# Automation manual for 2N IP intercoms


## Configuration Manual

**Firmware:** 2.32
**Version:** 2.32

www.2n.cz

The 2N TELEKOMUNIKACE a.s. is a Czech manufacturer and supplier of telecommunications equipment.

The product family developed by 2N TELEKOMUNIKACE a.s. includes GSM gateways, private branch exchanges (PBX), and door and lift communicators. 2N TELEKOMUNIKACE a.s. has been ranked among the Czech top companies for years and represented a symbol of stability and prosperity on the telecommunications market for almost two decades. At present, we export our products into over 120 countries worldwide and have exclusive distributors on all continents.



2N TELEKOMUNIKACE a.s. administers the FAQ database to help you quickly find information and to answer your questions about 2N products and services. On www.faq.2n.cz you can find information regarding products adjustment and instructions for optimum use and procedures „What to do if...".

2N TELEKOMUNIKACE a.s. hereby declares that the 2N product complies with all basic requirements and other relevant provisions of the 1999/5/EC directive. For the full wording of the Declaration of Conformity see the CD-ROM (if enclosed) or our website at www.2n.cz.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The 2N TELEKOMUNIKACE a.s. is the holder of the ISO 9001:2009 certificate. All development, production and distribution processes of the company are managed by this standard and guarantee a high quality, technical level and professional aspect of all our products.

# Content:

# 1. Terms and Symbols

The following symbols and pictograms are used in the manual:

**Safety**

- Always abide by this information to prevent persons from injury.

**Warning**

- Always abide by this information to prevent damage to the device.

**Caution**

- Important information for system functionality.

**Tip**

- Useful information for quick and efficient functionality.

**Note**

- Routines or advice for efficient use of the device.

# 2. 2N® IP Automation Configuration

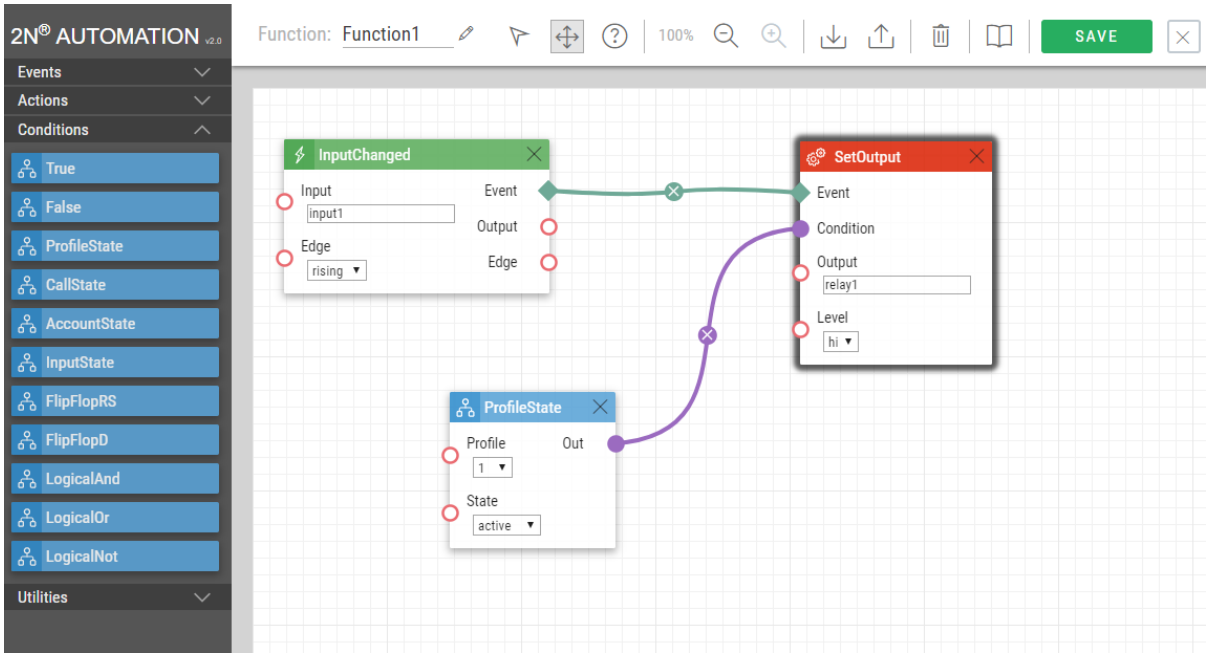
2N IP intercoms provide flexible setting options depending on the user's requirements. If the standard setting options (switch/call settings, e.g.) are insufficient for the intended use, apply a special programmable interface – Automation. Typically, Automation is helpful for applications that require rather complex interconnection with the third parties' systems.

**Note**

- Automation works only with a valid Enhanced Integration or Gold licence key.

Some 2N IP intercom models are equipped with a number of digital inputs and outputs, most of which can be configured like standard 2N IP intercom switches (refer to the Switches subsection). You can make use of all of these Automation inputs and outputs in variable combinations.

Automation helps you combine the Events arising in the system (such as key pressing, RFID card use, digital input status change, etc.) with specific Actions (such as digital output activation, user sound playing, call, etc.) as necessary. Moreover, the execution of actions can be bound by selected Conditions (time profile state, logic input state, e. g.).

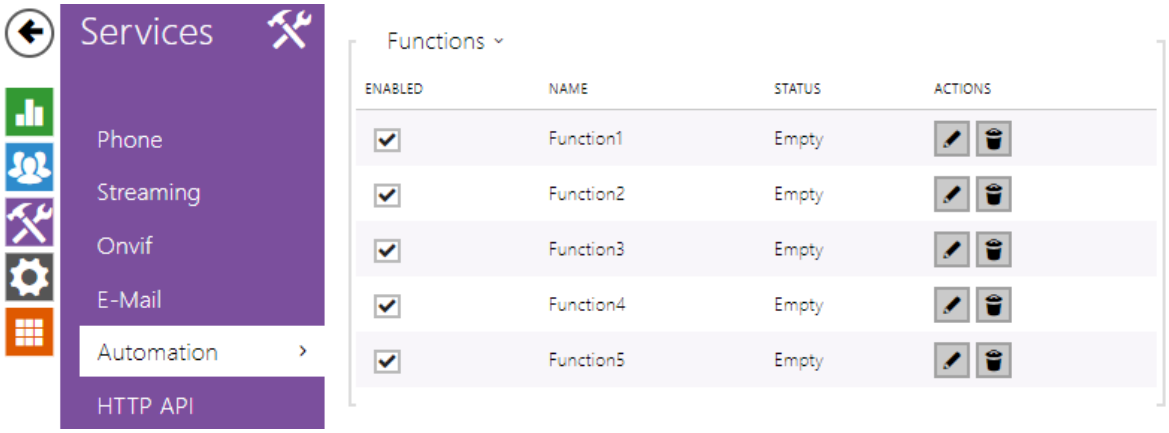



The figure above shows a typical interconnection of the Event, Action and Condition blocks. It holds true in general that an action is always tied with a selected event and is executed when a selected condition is met. The condition is optional and if none is selected, the action is executed whenever the assigned event occurs. **Automation** defines a number of events, actions and conditions to be further set. Refer to the subsections below for the full list.

The example shown in the figure above can be interpreted as follows: The **SetOutput** action (digital output setting) is executed if the **InputChanged** event (logic input1 change from log 0 to log 1) arises and the **Profile** (active profile 1) condition is met.

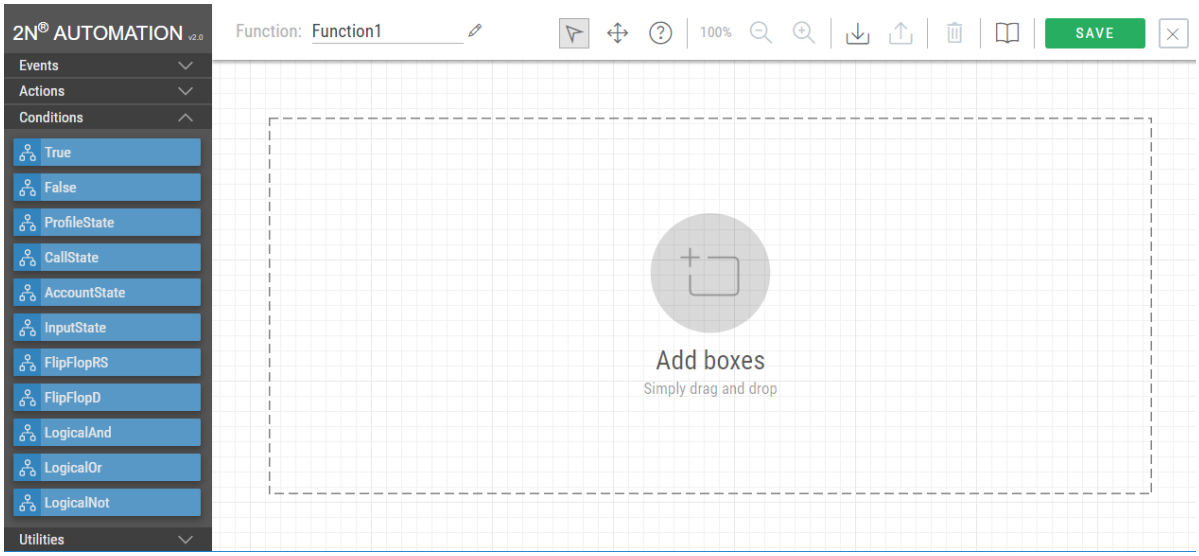
# Automation Control

- **Bookmark Function** – 2N IP intercom allows up to 30 blocks at 5 independent pages to be created and interconnected (regardless of the block type – events, actions and conditions). Multiple actions can be assigned to an event or condition. Thus, you can create 15 actions and assign them to 15 events or create 29 actions and assign them to 1 event, for example.
  - **Enabled** – function enable
  - **Name** – function name
  - **State** – function state: Started/Stopped/Empty/Error
  - **Action** – click  to set the function and  to delete the function.



## Automation Controls

Refer to the figure below for an empty Automation function.




