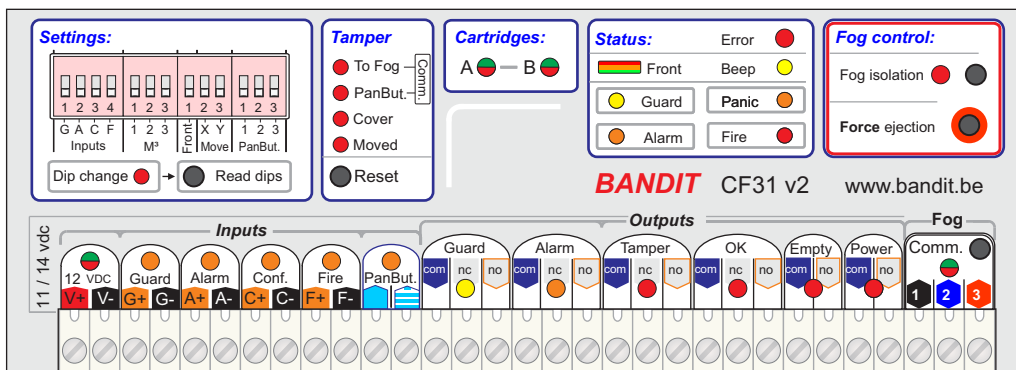


BANDIT World leader in active security

INSTALLATION MANUAL

CONTROLLER CF31 v2





Content

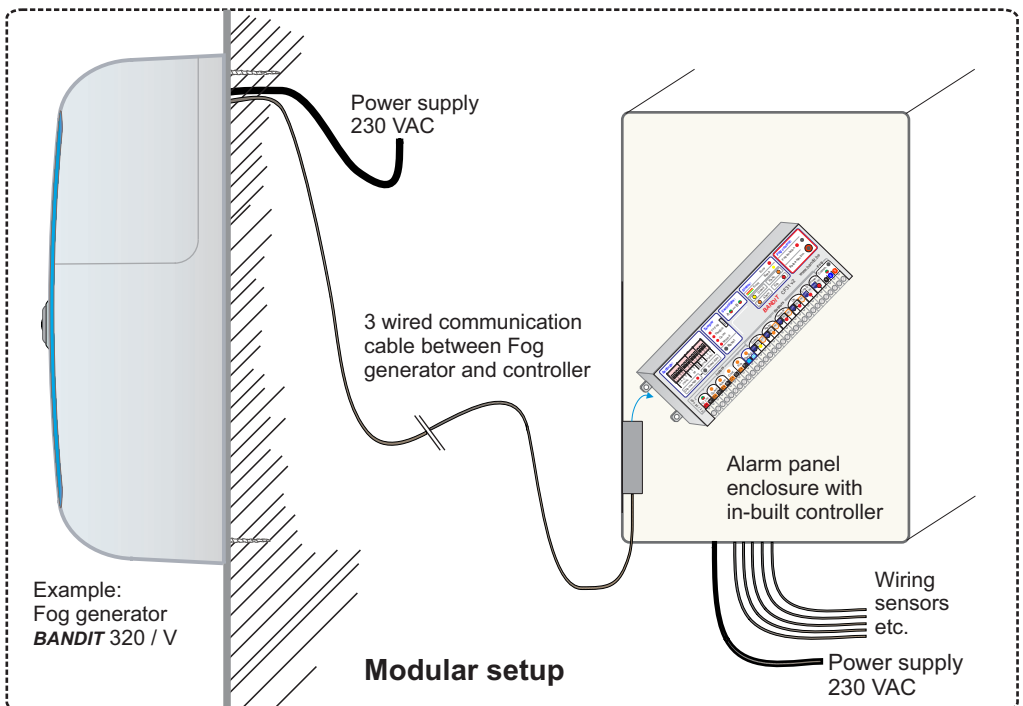
Introduction	Pag. 01
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INTRODUCTION

The modular make up of the Fog generator is a huge step forward for the active security sector. This innovative Bandit technology guarantees a reliable and flexible system, smooth installation, incredible design, and outstanding performance for the consumer.

In principle the modular make up of the Fog generator means: The Fog generator becomes separated from the controlling electronics. The connection consists of only a 3 wired communication cable. All settings, control, and connections will now be mainly executed through the control panel part and will no longer need to be carried out through the Fog generator itself.

The Sketch below is the main display which applies to several versions of the Controller:



All **BANDIT 320 / X** Fog generator models and the various available controllers are compatible with one another.

Properties of the CF31 v2 controller:

- Simple controller (settings via DIP switches) designed to interface between the alarm system and the BANDIT 320-xx fog generator. The connection to the fog generator is via a 3-wire communications line.
- For installation inside a tamper secure housing, the controller is normally installed inside the alarm panel enclosure.

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:

BANDIT nv. (plc)
Nijverheidslaan 1547
B-3660 Opglabbeek
Belgium

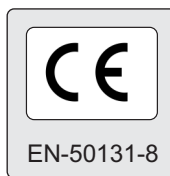
RPR Antwerp, div. Tongeren.
Tel: + (32) 89 85 85 65
Fax: + (32) 89 51 85 47
web: www.bandit.be

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.



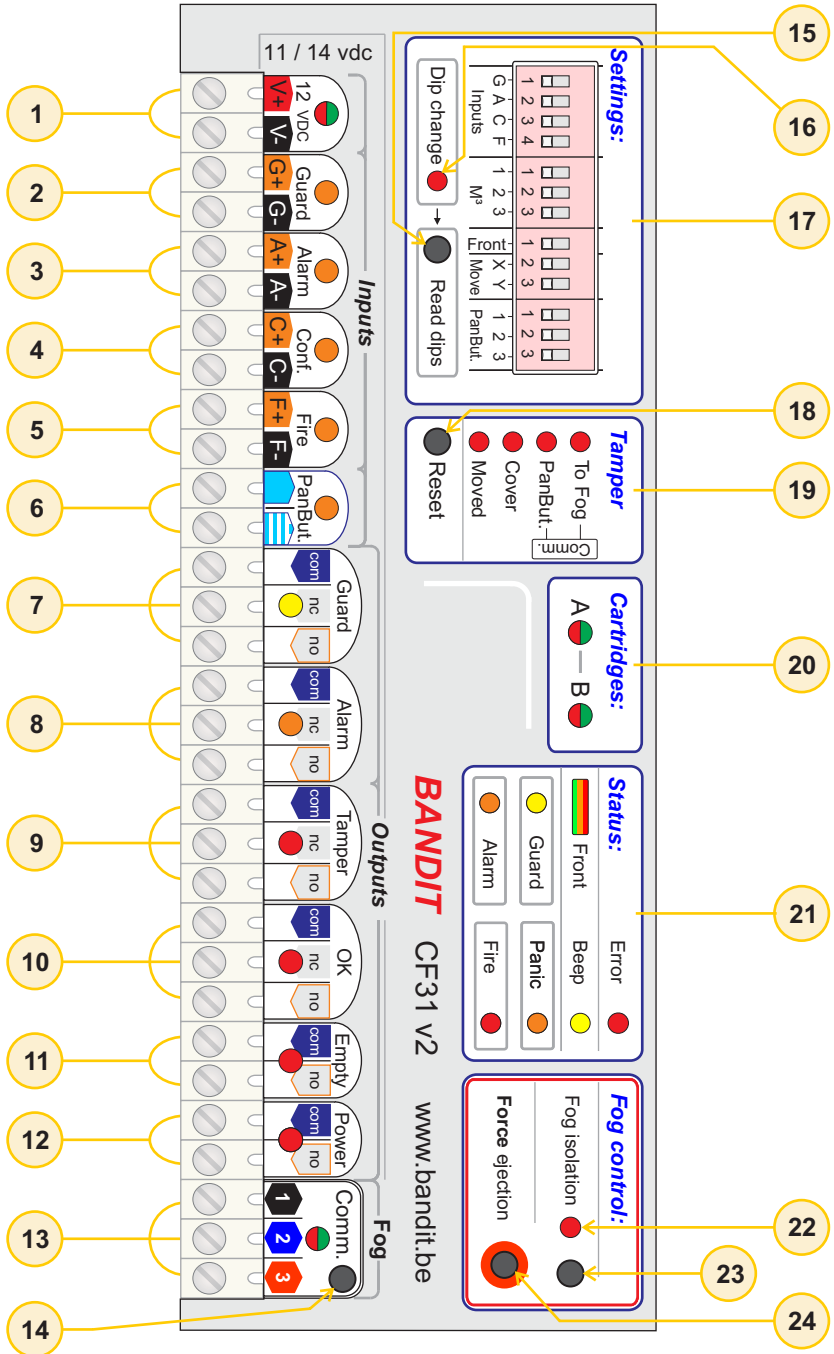
Certificat:
BE 10/23574209



Text and drawings in this document are covered by copyright law.
Copyright: Bandit plc, B-3660 Opglabbeek, Belgium.

