AH

User manual

AH
ARTHUR HOLM

ERT INTERFACE UNIT IP to RS422

AHnet Communications Protocol

AHmcs Monitor Control Software

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Welcome

Thank you for purchasing an ARTHUR HOLM product.

Our product range has been designed to create the perfect meeting room, where the screens are a part of the interior design as well as essential communication tools.

Please, read this installation and operating instructions carefully and keep them in a safe place for a future consultation.

We remain at your entire disposal if you have any suggestions that would help us to improve our products.

Henrik Holm
General Manager

ARTHUR HOLM

EC Regulations and Security

ATTENTION: Do not disassemble or modify the device in any way.

This symbol warn of the presence of dangerous un-insulated voltages inside some of the components, of sufficient magnitude to expose people to risk of electronic shock.

This symbol draws attention to important use and maintenance instructions in the manual that accompanies the unit.

This symbol indicates that the equipment conforms to the norms established by the European Community.

Safety instructions

POWER SUPPLY

This equipment must be powered by an external power supply of 12Vdc. Always use the power supply that came with your ERT Interface Unit

ENVIRONMENT

Place the equipment on a raised area.

Place the equipment in a ventilated area.

Keep the equipment away from:
– Rain or water
– Excessive heat, cold or humidity
– Area exposed to direct sunlight
– Dirty areas
– Equipment generating strong magnetic fields

System description

The ERT Interface Unit and AHnet Communication Protocol have been developed to control, configure and diagnose Arthur Holm monitors.

This system converts between RS422 Protocol and IP through a twisted pair CAT-5 ethernet cable. Each unit has an input connector and Loop-Through, RJ45 type. It is connected in cascade making the wiring simple.

The AHnet Communication Protocol can also be used in diferent control platforms.

AHmcs software is supplied on a USB pen drive with the ERT unit. This software provides total control of the Arthur Holm monitors.

COMMUNICATIONS PROTOCOL

Communication	**RS422**
Connection	**RJ45**
Wiring	**CAT-5**

SPEED & CONFIGURATION

Baud Rate	**38400**
Data Bits	**8**
Parity	**None**
Stop Bits	**1**

System description

CONNECTION

This interface uses a twisted pair CAT-5 ethernet cable.

Only 2 of the 4 pairs in the CAT-5 cable are used. One pair is used to send data (sending instructions to the equipment), and the other pair is used to receive data (the equipment responding).
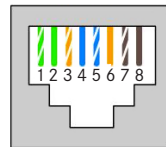
Pins 1 & 2 :
– The monitor responds

Pins 3 & 6 :
– The monitor receives instructions

WIRING DIAGRAM

1	Data TX +
2	Data TX −
3	Data RX +
4	NC
5	NC
6	Data RD −
7	NC
8	NC

RJ-45

AHnet protocol

The AHnet RS422 Communications Protocol is based on 5 Byte words.

Byte 0: Determines the type of monitor, for example 0xFA (Dynamic monitor).
Byte 1: Determines the equipment's address where instructions are sent.
Byte 2: Determines the type of instruction.
Byte 3: Determines the value 1 of the instruction.
Byte 4: Determines the value 2 of the instruction.

In some cases, Bytes 3 and 4, have no value and they are set to 0x00.

When sending a word, the equipment responds with the same word it receives, but increasing the **Byte 0** to 1.

For example:

Send: FA 01 01 01 00 Monitor 1 (UP)
Receive: FB 01 01 01 00 Monitor 1 (UP))

If the instruction to be sent is an enquiry, the response from the equipment on Byte 0 is also increased by 1.

CONTROL BYTE

The control byte can be checked to obtain the status of equipment. The control byte gives the state of each Bit.

Bit 0	(1) UP position
Bit 1	(1) DOWN position
Bit 2	(1) Screen ON
Bit 3	(1) Button lock
Bit 4	(1) Input DVI (0) Input VGA
Bit 5	
Bit 6	
Bit 7	(1) System failure

To send an instruction to all monitors simultaneously, set the Byte1 with 0xF9. The instruction will be received by all monitors.

When sending an instruction to all monitors simultaneously, the monitores do not send back confirmation of having received it.

AHnet protocol

Command	Instruction	Response
FA XX 01 01 00	Go UP	FB XX 01 01 00
FA XX 01 00 00	Go DOWN	FB XX 01 00 00
FA XX 02 01 00	Screen ON	FB XX 02 01 00
FA XX 02 00 00	Screen OFF	FB XX 02 00 00
FA XX 03 01 00	Input select VGA	FB XX 03 01 00
FA XX 03 00 00	Input select DVI	FB XX 03 00 00
FA XX 04 01 00	Button LOCK	FB XX 04 01 00
FA XX 04 00 00	Button UNLOCK	FB XX 04 00 00
FA XX 05 00 00	Auto config (VGA)	FB XX 05 00 00
FA XX 13 00 00	Failure OFF	FB XX 13 00 00
FA XX 14 00 00	Inquiry control byte	FB XX 14 CB1 CB2
FA XX 15 00 00	Firmware version	FB XX 15 FW

