MOBEYE CM PRODUCTS

How to understand the inputs

Most Mobeye "CM" products have 2x NO/NC alarm inputs. This document tries to explain the exact working of these inputs and how sensors or devices can be connected to them.

The document contains four sections:

1. Standard NO/NC contacts
2. Measurement of the input status
3. What if the output signal of your device is a voltage signal
4. What if the sensor wire seems to disrupt the signal

1 Standard NO/NC contacts

Any "normally open" (NO) or "normally closed" (NC) contact can be attached to one of the inputs. The + and – are irrelevant for these " potential-free" sensors. In the software settings the input can be set as NO or NC.
An example of a normally closed contact is a magnet door contact. If the door is closed, both parts of the magnets are put together and form a wired circle, which makes the wiring "closed". Once opened, the circle has been interrupted, which is interpreted as being "open". The "normally closed" input will detect this change and initiate an alarm event.

Examples of NO or NC input signals:
- float sensor (reed contact)
- door / window magnet contact
- relay contacts (dry mechanical contacts)

2 Measurement of the input status

In order to measure the (alarm or stand by) status of an input, 4 times per second a pull-up resistor (20kΩ) tries to pull up the voltage to a value of 3V. Each measurement takes about 200 µSec . The measured voltage over the input defines the status of the input: open or closed The software setting *input type* will influence the interpretation of this NO or NC measurement.

1 Measured signal between 0V and 1V
This signal is seen as "closed".

2 Measured signal between 1V and 2V
This signal is not interpreted in a correct way, it can be "open" or "closed".

3 Measured signal between 2V and 48V
This signal is seen as "opened".

NB: All – pins (12VDC, IN1, IN2) are interconnected with the ground.

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3 How to connect the wires?

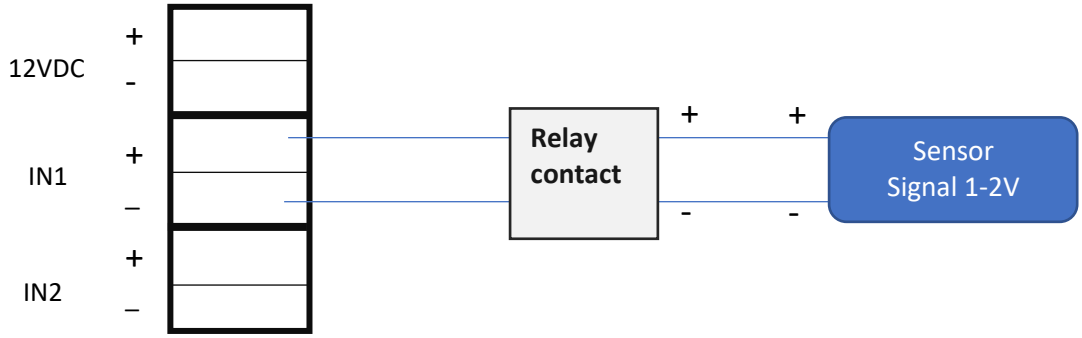
Depending on the output signal of the sensor different wiring schemes are applicable:

1 Potential free sensors

For the group of potential free, volt free or dry contacts the 2 sensor wires can be attached to the NO/NC pins. The + and – are irrelevant.

2 Voltage signals between 1V - 2V (versus 0V in reverse status)

If the output signal has a voltage between 1V and 2V (versus 0V in the reverse status), the output signal has to be converted to potential free signal. This can be done by the placement of an external relay between the wires and the inputs of the Mobeye device. The potential free outputs of the relay contact can be connected to the Mobeye inputs.



3 Alarm signal between 2V - 48V (versus floating in non-alarm status)

If the output signal has a voltage between 2V and max. 48V and a floating contact in the reverse status, the wires can be connected to the Mobeye inputs in two ways:

3.1 Use of external relay contact between the wires and the inputs of the Mobeye device. The potential free outputs of the relay contact can be connected to the Mobeye inputs. Can also be used if the reverse status keeps a voltage > 2V. See 2 for the wiring scheme.

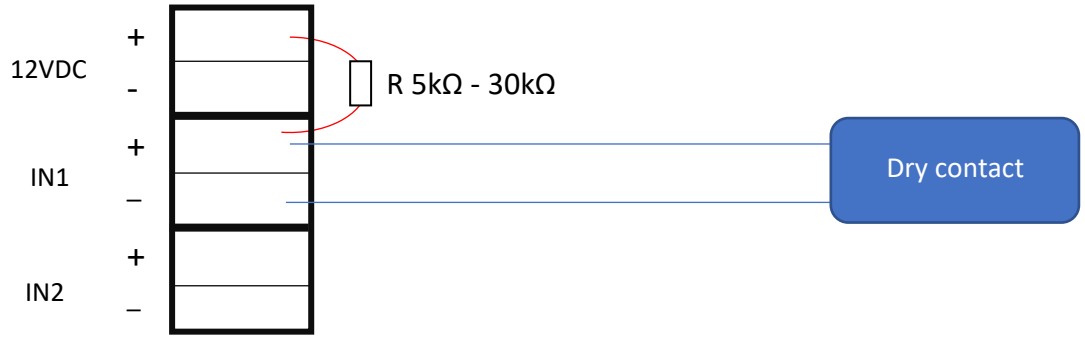
3.2 Use of a 5kΩ resistor to remove the floating effect by connecting the resistor to + and -.

4 What if the wire does not transmit the signal correctly?

The length and thickness of the wire can prevent the pull-up resistor to pull to 3V fast enough. The signal will keep reporting the status “closed” or false alarms will occur. Standard rule is to use thin cables for long lengths, to decrease the wire’s capacity. It is also possible to solve the problem by following wiring:

Wiring if powered externally

Place (min.) 5kΩ (max. 30kΩ) resistor between the 12VDC + and IN1 +. This results in a continuous 12V signal for the input signal, which will be measured as ‘open’. Once the sensor is closed the volt will drop to 0V.



Wiring if battery-powered

Connect the two inputs to each other by placing a wire between the IN1 + and IN2 +. In this way the internal resistors will be doubled, which halves the time it needs to rise to 3V.
Take care: in this way both the inputs IN1 and IN2 will send an alarm message. This can be stopped by deleting one of the action rules (see other help sheet).