**Function block column** – includes four groups of function blocks: **Events, Actions, Conditions, Utilities**. Drag and drop the items to the desktop.

**Toolbar** – includes function controls

| Pictogram | Description |
|---|---|
| Function: Function1 | function name |
| | function editing mode |
| | function block moving mode |
| | help mode for function blocks. Click a block to display the block help. |
| 68% | magnification |
| | zoom out/in |
| | import/export |

| | |
|---|---|
|  | block deletion |
|  | Automation manual reference |
| SAVE | save |
|  | quit function editing |

- The **desktop** helps you place and interconnect the function blocks.

# Block Parameter Settings

Select the required Event (Event.xxx), Action (Action.xxx) or Condition (Condition.xxx) in the **Object type** column. Set one or more parameters for the blocks in the respective row of the **Parameters** column – refer to the block describing subsections below for the supported parameters. Enter the block parameter value into the appropriate field below the parameter name.

The changes will not be executed until you press the **Save** button in the right-hand upper corner of the page .

Click Save to save the changes. If the function setting is correct, the information is displayed in a green field. If incorrect (invalid name/value or missing mandatory parameter), error information is displayed in a red field. Wrong values are marked with  and the parameter name is red. **Automation** works only if all the available blocks are configured properly. If not, **Automation** is in the Error state.

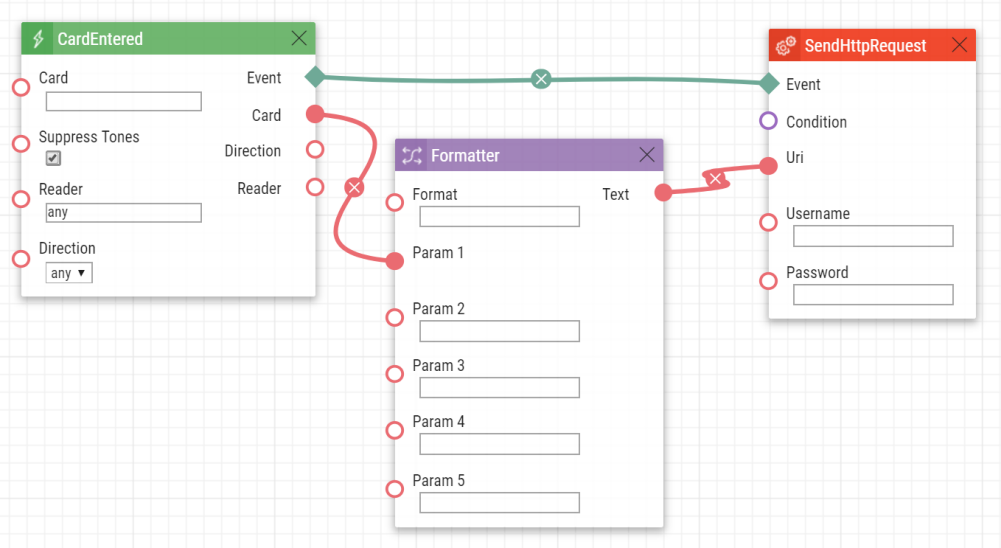
Most of the blocks include parameters (Event, Condition, StartEvent, e.g.) that refer to other blocks. To interconnect the blocks, click on the output of one block and drag and drop it to the input of another.

**Tip**

- The Upper-Lower case need not be respected in the parameter names.
- Some block parameters are optional. If you do not enter an optional parameter in the block definition, the default value will be applied.

# Use of Output parametres

The event block output parameters help transfer additional information between blocks – send the detected card ID via HTTP to another device, use the parameters received via HTTP for setting parameters of a tied action and so on. Use Formatter for this purpose. The output parametres values are updated whenever an event is generated. A value can be used for other blocks too thanks to interconnection.




To move an output parametr from Events to Formatter, connect the output parameter with Param1. This output parameter is only available via addressing in the Format field {outputparameter_number} .

- Example of Formatter use for ID card transfer:
  - Format: http://1.1.1.1./card={1 }
  - Param1: connected to CardEntered card block output
  - Text: connected to SendHttpRequest Uri block input

Every event defines the **TimeStamp** and **Count** output parameters.

**TimeStamp** contains encoded date and time of the last event generation in the Unix Time format (second count from 00:00:00 1.1.1970).

**Count** contains the count of event generations after the device start or last block configuration change. The output parameter increases by 1 after each event generation.

Refer to the following subsections for more output parameters with specific functions.

**Tip**

- The Upper/Lower case is not be respected in the output parameters names.

**Caution**

- You cannot use the output parameters in the block relation defining parameters, i.e. Event, Condition, etc.

**Caution**

Warning

In order to ensure the full functioning and guaranteed outputs we strongly recommend a verification of the timeliness of version of product or facility already during the installation process. The customer takes into consideration that the product or facility can achieve the guaranteed outputs and be fully operational pursuant to the producer's instructions only by using the most recent version of product or facility, which has been tested for full interoperability and has not been determined by the producer as incompatible with certain versions of other products, only in conformity with the producer's instructions, guidelines, manual or recommendation and only in conjunction with suitable products and facilities of the other producers. The most recent versions are available on the website https://www.2n.cz/cs_CZ/, or specific facilities, depending on their technical capacity, allow updating in the configuration interface. Should the customer use any other version of product or facility than the most recent one, or the version that has been determined by the producer as incompatible with certain versions of other producers' products of facilities, or the product or facility in a way incompatible with the producer's instructions, guidelines, manual or recommendation or in conjunction with unsuitable products or facilities of the other producers, he or she is aware of all potential limitations of functionality of such a product or facility and all relating consequences. Should the customer use any other than the most recent version of the product or facility, or the version that has been that has been determined by the producer as incompatible with certain versions of other producers' products of facilities, or the product or facility in a way incompatible with the producer's instructions, guidelines, manual or recommendation or in conjunction with unsuitable products or facilities of the other producers, he or she agrees that the company 2N TELEKOMUNIKACE a. s. is not liable neither for any limitation of such a product's functionality, nor for any damage, loss or injury relating to such a potential limitation of functionality.

# 3. Events

Automation defines the following types of events:

- AudioLoopTest – audio test performed
- CallStateChanged – call state changed
- CardEntered – RFID card entered
- CardHeld – RFID card held
- CodeEntered – numeric code entered
- Delay – delay defined
- DoorOpenTooLong – excessively long door opening
- DtmfEntered – DTMF numeric code detected in call
- DtmfPressed – DTMF code received in call
- FingerEntered – fingerprint reader authentication
- HttpTrigger – HTTP command received
- InputChanged – digital input changed
- KeyPressed – key pressed
- KeyReleased – key released
- MobKeyEntered – Bluetooth reader authentication
- MotionDetected – motion detected by the camera
- MulticastTrigger – command for multiple devices received
- OnvifVirtualOutputChanged – event received from VMS
- NoiseDetected – noise detected by the microphone
- RegistrationStateChanged – SIP account registration state changed
- Rebooted – device start/restart detected
- SilentAlarm – silent alarm activated
- Time – specific time (alarm clock)
- Timer – periodical event timer
- UnauthorisedDoorOpen – unauthorised door opening
- UserAuthorized – user authorisation
- OutputChanged – output changed

See below for details on the events and their Input parameters and use.

# AudioLoopTest

The **AudioLoopTest** block defines the event generated after the loudspeaker and microphone test (Audio Loop Test) is performed. The subsequent actions are executed based on the test result.

## Input parameters

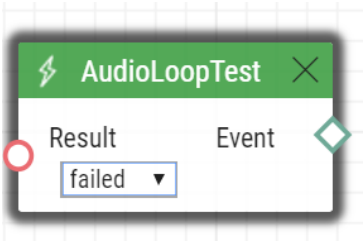
- **Result** – this parameter specifies the required test result.
  - Valid values:
    - **any** – the event is generated whenever the test is performed (regardless of the result).
    - **passed** – the event is generated whenever the test is successful.
    - **failed** – the event is generated whenever the test fails.
  - The parameter is optional, the default value is **failed**.

## Output parameters

- **Event** – the Event output to invoke the connected Event or Action.

## Example

An event generated after the audio loop test if the test result is negative (i.e. the microphone or loudspeaker is out of order):



# CallStateChanged

The CallStateChanged block defines the event generated by a call state change (call ringing, call connection, call termination, etc.).

## Input parameters

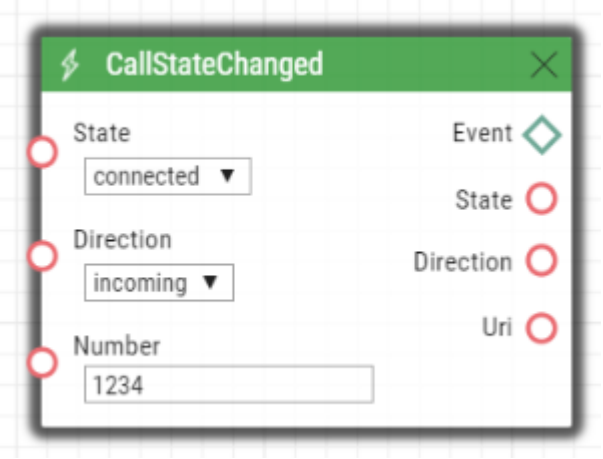
- State – define the call state change.
  - Valid values:
    - ringing – ringing start
    - connected – successful call connection
    - terminated – call termination.
- Direction – define the call direction.
  - Valid values:
    - incoming – incoming calls
    - outgoing – outgoing calls
    - any – both directions.
  - The parameter is optional, the default value is any.
- Number – define the identifier (phone number, IP address) to be matched against the caller's identifier to make the event happen. Enter multiple comma-separated numbers if necessary. A non-completed value is the same as any.
  - This parameter is optional, the default value is any.

## Output parameters

- Event – the Event output to invoke the connected Event or Action.
- State – the detected call state which generated this event. The options correspond to the State parameter.
- Direction – the detected call direction which generated this event. The options are incoming or outgoing.
- Uri – the output containing the opponent's complete SIP uri.