ERT Interface Unit
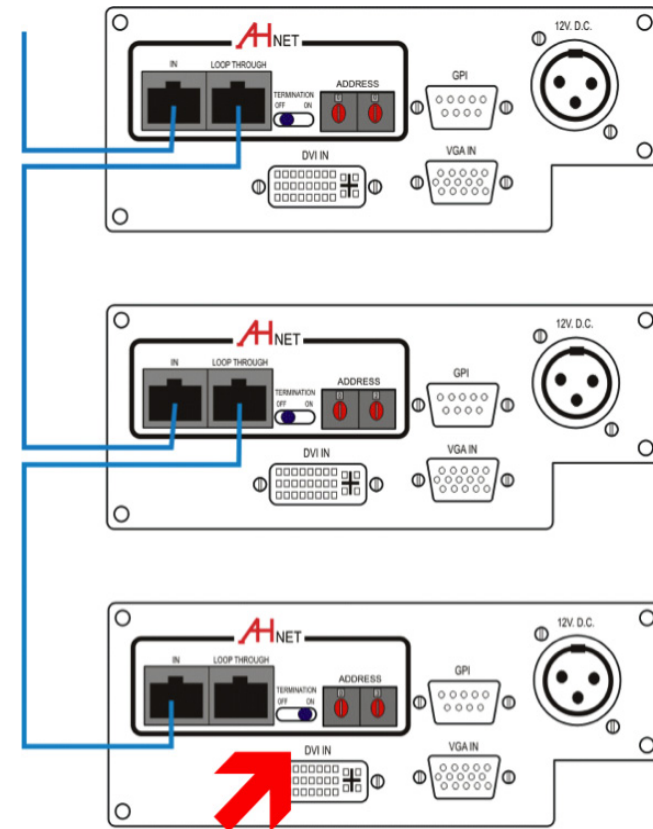
Maximum number of monitors connected per unit: **30.**

Set the address of the equipment **(Address).** The address of the first monitor should be **1**.

Termination must be active on the last monitor **Termination Switch (ON)**.

Maximum length of an entire cable line from ERT unit to the last connected monitor: **500 mts** (1640 feet).

The main function of the **ERT Interface Unit** is linking the **RS422** Protocol to an **IP** address.

To help control and configure the monitors, **AHmcs (**AH monitor control software) is included in the USB pen that comes with the unit.

Other systems with RS422 / IP can also be used to control the monitors.

ERT units have an **Auto Check** working mode. When Auto Check is selected the unit sends an alarm by email if a monitor stops responding or goes into protection mode (for example if an object is blocking the monitor cover plate).

It is important to note the following points:

1) When the router is in **Auto Check**, monitors can not be controlled via IP and have to operated manually. This way user safety is increased.

2) The alarm mail system sends a generic message when a monitor fails or goes into protection mode.

3) To use the mail system, you must have an SMTP mail server.

EXAMPLES OF MAILS GENERATED

A unit is not responding

Date: Monday 15th of May, 2011, 10:22h
From: demo@ahnet.com
To: John Tech <j.tech@company.com>

Transition Alarm!

A unit is blocked (Protection STOP)

Date: Monday 15th of May, 2011, 10:22h
From: demo@ahnet.com
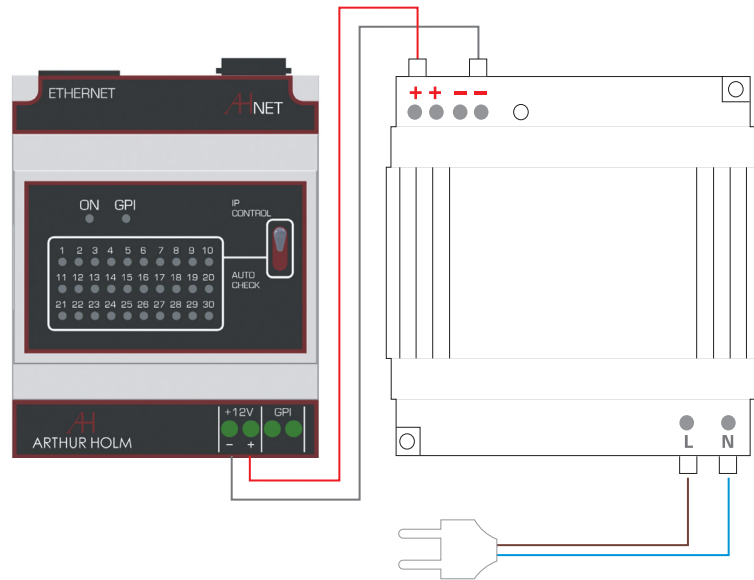To: John Tech <j.tech@company.com>
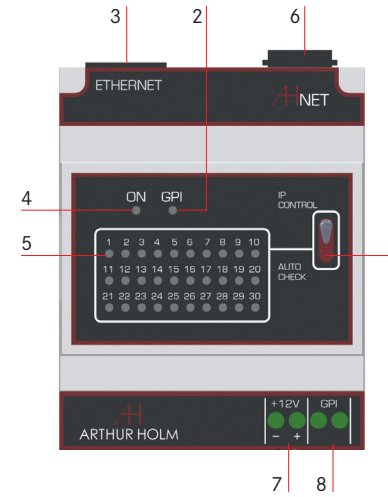
Transition Alarm!

