Algorithmic system

for fire detection and control

aguilera electrónica

Contents

What are algorithmic central units?

Algorithmic, micro-processed central units manufactured by AGUILERA ELECTRONICA and certified according to the European standards UNE EN 54-2 and UNE-EN 54-4, with extensive operational capability that allows you to individually control all computers that make up the installations for fire detection.

Common characteristics to all the series:

• Detection loops with independent microprocessor for the control of 125 groups each one of them, to which are connected the detectors, push buttons, switches, modules for manoeuvres, controls and any other element that makes up the installation. Depending on the model of equipment, it can mean the control of more than 1000 independent points (one module of 8 inputs can monitor individually 8 identifiable signals).

• Allows the connection of CLASS A loops: closed loop with independent isolators of input and output, and CLASS B loops: open-loop output isolator.

Available in models for 1, 2 and up to 8 detection loops.

• Switched power supply, expected to cover the needs of both, of the central unit and of the installation.

• Emergency battery charger.

• CPU module, where the installation is customized, the output manoeuvres are scheduled and the information is managed.

Its main features are:

- Non-volatile memory of events, with capacity for 4000 events.
- Real time clock.
- Complete control of operation of all equipment that makes up the installation in a manual or programmed form: resets, repositions, levels, connection / disconnection of points, evacuation activations /deactivations, closing of lock-gates and firewalls.
- Delays can be schedules according to the UNE EN54-2 norm.
- DAY / NIGHT modes automatically configured by using programmable timing.
- Output of warning to fire-fighters with programmable activation times: Time for recognition and investigation time, according to the NEN2535 norm.
- Tests and test modes are built for each zone.
- It permits multiple working languages.
- Comprehensive management of historic lists between two dates and the status of the zones.
- Graphical display of 240x64 points.
- Control keyboard.
- Illuminated signs and a local buzzer, for the presentation of the general service states, alarm, fault, disconnection, test, power supply, evacuation manoeuvres"92 status and others.
- Evacuation embedded outputs (monitored outputs), alarm (fire-fighters), prealarms and faults.
- 2 communication ports series RS232 or RS485 Interface, user selectable.
- 1 serial communication port RS485 Interface, with ARCNET protocol, optional to work with the Aguilera AE2NET network.
- Incorporated series printer port.
- Optional TCP network port, through an AE/ SA-TCP card, for remote control of the central unit, via Ethernet networks.

CERTIFICADOS SEGÚN CPD CE

Algorithmic central units

1 Algorithmic central unit of 1 loop AE/SA-C1

Central intelligence unit for fire control with a capacity for 1 loop of 125 groups each, to which the detectors, switches, modules for manoeuvres, for control and other elements that make up the installation, all connect.

- Switched power supply of 27.2 V CC at 2 A.
- Emergency battery charger with capacity for receiving two 12V /7Ah batteries.
- Dimensions: Height: 274 - Width: 322 –'96 Depth: 123 mm

2 Algorithmic central unit of 2 loops AE/SA-C2

Central intelligence unit for fire control with a capacity for a AE/SA-CTL of 2 loops of 125 groups each, to which the detectors, switches, modules for manoeuvres, for control and other elements that make up the installation, all connect and with a capacity to control 250 devices.

- Switched power supply of 27.2 V CC at 4 A.
- Emergency battery charger, where the central unit has the capacity to receive in its interior, two 12V/ 7Ah batteries.
- Dimensions: Height: 410 - Width: 310 –'96 Depth: 120 mm

3 Algorithmic central unit of 8 loops AE/SA-C8

Central intelligence unit for fire control with bus for connecting with 1 to 4 cards AE /SA-CTL. Each card controls two bidirectional algorithmic loops, with a capacity for 125 groups each, to which the detectors, switches, modules for manoeuvres, for control and other elements that make up the installation, all connect.

- The central unit's capacity to control equipment is up to 1000 devices and depending on the type it can mean controlling more than 3000 independent points. For every 250 devices the central unit is equipped with an independent microprocessor.
- Independently switched power supply of 27.2 V CC at 4 A.
- Emergency battery charger, where the central unit has capacity for receiving in its interior, two 12V/17Ah batteries.
- Dimension: Height: 500 - Width: 390 –'96 Depth: 145 mm

Remote controlled terminal AE/SA-TCR

Remote controlled terminal manufactured by AGUILERA ELECTRONICA, developed for monitoring and remote management of the fire protection facilities, based on our new algorithmic central units.