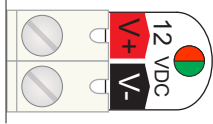
CONTROL PANEL

● Recessed buttons



INPUTS

1



Input: 12 VDC supply

In order to function, the controller requires a 12 VDC supply voltage, which is normally supplied from the existing control panel.

The maximum current is 1A. [— 1 AT].

- 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

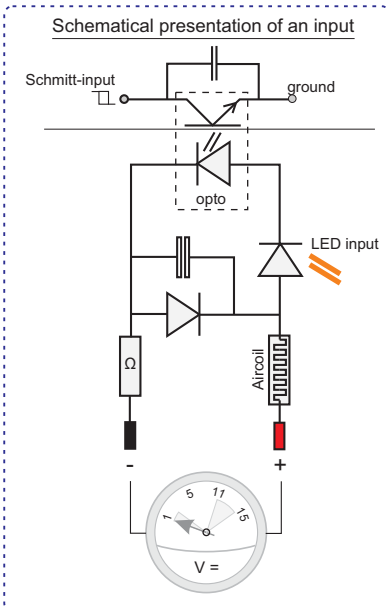
3

4

5

Control inputs

All control inputs are equipped with opto-couplers. This is an excellent separation between the internal electronics of the **BANDIT** and the "outside world".



Electrical characteristics:

- Polarisation (+ and - signs).
- Reverse polarity protection and RC and LC filter provided.
- An input should be stable for at least 0.2 seconds for the new state to be accepted.
- The input current at 12 V is ~ 6 mA per input.

After installation, check the control voltages on the inputs.

- Consider < 2 V as no voltage present.
- Consider > 9 V as 12 VDC voltage present.

Voltage readings between 2 and 9 VDC are not normal and will sooner or later give problems.



2



Input: Input Monitoring [Guard]

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.
 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.








Properties of the "monitoring mode":

- The yellow LED [Guard] will be illuminated in the **Status** section  Guard as long as the device is in "monitoring mode".
- The **BANDIT** fog generator's Front LED will light orange  as long as the device is in "monitoring mode".
- An active Alarm mode (caused by an alarm input during the monitoring mode [Guard]) will be terminated if monitoring mode is disabled.

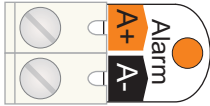
Control of the guard input [Guard]

Depending on the position of dip switch G, monitoring mode can either be activated when 12 VDC is present on the input, or if there is no voltage on the input.

Logical truth chart for the Monitoring input [Guard]:

	Dip G ON 		Dip G OFF 		 Changes to dip-switch settings are only valid once confirmed  15
	12 V on Guard	No voltage on Guard	12 V on Guard	No voltage on Guard	
	on	off	on	off	 Guard LED lights as long as there is 12 V present on the Guard input
Monitoring status  Guard	yes	no	no	yes	 The fog generator front LED is orange while monitoring mode is active (Guard mode).

3



Input: Alarm input [Alarm]



Through this input an alarm generated by the intruder alarm system or burglar detector is reported to the **BANDIT**.

If an alarm signal is received (momentary pulse) on this input while the unit:


- Is in monitoring mode, and
 - Confirm input [Confirm] is active,
- the controller 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 next page 7 "confirmation" and page 12 "Flowchart".









Properties of the "alarm status"

- The orange LED [Alarm] will be illuminated  in the **Status** section as long as the device is in "alarm mode".
- The front LED of the BANDIT fog generator will flash orange  as long as the device is in "alarm mode".
- An active Alarm mode (caused by an alarm input during the monitoring mode [Guard]) will be terminated if monitoring mode is disabled.

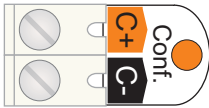
Activation of the alarm input [Alarm]:

- Depending on the position of dip switch A, alarm mode will start when either a negative or a positive voltage transition (edge) is present on this input.
- The front LED of the **BANDIT** fog generator will flash orange .

Logical truth chart for the Alarm input [Alarm]:

	Dip A ON 		Dip A OFF 		 Changes to dip-switch settings are only valid once confirmed  15
	12 V on Alarm	No voltage on Alarm	12 V on Alarm	No voltage on Alarm	
	on	off	on	off	 Alarm LED lights as long as there is 12 V present on the Alarm input
Alarm-status 	yes 	no	no	yes 	

4



Input: Confirmation input [Conf.]

Through this input permission to switch to “alarm mode” is provided to the **BANDIT**.

The purpose of this feature is to postpone proceeding to “alarm mode” until a local zone or intrusion detector confirms the burglary.



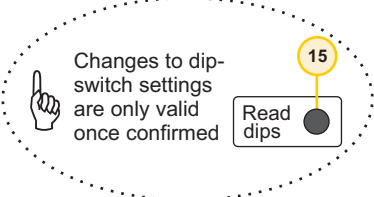
Features of the confirmation input [Conf.]:

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 [Guard].

Control of the confirmation input [Conf.]

Depending on the position of dip-switch C, confirmation will be provided to switch to the alarm mode from the alarm input [Alarm].

Logical truth chart for the Confirmation input [Conf.]:

	Dip C ON 		Dip C OFF 		
	↑ Inputs		↑ Inputs		
	12 V on Guard	No voltage on Guard	12 V on Guard	No voltage on Guard	
	on	off	on	off	
Confirm	yes	no	no	yes	

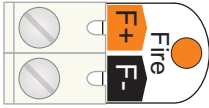
Changes to dip-switch settings are only valid once confirmed. Read dips.

Conf. LED lights as long as there is 12 V present on the Conf.-input

For conditions to switch to the alarm mode and associated fog ejection, see previous page. 6 "Alarm Input" and p. 12 "Flow chart".

If you do not want to use the confirmation input, put Dip C **OFF** and leave both Conf. input terminals **C+** **C-** disconnected. The **BANDIT** will then always switch directly into “alarm mode” without the need for any confirmation.




5



Input: Fire input [Fire]

This input serves as fog ejection blocking. The intention of this function is to block the fog ejection as long as the fire input [Fire] is active. If the system is already in Alarm or Panic mode, the presence of an active fire signal has no influence over the Alarm / Panic mode or the related execution of a fog ejection.



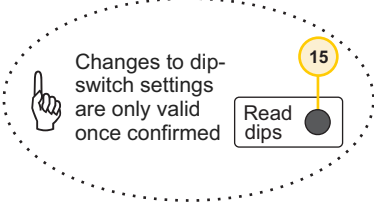


Properties of the "Fire mode":



- The red LED [Fire] in the Status box will light  while the fire mode is active.
- The front LED of the BANDIT fog generator will flash red  as long as the device is in "Fire mode".
- A fog ejection cycle cannot start, including through the [Force ejection]  button.

Control of the fire input [Fire]

Depending on the position of dip-switch F, Fire mode will be active either when 12 VDC is present on the input, or if there is no voltage on the input.

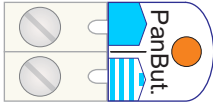
Logical truth chart for the fire input [Fire]:

		Dip F ON 		Dip F OFF 		
		12 V on Fire	No voltage on Fire	12 V on AFire	No voltage on Fire	
		on	off	on	off	 Fire LED lights as long as there is 12 V present on the Fire input
Fire-status		yes	no	no	yes	

If you do not want to use the Fire input, put Dip F **ON** and leave both Fire input terminals   disconnected.

