ignored by the Digiplexer.

4.11.1. Supported SNMP versions

The Digiplexer implements an SNMP agent conform with SNMPv1 and SNMPv2c versions. GET and SET commands are supported, as are GETBULK in SNMPv2c. Notifications can be transmitted in TRAP V1 or V2c form or INFORM V2c type.

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4.11.2. Notification modes

- To ensure that the traps reach their destination via the protocol, the Digiplexer offers two methods based on the principle of notification retransmission until acknowledgement is received by the addressee manager.
- Acknowledgement is automatic, via INFORM type notifications. These notifications are only available with the protocol's 2c version. The protocol ensures that the manager immediately returns the received notification to the transmitting agent. This mechanism is very simple and reliable, requiring no specific configuration from the addressee manager.
- Manual acknowledgement: a specific OID ("alarmPendingAlarmsalarmAck") is extracted from variables transmitted inside the trap, on which the manager will have to carry out a SET command. This method is difficult to set up, but is the only possible method for managers limited to the protocol's version 1.

Acknowledgement mode selection (Trap V1, Trap V2c or Inform) is set for all alarms. See section 4.8, **"Notifications"** for additional configuration specific to notification type.

4.11.3. MIB structure

Most MIB elements which can be viewed and modified are presented on the embedded web site.
The MIB also has diverse unique and specific tables.

- ScriptEasy alarm table
- Table of notifications awaiting acknowledgement
- Input-output table

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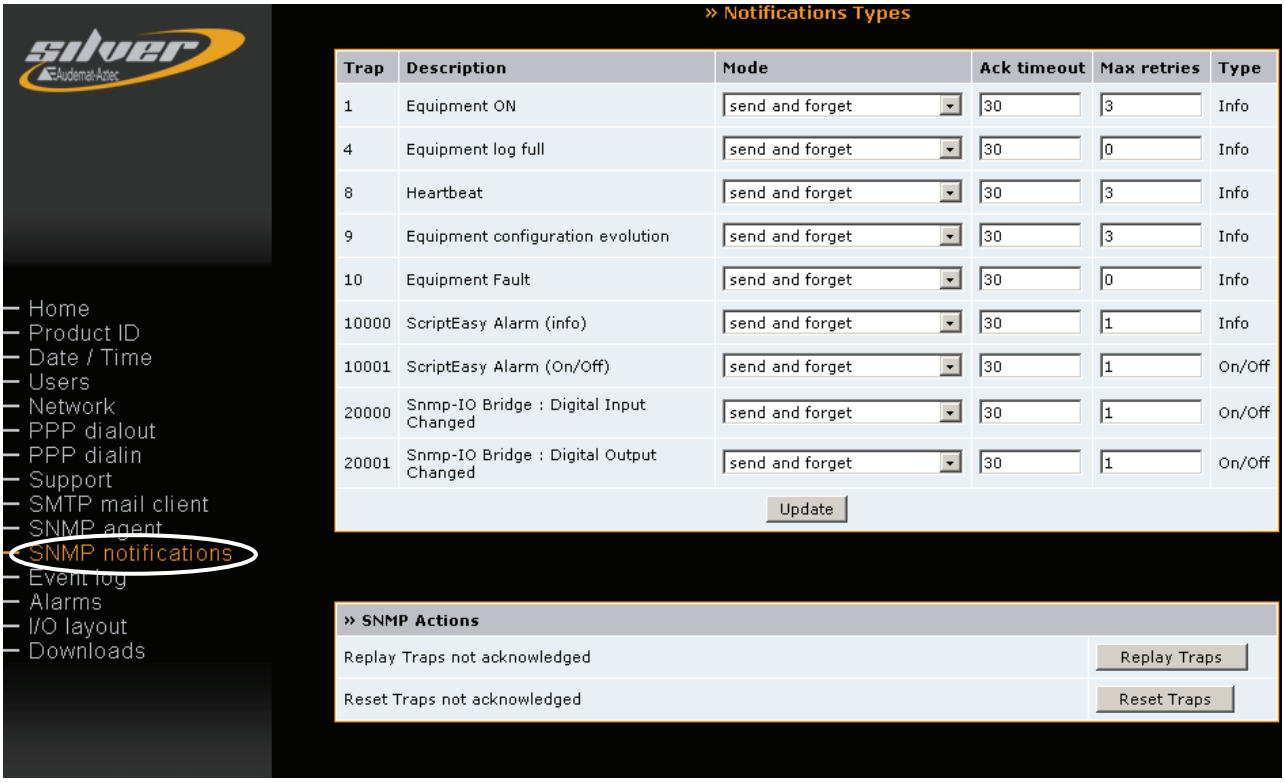
4.12. Notifications



- Enables each configuration type to be configured individually (see chapter SNMP agent, 4.7.2)
  - "Do not send": Useful if some alerts have to be temporarily suspended.
  - "Send and Forget": standard SNMP mode, no acknowledgement expected, notifications are destroyed immediately after being sent.
  - "Resend until acknowledged": standard mode of standalone Digiplexer alarms. Notifications are re-transmitted until acknowledgement has been received. Acknowledgement mode as such depends on the sending mode:
    - automatic acknowledgement for sending in INFORM
    - manual acknowledgement for V1 Traps and V2c Traps

4.12.1. Principle of re-transmissions / acknowledgements functioning

As long as its acknowledgement has not been received, the notification will be re-transmitted at a rate of one sending every <d> seconds, a maximum of <n> times; where <d> and <n> are the fields respectively <Ack Timeout> (1) and <Max Retries> (2).

If acknowledgement does not arrive following <n> attempts, the notification is "frozen", that-is-to-say, it is put on standby until a new notification of the same type occurs. It can also be manually "unfrozen" using the "Replay Traps" button (3).

It is important to note that non transmitted notifications are not lost. They are kept to be re-transmitted when conditions permit it once again. When a new notification occurs the "frozen" notification is re-activated, and a cycle of sending attempts starts up again.

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4.12.2. Events leading to SNMP notification sending

- ColdStart: this is the very first message sent via the stand alone Digiplexer following its starting up. This trap is part of the SNMP protocol, it cannot be acknowledged, and is never re-transmitted.
- EquipmentOn (identifier: 1): it is equivalent to ColdStart except that it can be acknowledged and re-transmitted if necessary. Transmitted just after ColdStart.
- HeartBeat (identifier: 8): notification sent at regular intervals to give equipment sign of life. Configurable on page “SNMP agent”.
- ConfigurationChanged (identifier: 9): transmitted when system configuration is modified.
- EquipmentFault (identifier: 10): transmitted on application critical error or system breakdown.

➢ **Specific applicative alarms (ScriptEasy)**

- ScriptEasy Info alarm (identifier: 10000): ScriptEasy INFO type alert (event having no distinct beginning or end)
- ScriptEasy On/Off alarm (identifier: 10001): ScriptEasy ON/OFF type alarm (event marking beginning or end of a state)

Three tables display the current state of a device’s inputs and outputs.

➢ The slot configuration table which shows the layout of the mini boards (.sys.io.slots.slotsLayoutTable)

slotsLayoutSlotNumber	Slot number (10 or 11)
slotsLayoutHWVersion	Hardware version of mini board
slotsLayoutSWVersion	Software version of mini board (if applicable)
slotsLayoutCardType	Type of mini board: “Analogic input” “Digital input” “Digital output” “empty”

➢ Table of digital Inputs (.sys.io.dig.digStatusTable)

digStatusSlotNumber	Slot number (10 or 11)
digStatusInputNumber	Port number (counted from 0)
digStatusInputName	Input name
digStatusNormalState	Normal state (0 or 1)
digStatusstartOfIncident	Date and time of beginning of incident
digStatusendOfIncident	Date and time of end of incident
digStatusErrCode	Free error code
digStatusErrMessage	Free error message
digStatusValue	Current value (0 or 1)

➢ Table of relay Outputs (.sys.io.rel.relStatusTable)

relStatusSlotNumber	Slot number (10 or 11)
relStatusOutputNumber	Port number (counted from 0)
relStatusOutputName	Relay name
relStatusNormalState	Normal state (0 or 1)
relStatusLastChange	Date and time of last change of state
relStatusValue	Current value (0 or 1)

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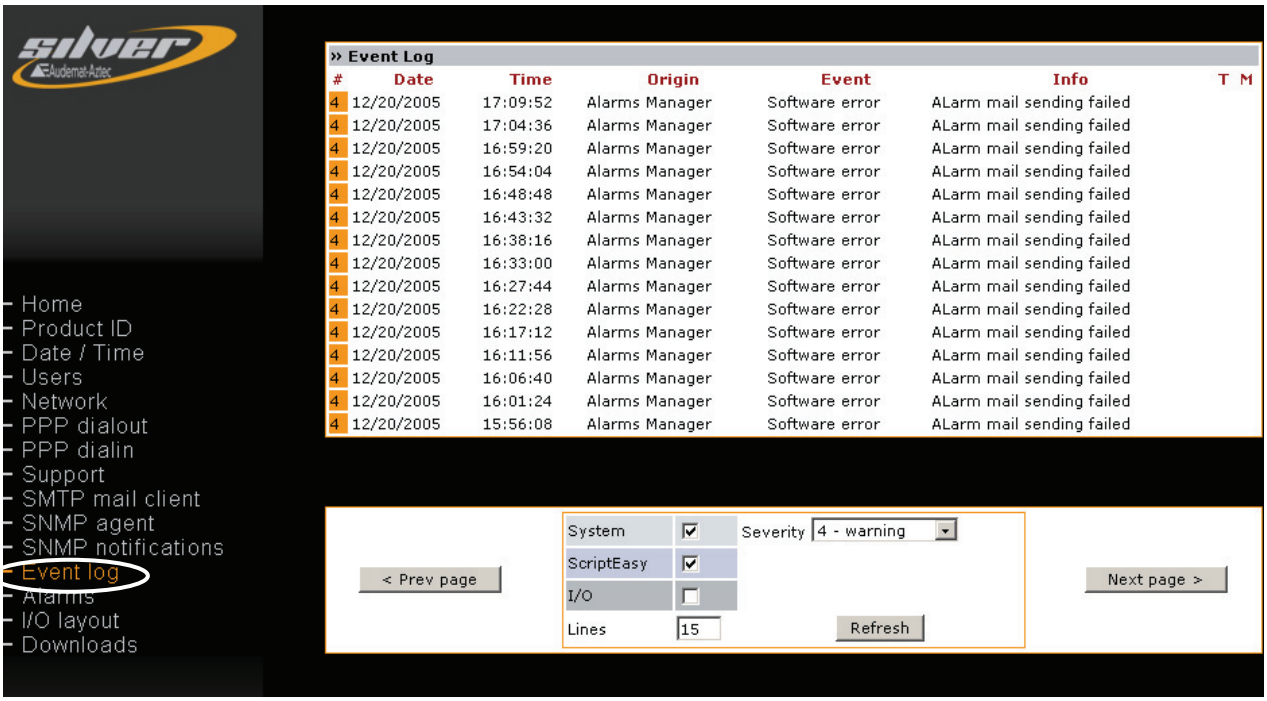
4.13. Event log



- Review of events. The user can sort:
  - By checking “System” to view the system alarms, and / or “ScriptEasy” for application alarms, and / or “I/O” for inputs-outputs. The number of lines per page can also be set.
  - The user can also choose to view events according to the severity (0 being the highest level of severity). Click on “refresh” to display the selection:
    - **0: emergency**
    - **1: alert**
    - **2: critical**
    - **3: error**
    - **4: warning**
    - **5: notice**
    - **6: information**

If 3 “error” is chosen, for example, the user will have all the alarms from 0 to 3.

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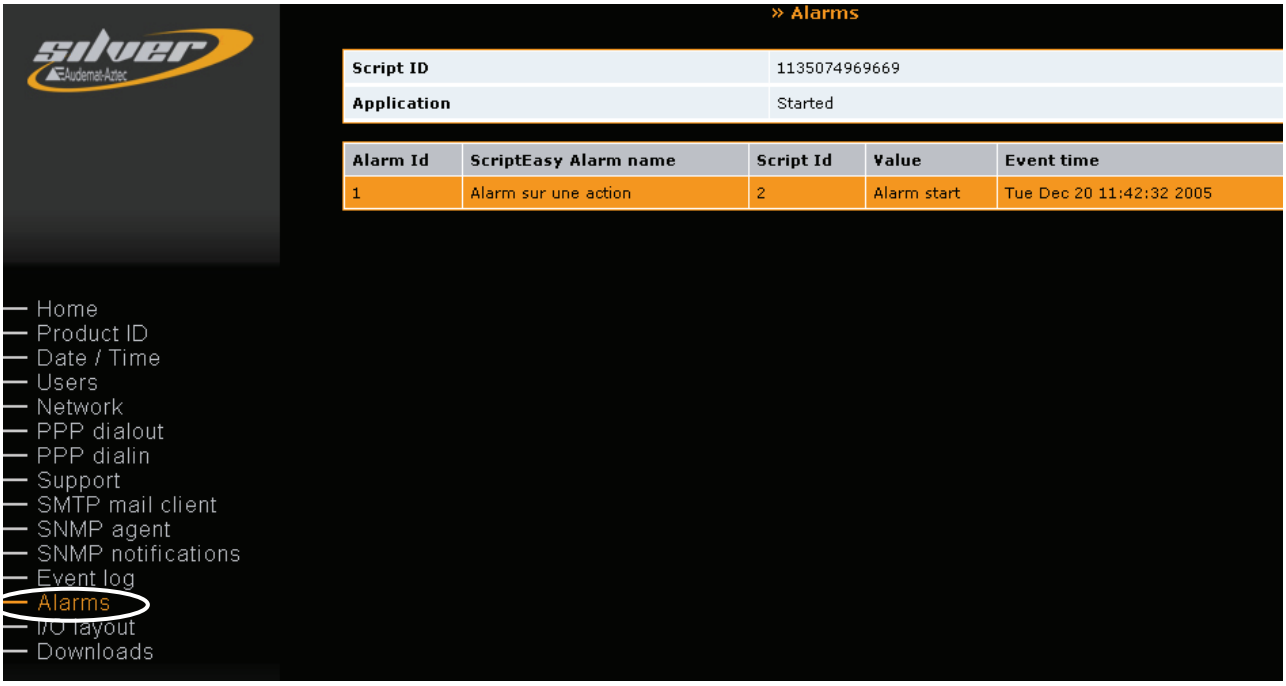
4.14. ScriptEasy Alarms



-  Green indicates that the alarms are over or not active.
-  Yellow indicates the beginning of an alarm.

