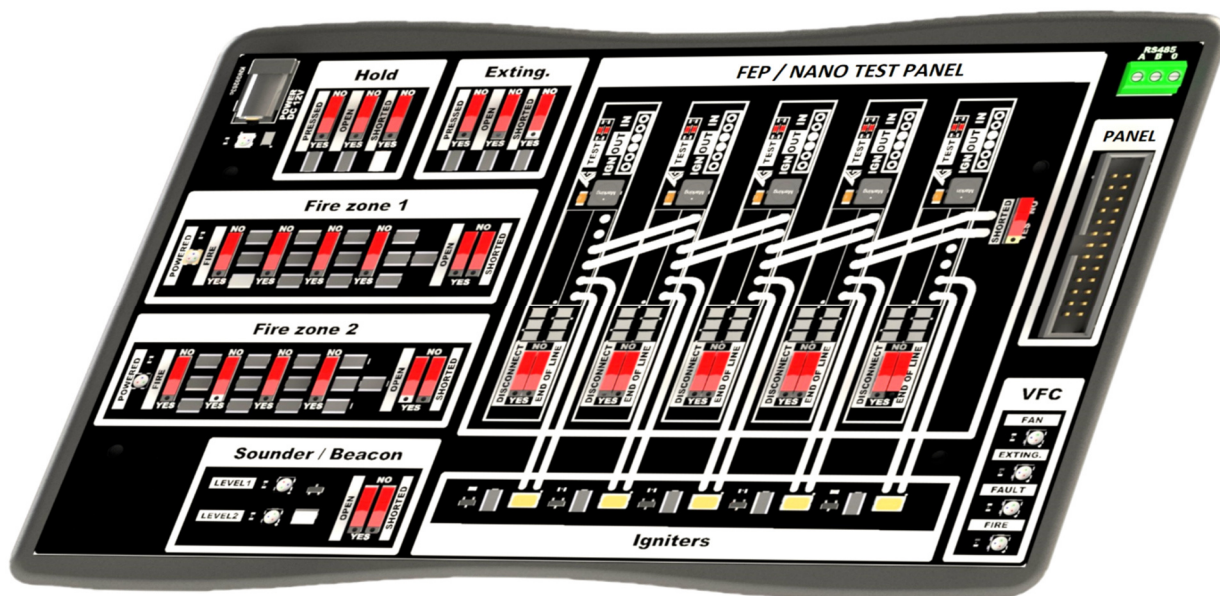




# User Manual FTM



## TESTPANEL FOR NANO FIRE DETECTION AND EXTINGUISHING CONTROL SYSTEM



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## 1 DOCUMENT REVISION DETAILS

Issue	Modification Detail	Author	Date
01	1 <sup>st</sup> publishing document	CvT	01 / 03 / 2023
02	Added pictures of the adapter to this manual	CvT	06 / 03 / 2023

## 2 IMPORTANT NOTES

This user manual is an integral part of the NANO user manual version 2.2 of October 1, 2022. This manual should be thoroughly read and understood before installation and/or commissioning of the system is undertaken. The NANO system is not to be regarded as properly used when it is used without regard to any relevant information or advice relating to its use that has been made available by the supplier. The NANO and the corresponding connections must be properly connected to the FTM by an appropriately qualified and competent person.

The NANO system and the associated connections must be installed, commissioned, and maintained by a skilled, knowledgeable, and competent person or organization that is qualified to perform this work and is familiar with the objective of the equipment and the associated technical terminology. Always take precautions against electrostatic discharge (ESD) when opening the NANO. Avoid direct contact with any of the electronic components on the printed circuit board of the NANO or FTM. The NANO itself cannot discharge a static charge. Failure to follow the ESD handling advice may cause damage to the NANO and FTM. The warranty may be deemed invalid if the equipment is damaged by ESD.

## 3 WARRANTY

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N2KB B.V. represents the NANO system and is free from material defects in materials and workmanship. Our warranty does not cover a NANO system which is damaged, misused, and/or used contrary to the supplied operating manuals or which has been repaired or altered by others. The liability of N2KB B.V. is at all times limited to repair or, at N2KB BV's discretion, replacement of the NANO system. N2KB B.V. shall not under any circumstances be liable for any indirect, special, or consequential damages such as, but not limited to, damage or loss of property or equipment, cost of de-installation or reinstallation, cost of transport or storage, loss of profits or revenue, cost of capital, cost of purchased or replacement goods, or any claims by customers of the original purchaser or third parties or any other similar loss or damage, whether incurred directly or indirectly. Remedies set forth herein to the original purchaser and all others shall not exceed the price of the NANO system supplied. This warranty is exclusive and expressly in lieu of all other warranties, whether expressed or implied, including, without limitation, any warranties of merchantability or fitness for a particular purpose. The warranty may be void if the equipment is damaged by ESD.

## 4 INTRODUCTION

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The NANO is designed as a stand-alone fire detection and extinguishing control system. The FTM has been developed as a test module especially for testing the NANO system. Just as the NANO the FTM is easy to operate and is designed to test the system and/or the programming in a simple manner. By periodically maintaining, checking, and testing the NANO system, the possibility of hidden errors, defects and/or incorrect programming is prevented. This is done by systematically checking the functionality of the NANO and ETB system. Partly to check whether the entered programming and the functions, alarms, controls, and alerts function properly, but also to check the system in a simple and reliable manner for any system malfunctions that may be present.