INSTALLATION
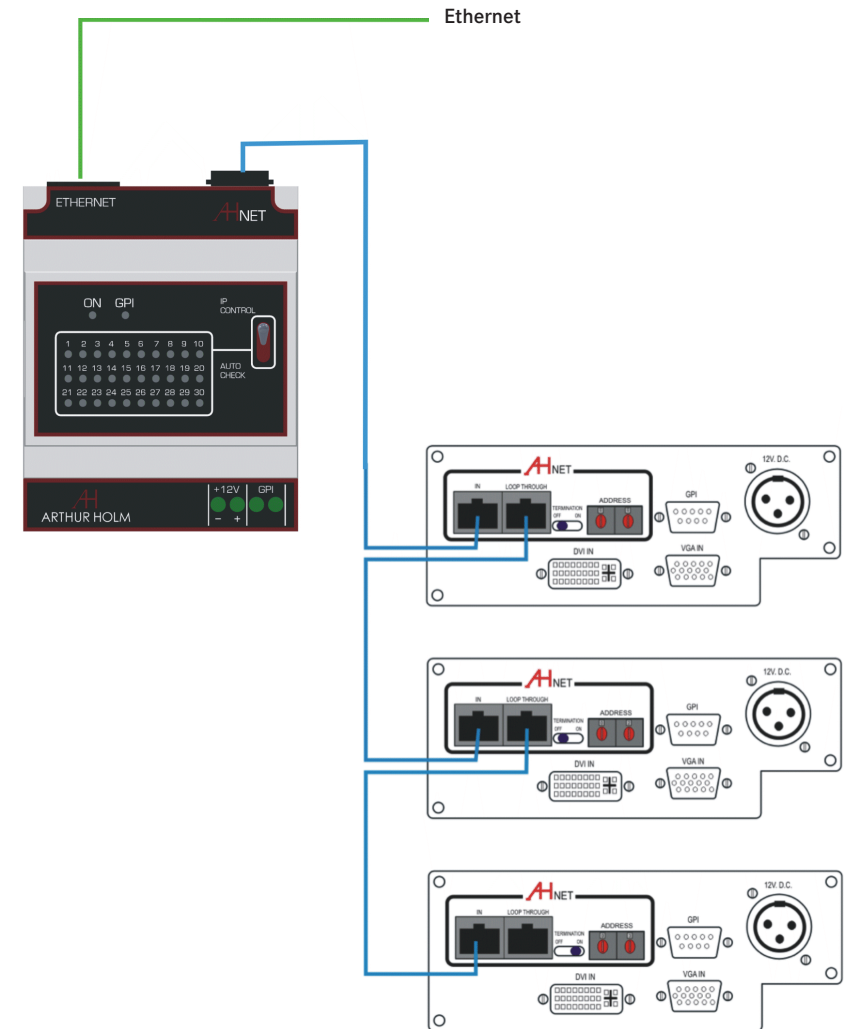
CONNECTING THE POWER SUPPLY

FUNCTIONS

Power supply connexion diagram.

1) Work mode selector:

   a) IP Control
   b) Auto Check

2) Closed GPI indicator

3) Ethernet connection

4) Operation indicator ON

5) Activity indicator leds:

   a) In IP control mode, indicate communication with the monitor
   b) In Auto Check mode, the lights warn of monitor failure

6) AHnet connection (RS422)

7) Connection to 12V power supply

8) GPI, for system configuration

For remote access web configuration, you need a computer connected to the network and set to an IP address within the same range as the ERT unit.

The default IP address of the ERT unit is: 192.168.0.125

Remote web configuration is limited to the essential features of the system.

To obtain assistance and information about the system, access the **"Help"** menu (some areas are accessible only to the manufacturer).

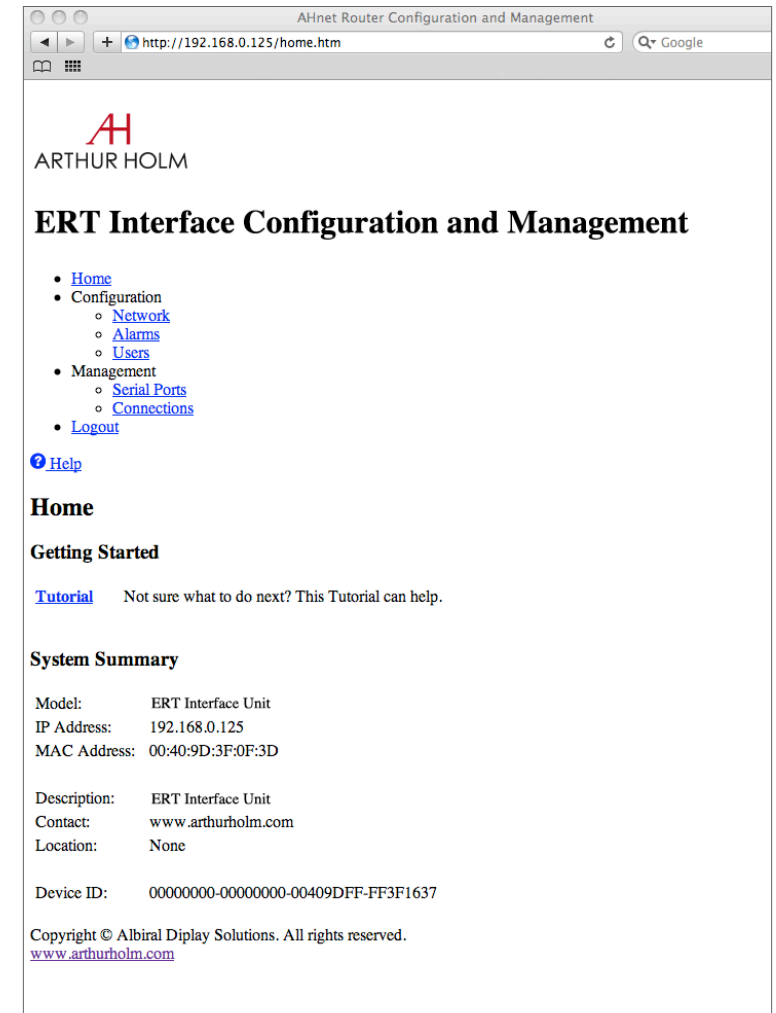1) Open your web browser.

