GB

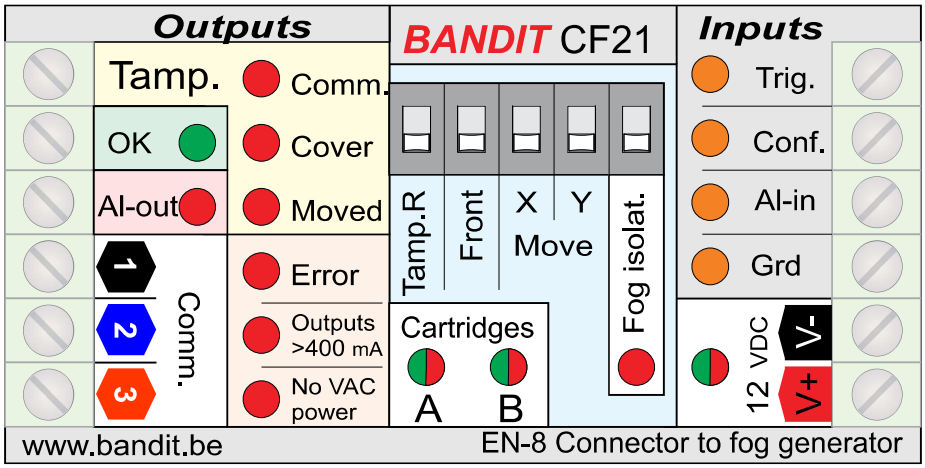
BANDIT

World leader
in active security

INSTALLATION MANUAL

EN-8 CONNECTOR

CF21 v2



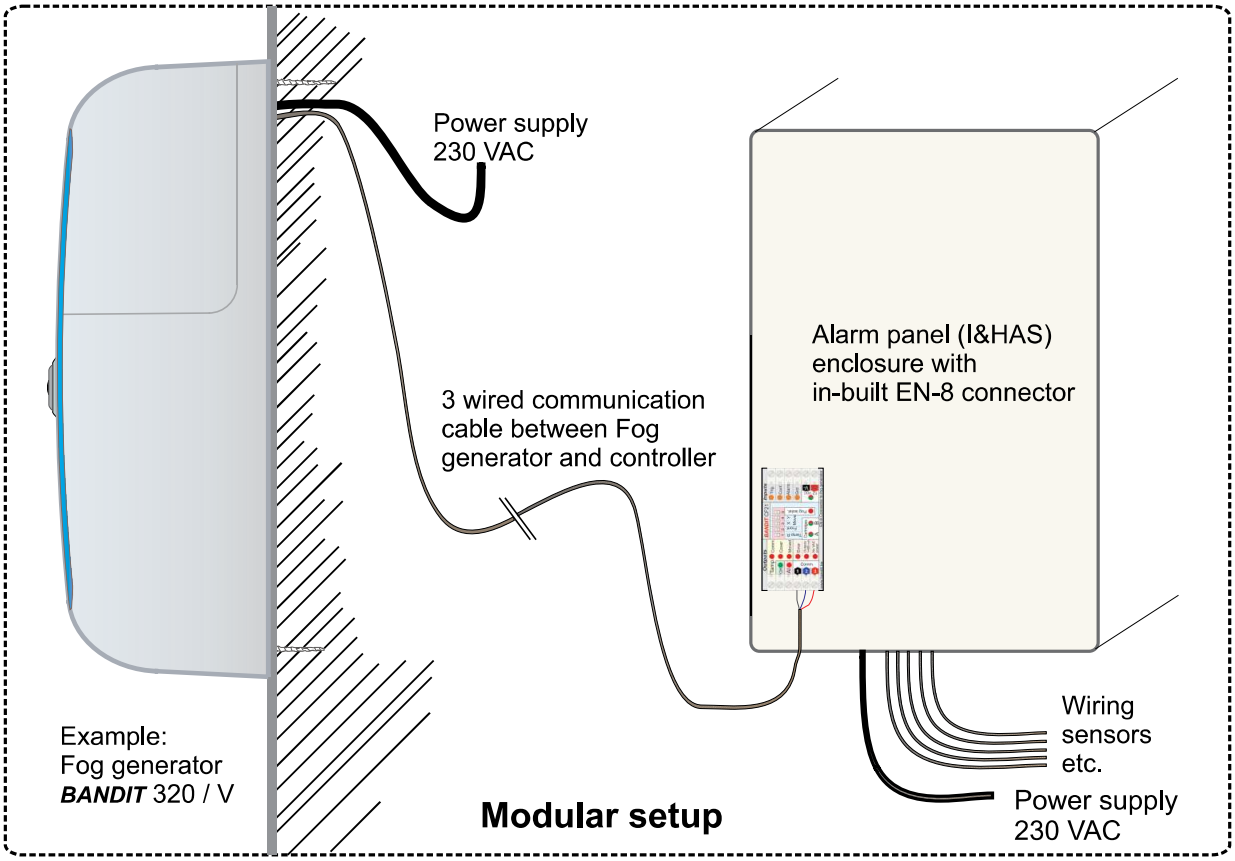
Content

INTRODUCTION

The modular make up of the Fog generator is a huge step forward for the active security sector. This adjustable EN-8 connector guarantees a reliable and flexible system, smooth installation, economy and outstanding performance for the consumer.