This NANO test panel is also suitable for testing the  $\mu$ -FEP system.

## 5 DELIVERY

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The FTM Test set consist of:

- Storage/protection case
- NANO test module
- NKB 2345b adapter + 10 cm long flat cable
- Power supply: input 100-240V~  
output 12V Vdc



## 6 IMPORTANT PROPERTIES OF THE FTM:

### Alarm simulation of:

- the four automatic fire detectors fire alarm zone 1
- the four automatic fire detectors fire alarm zone 2
- the external extinguishing release button zone
- the external extinguishing release delay button zone

### Simulation of short circuit or cable malfunction monitoring in the:

- fire alarm zone 1
- fire alarm zone 2
- external extinguishing release button zone
- cabling of the external extinguishing release delay button zone
- external sounder/beacon combination
- wiring to the igniters of the aerosol extinguishing generators
- wiring to the solenoid activator

### Signaling of an activated potential output contact intended for:

- switching off the ventilation/air conditioning
- common fire alarm
- common system fault

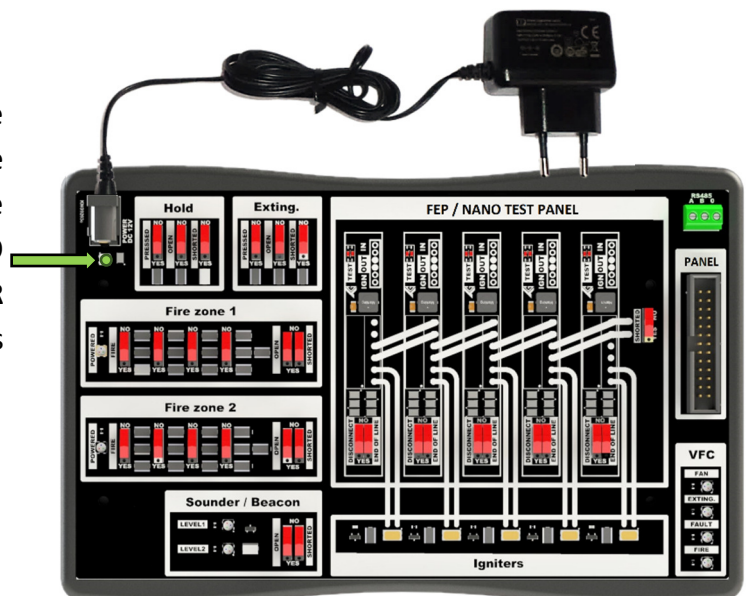
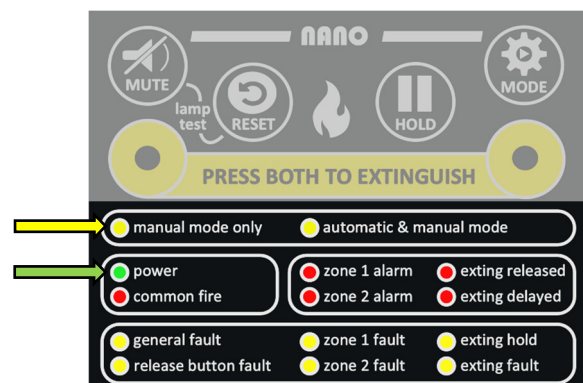
### Signaling activation and fault of the sounder/beacon combination