2) Key in **http://192.168.0.125** and the following screen appears.
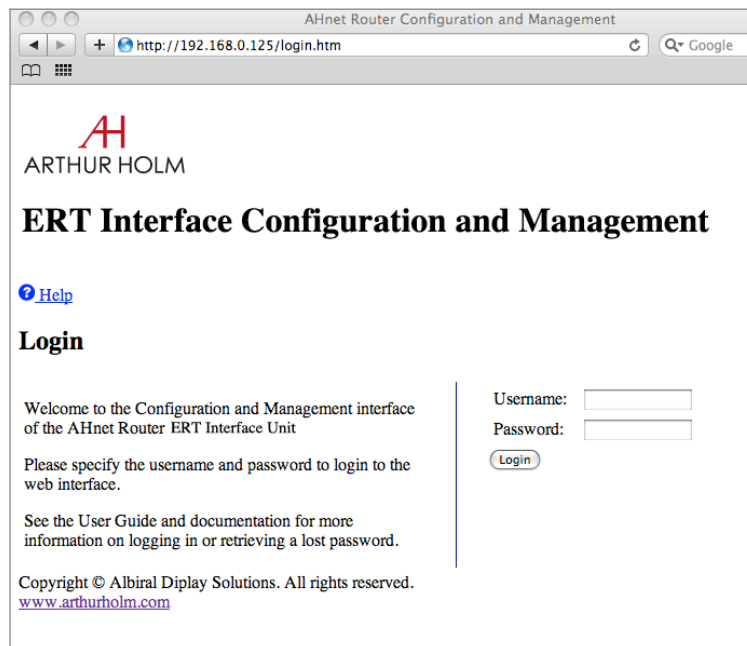
3) Enter the username and password. The default is:

Username: **user**   Password: **storm**

4) The main page displays a the menu and basic system information.

5) Click on **Network** configuration and the following window appears.

Configure **IP address**, **Subnet Mask** & **Gateway** in this window.
The **Gateway** needs to be configured only if you want **Auto Check** to send alarms by email.

The other parameters are set by default. Now click **"Apply"**.

6) To configure **Auto Check** to send alarms, click on the **Alarms** menu.

Check **"Enable alarm notifications"**.

Enter the address of the SMTP mail server.

Enter the email address of the ERT unit after **"From E-mail Address:"** (an address in the mail server must have been assigned to the ERT).

7) Select **Alarm 1.** This window appears.

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ERT Interface Configuration and Management

Alarm 1 Configuration

Alarm Conditions

⊙ Send alarms based on GPIO pin states

Pin 1: [Low] ⇕   Pin 2: [Low] ⇕   Pin 3: [Low] ⇕
Pin 4: [Low] ⇕   Pin 5: [High] ⇕

Alarm recurrence time: [10] secs
☐ Send reminders while GPIO pins remain in this state
   Every: [10] secs

○ Send alarms based on serial data pattern matching
   Pattern: [default]

Alarm Destinations

☑ Send E-mail to the following receipients when alarm occurs
To: [j.tech@company.com]
CC: [ ]
Priority: [Normal ⇕]
Subject: [A unit is not responding]

☐ Send SNMP trap to following destination when alarm occurs
   Destination: 0.0.0.0
(Apply) (Cancel)

– In **"Send E-mail to..."** enter the email address to which the alarm will be sent.

– Press **"Apply"**.

– You have to repeat the same process again for **Alarm 2.**

– Press **Logout** to exit.

8) Finally, to use the **Auto Check** we have to check the monitors linked to the ERT Interface Unit. The monitors must be connected and working.

– Place the mode selector work (**1**) on **Auto Check** position.

– Turn off the ERT unit.

– Put a wire between **GPI** connections to close the contact.

– Power up the ERT unit.

– The system will check how many monitors are connected (**Wait**)

– When the process is completed, all LED indicators will light in flashing mode.

– Now, turn the power off and remove the cable from GPI.

– The system is now ready for operation.
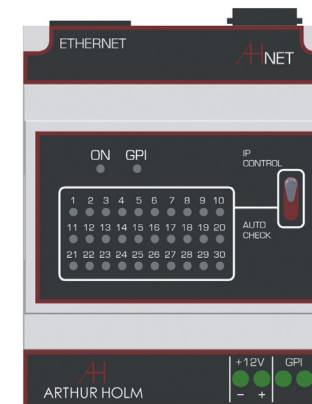
A wire between the GPI connections closing the contact

AHmcs software is supplied with the ERT unit on a USB pen drive.

This software is designed to control and diagnose an installation of Dynamic monitors.

The software runs on Windows OS.

AHmcs software can control up to 200 Dynamic monitors in groups of 30. One ERT unit is needed for every 30 monitors.

INSTALLATION

1) Run the file **"Install Monitor Control V2.0.3"**

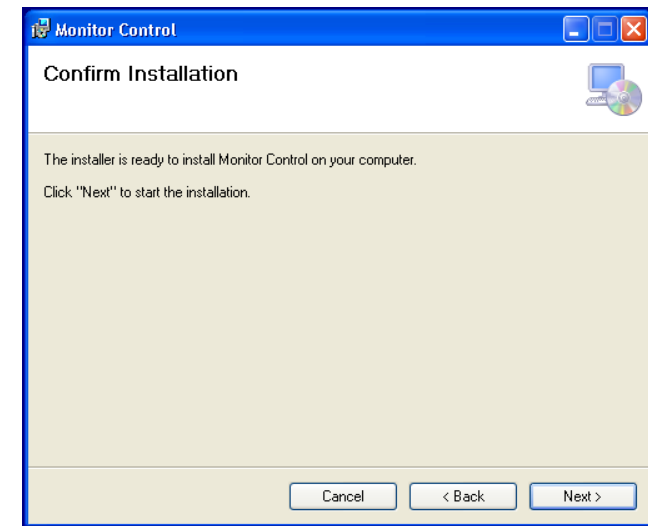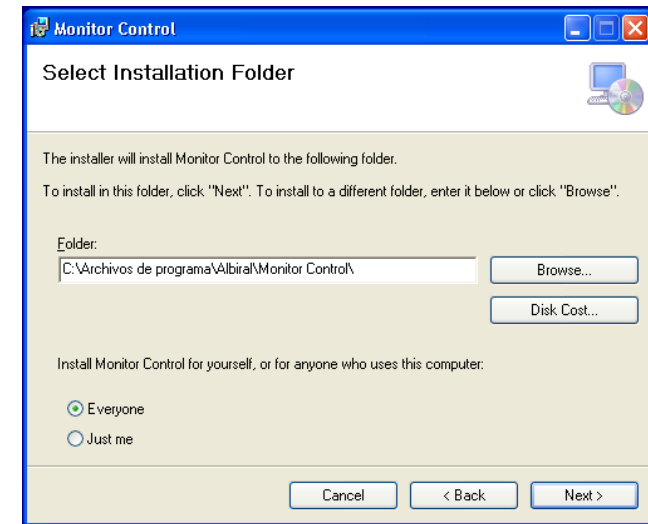2) Microsoft's **.NET Framework 3.5** has to be installed on the computer.