## Example

Event generated by answering a call from number 1234:



# CardEntered

The **CardEntered** block defines the event generated by tapping (swiping) of the RFID card with the defined ID (for RFID card reader models only).

## Input parameters

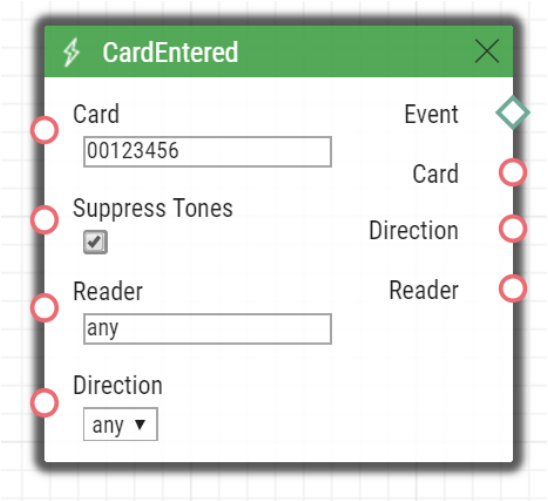
- **Card** – define the RFID card ID; refer to the Card Reader subsection in the **Configuration Manual**.
  - Valid values:
    - **valid** – any valid card (included in the intercom card list)
    - **invalid** – any invalid card
    - **any** – any valid or invalid card
    - **< > (empty value)** – the event will not be generated
    - Or, complete the card ID manually.
- **SuppressTones** – suppress sound signalling initiated by detection of an invalid card. The parameter is optional.
  - Valid values:
    - **disabled** – tones are not suppressed
    - **enabled** – tones are suppressed (default value).
- **Reader** – define the card reader / module to be used
  - Valid values:
    - **internal_cardreader** – internal card reader (**2N® IP Vario, Force**)
    - **external_cardreader** – external card reader (**2N® IP Vario, Force**)
    - **any** – any reader / module
    - Or, complete the module name manually as configured in the Module Name parameter in the Hardware / Extenders / Modules / Used module menu (**2N® IP Verso**).
  - The parameter is optional, the default value is **any**.
- **Direction** – define direction
  - Valid values:
    - **in** – reader with defined incoming direction
    - **out** – reader with defined outgoing direction
    - **any** – both directions
  - The parameter is optional, the default value is **any**.

## Output parameters

- **Event** – the Event output to invoke the connected Event or Action.
- **Card** – ID of the detected card which was the last to generate this event.
- **Direction** – configured direction at the card reader (**in, out, any**).
- **Reader** – name of the module which was used (**internal_cardreader**, **external_cardreader**, **<module_name>**).

## Example

Event generated by entering of the card with ID 00123456:



# CardHeld

The **CardHeld** block defines the event generated by holding of the RFID card with the defined ID (for RFID card reader models only). The event is generated by holding the RFID card for 4s at the RFID card reader.

## Input parameters

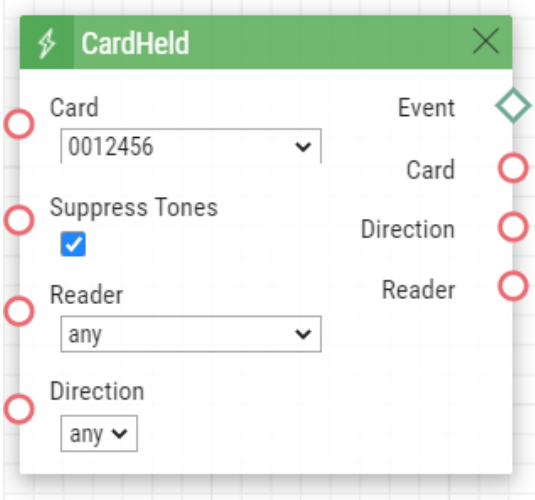
- **Card** – define the RFID card ID; refer to the Card Reader subsection in the **Configuration Manual**.
  - Valid values:
    - **valid** – any valid card (included in the intercom card list)
    - **invalid** – any invalid card
    - **any** – any valid or invalid card
    - **< > (empty value)** – the event will not be generated
    - Or, complete the card ID manually.
- **SuppressTones** – suppress sound signalling initiated by detection of an invalid card. The parameter is optional.
  - Valid values:
    - **disabled** – tones are not suppressed
    - **enabled** – tones are suppressed (default value).
- **Reader** – define used card reader / module
  - Valid values:
    - **internal_cardreader** – internal card reader (**2N® IP Vario, Force**)
    - **external_cardreader** – external card reader (**2N® IP Vario, Force**)
    - **any** – any reader / module
    - Or, complete the module name manually as configured in the Module Name parameter in the Hardware / Extenders / Modules / Used module menu (**2N® IP Verso**).
  - The parameter is optional, the default value is **any**.
- **Direction** – define direction
  - Valid values:
    - **in** – reader with defined incoming direction
    - **out** – reader with defined outgoing direction
    - **any** – both directions
  - The parameter is optional, the default value is **any**.

## Output parameters

- **Event** – the Event output to invoke the connected Event or Action.
- **Card** – ID of the detected card which was the last to generate this event.
- **Reader** – name of the module which was used (**internal_cardreader**, **external_cardreader**, **<module_name>**).
- **Direction** – configured direction at the card reader (**In, Out, Unspecified**).

## Example

Event generated by holding of the card with ID 0012456:



# CodeEntered

The CodeEntered block defines the event generated by entering of a numeric code and confirmation with the * key (for numeric keypad models only).

## Input parameters

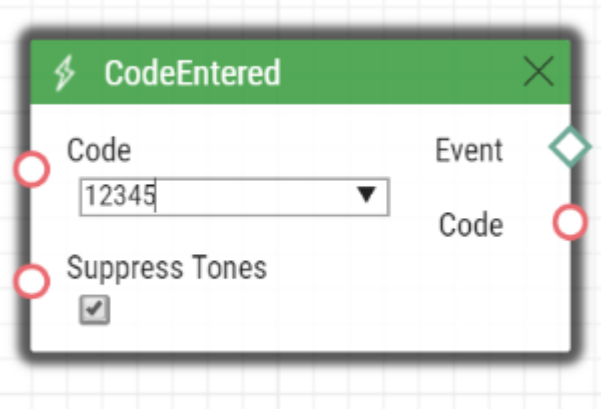
- Code – define the numeric code.
  - Valid values:
    - numeric code – 12345, e.g.
    - valid – any valid code
    - invalid – any invalid code
    - any – any valid or invalid code
    - < > (empty value) – the event will not be generated
- SuppressTones – suppress sound signalling initiated by receiving of an invalid numeric code. The parameter is optional.
  - Valid values:
    - disabled – tones are not suppressed
    - enabled – tones are suppressed (default value).

## Output parameters

- Event – the Event output to invoke the connected Event or Action.
- Code – the received numeric code which was the last to generate this event.

## Example

Event generated by entering code 12345* on a keypad:



# Delay

The **Delay** block defines the event generated with a defined delay after another specified event. Define this event to delay the response to the other event by a defined time interval (Delay).

## Input parameters

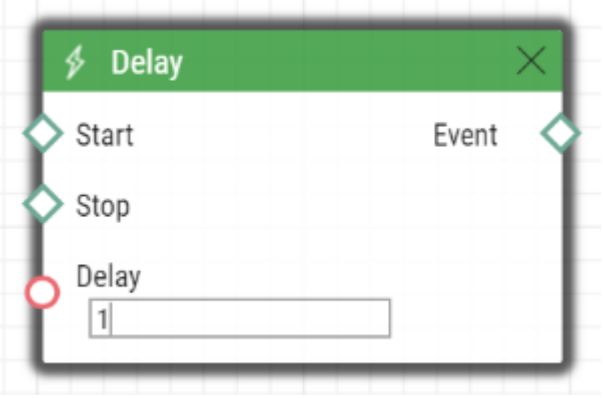
- **Start** – define the event that starts the delay.
- **Stop** – define the event that stops the delay. The parameter is optional.
- **Delay** – define the delay time. It is only possible to enter a numerical value, not a value from an output parameter produced by other events.
- Example of valid values:
  - **10** – 10 seconds (units are unnecessary)
  - **10s** – 10 seconds
  - **100ms** – 100 milliseconds.

## Output parameters

- **Event** – the Event output to invoke the connected Event or Action.

## Example

Event generated 1s after the rise of event on row 1:



# DoorOpenTooLong

The DoorOpenTooLong block defines the event generated in case the door stays open longer than as set.

## Input parameters

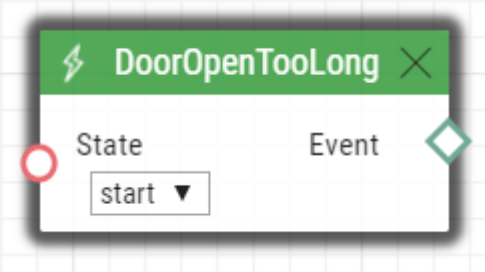
- State – state of the door sensor that generates the event.
  - Valid values:
    - Start – event start
    - End – event end

## Output parameters

- Event – output for generating of the assigned Event or Action.

## Example

The DoorOpen event is longer than set.



# DtmfEntered

The **DtmfEntered** block defines the event that is generated by entering of a numeric code confirmed with the * key in DTMF in an incoming or outgoing call.

## Input parameters

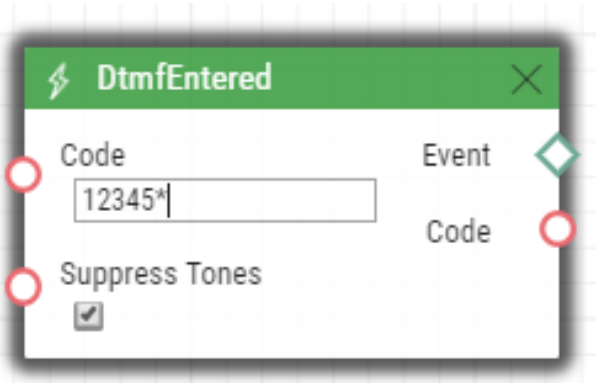
- **Code** – define the numeric code.
  - Valid values:
    - **numeric code** – 12345, e.g.
    - **< > (empty value)** – the event will not be generated
- **SuppressTones** – suppress sound signalling initiated by receiving of an invalid DTMF code. The parameter is optional.
  - Valid values:
    - **disabled** – tones are not suppressed
    - **enabled** – tones are suppressed (default value).