The connection only consists of a 3-wire communication wire.
All settings, controls and connections are made from the EN-8 connector and therefore no longer need to be performed on the fog generator itself.
This connector connects to an I&HAS (Intrusion and Hold-up Alarm System) and conforms to EN-50131-8 to fog generator installations.

The Sketch below is the main configuration which applies to several versions of controller or connectors, etc...:



Properties of the CF21 v2 EN-8 connector:
- Simple adjustable connector (settings via DIP switches) designed to interface between the alarm system (I&HAS) and a ***BANDIT*** 320 / fog generator. The connection to the fog generator is via a 3-wire communications line.
- Due to its small dimensions (54 x 29 x 14 mm thick), this connector also fits easly into a populated alarm panel cabinet.
- Due to the low 12 VDC power consumption (approx. 60mA), this connector requires practically no additional load for the power supply / battery of the connected alarm panel (I&HAS).

Approvals:
Certified according to the EN standard: Security fog device/systems:
EN 50131-8.

Industrial property:
- ***BANDIT*** is a registered tradename.
- ***HY-3*** is a registered tradename.
- The ***BANDIT*** fog generator process is internationally protected by various patents.

Manufacturer:

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B-3660 Opglabbeek
Belgium

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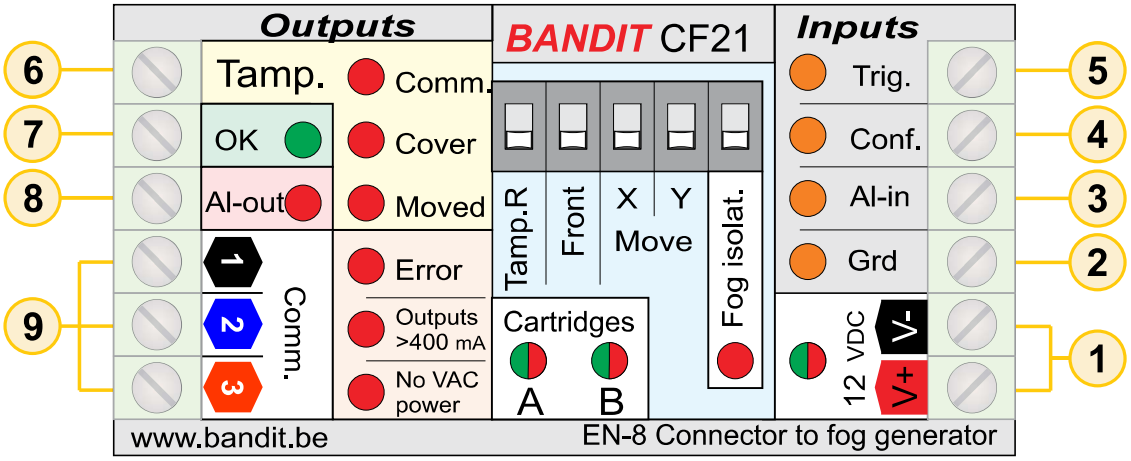
web: www.bandit.be

This product is fully developed and manufactured in the BANDIT plant in Opglabbeek, Belgium.
The company BANDIT nv. is quality certified for development and manufacture of fog generators following the standard ISO 9001:2015.

Certificat:
BE 10/23574209

EN-50131-8

CONTROL PANEL



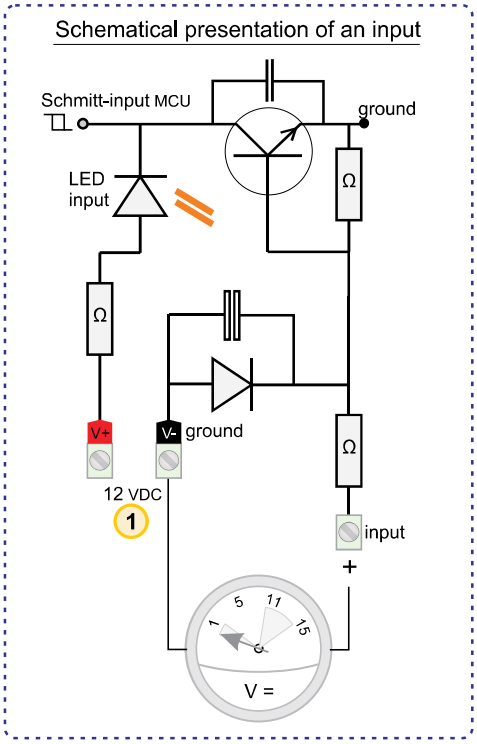
INPUTS

Input: 12 VDC supply

In order to function, the connector requires a 12 VDC supply voltage, which is normally supplied from the existing control panel (I&HAS).
When the 12 VDC is initially connected, a current of approximately 200 mA will flow (charging of internal capacitors) for approximately 20 minutes, after which the power consumption is limited to approx. 60 mA (–▭– 500 mAT) .