### Simulation of an igniter malfunction or disconnection in one of the aerosol extinguisher units

## 7 CONNECTING FTM

### 7.1 POWER SUPPLY

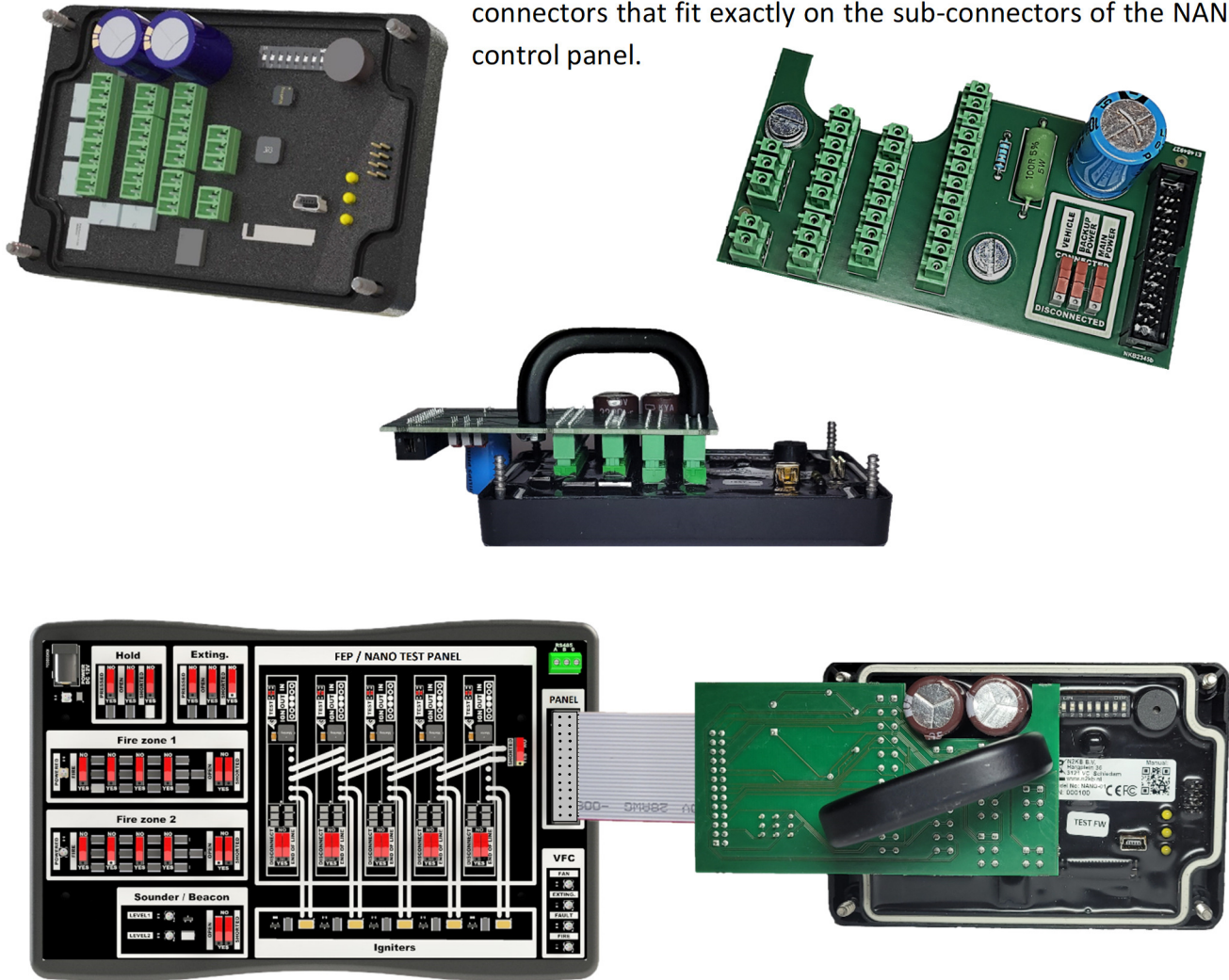
The FTM is supplied with a switch mode power supply of 100-240V~/12V- with a type C electrical plug. The FTM can also be powered via the USB connection of the NANO itself. Once connected, the green **POWER** LEDs on the FTM and the NANO will be lit as well as the yellow manual mode only LED.





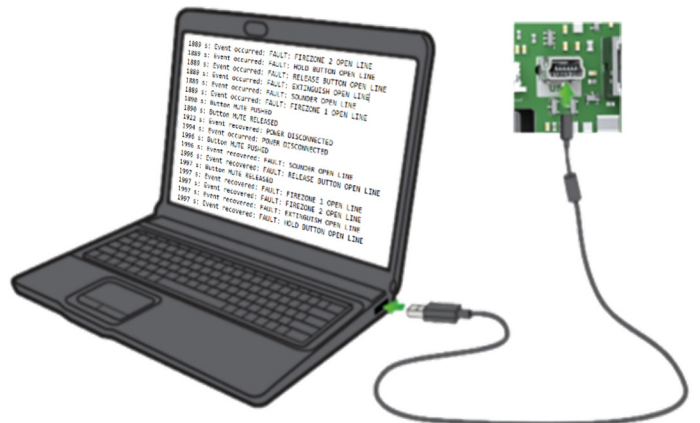
## 7.2 CONNECTING THE NANO TO THE FTM

To connect the NANO panel to the FTM test panel an adapter is required. The adapter is fitted with connectors that fit exactly on the sub-connectors of the NANO control panel.



## 7.3 READING TEST RESULTS

The NANO has a historic event memory log of 10,000 events. Connect the NANO via the USB Mini-B cable to a laptop and the device will serve in the same way as a USB stick does on a laptop.



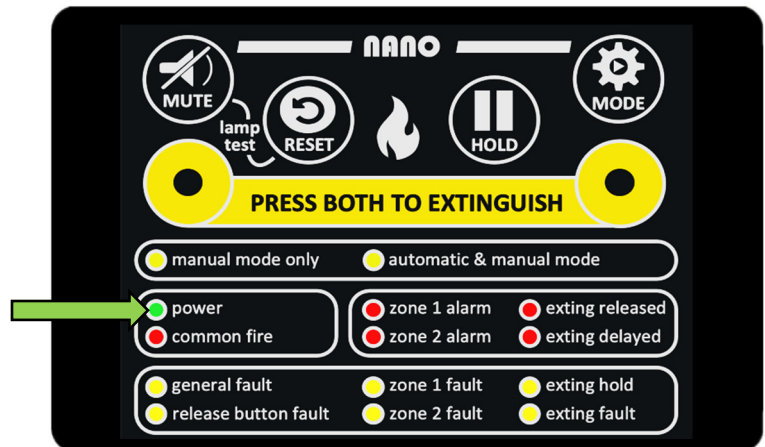
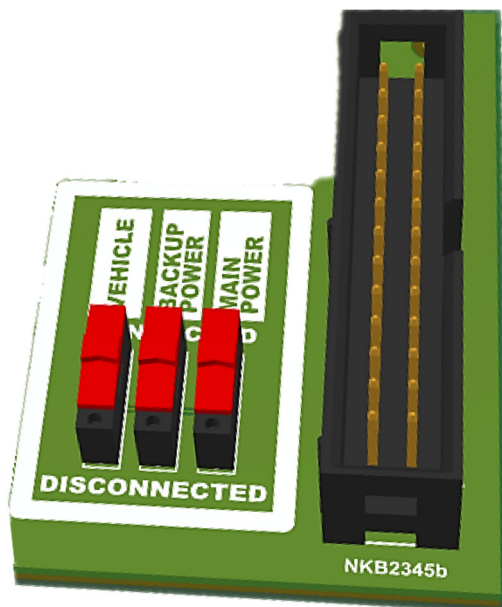
## 8 TESTING POWER INPUTS

The NANO has three power inputs.