  The error condition stays active.

➢ This table shows the current state of the script alarm objects while operating the equipment

Details of table fields

ScriptEasyAlarmsidScriptObject	Object identifier in the script
ScriptEasyAlarmsName	Number of alarm associated with this object
ScriptEasyAlarmsseverity	Severity affected to alarm
ScriptEasyAlarmsValue	1 = INFO,ON 2 = ON/OFF,BEGIN 3 = ON/OFF,END 4 = INFO,OFF
ScriptEasyEventTime	Date and time of last event

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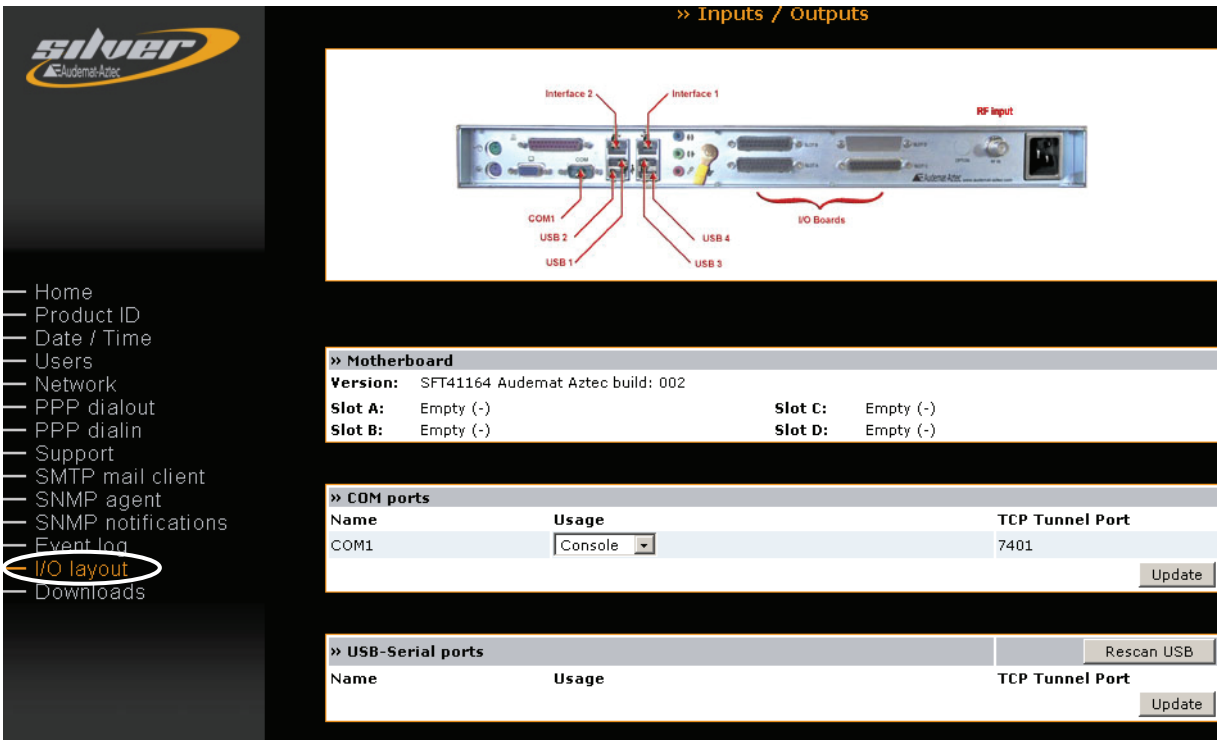
4.15. I/O Layouts



- Motherboard: the user can view the type of boards (relay, digital) and their place on the slots.

- **Com port**: COM0 and COM1 by default.
  - Modem: configuration of serial port in modem port.
  - Console: configuration of serial port in console port.
  - Scriptlet: selection of a JavaScript program for the selected Com port (the program has to be selected in the combo list of the column “Serial Script”).

  ⇨ To upload the Scriptlets , connect to the unit with FTP, under ScriptEasy username and password (see Users page); put the scriptlet file in the /serial directory. It will now appear in the drop-down selection list.

  - Scriptlet debug: associates an interactive JavaScript interpreter to the selected COM port. This interpreter can be used to test the Scriptlets, by being connected by ssh on the equipment with the login “jstest<x>” or <x> corresponding to the COM PORT.

  ⇨ For example, if the COM3 is in “Scriptlet debug” mode, we can connect the interactive interpreter by ssh with the login « jstest3 ». The common password is « jstest ».

  - Unset: non attributed serial port (inactive).
  - Support: support port. Reserved for Audemat.
  - Tunelling: configuration of serial port by tunelling.

Caution: if you disable the console port, you will no longer have access to the Remote Control Silver terminal mode.

- **USB Serial ports:** Enables dynamic addition of serial ports. Contact Audemat to check for compatibilities.

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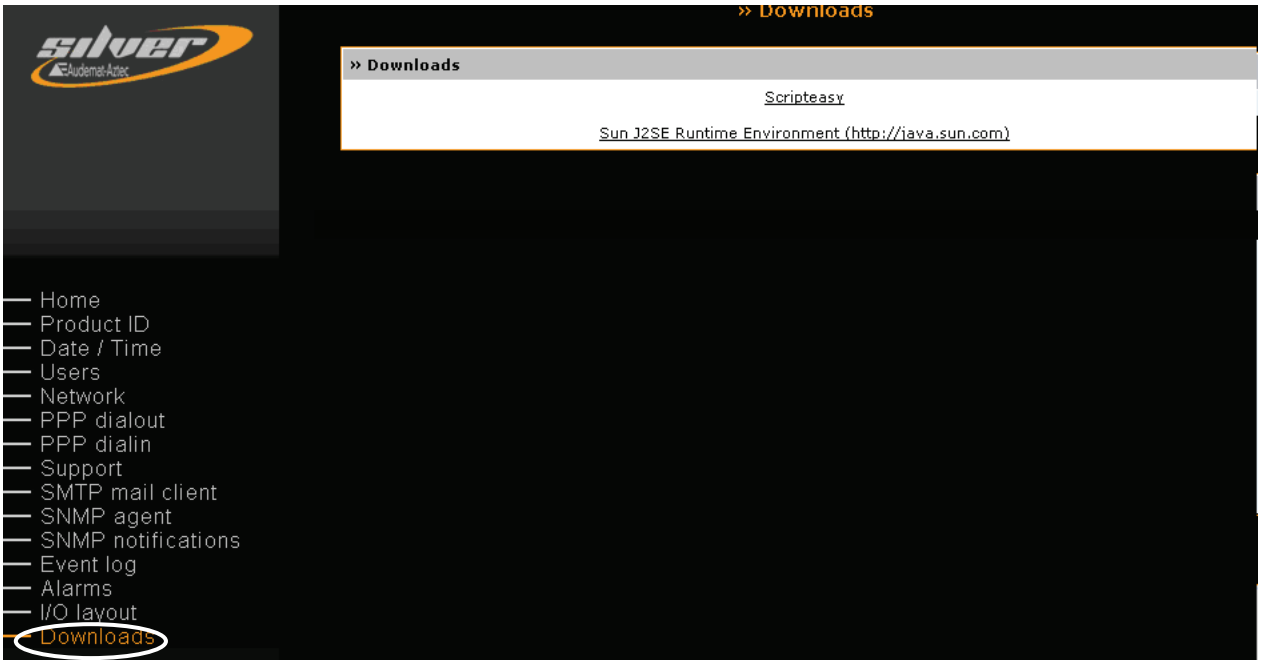
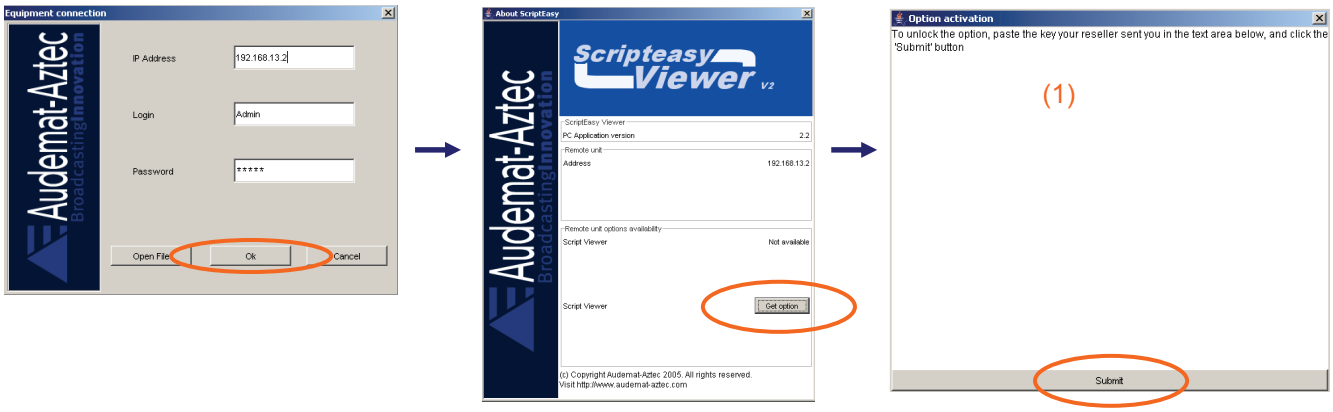
4.16. Download



- From this page, download:
  - ⇨ The ScriptEasy portal: it will give you access to the Creator module and Viewer module Please see the ScriptEasy manual available on the Silver CD and on www.audemat.com. ***Note: The Viewer module is only available if the Viewer option is activated.***
  - ⇨ 'Java Run time', required to run the ScriptEasy application.

Installing the Viewer option

- Contact the sales department or support services to get the CD containing the files you will need to install the option.
- Insert the CD to launch the ScriptEasy portal and click on "ScriptViewer",
- Enter your equipment IP address, login and password,
- Click on "Get option" on the "Script Viewer" line, insert the product key (1) and click on "Submit".



- Click on "connect".

NOTE: "Yes" will appear on the "Script viewer" line in the "About" window.

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5. API SCRIPTLETS

The Scriptlets are small JavaScript programs written by the user, which enable control of equipment linked to the Remote Control Silver by RS232 or RS485 port.

These scripts enable the user to define objects in ScriptEasy like “software inputs” similar to the logic inputs.

Specific Scriptlets functions:

Each Scriptlet is linked to a specific COM port (via the I/O Layout page). This port is accessible from the JavaScript program by **a serial** object automatically created at launching.

This object has the following properties:

- serial.status: state of the port (open/closed)
- serial.speed: defines the port speed (between 600 and 230400)
- serial.parity: defines the flow parity (“none”, “even” or “odd”)
- serial.fluxControl: defines the flow control (“CTRSCTS”, “XONXOFF” or “NONE”)
- serial.bits: the bits number (5,6,7 or 8)
- serial.stopBits: positioned on TRUE, indicates that we have to use a bit stop.

The methods of serial object are:

- serial.open() to open the port
- serial.close() to close it.
- serial.readLine(endChar, timeout): reading of a “line” of data. The parameters are:
  - end: ascii value of the trailling character.
  - timeout: maximum time (seconds) to wait for this end character.

  Example: myLine = serial.readLine(20, 10); assign to “myLine” the result for the reading on the current COM Port of all characters until the characters ascii20 (‘ ‘). If after 10 seconds, the character ‘ ‘ is not received, readLine finishes and myLine is equal to an empty string.
- serial.write(size,string): writing of a string on the COM PORT.
  - string: an ordinary string (native JavaScript type).
- serial.readBytes(size,timeout): reading of byte array on the COM port.
  - Size: byte number to read
  - Timeout: maximum during (sec) to wait for the characters before giving up.
- serial.writeBytes(array): writing of a byte array on the COM port.
  - array: a byte array.

The Scriptlet API exposes a specific object to communicate with ScriptEasy: **the object serialInput.**

This object has 3 properties:

- serialInput.name: the name of the object
- serialInput.info: complementary information on the object.
- serialInput.value: a Boolean value which will be visible in the ScriptEasy and accepted as a logic entry.