This terminal allows to control "at a distance" via cable (RS-485) any installation based on AE/SA-C1, AE/SA-C2 and AE/SA-C8 central units.

The connection is made in a network, through a RS-485 communication channel. All the control panels show the general status of all the central unitsexisting in the network and from any of them, any central unit can be controlled.

It has an independent power source and capacity for two 7 Ah batteries.

Control Station

Europe III Control Station has been developed to boost the capacity, management and presentation of information for fire protection installations.

The system consists of a graphic software installed in the Control Station computer AND Algorithmic Central Units in the series SA connected to the computer through a port RS-232, RS-485 or TCP/IP.

Algorithmic central units in the series SA are subordinated to the management carried out from the Control Station, but without loosing autonomy at any moment, even in the case of loss of communication with the Control Station, each central unit continues controlling is installation.

description

The system allows us to see detailed information of each element in the installation in real time. This information is shown in several windows: installation plan windows, system event window, sector window…

We can act on the installation points from any window and through the mouse: connect/disconnect points, request of information about its state, activate/deactivate operation sequences, restore the installation, reading of each detector state…

The installation can be represented through plans generated on bit maps of any size and number of colours. The installation active elements (central units, points, sectors, sequences) can be placed on this plans in such a way that the state changes are immediately shown on them, and the Control Station user can also have a global view of the state of each area in the installation just with a quick look at the associated plan.

connectivity

Each algorithmic central unit is provided with communication ports RS232 and RS485 in order to connect with the Control Station.

If required, connection can be executed through protocol TCP/IP through the existing net in the installation.

features

- Graphic representation of the whole installation allowing for the use of key plans per fire sectors.
- Buttons for easier actions can be defined in each plan such as: silencing warning tones, restoring alarms, changing the system operation mode, skipping to specific plans…
- Skip to a plan associated to an automatic alarm configurable by the user.
- Full operation of the system through the mouse or keyboard.
- Access to the Control Station functions by persons not involved in the system can be limited though keys as well as assigning each user his/her operation through the assignation of levels.
- Background list of each incidence produced in the installation and its evolution.
- Symbols for active elements fully definable by the user.
- Operation under Windows environment.
- Easy and intuitive Software in order to customize the installation.
- Sound warnings for incidences through a sound card and system speakers.
- Graphic bookshop editor which allows the Control System user to make customized image bookshops, which will be used in the Control Station for drawing the plan active elements.

Installation telecontrol programme

System which allows for remote control and management of fire detection installations. The installation telecontrol system provides important advantages as well as remote maintenance of the ones which are currently working.

The system allows for remote control of any installation, based on the series SA central units. It consists of a control software AGE44 which allows to show the Control Panel of the central unit on the computer monitor and perform any action on the central unit as if we were in front of it.

It is especially intended for controlling: hotel chains, shopping centres, car parks and facilities where remote control from a different place where the central unit is located, is needed. For example: place for the maintenance central unit, headquarters, etc.

In the installation monitoring mode, any incidence produced in one of the monitored central units generates a warning signal which allows us to connect with it for consults or operations.

The system admits many possibilities for connection networks:

- Ports series, RS-232 and RS-485.
- AE2NET Network.
- Ethernet
- INTERNET via TCP/IP.

Remote control of installations

AGUILERA ELECTRONICA software development providing control for the Fire Protection Installations based on Europe III and/or Europe II Control Stations.

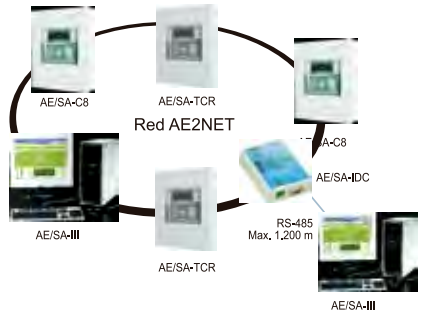
We are allowed to:

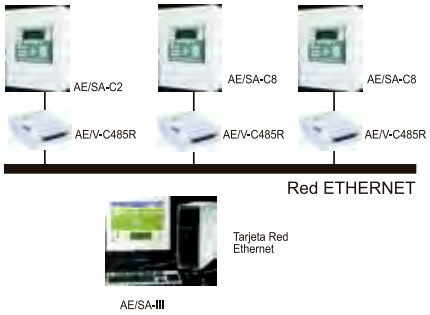
- Create and maintain an installation database, each one managed by a control station.
- Monitor the state of installations defined in the database, showing the state of each one in real time.
- Control any monitored installation in a remote way as if we were in front of it.