The **BANDIT** will then never switch into "Fire mode" and there will be no blocking of the fog ejection.

6





Input: Panic [PanBut.].

Through this input a panic alarm generated by the intruder alarm system or panic button is reported to the **BANDIT**.

If a panic signal is received on this input the **BANDIT** will immediately proceed to Panic mode and commence fog ejection.

However, if the fire mode is active (via Fire-input) or "Fog isolation mode" is selected there will be no fog ejection.

Features of the **Panic mode** [Panic]:


- The orange LED [Panic] will be highlighted in the **Status** section , as long as the system is in "Panic mode".
- The frontLED of the **BANDIT** fog generator will flash orange , as long as the unit is in "Panic -mode".

Activation of the panic input [PanBut].

In contrast to the four control inputs, this input is not a 12 VDC voltage controlled input.

This input has two setting modes via dip-switch setting [PanBut.]1 

a) NO or NC contact input.

The input monitors whether a connected electrical contact is open or closed, referenced to terminal block  is +.

For example:

- Inside a standard panic button which is normally closed (NC) or normally open (NO), or
- A serial or parallel connection of several panic buttons or relay contacts.

Settings: See the following page 10.

b) Bandit panic button input.

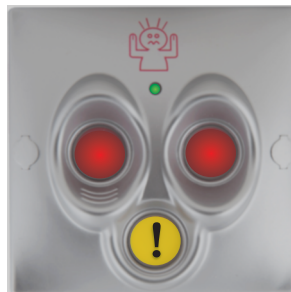
The input communicates digitally (supply and bus) with an attached **BANDIT** panic button of the type: 820-xx.

The panic button is optional and can be ordered from your Bandit dealer.

If the installation requires that the fog generator is directly activated via a panic button, it is recommended that a **BANDIT** panic button is used for this purpose.

Advantages of using a **BANDIT** panic button:

- Only when both red buttons are depressed at the same time will a panic-trigger be directly sent to the fog generator.
- As long as the yellow button has been pressed, this will cause the built-in buzzer in the fog generator to buzz. This function is intended to draw the attention of employees that are on the premises.
- The three pushbuttons have background lighting which is dimmable (0 - 50 - 100%).
- Tamper monitoring between panic button and controller is also maintained. See **Tamper** section → ● PanBut. Comm.
- See also: example diagram 3, p. 36.

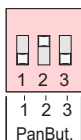
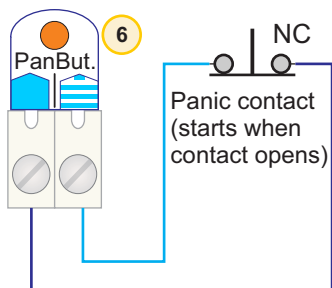


Panic button:
820-13S

Settings for the panic input [PanBut]:

The functions of this input can be selected via the three dip-switches [PanBut.]. Below are the three different options:

1. Panic mode starts when the input measuring a contact transition from closed to open (NC-contact).



Dip switch settings [PanBut.]:

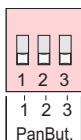
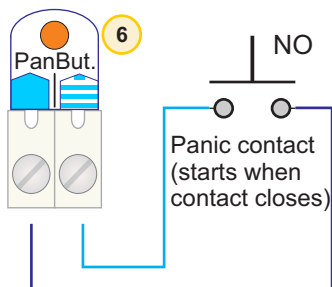
Dip 1: OFF

Dip 2: ON

Dip 3: Use this to choose whether the Panic mode:

- a) Dip 3 OFF - stop one minute after the first pulse is received (1 minute delay timer), or
- b) Dip 3 ON - last as long as the contact is open.

2. Panic mode starts when the input measuring a contact transition from open to closed (NO-contact).



Dip switch setting [PanBut.]:

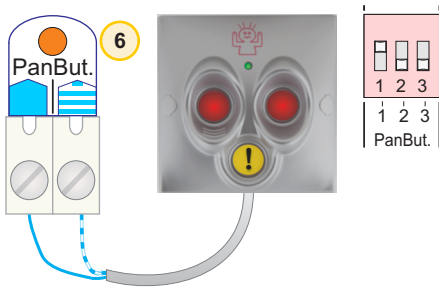
Dip 1: OFF

Dip 2: OFF

Dip 3: Use this to choose whether the Panic mode:

- a) Dip 3 OFF - stop one minute after the first pulse is received (1 minute delay timer), or
- b) Dip 3 ON - last as long as the contact is closed.

3. **BANDIT** panic button / type 820-13S is connected to [PanBut.].



Dip switch settings [PanBut.]:

Dip 1 ON

Dip 2 and 3:

a) No backlight:

Dip 2 OFF and Dip 3 OFF.

b) 50% dimmed backlighting:

Dip 2 ON and Dip 3 OFF.

c) 100% of backlight:

Dip 2 ON and Dip 3 ON.

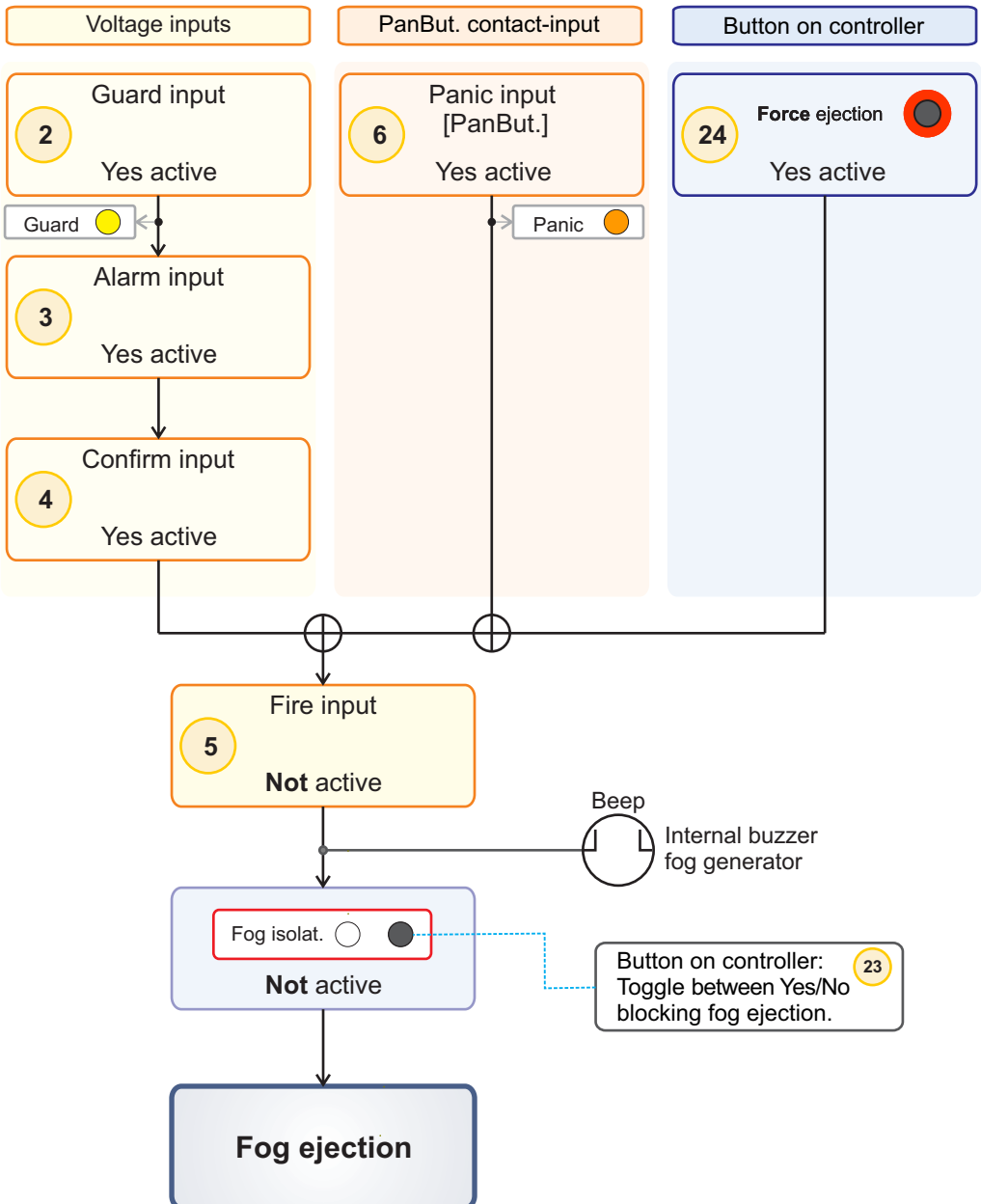
Panic mode starts when the two red buttons are pressed simultaneously and then stops one minute later (1 min. delay timer).