To use it, you have to instantiate in the Scriplet the serialInput objects that you will need:

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```
MySerialInput1 = new serialInput("nom","info");
MySerialInput2 = new serialInput("autre_nom","autreinfo");
```

Then, to change the state object throughout the program:

```
If( condition == 1) {
      MySerialInput1.value = TRUE ;
} else {
      MySerialInput2.value = FALSE;
}
```

These value modifications will be immediately taken in account in the ScriptEasy.

Useful functions and update functions:

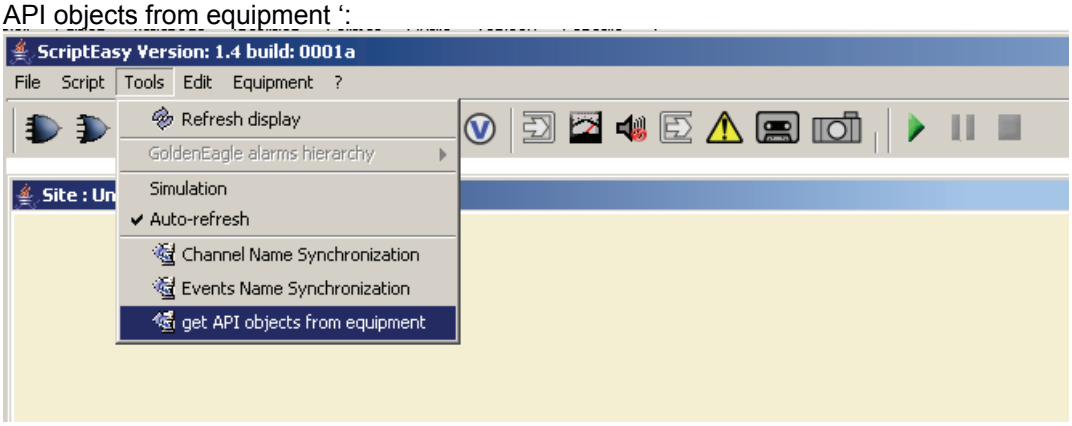
- print(string): displays the string on standard error output stream.
- hprint(string): displays the hexadecimal value of the string on standard error output stream.
- exec(filename): load and execute the JavaScript program in argument.
- sleep(seconds): suspends the execution for the number of seconds specified in argument.
- string2array(string): converts the string to a bytes array.
- array2string(array): converts a bytes array to a string.

➢ To upload the Scriptlets , connect to the unit with FTP, under ScriptEasy username and password (see Users page); put the scriptlet file in the /serial directory. It will now appear in the drop-down selection list.

API Inputs :

API inputs are logic inputs linked to the API script functions which have been created.

To make them available in ScriptEasy, you first have to synchronize with the equipment.
For that, first configure the IP address (password and login), then go to the menu "Tools" and click on "get API objects from equipment ':



Once synchronized, new objects are available:

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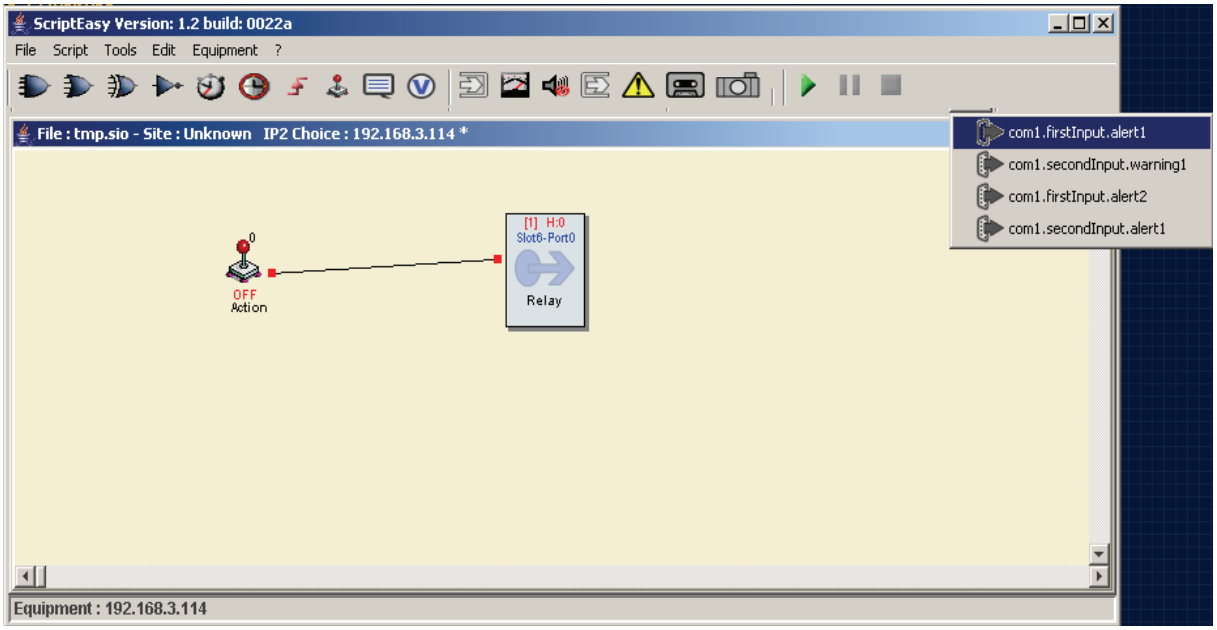
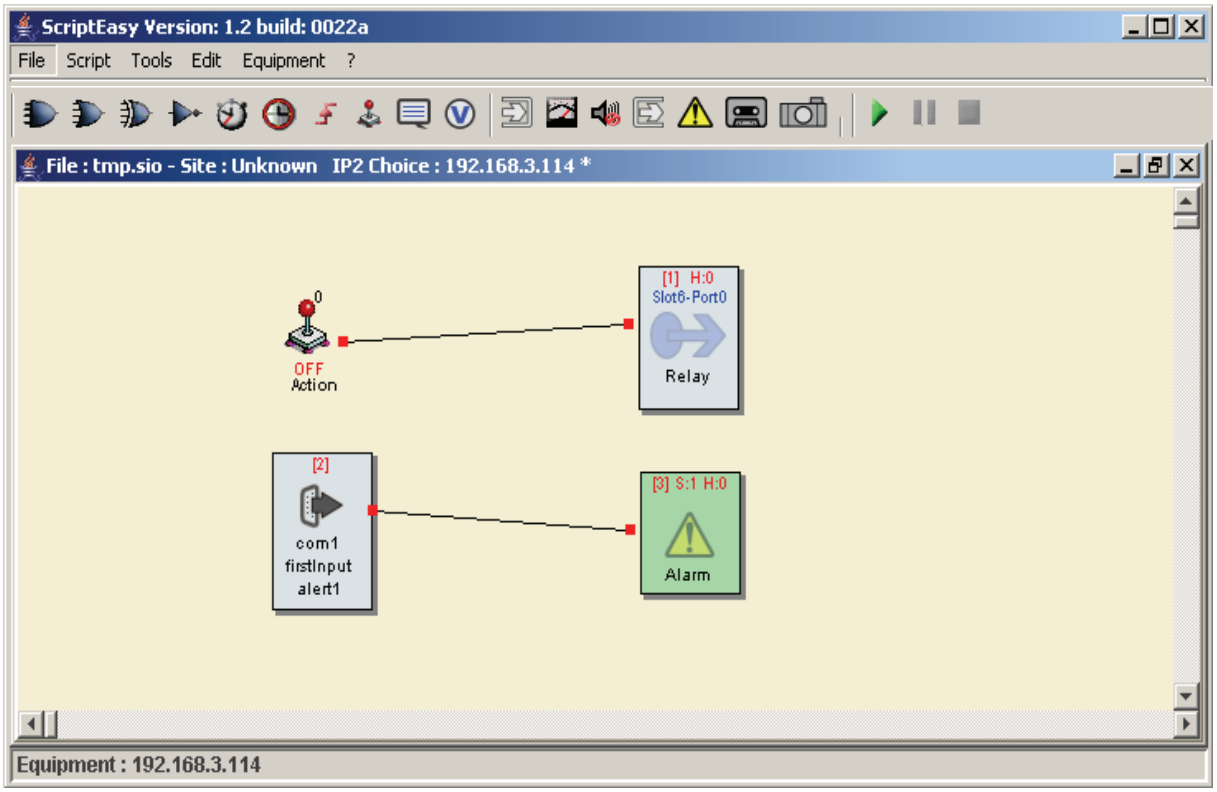


And you can include them in your script:



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6. API XMLRPC

To enable access to the equipment data from programs or external web pages, the Remote Control Silver exposes an 'API' under the format XMLRPC (cf http://www.xmlrpc.org). The advantage of this format is to be simple, platform independent and well supported by a variety of standard tools (php, etc…).

sys.getEventLog

```
 parameters :
      -  firstID (<int>)
      -  eventTypeMask (<int>)
      -  maxNumberOfLines (<int>)
      -  minimumSeverity (<int>)
Description :
-       firstID : set the lower limit in databases idEvent. As the events
numbering is strictly growing, you can use this parameter to fetch only newer
entries from base.

- eventTypeMask :
         SYSTEM_EVENT  0x1
         APPLI_EVENT   0x2
         IO_EVENT      0x4
Use a logical OR to combine these values to select which one to fetch

- maxNumberOfLines : self-explanatory, limit the number of lines in the reply

- minimumSeverity : filters out event with a lesser severity. Remember that
you can qualify the alarms severity in the ScriptEasy application. So if you
use '3' as value for minimumSeverity, you'll fetch only the most serious
events (1,2,3 ranks)

 reply :
        <array>
          <array>
             <string> idEvent
             <string> eventType
             <string> eventDateTime
             <string> severity
             <string> sysEventDescription
             <string> sysEventType
             <string> sysEventMessage
             <string> ioObjectName
             <string> ioValue
             <string> appliObjectName
             <string> appliObjectValue
             <string> appliObjectMessage
             <string> RFU-1
             <string> RFU-2
             <string> RFU-3
             <string> RFU-4
             <string> RFU-5
           </array>
                [...  may be repeted several times]
        </array>

Description :

idEvent : event id (sequence number)
```


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```
eventType : 0: system  1: i/o  2: ScriptEasy
eventDateTime : event's date of effect
severity : event's severity qualifier
sysEventDescription  : if eventType = 0 : subsystem name ;  else empty
sysEventType : if eventType = 0 : description of system event ; else empty
sysEventMessage : if eventType = 0 : additionnal information on system event ;
else empty
ioObjectName : if eventType = 1 : I/O sender name ; else empty
ioValue : if eventType = 1 : I/O logical state (0/1); else empty
appliObjectName : if eventType = 2 : ScriptEasy alarm name ; else empty
appliObjectValue : if eventType = 2 : ScriptEasy alarm value ; else empty
appliObjectMessage : if eventType = 2 : additionnal information on ScriptEasy
alarm ; else empty
RFU-1 : reserved for future use
RFU-2 : reserved for future use
RFU-3 : reserved for future use
RFU-4 : reserved for future use
RFU-5 : reserved for future use
```

ScriptEasy.getAlarms

parameters : none

reply :

```
<array>
  <struct>
    <member>
      <name>alarmId</name>
      <value><int>1</int></value>
    </member>
    <member>
      <name>alarmName</name>
      <value><string>Alarm</string></value>
    </member>
    <member>
      <name>alarmValue</name>
      <value><string>Alarm start</string></value>
    </member>
    <member>
      <name>alarmStatusCode</name>
      <value><int>2</int></value></member>
    <member>
      <name>alarmTime</name>
      <value><string>Thu Feb  9 10:26:08 2006</string></value>
    </member>
  </struct>
      [...  may occurs several times]
</array>
```

The reply is composed of an array of structs, one struct for one Alarm object. Every Alarm struct is built from 3 members :

- alarmId (<int>) is the ScriptEasy object id
- alarmName (<string>) is the ScriptEasy object name
- alarmStatusCode(<int> is the current status. Value range is :
  1 : INFO,ON
  2 : ON/OFF,BEGIN
  3 : ON/OFF,END
  4 : INFO,OFF

ScriptEasy.getAlarmById

parameters :

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- alarmId (<int>) : (as fetched with ScriptEasy.getAlarms, it's also the little number displayed in the upper left corner inside square brackets on ScriptEasy application's Alarms objects)

reply :

```
<struct>
  <member>
    <name>alarmId</name>
    <value><int>1</int></value>
  </member>
  <member>
    <name>alarmName</name>
    <value><string>Alarm</string></value>
  </member>
  <member>
    <name>alarmValue</name>
    <value><string>Alarm start</string></value>
  </member>
  <member>
     <name>alarmStatusCode</name>
     <value><int>2</int></value></member>
  <member>
     <name>alarmTime</name>
     <value><string>Thu Feb  9 10:26:08 2006</string></value>
  </member>
</struct>
```

A single struct for the alarmId passes as parameter, same format as in getAlarms

ScriptEasy.getActions:

parameters : none

reply:

```
<array><data>
        <value>
          <struct>
            <member>
              <name>actionId</name>
              <value><int>35</int></value>
            </member>
            <member>
             <name>actionName</name>
             <value><string>Action</string></value>
            </member>
            <member>
              <name>actionState</name>
              <value><int>0</int></value>
            </member>
          </struct>
        </value>
        [...  may occurs several times]
</data></array>
```

As for getAlarms, the reply is formed of an array of structs, each one built as :

- actionId (<int>) : the ScriptEasy object id
- actionName (<string>) : the ScriptEasy object name
- actionState (<int>) : the ScriptEasy object logical state

ScriptEasy.getActionmById:

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```
      - actionId (<int>) : (as fetched with ScriptEasy.getActions, it's also
the little number displayed in the upper left corner inside square brackets on
ScriptEasy application's Actions objects)

reply :
                <struct>
                        <member>
                                <name>actionId</name>
                                <value><int>35</int></value>
                        </member>
                        <member>
                                <name>actionName</name>
                                <value><string>Action</string></value>
                        </member>
                        <member>
                                <name>actionState</name>
                                <value><int>0</int></value>
                        </member>
                </struct>

Reply is a single struct for the actionId given in parameter, same format as
getActions.
ScriptEasy.setActionmById
Parameters :
      -   actionId (<int>) : (as fetched with ScriptEasy.getActions, it's also
          the little number displayed in the upper left corner inside square
          brackets on ScriptEasy application's Actions objects)
      -   state (<int>) : state to set (0 or 1)

reply :
        int , 0 meaning OK
```

php script examples

The following example modifies the state of inputs / outputs.

Create an HTML form and a script linked to the button that will in turn call a specific script for each option.

The script "action.php" is executed when the 'Actions' option is selected.

action.php

