

PROTECT M80 PROTECT M90

INSTALLATION MANUAL



Version 1.5

GB Installation Manual



SECURED IN SECONDS

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1. Before you begin

1

Start by reading this manual - the included quick guide cannot stand alone.



2

By now you should have completed our installation course. That may be a requirement.

Read more at www.protectglobal.com/e-learning



3

Always use the newest version of IntelliSuite™ for the best, safest and fastest installation with documentation.



4

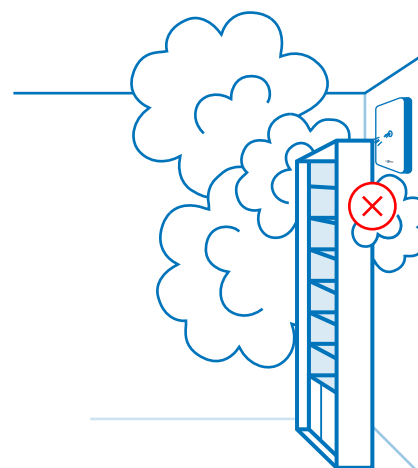
For technical support, please contact the place where you purchased the Fog Cannon™ or find help in this manual.



2. Safe instructions and best practice

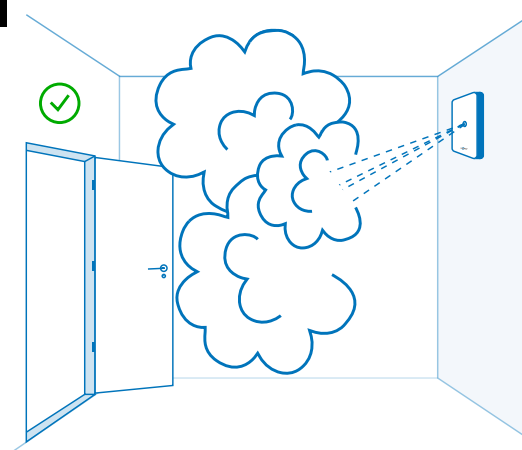
1

To ensure the best possible coverage the fog needs free passage.



2

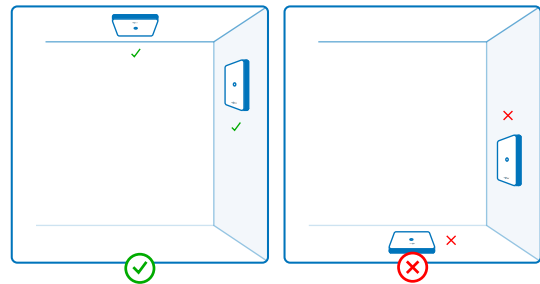
The fog cannon must be placed to ensure immediate coverage of possible access points.



3

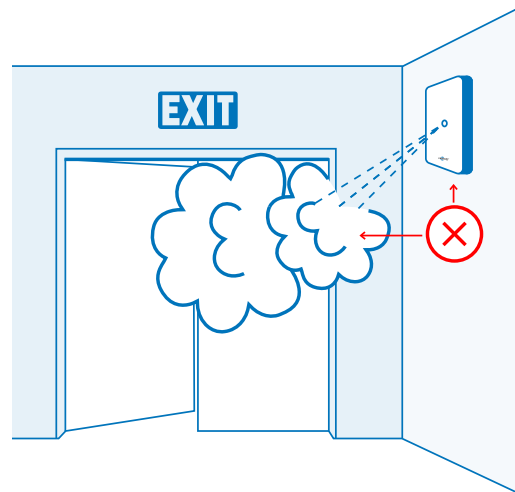
Reduce the risk of sabotage by placing the Fog Cannon™ as high as possible.

At the same time, proper placement provides the most effective security.



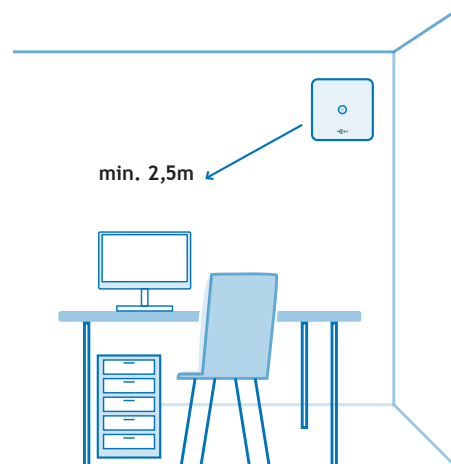
4

Avoid covering escape routes with security fog.



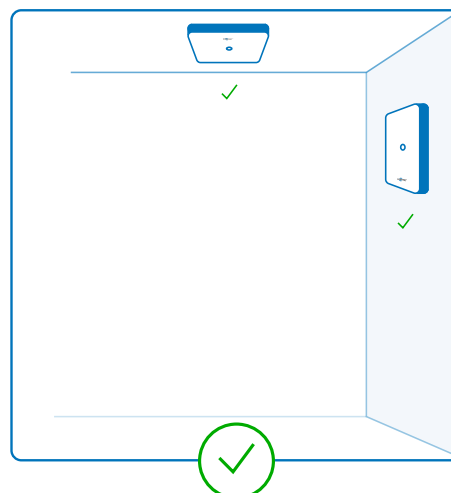
5

Min. installation distance from objects - 2.5 m.



6

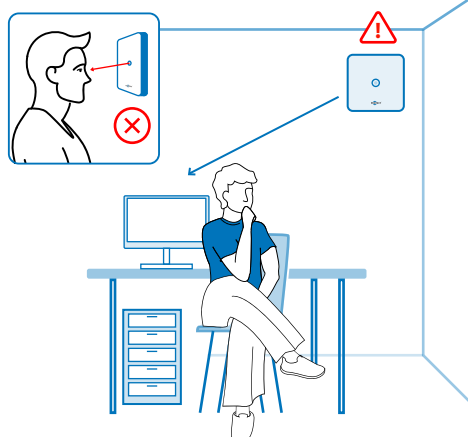
For horizontal mounting, place the fog machine as shown in the picture.



7

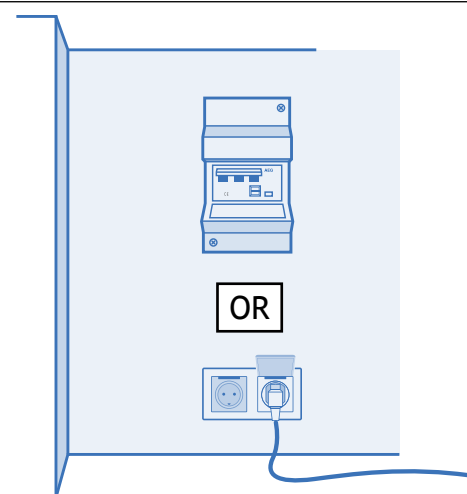
Minimum safety distance is 35 cm for people and objects.

Do not look directly into the nozzle at a short distance - risk of scalding!



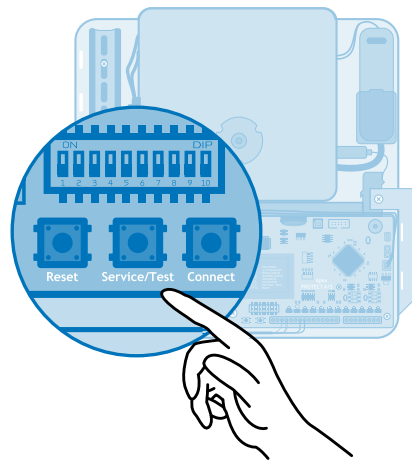
8

IMPORTANT! To avoid electrical shock, disconnect power to the machine before removing the metal case.



9

Press the service button and/or remove the fluid container during installation and service to avoid the unintentional fog emission.



10

Full-scale test: Remember that the test must include the entire alarm installation.



3. Standard installation

3.1 Preparation

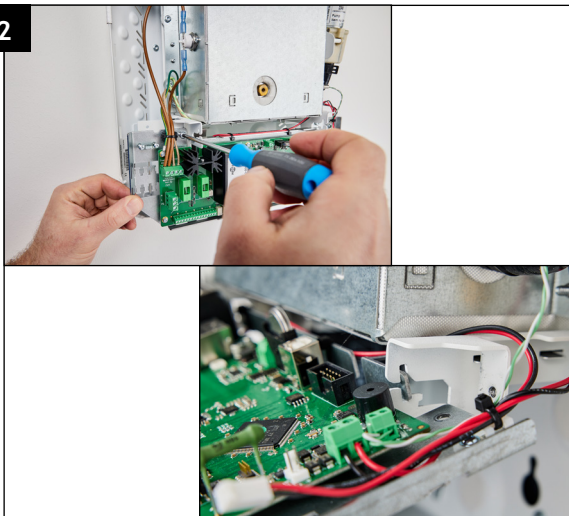
1

Remove the cover.



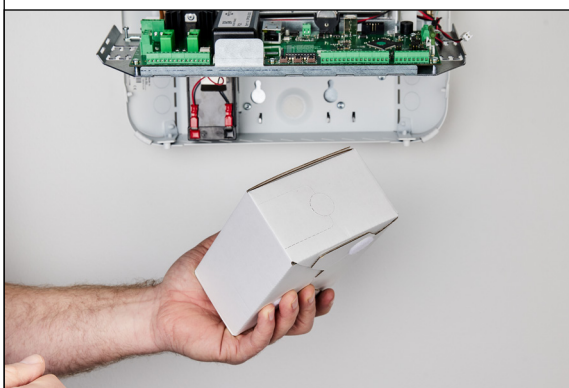
Loosen the PCB and place it in the upright position, using the “hooks”.

2



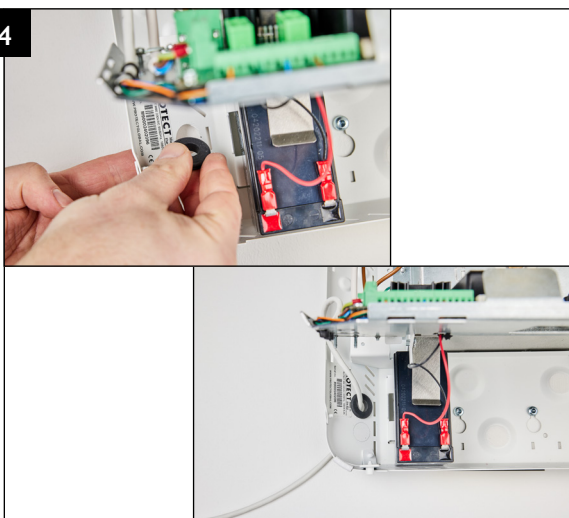
Remove the fluid box.

3



Remove the cable blinds and mount the rubber grommet to protect the cables. Dual access on each side.

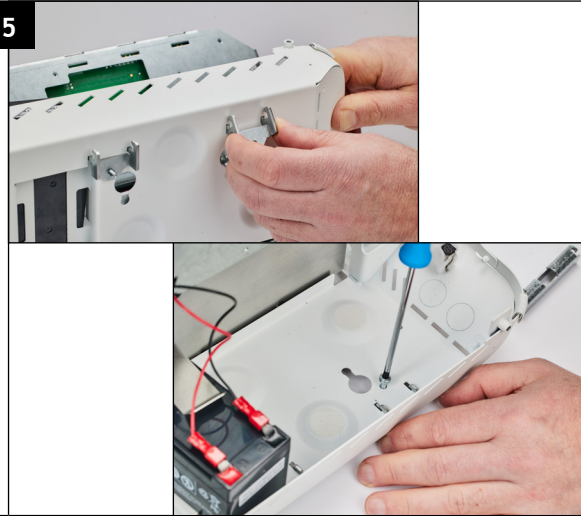
4



If the mounting bracket is used to mount the machine, prepare the machine with the following steps:

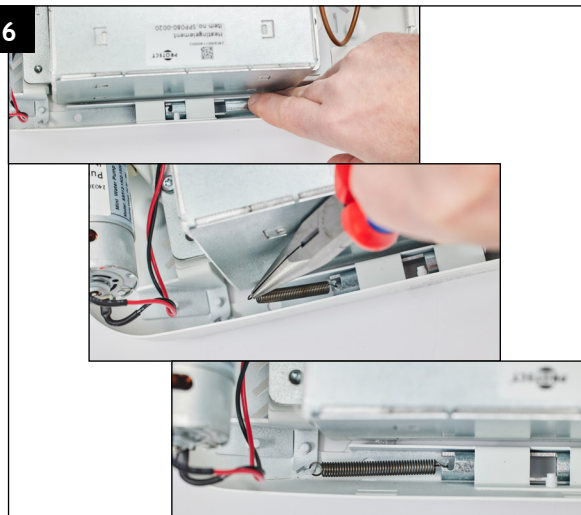
1. Mount the 2 hooks from the back of the machine.
2. Secure with screws from the inside of the machine.

5



3. Place the slider within the fog cannon frame, positioning it above the heating element.
4. Attach one end of the spring to the slider.
5. Using pliers, attach the other end of the spring to the hook on the frame.

6



3.2 Mounting

When mounting without the mounting bracket.

Use the correct screws/rawlplugs for the wall material.

Recommended screw:
 Size: 5*50 mm
 Type: Full thread
 Head: Pan head

1



2A

Directly on the wall:

Use pan head screws in the 4 holes in the back of the machine.

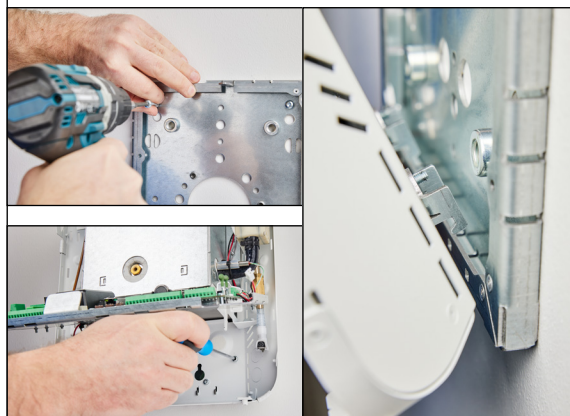
1. Mark the positions of the 2 keyholes (bottom) and 2 holes (top) on the wall.
2. Drill and prepare the holes for the screws.
3. Screw 2 screws into the lower 2 holes, leaving some air gap.
4. Place the machine over the screws.
5. Screw the remaining 2 screws into the top 2 holes and tighten them.
6. Tighten the 2 screws at the bottom of the machine.



2B

On the wall/ceiling using backplate:

See Section “4.4 Mounting bracket”.



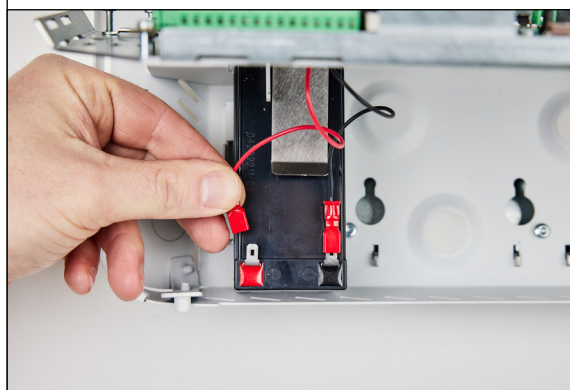
3

Mount the battery and wires:

- The “steel spring” will secure the battery with no screws.
- Connect the red wire to +
- Connect the black wire to -

NOTE: If the fog cannon is without mains supply for an extended period, or if the battery is not needed, leave it unconnected to prevent potential damage.

Alternatively, you can disconnect the battery from the fog cannon by removing the battery connector on the PCB.