## Output parameters

- **Event** – the Event output to invoke the connected Event or Action.
- **Code** – the detected received numeric code which was the last to generate this event.

## Example

Event generated upon detection of DTMF code 12345*



# DtmfPressed

The DtmfPressed block defines the event that is generated when the defined or any DTMF code is received from the defined group. DTMF codes are detected both in incoming and outgoing calls.

## Input parameters

- Key – define the DTMF code (or DTMF code group). If this parameter is not completed, the event is generated whenever any DTMF code is detected (default value: Any).
  - Valid values:
- 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, *, #, A, B, C, D
- any for any key (default value).
- Separate the values with a comma to specify a group of codes.
- Direction – define the call direction.
  - Valid values:
    - incoming – incoming calls
    - outgoing – outgoing calls
    - any – both directions
  - The parameter is optional, the default value is any.

## Output parameters

- Event – the Event output to invoke the connected Event or Action.
- Pressed Key – the recorded received DTMF code which was the last to generate the event. The DTMF is stored in the Key parameter format.

## Example

Event generated upon detection of DTMF code #:

# FingerEntered

The FingerEntered block defines the event generated by identifying a known fingerprint on the fingerprint reader (for fingerprint reader equipped devices only).

## Input parameters

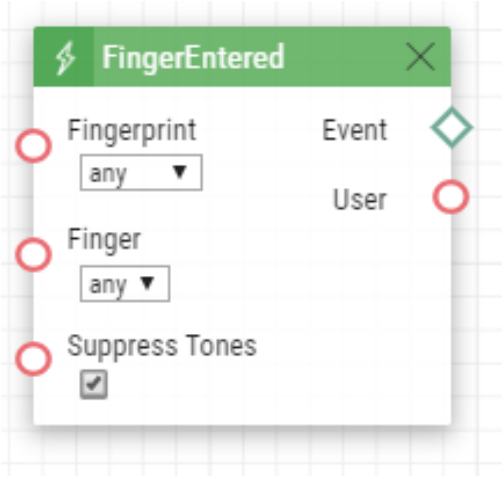
- Fingerprint - define validity of the entered fingerprint.
  - Valid values:
    - valid – the fingerprint belongs to a user
    - invalid – the fingerprint is unknown
    - any – any entered fingerprint
- Finger – define one of two fingerprints stored for the user.
  - Valid values:
    - any – any fingerprint of the user
    - F1 – the fingerprint was defined as "F1" for Automation at the Fingerprint enrolment
    - F2 – a fingerprint was defined as "F2" for Automation at the Fingerprint enrolment
- Suppress Tones – suppress sound signalling initiated by detection of an invalid user (fingerprint). The parameter is optional.
  - Valid values:
    - disabled – tones are not suppressed
    - enabled – tones are suppressed (default value).

## Output parameters

- Event – the Event output to invoke the connected Event or Action.
- User – UUID of the user whose fingerprint has generated this event.

## Example

An event generated by valid entering of a fingerprint on a biometric reader.



# HttpTrigger

The HttpTrigger block defines the event generated by receiving of an HTTP command from the intercom HTTP server. When the HTTP command http://ip_addr/enu/trigger/id is received, the event will be generated whose ID matches the value that follows 'trigger/' in the HTTP command. The intercom sends a simple reply to this request (200 OK).

## Input parameters

- Name – define a unique HTTP command identifier including alphabetical characters and digits.

## Output parameters

- Event – the Event output to invoke the connected Event or Action.
- Params – parameters sent in the SendHttpRequest block or the command coming to the 2N IP intercom.

The HttpTrigger event is always generated by the HTTP command which can carry a list of user Input parameters as included in the URI command.

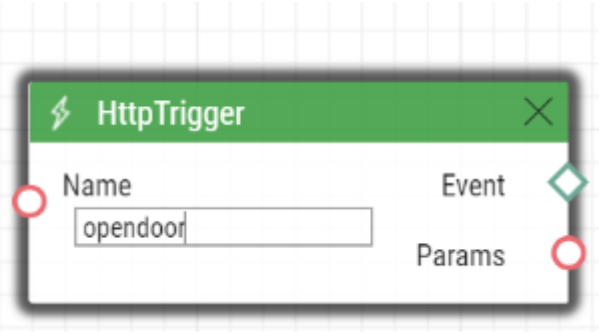
http://ip_address/enu/trigger/id?param1=value1&param2=value2

The list of Input parameters follows the ? character. Each parameter must include the name and value separated with the = character. If the list includes more Input parameters than one, & is used as the separator.

The HTTP-received Input parameters are available as HttpTrigger block Output parameters. The output parameters name equals to the name of the parameter transferred - $(line.param1) a $(line.param2).

## Example

Event generated by receiving of the following HTTP command: **http://ip_addr/enu/trigger/opendoor** :



# InputChanged

The InputChanged block defines the event generated by a change of the logic level on the defined digital input.

## Input parameters

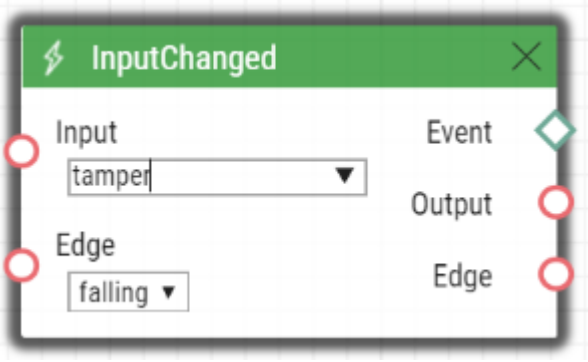
- Input – define the logic input.
  - Valid values:
    - tamper – tamper switch input
    - input1 – digital input 1
    - input2 – digital input 2
    - cr_input1 – digital input 1 on card reader
    - cr_input2 – digital input 2 on card reader.
  - There may be different lists of valid values for different 2N IP intercom models; refer to the Available Digital Inputs and Outputs subsection.
- Edge – define the detected change on the digital input.
  - Valid values:
    - falling – falling edge, change from log. 1 to log. 0
    - rising – rising edge, change from log. 0 to log. 1.
  - The parameter is optional, the default value is rising.

## Output parameters

- Event – the Event output to invoke the connected Event or Action.
- Output – the detected ID of the input whose change was the last to generate this event. The options correspond to the Input parameter values.
- Edge – the detected edge change which was the last to generate this event. The options are falling or rising.

## Example

Event generated by disconnection of the tamper switch (device opening):



# KeyPressed

The KeyPressed block defines the event generated by pressing of the defined key or any key from the defined group.

## Input parameters

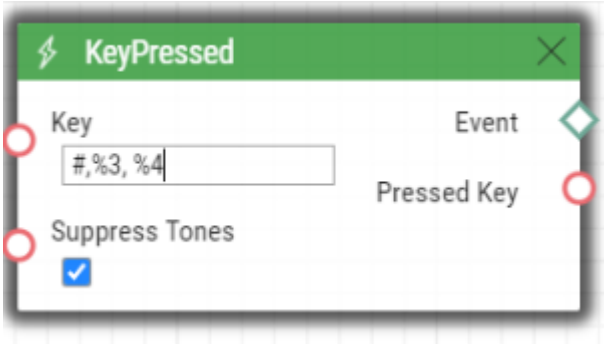
- Key – define the key or a key group. If this parameter is not completed, the event is generated upon pressing of any key (default value: any).
  - Valid values:
    - 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, *, # for numeric keypad buttons
    - %1, %2, .., %999 for quick dial buttons
    - T – for display touch
    - B – for Bluetooth authentication initializing key
    - any for any button (default value)
  - Separate the values with a comma while defining more keys than one.
- SuppressTones – suppress sound signalling initiated by pressing of a non-programmed quick dial button. The parameter is optional.
  - Valid values:
    - disabled – tones are not suppressed
    - enabled – tones are suppressed (default value)

## Output parameters

- Event – the Event output to invoke the the connected Event or Action.
- Pressed Key – the recorded code of the key which was the last to generate this event. The key code is stored in the Key parameter format.

## Example

Event generated by pressing of # and quick dial button 3 or 4:



# KeyReleased

The KeyReleased block defines the event generated by releasing of the defined pressed key or any key from the defined group.

**Note**

- Vario model: the event is generated whenever the button is pressed, the functionality is the same as with KeyReleased.

## Input parameters

- Key – define the key or a key group. If this parameter is not completed, the event is generated upon releasing of any key (default value: any).
  - Valid values:
    - 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, *, # for numeric keypad buttons
    - %1, %2, .., %999 for quick dial buttons
    - any for any button (default value).
  - Separate the values with a comma while defining more keys than one.

## Output parameters

- Event – the Event output to invoke the connected Event or Action.
- Released Key – the recorded code of the key which was the last to generate this event. The key code is stored in the Key parameter format.

## Example

Event generated by releasing of 1 and quick dial button 2:

# MobKeyEntered

The MobkeyEntered block defines the event generated by reading a known Mobile Key on the Bluetooth reader (for the devices with Bluetooth reader only).