PSU 1 & 2 and power input vehicle feature.

To test the power inputs, three switches are fitted to the adapter,

By operating each switch, a flashing pattern of the green power LED appears and the general fault LED will also light up.



11	●
12	●
13	●
14	●
15	●
16	●
17	●
18	●

+ vehicle power

PSU 1 - main power

PSU 1 + main power

ground

PSU 2 - battery

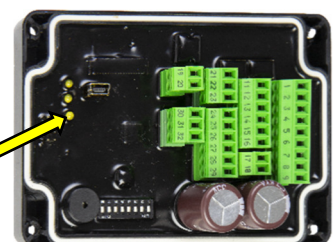
PSU 2 + battery

Under normal conditions the NANO control panel will have only the green, power on LED lit and either the manual only or automatic & manual LED lit. Failure of the mains power or disconnection of the backup power will cause a fault. The power LED lite differently, indicating an abnormality in the power supply to the NANO. When starting the NANO after a power failure or an extinguishers release, the green power LED flashes for maximal 1 minute until the system is ready and this LED lit continuously.

If the main power supply is NOT present, the secondary power supply takes it over, the power LED flashes 1 x per second, the yellow general fault LED lit, the common fault relay will be deactivated.

If the standby power supply is NOT present, the power LED flashes 2 x per second followed by a pause of 1 second, then repeating, the general fault and internal battery fault LED lit, the common fault relay is deactivated.

Sounder ●  
Hold ●  
PSU 2 ●

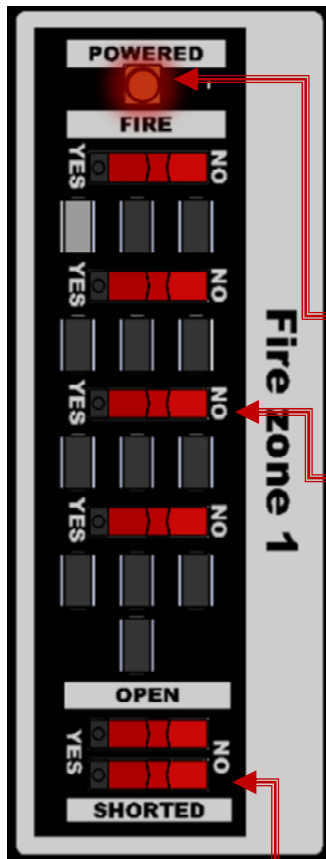


If a standby power source is not available, then the connection points 17/18 must be connected to respectively point 14/15 to avoid an fault message.

When the vehicle function (DP2) is enabled, the green power LED flashes at 1 x per second when vehicle is parked and switch to the secondary vehicle voltage.

## 9 TESTING MONITORED INPUTS

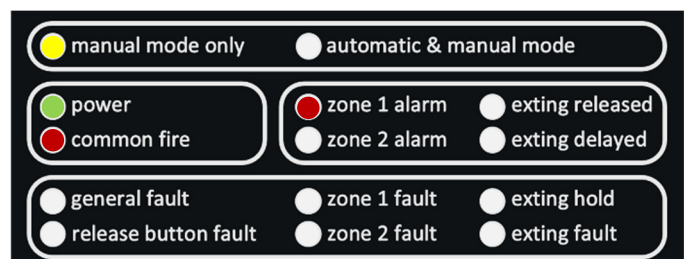
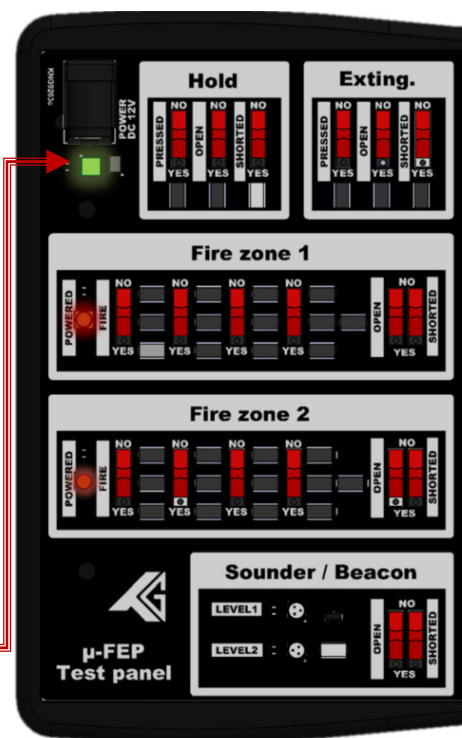
The NANO is equipped with two detection zones for automatic fire detectors, an external manual extinguishing release button zone and an external extinguishing release delay button zone. These inputs are continuously monitored for short circuit and/or cable malfunction. In addition, alarm values are constantly monitored. All inputs have an end of line resistor of 10KΩ. A resistor in series between 470 and 1KΩ must be placed in series with the alarm contact of the extinguishing release and delay buttons



These resistors are also present on the FTM test module. All possible alarms and faults can be simulated by using the switches.