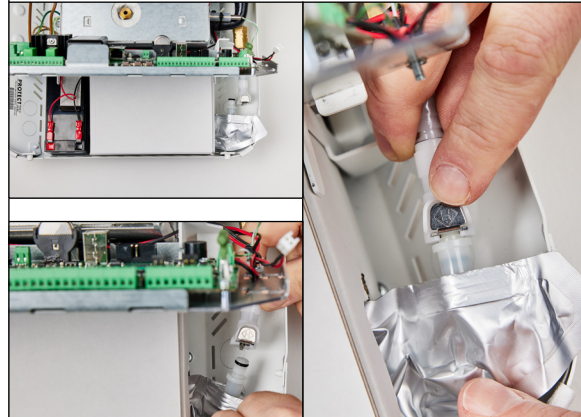
4

Mount the Fluid:

- Place the container into place
- Push the spring ring on the quick connector until click
- Connect the hose to the container until the spring ring clicks
- Make sure there are no sharp bends on the bag

WARNING:

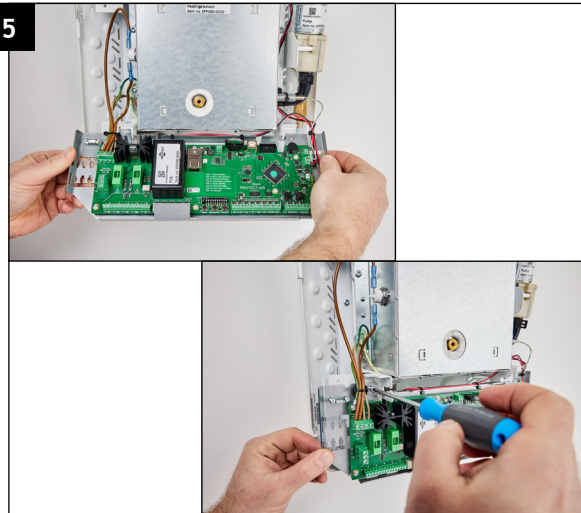
- The bag must not be removed from the box!
- The bag must not hang in the connector!



5

Mount the PCB plate:

- Loosen from upright position
- Mount the two screws

**3.3 Wiring**

1

General comments:

Use Twisted pair cables for signal.

Secure cables with cable ties.

Make sure the cables enter the PCB bracket from behind.

Make sure to keep the wires inside the bracket edges.

Ensure that the PCB bracket can be positioned upright to access the battery and fluid components.

Typical wiring, see picture:

Left side:

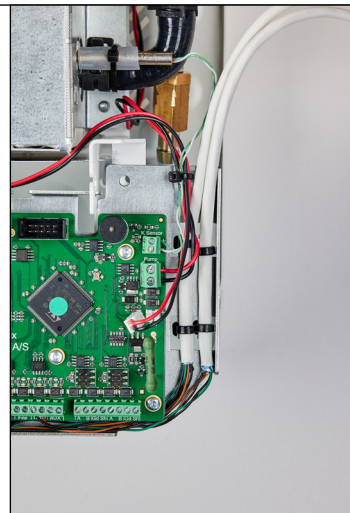
4*2*0,6 mm2 twisted pair for status relays.

3*1,5 mm2 stranded for Mains supply.

Right side:

2*2*0,6 mm2 twisted pair for Alarm Panel.

3*2*0,6 mm2 twisted pair for PIR sensor.



2

Connect to Mains power.

Position the equipment in a way that allows for easy disconnection of the power cable from the mains.

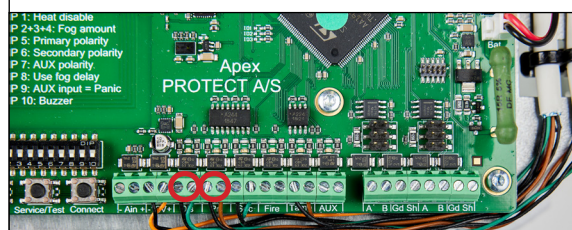
The user must use power cord according to the local laws.



3

Alarm Panel connections:

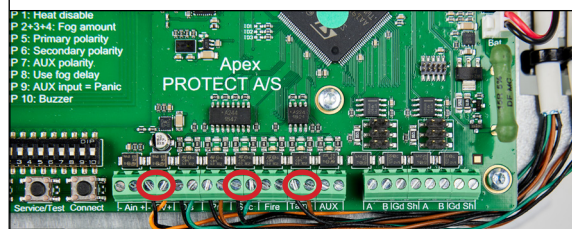
- Disable: Connects to the “Day/Night” signal on the alarm panel
- Primary trigger: Connects to the “Activation” signal on the alarm panel



4

Verification/PIR sensor

- 12V power supply to PIR sensor
- PIR signal -> Sec input
- Tamper -> Tamp input

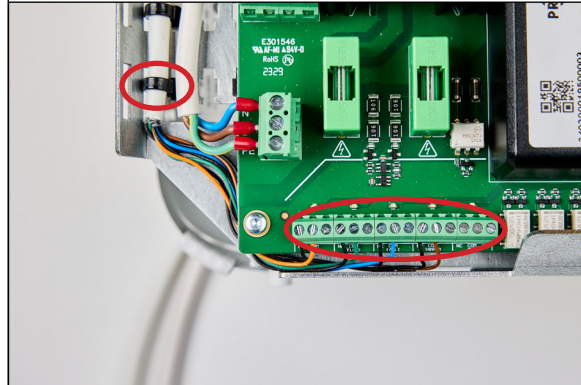


5

Status relays connect to the zone inputs on the alarm panel:

- Fog
- Fluid
- Fault
- Tamper

Relays are potential-free, Normally Closed (NC) contacts.



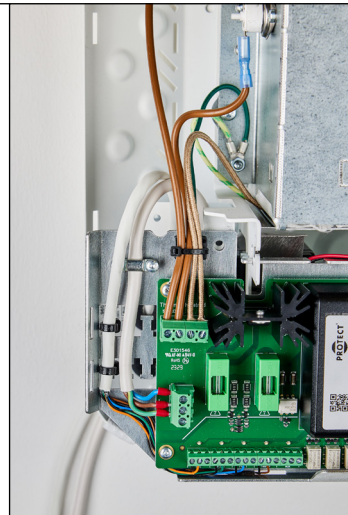
3.4 Configuration

1

Turn Mains power ON.

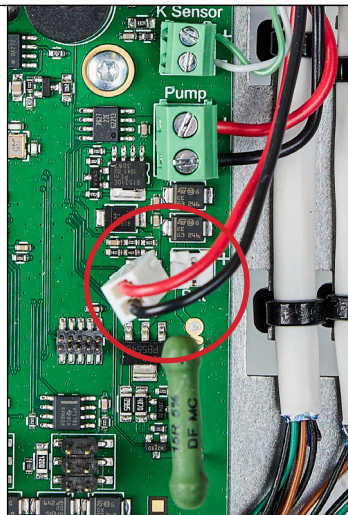
The Fog Cannon™ is now beginning to heat up. During the initial heating process, there may be a slight release of fluid from the nozzle.

Please take care to prevent any fluid stains on inventory items, and promptly wipe away any spills if necessary.



2

Connect battery to the PCB.

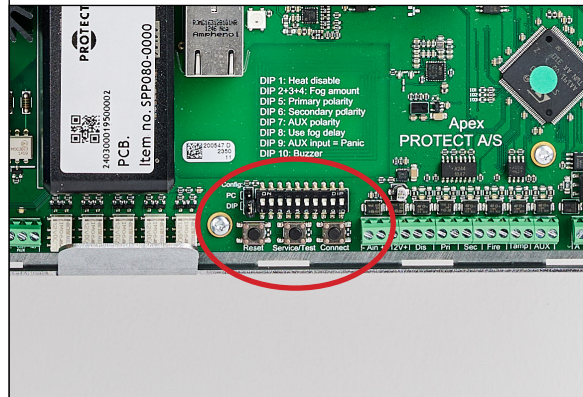


3

Choose configuration by IntelliSuite 2 (recommended):

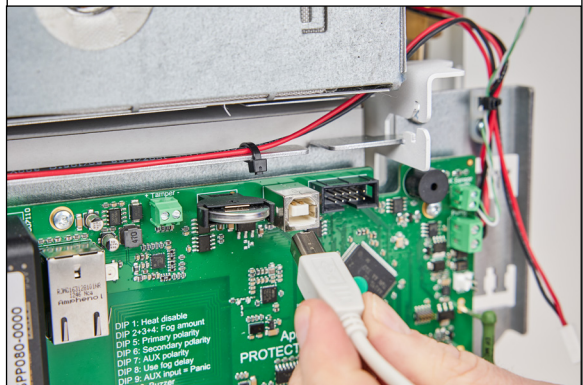
Place the jumper in “PC” position and reset the Fog Cannon™ by pressing and holding the reset button until you hear a beep.

NOTE: Configuring via DIP switches is useful when you lack access to a laptop with IntelliSuite 2 installed and a USB cable.
However, only the most basic features can be configured using DIP switches.



4

Connect Fog Cannon to IntelliSuite 2.
(Download and install IntelliSuite 2 from [PROTECT Download Center](#))



5

Update firmware if required.

There is a firmware update available!

Current firmware version: 1.1.0

Latest firmware version: 1.2.0

[CLOSE](#)

[UPDATE FIRMWARE](#)

6

If the machine is new, you will be asked to start the installation guide.

If not, you can start the Installation Guide manually.
Follow the instructions on the screen.

If you follow the Installation guide (recommended), you can skip the next section.

Congratulations on your new Fog Cannon!

An unconfigured Fog Cannon is detected.
We recommend you to let us help you configure the Fog Cannon using our Installation Guide.

ABORT

INSTALLATION GUIDE

14.7.2093 - 01:26

 SERVICE MODE OFF

START INSTALLATION

START SERVICE

3.5 IntelliSuite 2 manual configuration

1

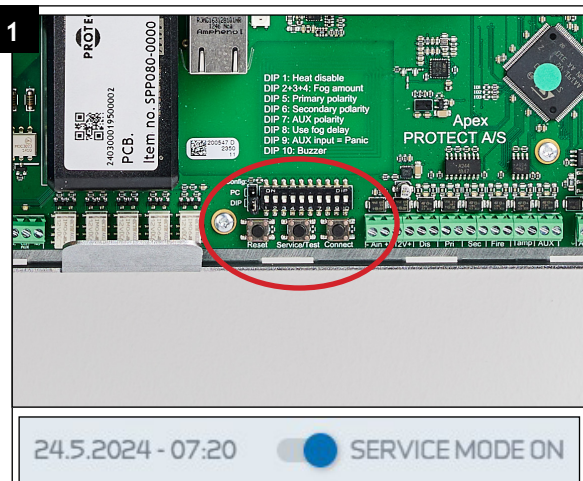
Before changing the configuration, enable “Service mode” to avoid sudden fog activation:

Press “Service/Test” on PCB

OR

Toggle the “Service mode” switch on IntelliSuite 2.

The diode on the PCB will light pink when the machine is in service mode.



24.5.2024 - 07:20

SERVICE MODE ON

2

Set up the Mandatory shot.

[illegible]

Setup optional shots 1..2, if used.

3

Optional Shot 1 ☒

Shot Type
Panic

Trigger Input
Trigger 5 - Aux

VOLUME TO COVER 80 M3

Configure the input polarities as triggered by 12V or open circuit.

4

POLARITIES ENERGY FIRE TAMPER

PRIMARY SECONDARY FIRE TAMPER AUX

12 V
OPEN CIRCUIT

Choose if you want the Fog Cannon™ to go into Power Saving mode when Disabled.

5

POLARITIES **ENERGY** FIRE TAMPER

The cannon must be warmed up before shooting.
Energy saving mode can be relevant during the day when the alarm system is off.

☐ ENERGY SAVING MODE

Standby Power
None

6

Choose if you will use the Fire input and functionality.

POLARITIES ENERGY **FIRE** TAMPER

Set the shot time delay (Mandatory shot only), to make sure the fire alarm has time to change sensitivity.

Block fog when the fire alarm input is active.

☐ DELAY SHOT 0 SEC

☐ BLOCK FOG ON FIRE ALARM

7

Choose if you use the external Tamper surveillance option.

Typically used for the PIR sensor sabotage switch.

POLARITIES ENERGY FIRE **TAMPER**

Is Tamper input wired to switch?

☐ USE EXTERNAL TAMPER

De-select if the Fog Cannon is mounted without cover

☐ USE ON-BOARD TAMPER

8

Set the machine identification.

Location, Site 

Address 1, Address 2

STATUS **SERVICE MODE** [SEE DETAILS \(1 WARNING\)](#)

SERVICE 0 DAYS (LAST SERVICE NA)

CONFIG TYPE INTELLISUITE

Please edit one or more fields and click save to store the changes.

Site location

Location

Machine Location

Site

Street

Address 1

City

Address 2

SAVE CLOSE

9

Test input functionality and wiring from the Monitoring page.

The timestamps can help verify the installation, if inputs are triggered away from the Fog Cannon™.

INPUT	CONFIGURATION	TRIGGERED	CHANGED
Disable	Disable		
Primary	Mandatory Shot		
Secondary	Mandatory Shot	Yes	
Fire	Not used		
Tamper	Not used	Yes	
Aux	Optional Shot 1		
SHOT	TYPE	TRIGGERED	CHANGED
Mandatory	Standard		
Optional 1	Panic		
Optional 2	Inactive		
Optional 3	Inactive		

10

Set clock if needed, fx. if you are in a different time zone.

24.5.2024 - 07:20 ☒ SERVICE MODE ON

3.6 Finishing the installation

- After configuring the machine, make sure to prime the pump with fluid.
- To prime the pump either long press the “service/test” button on the PCB, or through IntelliSuite 2 on the button “test shot”.
 - When long pressing the “service/test” button there will first be a few short bursts and a few seconds after that there will be a longer continuous shot.
 - It is possible to prime the pump while the machine is in service mode.
- When a small amount of fog comes out of the machine, the pump has sufficiently been primed.
- Put the cover back on the machine.

Remember to put warning labels on the windows/doors.



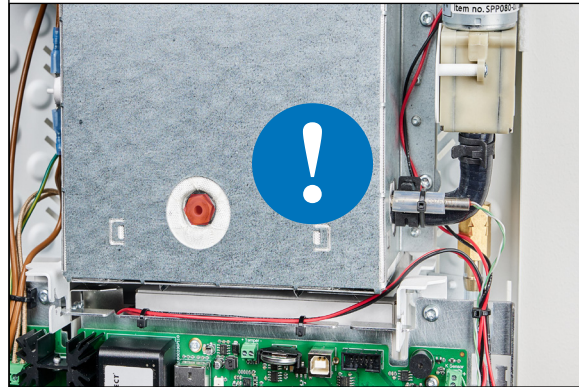
4. Installation of accesories

4.1 Nozzles

1

WARNING: only change the nozzle when the machine is cold, if possible!

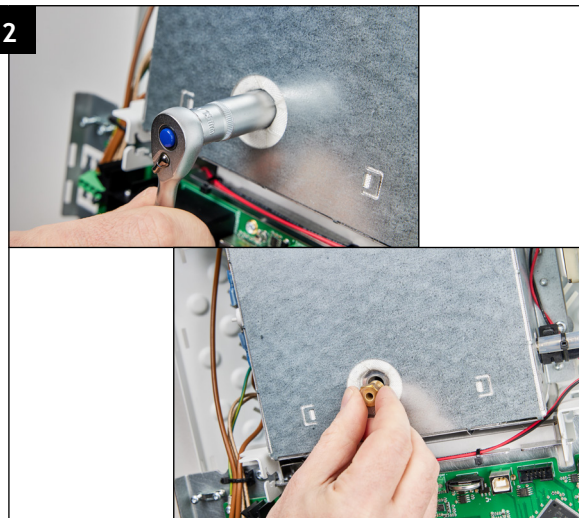
- If the machine is hot while changing nozzle be aware that the mounted nozzle is very hot and that the new nozzle conducts heat very well so it will get hot within a few seconds.
- If changing nozzle on an already installed machine the cover needs to be removed.



2

Remove the old nozzle.

