SMARTEK

NUBI 4.0

Model: **NB40F2**
Power supply: 12VDC
PIR: yes

Thank you for purchasing NUBI 4.0, the intelligent smoke screen security device able to be connected to any burglar alarm system in new or existing systems.

OPERATIONAL OVERVIEW

The device is powered from 10VDC to 15VDC, usually supplied by the alarm control panel, the consumption is less than 1mW. NUBI 4.0 does not require any additional energy from the external power supply when the smoke cartridge is ignited, as this energy has already been stored on the motherboard. This ensures the ignition of the cartridge in any power condition and the guarantee of not having any overload on the power supply even in case of simultaneous triggering of many NUBI 4.0 devices.

NUBI 4.0 efficiently protects volumes up to 100 m^3. The smoke generated by NUBI 4.0 is based on incense and does not produce toxic atmosphere as tested according to the TLV-STEL directive EU 2017/164 and ACGIH. After use the room must be ventilated before staying there.

NUBI 4.0 is activated through 3 inputs: one input drives the immediate emission of smoke, while the other two inputs realize a triple-consent logic to avoid false alarms. In this case, to trigger the emission of smoke, it is necessary that the state of the burglar system is armed, then within a time window of 15 minutes two other conditions occur:
1) The burglar system goes into alarm
2) The integrated NUBI 4.0 PIR sensor detects movement
At the moment the second condition has been reach, the smoke will be emitted immediately.
The inputs polarity and logic level can be easily configured using the DIP switches in order to interface NUBI 4.0 with any burglar panel.

NUBI 4.0 has got two outputs to inform other devices about alarm state and the detection of the movement by the PIR. The output logic level can be reversed using DIP switches.

The box opening is detected with a tamper switch, its clean contact can be connected to the burglar panel.

An optional internal siren can be housed inside the box and plugged to the proper motherboard connector.

The smoke cartridge works only once, the smoke emission, when triggered, can no longer be interrupted.
The smoke cartridge replacement is very easy, each spare cartridge is provided with a special board soldered on its wires to be easily plugged on the proper motherboard connector.
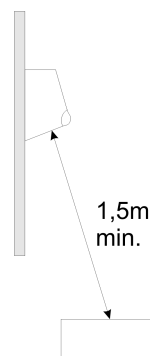
INSTALLATION
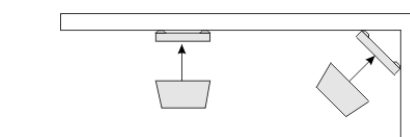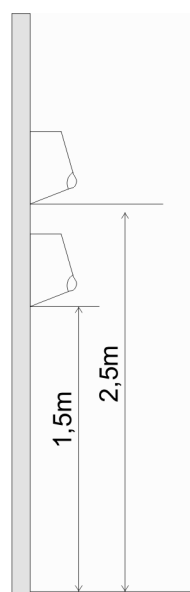
NUBI 4.0 can be easily installed on the wall or even in a corner at a height between 150 and 250 cm.
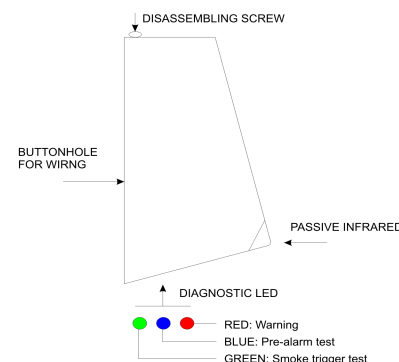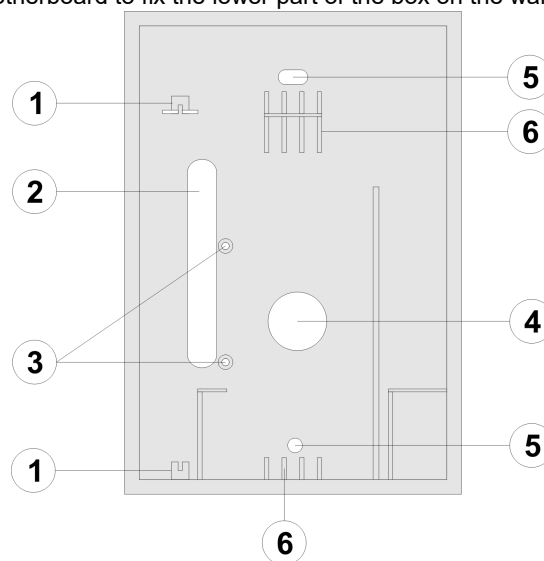

WARNING
Do not insert any obstacle at a distance of less than 1.5 meters from the smoke outlet hole.