## Input parameters

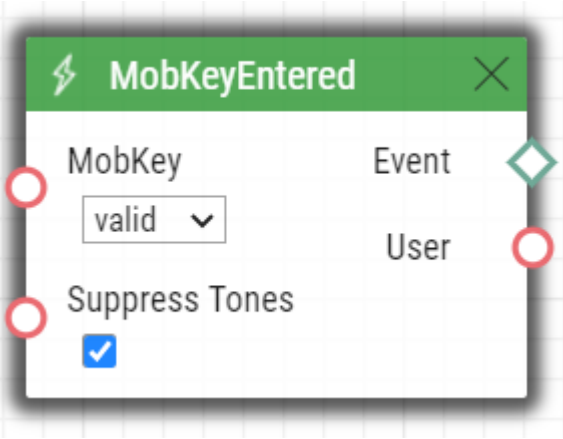
- MobKey – define the current Mobile Key validity.
  - Valid values:
    - valid – the Mobile Key belongs to a user
    - invalid – the Mobile Key is unknown
    - any – any entered Mobile Key.
- Suppress Tones - suppress sound signalling initiated by detection of an invalid user (Mobile Key). The parameter is optional.
  - Valid values:
    - disabled – tones are not suppressed
    - enabled – tones are suppressed (default value).

## Output parameters

- Event – the Event output to invoke the connected Event or Action.
- User – UUID of the user whose Mobile Key has generated this event.

## Example

An event generated by valid reader authorisation.



# MotionDetected

The **MotionDetected** block defines the event generated at motion detection. Motion can be detected by the internal camera only. The Motion detection Input parameters are configured in the Hardware / Camera / Internal Camera menu, section Motion Detection Settings.

## Input parameters

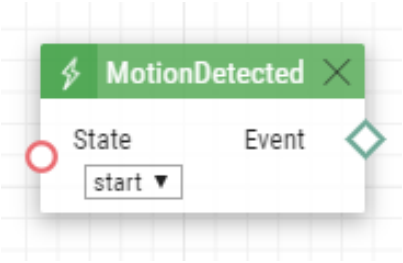
- **State** – define whether the start or the end of the motion should be detected.
  - Valid values:
    - **start** – start of the motion
    - **end** – end of the motion
  - The parameter is optional, the default value is **start**.

## Output parameters

- **Event** – the Event output to invoke the connected Event or Action.

## Example

Event generated at the start of the motion.



# MulticastTrigger

The MulticastTrigger block defines the event generated by receiving of a command sent via SendMulticastRequest. The request is a message sent by UDP to a multicast address (235.255.255.250:4433) and can thus be received by multiple devices at the same time. The message includes the command ID (Command parameter) and additional optional Input parameters. The message can be password-secured (Password parameter).

## Input parameters

- Command – define the command ID to distinguish the command types. The MulticastTrigger block responds to the SendMulticastRequest action only if the command identifier is the same. Any text containing the A–Z, a–z and 0–9 characters can be used for identification. The Upper/Lower case must be respected in the command name.
- CheckTime – enable/disable the check of the command receiving time against the time value included in the command message to eliminate attacks caused by repeating of an already processed message. Synchronised time (via the NTP server) on all command sending and receiving devices is required for this function.
  - Valid values:
    - disabled – message time is not checked
    - enabled – message time is checked (enhanced security).
  - The parameter is optional, the default value is 0.
- Password – define the password to secure the command against unauthorised access. The password must match the value defined in the SendMulticastRequest action to which MulticastTrigger is expected to respond.

## Output parameters

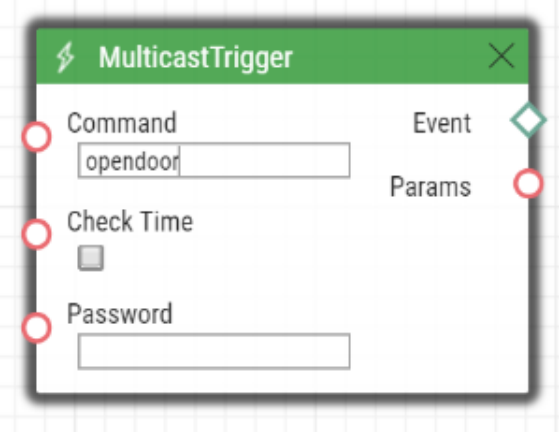
- Event – the Event output to invoke the connected Event or Action.
- Params – parameters sent in the SendMulticastRequest Action.

The MulticastTrigger event is generated whenever a mass command including the list of user Input parameters (Params parameter, MulticastRequest action) is received. Each of the Input parameters has a user-defined unique name and is available as an Output parameter of the same name in the MulticastTrigger block.

Example: Suppose a mass command generated by the MulticastRequest action is received, in which Params="AAA=123" is included. The MulticastTrigger event which processes this command will automatically include value 123 for the AAA output parameter. This output parameter can be referred to in the interconnected blocks.

## Example

Event generated by receiving of a mass opendoor command:



# OnvifVirtualOutputChanged

The **OnvifVirtualOutputChanged** block helps transmit events from VMS to a 2N IP intercom.

## Input parameters

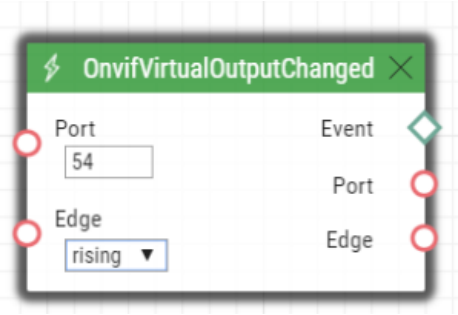
- **Port** – set the port to set VMS. Valid values: 50–54.
- **Edge** – define the change detected on the virtual input.
  - Valid values:
    - **falling** – falling edge, change from log 1 to log 0
    - **rising** – rising edge, change from log 0 to log 1
  - The parameter is optional, the default value is rising.

## Output parameters

- **Event** – Event/Action generating output.
- **Port** – port value changed from VMS. Valid values: 50–54.
- **Edge** – the last virtual input change that generated this event. Valid values: falling or rising.

## Example

The event generated when the virtual port value changes.



# NoiseDetected

The **NoiseDetected** block defines the event generated at noise detection. Noise can be detected by the internal microphone only. The noise detection Input parameters are configured in the Hardware / Audio menu, section Noise Detection Settings.

## Input parameters

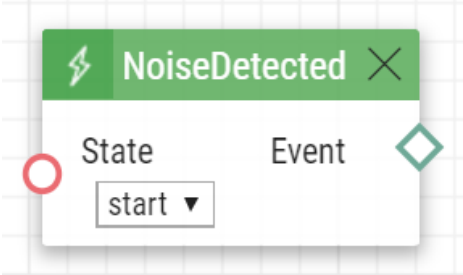
- **State** – define whether the start or the end of the noise should be detected.
  - Valid values:
    - **start** – start of the noise
    - **end** – end of the noise
  - The parameter is optional, the default value is **start**.

## Output parameters

- **Event** – the Event output to invoke the connected Event or Action.

## Example

Event generated at the start of the noise



# RegistrationStateChanged

The RegistrationStateChanged block defines the event generated at a SIP account registration state change. Set the SIP registration in Services / SIP 1 and SIP 2. Registration gets changed whenever the intercom is switched on, configuration is changed or registrar connection gets lost, for example.

## Input parameters

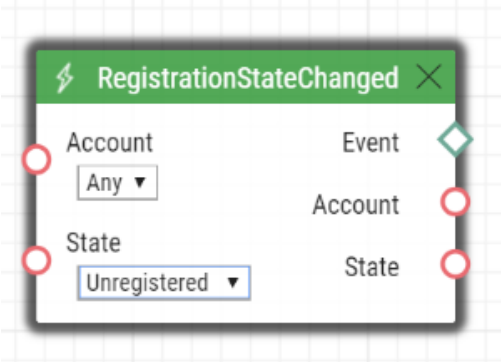
- Account – select the account for which events are to be monitored.
  - Valid values:
    - 1 – account 1
    - 2 – account 2
    - Any – any account
- The parameter is optional, the default value is Any.
- State – set the registration state that generates the event.
  - Valid values:
    - Unregistered – intercom not registered
    - Registering – registration in progress
    - Registered – intercom is registered
    - Unregistering – unregistration in progress
    - Any – any state change
- The parameter is optional, the default value is Any.

## Output parameters

- Event – the Event output to invoke the connected Event or Action.
- Account – select the account for which events are to be monitored.
- State – set the registration state that generates the event.

## Example

Event generated when the intercom has been unregistered (whenever the registrar failed to respond to a periodical registration request):



# Rebooted

The **Rebooted** block defines the event generated in case the device is started /restarted.

## Input parameters

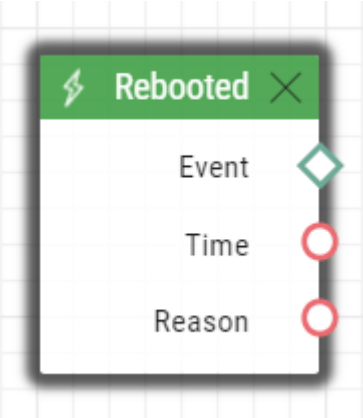
This block has no Input parameters.

## Output parameters

- **Event** – output for generating of the assigned Event or Action.
- **Time** – device start/restart time.
- **Reason** – reboot reason.

## Example

The event generated at the device startup.



# SilentAlarm

The SilentAlarm block defines the event generated upon the silent alarm start. Silent alarm can be started by entering a code higher by 1 than the user switch code. If, thus, a user is assigned switch code 123, silent alarm is started with 124.

## Input parameters

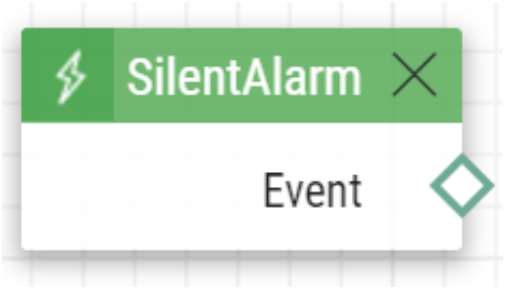
This block has no Input parameters.

## Output parameters

- Event – the Event output to invoke the connected Event or Action.

## Example

Event generated by entering code 112 if some of the users is assigned code 111.



# Time

The Time block defines the event generated every day at a specific time (alarm clock). To limit validity of this event for some days only, use the condition Condition. ProfileState at the started action and specify requested days in the used time profile.

## Input parameters

- Time – define time to start the event. Time is entered in hh:mm format.