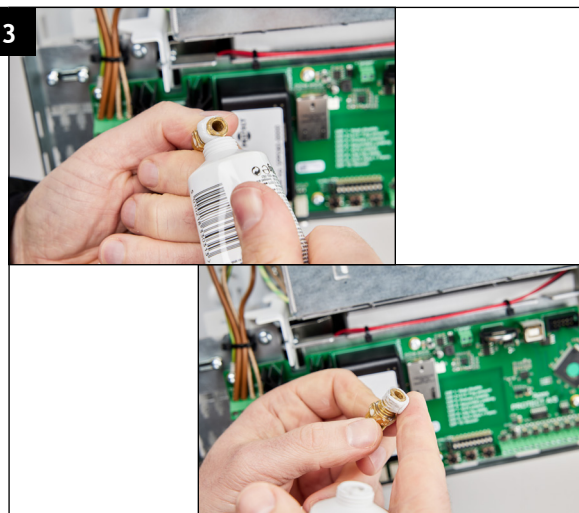
- Use a 13 mm spanner or socket wrench to remove the nozzle, by turning counterclockwise.
- Clean around the flange where the nozzle is mounted, if necessary. Make sure that no debris fall into the heating element when the nozzle is removed.
- If the nozzle has been changed multiple times and it is difficult to catch the thread with a new nozzle the old hardened paste might need to be cleaned away from the thread in the heating element. Use a M10x1.5 tap to clean the thread - if possible with the threads facing downwards to avoid debris entering the heating element.



3

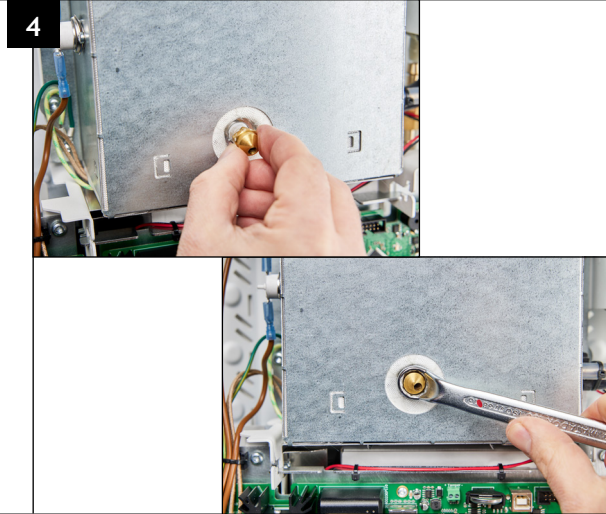
Prepare new nozzle.

- Apply a small amount of paste on the thread of the new nozzle.
- Make sure it is distributed evenly.
- We recommend using "Holts Firegum", but any exhaust assembly paste should be usable.



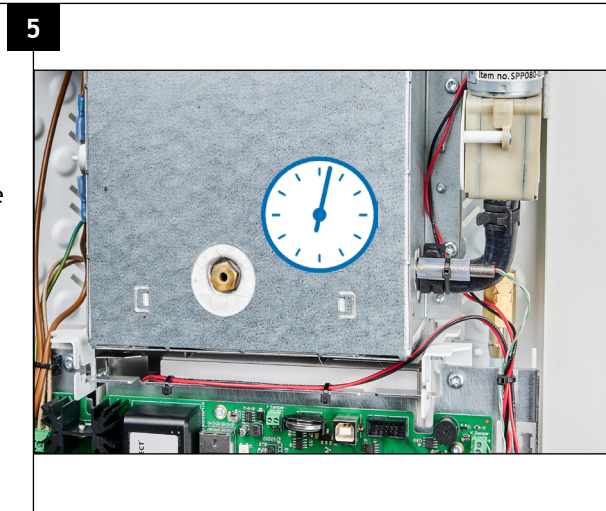
Install the new nozzle.

- Screw the new nozzle into place, this can be done with the fingers or the 13 mm spanner. If the machine is hot the nozzle can be placed with the fingers but will need to be screwed in with tools to avoid burns.
- Position the outlet hole in the desired direction (with the nozzle screwed in as far as possible) - the nozzle does not have to be tightened. Be aware if the machine is hot the nozzle will have to be positioned quickly (approximately 10 seconds) to avoid the paste hardening before the position is determined.
- When positioning the direction of the nozzle it is allowed to turn back counterclockwise if necessary.
- Clean for excess paste around the nozzle head.



Finish installation.

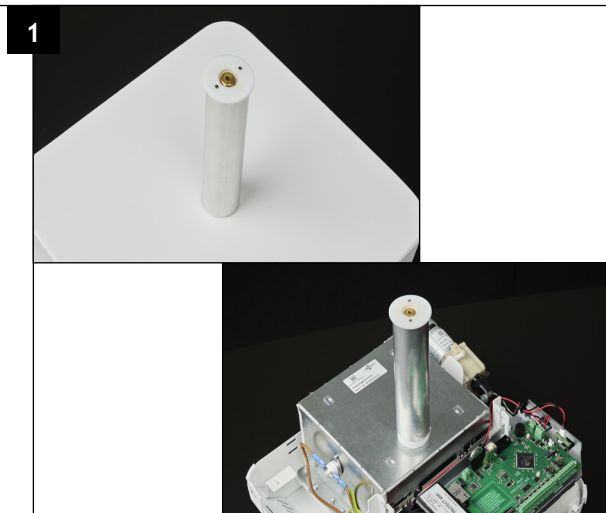
- If the machine was cold while changing the nozzle the paste should be hardened when the machine has heated up.
- If the machine was hot while changing the nozzle the paste should harden for minimum 5 minutes before use.
- If no further work is to be done on the machine, mount the cover again.



4.2 Nozzle extender

All APEX nozzles can be used with the nozzle extender.

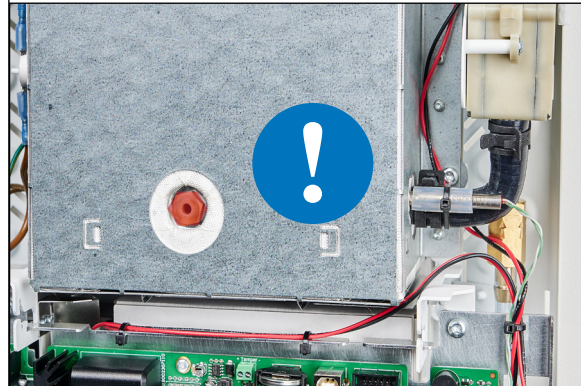
The nozzle extender can be mounted both with and without the cover on the machine, but it is preferred to mount it without the cover.



2

WARNING: only install the nozzle extender when the machine is cold, if possible!

- If the machine is hot when installing the extender be aware that the removed nozzle from the machine is hot and you can get burned.
- Be aware not to overtighten the thread in the hot aluminium.



3

Remove the old nozzle from the heating element with a 13 mm spanner or socket wrench, by turning counterclockwise.



4

Prepare the nozzle extender.

Do not pull the nozzle extender fully out of the insulation!

- Pull the insulation down over the copper adapter and install the nozzle in the extender tube.
- Tighten with a 13 and a 10 mm spanner.
 - If the standard nozzle is reused no paste is required.
 - All other APEX nozzles can be used as well, but here paste is required. See section 4.1 on how to prepare the nozzle.

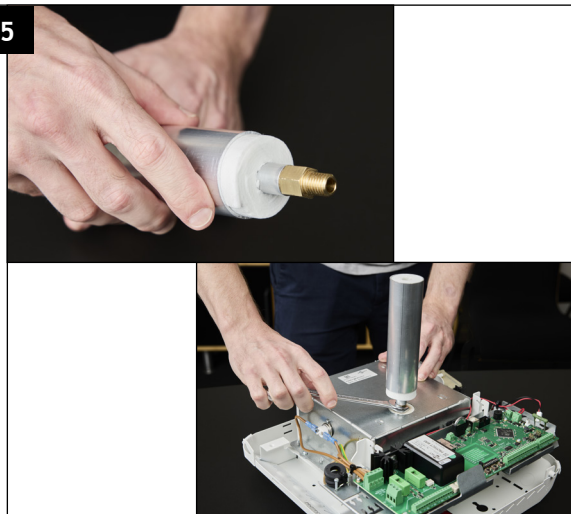
Be aware if the reused nozzle is hot!
The procedure for mounting the nozzle extender with and without the cover is different.



Without cover:

- Pull the insulation over the nozzle to expose the copper adaptor.
- Screw the nozzle extender into the heating element and tighten at the adaptor with a 13 mm spanner.
- Slide the insulation into contact with the heating element.

5

**With cover:**

- Mount the cover onto the machine.
- Pull the insulation over the nozzle to expose the copper adaptor.
- Cut the insulation 2-3 mm longer than the outer tube. The outer tube and the insulation should be flush in the end with the nozzle.
- Screw the nozzle extender into the heating element and tighten at the adaptor with a 13 mm spanner.
- Slide the insulation into contact with the cover.

6

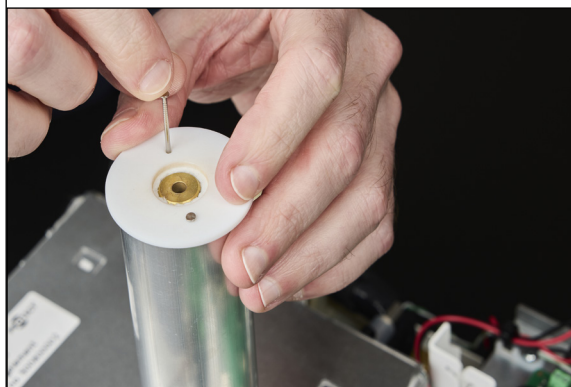


When using the standard nozzle, the surface of the nozzle, the insulation and the outer tube should be flush with each other. When using other APEX nozzles, the nozzle will stick out further than the insulation.

Place the end cover over the nozzle and push the two nails into the insulation.

- The nails should not touch any of the metal parts!

7

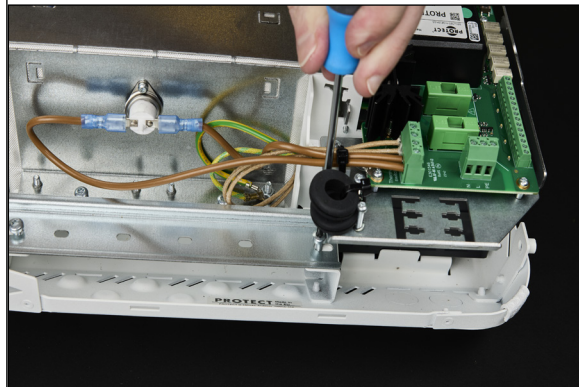


4.3 DIN rail

Mount the DIN rail in the empty space next to the heating element.

Use the 2x supplied M4x8 screws and a Torx 20 screwdriver to mount the DIN rail onto the backplate of the machine.

1



4.4 Mounting bracket

On the wall/ceiling/beam using the mounting bracket:

1. Find suitable mounting holes on the mounting bracket, depending if it is to be mounted on a flat or uneven wall/ceiling, attached to a beam, etc.
2. The drilling template can also be used for the mounting bracket, to ensure correct distance from walls and ceiling. The gray holes on the drilling template represents the holes on the mounting bracket.
3. On a ceiling (horizontal surface) - if the fog cannon is close to a wall, the hook must be towards the wall.
4. Mark the positions of the holes.
5. Drill and prepare the holes for the screws.
6. Screw the mounting bracket onto the wall/ceiling/beam, etc.

1



2

Suspended from the ceiling using the mounting bracket:

1. Wires can be attached the 4 corners of the bracket using the semicircular holes.
2. Threaded rods can be attached in the 4 corners using the M10 press nuts, or the holes right next to them.

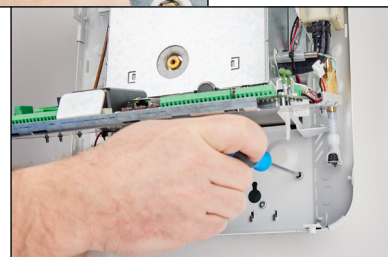


Attach the fog cannon to the mounting bracket:

1. Place the hooks on the back of the machine over the edge on the bottom of the mounting bracket.
2. If the fog cannon is mounted on the ceiling, the hooks should fall into place in the 4 holes on the flange of the mounting bracket to stabilize the machine.
3. Push the top of the machine over the hook in the mounting bracket until you hear it click in place.

3A

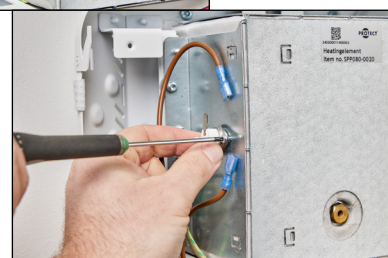
4. Secure the machine with the 2 screws from the inside of the machine in the top left and lower right corner.

3B

5. Replacing spare parts

5.1 Temperature fuse

- Disconnect the 2 wires from the temperature fuse.
- Unscrew the 2 screws holding the temperature fuse.
- Reuse the 2 screws to attach the new temperature fuse. Make sure that it sits flat against the surface of the heating element.
- Reattach the 2 wires to the fuse.

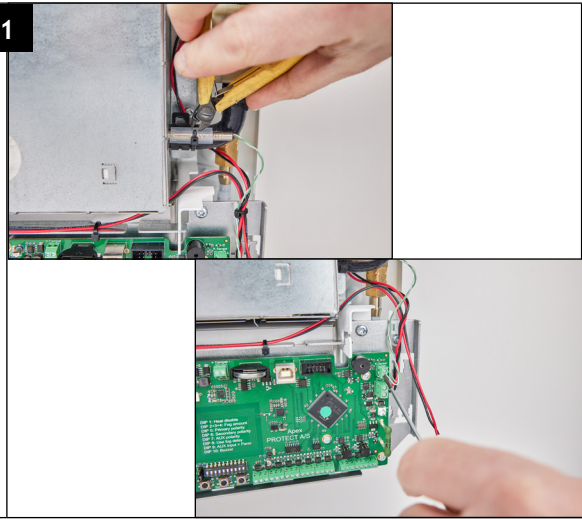
1

5.2 Thermal sensor

Remove the Thermal sensor from the PCB.

- Cut the 2 cable ties securing the sensor and the wires.
- Remove the wires from the screw terminals on the PCB.

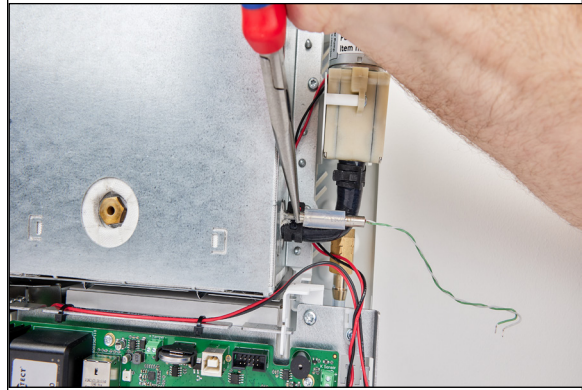
1



Remove the Thermal sensor from the heating element.

- Pull out the sensor from the heating element.
- It might be necessary to use pliers as shown in the picture, to remove the sensor.

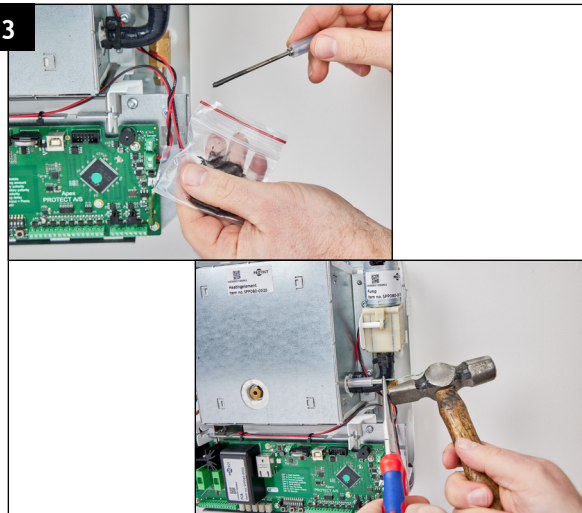
2



Install the new thermal sensor in the heating element.