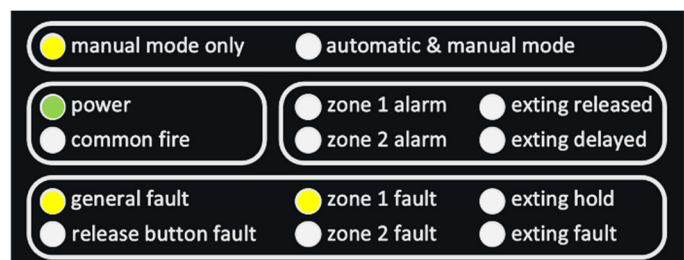
If the FTM is connected properly, The green Power LED illuminate. Also, the RED Fire Alarm Zone lit in each zone.

A fire alarm for each fire detector in each fire alarm zone can be simulated by setting the red switch into the YES position. A fire indication in 'fire alarm zone 1' on the NANO is the result. The red common FIRE LED lit and the red fire zone LED lit.



A cable malfunction can be simulated by setting the red 'SHORTED' switch to the YES position. A fault indication in 'fire zone 1' is the result. There are two yellow LEDs lit, one (fault) in the 'General' group and the other (zone 1 fault) in the 'Fire zone' group.

A short circuit can be simulated by setting the red 'SHORTED' switch into the YES position. A fault indication in 'fire zone 1' is the result. There are two yellow LEDs lit, one (fault) in the 'General' group and the other (zone 1 fault) in the 'Fire zone' group. The same procedure applies to fire alarm zone 2, the extinguishing delay 'HOLD' function and the manual extinguishing release 'EXTING' function.





## 10 TESTING THE EXTINGUISHING RELEASE OUTPUT

The N2KB NANO is equipped with two activation techniques for the activation of fire extinguishing systems. The NANO has a very sophisticated and advanced extinguishing release output circuit for aerosol extinguishing generators. The aerosol extinguisher igniter release output is a current source of 1,3 Amperes and generates a pulse of 50 milliseconds. Normally a voltage source is used for igniters, but a current source gives a far better controlled power per igniter.

In addition, the NANO has the option to choose for activation of an extinguishant system using a solenoid as initiator.

This selection can be made using DIP switch 3. By default, the NANO is programmed for the activation of electrical igniters intended for aerosol fire extinguisher generators, with DIP switch 3 in the OFF position.

When DIP switch 3 is placed into the ON position, then the NANO is suitable for activating a fire extinguishing system that makes use of a solenoid as actuator of the fire suppression system. The activation voltage is then 24V DC with a maximum of 1A.

PDS 3 OFF system is suitable for electrical igniters intended for aerosol fire extinguishers 1,3A/50ms

PDS 3 ON system is suitable for solenoid activation 24V DC 1 A.

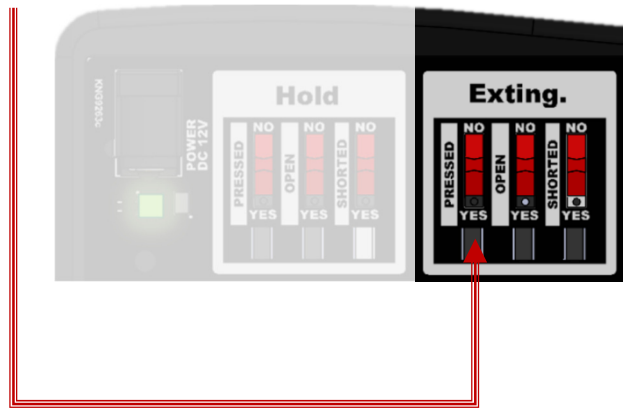
The NANO FTM test adapter is equipped with protective electronics. This ensures that the test panel is suitable for current pulse activation intended for an aerosol generator as for voltage type activation intended for a solenoid technology activation.





## 11 TESTING THE EXTINGUISHING RELEASE

The NANO has a separate input for external extinguishing delay and extinguishing release. The external function push button(s) have the same function as the double extinguisher buttons 'EXTINGUISH' and the extinguishing delay (HOLD) button on the front of the NANO. By pressing the external extinguishing release button, the fire extinguisher(s) will be released. These functions are also present on the FTM. Depending on the DIP switch settings, the release may be delayed.

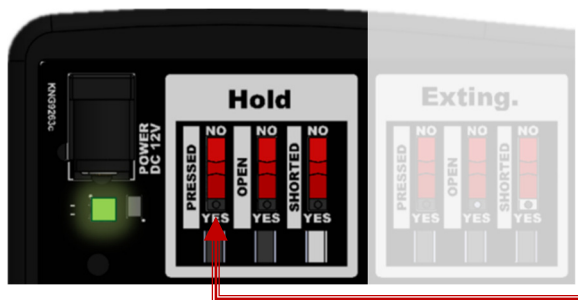
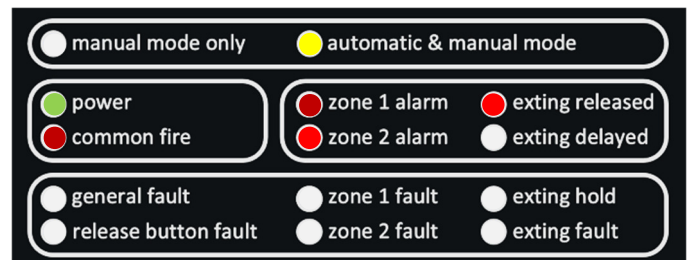


### 11.1 ACTIVATING EXTINGUISHING

Activating the extinguishing release can be simulated in two ways.