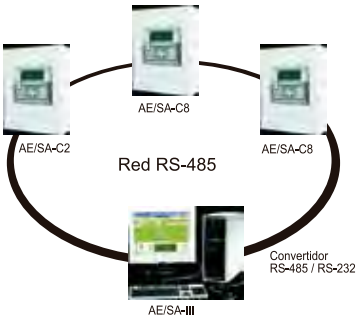
Connection between applications and remote installations is made by using TCP/IP communications. In this way, we have access to installations provided with this type of communications, independently from its geographical position.

Connectivity

fire detection network system







There are different classifications for the connection of the control and supervising units which are part of the installation:

AE2NET Network

AE2NET network is based on ARCNET local network technology

The following characteristics stand out:

- Robustness and speed (312 Kbps).
- Interface: RS-485.
- Allows for simultaneous connection of series SA central units, relay stations and many control stations, up to 31 nodes, which allows the capacity of 30000 equipments.
- Allows integration with control systems of other companies (open protocol).
- Each control station is to be provided with a communication interface AE/SA-IDC.

ETHERNET Network

Connection of up to 128 central units via TCP/IP with an EUROPE III control station, on a LAN network (local area network) or a WAN network (broadband network) ETHERNET 10/100Mhz, as an ADSL line can provide.

Aguilera microserver RS-485-TCP/IP, model AE/V-C485R should be provided to each central unit.

Series RS-485 or RS/232 Networks

With this type of networks, top simplicity is achieved regarding configuration and installation by using the communication ports the new central units are provided with as standard.

- Interface RS-485: Up to 31-node connection on twisted pair or fibre optic.
- Interface RS-232: Direct connection via series with the central unit.

Communication Interface

AE/SA-IDC

Multi-protocol module that permits the integration of the algorithmic central units of Aguilera Electrónica in different control systems. Supported protocols: Modbus/RTU, N2 Metasys, Aguilera Electronica and ESPA 4.4.4

It has the following interfaces:

- RS232
- RS485
- RS485/ARCNET for connection to the AE2NET network of Aguilera Electronica.

AE/SA-GAT

Interface of communications TCP/IP Multiprotocol module that permits the integration of the algorithmic central units of AGUILERA ELECTRONICA in different control systems. Supported protocols: Modbus / RTU / TCP, N2 of Metasys and ESPA 4.4.4

It has interfaces:

- RS232
- RS485
- Ethernet

AE/SA-ILW

The AE /SA- ILW gateway converts the dump protocol, Aguilera Electronica´s series, to a LonWorks protocol. The main use of the device is to connect the central algorithmic units in a LON network.

This equipment is based on the 3150 NEURON chip at 20 Mhz with topology free at 778Kbit/s (FTT-10). DIN rail mounting. The serial communications are done through one of the RS-232 ports of the algorithmic central unit.

Algorithmic detectors

Optical detectors

Aguilera Electrónica directionable optical detectors manage a smoke optical detector. It is aimed at taking light measures diffusing smoke particles, evaluating its density and increase percentage throughout the time, then, already analyzed information is sent to the central unit and this central unit compares the results obtained with the programmed parameters for 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-OPZ, optical detector with alarm warning device.

AE/SA-OPI, low-profile optical detector.

Thermovelocimetrical detector

Aguilera Electrónica AE/SA-T algorithmic thermovelocimetrical detector is a heat detector managing two temperature parameters, a differential one taking temperature increase measures in time, and a thermal one controlling the room temperature detected at every moment. Both differential and thermal parameters are analyzed and sent to the central unit so that the alarm warning is produced in accordance with the programming carried out in each case.

Optical-thermal detector

The optical/thermal detector made by Aguilera Electrónica AE/SA-OPT is a multi-sensor detector with double technology managing a smoke optical sensor and a heat optical sensor. The optical sensor is aimed at taking light measures diffusing smoke particles and its increase while the heat sensor takes measures for thermal variations. Both measures are analyzed and sent to the central unit so that the alarm warning is produced if programmed parameters for each case are reached.

Algorit Algorithms

Signal received by a smoke detector in clean air may vary due to pollution effects, dirty environments or punctual presence of smoke (smokers' room). The range of smoke detectors in the Algorithmic system are provided with the ALGORIT adjustment algorithms which compensate such drift in order to maintain a more constant response value throughout the time, within the permitted limits.