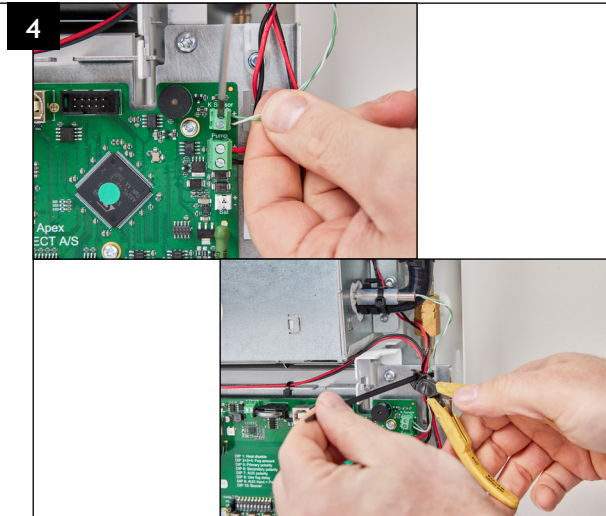
- Put some thermal paste on the tip of the sensor and insert it into the heating element.
- Take the pliers and a screwdriver and tap it lightly in the end to get the sensor fully into the hole.

3



Install the new thermal sensor on the PCB.

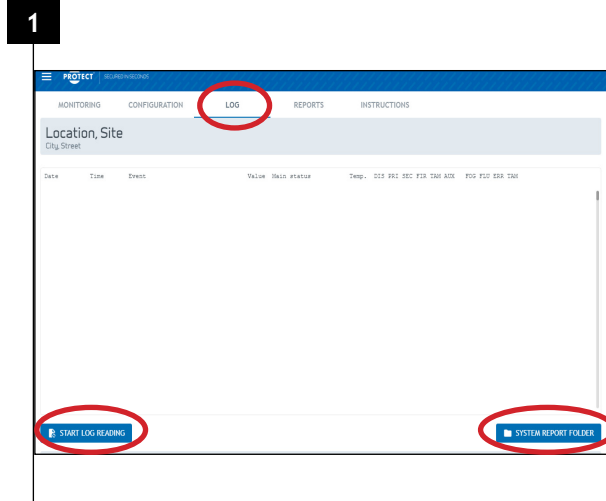
- Install the 2 wires on the PCB, with the green wire in + and the white in - on the screw terminal.
- Use the 2 cable ties to secure the wire and sensor again.



5.3 PCB

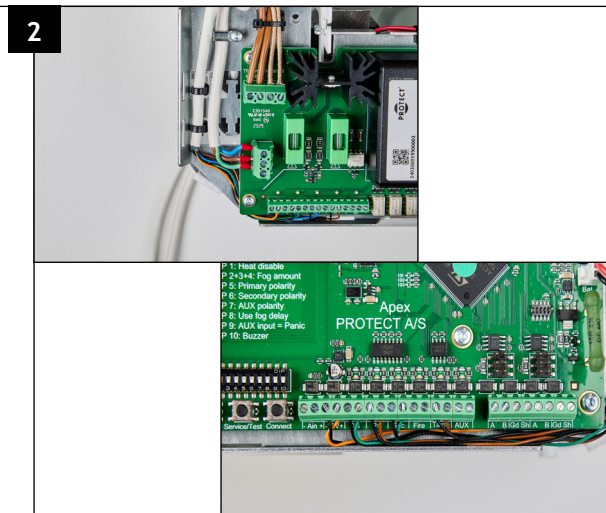
Save machine configuration

- To ease the setup of the new PCB, start by opening IntelliSuite 2 and connect the machine.
- Go to the “LOG” tab in the top, press “START LOG READING” and when the log has been read press “SYSTEM REPORT FOLDER”.
- In this folder you can find the log file of the machine (The file has the PCB serial number as name, and is the newest file generated).
- Open the LOG file in a text reader and go to the “CONFIGURATION” section. Here all the configured parameters of the machine are written.



Remove wires from the PCB

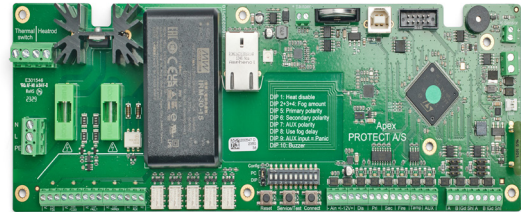
- Disconnect AC power from the machine.
- Note how all the wires are connected to the PCB and remove them from the PCB.



3

Remove the PCB from the PCB mounting plate.

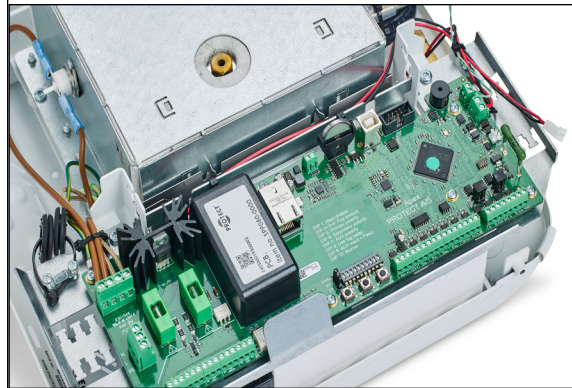
- Remove 7 M3 screws that fasten the PCB with a torx 10 screwdriver.



4

Mount the new PCB to the PCB mounting plate.

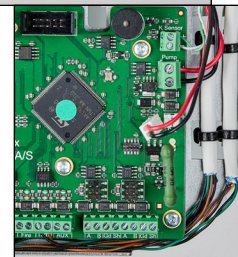
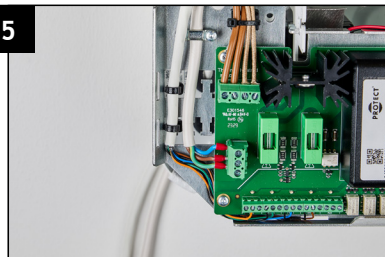
- Mount new PCB and attach with the same 7 M3 screws.



5

Reconnect the wires to the PCB.

- Reconnect the wires to the PCB in the same positions as they were removed from.
- Be aware that the AC power is connected correctly, blue on N, brown on L, and green/ yellow on PE!
- Be aware that the Thermo sensor (K sensor) is connected correctly, green on + and white in -!



6

Configure the machine with the new PCB.

- When done installing the new PCB open IntelliSuite 2 and connect the machine.
- IntelliSuite 2 will ask you to configure a new machine. Configure the machine as you would if a new machine was to be installed. Do this with the information from the LOG file of the old PCB to configure it the same way again.

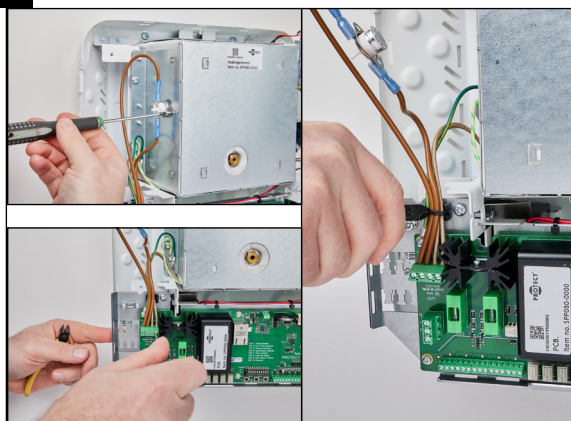


5.4 Heating element

1

Preparing to remove the heating element.

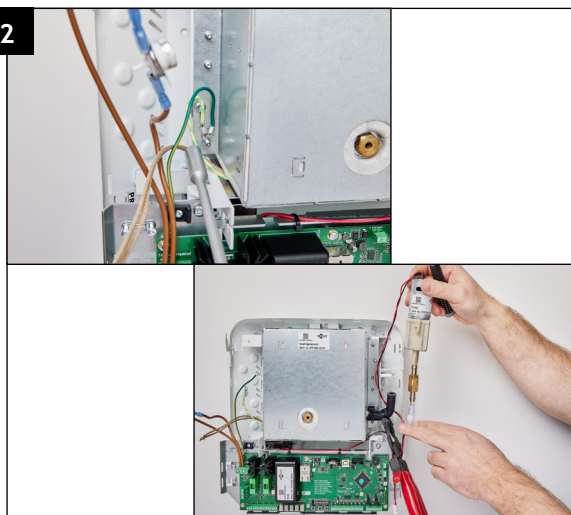
- Remove the Thermal fuse from the heating element, by removing the 2 screws.
- Remove the cable tie holding the wires in place on the PCB plate.
- Remove the 2 wires to the heating rod on the PCB.



2

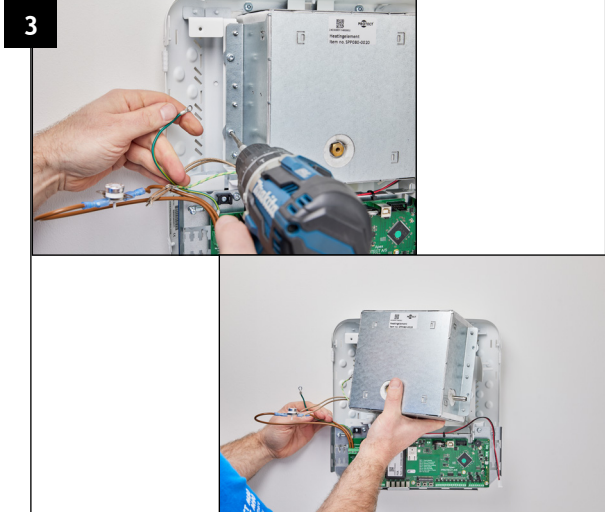
Preparing to remove the heating element.

- Remove the nut on the heating element, securing the ground cables, and remove the ground cables and the serrated washer.
- Remove the pump assembly - see section 5.5. The bent hose and the clamps will not be reused.
- Remove the thermal sensor - see section 5.2.



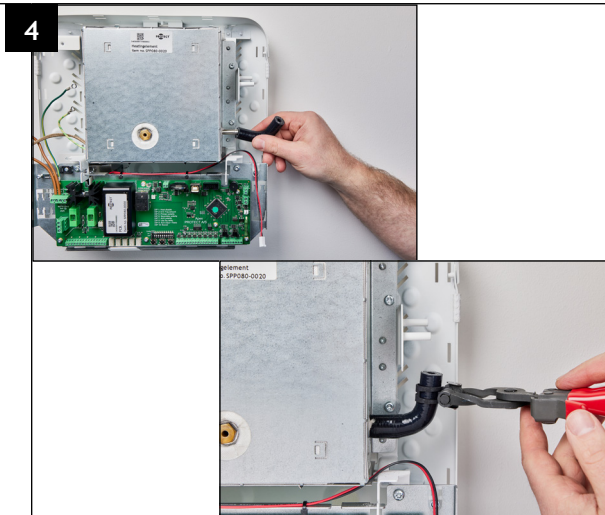
Removing the heating element.

- Remove the 4 screws holding the heating element in place.
- Lift out the complete heating element.



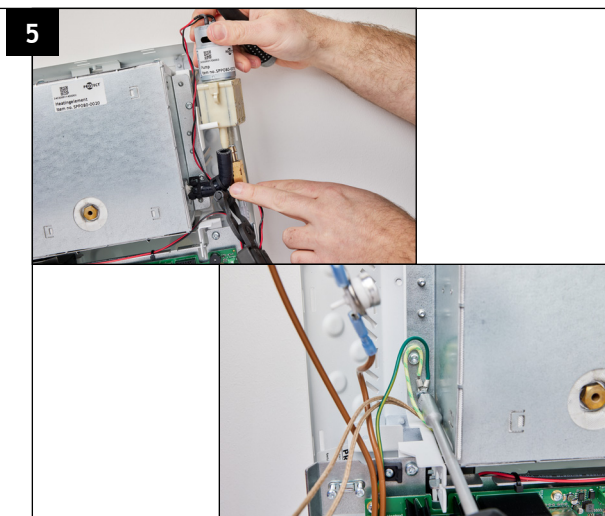
Installing the new heating element.

- Insert the new heating element and tighten the 4 screws in place.
- Push the longest leg of the new bent hose over the inlet on the heating element.
- Mount the clamp on the hose.
Be careful to only open the clamp as little as possible, to prevent deformation, thus reducing the clamping force.
Move the ears of the clamp away from the top, away from the PCB to allow space for the thermal sensor.



Reattaching components to the heating element.

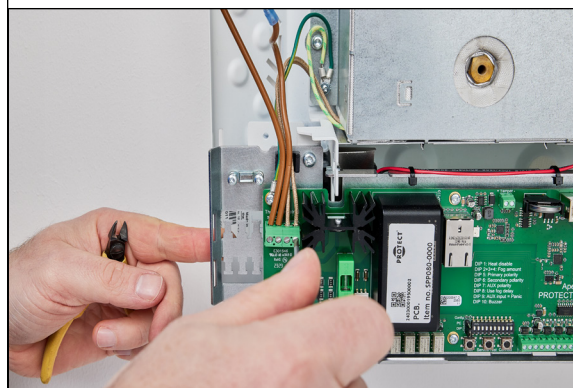
- Install the pump assembly - see section 5.5.
The bent hose and the clamps will not be reused.
- Install the thermal sensor - see section 5.2.
- Reattach the ground cables to the heating element.
Remember the serrated washer under the cables!



6

Reattaching components and wires.

- Connect the 2 wires from the heating rod on the PCB.
- Screw in the thermal fuse on the side of the new heating element, reusing the 2 screws.
- Secure the wires on the PCB plate with the supplied cable tie.

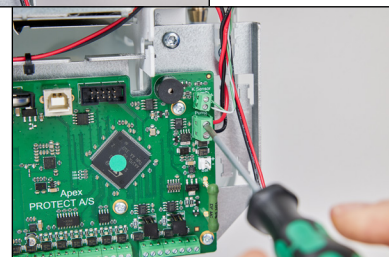
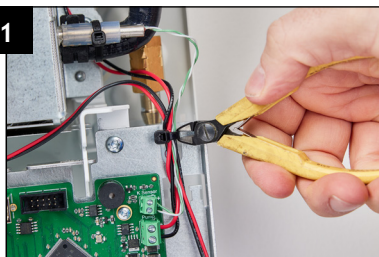


5.5 Pump

1

Removing the pump from the PCB.

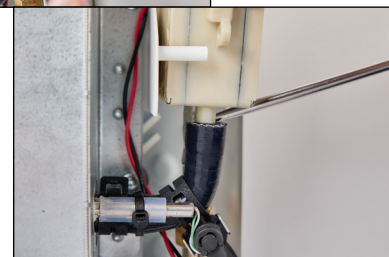
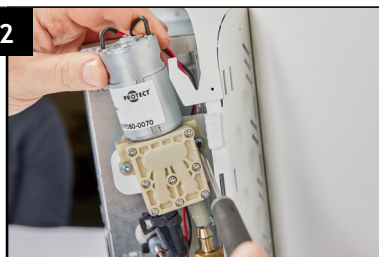
- Cut the cable tie securing the wires to the PCB plate.
- Remove the wires from the screw terminals on the PCB.



2

Removing the pump from the back plate.

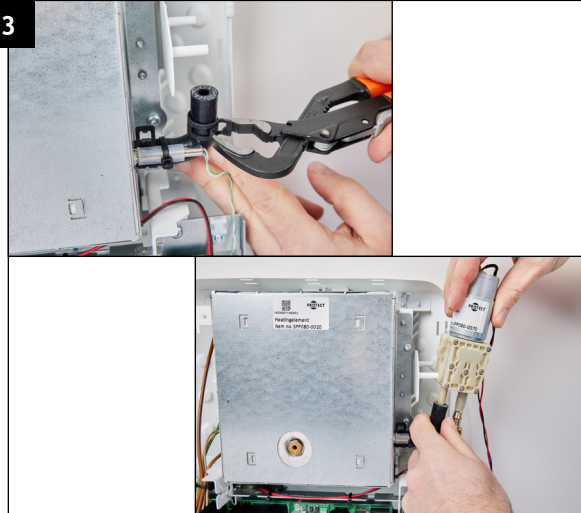
- Remove the 2 screws at the pump housing holding the pump in place.
- Remove the clamp from the upper black hose. Pull it onto the bend of the hose.
- Remove the pump assembly from the hose. If necessary, use a large flat head screwdriver.
- Be careful not to damage the hose!



3

Installing the new pump on the hose.