- ○ LED off: supply voltage is less than 9.5 volts or reversed.
- ● Red LED on: supply voltage is less than 11 volts (9.5 ~ 11 VDC)
- ● Green LED on: supply voltage is OK (11 ~ 14.4 VDC).
- ⊗ Red LED flashes: power supply voltage is too high (> 14.4 volts).
  At a supply voltage of > 18 volt, an internal overvoltage / overcurrent protection will trip (return to factory and with no warranty).

2 3 4 5 Control inputs



Electrical characteristics:
- Active as long the input receives 12 VDC (input opposite V-).
- An input should be stable for at least 0.2 seconds for the new state to be accepted.
- The input current at 12 VDC is ~ 0.25 mA per input.

After installation, check the control voltages on the inputs.
- Consider < 1 V as no voltage present.
- Consider > 10 V as 12 VDC voltage present.

Voltage readings between 1 and 10 VDC are not normal and will sooner or later give problems.

2 Grd Input: Input Guard [Grd]

Only if ***BANDIT*** is in the "monitoring mode" (Guard-state), will it be possible to switch to Alarm-mode (incl. ejecting fog) via the Alarm input [Alarm] + Confirmation input [Conf.] inputs.
- A long 12 VDC is present over the [Grd]-input the orange LED [Grd] will light orange and the fog generator is in "monitoring mode" (Guard-state).
- For the duration the fog generator is in “monitoring mode” (Guard-state), the Front LED “error flashing” is inhibited so that it will never indicate the presence of any failure or problem.
- The ***BANDIT*** fog generator's Front LED will light orange — as long as the device is in "monitoring mode" (Guard-state).
  Disabeling the Front LED on the fog generator. This is to comply with the standards EN 50131-1, see p. 12 / Dip 2.
- An active Alarm mode (caused by an alarm input during the monitoring mode [Guard]) will be terminated if monitoring mode is disabled (input [Grd] no voltage).

3 AI-in Input: Alarm input [Alarm]

Through this input an alarm generated by the intruder alarm system (I&HAS) or burglar detector is reported to the ***BANDIT***.
If an alarm signal is received (momentary 12 VDC pulse) on this input while the unit:
- Is in monitoring mode (Guard-state) = ([Grd] is 12 VDC) and
- Confirm input [Conf.] is active,

the connector will switch to the "alarm mode" and the fog generator will subsequently start a fog ejection.

! For the conditions to enable switching to the alarm mode and associated fog ejection, see below "confirmation" and page 7 "Flowchart".

Properties of the **"alarm mode":**
- The front LED of the ***BANDIT*** fog generator will flash orange ▬ ▬ ▬ as long as the device is in "alarm mode".
- The alarm output [AI-out] (8) changes to 12 VDC for the duration the fog generator is switched to the "alarm mode".
- An active Alarm mode (caused by an alarm input during the monitoring mode [Grd]) will be terminated if monitoring mode is disabled.

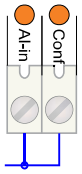
4 Conf. Input: Confirmation input [Conf.]

Through this input permission to switch to “alarm mode” is provided.
The purpose of this feature is to postpone proceeding to “alarm mode” until a local zone (I&HAS) or intrusion detector confirms the burglary.

Features of the **confirmation input** [Conf.]:
The ***BANDIT*** can only switch to “alarm mode” if the Alarm input [Alarm] and Confirmation input [Conf.] are simultaneously active while the device is in Guard mode [Grd].

☞ For conditions to switch to the alarm mode and associated fog ejection, see also "Alarm Input" and p. 7 "Flow chart".

☞ If you do not want to use the confirmation input [Conf.].
Connect (jumper) the inputs [AI-in] and [Conf.] with each other.
The ***BANDIT*** will then always switch directly into “alarm mode” without the need for any confirmation.



Input: Trigger input [Trig.]