## Output parameters

- Event – the Event output to invoke the connected Event or Action.

## Example

Event generated every day at 17:30.

# Timer

The Timer block defines the event generated with a defined delay after another specified event with a defined count of repetitions. Define this event to delay the response to the other event by a defined time interval or execute the response several times.

## Input parameters

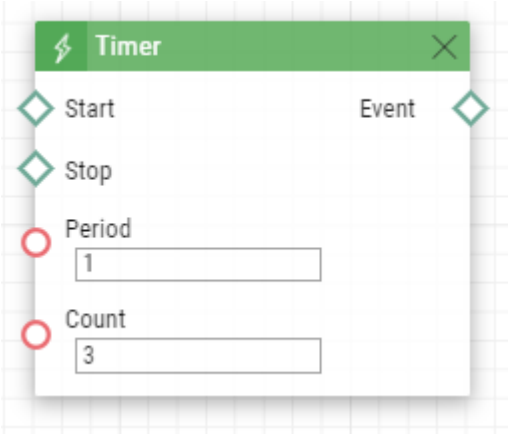
- Start – define the timer starting event (i.e. the row number on the Automation tab on which the event is defined). The parameter is optional. If no value is completed, the timer will be started automatically.
- Stop – define the timer stopping event (i.e. the row number on the Automation tab on which the event is defined). When StopEvent is executed, the timer will stop and will be restarted by StartEvent only. This parameter is optional.
- Period – define the timer period.
  - Example of valid values:
    - 10 – 10 seconds (units are unnecessary)
    - 10s – 10 seconds
    - 100ms – 100 milliseconds.
  - The minimum period is 100ms.
- Count – define the count of repetitions. The parameter is optional and the default value is 0, which means that the count of timer generated events is unlimited. Value 1 makes the timer behave as a Delay.

## Output parameters

- Event – the Event output to invoke the connected Event or Action.

## Example

Event generated three times in 1s intervals after the rise of event on row 1:



# UnauthorisedDoorOpen

The **UnauthorisedDoorOpen** block defines the event generated whenever an unauthorised door opening is detected.

## Input parameters

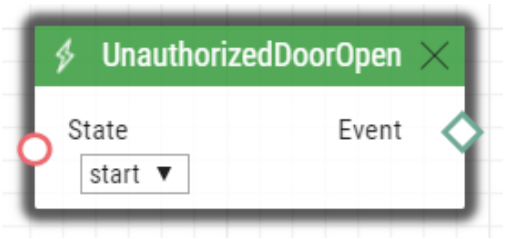
- State – state of the door sensor that generates the event.
  - Valid values:
    - Start – event start
    - End – event end

## Output parameters

- Event – output for generating of the assigned Event or Action.

## Example

The event generated at an unauthorised door unlocking.



# UserAuthorized

The UserAuthorized block defines the event generated at user authorisation by any access method (code, PIN, RFID, Bluetooth, fingerprint).

## Input parameters

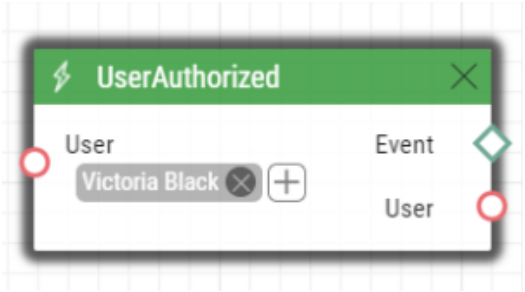
- User – define the user/user list. If no value is completed (default value), the user is irrelevant.

## Output parameters

- Event – Event/Action generating output.
- User – user identification that generated this event.

## Example

The event generated by Victoria Black user authorisation.




**Caution**

- The User parameter is limited to up to 10 users.

# OutputChanged

The OutputChanged defines the event generated at an output change.

## Input parameters

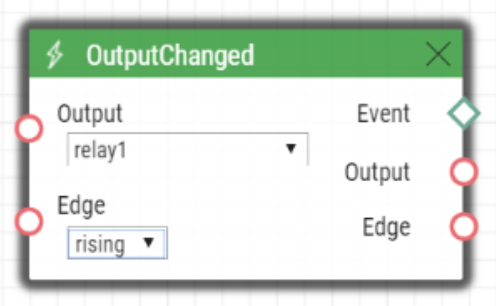
- Output – define the logical input.
  - Valid values:
    - relay1 – relay 1 on basic unit
    - relay2 – relay 2 on basic unit
    - output1 – output 1 on basic unit
    - output2 – output 2 on basic unit
  - The list of valid values can be different for each of the 2N IP intercom models, refer to Available Digital Inputs and Outputs.
- Edge – define the detected output change.
  - Valid values:
    - falling – falling edge, change from log 1 to log 0
    - rising – rising edge, change from log 0 to log 1
  - The parameter is optional, the default value is rising.

## Output parameters

- Event – Event/Action generating output.
- Output – detected ID of the input whose change was the last to generate this event. The available values correspond to the Input values.
- Edge – detected change of the output that was the last to generate this event. The available values are falling or rising.

## Example

The event generated by the change of the relay 1 output.



# 4. Actions

Automation – defines the following types of actions:

- ActivateSwitch – switch activation
- SetOutput – digital output state setting
- BeginCall – outgoing call setup
- AnswerCall – incoming call answer
- EndCall – call termination
- SendHttpRequest – HTTP command sending
- SendMulticastRequest – command sending to multiple devices
- PlayUserSound – user sound playing
- StartMulticastSend – audio stream sending start
- StopMulticastSend – audio stream sending stop
- StartMulticastRecv – audio stream receiving start
- StopMulticastRecv – audio stream receiving stop
- SetCameraInput – camera input selection
- ControlRtpStream – call RTP stream control
- LogEvent – event logging to the syslog server
- SendDtmf – DTMF codes sending
- SendEmail – email sending
- SetOnvifVirtualInput – virtual input for ONVIF
- SendWiegandCode – code sending to the Wiegand bus
- UploadSnapshotToFtp – snapshot upload to the FTP server
- StartAutoUpdate – firmware and configuration AutoUpdate
- OpenDoor – light and sound signalling of access via a card reader

# ActivateSwitch

The ActivateSwitch block defines the action necessary for activation of the intercom switch as configured in the Switch 1–4 tags. The activity to be performed depends fully on the particular switch settings (digital output activation, HTTP command sending, etc.). Switch deactivation is controlled by the switch settings too.

## Parameters

- Event – define the event to launch the action.
- Condition – define the condition to be met to execute the action. This parameter is optional.
- Switch – define the switch to be activated (1 to 4).
- Action – define the state of the bistable switch (parameter does not apply for the monostable switch mode).
  - Valid values:
    - on – the switch is activated.
    - o ff – the switch is deactivated.
    - toggle – the switch is toggled.
    - lock – the switch is locked.
    - unlock – the switch is unlocked.
    - hold – the switch is hold.
    - release – the switch is released.
  - The parameter is optional, the default value is on.

## Example

Activate switch 1 if the event defined on row 2 arises and the condition defined on row 3 is met:

# SetOutput

The **SetOutput** block defines the action necessary for setting of the intercom output to the required level.

## Parameters

- **Event** – define the event that launches the action.
- **Condition** – define the condition to be met to execute the action. This parameter is optional.
- **Output** – define the output to be set.
  - Valid values:
    - **relay1** – relay 1 on basic unit
    - **relay2** – relay 2 on basic unit
    - **output1** – output 1 on basic unit
    - **output2** – output 2 on basic unit
  - There may be different lists of valid values for different **2N IP** intercom models; refer to the **Available Digital Inputs and Outputs subsection**.
- **Level** – define the required output level. This parameter is optional.
  - Valid values:
    - **lo** – output deactivation
    - **hi** – output activation (default value).

## Example

Activate Output1 if the event defined on row 2 arises:

# BeginCall

The **BeginCall** block defines the action necessary for establishing of an outgoing call to the defined telephone number, SIP URI or user number included in the intercom phone book.

## Parameters

- **Event** – define the event to launch the action.
- **Condition** – define the condition to be met to execute the action. This parameter is optional.
- **Number** – define the phone number to be called (if **2N IP** intercom is registered to the PBX).
- **Uri** – define the SIP URI to be called: sip:user@domain.
- **User** – define the user to be called.
- **Device** – define the **2N® IP Mobile** application to be called: device_name.
- Enter just one of the above mentioned parameters (**Number**, **Uri**, **User** or **Device**).

## Example

Establish an outgoing call if the event defined on row 2 arises:

# AnswerCall

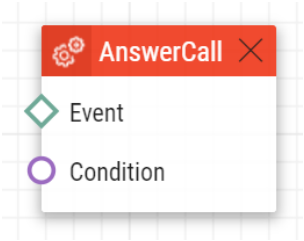
The AnswerCall block defines the action necessary for answering of an incoming call. In case no call is coming or the incoming call is not ringing, the action will not initiate any activity.

## Parameters

- Event – define the event to launch the action.
- Condition – define the condition to be met to execute the action. This parameter is optional.

## Example

Answer a call if the event defined on row 2 arises:



# EndCall

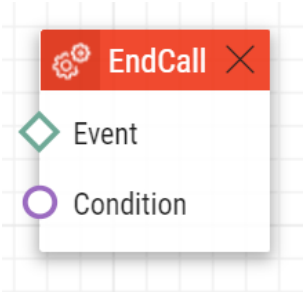
The EndCall block defines the action necessary for termination of the currently made call. In case there is no active call via the intercom, the action will not initiate any activity.

## Parameters

- Event – define the event to launch the action.
- Condition – define the condition to be met to execute the action. This parameter is optional.