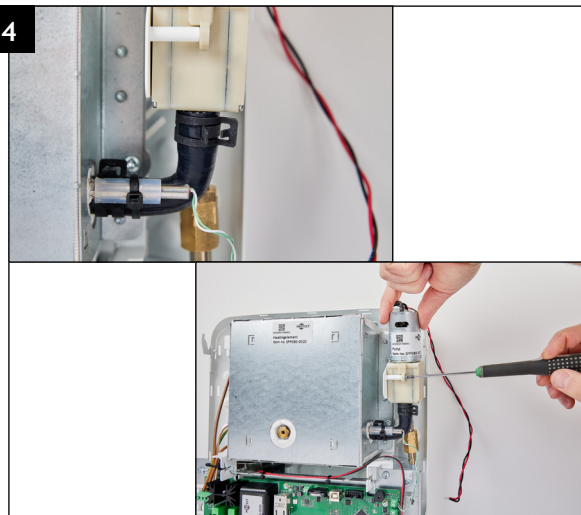
- Make sure to use the new clamp provided! Insert the clamp over the hose but be careful to only open the clamp as little as possible, to prevent deformation, thus reducing the clamping force.
- Push the pump over the hose and position it to align with the studs on the back plate.



4

Installing the new pump on the back plate.

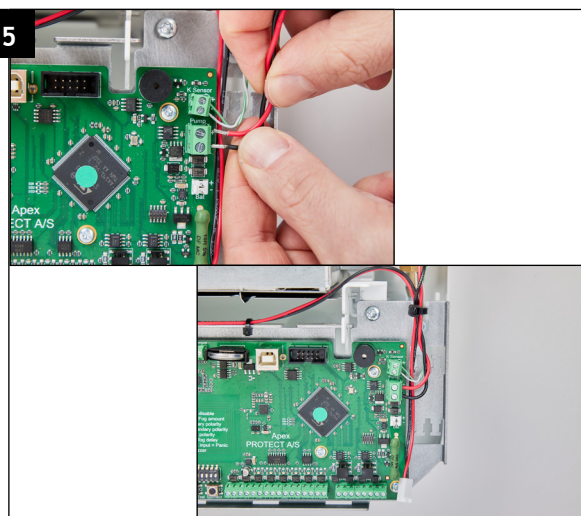
- Place the clamp over the barb on the pump, again making sure to deform the clamp as little as possible!
- Fasten the pump again on the pack plate, using the 2 screws on the pump housing.



5

Installing the new pump to the PCB.

- Run the wires between the pump and the heating element, and underneath the bent hose.
- Install the 2 wires on the PCB, with the red wire in + and the black in - on the screw terminal.
- Use the cable tie to secure the wires again.



6. TECHNICAL REFERENCE



6.1 Introduction

The Technical Reference Manual is designed for use as a reference document, rather than a step-by-step guide. It comprehensively outlines all technical details and functionalities of the Fog Cannon™.

6.2 General information

The new generation of fog cannons from PROTECT™ shares similarities with previous models in many aspects. Nevertheless, there are some fundamental changes that are crucial to be aware of:

6.2.1 Configuration via IntelliSuite 2 or DIP switches

The latest generation of fog cannons is most conveniently configured using the new IntelliSuite 2 PC program. Connect the PC to the fog cannon with a standard USB cable, and IntelliSuite 2 will assist with:

- Step-by-step installation guide
- Step-by-step Service Guide
- Testing and configuration assistance
- Overview of all machine statuses
- Firmware updates
- Log reading
- Access to manuals
- Troubleshooting

We highly recommend using IntelliSuite 2 for all machine-related tasks to ensure optimal functionality.

Alternatively, basic settings can still be configured exclusively via DIP switches, similar to our previous models.

The choice between PC or DIP configuration is made by placing a jumper in the desired position.

6.2.2 Shot configuration

- Configurable settings for up to 4 different shot profiles.
- Multiple shot profiles available for selection.
- Fog volume is determined based on chosen visibility and room size.

The fog cannon can be configured with 4 distinct shots, each initiated by its dedicated trigger inputs. Various shot types are available, including:

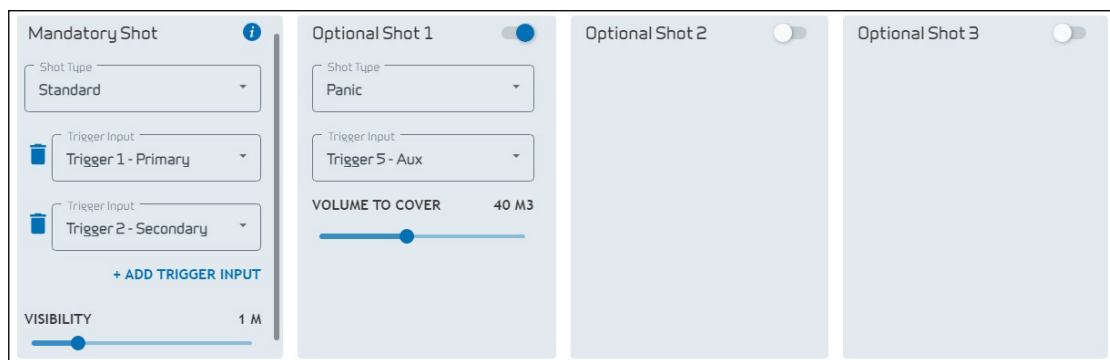
- Standard: Maximum fog output
- Turbo: Maximum speed
- Panic: Swift shot that disregards the Disable input
- Warning: Smaller shot with incomplete room coverage, also ignores Disable input

The fog volume is determined by assessing the room's volume and choosing the desired visibility. The fog cannon will then automatically calculate the necessary fluid amount to produce the required fog volume.

Depending on the fog cannon size, each shot type will have distinct limits for maximum fog output.

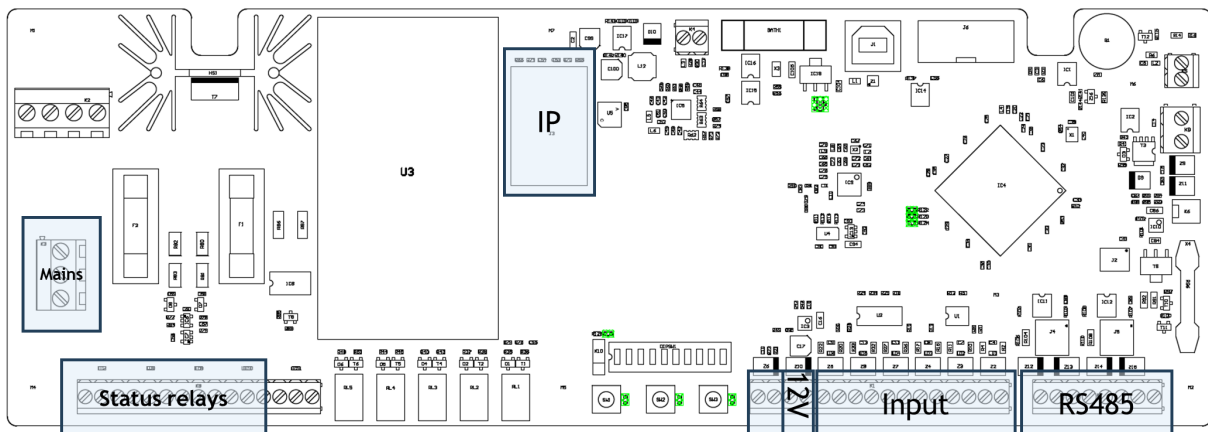
As an example of IntelliSuite 2 setup, you can configure:

- Standard shot
 - o Trigger = Primary + Secondary
 - o Visibility = 1 meter
 - o Room size = 110 m3
- Panic shot
 - o Trigger = AUX
 - o Room size = 40 m3 (Panic = 50 cm visibility)



6.3 PCB connections

Overview of the PCB connections:



6.4 Mains power

Voltage

PROTECT M80™	PROTECT M90™
230 V ac	230 V ac

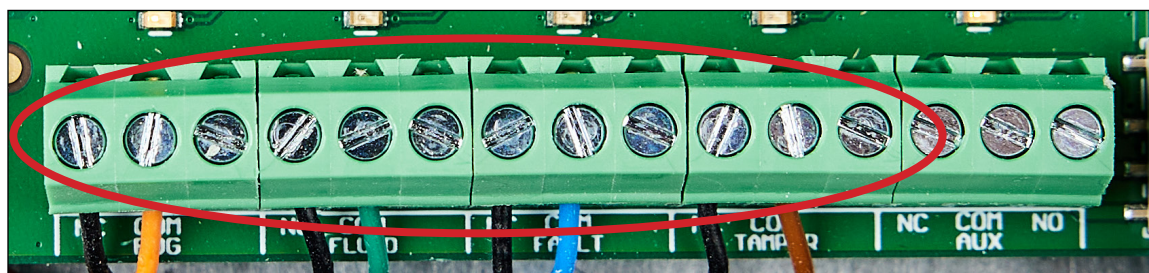
Effect

PROTECT M80™	PROTECT M90™
1000 W	1000 W

6.5 Status relays

4 status relays can be connected to the alarm panel (optional):

- Fog: Open during fog activation
- Fluid: Open when fluid is low/not found
- Fault: Open when a critical error is active
- Tamper: Open if cover is removed and/or external tamper input is active (if used)



6.5.1 Relay contacts

All relays are in the Normally Closed (NC) state, opening when the status is active.

An additional terminal is provided for a balancing resistor; refer to the details below.

6.5.2 Status LED

Each relay is equipped with a status LED.

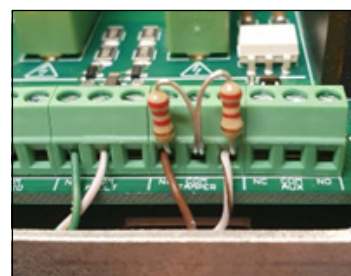
This LED is ON when status is OK. This way, if LED is turned OFF, it indicates that the status is active.

6.5.3 End Of Line resistors

Each status relay terminal includes an extra terminal designed for one side of a balanced End Of Line termination.

You can simplify the process of connecting resistors or wires by utilizing this spare terminal, as illustrated in the image here:

While the use of EOL resistors is not compulsory, the installer can opt for an appropriate solution based on their preference.



6.6 AUX relay

The AUX relay serves various purposes, and can be configured in IntelliSuite 2.

6.7 Digital inputs

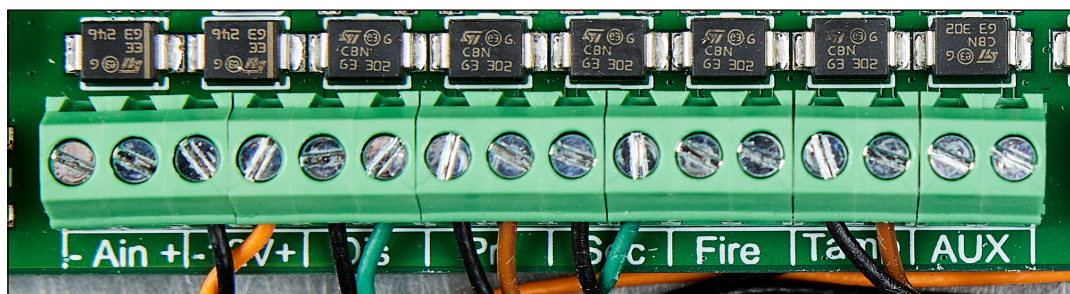
There are six digital inputs available.

Certain inputs come with dedicated functionalities, while others offer configurable options for various purposes:

Input	Normal functionality	Alternative functionality	Configurable polarity
Dis	Disable	NA	No
Pri	"Activation" trigger		Yes
Sec	PIR/Verification trigger		Yes
Fire	Block fog on fire detected	Trigger	Yes (Fire = Always 12V active)
Tamp	External Tamper fx PIR sensor sabotage switch	Trigger	Yes
AUX	Configurable	Trigger	Yes

Detailed description

Input	Description
Dis	12V = Disable the fog cannon The fog cannon is usually disabled during daytime, preventing fog initiation. However, certain shot types disregard the Disable signal: Panic and Warning shots can be triggered even during daytime.
Pri	This is the Primary trigger input from the alarm panel: the "Activation" signal. Select the trigger polarity using IntelliSuite 2 or DIP switches.
Sec	The Secondary trigger is commonly employed for connecting to a PIR sensor/Verification signal. When used together with the Primary signal, both triggers must be simultaneously active to initiate the fog. Select the trigger polarity using IntelliSuite 2 or DIP switches.
Fire	Applying 12V/24V to this input will prevent fog activation in the event of a fire. If not used as a Fire input, it can be configured as a trigger input through IntelliSuite 2. Choose the trigger polarity using IntelliSuite 2.
Tamp	External tamper input. Typically used to connect to PIR sensor tamper circuit/sabotage switch. Open circuit = Tamper active. The overall tamper status depends on both the internal tamper detection and this external tamper input. If not used as a tamper input, it can be configured as a trigger input through IntelliSuite 2. Select the trigger polarity using IntelliSuite 2.
AUX	This serves as an additional input for use as a trigger or other specialized functionality. When configuring the Fog Cannon™ via DIP settings, set DIP9 = ON to activate the AUX trigger input as a Panic shot trigger. Select the trigger polarity using IntelliSuite 2 or DIP switches.



6.7.1 Electrical specifications

All digital inputs adhere to the following specifications:

- Responsive to active signals: 0/12VDC or 0/24VDC
- Operating range: 7-30 VDC
- Current consumption: < 5mA
- Opto-isolated
- Unipolar

6.7.2 Trigger LED status

Each digital input is equipped with a dedicated LED signal that displays the current status of the input and its functionality.

This feature is invaluable for promptly assessing the input status (whether it's active or not), eliminating the necessity to connect to IntelliSuite 2 during trigger connection and activation testing.

LED	Status
OFF	Function inactive.
Constant ON	Function is active (no trigger type input).
Slow blink	Input is configured as trigger and is active. But not all configured triggers are active, so the fog cannon will NOT start the fog.
Fast blink	Input is configured as trigger and is active. All necessary triggers are now active. You should NOT leave service mode and/or enable the fog cannon now!

6.8 External power supply

A power supply for external equipment is available, such as:

- Verification sensor/PIR
- Wireless modules



Technical specifications

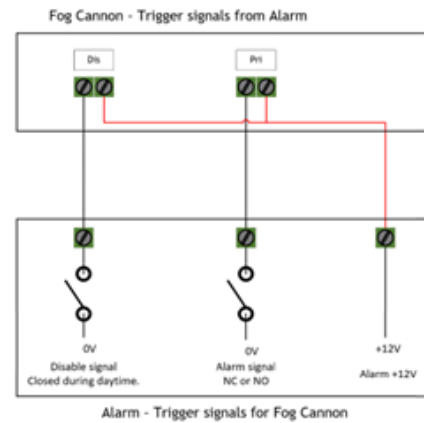
- Voltage, mains supplied: 15VDC
- Voltage, running from battery: 12VDC (the battery voltage)
- Maximum current: 100 mA
- Short circuit protected: Yes
- Surveillance: Yes (heat, overcurrent)

The AUX supply should never be connected to the Alarm Panel power supply.