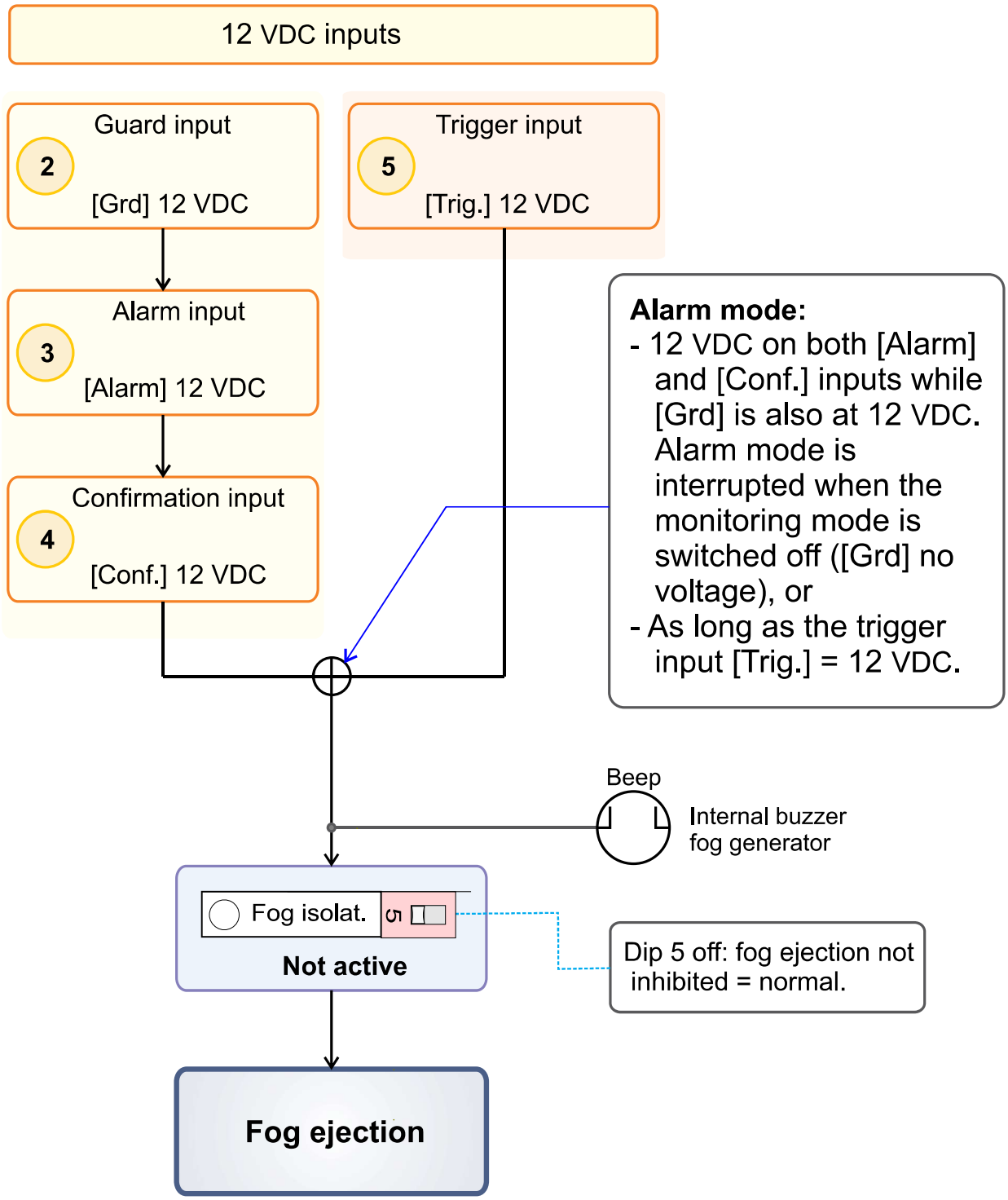
By switching this input to 12 VDC the ***BANDIT*** fog generator is switched directly to the alarm mode (without taking into account monitoring-, alarm mode or the confirmation input).
The triggered alarm status remains for the duration 12 VDC is on this input [Trg.].
The alarm output [Al-out] changes to 12 VDC for the duration 12 VDC is on this input [Trg].

☞ For conditions to switch to the alarm mode and associated fog ejection, see also "Alarm Input" and p. 7 "Flow chart".

☞ See also alarm output [Al-out] on pag. 10

Flowchart of the inputs

Flowchart below shows a simplified relationship of the 3 control inputs, the trigger input and the fog isolate dip-switch:



OUTPUTS

All 3 outputs are represented by a solid-state P-FET transistor, this transistor switches between open (no voltage) or closed (12 VDC).
Together with the 3 communication terminals [Comm.] these 3 outputs are secured against overcurrent via an internal electronic fuse of 400 mA. This fuse is self-resetting (1Hz retry).
As long an overcurrent is detected the red LED illuminate 

