aguilera electrónica

Fire detection

ALGORITHMIC SYSTEM
FIRE DETECTION

Index

What are algorithmic control panel?

The algorithmic control panels are microprocessed control panels, manufactured by AGUILERA ELECTRÓNICA and certified according to the European standards UNE EN 54-2 and UNE EN 54-4, with a wide operating capacity that allow them to individually control all the equipment that makes up the fire detection installations.

Features common to the entire series:

- Detection loops with independent microprocessor for the control of 125 units each, to which the detectors, buttons, maneuver modules, control modules and other elements that make up the installation are connected. Depending on the equipment model, it can mean the control of more than 1000 independent points (an 8-input module can control 8 individually identifiable signals).
- Allows the connection of CLASS A loops: closed loop with independent input and output isolators; and CLASS B loops: open loop with output isolator.
- Available in models for 1, 2 and up to 8 detection loops.
- Switching power supply, planned to meet the needs of the plant and the installation.
- Emergency battery charger.
- CPU module, where the installation is customized, the output maneuvers are programmed and the information is managed.

  Its main characteristics are:

  - Non-volatile event memory, with a capacity of 4000 events.
  - Real time clock.
  - Complete control of the operation of all the equipment that makes up the installation, programmed or manually: resets, levels, connection and disconnection of points, activation and deactivation of evacuations, closing of doors and fire dampers.
  - Programming of delays according to the UNE EN54-2 standard.
  - DAY/NIGHT modes automatically configurable through programmable calendar.
  - Warning output to firefighters with programmable activation times: Recognition time and investigation time, according to the NEN2535 standard.
  - Built-in test and test modes for each zone.
  - Allows several working languages.
  - Comprehensive management of historical lists between two dates and status of the zones.
  - Graphic display of 240x64 points.
  - Control keyboard.
  - Luminous indicators and local acoustic warning, for presentation of general states of service, alarm, breakdown, disconnection, test, power supply and status of evacuation maneuvers and others.
  - Built-in evacuation outputs (monitored exit), alarm (firefighters), pre-alarm and breakdown.
  - 2 serial communications ports Interface RS232 or RS485 selectable by the user.
  - 1 RS485 Interface serial communications port with optional ARCNET protocol to work with Aguilera's AE2NET network.
  - Built-in serial printer port.
  - Optional TCP network port, through AE/SA-TCP card, for remote control of the control panel through Ethernet networks.

Types of algorithmic control panels

1 Algorithmic control unit with 1-loop AE/SA-C1

Intelligent fire control panel with capacity for 1 loop of 125 units, to which the detectors, pushbuttons, maneuver modules, control modules and other elements that make up the installation are connected.

- 27.2 Vdc 2 A switching power supply.
- Emergency battery charger. Capacity to house two 12V / 7 Ah batteries.
- Measurements: Height 274 - Width 322 - Depth 123 mm

2 Algorithmic control unit with 2 loops AE/SA-C2

Intelligent fire control panel with capacity for an AE/SA-CTL card with 2 loops of 125 devices each, to which the detectors, push buttons, maneuver modules, control modules and other elements that make up the installation are connected. Control capacity of 250 teams.

- 27.2 Vdc 4 A switching power supply.
- Emergency battery charger. The control unit has the capacity to house two 12V / 7 Ah batteries inside.
- Measurements: Height 410 - Width 310 - Depth 120 mm

3 Algorithmic control unit with 8 loops AE/SA-C8

Intelligent fire control panel with bus for the connection of 1 to 4 AE/SA-CTL cards. Each card controls two bidirectional algorithmic loops, with a capacity of 125 devices each, to which the detectors, pushbuttons, maneuver modules, control modules and other elements that make up the installation are connected.