## Example

Terminate a call if the event defined on row 2 arises:



# SendHttpRequest

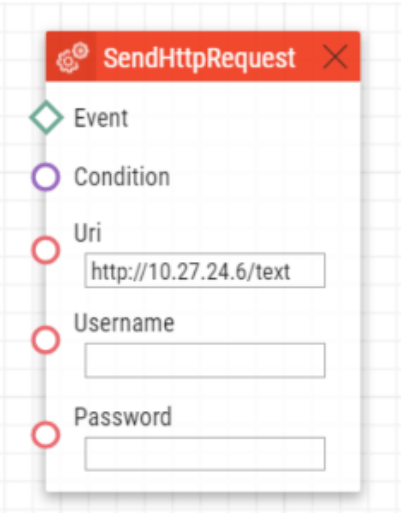
The **SendHttpRequest** block defines the action necessary for sending of an HTTP command to another LAN device. The HTTP command helps you control other devices in the LAN (IP relay, recording system, another intercom, etc.).

## Parameters

- **Event** – define the event to launch the action.
- **Condition** – define the condition to be met to execute the action. This parameter is optional.
- **Uri** – define the standard HTTP URI including the destination address and, optionally, the path and other parameters. The maximum length is 2048 bytes.
- **Username** – define the username in case authorisation is required by the HTTP server. This parameter is optional. The default value is "intercom".
- **Password** – define the password in case authorisation is required by the HTTP server. This parameter is optional.
- **Method** – define the HTTP request method: **GET**, **POST**, **PUT**, **DELETE**.
- **Type** – select the type of the HTTP request body content: "application/json" or "text/plain". Applies to valid methods **POST** and **PUT** only.
- **Text** – select the request text content. Applies to valid methods **POST** and **PUT** only.

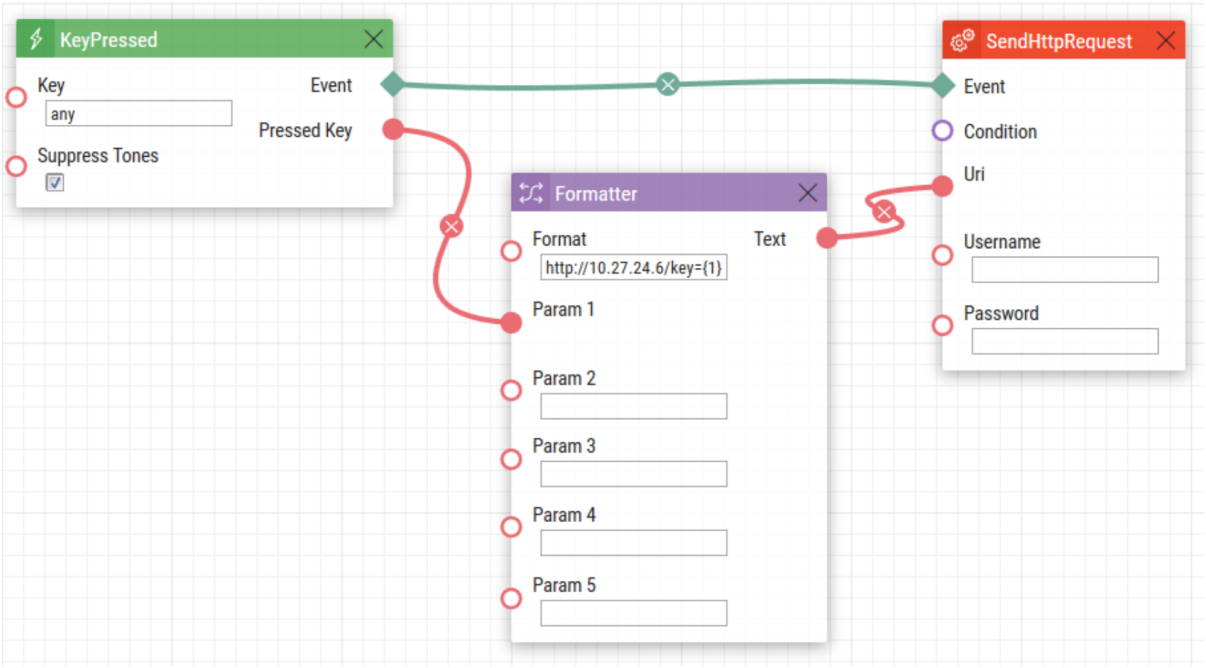
### Example 1)

Whenever a connected event is generated, HTTP sends a request to the following IP address: 10.27.24.6:



### Example 2)

Whenever any key is pressed, its exact identification is sent to the following IP address: 10.27.24.6:



**Caution**

- Both Basic and Digest authentication are supported, we recommend Digest for added security.

**Caution**

HTTP commands use URL encoding. In the following Automation example:

1. Event.KeyPressed: Key=Any

2. Action.SendHttpRequest: Uri= <Command>; Event=1 will send a message **http://192.168.1.1/message=%251** ("%" is encoded as "% 25") after pressing the quick dial button no. 1.

| Button to be pressed | Format in Formatter | Request to be sent |
|---|---|---|
| Quick dial 1 | **http://10.27.1.6 /message={1}** | **http://10.27.1.6/message=%251** ("%" is encoded as "%25") |
| Keypad 1 | **http://10.27.1.6 /message={1}** | **http://10.27.1.6/message=1** |
| Quick dial 1 | **http://10.27.1.6/mess? age={1}** | **http://10.27.1.6/mess?age=%251** |
| Keypad 1 | **http://10.27.1.6/mess? age={1}** | **http://10.27.1.6/mess?age=1** |

**Caution**

- Comma-delimited parameter value parsing

  One parameter can be comma-delimited into values. The values can be separated with '`' (back apostrophe). Use \ as the escape character for `.

  E x a m p l e s
  abc,def  abc and bcd

  `abc,def` abc,bcd

  abc\`def  abc`def

  abc\def  abcdef

  abc\ \def  abc\def (backslash twice in a row)

- The validity of notification marked % remains.

# SendMulticastRequest

The SendMulticastRequest block defines the action necessary for user command sending to multiple devices. The sent command can be processed by the MulticastTrigger block. The command is a message sent by UDP to a multicast address (235.255.255.250:4433) and can thus be received by multiple devices at the same time. The message includes the command ID (Command parameter) and additional optional parameters (Params parameters). The message can be password-secured (Password parameter). It is recommended to send these commands with a maximal intensity of 1 command per second.

## Parameters

- Event – define the event to execute this action.
- Condition – define the condition to be met for the action to be executed. This parameter is optional.
- Command – define the command identifier to distinguish the command types. The MulticastTrigger block responds to the SendMulticastRequest action only if the command identifier is the same. Any text containing the A–Z, a–z and 0–9 characters can be used for identification.
- Parameters – define one or more (comma-separated) command parameters to be included in the UDP message. Keep the “parameter_name=parameter_value” format.
    - Example:

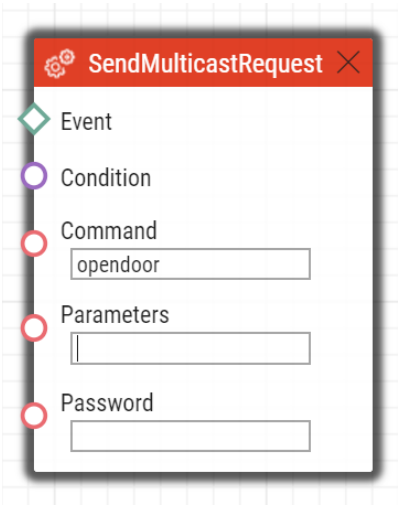
Params=“Address=192.168.1.1”, “Port=10000”

The so-sent parameters will be available in the HttpTrigger event responding to this command as the Address and Port output parameters and can be used in the HttpTrigger-tied actions, for example.

- Password – define the password to secure the command against unauthorised access. The parameter is optional. If no password is completed, the command is not secured. Use any text containing the A–Z, a–z and 0–9 characters.

## Example

Send the opendoor command to all the devices with the properly set Event. MulticastTrigger block in the network if the event defined on row 2 arises:




**Caution**

- Comma-delimited parameter value parsing

  One parameter can be comma-delimited into values. The values can be separated with '`' (back apostrophe). Use \ as the escape character for `.

  E x a m p l e s
  abc,def  abc and bcd

  `abc,def` abc,bcd

  abc\`def  abc`def

  abc\def  abcdef

  abc\ \def  abc\def (backslash twice in a row)
- The validity of notification marked % remains.

# PlayUserSound

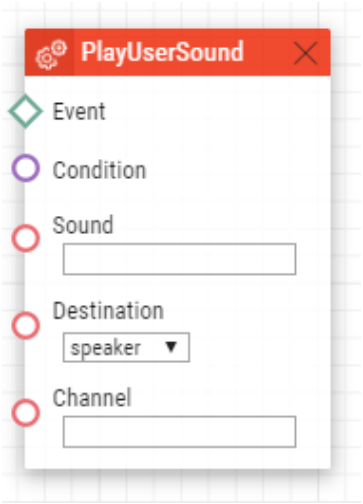
The PlayUserSound block defines the user sound playing action.

## Parameters

- Event – define the event to launch this action.
- Condition – define the condition to be met for the action to be executed. This parameter is optional.
- Sound – define the sound to be played.
  - Valid values for user defined sounds:
    - 1–10 – user sound number
  - Valid values for predefined sounds (asterisk before the number indicates the use of predefined sound):
    - *1 – Modern Ringtone
    - *2 – Huge gong
    - *3 – Dogs barking
    - *4 – Horn/siren
    - *5 – Gentle gong
- Destination – define the user sound playing destination.
  - Valid values:
    - speaker – the sound is played on the intercom.
    - call – the sound is played into the call.
    - multicast – the sound is played via multicast address
- Channel – define the channel number (0–3) to be controlled.
  - The parameter is optional; the default value is speaker.