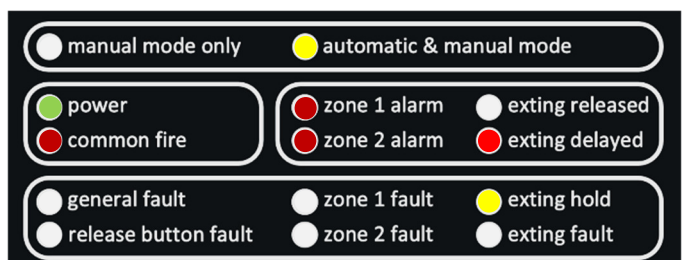
- 1) by simulating a fire alarm in fire alarm zone 1 + 2
- 2) by setting the '**EXTING**' switch in the **YES** position.

In the event of a fire alarm in both fire alarm groups or when operating the '**PRESSED**' '**EXTING**' and FIRE switches on **YES**, the red 'released' LED (extinguishing activated) will light up immediately when no extinguishing delay is programmed.



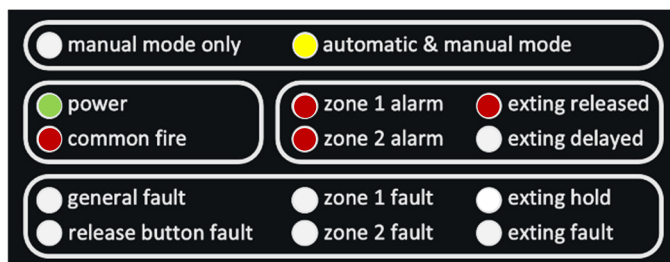
operation does not apply when DIP switches 6 & 7 and 8 are programmed. Refer to the NANO manual for this.

In the event of a fire alarm in both fire alarm zones or when operate the **EXTING** switch in the YES position, and an extinguishing release delay is programmed, the red 'delay' LED lite. When operating the **HOLD** switch, the tone signal will change, and the yellow 'hold' LED is lit in the 'Extinguishing' group. This

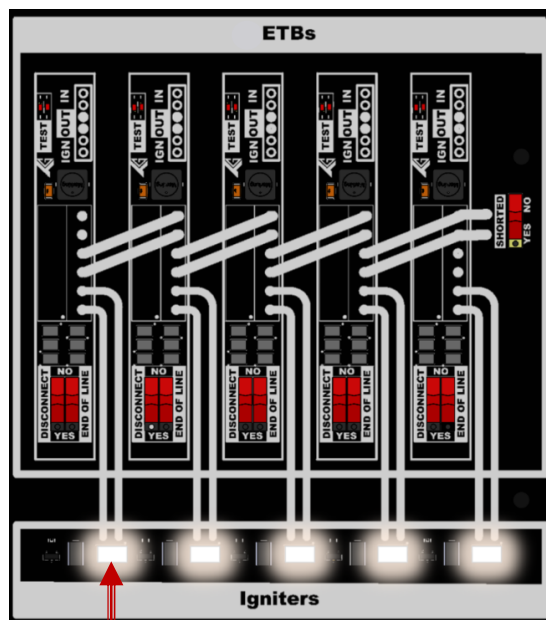


## 11.2 CONFIRMATION OF RELEASE

The confirmation of an extinguishing release is signalled by the red **exting released** LED. The red fire zone LEDs remain lit, the delay and hold indication goes out.



On the FTM 5 clear extinguisher igniter LEDs flash frequent on the FTM panel. This signal confirms a successful activation. It does not work when power is supplied via a laptop connection and/or the emergency power battery, but only and exclusively when used with the included switch mode power supply.



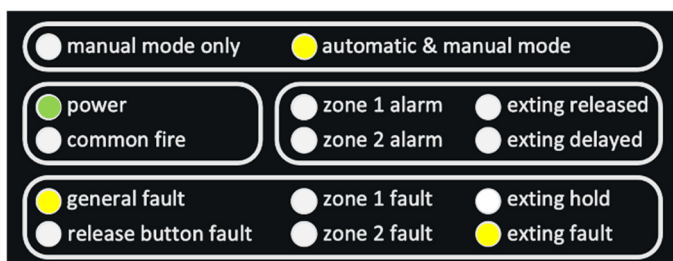
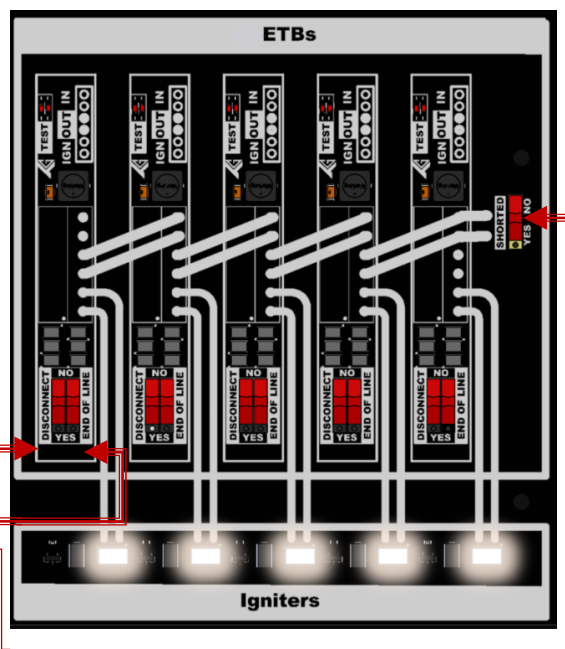
## 11.3 TESTING THE EXTINGUISHER OUTPUT MONITORS