- The control capacity of the central unit rises to 1,000 units, which depending on the type can mean the control of more than 3,000 independent points. For every 250 units, the control panel has an independent microprocessor.
- Independent switching power supply of 27.2 Vdc 4 A.
- Emergency battery charger. The control unit has the capacity to house two 12V / 17 Ah batteries inside.
- Measurements: Height 500 – Width 390 – Depth 145 mm

AE/SA-TCR remote control terminal

Developed for remote control and management of fire protection installations. The AE/SA-TCR remote control panel allows us to control remotely via cable (RS-485) any installation based on algorithmic control panels.

The maximum number of devices connected to the RS-485 bus is 32, between algorithmic control panels, remote control terminals and Europe III control stations. All the control panels show the general status of all the existing control panels in the network and from any of them you can control any control panel, silence the internal buzzer, silence bells, reset output maneuvers, reset the system...

Certified according to:

EN 54-2

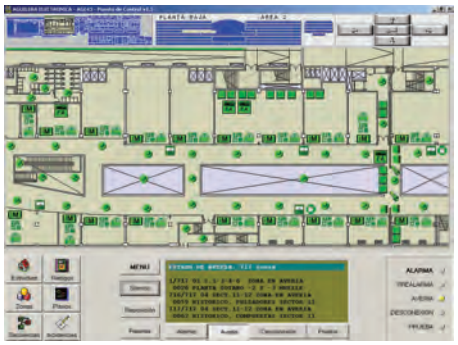
EN 54-4

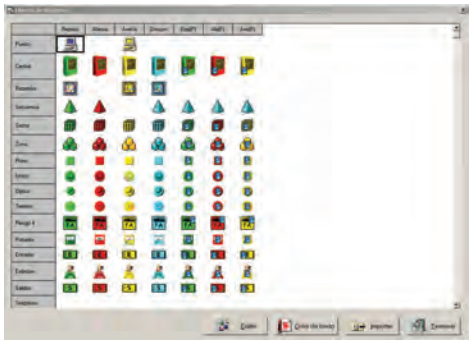
Checkpoint

The Europa III Control Post has been developed to enhance the capacity, management and reporting of fire protection facilities.

The system consists of graphic software installed on the Control Post computer and SA series Algorithmic Control Panels connected to the computer through an RS-232, RS-485 or TCP/IP port.

The SA series algorithmic control units are subordinated to the management carried out from the Control Post, but without losing autonomy at any time, even in the event of loss of communication with the Control Post, each control unit continues to control its installation .





Description

The system allows us to see the detailed information in real time of each element of the installation. This information is reflected in several windows: installation plan windows, system events window, sectors window,...

From any of these windows and by using the mouse, we can act on the points of the installation: connect/disconnect points, request information about their status, activate/deactivate maneuver sequences, reset the installation, read the status of each detector. ..

The installation can be represented by plans generated on bitmaps of any size and number of colors. The active elements of the facility (power stations, points, sectors, sequences) can be located on these plans so that their status changes are immediately reflected in them, and the Control Post user can also have a global view of the status of each area of the installation with a simple glance at its associated plan.

Connectivity

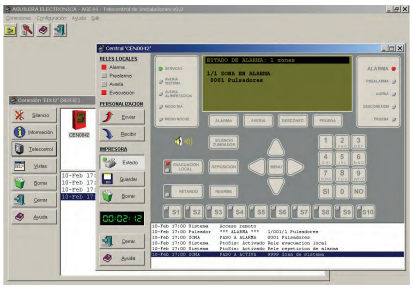
All the algorithmic control panels have RS232 and RS485 communication ports to be able to connect with the Control Post.

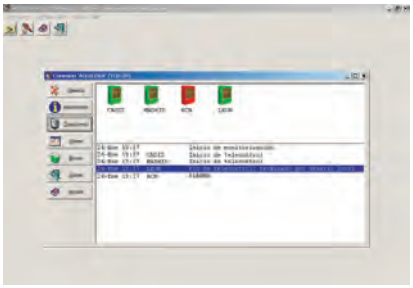
If required, the connection can be made using the TCP/IP protocol through the installation's own existing network.

