FAQ: HOW DO I REALISE LOGICAL AND ADVANCED FUNCTIONS IN VELBUS?

For a general explanation about Velbus, please consult the installation manual at www.velbus.eu.

Always use the latest version of Velbuslink. This can be downloaded for free at www.velbus.eu > Support > Downloads.

1 QUESTION

I want to realize logical (AND, OR, NOT, ...) and advanced functions in Velbus. How do I start?

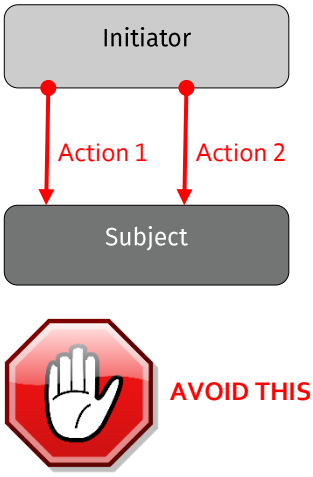
2 ANSWER

To realize logical functions and advanced programming, we use combinations of actions in Velbuslink, often using one or more virtual relays.

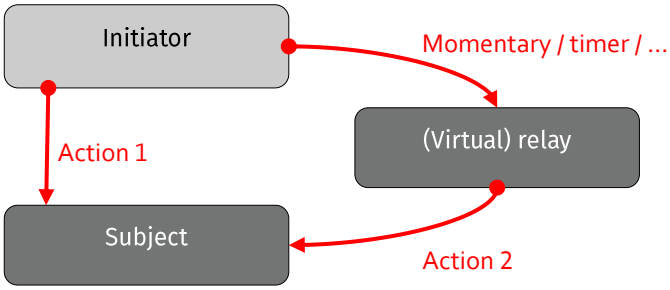
Logical functions can also be programmed in Velbus Home Center server in case there's one available (see "Home Center Logic Guide" of Home Center itself). In this document, we only discuss Velbuslink, not Home Center.

For most of the advanced functions, there's more than one possible solution. Below you can find some examples.

Velbus allows to define multiple actions between the same pair ***initiator-subject***. To avoid any conflicts, it's better to use a (virtual) **intermediate relay** where possible (see diagram below).



AVOID THIS



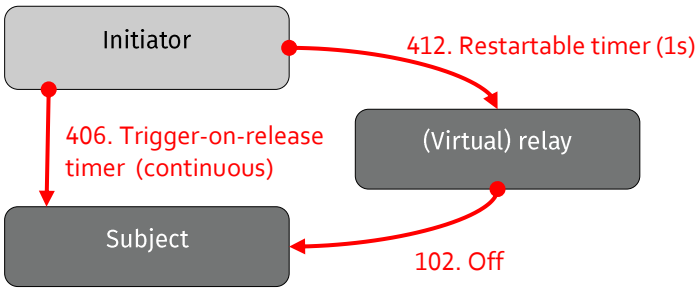
RECOMMENDED

2.1 NOT-FUNCTION (“INVERT”)

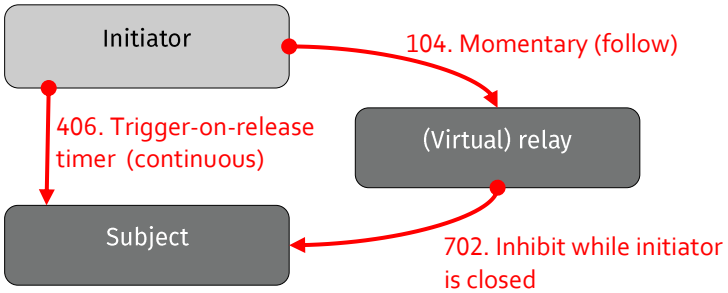
With the NOT-function, the subject is always in the opposite state of the initiator:

- when initiator is on, subject is off
- when initiator is off, subject is on

2.1.1 Solution 1



2.1.2 Solution 2



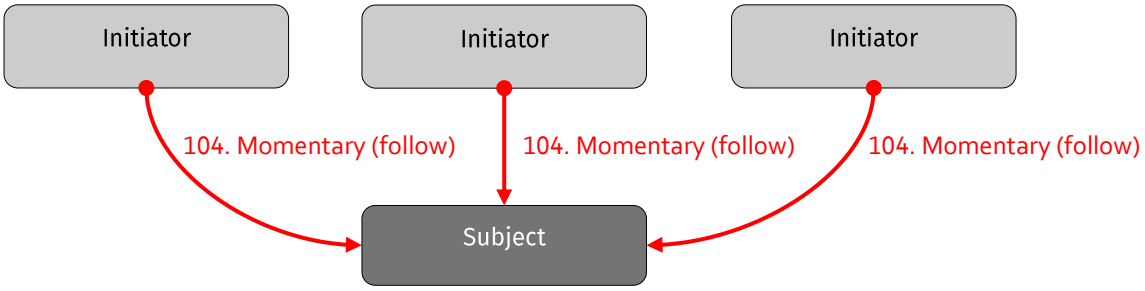
With solution 2, subject cannot be activated as long as initiator is on, not even by another trigger on the bus (because it is inhibited). With solution 1, it can.