```
?php

$h2 = 'Actions';
$htmlTabResult = ''; //results to be displayed in html page
```


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```
$scriptRpc = 'scriptEasy.getActions'; //script name that xml_rpc must get by
default
$param = array(); //parameter to transmit when xml_rpc object is created
$actionId = ''; //action button id
$actionName = ''; // action button name
$actionState = ''; //button state
$ip = $_POST["ip"];
$type = $_POST["type"];

 if($_POST['idAction'] == TRUE)
{
      //current state is switched if ON=>OFF if OFF=>ON (bool)
      if($_POST['etat'] == 1)
      {
            $etat = 0;
      }
      else
      {
            $etat = 1;
      }

      //script to call
      $scriptRpc = 'scriptEasy.setActionById';

      // parameter to transmit when new xmlrpcmsg object is created
      $param = array(new xmlrpcval($_POST['id'], 'int'), new xmlrpcval($etat,
'int'));
}

$message =  $xmlrpc->createRpcMessage($scriptRpc, $param);

$result = $xmlrpc->sendMessage($message);

if($_POST['idAction'] == TRUE) {
      //initial script is sent to display the table again after state has been
changed
      $message = $xmlrpc->createRpcMessage('scriptEasy.getActions', array());
      $result = $xmlrpc->sendMessage($message);
}

//table headers
$htmlTabResult =  "<tr>\n" .
                              "
      <td><strong>Identifier</strong></td><td><strong>Name</strong></td><td><s
trong>Change status</strong></td>" .
                              "</tr>";

if ($xmlrpc->displayError($result) == null) {
      $array = $xmlrpc->value($result);
      $size = $array->arraysize();

      for($i=0; $i<$size; $i++) {
       //taken again from here
       $struct = $array->arraymem($i);

       $actionId = $struct->structmem("actionId");//extraction of ID value
       $actionId  =  $actionId->scalarVal();//Transformation  of  xmlrpc  object
into php friendly data

       $actionName = $struct->structmem("actionName");//name extraction
       $actionName = $actionName->scalarVal();
```


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```
        $actionState   =   $struct->structmem("actionState");//state   extraction
(bool, 0 or 1)
        $actionState = $actionState->scalarVal();

        if($actionState == 0)
             $buttonName = " Off ";
        else
             $buttonName = " On ";

             $htmlTabResult .= "<tr>\n" .
                 "   <td>$actionId</td>\n" .
                 "   <td>$actionName</td>\n" .
                 "   <td>\n" .
                 "   <form action='../accueil/scriptview.php' method='post' >\n" .
                 "   <input type='hidden' value='1' name='idAction'>\n" .
                 "   <input type='hidden' value='$actionId' name='id'>\n" .
                 "   <input type='hidden' value='$actionState' name='etat'>\n" .
                 "   <input type='hidden' value='$type' name='type'>\n" .
                 "   <input type='hidden' value='$ip' name='ip'>\n" .
                 "   <input type='submit' value='$buttonName'>\n" .
                 "        </form>\n".
                 "   </td>\n".
                "</tr>\n";
      }