Technical performance

- Graphic representation of the entire installation, allowing the use of key plans by fire sectors.
- Buttons can be defined in each plane to be able to carry out actions more easily, such as: silence warning tones, reset alarms, change the system's operating mode, jump to certain planes,...
- Jump to plane associated with an automatic alarm configurable by the user.
- Total management of the system by means of mouse or keyboard.
- It is possible to control, by means of passwords, the access of people outside the system to the functions of the Control Post, as well as assigning each user their operability by reducing levels.
- Historical list of all the incidents produced in the installation and their evolution.
- Symbols of active elements fully definable by the user.
- Operation under Windows environment.
- Software to customize the easy and intuitive installation.
- Sound notifications of incidents through the system's sound card and loudspeakers.
- Graphic library editor that allows the Control System user to build custom image libraries, these will be used in the Control Post to draw the active elements of the plans.

Program of remote control installations





System that allows remote control and management of fire detection installations. The remote control system for installations provides great and important advantages in new installations, as well as remote maintenance of those currently in service.

The system allows remote control of any installation, based on the SA series control panels. It consists of AGE44 control software that allows the Control Panel of the connected control panel to be displayed on the computer monitor and to carry out any action on the control panel, just as we would do if we were in front of it.

It is especially suitable for controlling: hotel chains, shopping centres, car parks and all those facilities where remote control is to be carried out in a place other than where the head office is located, for example: central maintenance post, head office. ..etc.

In the installation monitoring mode, any incident produced in one of the monitored stations produces a warning signal that allows us to connect with it to carry out any query and action on it.

The system supports wide possibilities of connection networks:

- Serial ports, RS-232 and RS-485.
- AE2NET network.
- Ethernet
- INTERNET via TCP/IP.

Control remote from installations

Software development that provides remote control of Fire Protection installations based on Europe III and/or Europe II Control Posts, of AGUILERA ELECTRONICA. For this, it allows us, among other things:

- Create and maintain a database of facilities, each managed by a control post.
- Monitor the status of the installations defined in the database, showing the real-time status of each of them.
- Remotely control any monitored installation as if we were in front of it.

The connection between the application and the remote installations is made using TCP/IP communications. In this way we have access to any installation that has this type of communications, regardless of its geographical location.

Connectivity

Fire detection network systems

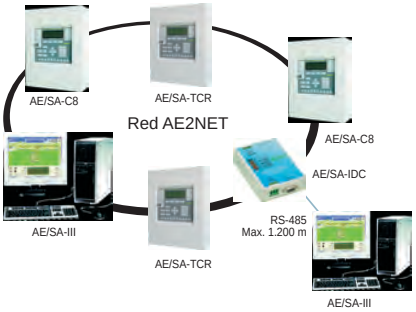
There are different typologies for the connection of the different control and supervision equipment that are part of the installation:

AE2NET network

The AE2NET network is based on the ARCNET local network technology

Among its characteristics we can highlight:

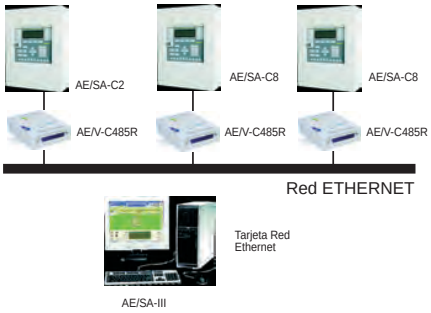
- Robustness and speed (312 Kbps) together.
- Interface: RS-485.
- Allows the simultaneous connection of SA series exchanges, repeaters and several control posts, up to a maximum of 31 nodes, which can provide a capacity of 30,000 devices.
- Allows integration with control systems of other companies (open protocol).
- Each control post must have an AE/SA-IDC communications interface.



Ethernet network

Connection of up to 128 control panels via TCP/IP with a EUROPA III control station, over a LAN network (local area network) or a WAN network (broadband network) ETHERNET 10/100Mhz, as can be provided by an ADSL line.