☞ If Panic mode is not required, set all 3 DIP switches of [PanBut.] to OFF and leave both [PanBut.] input terminals disconnected.

The **BANDIT** will then never switch into “Panic mode” (factory default).

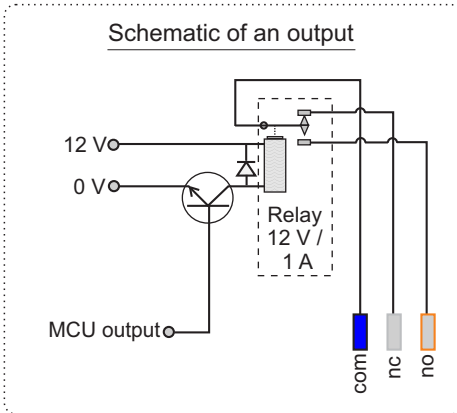
Flowchart of the inputs

Flowchart below shows simplified the relationship of the 4 control inputs, the panic input and two control keys:



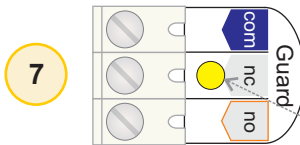
OUTPUTS

All six outputs are represented by potential free relay contacts. This will provide a perfect separation between the internal electronics and the "outside world".



Electrical properties of a relay output:

- Potential free.
- Max. 1 Amp. at max. 24 V.
- Fit spark suppressors (varistors or freewheeling diodes) across contacts if switching inductive loads (relay coils, and the like).
- If the internal 12 VDC supply drops below 9.5 VDC, each output will go to "failsafe" mode, so COM and NO will be open.



Output: Monitoring [Guard]

Via this three-output terminal connector the controller reports if the **BANDIT** is switched into Monitoring mode [Guard] or not. See also p. 5, Monitoring input.

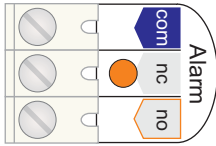
Properties of the monitoring output [Guardout]

As long as the unit is in monitoring mode:

- Contacts COM and NO are closed (ie, COM and NC open).
- The yellow LED lights Guard.
- Yellow monitoring Status LED is on Guard ●.
- The front-LED of the **BANDIT** fog generator illuminates orange —.

During monitoring COM and NO is closed.

8



Output: Alarm [Alarm]

Via this three-output terminal connector the controller reports if the **BANDIT** has switched into Alarm- and/or Panic mode.

See also p. 6: alarm input and p. 9: panic input.



Properties of the **Alarm output** [Alarm].

- Orange Alarm LED lights as long as the relay is activated (COM and NO closed, and COM and NC open).
- The frontLED of the **BANDIT** fog generator will flash orange — — — as long as the unit is switched into panic or alarm mode.

▶ In case of alarm mode:

- COM and NO are closed (relay activated) from the start of the alarm-mode for 3 minutes (reset timer).
If the alarm mode is interrupted (Monitoring mode is switched OFF) the relay contact will also switch back to rest (COM and NO open, and COM and NC closed).

- The orange alarm mode LED is illuminated Alarm ●.

▶ In case of panic mode:

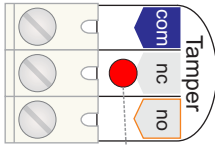
- COM and NO are closed (relay activated) for the full duration the panic mode is activated (no timer).

- The orange panic mode LED is illuminated Panic ●.

A typical application for this useful alarm output [Alarm] is to connect this to an auto dialler (to report the alarm state), or to directly operate an external siren on/off (Max. 1 A at 24 V).

During alarm COM and NO is closed

9



Output: Tamper [Tamper]

During the normal operation of the connected fog generator the Tamper output contact between COM and NO is closed. It switches to COM and NO open and the Tamper LED lights red from the moment a tamper fault is detected until:

- a) There is no Tamper error detected any more, and
- b) It has been reset via the Tamper reset button.

As long as a tamper fault (Tamper) remains present, the front LED of the fog generator will flash red **■ ■ ■**.

Dedetected Tamper errors (sabotage):

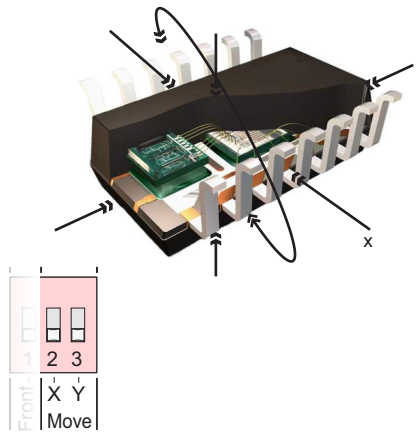


- a) **●** To Fog:
This red LED lights when a communication error is detected between the controller and the fog generator.
Possible causes:
None, or poor electrical connection between the three terminal connectors [Fog] on the controller and the corresponding three Comm. terminal connectors on the fog generator. See also p. 20 and set up communication on p. 21.
- b) **●** PanBut.:
This red LED lights when a communication error is detected between the controller and any attached panic button type Bandit 820-xx. See also input [PanBut] p. 11.
Possible causes:
None, or poor electrical connection between the two terminal connectors [PanBut.] on the controller and the two wires from the connected Bandit panic button 820-xx.
- c) **●** Cover:
This red LED lights when the fog generator lid (click-on lid above cartridges) is not properly closed.

d) ● Moved:

This red LED lights 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 controller.

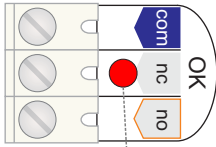
The motion sensitivity is adjustable via 2 DIP switches [Move] (see p. 25).



Normally this Tamper contact is also included in the general sabotage loop of the controlling alarm system.

As long as there is no Tamper error
COM and NO are closed.

10



Output: Technical output [OK]

Via this three-output terminal connector the controller reports that a fault or problem has been detected. See also p. 27 Error-LED.

Properties of the **technical output** [OK]

- If a failure or abnormal setting is determined by the fog generator, communication or controller, COM and NO will be open.
(ie COM and NC will be closed).
- The red OK LED illuminates.
- The front LED of the fog generator flashes red ■ ■ ■ .

Any malfunction or problem that is reported by the technical output [OK] is displayed on the Controller panel. Signals to check:

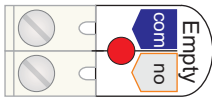
- a) If any red LED is lit then this also indicates the problem that has been detected.
- b) If any red LED is flashing (eg. Error LED), then this also indicates the problem that has been detected.



For more information about the fault being displayed via the red Error ● LED in the **Status** section 21 see p. 27.

A typical application for this output [OK] is to connect this to a zone input of the controlling alarm system or an auto dialler (to report the problem). In this way an alert can be sent to all control centres (PAC's) to notify them of a technical failure of the fog generator.

As long as there is no failure or problem
COM and NO are closed.



Output: Empty [Empty]

Via this two-output terminal blocks the controller notifies that at least one cartridge in the attached fog generator is empty. This should be replaced with a new cartridge as soon as possible.

HY -3 fog cartridges are available from your dealer or via the Bandit web site www.bandit.be internet shop.

Properties of the **Empty output** [Empty].