}
else {
      $msgError = $xmlrpc->displayError($result);
}

 ?>
```


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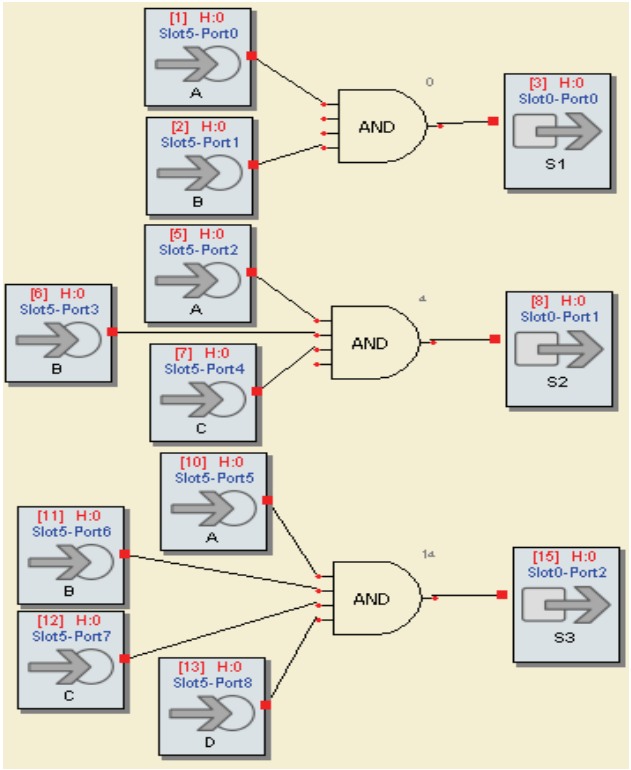
APPENDIX 1: OBJECT DEFINITIONS AND APPLICATION EXAMPLES

=> see all the script examples on the website www.audemat.com
("download" page of the Remote Control Silver product)

1) Equipment used : =>IP2CHOICE:

-Slot 0: Relay
-Slot 1: Relay
-Slot 2: Relay
-Slot 3: Relay
-Slot 4: Empty
-Slot 5: Dig
-Slot 6: Dig
-Slot 7: Empty
-Slot 8: Dig
-Slot 9: Dig
-Slot 10: Ana
-Slot 11: Ana

2)And : And.sio



D	C	B	A	S1	S2	S3
0	0	0	0	0	0	0
0	0	0	1	0	0	0
0	0	1	0	0	0	0
0	0	1	1	1	0	0
0	1	0	0		0	0
0	1	0	1		0	0
0	1	1	0		0	0
0	1	1	1		1	0
1	0	0	0			0
1	0	0	1			0
1	0	1	0			0
1	0	1	1			0
1	1	0	0			0
1	1	0	1			0
1	1	1	0			0
1	1	1	1			1

3)Or : OR.sio

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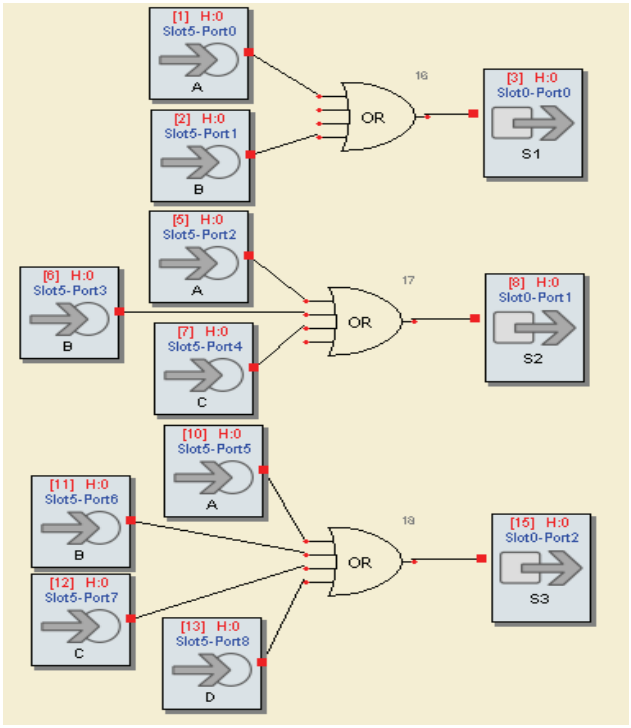
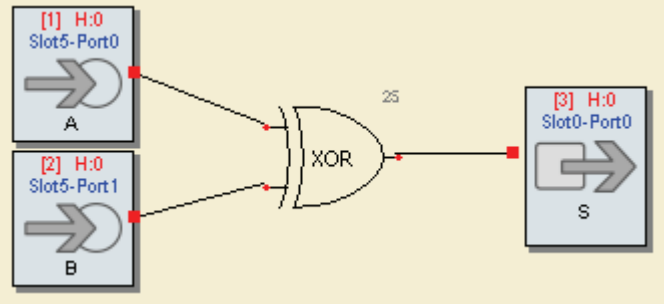


D	C	B	A	S1	S2	S3
0	0	0	0	0	0	0
0	0	0	1	1	1	1
0	0	1	0	1	1	1
0	0	1	1	1	1	1
0	1	0	0		1	1
0	1	0	1		1	1
0	1	1	0		1	1
0	1	1	1		1	1
1	0	0	0			1
1	0	0	1			1
1	0	1	0			1
1	0	1	1			1
1	1	0	0			1
1	1	0	1			1
1	1	1	0			1
1	1	1	1			1

4)XOr : Xor.sio



B	A	S
0	0	0
0	1	1
1	0	1
1	1	0

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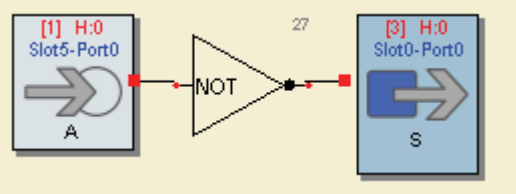
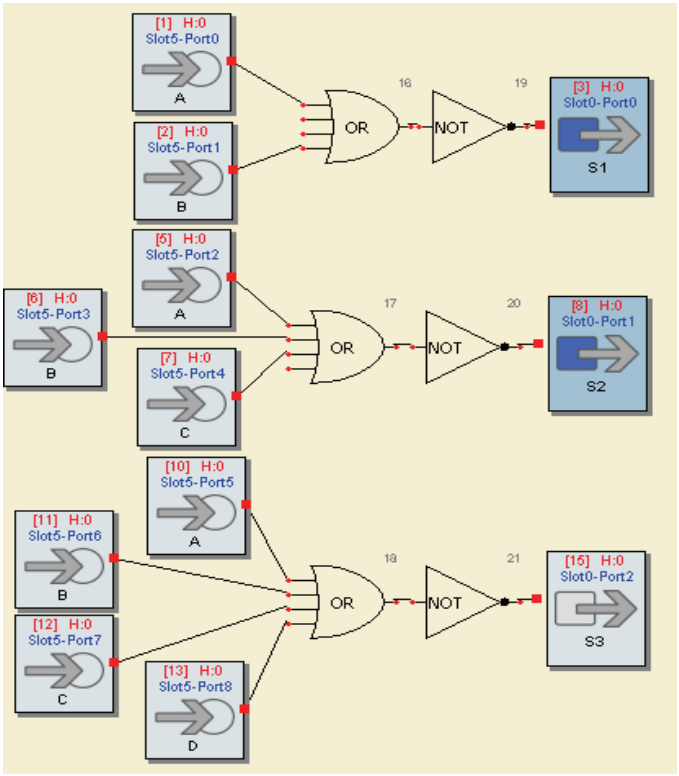
5) Reverser : Inverseur.sio



A	S
0	1
1	0

6) Nor : NOr.sio



D	C	B	A	S1	S2	S3
0	0	0	0	1	1	1
0	0	0	1	0	0	0
0	0	1	0	0	0	0
0	0	1	1	0	0	0
0	1	0	0		0	0
0	1	0	1		0	0
0	1	1	0		0	0
0	1	1	1		0	0
1	0	0	0			0
1	0	0	1			0
1	0	1	0			0
1	0	1	1			0
1	1	0	0			0
1	1	0	1			0
1	1	1	0			0
1	1	1	1			0

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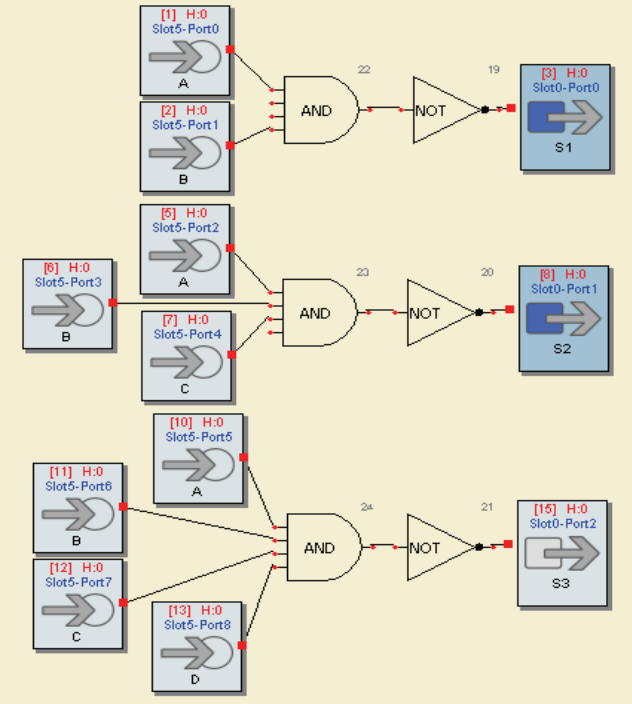