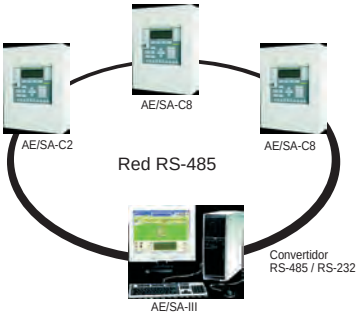
It is necessary to provide each panel with the Aguilera RS-485-TCP/IP microserver, model AE/V-C485R.



RS-485 or RS/232 serial networks

With this type of network we obtain the maximum simplicity in terms of configuration and installation using the communications ports that the new control units come with as standard.

- RS-485 interface: Connection of up to 31 nodes over twisted pair or over fiber optics.
- RS-232 Interface: Direct serial connection with the control panel.



Communications interface

AE/SA-IDC

Multiprotocol module that allows the integration of Aguilera Electrónica's algorithmic control panels in the different control systems. Supports protocols: Modbus/RTU, N2 Metasys, Aguilera Electronica and ESPA 4.4.4
It has the following interfaces: RS232, RS485 and RS485/ARCNET for connection to the AE2NET network of Aguilera Electrónica.

AE/SA-GAT

TCP/IP communications interface. Multiprotocol module that allows the integration of Aguilera Electrónica's algorithmic control panels in different control systems. Supports protocols: Modbus / RTU / TCP, Metasys N2, ESPA 4.4.4, OPTIMUS public address and evacuation system.

It has the interfaces: RS232, RS485 and Ethernet

AE/SA-GPIP

IP module for sending the events of the SA series algorithmic control panels, through its RS-232 port, to alarm receiving centers in Contact.ID format, by means of ADSL, GPRS, GSM or SMS.

It allows the sending of e-mail and SMS to inform about the different events. App connection.

Certified according to:
EN 54-21

Algorithmic detectors

Optical sensor

Aguilera Electrónica's addressable optical detectors manage an optical smoke sensor. Its function is to take measurements of the light that the smoke particles scatter, evaluate its density and its percentage of increase over time, then send the information already analyzed to the central, and it is the central that compares the results obtained with the parameters programmed in each case and decides to send the alarm signal.

At Aguilera Electrónica we have three types of algorithmic optical detectors:

AE/SA-OP optical detector.

AE/SA-OPI, low profile optical detector.

Thermovelocimetric detector

The AE/SA-T algorithmic thermovelocimetric detector from Aguilera Electrónica is a heat detector that manages two temperature parameters, a differential one that takes measurements of the increase in temperature over time and another term that controls the ambient temperature that it detects at all times. Both the differential parameter and the thermal parameter are analyzed and sent to the control panel for this alarm signal according to the programming made in each case.

Optical-thermal detector

The optical-thermal detector manufactured by Aguilera Electrónica AE/SA-OPT is a multi-sensor detector with dual technology that manages an optical smoke sensor and a heat sensor. The optical sensor takes measurements of the light that the smoke particles scatter and their increase while the heat sensor does so from the thermal variations. The two measurements are analyzed and sent to the central so that it proceeds to the alarm signal in the event that the parameters programmed for each case are reached.

Algorithms Algorit

The signal received by a smoke sensor in clean air can vary due to pollution effects, dirty environments or occasional presence of smoke (smoking rooms). The Algorithmic System range of smoke detectors incorporates the ALGORIT adjustment algorithms, which compensate for this drift to maintain a more constant response value over time, within the permitted limits.

Through the combination of two independent sensors: photoelectric sensor and temperature sensor, the AE/SA-OPT multisensor detector performs the alarm decision by processing the two signals, in a faster way. These signal processes allow us to definitively discriminate unwanted alarms.

Certified according to: EN 54-5
EN 54-7

Advantages of the detectors

• **Solution to slow smoke:** Current smoke detectors show difficulties when it comes to detecting slow smoke that occurs without flame in closed rooms. The origin of the problem can be found in the resistance that opposes the air to leave the optical chamber of the detectors, thus preventing the entry of smoke, an essential function for it to be detected. The AE/SA-OP and OPT optical detectors of this system solve the problem through the development of a natural ventilation based on an internal corridor that communicates the interior of the optical chamber, with the upper part of the casing that does not touch the ceiling. , creating the "chimney effect" that facilitates the exchange of air permanently.