2.2 OR-FUNCTION

As long as one of the initiators is on, subject is on. Only when all of the initiators are off, subject is off.

Example: as long as one of the lights outside is on, a feedback light is on. Only when all of the lights are off, the feedback light is off.

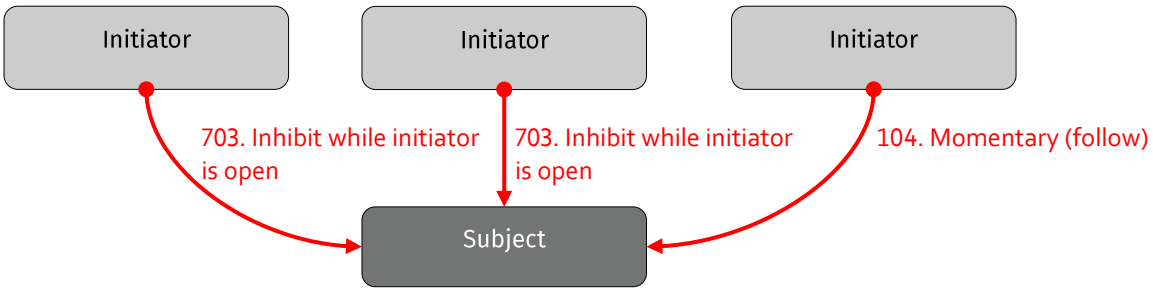
To realize the OR-function, simply connect all of the initiators to the subject using the action “104. Momentary (follow)”.



2.3 AND-FUNCTION

Only when all of the initiators are on, subject is on. As long as one of the initiators is off, subject is off.

Example: when both motion sensor and twilight sensor are on, a lamp is lit.



2.4 NAND-FUNCTION

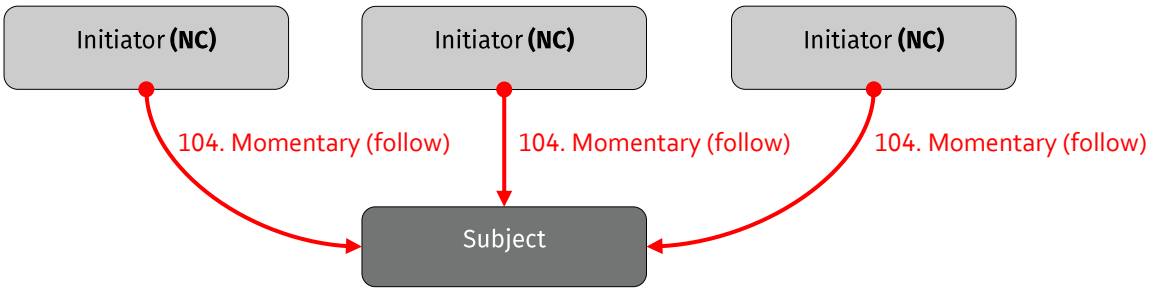
As long as one of the initiators is off, subject is on. Only when all of the initiators are on, subject is off.

Example: alarm for window or door contacts. When all of the contacts are closed (windows and doors closed), the alarm should stay off. If one of the contacts opens, the alarm should go off.