The NANO has an on short circuit and wire break monitored extinguishing output to connect on the extinguisher terminal board (ETB) intended for the aerosol extinguisher igniter. For test purposes, the extinguisher can be disconnected from and by the ETB connection unit. Likewise, the end-of-line diode can also be set by and on the ETB terminal unit. All functions can be simulated via the FTM.

Igniter disconnected.

End of line diode switch

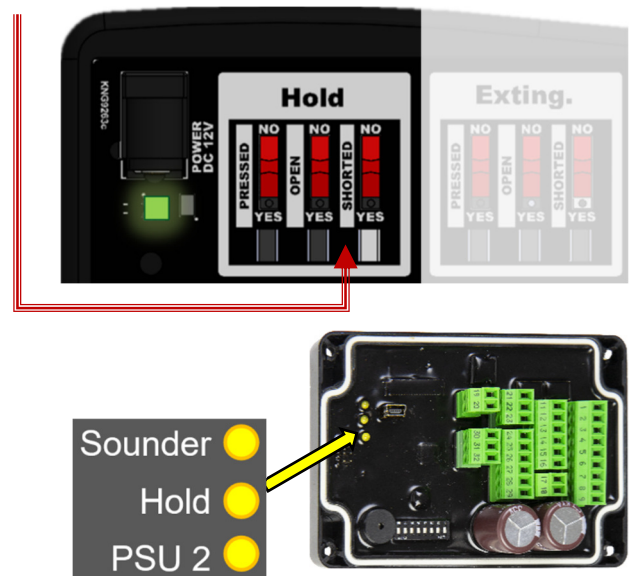
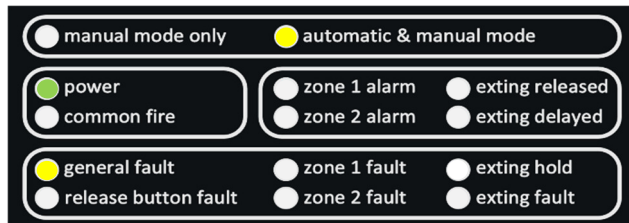
Short circuit.



## 12 FAULT EXTERNAL HOLD CIRCUIT

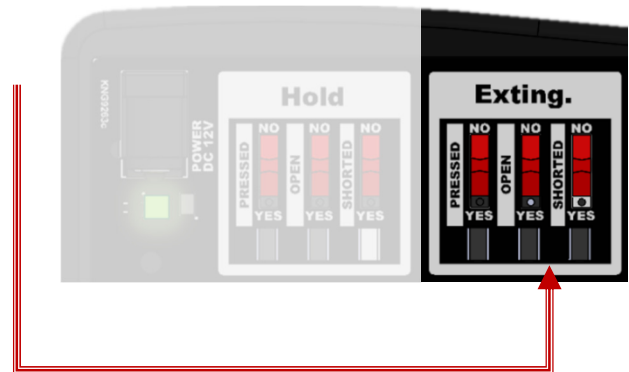
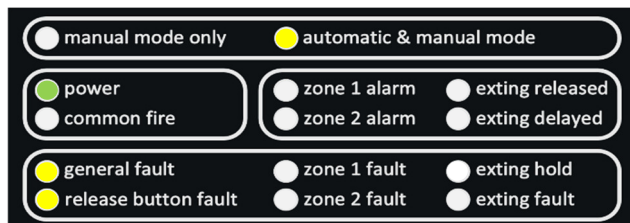
A short circuit or cable break can be simulated by using the “OPEN or SHORTED” switch on the FTM.

The common fault led lite also the internal yellow HOLD led.



## 13 FAULT EXTERNAL RELEASE CIRCUIT

A short circuit or cable break can be simulated by using the “OPEN or SHORTED” switch on the FTM. The common fault led lite also the front release button fault LED lite.

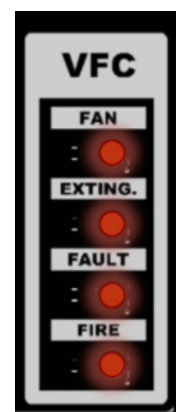


## 14 TESTING THE VFC OUTPUTS

The NANO has potential 3 output NC/C/NO contacts for external information.