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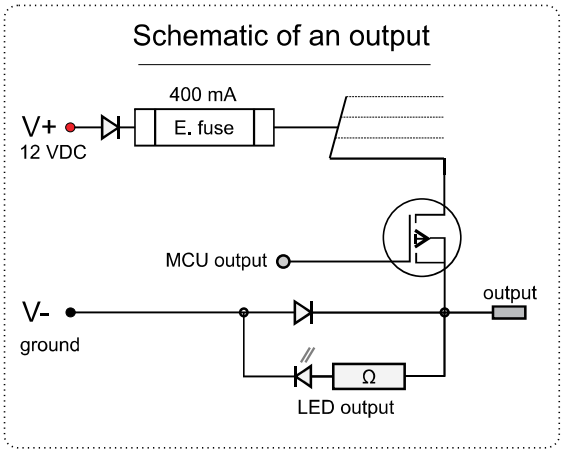
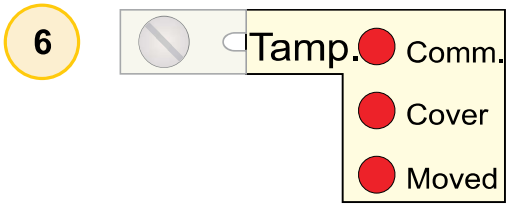
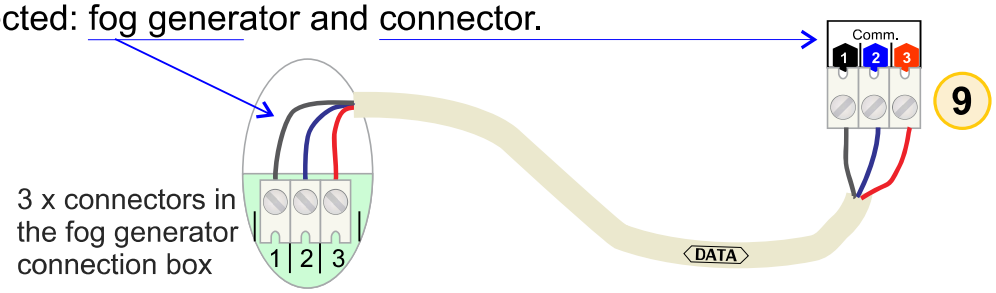




Tamper output [Tamp.]

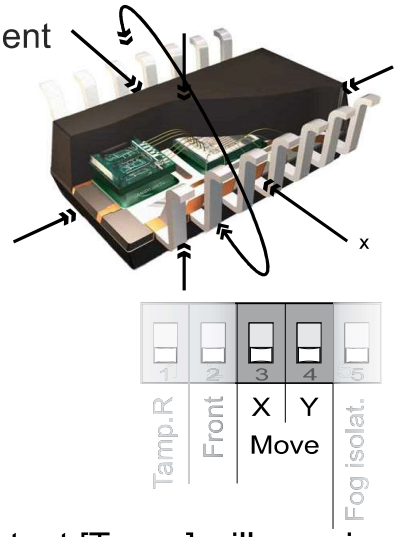
Via this output terminal the fog generator reports a tamper-problem.
This output changes to no voltage (0 V) from the moment a tamper problem is detected.
The detected problem is indicated via the 3 red Tamp-LED's, as follows:

Comm. This red LED illuminates when a communication error is detected: fog generator and connector.



Cover This red LED illuminates when the fog generator lid (click-on lid covering cartridges) is not properly closed.

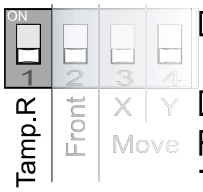
Moved This red LED illuminates when any movement of the fog generator has been detected. The fog generator is equipped with a multi-axis solid state gyro sensor. This sensor registers any movement or twisting of the fog generator and sends notification of this abnormality to its controlling connector.



The motion sensitivity is adjustable via two DIP switches [Move] pos. 3 en 4.
See also pag. 13.

As long as a Tamper error detection in present, the output [Tamp.] will remain at no voltage (0 V), the corresponding Tamp LED will illuminate red and the the front LED of the fog generator will flash red ▬ ▬ ▬.

Reset of a tamper error



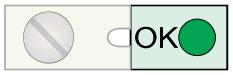
Depending on the position of Dip 1 [Tamp.R].

Dip 1 at OFF: is self-resetting (factory-default)
From the moment the tamper error(s) is remedied the associated Tamp-LED will turn off and the tamper output [Tamp.] will switch back to 12 VDC (normal situation).

Dip 1 at ON: manual reset.
Switching the tamper output back to 12 VDC and turning off the associated Tamp-LED message(s) is only possible after:
a) remediation of the tamper error and followed by
b) Dip1 momentarily switched to the OFF position (reset pulse) and return to ON position.

See also pag. 12 - Dip-switches.

NO tamper error = output 12 VDC.

7  **Technical output** [OK]

Via this output terminal the connector reports that a fault or problem has been detected. See also p. 14
As long as a malfunction or abnormal setting has been detected at the fog generator or mutual communication:
- output [OK] is 0V (no voltage), and
- the green OK-LED turns off.
- the front-LED of the fog generator flashes red ▬ ▬ ▬.

As long no malfunction or abnormal setting:
the output is 12 VDC and the OK-LED light green.

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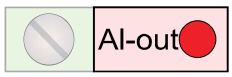
8  **Alarm output** [Al-out]

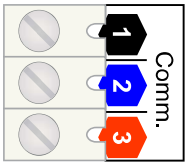
Via this output terminal the connector reports if the ***BANDIT*** has switched into Alarm mode (fog ejection).

This output is 12 VDC as long as:
- In case of alarm mode via the alarm input [Al-in]:
  - from the start of the alarm mode for 3 minutes (reset timer).
    If the alarm mode is interrupted (Monitoring mode is switched OFF via [Grd]) this output will also switch back to 0 volt (no voltage).
- In case of alarm mode via the trigger input [Trig.]:
  - As long the trigger input receive 12 VDC this output is also 12 VDC.