Through the combination of two independent sensors: photoelectric sensor and temperature sensor, the multi-sensor detector AE/SA-OPT makes the alarm decision through the processing of both signals, in a faster way. These signal processes allow us to discriminate the non-wanted alarms once and for all.

Advantages of the detectors

• Solution for slow smoke: Present smoke detectors have difficulties when detecting slow smoke with no flames in closed rooms. The origin of the problem is in the resistance the air offers when coming out from the optical chamber of the detectors, preventing from the inflow of smoke, an indispensable function for the smoke to be detected. Optical detectors AE/SA-OP and OPT in this system, solve this problem through the development of natural ventilation based on an internal airwell communicating the inside of the optical chamber with the casing upper part not in contact with the ceiling, creating the "chimney effect" which makes the air exchange easier.

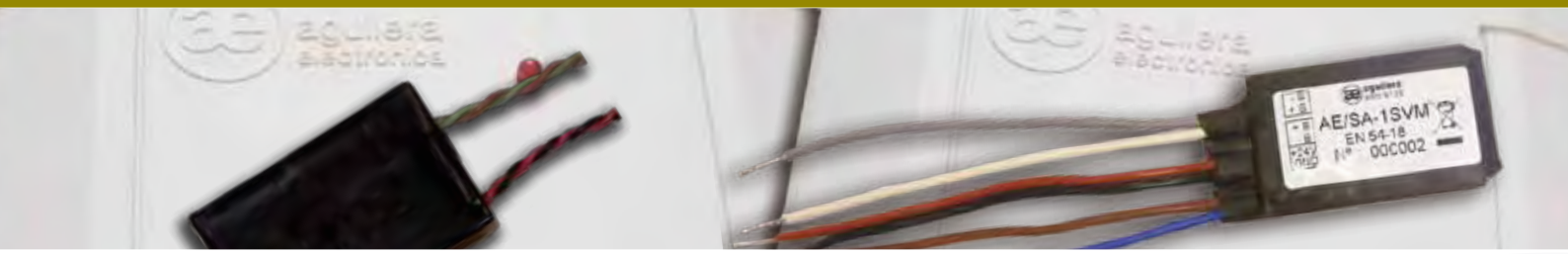
• Automatic adjustment of sensitivity: Algorithmic application that compensates for dusty and polluted environments maintaining the margin between stand-by and alarm, to acceptable levels; from such levels detectors require to be cleaned or replaced.

• Intelligence shared with the central unit: In this function the micro capacity for each detector is used so that sampling is managed and analyzed information is sent. In this way, higher efficiency is achieved and communications are more powerful and fluent.

• Hidden base: This new feature eliminates the view of joints between the base and the ceiling creating the idea of a suspended detector.

• Detectors with alarm buzzer: They are presented in two different options, with or without built-in buzzer. The option with buzzer is recommended for blind people's houses and bedrooms.

• Auto insulator: Each detector, pushbutton and modules in the system are provided with auto insulator, a device that, in case of short-circuiting in an equipment, disconnects the equipment with such problem so that the rest of the equipment is not affected.



Modules of the algorithmic system

Master modules

Directionable microprocessed unit controlling a loop with detectors, pushbuttons and other conventional devices. Suitable for controlling areas of conventional detectors or pushbuttons in places where intelligent detectors are installed.

The following models are available:

AE/SA-M: Suitable for an area of conventional detectors.

AE/SA-MC5 Suitable for an area of conventional detectors C5.

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

Input Modules

Directionable microprocessed units manufactured in accordance with the rule EN 54-18:2003 managing information from digital inputs.

AE/SA-2EV: For controlling 2 watched inputs

AESA-2E: For controlling 2 inputs

AE/SA-8E: For controlling 8 inputs

AE/SA-EM Mini module for 1 input

Output modules

Directionable microprocessed units manufactured in accordance with the rule EN 54-18:2003 managing information from outputs.

AE/SA-2SV: For controlling 2 watched outputs

AE/SA-SE: Provided with 1 output and 1 input

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

AE/SA-SE230: Output with relay at 230V

AE/SA-32S: 32 outputs for synoptic

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

Loop insulating module

Microprocessed unit manufactured in accordance with the rule EN 54-17, controlling the current in the loop and if it increases over the programmed parameters, opens the line insulating the rest of the loop so that it continues working.