2.4.1 Solution 1: using “normally closed” contacts

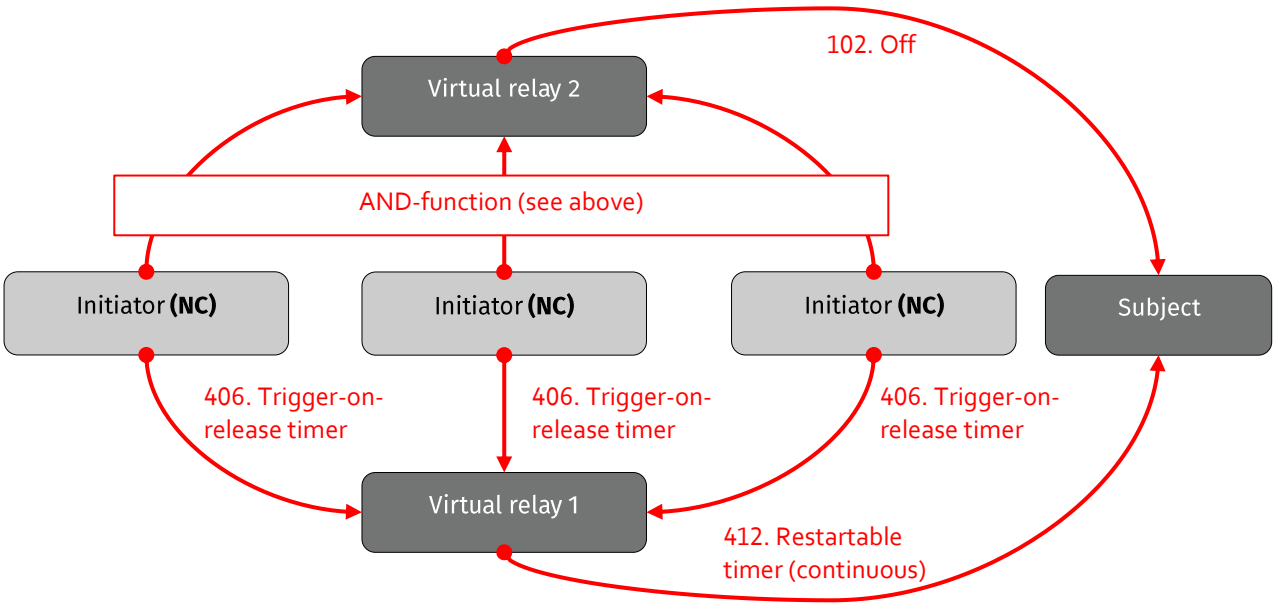
The easiest way to realize the NAND-function is to use normally closed contacts. Contacts can be put on “normally closed” (NC) as follows: right-click in Velbuslink on the relevant module, choose “configure module” and double click in the tab “NO/NC” on the channel you wish to configure.

To realize the NAND-function, we put the initiators on “NC” (normally closed) and connect everything like an OR-function.



2.4.2 Solution 2: using virtual relays

A second way to realize the NAND-function is using virtual relays as an intermediary.

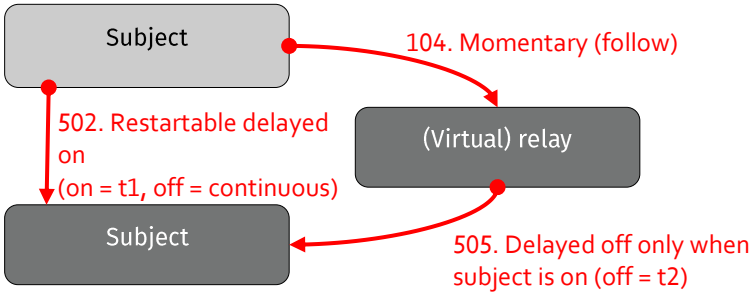


2.5 DELAYED "MOMENTARY (FOLLOW)"

Subject must follow initiator, but with a time delay.

- When initiator turns on, subject turns on too, but with a delay t1.
- When initiator turns off, subject turns off too, but with a delay t2.

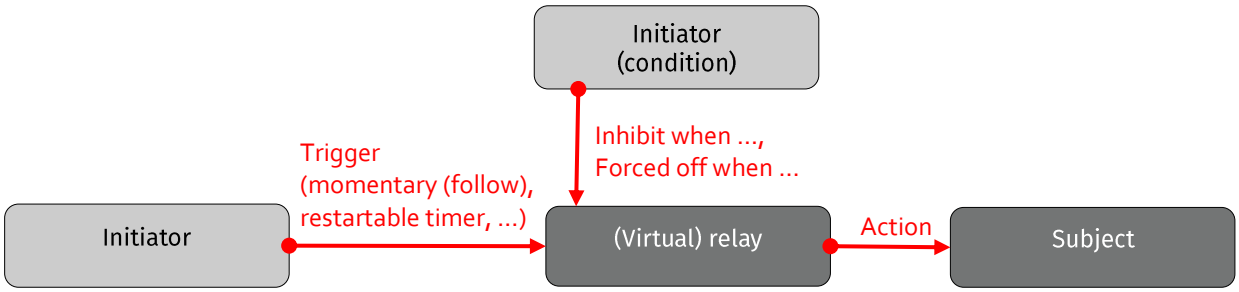
Example: one minute after the light in the toilet has been switched on, the ventilator turns on.



2.6 IF-THEN FUNCTIONS (CONDITIONAL OPERATION)

In an IF-THEN scenario, the connection between an initiator and a subject can only be active when a certain condition has been fulfilled. Conditions can be realized using (virtual or real) intermediate relays. Often, one of the "inhibit" or "force" actions will be used.

2.6.1 General principle



Depending on the situation many variations on this basic principle can be used, in combination with multiple (virtual) intermediate relays and other connections when needed. The actions have to be adjusted to the needed functionality.

2.6.2 Example

The on-button of a light works only when the twilight sensor is active (channel closed).