• **Automatic Sensitivity Adjustment:** Algorithmic application that compensates for dusty and polluted environments, maintaining the margin between rest and alarm, up to acceptable levels; from which the detector itself demands its cleaning or replacement.

• **Intelligence shared with the central unit:** In this function, the capacity of each detector's micro is used, so that it manages the sampling it performs and sends analyzed information to the central unit. In this way, greater efficiency and more fluid and powerful communications are achieved.

• **Hidden plinth:** This novelty eliminates the vision of the joints between the plinths and the ceilings, creating the sensation of a suspended detector.

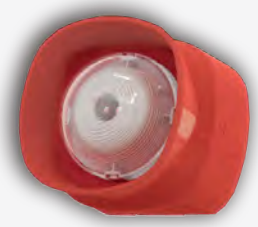
• **Socket with isolator for algorithmic detectors:** Provided with a bidirectional isolator that allows to isolate short circuits in the detection loop wiring.

• **Self-isolator:** All the detectors, buttons and modules of the system have been equipped with self-isolation, a device that in the event of a short-circuit in a piece of equipment, disconnects the equipment that suffers from it so that its failure does not affect the rest.

Algorithmic system modules

Certified according to:

EN 54-14
EN 54-17
EN 54-18



Master Modules

Addressable microprocessor unit that controls a loop with detectors, pushbuttons and other conventional equipment. Special to control zones of conventional detectors or pushbuttons in areas where intelligent detectors are not installed.

The following versions are available:

AE/SA-M: Indicated for a zone of conventional detectors.

AE/SA-MC5 Indicated for a zone of conventional C5 detectors.

AE/SA-MDL Indicated for the control of a linear smoke detector.

Input Modules

Addressable microprocessed units that manage the information of the digital inputs.

AE/SA-2EV: To control 2 monitored inputs

AESA-2E: To control 2 inputs

AE/SA-8E: For control of 8 inputs

AE/SA-1EM Mini module for 1 input

Output Modules

Addressable microprocessed units that manage the information of the outputs.

AE/SA-2SV: To control 2 monitored outputs

AE/SA-SE: It has 1 output and one input

AE/SA-SEV: 1 output and 1 input monitored

AE/SA-SE230: 230V relay output

AE/SA-32S: 32 outputs for synoptic

AE/SA-1SVM: Miniature module 1 supervised output

Loop Isolator Module

Microprocessed unit that controls the current flowing through the loop and if it increases above the programmed parameters, it opens the line, isolating the rest of the loop so that it continues to function.

AE/SA-AB Line Isolator Module

Alarm Pushbutton with Isolator

Pushbutton with protection cover, located in an ABS box, it has an algorithmic line isolator with input and output for the connection of the rest of the equipment.

AE/SA-PTA Alarm Pushbutton with isolator.

Socket with Isolator

AE/SA-ZBA Socket for algorithmic detectors provided with bidirectional isolator.

Algorithmic sirens

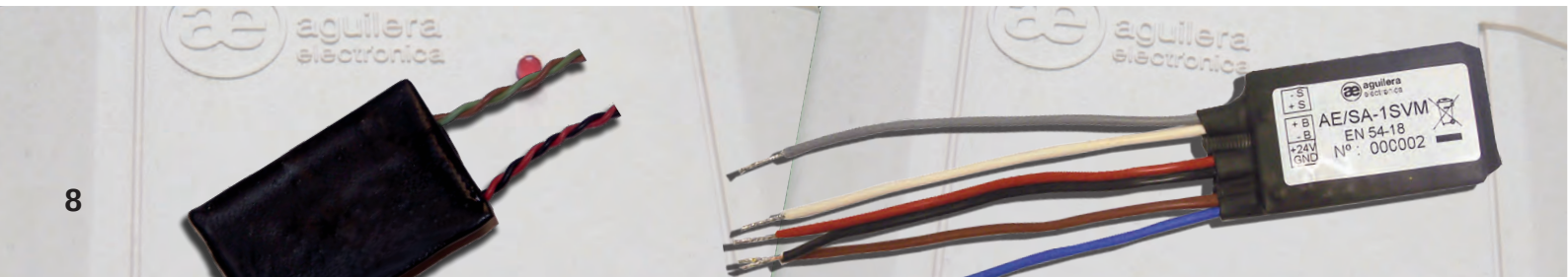
Multitone low consumption sirens, incorporate a microprocessor module for direct integration in the algorithmic loop.