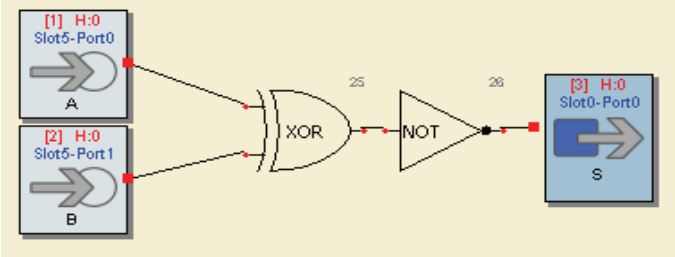
7) Nand : Nand.sio



D	C	B	A	S1	S2	S3
0	0	0	0	1	1	1
0	0	0	1	1	1	1
0	0	1	0	1	1	1
0	0	1	1	0	1	1
0	1	0	0		1	1
0	1	0	1		1	1
0	1	1	0		1	1
0	1	1	1		0	1
1	0	0	0			1
1	0	0	1			1
1	0	1	0			1
1	0	1	1			1
1	1	0	0			1
1	1	0	1			1
1	1	1	0			1
1	1	1	1			0

8)XNor : XNor.sio



B	A	S
0	0	1
0	1	0
1	0	0
1	1	1

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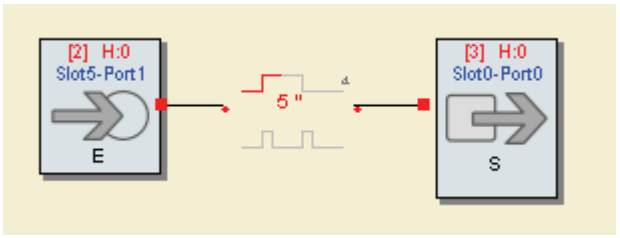
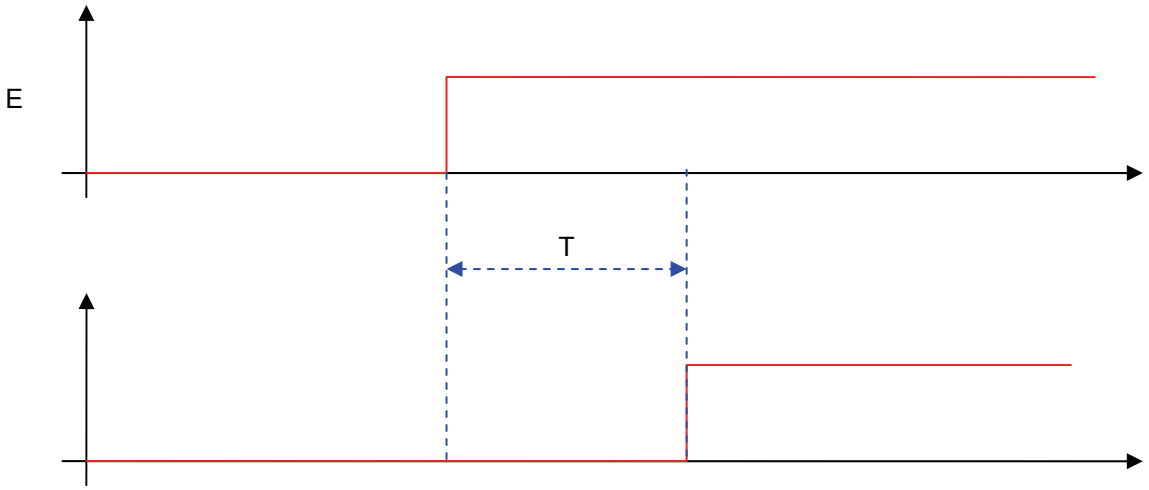
9)Timer :

9-1) Single Timer: TimerSimple.sio

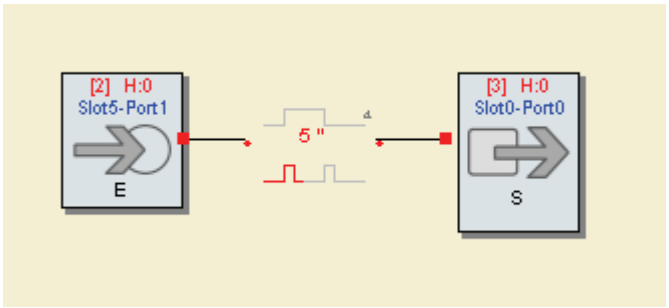
For T=5s





9-2) Pulse Timer: TimerPulse.sio

For T=5s



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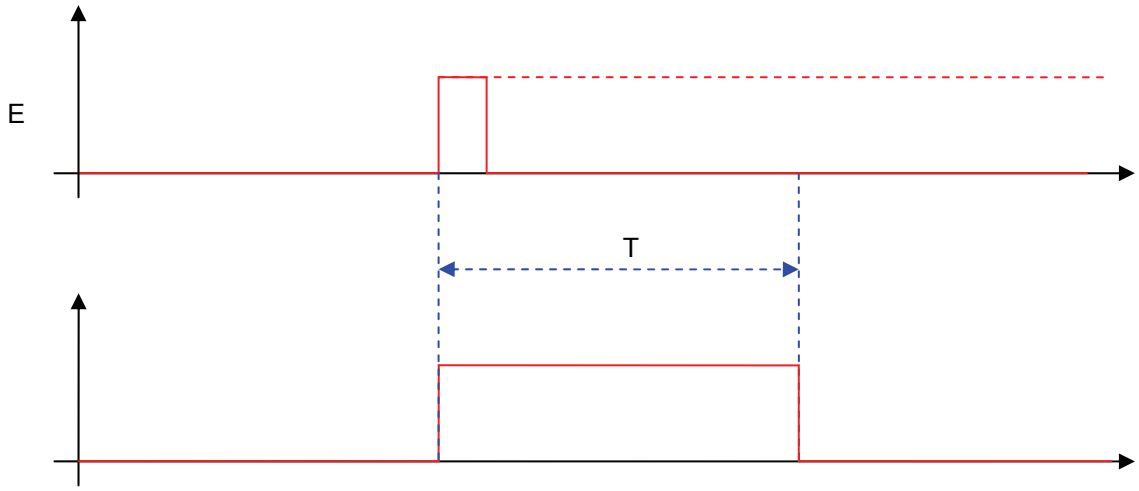
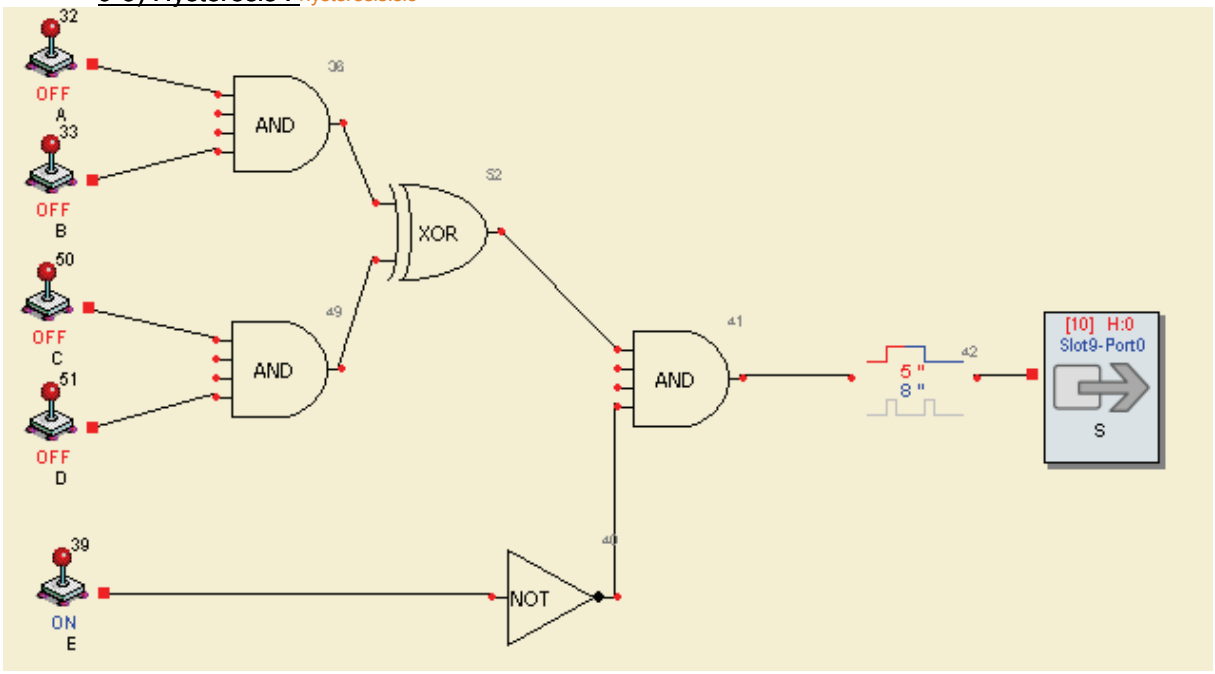


9-3) Hystérésis : hysteresis.sio



The 'Delay' object can manage a hysteresis (guard interval), ie. the output will be triggered only if the input remains TRUE during the specified minimum duration (5 seconds on the example).

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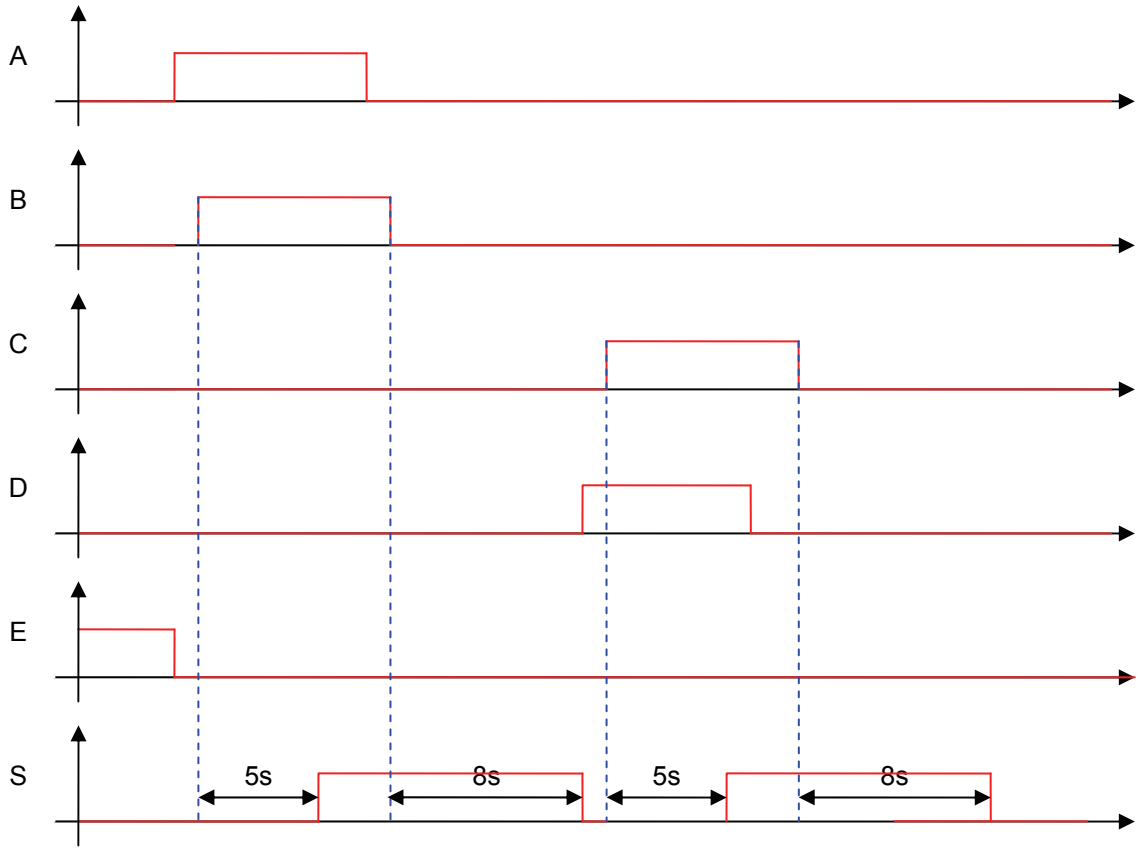
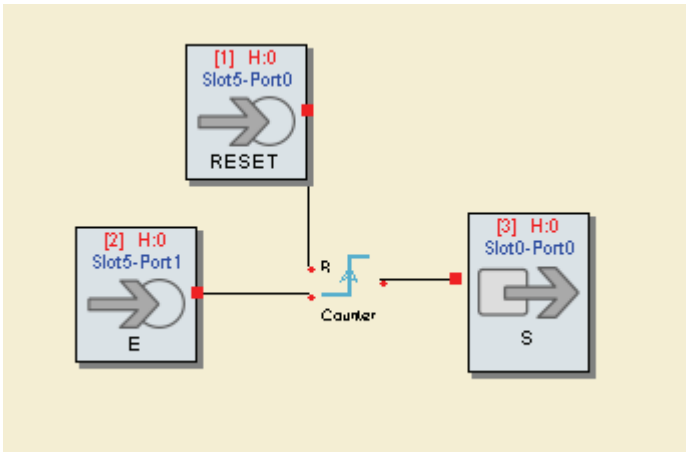


10)Counter : Counter.sio

For 3 impulsions in 5s (T)



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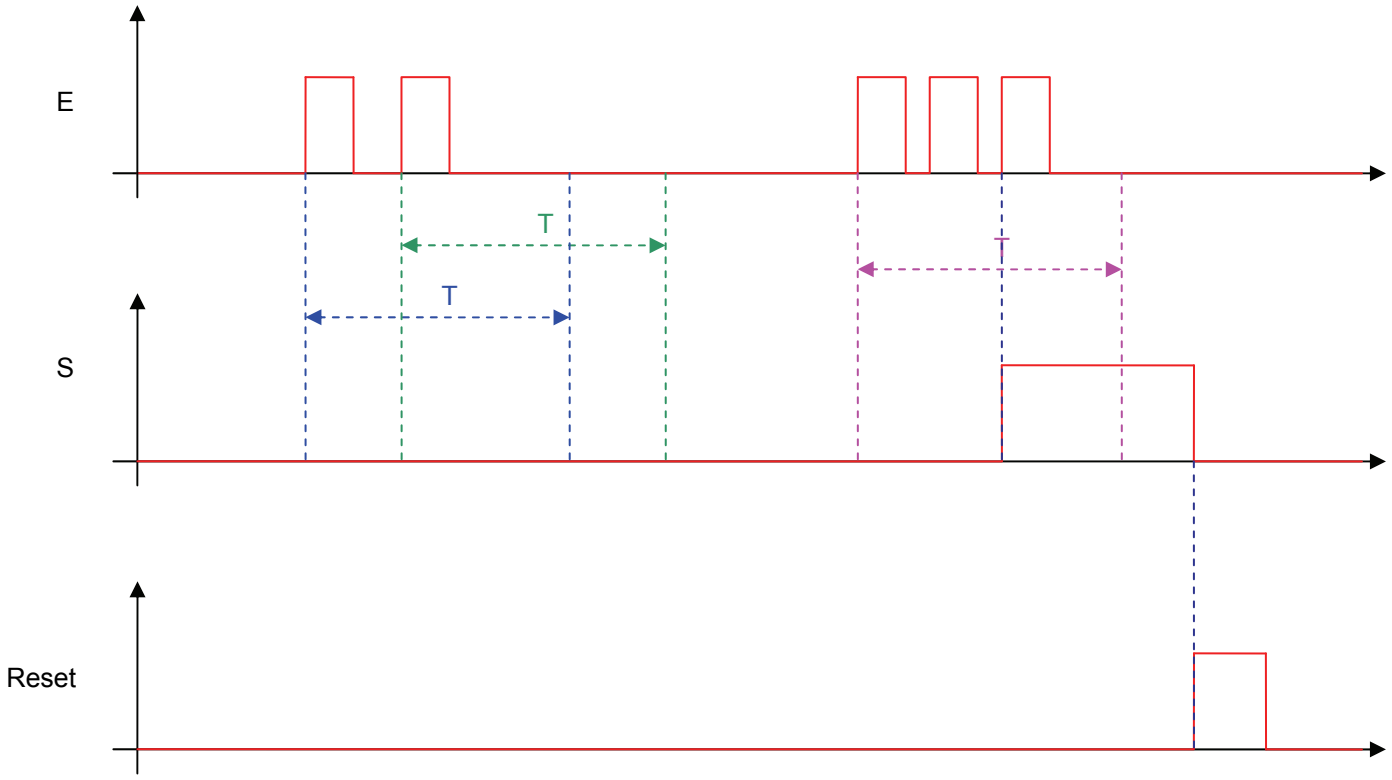
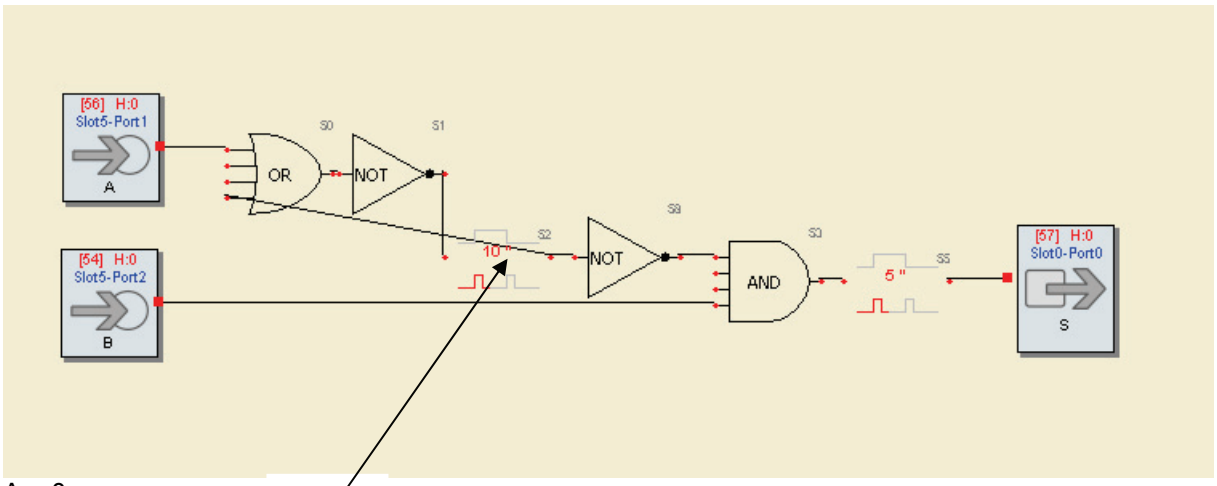


11) Diagram Tests:

11-1) Test1.sio



A = 0
B = 1

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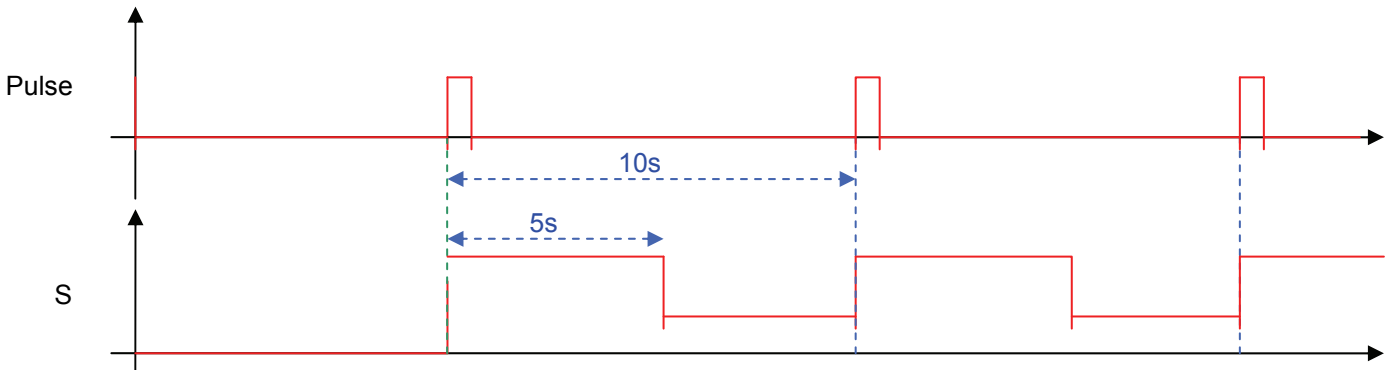
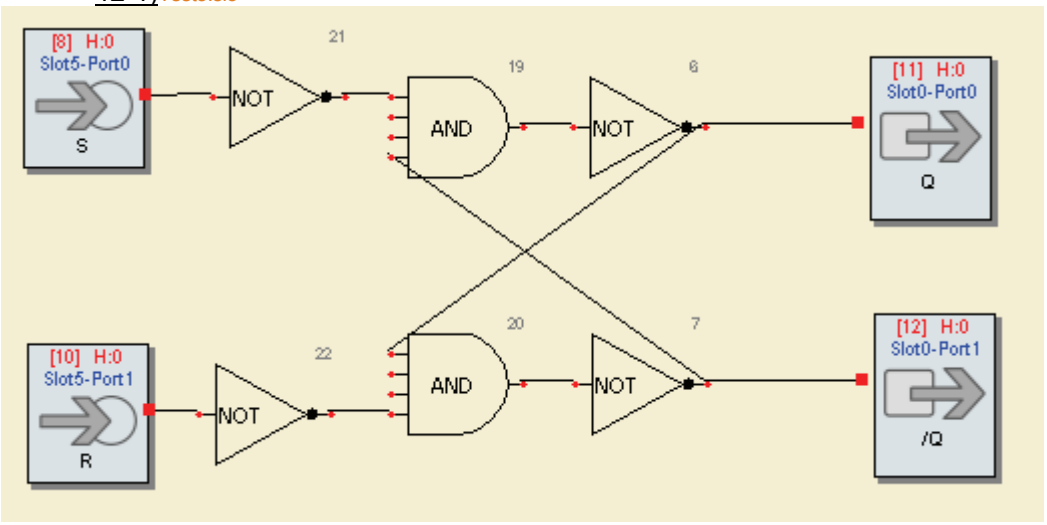


12) RS Rocker:

12-1)Test3.sio



Qn	R	S	Qn+1	/Q
0	0	0	0	1
0	0	1	1	0
0	1	0	0	1
0	1	1	X	X
1	0	0	1	0
1	0	1	1	0
1	1	0	0	1
1	1	1	X	X