6.9 Typical wiring, standard shot

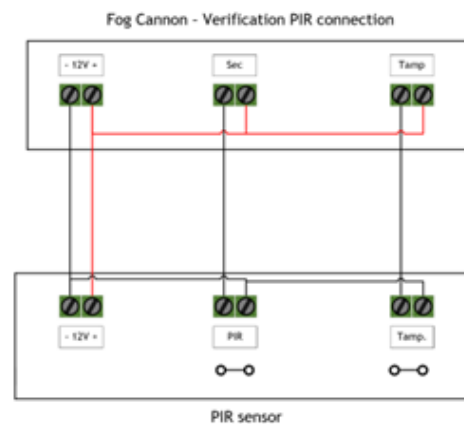
Trigger signals from Alarm Panel:

- Disable
- Primary (Intruder)



PIR sensor/Verification sensor signals:

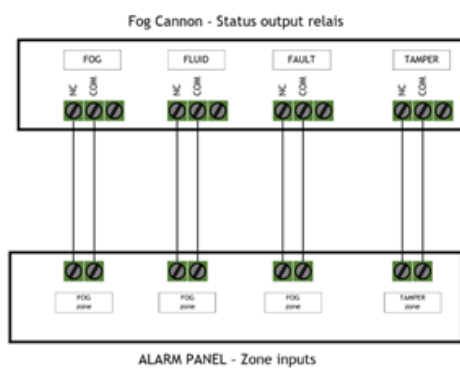
- Power supply from Fog Cannon™
- Intruder
- Tamper



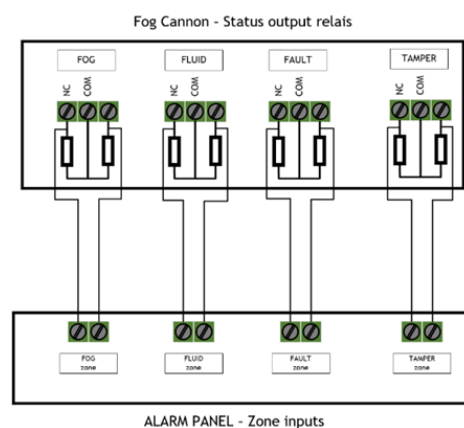
Status signals to Alarm Panel:

- Fog
- Fluid
- Fault
- Tamper

Direct connection:



Using EOL resistors:



6.10 User interface

The PCB features an onboard user interface for status indication, configuration, and control.

6.10.1 Status LED

The PCB features an integrated RGB LED providing information about the fog cannon's status:

- Overall status: Heating, Ready, Service.
- Warnings (Wx): The machine can start, but requires service to maintain operation.
- Errors (Ex): Critical error. Fog output not possible.

This LED remains visible even when the cover is mounted, seen through a small hole on the front. When the Fog Cannon™ is Disabled, the LED is turned OFF, except during Service mode.

For a comprehensive understanding of warnings and errors, including guidance on identification and resolution, refer to the Troubleshooter section.

The status LED is helpful for the initial diagnostics of an error.

For a more detailed fog cannon status description, it is advisable to connect to IntelliSuite 2.

The RB status is displayed in a sequence, depending on the current status, warnings, and errors.

The overall status is shown for 10 seconds.

If there are any active warnings, they will be indicated by a series of yellow blinks.
The number of blinks corresponds to the warning number (Wx).

If there are any active errors, they will be indicated by a series of red blinks.
The number of blinks corresponds to the error number (Ex).

If errors are active, the 10-second status indication is bypassed, as the fog cannon is in an error state.

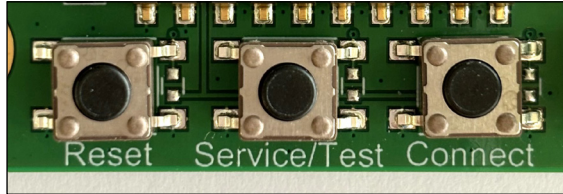


Examples:



6.10.2 User buttons

There are three buttons available below the DIP switches:

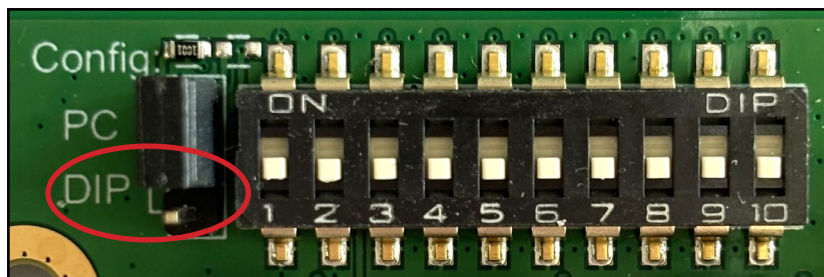


Button	Short press	Long press
Reset	-	Restart machine
Service/Test	Start/Stop service mode	Test shot (small bursts of fog). When releasing the button the pump stops. Pump priming. Keep the button pressed during and after test shot. The pump will start running continuously a few seconds after the test shots. When releasing the button the pump stops.
Connect	Future use	Future use

6.10.3 DIP switch

The 10-position DIP switch allows fog cannon configuration without requiring a connection to IntelliSuite 2. However, the configuration options are limited, and it is advisable to use IntelliSuite 2 for a more comprehensive setup. If you lack access to IntelliSuite 2 and/or a USB cable, the DIP switch configuration method can be used.

To activate DIP configuration, place the 'Config' jumper in the 'DIP' position:



After changing the jumper position, you need to restart the PCB for the changes to take effect.

NOTE: Buzzer ON/OFF is always controlled by DIP 10, no matter "Config" jumper position.

6.10.4 DIP configuration

DIP	Function	OFF	ON
1	Heat disable	Heater always ON	Turn heater OFF when fog cannon is Disabled
2	Fog amount	See table below	
3	Fog amount		
4	Fog amount		
5	Primary polarity	Trigger = Open	Trigger = 12V
6	Secondary polarity	Trigger = Open	Trigger = 12V
7	AUX polarity	Trigger = Open	Trigger = 12V
8	Fog delay	No delay	Fog is started 5 seconds after trigger
9	AUX = Panic shot	AUX input will trigger a Panic shot	AUX = panic shot trigger
10	Buzzer	Buzzer OFF	Buzzer ON

6.10.4.1 Fog amount

DIP2+3+4 is used to set the fog amount.
The fog amount is at 1 meter visibility.

PROTECT M80™

DIP2	DIP3	DIP4	Shot Amount (Standard Shot)
OFF	OFF	OFF	Demo mode
OFF	OFF	ON	50 m3 at 1 meter visibility
OFF	ON	OFF	100 m3 at 1 meter visibility
OFF	ON	ON	150 m3 at 1 meter visibility
ON	OFF	OFF	200 m3 at 1 meter visibility
ON	OFF	ON	250 m3 at 1 meter visibility
ON	ON	OFF	-
ON	ON	ON	-

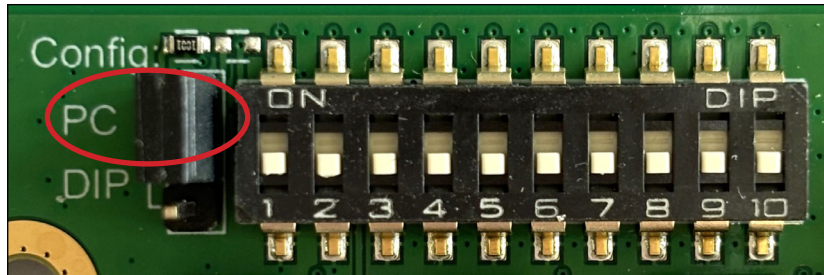
PROTECT M90™

DIP2	DIP3	DIP4	Shot Amount (Standard Shot)
OFF	OFF	OFF	Demo mode
OFF	OFF	ON	100 m3 at 1 meter visibility
OFF	ON	OFF	150 m3 at 1 meter visibility
OFF	ON	ON	200 m3 at 1 meter visibility
ON	OFF	OFF	250 m3 at 1 meter visibility
ON	OFF	ON	300 m3 at 1 meter visibility
ON	ON	OFF	-
ON	ON	ON	-

6.11 IntelliSuite 2

Connect the Fog Cannon™ to a PC/Laptop via USB cable, and use IntelliSuite 2 for advanced, easy configuration.

To configure the fog cannon via IntelliSuite 2, place the “Config” Jumper in “PC” position.



After changing the jumper position, you need to restart the PCB for the changes to take effect.

NOTE: Buzzer ON/OFF is always controlled by DIP 10, no matter “Config” jumper position.

IntelliSuite 2 offers:

- Step by step Installation guide incl. auto generated installation report
- Step by step Service guide incl. auto generated service report
- Monitoring of all status and values
- Troubleshooting
- Event log
- Firmware update
- Embedded manuals and other documentation

We strongly recommend using IntelliSuite 2 for any tasks involving the fog cannon.

Connect using a standard USB A/USB B cable.

While IntelliSuite 2 is designed to be self-explanatory, the upcoming sections will provide a detailed explanation of the overall concept and functionality.

6.11.1 Installation

Download the installer from the PROTECT Download Center.

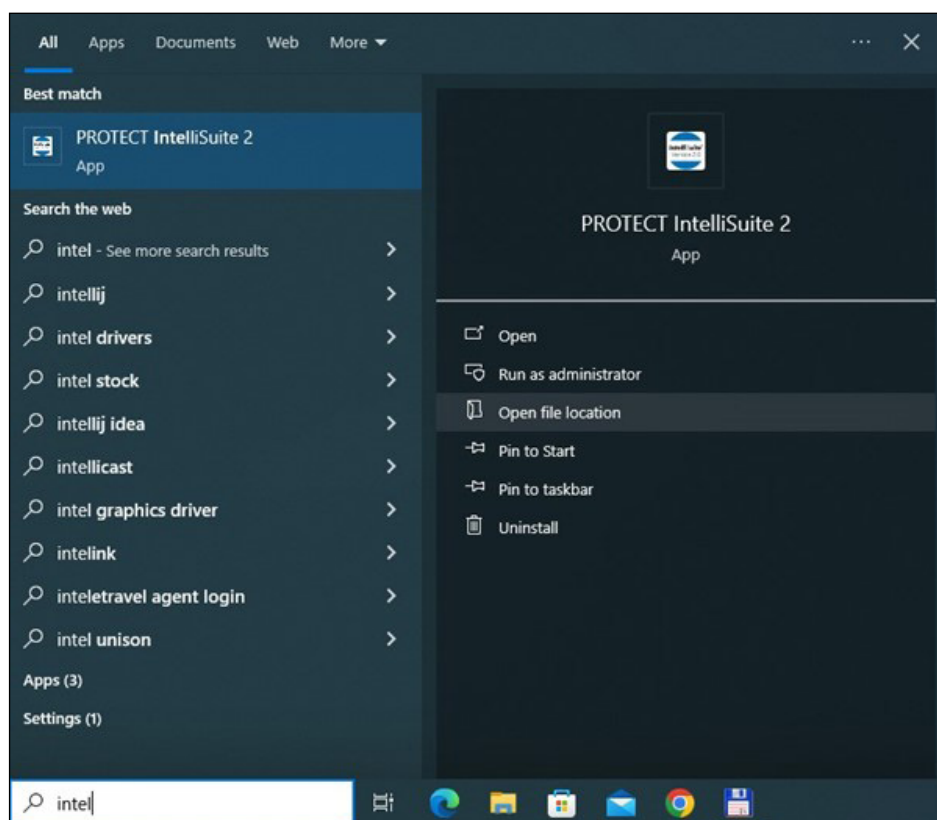
Initiate the installation process and follow to the on-screen instructions.

To access all program features, it is essential to run the application as an Administrator.

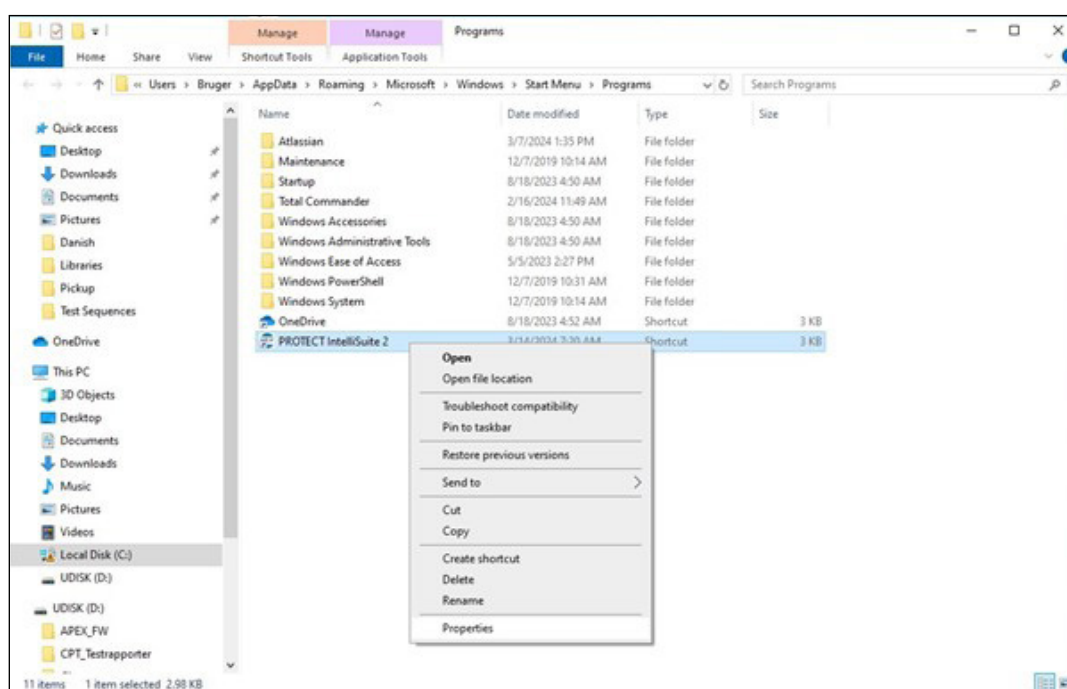
For optimal functionality, it is advised to configure Windows to consistently run IntelliSuite 2 as an Administrator.

You only need to do this once.

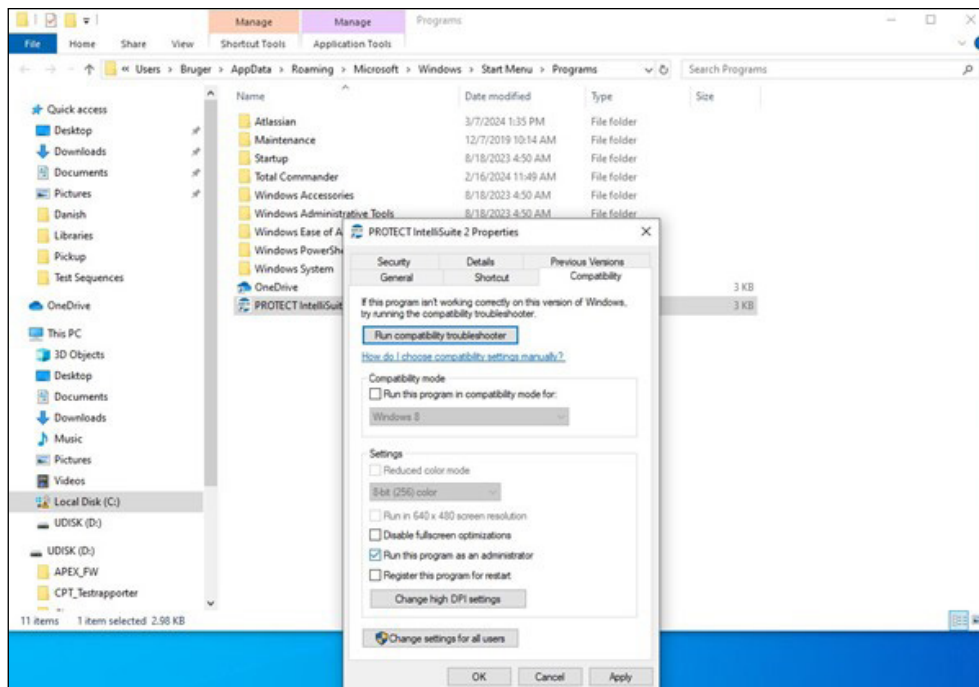
Search for “PROTECT IntelliSuite 2” in the Windows search bar, then choose “Open file location”.



Right-click on the “PROTECT IntelliSuite 2.exe” file and select “Properties”.