In the case of at least one empty cartridge:

- Contact is open.
- The Empty LED lights.
- The front LED of the BANDIT fog generator will flash red - - - in order to indicate that there is a problem.
- For more information, see p. 26



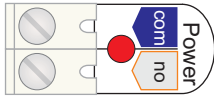
☞ The fog generator will always trigger a full cartridge when a fog ejection has been requested (auto selection). Only when both cartridges are empty (or not inserted correctly) will no fog ejection be possible.

This fog cartridge output [Empty] may be used in conjunction with the [OK] output, or on its own (see example diagram 1 on page 32) to connect this notification to a zone input of the controlling alarm system or an auto dialler (to report the problem).

In this way an alert can be sent to all control centres (PAC's) to notify them that at least one of the cartridges in the connected fog generator is empty.

As long as both cartridges are OK,
the contact is closed.

12



Output: Power [Power]

This two-output terminal connector notifies the controller that the attached **BANDIT** fog generator has 230 V AC (mains power) connected.

Properties of the voltage output [Power].

- ▶ Mains power is present: Contact is closed and the Power LED is off.
- ▶ No mains voltage present: contact is open and the Power LED lights red.

The front LED of the **BANDIT** fog generator flashes red - - - to indicate that there is a problem.

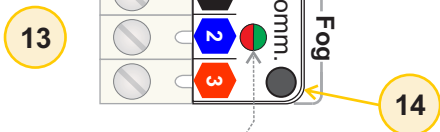


This output [Power] may be used in conjunction with the [OK] output, or on its own (see example diagram 1 on page 32) to connect this notification to a zone input of the controlling alarm system or an auto dialler (to report the problem).

In this way an alert can be sent to all control centres (PAC's) to notify them that the connected fog generator has an AC voltage problem.

As long as the **BANDIT** fog generator has AC supply voltage the contact is closed.

Fog Generator communication [Fog]

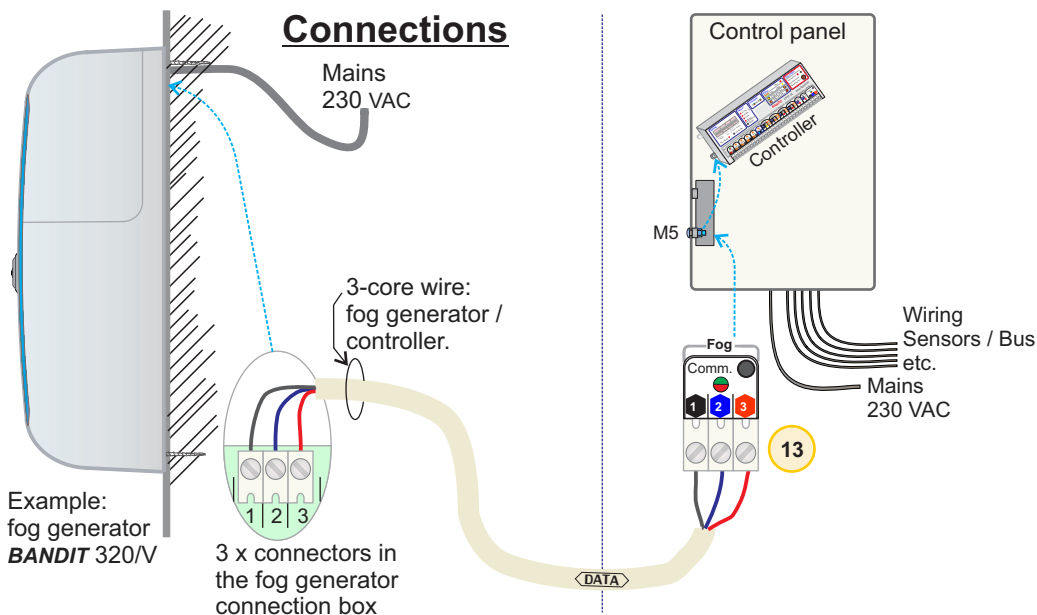


These three terminal connectors enable the controller to communicate with its installed fog generator. The bus communication takes place via encrypted digital three-wire connection.

Properties of Communication. [Fog]:

- The Comm.LED: ● Is continuous green as long as the communication between controller and fog generator is progressing normally.
- Flashing red / green: technical communication is normal, but there is a problem with the acceptance of the fog generator. See next page. 21: Setting procedure for communication.
- A continuous red light means that a fatal communication error exists. The electrical connection is broken. The [OK] and Tamper output [Tamper] will switch to inactive (COM and NO open).

Connections



Electrical connection:

The 3-wire communication line (between fog generator and controller):




- 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 controller 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.

Setting procedure for communication

The objective of this setting procedure is to enable the controller to recognise its communication counterpart and subsequently whether or not to accept it or not (Learn mode).

Performing a setup procedure is possible only if:

- The electrical connection "Controller↔fog generator" has been installed correctly (Fog LED ).
- The controller has 12VDC power supply (12 VDC LED  = green .

To enter new identification data, press the Comm key. .

Result: - Within two seconds the green Comm. LED lights:

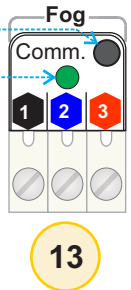
- The controller reads the type and serial number of the fog generator.

From this point the controller will not communicate with any other fog generator.

- The fog generator reads the type and serial number of its controller.

From this point the fog generator will not communicate with any other controller.

- The controller establishes an encrypted communication protocol with the connected fog generator.



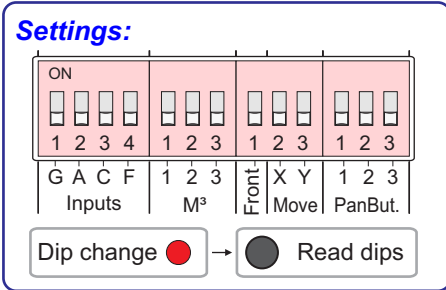
The connection has been established: the fog generator will accept and execute all settings provided by its controller. And in reverse, the fog generator will regularly report its status to its controller.

As long as there is no communication problem the Comm. LED is continuous green.




SETTINGS AND CONTROL



Settings:

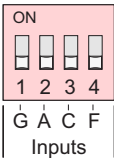


Settings: DIP switch settings

13 dip switches are divided into five blocks. Below is a description the function of each dip switch.

Only after pressing the button  will a new dip-switch setting be read and executed.

When a dip-switch is altered, the red LED  lights until the Read dips button has been pressed. This red LED  reminds you that a dip has changed position without the new state actually loaded and running.





Block: inputs [inputs]

This block selects whether the respective input is active when applying 12 VDC or when no voltage is present on the input terminals. See also the section: Inputs from p. 4.

Dip G: Configuration of guard input [Guard].

- ON - Monitoring mode is active when 12 V is on [Guard] terminals.
- OFF - Monitoring mode is active when 0 V (no voltage) is on [Guard] terminals.

Dip A: Configuration of alarm input [Alarm] (start pulse).

- ON - Alarm mode starts when 12 V is on [Alarm]  terminals.
- OFF - Alarm mode is starts when 0 V (no voltage) is on [Alarm]  terminals.

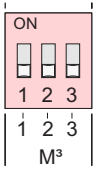
Dip C: Configuration of confirmation input [Conf.].

- ON - Confirmation is provided when 12 V is on [Conf.] terminals.
- OFF - Confirmation is provided when 0 V (no voltage) is on [Conf.] terminals.

Dip F: Configuration of fire input [Fire].

- ON - Fire mode is active when 12 V is on [Fire] terminals.
- OFF - Fire mode is active when 0 V (no voltage) is on [Fire] terminals.

Block: Setting the volume of the space to be protected [M³]



Each fog ejection of the **BANDIT** fog generator produces a fog volume corresponding to the volume of fog fluid content within the installed cartridge, which is selected to provide the correct room filling capacity in cubic meters (m³). In order to make sure that the fog capacity corresponds to the volume of the secured area, a fog volume setting is provided. Using this setting, the fog generator can control if an installed cartridge matches the volume of the area which needs to be protected (m³).



The specified volumes are based on a fog density according to



Grade 4

See also p. 31

Set up table: Fog volume of the area (M³).