AE/SA-AB Line insulating module

Algorithmic sirens

Sirens with low multi-tone consumption, certified in accordance with EN 54-3, a microprocessed module for direct integration in the algorithmic loop is built-in.

AE/SA-AS1 Algorithmic sirens

AE/SA-ASA Algorithmic loop siren with insulator

AE/SA-ASF1 Algorithmic loop flash siren

AE/ASF1A Algorithmic loop flash siren with insulator

Special equipments

Extinguishing Control Panel AE/SA-PX2

- 2 monitored detection zones.
- Operating mode, programmable as:
  - Double detection: Two alarms in one zone.
  - Crossed detection: One alarm in every zone.
  - Mixed: Two alarms in the panel.
- Monitored detection zone for push button to trigger the fire extinction.
- Monitored entry zone for an extinction pause button.
- Buttons for extinguishing the fire and pausing extinction built into the panel.
- 2 independent monitored inputs for pressure monitoring or control of weighing and flow control.
- Monitored output for evacuation and for fire extinguishing poster.

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

Short-circuitable switched-mode power supply of 24Vcc / 5A and 2A manufactured according to the EN 54-4 norm.

Bitension 230/115 V AC, 50/60Hz. Equipped with luminous indications on the general state of power supply, status and charge of the batteries and of the output fuses, as of EN 54-4 norm. They have 2 independent outputs protected against short-circuits.

Equipped with a micro-processor card, which keeps permanently the central algorithmic unit informed of its status.

Batteries:

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

Address programmer AE/SA-PRG

Portable device indicated for programming the identification code number of each algorithmic device.

With a simple process we can:

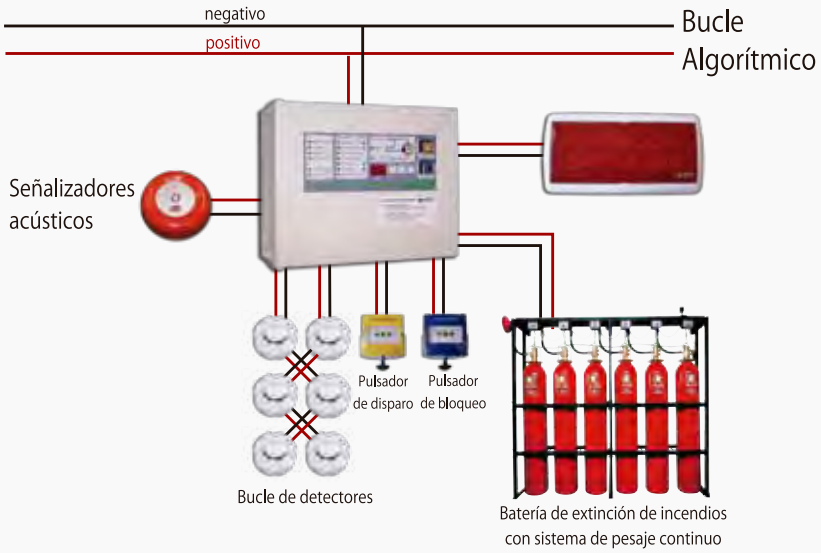
- Record the direction of the device.
- Read the stored address.
- Individually inhibit /allow the flash of Led to the device.

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

Example for installation

- 2-thread loop cable: Positive and negative
- Connection of all the equipments in the same loop
- Programming in the central unit. Control operations: Evacuation and warning, Sectorization, Transmission, Extinguishing system, ...

Algorithmic loop, acoustic signalling, negative, positive, detector loop, batteries for fire extinguishing systems with continuous weighting system.



Additional equipment

Repeater Panel AE/SA-PR32

Panel manufactured by AGUILERA ELECTRONICA, consisting of 32 LEDs for realtime representation of the status of the installation, and the FULL-DUPLEX intercommunication between the Repeater Panel and the central fire extinguishing unit. It's ideal for nurses' stations and other surveillance areas.

Its main features are:

- 1 point within the loop.
- Programming of multiple installation points for each indicator light.
- It allows individualized personalization of the text associated to each indicator light.
- Alarm buzzer of the zones.
- Snooze alarm relay, with output via voltage free contacts (NO and NC) and by voltage (24 V CC).
- Test push buttons for indicating lights, buzzer and relay.
- Blocking light switch for the buzzer and relay.