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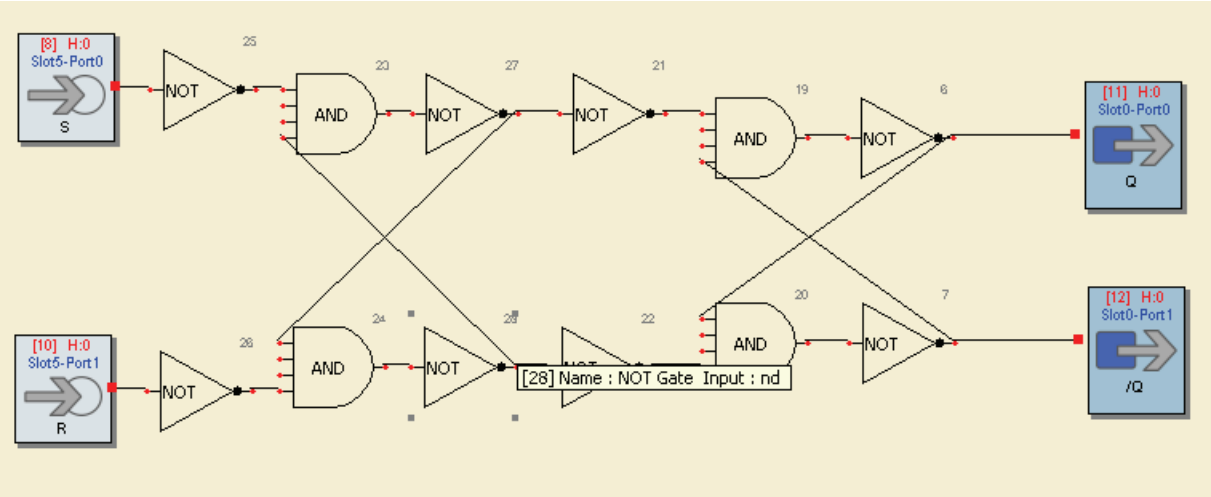
12-2)Test4.sio

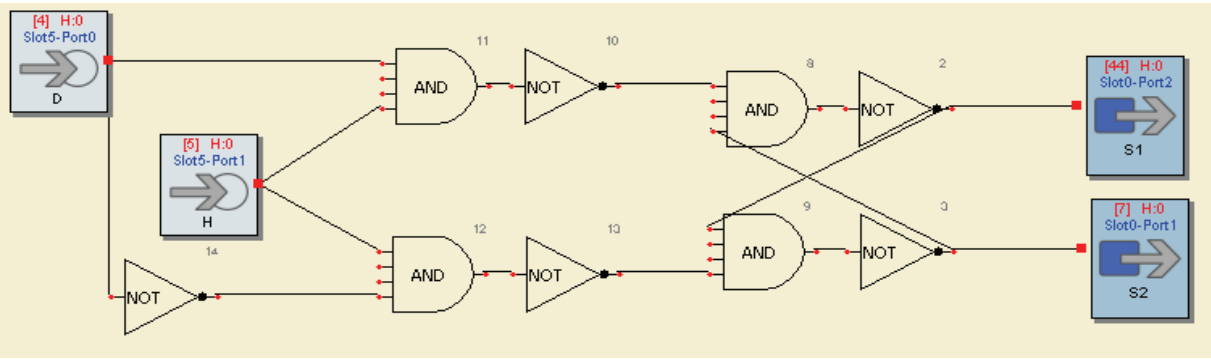


Qn	Set	Reset	Qn+1	/Q
0	0	0	0	1
0	0	1	0	1
0	1	0	1	0
0	1	1	X	X
1	0	0	1	0
1	0	1	0	1
1	1	0	1	0
1	1	1	X	X

→ Normally: $Q_{n+1}=1$ /Q=0

→ Normally: $Q_{n+1}=0$ /Q=1

14) Rocker D: Test6.sio



D on rising front:

D	Q	/Q
0	0	1
1	1	0

This type of logic diagram keeps a state in "memory".

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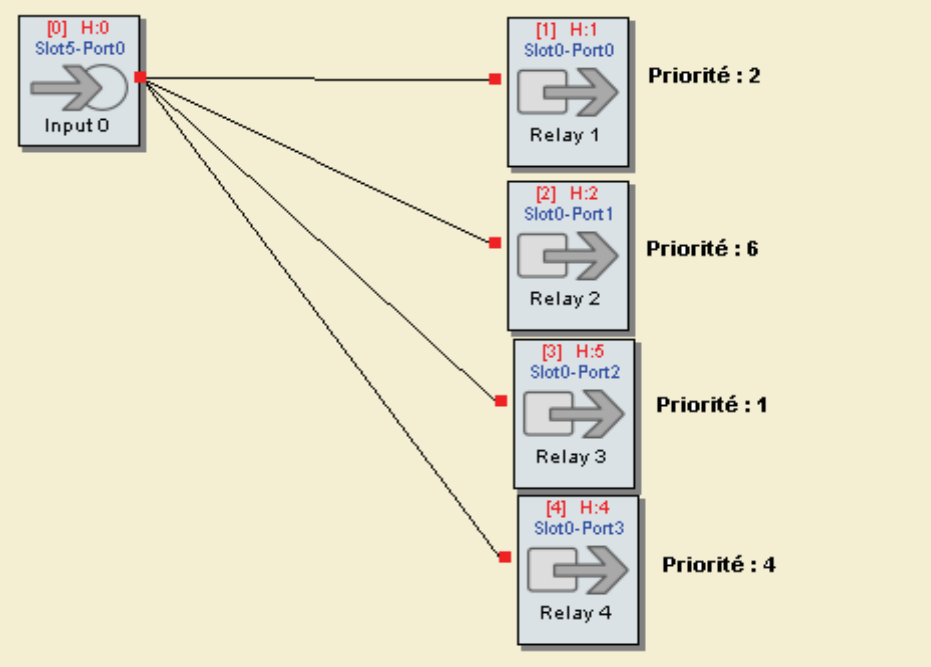
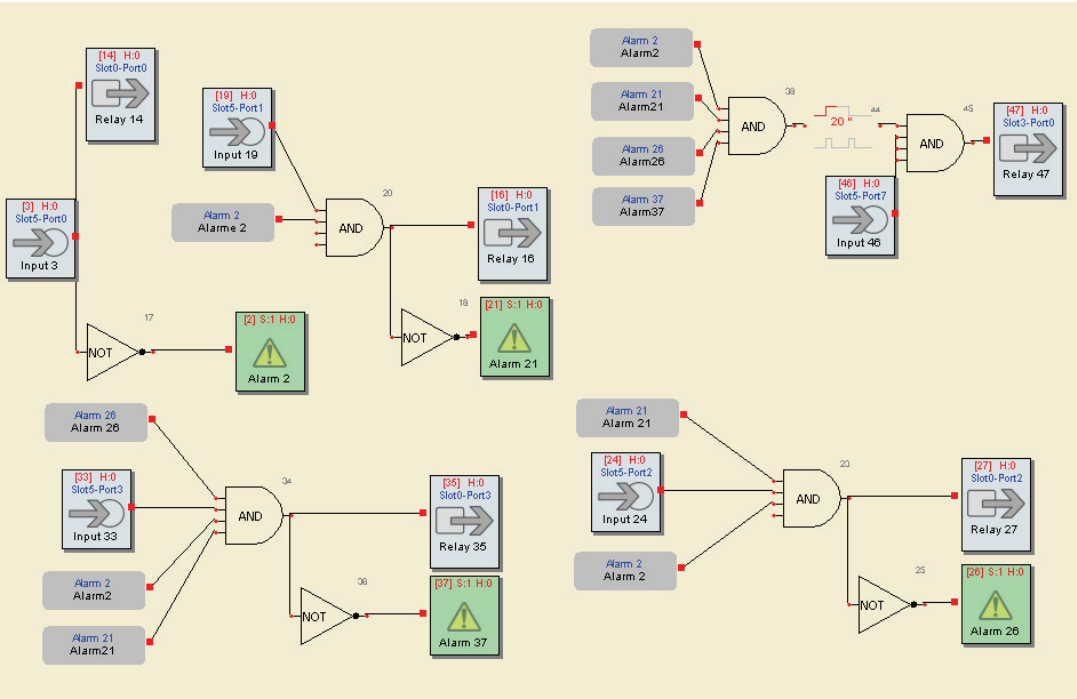
15) Priority of the relay: Test9.sio



If Input0 is TRUE, the Relay2 is the only one to commute because its priority is greater than the priority of the other relays.

16) Diagram test:

17-1)- Test10.sio



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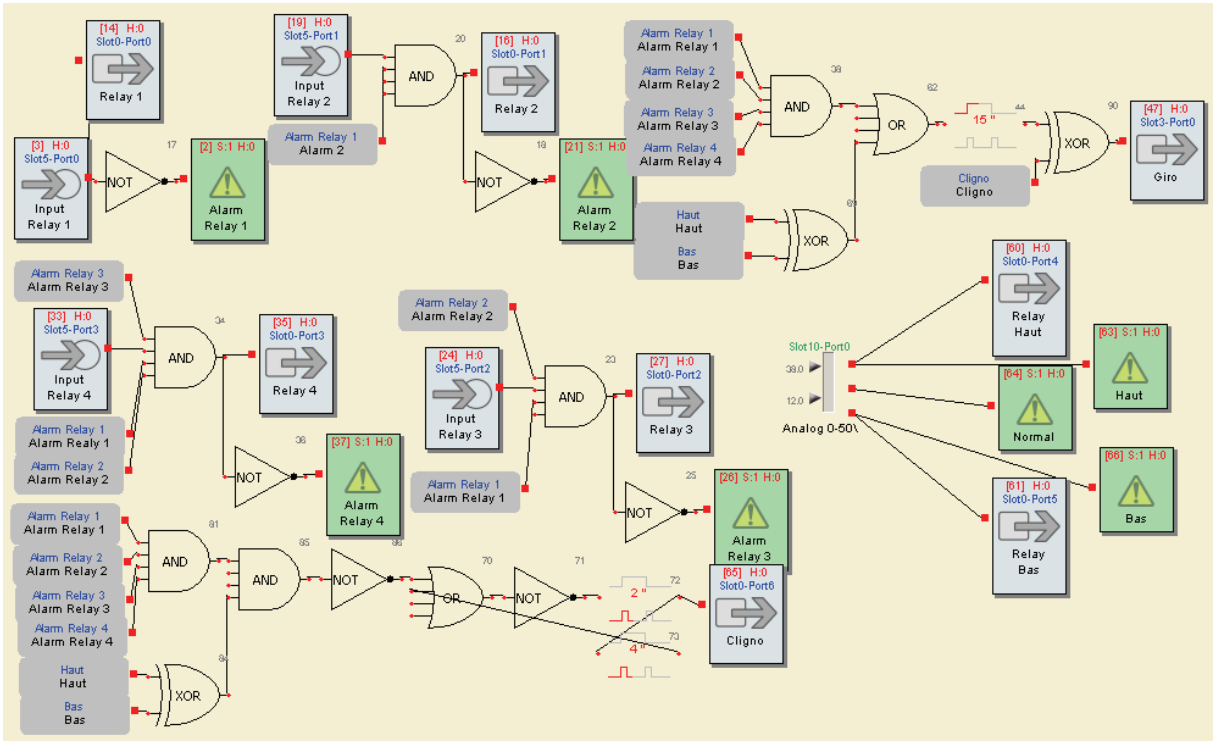
Input3	Input19	Input24	Input33	Input 46	Relay14	Alarm2	Relay16	Alarm21	Relay27	Alarm26	Relay36	Alarm37	Relay47
1	X	X	X	X	1	0	0	1	0	1	0	1	0
0	1	X	X	X	0	1	1	0	0	1	0	1	0
0	0	1	X	X	0	1	0	1	1	0	0	1	0
0	0	0	1	X	0	1	0	1	0	1	1	0	0
0	0	0	0	0	0	1	0	1	0	1	0	1	0
0	0	0	0	1	0	1	0	1	0	1	0	1	1

16-2)-Test10b.sio



Input Relay1	Input Relay2	Input Relay3	Input Relay4	Relay Haut	Relay Bas	Relay1	Alarm Relay1	Relay2	Alarm Relay2	Relay3	Alarm Relay3	Relay4	Alarm Relay4	Cligno	Giro
1	X	X	X	0	0	1	0	0	1	0	1	0	1	0	0
0	1	X	X	0	0	0	1	1	0	0	1	0	1	0	0
0	0	1	X	0	0	0	1	0	1	1	0	0	1	0	0
0	0	0	1	0	0	0	1	0	1	0	1	1	0	0	0
X	X	X	X	0	1	X	X	X	X	X	X	X	X	0	1(après 15s)
X	X	X	X	1	0	X	X	X	X	X	X	X	X	0	1(après 15s)
0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	1(après 15s)
0	0	0	0	1	0	0	1	0	1	0	1	0	1	C	C
0	0	0	0	0	1	0	1	0	1	0	1	0	1	C	C

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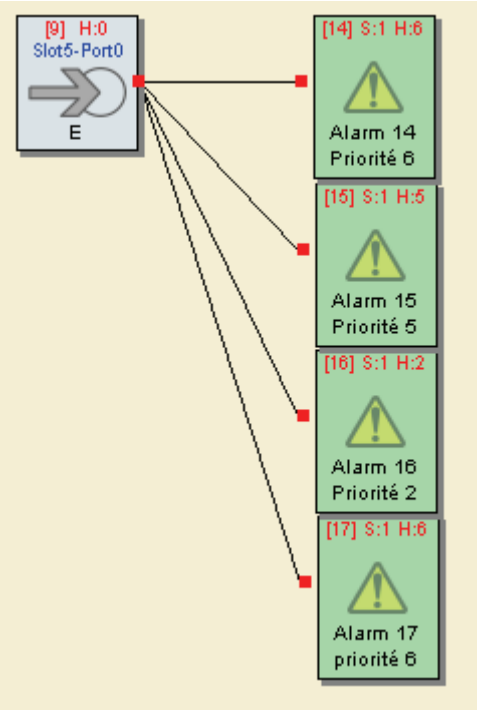