Volume of the area	dip 1	dip 2	dip 3
40 - 60 m ³	OFF	OFF	OFF
60 - 80	OFF	OFF	ON
80 - 100	OFF	ON	OFF
100 - 120	OFF	ON	ON
120 - 140	ON	OFF	OFF
140 - 160	ON	OFF	ON
160 - 180	ON	ON	OFF
180 - 200	ON	ON	ON

Maximum fog ejection capacity is different for each Bandit model fog generator. See manual of the connected fog generator.

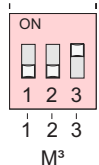
If a connected fog generator has a cartridge installed that differs from the dip-switch setting (Eg. 320-xx has a max. fog ejection capacity of 200 m³ for Grade 4 and 300 m³ for Grade 3) this will be indicated on the controller. See also p. 26 and p. 31.

Setting example:

To ensure fog ejection fills a space with a volume of 70 m³ to Grade 4, use cartridge 60-80 m³ and

put dip's at:
dip 1 = OFF
dip 2 = OFF
dip 3 = ON

+ press  Read dips



If a cartridge is placed in the fog generator which does not correspond to the volume set by the dip switches [M³], a fog ejection command will still allow the fog generator to activate this cartridge in any case. Of course, the result will not meet the stated expectations for filling the volume, because there may be not enough or too much fog produced.

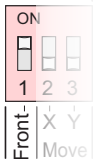
For more information about how to set the fog ejection volume, see instructions relating to the connected fog generator.

Prevent overfilling of the area !!!

- a) If there is no natural ventilation for more than 15 minutes (fully enclosed space), and / or
- b) the area is overfilled; the number of m³ indicated on the cartridge is significantly larger than the volume of the space to be protected, there is a chance that the fog may leave behind a thin film of condensation on smooth and / or cold surfaces.



As soon as there is ventilation this practically invisible and water-soluble thin film will evaporate within 24 hours.

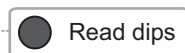
Dip switch: Front-LED fog generator [Front]



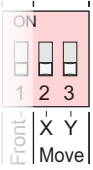
Operating this DIP switch disables the Front LED on the fog generator. This is to comply with the standards EN-50131-8 and parent EN 50131-1: 2006 clause 8.5.2. (no Indications of an I & HAS should be shown to the public (Access level 1)).

Dip Front: Front LED fog generator Y / N.

- ON - Front LED is operational, similar to the **Status LED**   Front (factory default).
- OFF - Front-LED is disabled (no visual status indication via fog generator in accordance with EN 50131-1)



Block: Motion control [Move]



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 show on its controller and activate the tamper output [Tamper]. Reset this message via the Tamper reset button. See also p. 15 and p. 16.

Sensitivity	dip X	dip Y
0% (off)	OFF	OFF
30% (normal)	OFF	ON
60% (sensitive)	ON	OFF
90% (very sensitive)	ON	ON

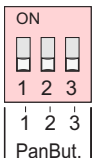
Detection sensitivity can be adjusted using the 2 DIP switches X and Y [Move].

→ 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.

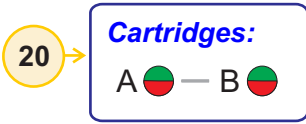
Block: Setting panic button [PanBut.]



This block of three DIP-switches is used to set the function of the panic button input [PanBut.]. For adjustment and settings, see p. 9, 10 and 11. See also: Example diagram 3 on p. 36.




Cartridges: Info about installed cartridges







A fog cartridge consists of the necessary fog liquid and a N² gas spring. Via its three electrical contacts, the fog generator can read the type of cartridge and/or activate the shut off valve.



There are different cartridge sizes available, the selected cartridge size (content of fog fluid) is dependent on the volume of the area which needs to be fogged according to:  Grade 4
See also p. 23 and p. 31.

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-green The cartridge is OK, but is not of the same type (size) as it is set via the dip switches on the controller. Check that the volume of the area to be protected is in agreement with the dip switch settings (See p. 23).
Replace the cartridge with one of the correct size (m³).
- 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.

Dispose of the empty cartridge responsibly in ordinary metal (Scrap) recycling.




Status: Status and fault indication.

21 →






Status:		Error	
	Front	Beep	
	Guard	Panic	
	Alarm	Fire	

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


 Front This three-color LED indicates the following states:


Front-LED	Indicated failure
	The heat exchanger is at normal operating temperature (OK)
	The LED flashes (approx. 1 Hz). The fog generator is warming up the heat exchanger to its operating temperature (From a cold state and depending on the model, this may take up to 30 min. time after the application of voltage). Until the operating temperature is reached the fog generator will not emit fog.
	Monitoring mode (Guard).
	Fog Generator is in the panic or alarm status.
	There is a problem or a failure, look at the controller. This indicates the problem (the red LED lights?).


→ As long as the fog generator is connected in monitoring status [Guard] by its controller, the green and red flashing is not shown by the Front LED on the fog generator.


Beep  The fog generator has a built-in beeper which beeps:
a) 3 sec. during a fog ejection
(Even if [Fog isolation  ] is active).
b) when connected to a panic button Bandit 820-xx, when the yellow "attention-button" on the panic button is pushed.
See also p. 9 and 10.
This yellow LED lights as long as the beeper beeps.

 Guard This yellow LED lights up as long as the fog generator monitoring mode is activated. See also p. 5.

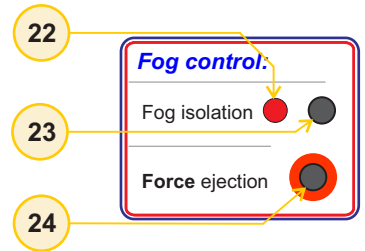
 As long as the fog generator is in monitoring mode no error message(s) are shown via its Front LED, therefore this will never (through blinking) betray a malfunction or problem to its surroundings.

 Alarm This orange LED lights while the fog generator is switched into the alarm mode. See also p. 6.

 Panic This orange LED lights while the fog generator is switched into panic mode. See also p. 9, 10 and 11.

 Fire This red LED lights while the fog generator is in Fire mode via its Fire input [Fire]. See also p. 8..

Fog control: Block and forcing fog ejections.



Blocking a fog ejection (fog isolation).

Fog isolation ● ● The red LED (22) shows whether the fog generator Y / N is switched into fog isolation status. The [normal ←→ fog isolate] is switched between Y / N using the push-button (toggle) (23). A controller is supplied factory-default with fog isolation ON.

- ☞ The active fog isolation is only displayed via the red LED (22), otherwise there is no indication to show this abnormal setting (all other functions, outputs and LED's operate on the controller as normal).
- ☞ The purpose of this fog-isolation option is to select this control 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.
- ☞ Once installed and in full operation make an additional check that the fog isolation function is indeed switched off (red LED (22) off).


Forcing a fog ejection:



Force ejection

Direct fog ejections are requested using this button .

This operation is carried out immediately, provided that:

- a) the fire status is not active, see p. 8
- b) the fog-isolation is not active, see p. 29.

-  Before carrying out a fog ejection:
- Notify all persons in the vicinity of the area
 - Notify the fire controller in the building (PAC fire alert).
 - You will use a cartridge, so make sure you have a replacement.


-  To comply with security industry good practice and professionalism, always conduct a full system test after the installation of a system to confirm its correct operation and performance.
-  A forced fog ejection only indicates that the fog generating component of the fog generator is functioning properly. This test does not confirm the correct wiring, control inputs or settings of the controller.
-

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 Visibility 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 EXAMPLES

Example diagram 1.