Hoses AE/MANG2R0HC AE/MANG2RF30C

Hose 2X1,5 free of halogens (AE/MANG2R0HC)

It meets EN 50265, EN 50266, EN 50267, EN 50268, all norms. The hose is halogen free, is flame retardant & does not spread the fire. Mod.AE/MANG2R0H of 2 conductors (2 x 1,5 mm2) shielded with an aluminium tape and polyester cover, approved for the algorithmic system and supplied in reels of 100 meters and on request, in larger coils.

Fire-resistant hose (AE/MANG2RF30C)

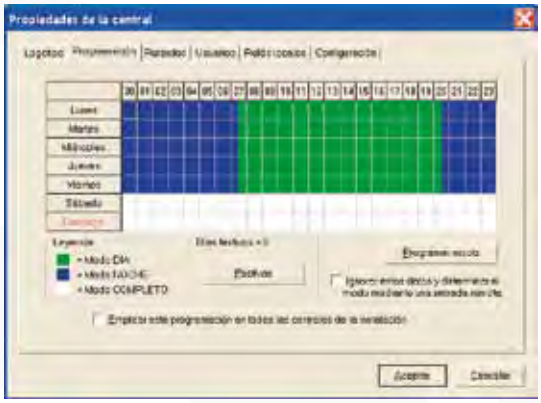
Hose of identical specifications to the previous one. It meets EN 50200 norm: fire resistant.

Optical detector for ducts AE/SA-OPIC

Equipment manufactured by AGUILERA ELECTRONICA, formed by an AE/SA-OPI optical algorithmic detector and a metal box, fitted with an alarm indication lamp, fitting for the entrance of cables and fittings for probe ducts, which take the samples from inside the ducts.

Software tools

Implementation program AGE 41



The objective of the implementation program AGE41 is to facilitate tuning and the maintenance of the installations based on the central Algorithmic system.

Under a Windows environment, it allows us to:

• Determine what devices are connected to what central unit and in each loop.

• Check the status of each one of them (rest, alarm and fault).

• Act over the outputs of these devices

• Export the structure of the channels to files, which the AGE42 customizer can read later.

• Obtain information on any incidents that are occurring at the facility.

• Monitor the general overall functioning of the central unit, using diagnostics.

• Reboot and download the statistical information stored in the central unit.

In short, the program permits to check the status of a facility, without the need for customized central units.

Customizer AGE 42

The AGE42 Customizer is software developed under the Windows, which we can use to create new customizations, as well as to edit and modify existing customizations.

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

• Create new customisations, defining the texts to be assigned to each of the zones and sectors of the installation.

• Capture the personalization of the connected central units.

• To dump the personalization of the connected central units.

• Import channel structures as created through the implementation program AGE41

• Verify the data integrity of the personalization.

• Define the installation plans for their use in the "Europe III" checkpoint, defining the active installation points, so that their status changes are automatically reflected in the plans.

• List the personalization data from the screen and printer, through various types of reports.

• Define sectors.

• To program automatic or manual control manoeuvres, in terms of various logical combinations (And, Or, Multiple Or) for any point, zone or sector of the installation.

Our commitment: services and guarantees

Projects

Grupo Aguilera offers engineering companies its support in the detection, control and extinguishing of fires advising on systems and covering for each building. The project department develops

The system design and dimensioning, hydraulic calculations, diffusers calibration and installation isometric advising on the effectiveness of the units in each risk and setting out the operating capacity .

Trainig

Aware of the need to know and control what we are doing, apart from the technical support provided to the installations where our products are used, Grupo Aguilera offers training courses on our equipment performance, installation and programming.

Customer service

At Grupo Aguilera each customer is important, we are aware of the different needs for each customer, this is the reason why our team of experts offers customized service meeting your requirements.

Mantenance

Grupo Aguilera commits itself to offering services on repair, reprogramming and original spare part supply after the guarantee period.

Technical support

With the aim of guaranteeing the correct operation of the installations, Grupo Aguilera Technical department carries out the operation and start-up test of the units, apart from collaborating with the installer in all the steps. Once the system is installed with the suitable power and water supply, and the hydraulic test has been previously carried out, Grupo Aguilera technical staff carries out the operation test and the start-up of the units.

Equipment guarantee

Grupo Aguilera guarantees the correct performance of the equipments for 2 years since the delivery date: we are responsible for the replacement and repair of the equipments where anomalies or manufacturing faults are observed and are delivered from our factory in Madrid.

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