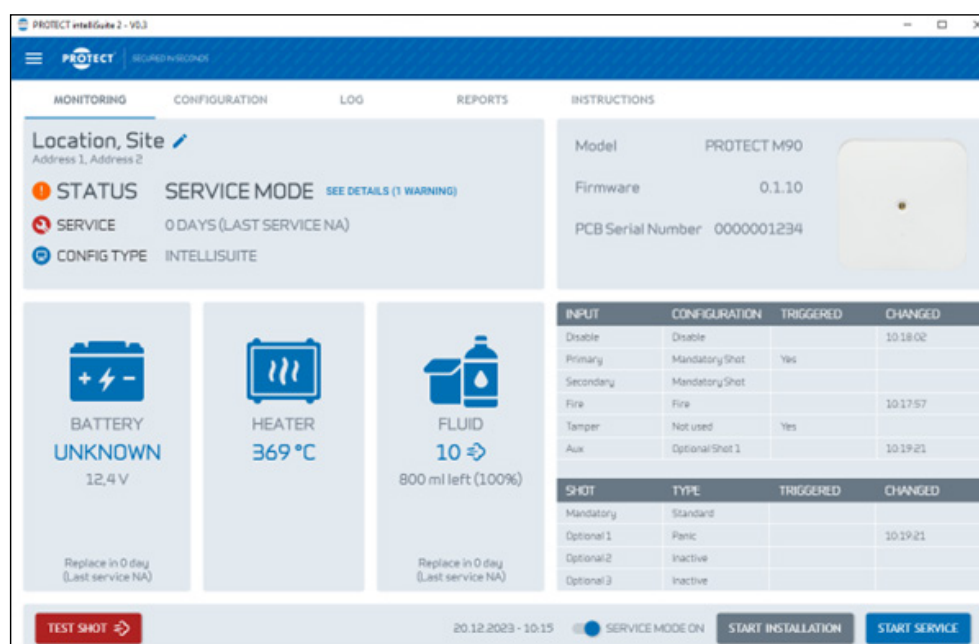


Open the “Compatibility” tab and check the option “Run this program as an Administrator”.



6.11.2 Monitoring

This page provides an overview of the Fog Cannon™'s status and identification information. It offers insight into the fog cannon's internal processes, making it particularly valuable for installation, testing, and troubleshooting purposes.



6.11.2.1 Overall status

Fog Cannon™ address

Used to identify the physical location of the fog cannon.

Typical usage:

- Site: A site can have one or more Fog Cannons™ installed
- Location: A named office, room etc. on the site
- Address 1: Street name and number
- Address 2: ZIP + City

Status

Displays the current status of the fog cannon, including information of active errors and warnings.

In case of active errors or warnings, click on the 'SEE DETAILS' link to access specific information about the issues and receive assistance in resolving the problem.

Service

Displays the last service date and indicates whether it is currently due for maintenance.

NOTE: In this version of IntelliSuite 2, the provided information relies on service reports generated on the laptop. After each service guide completion, IntelliSuite 2 automatically saves a service report on the laptop. The "Service" information is based on the service reports saved.

Config type

Indicates whether the Fog Cannon™ is configured through DIP switches on the PCB or uses configuration settings from IntelliSuite 2.

The mode is chosen by adjusting the "Config" jumper on the PCB, located next to the DIP switches.

IntelliSuite 2 will adapt the user interface based on the current selection.

6.11.2.2 Fog Cannon identification

Displays the model name, firmware version, and PCB serial number for the connected Fog Cannon™.

6.11.2.3 Battery

Indicates the battery status, including:

- Connection status (connected/not connected)
- Battery voltage
- Battery health
- Service due/Last service date, based on the last "Service guide"

6.11.2.4 Heater

Displays the current heater temperature.

6.11.2.5 Fluid

- Remaining shots (Mandatory shots)
- Fluid quantity in ml
- Fluid container presence status
- Service due/Last service date, based on the last "Service guide"

6.11.2.6 Input and shot

This tool is especially useful during the initial testing phase of wiring and trigger configurations.

Here, you can verify if the inputs behave as expected.

- Configuration: The selected functionality for this input
- Triggered: Indicates whether the input is active
- Changed: Updates the timestamp whenever the input changes state

6.11.2.7 Test shot

This functions similarly to the “Test” button on the PCB.
Press and hold to initiate brief bursts of fog from the Fog Cannon™.

The heater must be ready before test shot is possible.

6.11.2.8 Clock

Displays the Fog Cannon™ clock.

If the text appears in red, it indicates that the clock may not be set correctly.
Adjust the clock to match the local/laptop time by clicking on the date.

6.11.2.9 Service mode

You can activate Service mode directly from the program by toggling the button at the bottom of the screen.

This toggle switch functions similarly to the “Service” button on the PCB.

When the fog cannon is in Service mode, fog initiation is blocked, and the status LED turns pink.

If the trigger input status is active and a shot would start if Service mode were not blocking, the LED will blink, signaling that you should not exit Service mode at that moment to prevent fog release.

If the fog cannon remains in Service mode accidentally, it will automatically revert to normal mode after a certain period.

6.11.2.10 Start Installation

You can initiate the step-by-step Installation guide manually through this button.

The guide will walk you through the installation process and automatically generate an installation report, which can be accessed from the “Reports” menu.

6.11.2.11 Start Service

We highly recommend using the Service guide during each maintenance session for the fog cannon.
This guide will lead you through all the necessary service steps and generate a service report.

The service report is saved locally on the laptop and can be accessed from the “Reports” menu.

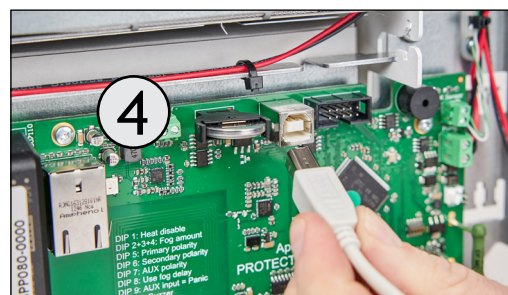
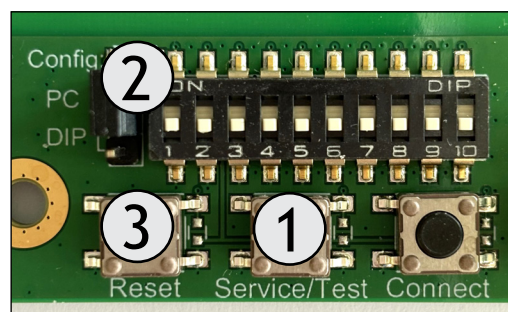
During the Service guide, you can also record changes such as fluid or battery replacements.
The change date will be saved, aiding in keeping track of the next service.

6.12 Configuration

On this page you can adjust all configuration parameters of the fog cannon.

Choose to configure the Fog Cannon™ with IntelliSuite 2.

1. Activate Service mode: Press and release the “Service/Test” button
2. Set the jumper to the “PC” position
3. Reset the fog cannon: Press and hold “Reset” button
4. Open IntelliSuite 2 and connect the Fog Cannon™ with a USB cable



A mandatory shot configuration is essential; without it, the Fog Cannon™ will not operate.

Shot Types:

Choose from various shot types/profiles:

Standard = Maximum fog volume

Turbo = Maximum speed

Note: Mandatory shot is blocked when Fog Cannon™ is Disabled.

Trigger inputs:

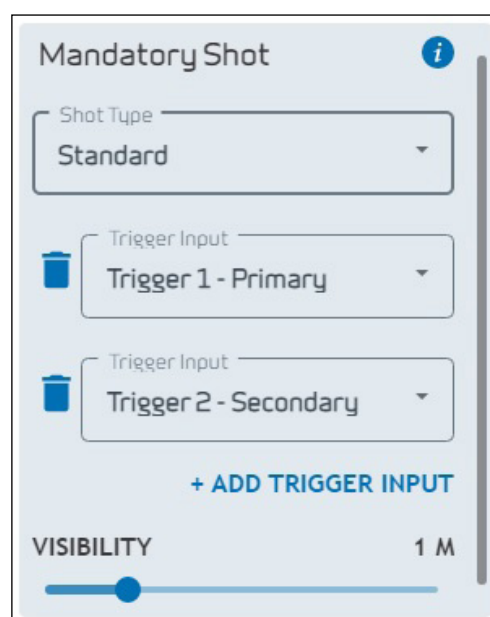
Select 1 to 3 trigger inputs.

All chosen triggers must be simultaneously active to initiate the fog.

Visibility:

Opt for the visibility that suits your requirements:

- High security: 50 cm
- Normal security: 100 cm
- Low security: 200 cm



Volume to cover:

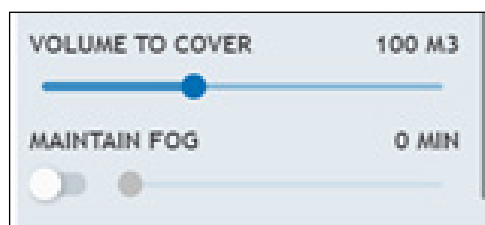
Select the room size.

NOTE: For very large rooms, irregularly shaped rooms, and rooms with high ceilings, additional attention and testing may be required to achieve the desired volume visibility.

The maximum volume depends on the fog cannon model and the selected visibility.

Maintain fog:

Enable this function to allow the machine to produce additional shots after the main shot, ensuring a prolonged period of fog density. This feature is particularly useful for sites situated at a considerable distance from the Alarm Central or where ventilation may disperse fog too quickly.



You can include up to 3 optional shots for specific purposes:

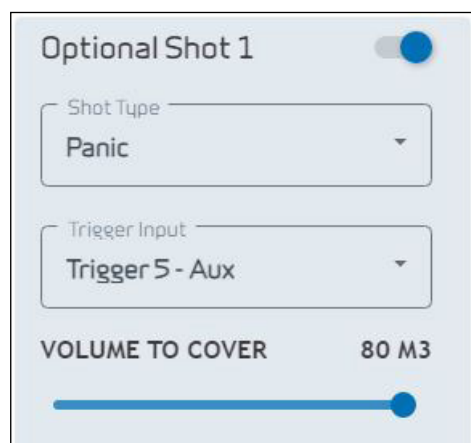
Shot type:

- Panic: Maximum speed shot with 50 cm visibility. Panic shot ignores Disable signal.
- Warning: Slow speed with 200 cm visibility.

Volume to cover:

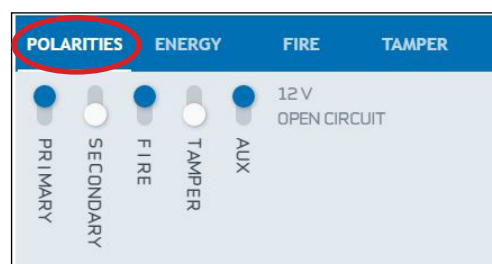
Select the room size.

The maximum volume depends on the shot type (varied visibilities).



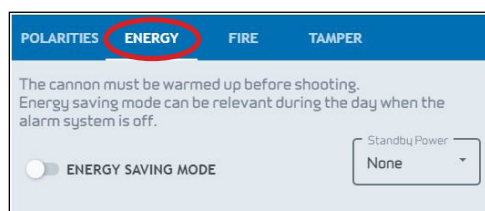
Input polarities can be triggered by either 12V or an open circuit.

You can select the polarity here.



Choose if you want the Fog Cannon™ to go into Power Saving mode when Disabled.

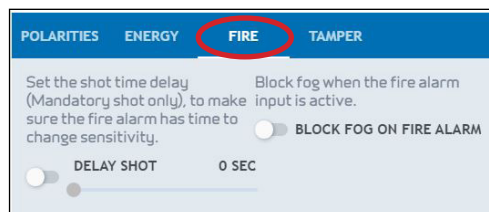
The time it takes for the machine to be ready to shoot upon activation will vary depending on the selected level.



The Fog Cannon™ can introduce a delay in the shot when triggered, allowing time for Fire Alarms to disable sensors sensitive to fog.

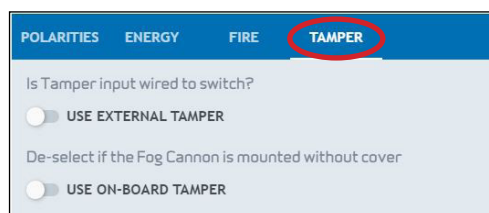
You can specify the delay time here.

Additionally, you have the option to inhibit all fog output if the Fire input is active.



Select whether you are using the external Tamper surveillance option, typically employed for the PIR sensor sabotage switch.

If the Fog Cannon™ is mounted without cover, de-select the internal tamper sensor.



Configuration Profiles

With the new Configuration Profiles feature in IntelliSuite 2, you can save and load complete configurations of fog cannons directly from a PC. The system validates that a fog cannon is connected before configurations can be loaded or saved.

Save Configuration

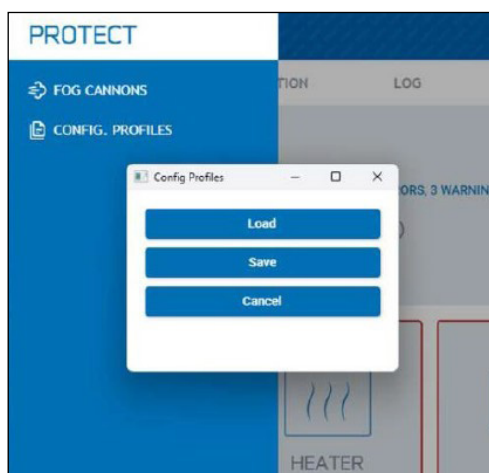
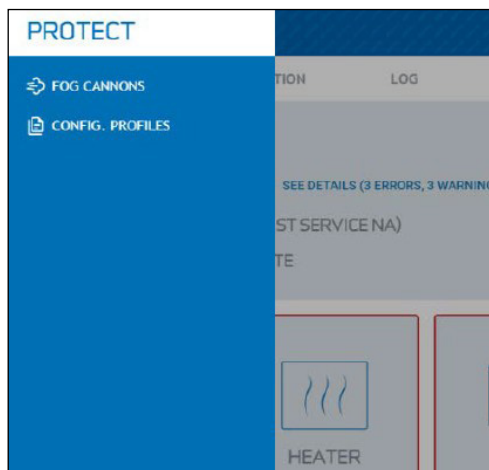
You can save the current setup of a connected fog cannon as a JSON file. The file contains all relevant settings, including network settings (IP, gateway, DNS), shot configurations (mandatory and optional shots), energy-saving settings, tamper settings, and other device-specific parameters.

Load Configuration

You can load a previously saved JSON configuration and update the device's settings.

You can find the feature under the Config Profiles menu in IntelliSuite 2. The function opens a dialog with three options:

- Load: Select a configuration file and load it directly to the device
- Save: Save the current configuration to a file
- Cancel: Close the dialog without action



6.13 Log

The event log records significant events whenever the Fog Cannon™ is powered on. This log proves crucial for troubleshooting.

Upon initially connecting the Fog Cannon™, click the “START LOG READING” button to retrieve the complete log. After this, the log will be automatically updated as new events occur.

The log has the capacity to save the last 1024 events and includes the following information:

Date/Time:

Timestamp from the onboard clock.

NOTE: If the PCB clock is updated, the date/time in the log may experience a “jump”.

Event:

A brief description of the event.

Value:

Some events store a value as additional information.

For example, when a shot is performed, the used fluid amount is saved with the event.

Main Status:

The Main status at the time of the event.

NOTE: The saved status is the status exactly WHEN the event occurred, and the event may cause the status to change.

This may vary in the final release of IntelliSuite 2.

Temp.

Displays the heater temperature when the event was logged.

DIS, PRI, SEC, FIR, TAM, AUX

Shows the current input status when the event occurred.

If the event is triggered by an input change, the displayed status reflects the new status.

FOG FLU ERR TAM

Displays the current status of the output relays.

MONITORING

CONFIGURATION

LOG

REPORTS

INSTRUCTIONS

Site, Location

Street, City

Date	Time	Event	Value	Main status	Temp.	DIS	PRI	SEC	FIR	TAM	AUX	FOG	FLU	ERR	TAM
22.05.2024	- 08:39:28	Ready	0	Enabled, warm up	364					x					
22.05.2024	- 08:39:27	Enabled	0	Disabled	364					x					
22.05.2024	- 08:39:25	Power up *****	10200	Init	364					x					
22.05.2024	- 08:39:21	User reset	0	Enabled, ready	364					x					
22.05.2024	- 08:37:27	Ready	0	Enabled, warm up	364					x					
22.05.2024	- 08:37:26	Enabled	0	Disabled	364					x					
22.05.2024	- 08:37:24	Power up *****	10200	Init	364					x					
22.05.2024	- 08:10:11	Ready	0	Enabled, warm up	364					x					
22.05.2024	- 08:10:10	Enabled	0	Disabled	364					x					
22.05.2024	- 08:10:08	Power up *****	10200	Init	364					x					
22.05.2024	- 08:09:27	Ready	0	Enabled, warm up	364					x					
22.05.2024	- 08:09:26	Enabled	0	Disabled	364					x					
22.05.2024	- 08:09:24	Power up *****	10200	Init	364					x					

6.16 Service and maintenance

The recommended service interval is 1 year.