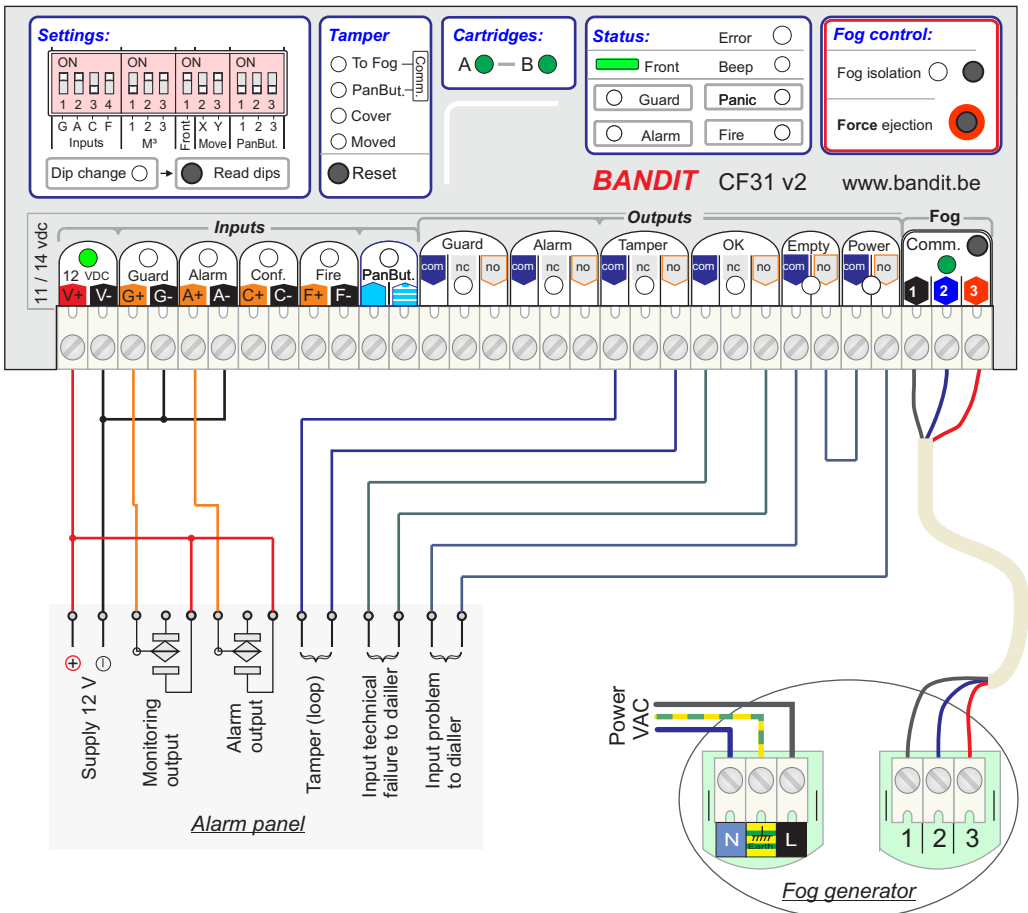
Easy connection to controlling alarm system.

Alarm panel with 2 relay outputs (monitoring and alarm)

1 dialler input (OK)

1 dialler input (Empty and / or power output).

Bandit fog generator with 100-120 m³ cartridges.

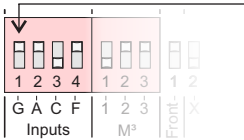


Description:


Alarm panel connections:

- 12 V supply: possibly through fuse 1AT (slow).
- Monitoring output: the output relay is open as long as the alarm panel is not monitoring and closed as long as it is in monitoring status.
- Alarm output: the output relay is open as long as the alarm panel is not in an alarm condition and switches to closed when in alarm.
- Tamper: Tamper is detected when the loop is interrupted.
- Dialler input 1: OKout output: Technical failures / problems are reported to the dialler when NO contact opens.
- Dialer input 2: Empty fog cartridge or "no power to fog generator". Both problems are reported together to the dialler when one or both NO contact ([Empty] or [Power]) opens.

Dip switch settings:



Dip G: is ON = the controller and the fog generator are in monitoring mode as long as there is 12 VDC provided to the Guard input [Guard].

As long as the controlling alarm system's monitoring contact closes, the orange Guard LED will light and **BANDIT** is in monitoring mode .



Dip A: is ON = the controller and the fog generator are in alarm mode (Incl. fog ejection) as long as there is 12 VDC provided to the alarm input [Alarm].

So when the alarm system closes its alarm contact, the orange



Alarm LED will light and **BANDIT** remains in alarm mode until removal of monitoring mode.

Dip C: is OFF = the confirmation input is not connected, so there is never going to be 12 VDC on the confirmation input [Conf.]. The controller thus receives continuous acknowledgement to switch to alarm mode.

Dip F: is ON = the fire input is not connected, so there is never going to be 12 VDC on the Fire input [Fire]. So the fire input is never active to thus prevent a fog ejection.

Dip switch block M³ is OFF-ON-ON as an example, the fog generator is programmed for a fog ejection and associated cartridges of 100 to 120 m³ (See p. 23).

Example diagram 2.

Easy connection to controlling alarm system, with confirmation sensor.

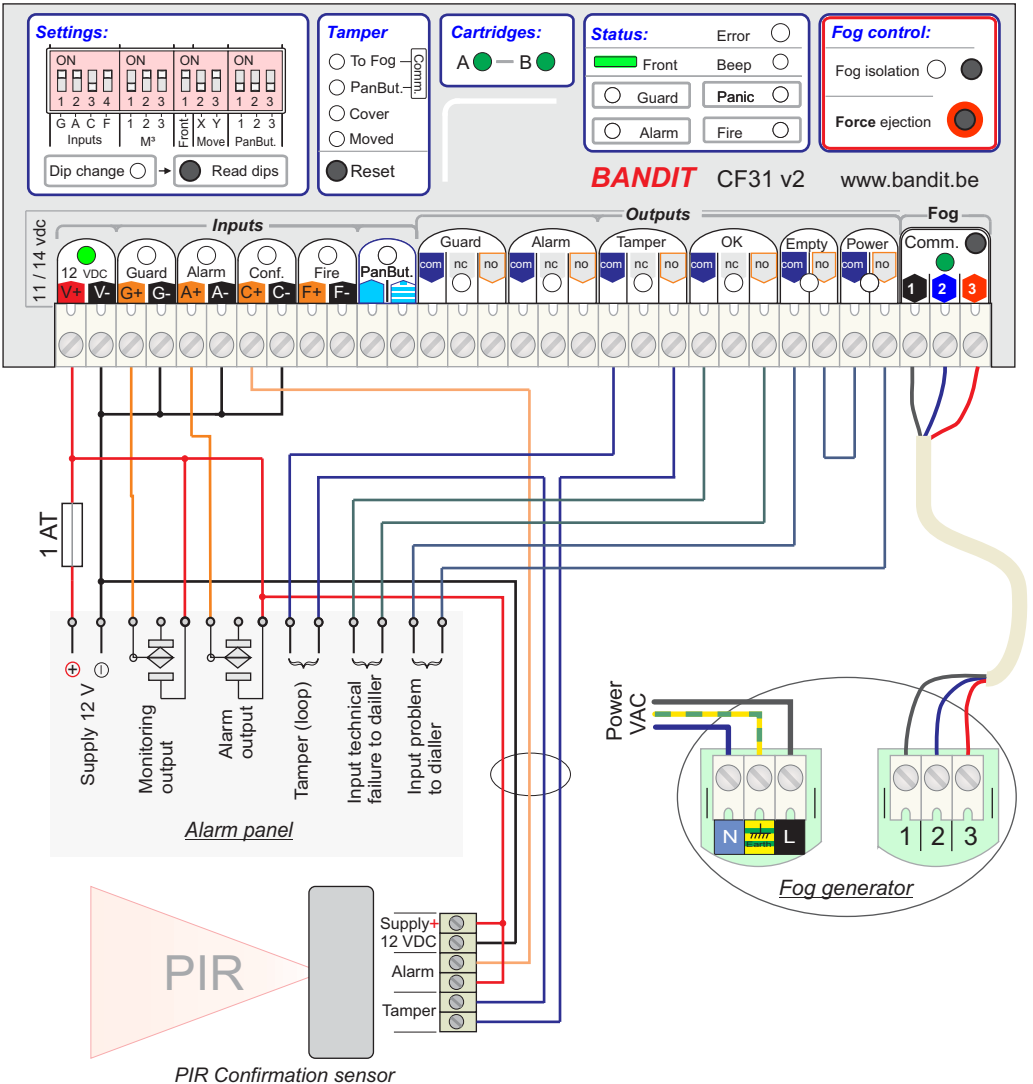
Alarm panel with 2 relay outputs (monitoring and alarm)

1 dailler input (OK)

1 dailler input (Empty and / or power output).