More info about alarm mode, see Flowchart pag. 7, and
- the red Al-out LED is illuminated, and
- The frontLED of the ***BANDIT*** fog generator will flash orange ▬ ▬ ▬ .

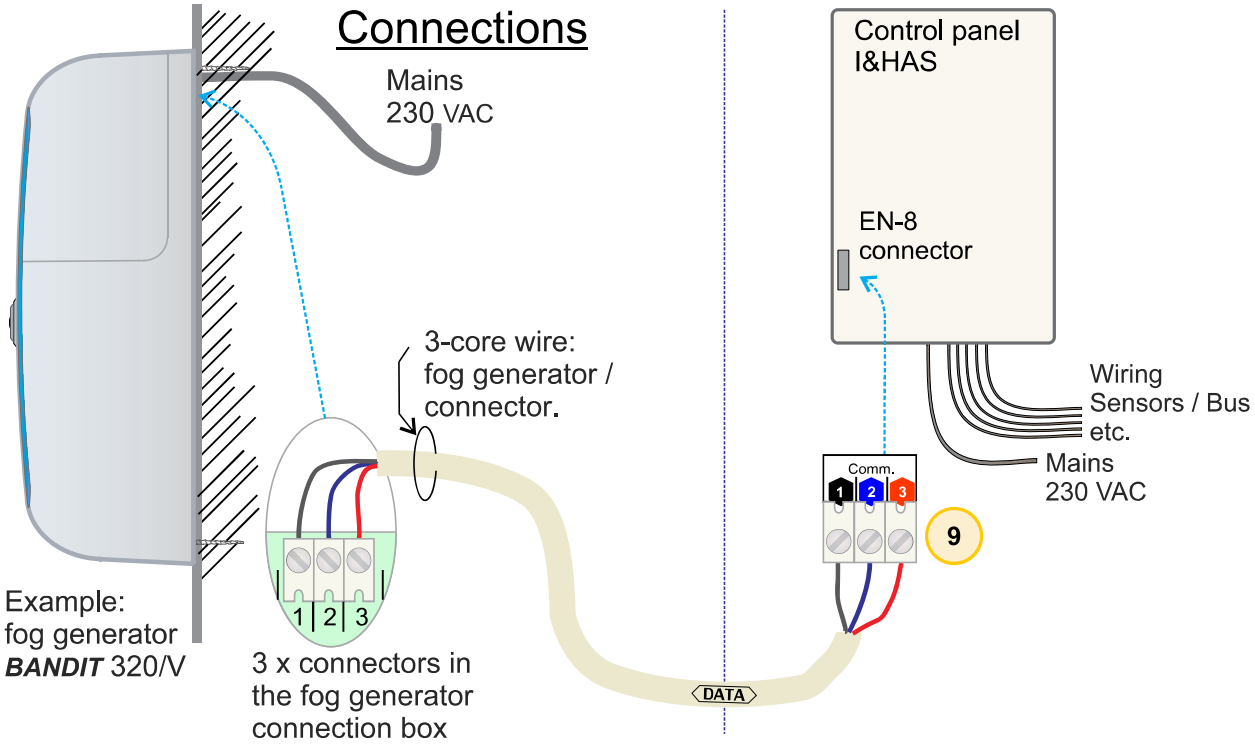
During alarm mode: the output is 12 VDC and
the red Al-out LED illuminated.

9



Fog Generator communication [Comm.]

These three terminal connectors enable the controller to communicate with its installed fog generator. The bus communication takes place via encrypted digital three-wire connection.



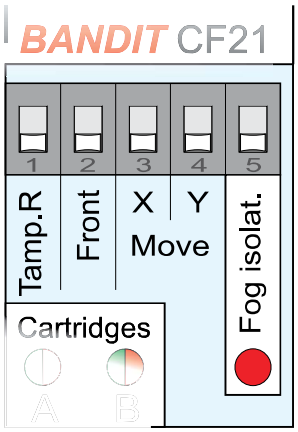
Electrical connection:

The 3-wire communication line (between fog generator and EN-8 connector):
- For a length of cable up to a maximum of 20 meters, the wire should have at least a section of 3 x 0.2 mm² (24 AWG alarm cable).
- For a length of cable up to a maximum of 100 meters, the wire should have at least a section of 3 x 0.75 mm² (19 AWG).

Keep in mind that this cable is the "lifeline" between the connector and its connected fog generator. Install this cable in such a way that the risk of sabotage (cutting) or accident breakage or damage is minimised as much as possible.

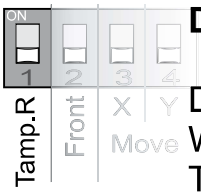
As long as there is no communication problem the red Tamp-LED Tamp. Comm. is off.

SETTINGS AND CONTROL



Dip switch settings

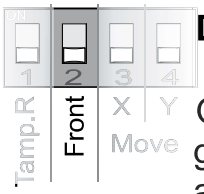
The EN-8 connector is adjustable via 5 dip switches. Below is a description of the function of each dip switch.



Dip 1 [Tamp.R]. Select manual- or autoreset of a tamper error.