In current versions of Windows this software comes preinstalled. In older versions it may not be installed. In such case AHmcs will automatically install it. During this process an Internet connection is needed.
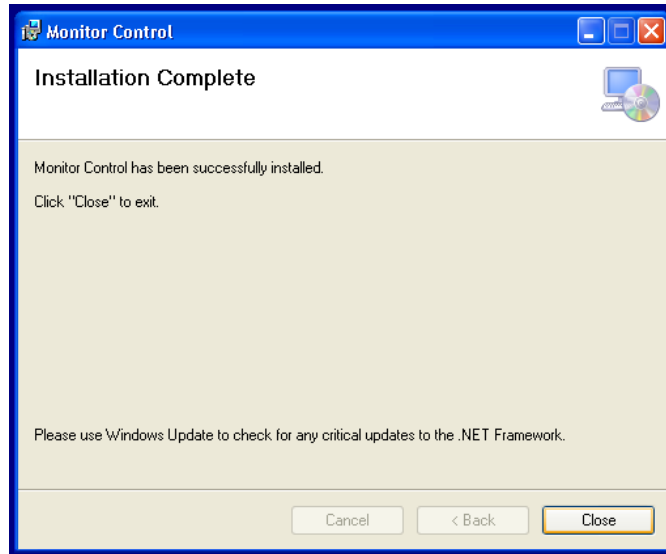

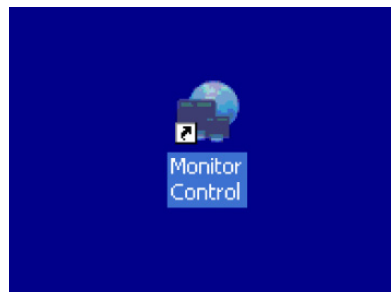3) Click **Next**

4) In this window select the installation folder and click **Next**

5) To confirm installation, click **Next**

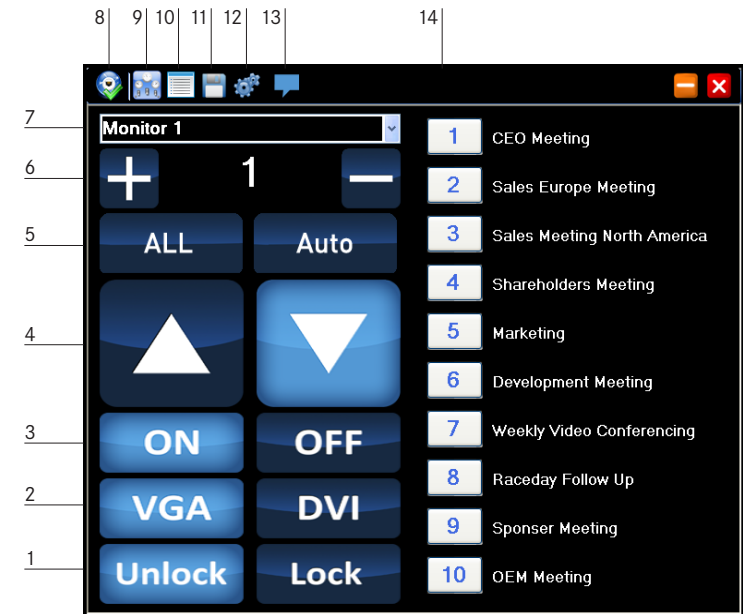6) This window informs that the installation is complete.
   Press **Close**

7) You will see this icon on your desktop. Now you can launch the software.

MAIN SCREEN

1) **Lock & Unlock** keys override the Up & Down buttons on the monitor
2) Select input, **VGA** and **DVI**
3) LCD screen ON and **OFF**
4) **UP** & **DOWN** monitor movement
5) **ALL** sends commands to all monitors simultaneously
   Auto image adjustment (only for VGA signals)
6) Press **+** and **−** keys to select the monitor you want to control
7) Displays the name of the monitor that you are controlling
8) Communications status: **Green: OK** − **Red: FAULT**
9) Shows the main **control window**
10) Shows the main **memories window**
11) Saves in **memory** monitor arrangements
12) Access to the **setup men**u. This option is password protected
13) Displays the pop-up **errors window**
14) List of **memories** stored

Please note that some versions of Dynamic monitors do not have all these features and consecuently they may not all be operational.