The best performance is achieved when the jet of smoke coming out from NUBI 4.0 directly hits the floor, in this way the smoke will cool and spread better.

After opening the top cover, remove the motherboard to fix the lower part of the box on the wall.

1	Motherboard rails
2	Cabling wire buttonhole
3	Internal siren fixing spacers
4	Internal siren sound outlet hole
5	Device fixing holes
6	Smoke cartridge supports

MAINBOARD

SMOKE

PIR

RED BLUE GREEN

PIR → OUT
ALL →
ALL ←
SI ← IN
CSI ←

24H

+12V

GND
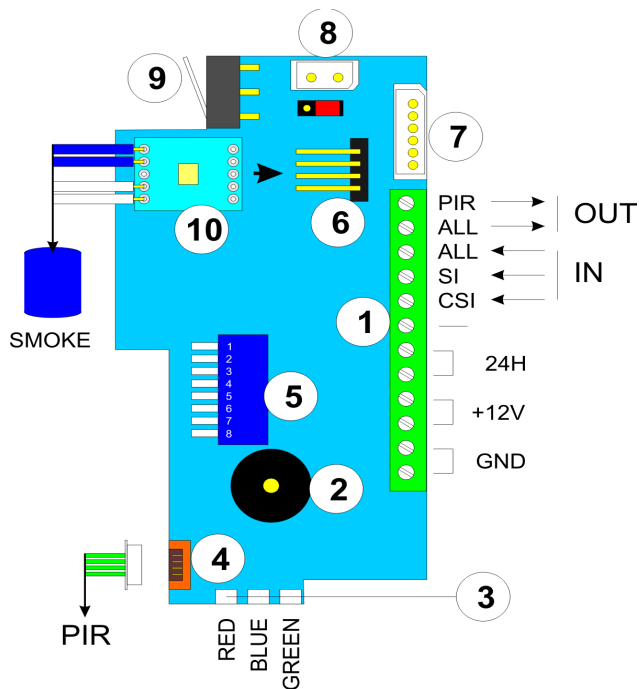
1) Main connector
2) Buzzer
3) Diagnostic LEDs
4) PIR connector
5) DIP Switch
6) Smoke cartridge connector
7) Expansion bus connector
8) Internal siren connector
9) Tamper switch
10) Validation board provided with smoke cartridge

MAIN CONNECTOR

GND: Ground power supply
+12V: +10..15VDC power supply
24H Tamper clear contact
CSI Immediate smoke delivery (INPUT)
SI System state (armed/disarmed) (INPUT)
ALL Alarm (INPUT)
ALL Alarm (OUTPUT)
PIR PIR movement detection (OUTPUT)

UNDERVOLTAGE ROTECTION

NUBI 4.0 is protected against under voltage. When the power supply falls below the 10V threshold, the smoke emission will be inhibited.

This function prevents unwanted smoke emissions when NUBI 4.0 and the alarm panel use the same power supply and the alarm panel causes unwanted commands due to a low supply voltage.

This could happen during a power failure that lasts a long time and drains the battery below the 10V limit.

INPUTS INTERFACE

ALL
SI
CSI

OFF

GND
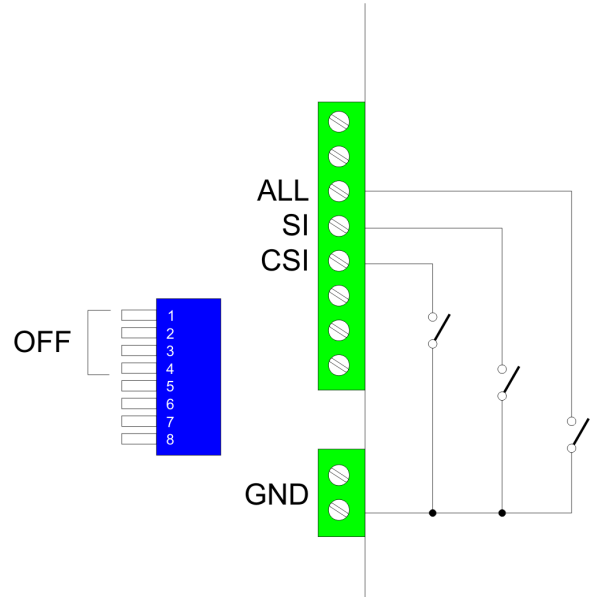
When the DIP Switches 1..4 are set to OFF, NUBI inputs will become active when switched to GND, as shown in the following table:

CSI	Trigger the smoke delivery when the input is closed to GND
SI	Burglar system armed when the input is closed to GND, disarmed when opened.
ALL	Burglar alarm active when the input is closed to GND.