AE/SA-AS1 Algorithmic siren

AE/SA-AS1A Algorithmic loop sounder with isolator

AE/ASF23 Flash siren algorithmic loop with isolator

AE/SA-SB Base with siren algorithmic detectors



Extinguishing control panel AE/SA-PX2

Certified according to:
EN 12094-1

- 2 supervised detection zones.
- Programmable operating mode as:
  - Double detection: Two alarms in one zone.
  - Cross detection: One alarm in each zone.
  - Mixed: Two alarms on the panel.
- 1 Supervised detection zone trigger button.
- 1 supervised input for stop button.
- Built-in extinguishing trigger and stop buttons.
- 2 monitored inputs for pressure switch supervision or weighing control and flow control.
- 1 monitored evacuation exit
- 1 Exit for firing sign.

Power supplies AE/SA-FA and AE/SA-FA2

Certified according to:
EN 54-4

24Vdc/5A and 2A short-circuitable switching power supplies.

Dual voltage 230/115 Vac ; 50/60Hz. Provided with luminous indications of the general state of the power supply, state and charge of the batteries and of the output fuses according to standard EN 54-4.

They have 2 independent outputs protected against short circuits. They equip a microprocessed card that keeps the algorithmic center permanently informed of their status.

Batteries:

- AE/SA-FA (5A) has capacity for 2 12V/17Ah batteries.
- AE/SA-FA2 (2A) has capacity for 2 12V/7Ah batteries.

TITANUS aspirating detectors

Certified according to:
EN 54-12

Early detection of smoke by aspiration

- Modular equipment for small, medium and large installations.
- Integrated in the algorithmic loop by means of a loop card with a built-in isolator.
- Wide range of degrees of sensitivity.
- Various alarm levels.
- Suitable for frozen areas.
- Silent versions.

Address programmer
AE/SA-PRG

Portable device indicated to program the identification code number of each algorithmic equipment.

It allows us through a simple process:

- Record the address of the equipment.
- Read the stored address.
- Individually inhibit/authorize the flashing of the unit's LED.

The individual programming process of each unit can also be carried out from the algorithmic control unit itself.

Hoses
AE/MANG2R0HC
AE/MANG2RF30C

Halogen-free 2X1.5 hose (AE/MANG2R0HC)

It complies with the EN 50575:2014 standard with reaction to fire class Cca-s1b,d1,a1, certified CPR. Halogen-free, flame retardant and fire retardant hose Mod. AE/MANG2R0H with 2 conductors (2 x 1.5 mm2) shielded with an aluminum tape and polyester sheath, approved for the algorithmic system. It is supplied in rolls of 100 meters and on request in larger coils.

Certified according to:

EN 50575

Fire resistant hose (AE/MANG2RF30C)

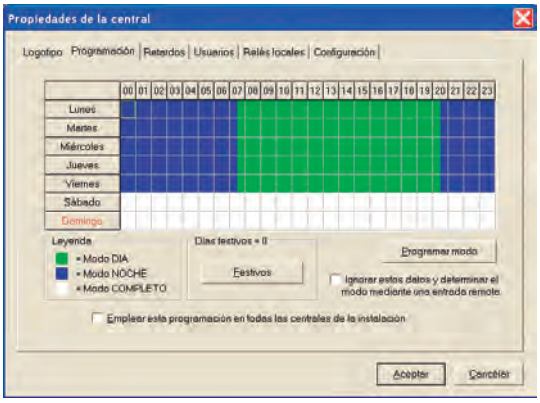
Hose with identical characteristics to the previous one.