AHmcs Monitor Control Software

CREATING MEMORIES
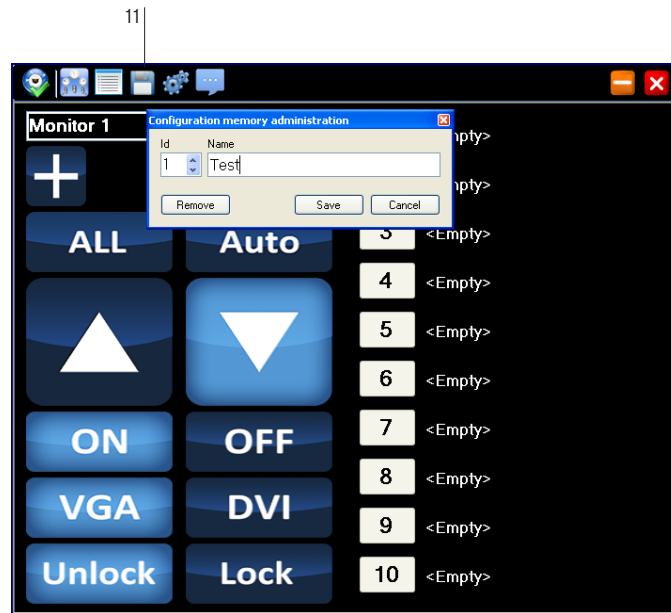
The use of **Memories** helps to set the arrangement of the room for different situations. The configuration of each and every monitor is stored in the memory and the stored Memories can be retrieved with a single click to suit any occasion.

1) Set each monitor to the desired situation: position (up/down), input selection, key lock etc.

2) Click the icon to save the memory (11).

3) Select memory number and name it appropriately.

4) Press **Save**

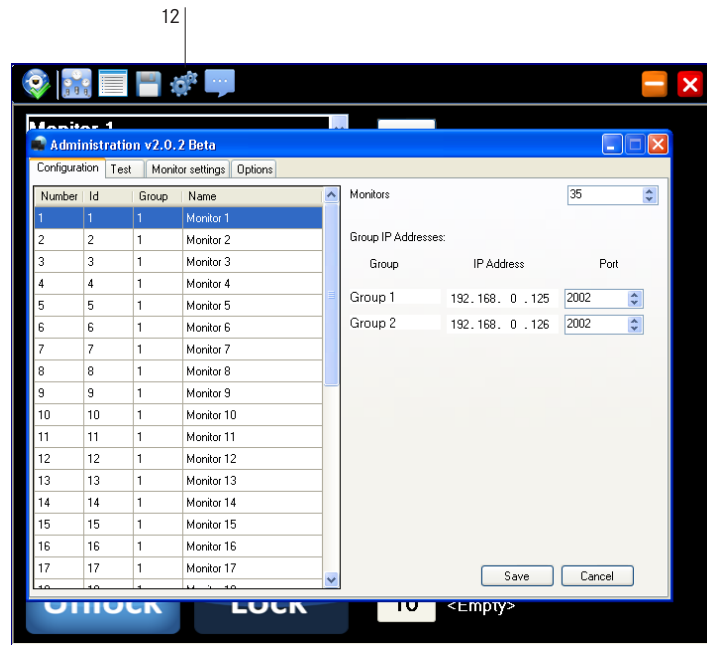The monitor arrangement is saved and ready to be retrieved with a click.

AHmcs Monitor Control Software

SYSTEM CONFIGURATION
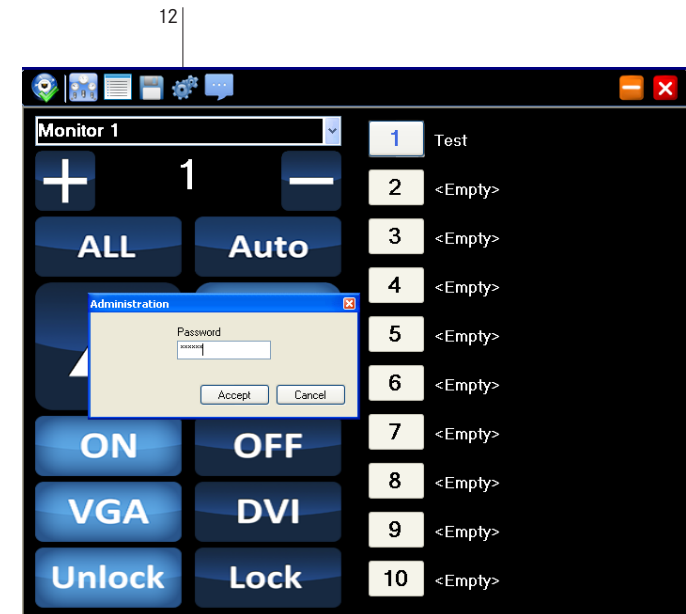
To access the setup menu, click on the icon (13).

You must enter the password: **config**

SYSTEM CONFIGURATION

In the window of the **set up menu**, configure the monitors connected to the ERT unit, and the unit's IP address and port.

1) Clicking on the **Name** cells, monitor names can be edited.

2) In **Monitors**, configure the number of monitors connected.

3) For each group of 30 monitors we must enter the IP address and port of the ERT unit serving that group.
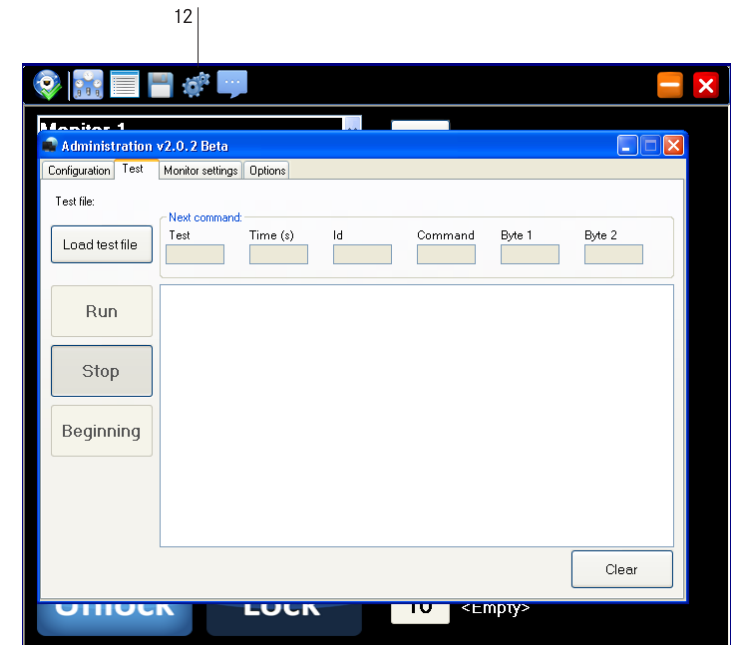
TEST

In this window a test file (Test.xml) can be loaded to set the monitors running continuously, for verification of the mechanical movement.
This should be carried out only by authorised after-sales service personnel.