Dip 1 ON: is auto-resetting (factory-default)
When the Tamper error(s) has been corrected, the corresponding Tamp LED will extinguish and the Tamper output [Tamp.] switches back to 12 VDC (normal state).

Dip 1 op OFF: manual reset.
Switching the tamper output back to 12 VDC and extinguishing of the corresponding Tamp LED message (s) can only be carried out after correcting the tamper error and subsequent shifting DIP 1 to the ON position (reset pulse) and back to OFF position.

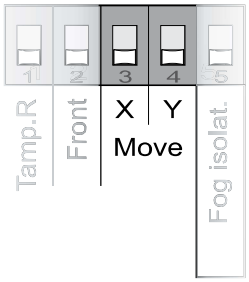


Dip 2 [Front]. Front-LED fog generator.

Operating this DIP switch disables the Front LED on the fog generator. This is to comply with the standards EN-50131-8 and parent EN 50131-1: 2006 clause 8.5.2. (no Indications of an I & HAS should be shown to the public (Access level 1)).

- Front-LED is operational:
  Dip 2 [Front] ON (factory default).

- Front-LED is disabled (no visual status indication via fog generator in accordance with EN 50131-1):
  Dip 2 [Front] OFF.



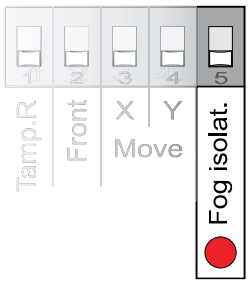
Dip 3 and 4 [Move]. Motion Sensivity.

The ***BANDIT*** fog generator is internally equipped with a motion sensor (solid-state gyroscope). This sensor detects when the fog generator is moved and this will be indicated as Moved and the Tamper output will swich to no voltage (0 V).

Sensitivity	dip **X**	dip **Y**
off	OFF	OFF
normal	OFF	ON
sensitive	ON	OFF
very sensitive	ON	ON

→ Factory default

☞ In the event of a tamper alarm by the motion sensor Moved , look for any changes of the installed fog generator position, direction, scratches, impact, etc .
This message may be an indication of a "break-in preparation or an “inside job“.



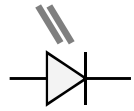
Dip 5 [Fog isolate.] Blocking a fog ejection (fog isolation).

- Dip 5 ON: No fog ejection possible.
  The active fog isolation is only displayed via the red LED Fog isolat. , otherwise there is no indication to show this abnormal setting (all other functions, outputs and LED's operate as normal). (factory default).
- Dip 5 OFF: Fog ejection possible (normal setting).

☞ The purpose of this fog-isolation option is to select this switch to ON during fitting and testing of the installation. A real fog ejection will not take place but you will hear the beeper (in the fog generator) emit a loud beep for 3 sec. as an indication of the virtual fog ejection.

☞ As long as fog isolation is on (dip = ON) the OK output is 0 VDC and the Front-Led on the fog generator blinks red.

LED INDICATION



Cartridges
A B

Information about the installed cartridges

A fog cartridge consists of the necessary fog liquid and a N_2 gas spring. Via its three electrical contacts, the fog generator can read the type of cartridge and/or activate the shut off valve.

The connected fog generator has two positions (A and B) for 2 cartridges. Ensure that the fog generator always has two full cartridges, so as to maintain maximum security in the event of two consecutive burglaries or robberies.

green — The cartridge is OK

flashing red — The cartridge is not properly installed (see manual for the connected fog generator). In practice, this is usually due to a badly fitting or not locked cartridge.

red — The cartridge is empty (depleted). Replace with a new cartridge of the same size and type.

knipper rood-groen — The cartridge is a demo- or installation test-cartridge.

Error

This red LED flashes according to a determined flash cycle when a technical failure is detected. This flash cycle indicates the type of failure that's been detected. Counting the number of flashes (blinks red) per cycle of 5 seconds. will indicate what the error is.

Number of flashes	**Indicated failure**	**Action**
2 x	The MCU reads unreal values.	Back to factory
3 x	Heat exchanger temperature error.	Back to factory

This red LED is illuminated as long as an overcurrent (> 400 mA) flows trough an output or the 3 [Comm.]-terminals.
See also: outputs pag. 8.

This red LED is illuminated as long as the connected fog generator receives no mains power (230 VAC).
And:
- The front-LED of the ***BANDIT*** fog generator flashes red ▬ ▬ ▬ to indicate that there is a problem.
- The Technical output [OK] is 0 volt (no voltage) and the accompagnant green OK-LED is off.

Classification (security level)

The use of a fog generator for security purposes is intended to rapidly limit the visibility in a room to be protected.
The security level is determined by two main factors:
a) speed in seconds, with which the space is filled with fog.
b) the density of the fog in the area to shield off (visibility).

Although the fog ejection capacity is defined within the current standard EN 50131-8 in Annex A “Performance”, in reality within the EU and the world of professional installers and insurers it is preferred to have a much clearer and more result-orientated standard (Security Fog Visibilty Protection), see www.sfvp.eu.