Optical detector for ducts
AE/SA-OPIC

Equipment manufactured by AGUILERA ELECTRÓNICA, consisting of an AE/SA-OPI algorithmic optical detector and a metal box provided with an alarm pilot light, cable entry fitting and fittings for probe tubes that take samples from inside the ducts.

AGE 41 Start-up software

The objective of the AGE41 commissioning program is to facilitate the commissioning and maintenance of installations based on Algorithmic control panels.

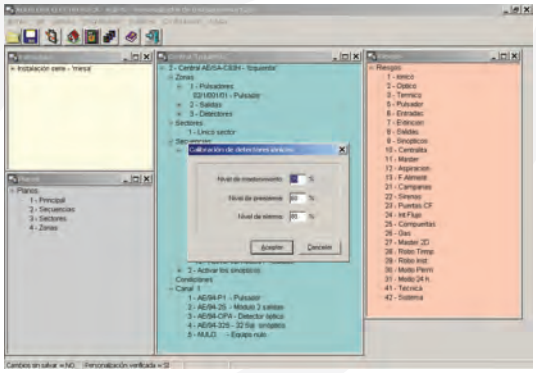


Under a Windows environment it allows us to:

- Determine which equipment is connected to a panel and in each loop.
- Check the status of each of them (rest, alarm, failure).
- Act on the outputs of this equipment.
- Export the structure of the channels to files, which the AGE42 customizer can read later.
- Obtain information on the incidents that occur in the installation.
- Monitor the general operation of the plant, through diagnostics.
- Restart and download the statistical information stored in the control panel.

In short, the program allows you to check the status of an installation without having to have customized control panels.

AGE 42 customizer



AGE 42 customizerThe AGE42 customizer is software developed under the Windows environment, which we can use to create new customizations, as well as to edit existing customizations.

This program allows us to perform, in a simple way, the following operations:

- Create new customizations, defining the texts to be assigned to each of the zones and sectors of the installation.
- Capture the personalization of the connected panels.
- Download the personalization to the connected control panels.
- Import channel structures created using the AGE41 start-up program.
- Verify the integrity of the personalization data.
- Define the plans of the installation for use in the Europa III control post, defining the active points of the installation, so that their status changes are automatically reflected in the plans.
- List customization data, by screen and printer, through various types of reports.
- Define sectors.
- Program manual or automatic control maneuvers based on various logical combinations (And, Or, multiple Or) for any point, zone or sector of the installation.

Our promise: services and warranties

Projects

The Aguilera Group offers its collaboration to engineering companies in fire detection, control and extinction projects, advising on the systems and coverage for each building. The projects department carries out the design and dimensioning of the system, advising on the effectiveness of the equipment in each risk and considering the operability in the maneuvers.

Training

Aware that we all want to know and control what we do, regardless of the technical support we provide to the installations that run with our products, the Aguilera Group offers training courses on the operation of our equipment, its installation and programming.

Personal attention

At the Aguilera Group, each client is important. We are aware that not all of us have the same needs. For this reason, our team of professionals provides personal attention tailored to your requirements.

Maintenance

The Aguilera Group undertakes to guarantee the repair, reprogramming and supply of original spare parts after the warranty period.

Technical service

With the aim of guaranteeing the proper functioning of the facilities, the Aguilera Group's technical department advises on the operation tests and start-up of the equipment, in addition to collaborating with the installer in all phases of the work.

Equipment Warranty

The Aguilera Group guarantees the proper functioning of its equipment for 2 years from the date of delivery (manufacturer's commercial guarantee), we are responsible for the replacement or repair of those in which anomalies or manufacturing defects are observed and are delivered in our factory in Madrid.

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Algorithmic System

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