TEST

12
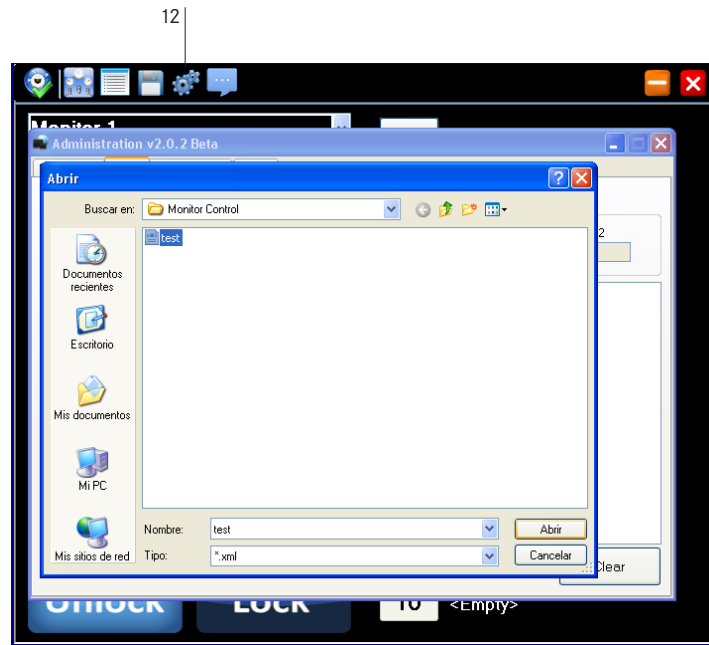
Click on **Load test file** to upload the file.

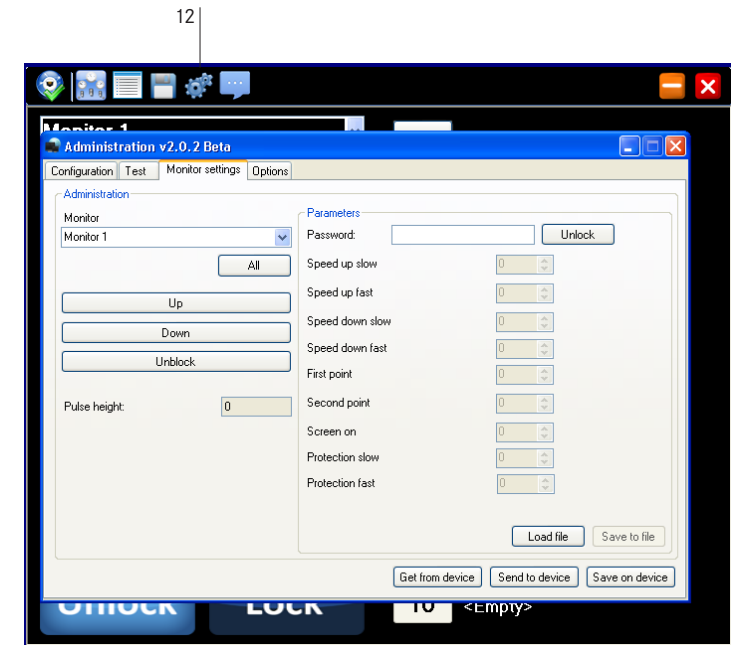Then, click **"Run"** to start the sequence of continuous movement.
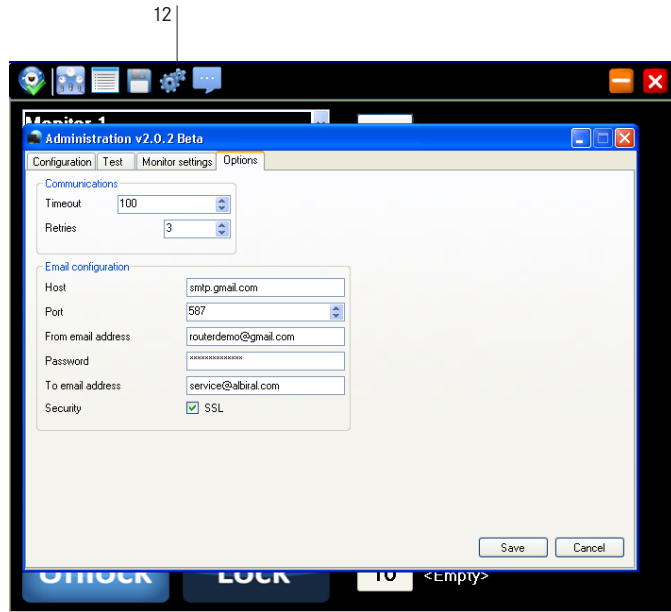
Press **"Stop"** to stop the test sequence.

MONITOR SETTINGS

12

This window is disabled and only accessible by technical service personnel.

OPTIONS MENU

12

EMAIL CONFIGURATION

In this window, set the communication parameters.