17) Alarm priority:

Test11b.sio



When E is TRUE, Alarms 14 and 17 are the only ones to be sent because their priority level is the greatest.

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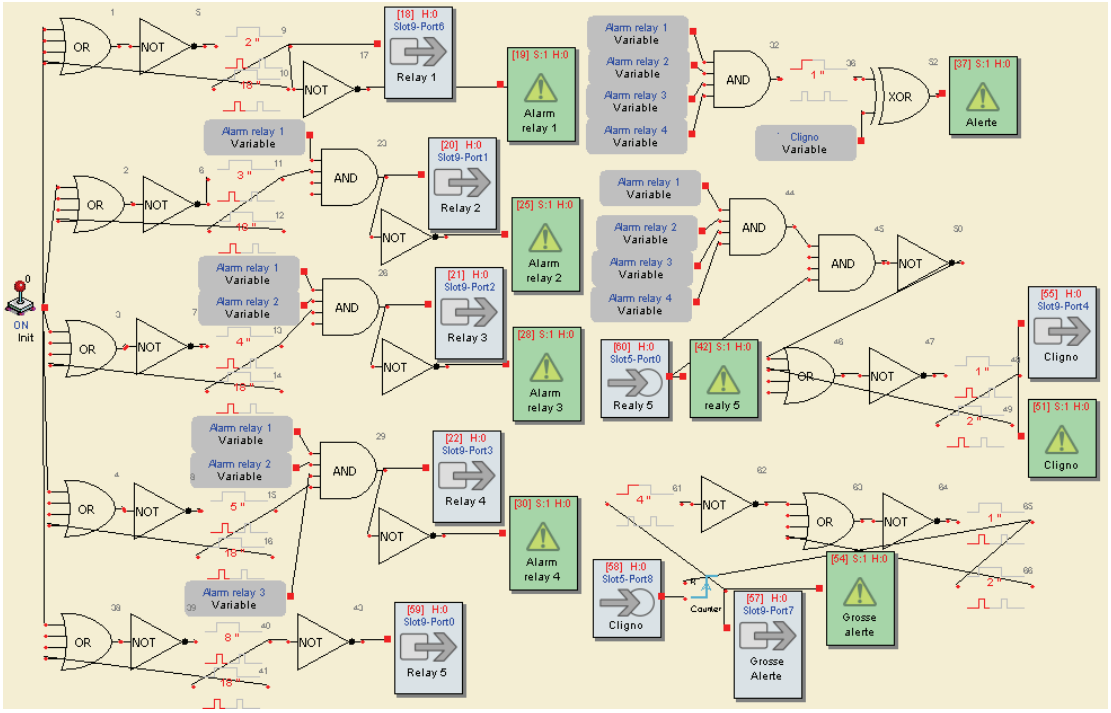
18) Test12.sio



Equipment: IP2CHOICE

-Slot 0: Dig
-Slot 1: Dig
-Slot 2: Dig
-Slot 3: Dig
-Slot 4: Dig
-Slot 5: Dig
-Slot 6: Dig
-Slot 7: Dig
-Slot 8: Empty
-Slot 9: Relay
-Slot 10: Empty
-Slot 11: Empty

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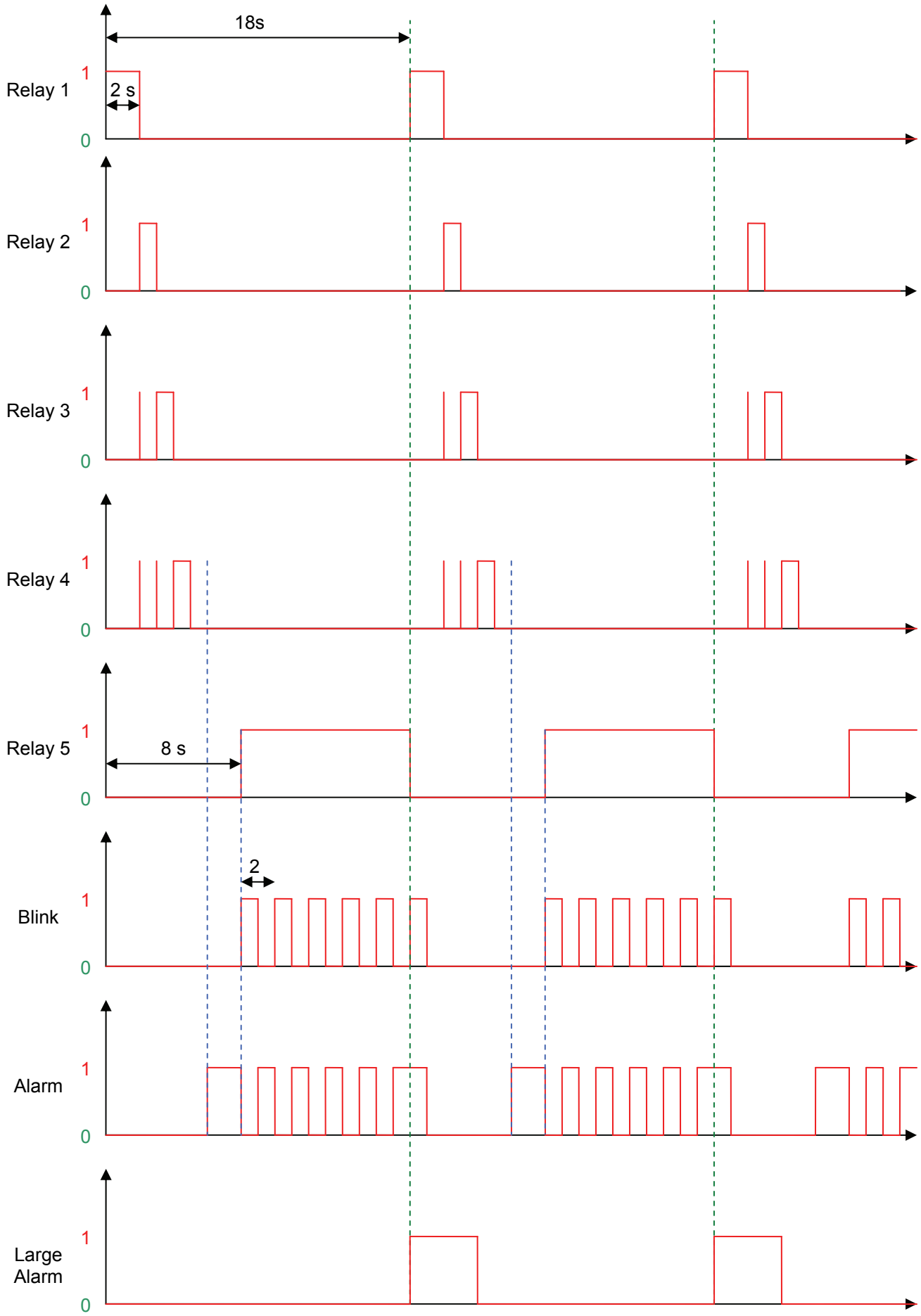

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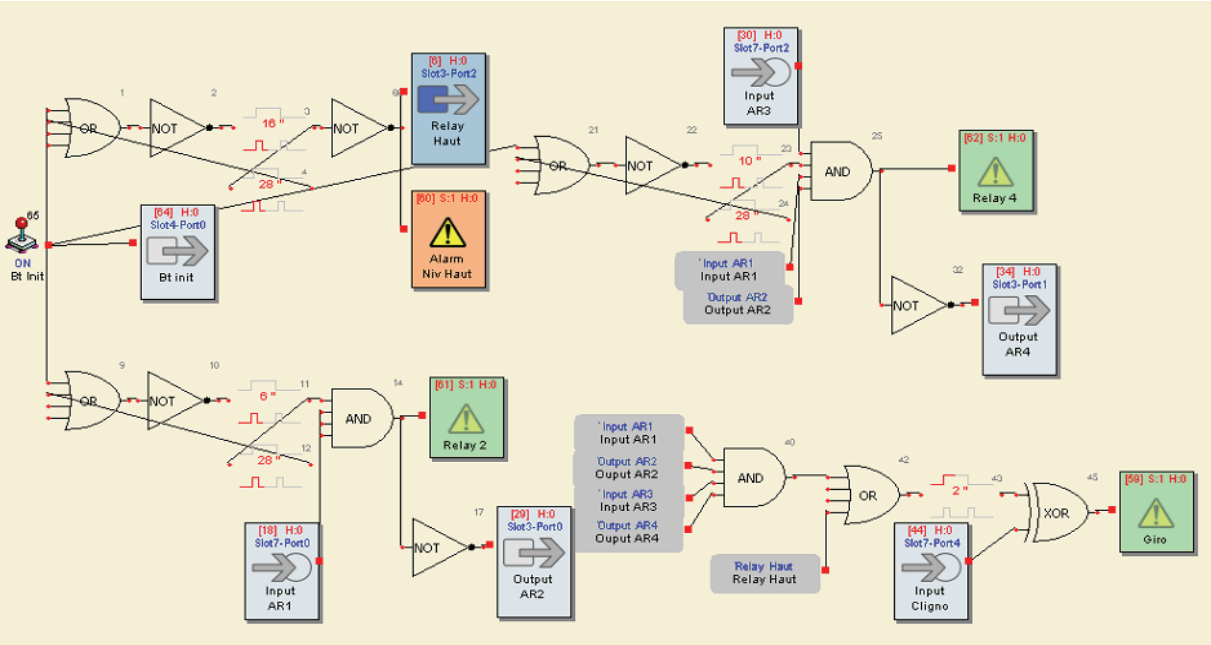
20) Example with 2 IP2CHOICE (crossed cable):

Equipment specifications:

Equipment 1: (**IP2CHOICE**)
- Slot 0: Dig
- Slot 1: Dig
- Slot 2: Dig
- Slot 3: Dig
- Slot 4: Dig
- Slot 5: Dig
- Slot 6: Dig
- Slot 7: Dig
- Slot 8: Empty
- Slot 9: Relay
- Slot 10: Empty
- Slot 11: Empty

Equipment 2: (**IP2CHOICE**)
- Slot 0: Relay
- Slot 1: Relay
- Slot 3: Relay
- Slot 4: Relay
- Slot 5: Relay
- Slot 6: Relay
- Slot 7: Dig
- Slot 8: Empty
- Slot 9: Empty
- Slot 10: Ana
- Slot 11: Ana

Script Equipment 1:Test_2ip_mach1.sio



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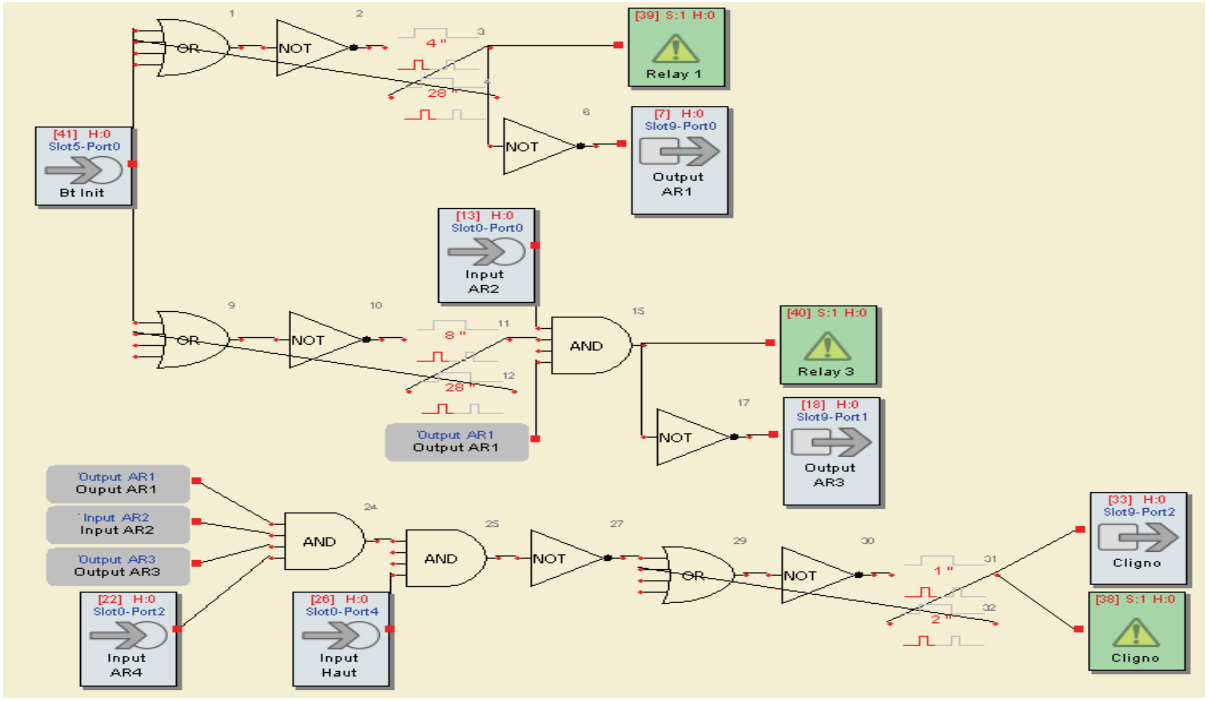
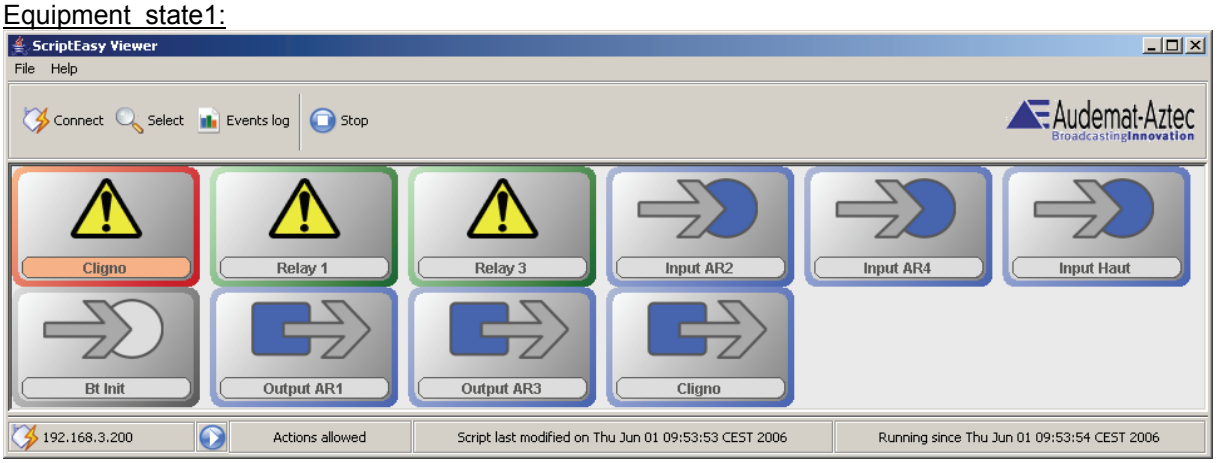
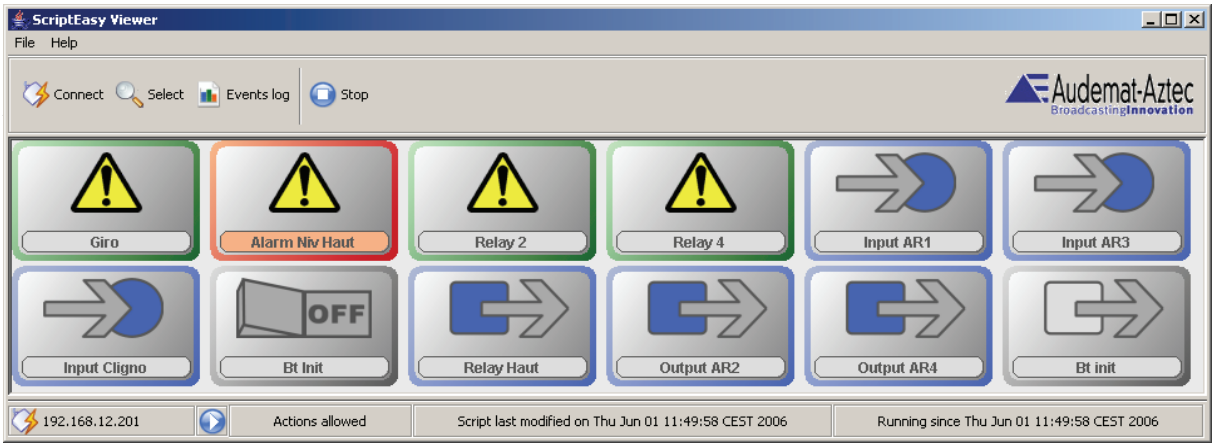
Script Equipment 2: Test_2ip_mach2.sio



Equipment state1:



Equipment state 2:



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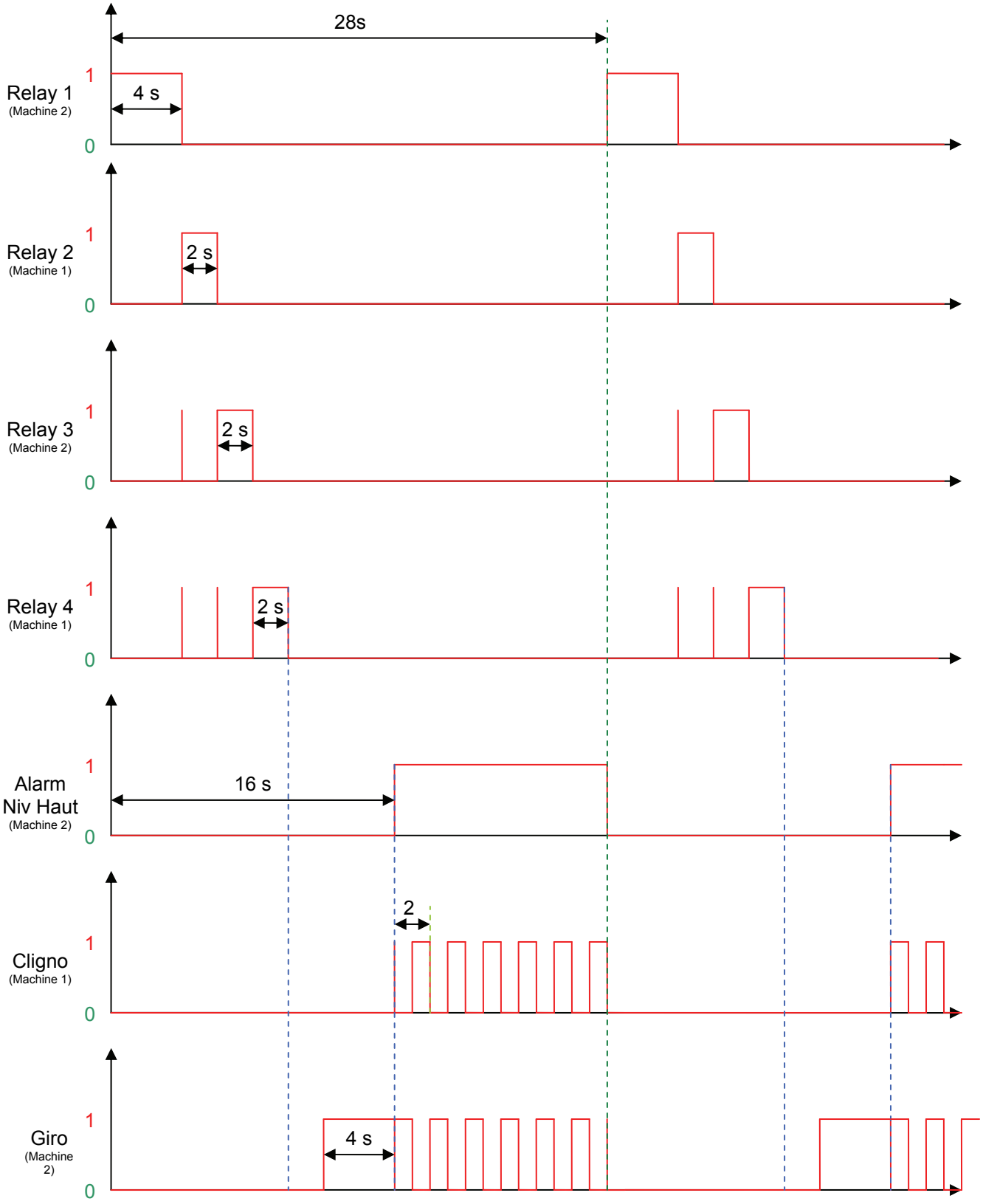

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APPENDIX 2: FOR MORE INFORMATION

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