It is beyond the scope of this manual to describe the full text of the SFVP-grading method but here are the main items:

The SFVP security level is defined in the following table:

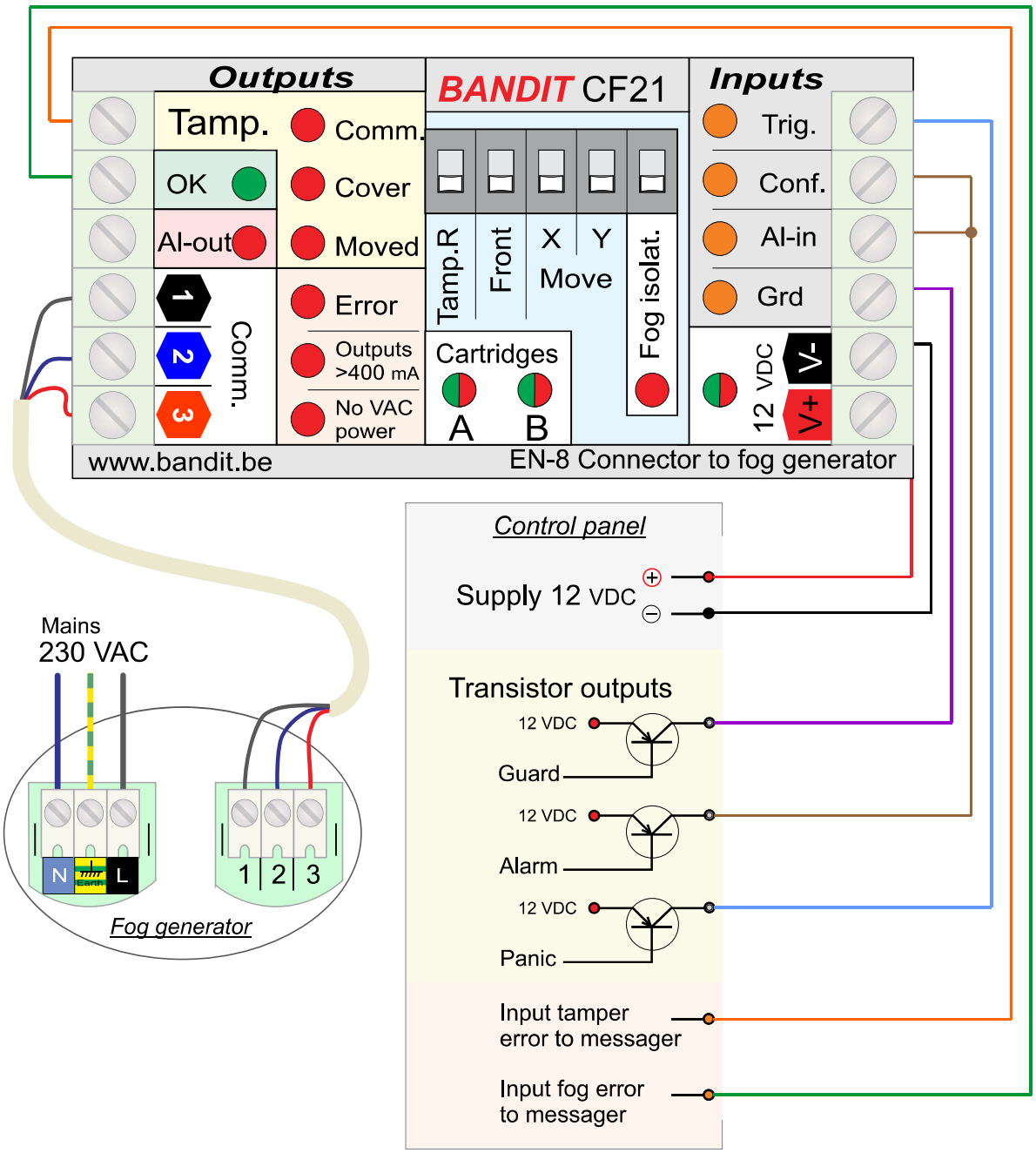
Security level (grade)	Time (seconds)	Visibility (b/w cross)	Indication of visibility restriction
1	< 60 s	≤100 cm	Little restriction in sight and time.
2	< 30	≤ 65	Limited visibility with minor time constraints.
3	< 20	≤ 45	Severely limited visibility with time constraints
4	< 10	≤ 40	Severely limited visibility with large time constraints (flee behavior).

Which "grade" suits at what maximum volume of a space is indicated by the manufacturer or importer in the specifications of the fog generator; eg. Grade 2 <320 m³ / Grade 3 <250 m³ / Grade 4 <170 m³.

☞ Explanation:
- A Grade 2 level of security provides sufficient protection where removal of valuable assets is likely to take longer than 30 seconds to achieve.
- Insurers and professional security managers will normally recommend a Grade 3 or 4.
- For panic button operation a Grade 4 will always be chosen.

INSTALLATION EXAMPLE

Easy connection to controlling alarm system (I&HAS).



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