With the DIP SW1 the inputs reference can be changed from GND to +12V (+VCC). Using SW2, SW3, SW4 each input logic can be switched from normally open to normally closed as shown the following DIP Switches functional table.

In the event that the inputs are not driven with a clean contact to GND, **never apply a voltage higher than +VCC to the input** which would irreversibly damage the electronic circuit.

DIP SWITCHES

DIP	OFF	ON
1	Input driven to GND	Input driven to +12V (+VCC)
2	CSI input normally open	CSI input normally closed
3	SI input normally open	SI input normally closed
4	ALL input normally open	ALL input normally closed
5	PIR output active low	PIR output active open
6	ALL output active low	ALL output active open. (Not for internal siren use)
7	Operating mode	Test mode
8	Tamper enabled	Tamper disabled

DIAGNOSTIC LEDs

Diagnostic LEDs are active only in test mode.

| BLUE	NUBI pre-alarm in test mode.
GREEN	Flash when the smoke cartridge is triggered.
RED	Warnings.
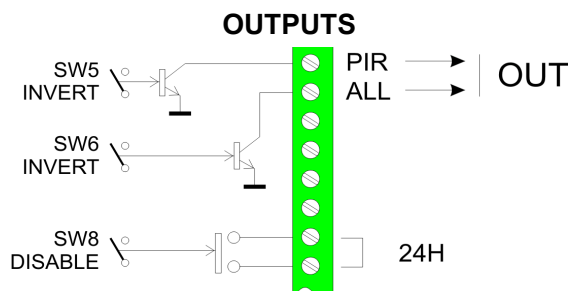
OUTPUTS

ALL output is active for 90 seconds starting from the beginning of smoke delivery. SW6 sets the output logic, when use internal siren, set SW6 always to OFF.
PIR output is active for one second each time the PIR detects movement.
24H output is a clear contact normally closed when the NUBI 4.0 box is closed, it will open when the box will be opened. When the SW8 is set to ON, tamper output is disabled (output is always closed).

PIR RANGE

The picture below shows the PIR range
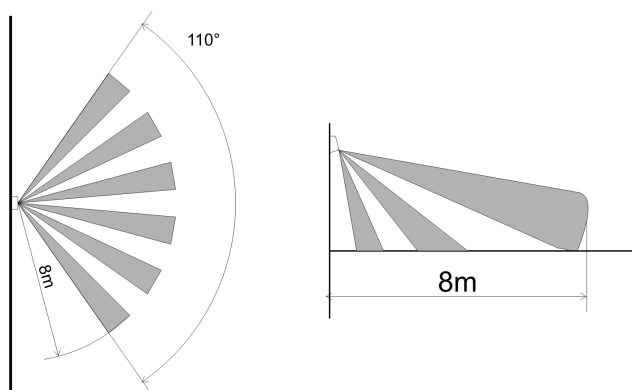
TEST MODE

Set the DIP SW7 to ON to activate the test mode. As soon as the device enters test mode, all the LEDs and the buzzer will flash 8 times. If the voltage is below 10V, the red LED and the buzzer will remains ON, otherwise the green LED will flash one time, then the smoke cartridge will be tested. When it is empty the red LED and the buzzer will light up and the green LED on the validation board will be OFF. When the smoke cartridge is not empty the green LED on validation board will flash, the test will continue and the BLUE led will flash slowly, one time each second, to indicate the test mode is activated.

In test mode, each time the integrated PIR detect movement, the red LED will flash and the buzzer will activate for 1 second. When the SI input detects that the system is armed, one event between the detection of the PIR movement or the activation of the ALL input will cause

the NUBI 4.0 pre-alarm state for 15 minutes and the blue LED will flash quickly. When the second alarm event occurs within the pre-alarm period, the green LED will flash for 1 second to indicate the simulation of smoke delivery.