Connect the Fog Cannon™ to IntelliSuite 2 and use the “Service guide.” This guide will assist you in completing the checklist below and automatically generate a comprehensive service report.

The following aspects should be checked:

Visual inspection of the outside of the fog cannon	- Physical damage on the casing - Nozzle blocked or damaged
Visual inspection of the inside of the fog cannon	-
Inspection of fluid	- No spillage in the machine - Fluid level - Connector and hose not damaged
Errors or warnings	Connect IntelliSuite 2 to check for errors and warnings. Alternatively, check the LED for error and/or warning codes.
Inputs	Use IntelliSuite 2 to check that all used inputs work as expected. Alternatively, check the activity status of inputs using the yellow LEDs on the PCB.
Outputs	Use IntelliSuite 2 to activate output relays and confirm their proper connection to the alarm system.
Replace the fluid if more than 2 years have passed since installation	Use APEX Fog Fluid 800 ml
Replace the battery if:	- More than 2 years have passed since installation in the machine - More than 1 year if the machine is located in hot or poorly ventilated conditions - If the “Health” status in IntelliSuite 2 is “Poor” or “Dead” Replace with a battery similar to the following specifications: - Type: AGM - Voltage: 12V - Capacity: 1,2 Ah - Dimensions: 97*43*51 mm IMPORTANT: - Use a high-quality battery only - Ensure the battery is well-maintained in stock (recharged every 6-12 months) and stored in a cool place We recommend using: - FIAMM FG20121 - Yuasa NP1.2-12 - FGS FGS20121
Fog test	Either perform a small test shot using the “Test” button on the PCB. This will generate small bursts of fog. Or conduct a full test with the selected fog volume by activating the alarm system.

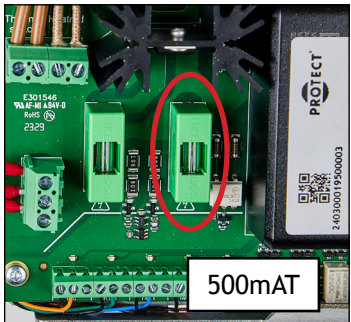
7. TROUBLESHOOTER



An overview of potential errors in the machine and the necessary actions to correct each error. Some errors can be self-detected by the machine, while others show up in different ways.

- Errors that can be self-detected by the fog cannon:
 - o Warnings
 - Less critical error: The fog cannon remains functional.
 - Code is displayed with status LED: YELLOW flashing. Number of flashes = error code
 - The fog cannon produces an acoustic signal
 - o Errors
 - Critical errors on the fog cannon. The machine is not functional.
 - Fault code displayed with status LED: RED flashing. Number of flashes = error code
 - The fog cannon produces an acoustic signal
- Other errors:
 - o Errors that the fog cannon cannot detect and do not display an error code.

7.1 Warnings

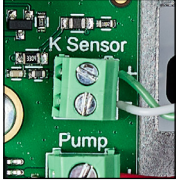
#	Warning	
1	Mains	No mains voltage. The fog cannon operates on battery power (or USB). - Verify the presence of supply to the machine: Check for 230VAC on N and L. - Check fuse F1 (500mAT): 
2	Low fluid	If the fog cannon detects that there is only enough fluid for one shot, this warning is triggered. The machine is still capable of shooting, but subsequent shots may not be at full capacity. Solution: - Insert a new fluid container

3	Tamper	If the fog cannon's cover is removed, the warning is triggered. If an external tamper is employed, such as a PIR sensor, the warning will activate if the tamper function of external equipment is active. Solution: - Put on the cover - Check external equipment tampers - Ensure that the external tamper input is correctly set to Normally Open (NO) or Normally Closed (NC) activation.
4	Low battery voltage	The battery voltage has been detected as too low. Solution: Replace the battery with a new one.
5	Charging	The battery could not be charged within the time limit. Solution: Replace the battery with a new one.
6	Battery capacity	Insufficient battery capacity to guarantee full functionality in the event of a power failure. Solution: Replace the battery with a new one.
7	Battery test circuit	Battery capacity test circuit is faulty. Solution: - Check if the large, "floating" resistor is damaged - If the resistor is damaged, replace the PCB
8	Fluid chip missing	No fluid container detected. Solution: - Check that there is a fluid container fitted - Check that the fluid container is seated correctly
9	-	
10	DIP/PC jumper	Jumper has been changed. Restart the machine to accept the new setting.
11	DIP9 Panic changed	DIP9 has been changed, requiring reboot. Restart the machine to accept the new setting.
12	Demo mode	The fog cannon is in demo mode. Set the trigger correctly if the machine is not being used as a demo fog cannon.

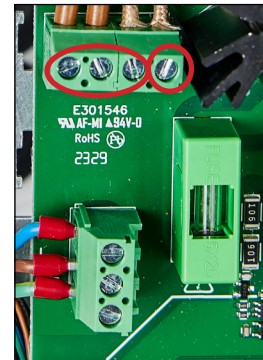
7.2 Errors

Error (Ex) indicates that the fog cannon has entered error mode and, as a result, is unable to activate.

Service is necessary to identify and rectify the fault.

#	Error	
1	No fluid	Cause: Proper fluid consumption was not detected during the last shot. The fluid container is empty or not installed correctly. Solution: Check fluid level. Ensure that the fluid container is mounted correctly. Replace with a new fluid container.
2	Wrong fluid	Cause: The fluid container does not match the expected type. Solution: Replace it with a new, original PROTECT™ fluid container that matches the model.
3	Fire input	Cause: The Fire input is active. The machine is blocked from producing fog. Solution: Disable the Fire input.
4	Pump	Cause: The pump could not be detected. Solution: Check the wiring to the pump.
5	Temperature sensor	Cause: The sensor in the heater is defective. The sensor is not connected correctly to the PCB. Solution: Check that the wires are connected correctly. Detach the sensor from the heater and the PCB. Boil water and pour it into a cup. Place the sensor into the cup of boiling water and measure the mV voltage on the wires. You should be able to measure approximately 1.5-2.5 mV a few minutes after it has boiled. If the voltage is 0 mV, the sensor is defective and must be replaced. If you measure the correct voltage, may be an error on the PCB or the sensor has not been screwed into the PCB correctly.    

6	Heater temperature	Cause: If the fog cannon has been unable to heat up to the correct temperature, several factors may be responsible: - Defective heating rod - Thermal protection/overheating - Bad connection - Blown fuse Solution/Troubleshooting: Disconnect the power supply before further testing. Thermal protection/overheating: Check the thermal fuse on the side of the heater. If the heater has overheated, the fuse will blow. Reset the fuse by pressing the button in the middle. If this was the error, it is a serious issue, and the cause must be identified. Contact PROTECT™ technical support. Measure for a short circuit between the “Thermoswitch” terminals on the PCB. Bad heating rod connection: Check that the wire from the heating rod is seated correctly in the screw terminals. Measure ohm value: - Disconnect power from the machine - Measure the ohm value in the screw terminal - You should be able to measure approx. 54 ohms between the top screw terminal and the other three If you can measure 54 ohms above “Heatrod”, then the heating rod is OK. If you can measure 54 ohms across the “Heatrod” and the bottom terminal for “Thermoswitch” = Thermoswitch is OK. Fuse: Check fuse F2 located next to the Heatrod and Thermoswitch terminals. If it is broken: - Investigate why it might have blown; there must be a reason - Replace it with a new 10AT fuse
7	PCB temperature sensor	Cause: Temperature sensor on PCB is defective. Solution: Repalce with the new PCB.
8	Fog cannon temperature	Cause: The temperature inside the fog cannon is either too hot or too cold. Solution: Ensure there is proper air circulation around the machine. Verify that the machine is not installed in locations prone to excessive heat or cold.
9	External supply	Cause: The external supply is shut down due to overcurrent or other faults. This may result from a short circuit or excessive load on the supply. Solution: Check the equipment connected to the supply: Can they draw too much current? Ensure the maximum current does not exceed 100mA.
10	Config data	Cause: There are errors in the saved configuration data. Solution: Reset the fog cannon. Check if the machine restores to factory settings and make sure to set up the machine correctly again.



11	System error	Cause: An internal serious system error. Solution: Reset the fog cannon. If the error persists, replace the PCB.
12	Fluid tag ID	Cause: The fluid container ID is not correct. Possible unofficial copy of fluid chip. Solution: Contact PROTECT. Send the fluid container to PROTECT™ for further inspection.
13	Fluid data error	Cause: The data from the fluid chip cannot be read. Solution: Replace the fluid container.
14	Temperature calibration	Cause: Temperature calibration not approved. Solution: Replace the PCB.
15	Pump priming required	Cause: Pump is not yet primed after first installation. Solution: Heat up the machine. Press and hold the “Test” button on the PCB to start test shot. If the small test shots does not produce any fog, keep the button pressed until the pump runs continuously (priming). Release button when fog is produced.

8. Technical specifications

Protection index: IP 20.

Mechanical shock protection index: IK08.

Installation weight, without cover, fluid and battery: 6 kg

Installed weight: 10 kg

Dimensions: L: 330 W: 330 H: 120 mm

Mains supply: 100VAC - 240VAC

Max power: 1000 watt

Standby power, with heat: 45 watt

Standby power, without heat: 2 watt

Operating temperature (min./max.): -10/55° C.

9. Warnings: Must be read by users and fitters of PROTECT™ security fog

- Spilled fog fluid from dripping or other, which has gathered on the floor underneath the machine, immediately after the system has been activated or in connection with the handling of the fog fluid, must be removed immediately due to the risk of slipping and falling, and possible inventory damage.
- Do not swallow the fog liquid, and keep it away from children and animals. In case of ingestion of large quantities: Contact a physician immediately. Avoid contact with eyes. In case of contact with eyes, rinse immediately with clean water for min. 15 minutes. If irritation continues, contact a physician. In case of direct contact with skin rinse thoroughly with water and soap.
- Avoid prolonged stays in fog filled premises as this can irritate the mucous membrane in the eyes, nose and throat. The effect is temporary and only occurs in connection with prolonged stays in the dense fog.

- Never stick your fingers or other objects behind the grille in front of the nozzle. The nozzle may be hot and touching it may cause burns. Do not look directly into the nozzle.
- Flammable or heat-sensitive objects must be placed at least 35 cm. from the nozzle.
- The system must only be cleaned using a damp cloth. Do not spray it with water.
- Air the room for 20 minutes within the first hour of fog activation to avoid condensation.
- The installer must ensure that staff who work in the secured premises on a daily basis are informed about the proper rules of precaution when operating the Fog Cannon™.
- If the Fog Cannon™ is installed in premises with public access, the staff needs to be instructed in how to guide visitors and show them the way out in case the Fog Cannon™ should fire unintentionally at a time where people have access to the secured premises.
- The electrical connections of the Fog Cannon™ must only be handled by certified electrical fitter. The system MUST be connected to earth to meet electrical safety requirements and must only be serviced by instructed personnel. PROTECT™ and our distributors worldwide provide training sessions regarding correct mounting, setting and use of the system. The system should be fitted with max. 16A fuses.
- The device must be connected to the mains supply via a plug or via switch which break all the conducting poles (both live and neutral) in accordance with the wiring rules.
- The system must be set correctly to prevent overdosing. Never install the system without supervision (connection to alarm panel and control centre) and service/test the system once a year. Servicing/tests must be carried out by an alarm technician.
- The system must be placed outside normal reach. The system must not be placed e.g. near the floor where animals or children can reach it.
- The system must not be installed in a way which blocks emergency exits or fire escapes when fired.
- Place the system with the distance from the nozzle to the nearest object or surface being min. 2.5 m. Secure the system properly to prevent condensation.
- Make sure that there is sufficient ventilation space around the system (minimum 15 cm). Do not fit the system in a closed cavity space.
- Disconnect the mains supply before removing protective covers. Live parts are accessible inside the device, and there may be risk of electrical chock.
- The system is produced for use in a dry indoor climate and must therefore not be placed outdoors or in damp rooms.
- Special precautions must be taken where the fog machines are installed in locations with automatic fire alarm systems and in blocks of flats.
- Before installing the fog machines the installer must ensure that this can be done in accordance with relevant national legislation and regional regulations. The installer must inform the authorities, the control centre and security staff of the installation.
- Before service on signalling cables, the Fog Cannon™ and connected equipment such as alarms, etc. the Fog Cannon™ must be protected against unintentional firing. The system must be protected against activation when the secured premises are in normal use.
- If the above instructions are not observed, PROTECT A/S shall not be liable for any consequences resulting from such non-observance.
- Certain types of thermal paper, thermal labels and certain types of ink used for print on plastic wrappings and plastic bags can be damaged by the fog.
- This PROTECT Fog Cannon® is only to be installed and used in the country, from where it is purchased. Local PROTECT™ dealers/installers only service machines purchased in their own countries.

Consequences of the use of unauthorized fluid in PROTECT Fog Cannons®

- **Cancellation of the warranty:** The use of unauthorized fluid in a PROTECT Fog Cannon® results in the cancellation of the warranty.
- **Risk of machine defects:** Use of unauthorized fluids can cause damage to heating element, such as corrosion.
- **Risk of lack of activation with an alarm signal:** If the pump cannot withstand the chemical composition of the unauthorized fluid, the pump may fail causing an absence of fog machine activation in a real-life scenario of alarm activation.
- **Risk of toxic fumes formation:** Unauthorized fluid can become toxic by heating and/or pressure, which can mean a risk to humans, animals and food.
- **Risk of condensation (residue):** If the molecular composition of the fluid is not correct, its consistency does not adjust to the exit diameter of the nozzle with the consequent risk of condensation and possible damage to electronics, fabrics, furniture, etc.
- **Low density risk:** Unauthorized fluid may have a too low density, which makes it useless as a security system by fog.

The complete 100% tested and guaranteed performance & no harmful side effects can only be achieved by using approved PROTECT™ fog fluid.

Warranty and exceptions

The warranty does not cover fog fluid or batteries (consumables), nor the wear caused by the normal use of the fog machine. The transport costs of the equipment are also excluded from the warranty.

The PROTECT™ security fog fluid has an expiration time of 2 years from the installation of the fluid container in the Fog Cannon™, and 5 years if it has not been installed and has been stored in its original packaging, in a cool, dry place protected from sunlight. Once the expiration date has passed, a replacement is recommended to maintain the properties and density of the security fog.

The warranty will be void, if the product has not been installed in accordance with the instructions in the manual that is supplied in the original PROTECT™ packaging, or if spare parts or fog fluid not provided by PROTECT™ have been used.

The system must be set correctly to prevent overdosing. Never install the system without supervision (connection to alarm panel and control center) and service/test the system once a year. Servicing/tests must be carried out by an alarm technician.

PROTECT™ provides a 60-months' warranty for defects in the products (Xtratus®/Xtratus Flex®: 24 months). The date of commencement of the warranty is based on the invoice date on the invoice from PROTECT™ to the alarm installation company. Complaints shall be made immediately.

PROTECT™ provides a 12-months' warranty on additional equipment, spare parts and repair work.

10. Certification and compliance

PROTECT M80 and PROTECT M90 comply with the standards EN 50131-8, RTC 50131-8 and RTC Cyber and are classified as Environmental Class II in accordance with EN 50130-5.

They are NF&A2P certified in accordance with the NF 324-H58 certification scheme.

Certification bodies:

AFNOR (www.marque-nf.com)

CNPP (www.cnpp.com)

Certificate number: 9024000005B0/9024000005A0

Security level: 2 shields





GB PROTECT A/S is the world's largest supplier and the only producer of fog machines in Scandinavia. PROTECT™ is represented worldwide in 50 countries.



SECURED IN SECONDS