Communications

Timeout   Is the length of time, in microseconds (mS), the system waits for a response from the monitor before sending a communication error. By default is set at **100.**

Retries   When communication fails the system tries again. Here you can specify how many retries before displaying a failure message. By default is set at **3**.

In normal circumstances the default values are adequate. These values can be modified if there are communication problems in the network and the monitors are controlled via the Internet.
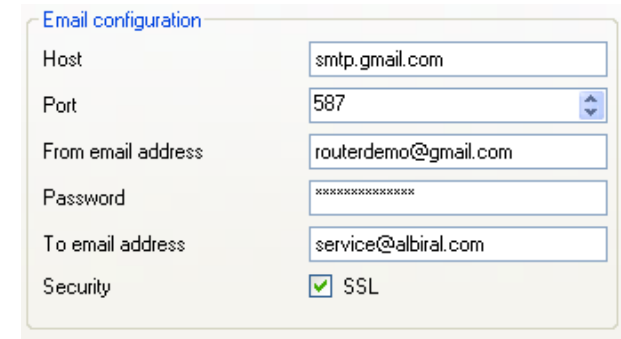
This program can be configured to send an alarm by email if a fault in the system is detected. The warning can report which monitor is failing and the cause of the malfunction.

This function must not be confused with the alarms sent by the ERT unit when set in Auto Check mode.

The mail server must be type POP3 and an account like G-mail can be used.

AHmcs Monitor Control Software

13
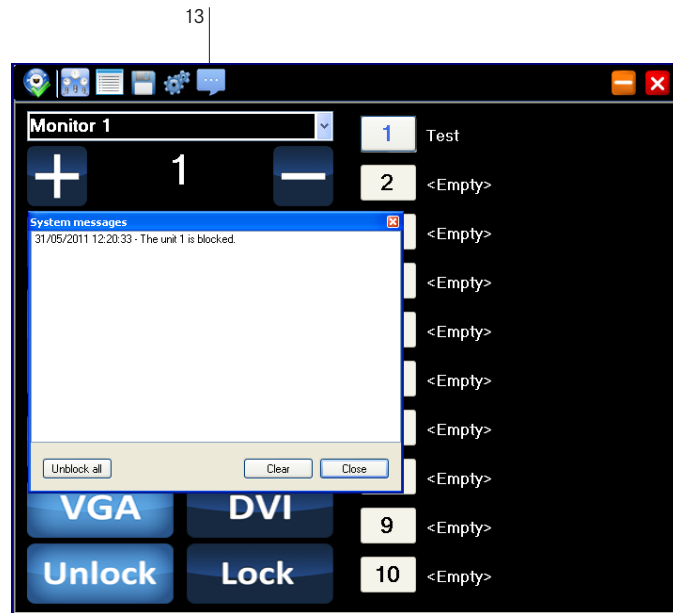
If a fault occurs, a pop-up window reports the problem.
The faulty monitor is dropped from the system until the **Clear** button is pressed. If the problem persists the message appears again.

If a monitor is blocked by an object obstructing its movement, it can be unlocked by pressing the button: **Unlock all.**

Before unlocking a monitor it is imperative to examine the monitor personally to determine the reason for blocking.

Press **Close** to close the window.

Information on disposal for users of waste electrical & electronic equipment

This symbol on the products and/or accompanying documents means that used electrical and electronic products should not be mixed with general household waste.
For proper treatment, recovery and recycling, please take these products to designated collection points, where they will be accepted on a free of charge basis. Alternatively, in some countries you may be able to return your products to your local retailer upon the purchase of an equivalent new product.
Disposing of this product correctly will help to save valuable resources and prevent any potential negative effects on human health and the environment which could otherwise arise from inappropriate waste handling. Please contact your local authority for further details of your nearest designated collection point.
Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.

For business users in the European Union

If you wish to discard electrical and electronic equipment, please contact your dealer or supplier for further information.

Information on disposal in countries outside the European Union

This symbol is only valid in the European Union.
If you wish to discard this product, please contact your local authorities or dealer and ask for the correct method of disposal.

Product Warranty

Albiral Display Solutions S.L., with this document, guarantees all Albiral and Arthur Holm Trademark devices against defects in manufacturing in accordance with the following conditions:

1) This guarantee covers the original product purchaser for a period of 24 months from the date of purchase.

2) This guarantee covers:

   a) **Parts:** During the warranty period, the replacement of any electronic and mechanical parts against any defects in manufacturing. The guarantee does not cover any faulty electronic and/or mechanical components arising from incorrect installation, non-authorised modification, and inadequate transport or as a result of atmospheric phenomenon.

   b) **Labour:** Albiral Display Solutions S.L covers labour costs for replacement of any defective parts (in accordance to paragraph 2a) during the period of this warranty.

   c) **Transport costs:**

   i) In the case that a manufacturing defect occurs within 30 days after the purchase date, both freight and insurance will be paid by Albiral Display Solutions S.L. **Although Albiral Display Solutions S.L pays for transport and insurance cost, Albiral Display Solutions, S.L. will not be responsible for the damages caused by transport if the customer does not inform in writing when receiving the goods.**
   ii) After 30 days of the purchase date, both freight and insurance costs will be paid by the customer.

   d) Albiral Display Solutions S.L. will not be responsible for the damages caused by transport, when this is paid by customer.

   e) The guarantee is not valid if persons other than authorised service Centre have handled the product and if the product has been manipulated.

   f) The beneficiary of the Guarantee will have to send the devices with the original packaging or an appropriate one to guarantee there are no damages during the transport.

   g) The guarantee is not valid if the customer does not include **RMA form and copy of the purchasing invoice**

3) Albiral Display Solutions S.L. recognized all guaranteed user rights by all legal rules from its region, and in the absence of them, all established consumer rights by general law 26/84.

Contact your Authorized Distributor

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