Bandit fog generator 100-120 m³ cartridges.

Ancillary devices: PIR sensor as a confirmation sensor.



Description:

Alarm panel connections:

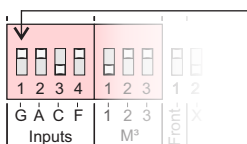
- 12 V supply: possibly through fuse 1 AT.
- Monitoring output: the output relay is open as long as the alarm panel is not monitoring and closed as long as it is in monitoring mode.
- Alarm output: the output relay is open as long as the alarm panel is not in an alarm condition and switches to closed when in alarm.
- Tamper: Tamper is detected when the loop is interrupted.
- Dialler input 1: OKout output: Technical failures / problems are reported to the dialler when NO contact opens.
- Dialler input 2: Empty fog cartridge or "no power to fog generator". Both problems are reported together to the dialler when one or both NO contact ([Empty] or [Power]) opens.



PIR Confirmation sensor:

A typical PIR or better dual-technology (PIR / radar) sensor.


Objective: To delay the alarm status until a local zone detector confirms the burglary signal of the alarm locally. The connected PIR / radar detector will then open its contacts and the 12 VDC on the confirmation input [Conf.] is removed, and consequently the alarm mode is confirmed.

Dip switch settings:




Dip G: is ON = the controller and the fog generator are in monitoring mode [Guard] as long as there is 12 VDC provided to the Guard input [Guard]. When the controlling alarm system's monitoring contact closes, the orange Guard LED will light and **BANDIT** is in monitoring status  .

Dip A: is ON = the controller and the fog generator are in alarm mode (Incl. fog ejection) as long as there is 12VDC provided to the alarm input [Alarm].

So when the alarm system closes its alarm contact, the orange Alarm LED will light and **BANDIT** is in the alarm status until removal of the monitoring status. 

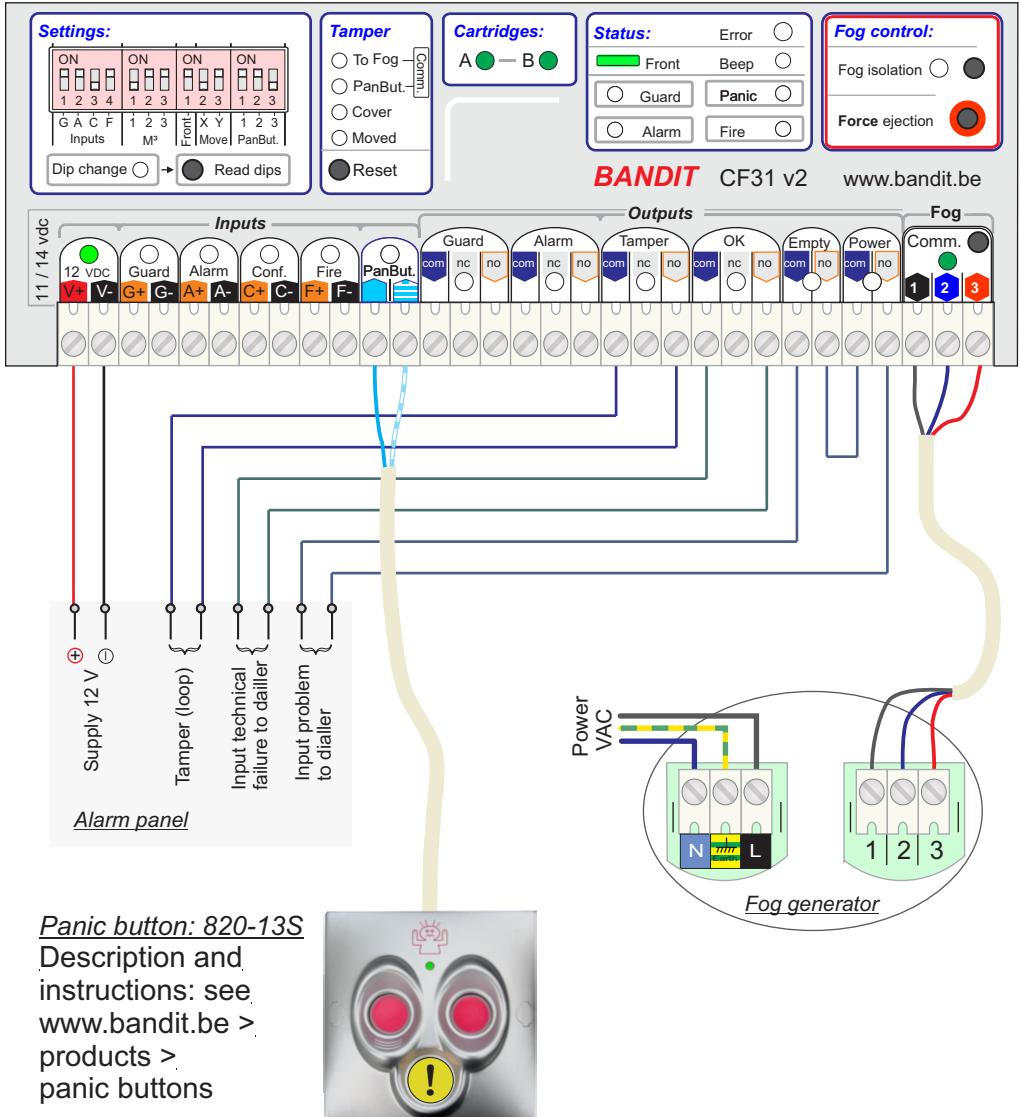
Dip C: is OFF = when the connected sensor remains inactive, its alarm contacts are closed, so there is 12 VDC on the Confirmation input [Conf.] and the orange LED Conf. is lit

When the sensor detects motion, it opens its alarm contacts and so removes the 12 VDC over [Conf.], so confirmation to switch to the alarm mode. 

Example diagram 3.

Easy connection to controlling alarm with **BANDIT** panic button 820-xx and dialler

- Alarm panel with 1 dailler input (OK)
- 1 dailler input (Empty and / or power output).
- Bandit fog generator 100-120 m³ cartridges.
- Ancillary devices: **BANDIT** panic button 820-xx.

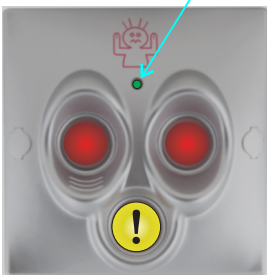



Description:

Alarm panel connections:

- 12V supply: Eventually via fuse of 1AT
- Sabotage loop: Sabotage is detected once the loop is interrupted.
- Dialler input 1: OKout output: Technical failures / problems are reported to the dialler when NO contact opens.
- Dialler input 2: Empty fog cartridge or "no power to fog generator". Both problems are reported together to the dialler when one or both NO contact ([Empty] or [Power]) opens.

Panic button: **BANDIT** 820-13S:



- Once the two red push buttons are simultaneously pushed in, panic mode will start (see also p.11)
- As long as the yellow button is pushed in, the built-in buzzer of the fog generator will buzz. This function is intended to draw the attention of employees who are in close proximity.
- The three colour infoLed displays the same as the **Status** (21) front Led  Front. See also p. 27.

Dip switch settings:

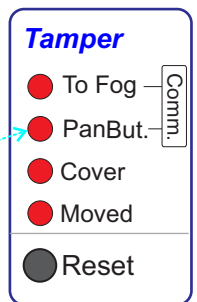
Settings:



Dip [PanBut.] 1 is ON = **BANDIT** panic button attached.
The dip's [PanBut.] 2 ON and 3 OFF = background lighting of panic button 50% dimmed. More info: see p. 10.



Once Dip[PanBut] 1 is read as ON, the controller will assume that there is a Bandit panic button connected. This is why the controller also controls the connection to, and the working of the panic button. When an error occurs this is displayed via: See also p. 15.



BANDIT

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in active security

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186 mm / 7.32 In