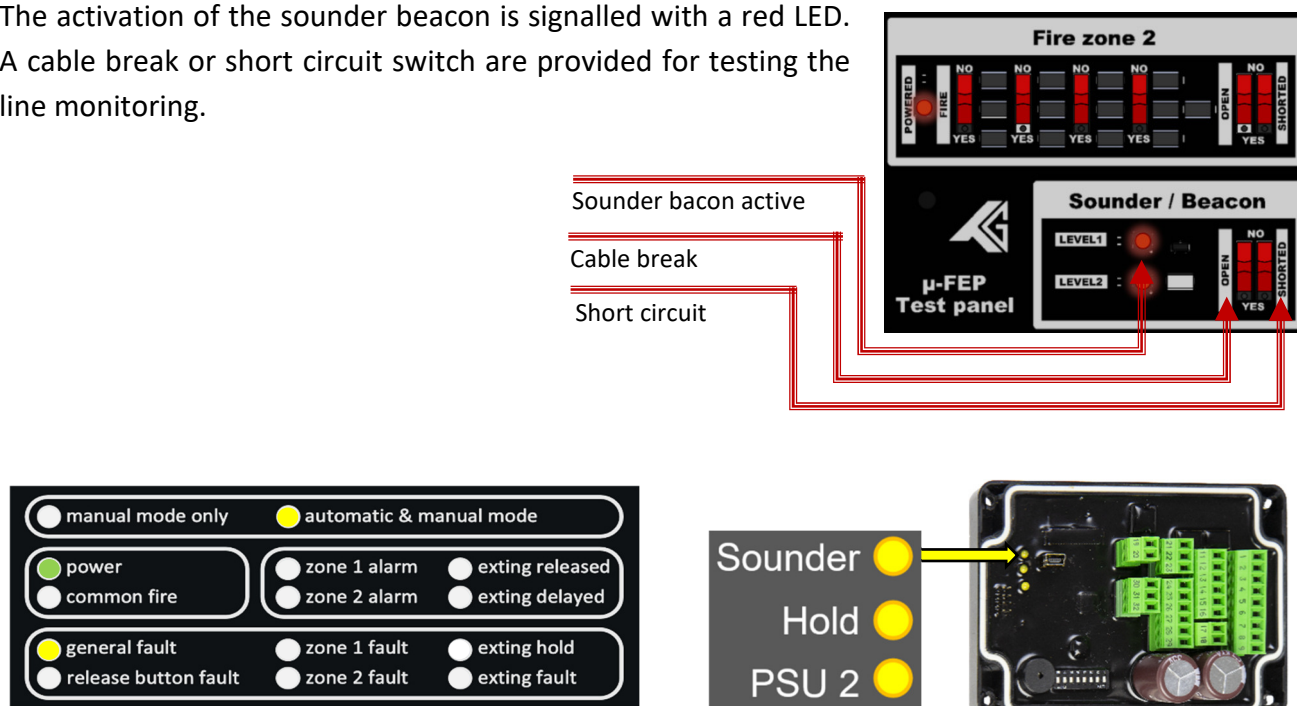
- 1 relay output for switching off ventilation and/or air conditioning
- 1 relay output for signaling a fault.
- 1 relay output for signaling the 1st stage fire alarm.

The activation of these VFC relays is signaled by the FTM with 3 red LEDs. As this test panel can also be used for the FEP system, 4 LEDs are present. The NANO panel hasn't an extinguishing release output.



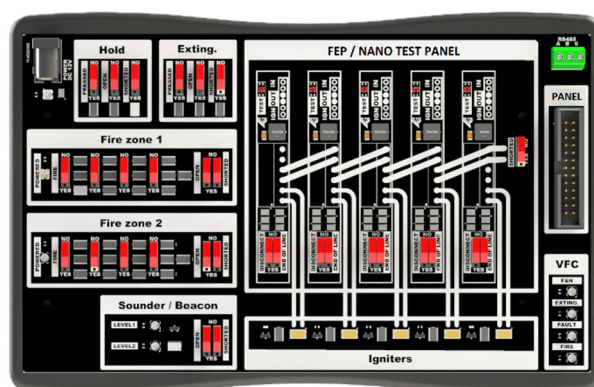
## 15 TESTING THE SOUNDER BEACON OUTPUT

The activation of the sounder beacon is signalled with a red LED. A cable break or short circuit switch are provided for testing the line monitoring.



## 16 HOUSING SPECIFICATION

- |       |   |
|-------|---|
| Outer | <ul style="list-style-type: none"> <li>- height maximum of 130 mm</li> <li>- width 205 mm</li> <li>- depth (not including switches) 10 mm</li> <li>- depth including switches 18 mm.</li> </ul> |
|-------|---|



The diagrams of operating principles of the NANO fire-/extinguisher system, included in this manual, are intended to support this manual and are therefore not intended and suitable for technical implementation or realization. No part of this manual may be reproduced, stored in an automated database, or made public in any form or by any means either electronically, mechanically or by photocopying, recording, or in any other way, without prior written permission from N2KB B.V. The policy of the N2KB B.V. is one of continuous improvement and as such we reserve the right to amend product specifications at any time and without prior notice. Errors and omissions excepted.

Outdated or replaced computers and electronics are valuable sources for secondary raw materials, if recycled. Dealers of the NANO system must comply with local regulations for waste separation applicable in the country where the supplier is located. Questions concerning the information presented in this manual may be addressed to your dealer. For technical questions or support contact your dealer or further assistance.