If the pre-alarm was caused by the PIR detection, the alarm confirmation will be due to the activation of the ALL input. If the pre-alarm was caused by the activation of the ALL input, the confirmation will occur whit the PIR detection. In test mode, the smoke cartridge will never be activated and never the validation card will be damaged.

> **Remember to activate the operating mode (DIP SW7 OFF) at the end of testing.**

SMOKE CARTRIDGE REPLACEMENT

When a smoke cartridge is empty, it must be replaced with a new one. The smoke cartridge is supplied with the validation card welded to the ends of the wires. Only in test mode (SW7 ON) the green LED on validation board will flash when the cartridge is full, OFF when it is empty and needs to be replaced.

> **Remove the power supply and wait at least 3 minutes before replacing the smoke cartridge.**

1) Remove from the motherboard the old validation card soldered onto the wires of the empty smoke cartridge.
2) Insert the new validation card soldered onto the wires of the new cartridge.
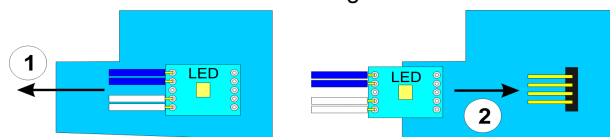
Commissioning

We advise to perform a test (see previous chapter Test mode) before perform a definitive commissioning of the device. Set the DIP SW7 to OFF to switch in operating mode. We advise to remove the adhesive that protects smoke exit hole of the smoke cartridge.

WARNING PROCEDURE TO PREVENT SMOKE EMISSION AT THE POWER UP

During the first 30 minutes after power the device, there is a special function to prevent unwanted smoke emissions, for example due to wiring errors.
When the smoke activation condition occurs during this time, instead of immediately emitting smoke, a warning procedure starts and the buzzer emits an intermittent sound for 120 seconds and the red LED flashes.
It will be possible to stop the activation by opening the box and setting the DIP SW7 to ON or, in case of difficulty, it will also be possible to unplug the smoke cartridge validation card from the motherboard.
If this warning procedure is not interrupted, at the end of the 120 seconds we will have the emission of smoke.
Each time this warning procedure is activated, the 30-minute timer is regenerated to allow an additional 30 minutes of test time.

MAINTENANCE

We recommend replacing the smoke capsule every 5 years using only the original replacement.

WARRANTY

SMARTEK s.r.l. It guarantees its products against all manufacturing defects for a period of 30 months from the production date shown on the label.

RECOMMENDATIONS

Before leaving, ventilate the rooms thoroughly after the smoke has been delivered.

TECHNICAL SPECIFICATIONS

Power supply	From 10 to 15VDC < 1mW
Size	12cm x 17cm x 14cm
Saturable volume	100m³
Weight	760g
Smoke average delivery time	25sec
Operating temperature	From 0°C to +45°C
Storage temperature	From -20°C to +55°C
Maximum relative humidity	70%
Inputs	SI – System state ALL – Alarm CSI – Immediate action
Outputs	24H – Tamper ALL – Alarm PIR – PIR detection

ADVANCED WIRING

The inputs interface mode can be programmed using the DIP switches SW1, SW2, SW3 and SW4 as previously explained.
The inputs can be controlled not only with clean contacts but also with open collector or push-pull outputs. The image below shows a typical NPN or PNP interface.
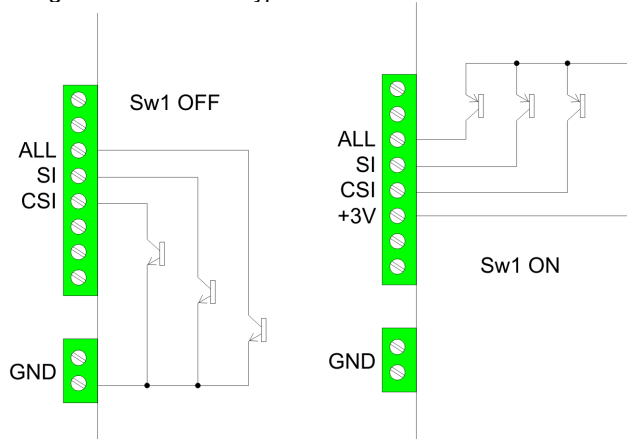
For any kind of interface, the inputs voltage thresholds are the followed:

	Min V	Max V
Level 0	GND	2,0V
Level 1	8,0V	+VCC

WORKING DIAGRAM