## Example

Play user sound 1 if the event defined on row 2 arises:


PlayUserSound
Event
Condition
Sound
Destination
speaker
Channel

# StartMulticastSend

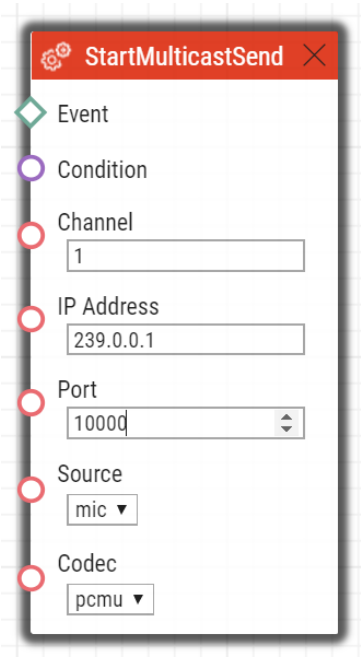
The StartMulticastSend block defines the starting action for audio stream sending to a multicast IP address. You can control up to four independent transmission channels. The RTP/UDP protocol is used.

## Parameters

- Event – define the event to launch this action.
- Condition – define the condition to be met for the action to be executed. This parameter is optional.
- Channel – define the channel number (0–3) to be controlled.
- Address – define the audio stream multicast IP address.
- Port – define the UDP port to which audio stream shall be sent.
- Source – define the audio source.
  - Valid values:
    - mic – the audio source is the microphone.
    - call – the audio source is the call.
  - The parameter is optional; the default value is mic.
- Codec – define the audio codec to be used.
  - Valid values:
    - pcmu – codec G.711 u-law
    - pcma – codec G.711 A-law
    - g729 – codec G.729
    - g722 – codec G.722
    - l16 – codec L16, 16 kHz
  - The parameter is optional; the default value is pcmu.

## Example

Start audio stream sending via channel 1 to address 239.0.0.1:10000 if the event defined on row 2 arises:



# StopMulticastSend

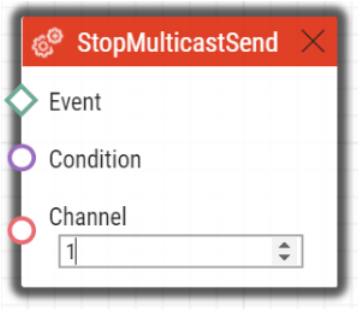
The StopMulticastSend block defines the stopping action for audio stream sending to a multicast IP address.

## Parameters

- Event – define the event to launch this action.
- Condition – define the condition to be met for the action to be executed. This parameter is optional.
- Channel – define the channel number (0–3) to be controlled.

## Example

Stop audio stream sending via channel 1 if the event defined on row 2 arises:



# StartMulticastRecv

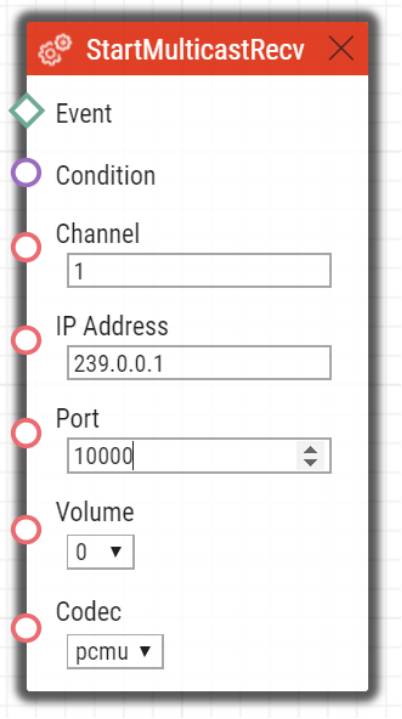
The StartMulticastRecv block defines the starting action for audio stream receiving and playing. You can control up to four independent transmission channels. The RTP /UDP protocol is used.

## Parameters

- Event – define the event to launch this action.
- Condition – define the condition to be met for the action to be executed. This parameter is optional.
- Channel – define the channel number (0–3) to be controlled.
- IP Address – define the audio stream multicast IP address.
- Port – define the UDP port on which audio stream shall be received.
- Volume – define the relative volume level for the audio stream to be played (from -6 dB to +6 dB).
  - Valid values:
    - -6 – minimum level
    - 0 – mean level (default value)
    - 6 – maximum level.
  - The parameter is optional; the default value is 0.
- Codec – define the audio codec to be used.
  - Valid values:
    - pcmu – codec G.711 u-law
    - pcma – codec G.711 A-law
    - g729 – codec G.729
    - g722 – codec G.722
    - l16 – codec L16, 16 kHz
  - The parameter is optional; the default value is pcmu.

## Example

Start audio stream receiving on multicast IP address 239.0.0.1:10000 via channel 1 if the event defined on row 2 arises:



# StopMulticastRecv

The StopMulticastRecv block defines the stopping action for audio stream receiving to a multicast IP address.

## Parameters

- Event – define the event to launch this action.
- Condition – define the condition to be met for the action to be executed. This parameter is optional.
- Channel – define the channel number (0–3) to be controlled.

## Example

Stop audio stream receiving via channel 1 if the event defined on row 2 arises:

# SetCameraInput

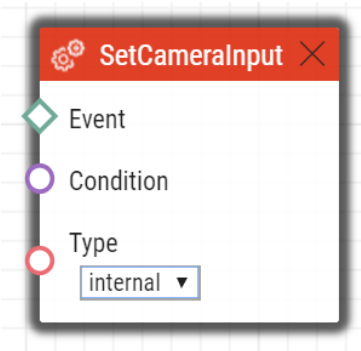
The **SetCameraInput** block defines the action that allows you to switch video signal sources for active calls: the integrated camera, an external IP camera and two analogue camera inputs for the **2N® IP Video Kit** if necessary. This action cannot be used for video source switching for RTSP streams.

## Parameters

- **Event** – define the event to launch this action.
- **Condition** – define the condition to be met for the action to be executed. This parameter is optional.
- **Type** – define the video signal type. A change during a call will apply only for this call. Other video receivers receive video from the same source.
  - Valid values:
    - **internal** – internal camera (or external analogue video camera connected directly to the device)
    - **external** – external IP camera.
  - The parameter is optional, the default value is **internal**.

## Example

Switch the video signal source to the first external analogue camera input if the event defined on row 2 arises:



# ControlRtpStream

The **ControlRtpStream** block defines the action that controls the flow of the RTP streams. This action controls only call streams; multicast streams are not affected by this action.

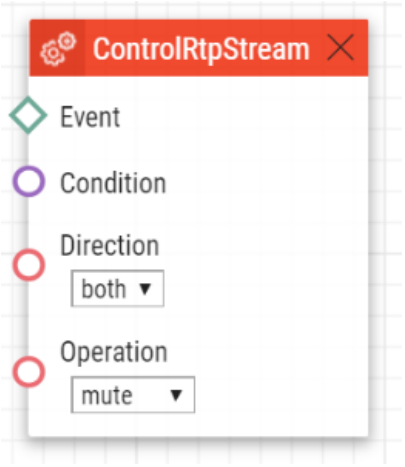
## Parameters

- **Event** – define the event to launch this action.
- **Condition** – define the condition to be met for the action to be executed. This parameter is optional.
- **Direction** – define the call RTP stream playing direction.
  - Valid values:
    - **in** – incoming stream to the intercom
    - **out** – outgoing stream from the intercom
    - **both** – incoming and outgoing stream.
  - The parameter is optional; the default value is **both**.

  **Operation** – define the RTP stream operation.
  - Valid values
    - **mute** – mute the stream.
    - **unmute** – unmute the stream (stream is played).

## Example

Mute call streams in both ways if the event defined on row 2 arises:



# LogEvent

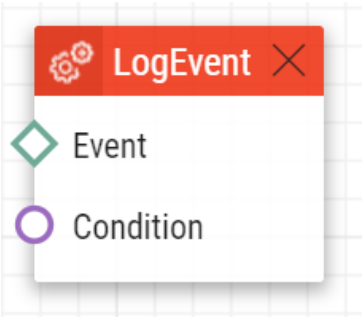
The **LogEvent** block defines the action that logs the event to the syslog server. This block can be used for verification of Automation settings.

## Parameters

- **Event** – define the event to launch this action.
- **Condition** – define the condition to be met for the action to be executed. This parameter is optional.

## Example

Send a syslog message with captured event 2 (Event.CardEntered) if the event defined on row 2 arises:



# SendDTMF

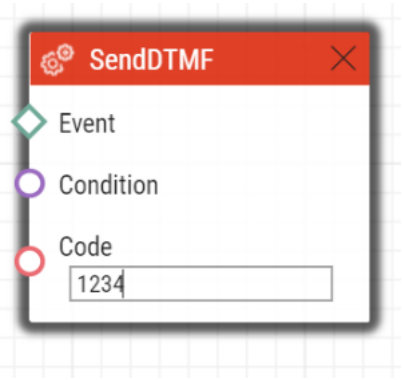
The Action.SendDTMF block defines action which sends a DTMF code to an active call.

## Parameters

- Event – defines the event to launch this action.
- Condition – defines the condition to be met for the action to be executed. This parameter is optional.
- Code – defines sent DTMF characters
  - Valid values: 0–9, A–D, F

## Example

Send code 1234 into an active call:



# SendEmail

The SendEmail block defines the action that sends an email.

## Parameters

- Event – define the event to launch this action.
- Condition – define the condition to be met for the action to be executed. This parameter is optional.
- Sender – define the sender address for outgoing emails.
- Subject – define the subject of the email message to be sent.
  - Special placeholders can be entered for the date and time, device Id. These placeholders are replaced with the current values before message sending. Refer to the Body description below.
- Body – define the body of the message to be sent. Use the HTML formatting characters. You can enter special placeholders into the text for the date and time, device id to be replaced with the current values before the message is sent:
  1. $User$ – called user name
  2. $DateTime$ – current date and time
- Snapshots – define the count of snapshots to be enclosed to the email [0, 5].
  - The parameter is optional; the default value is 1.
- TimeSpan – define the timespan in seconds for the snapshots enclosed to the email.
  - The parameter is optional; the default value is 1.

**Tip**

You are advised to choose such TimeSpan and Snapshots values that the TimeSpan/Snapshots ratio should be an integer.

Example: Timespan = 8

Snapshots = 5

The latest snapshot will be displayed followed by the earlier ones in a two-second timespan.

If the timespan is lower than the count of available snapshots, some photos are used repeatedly.

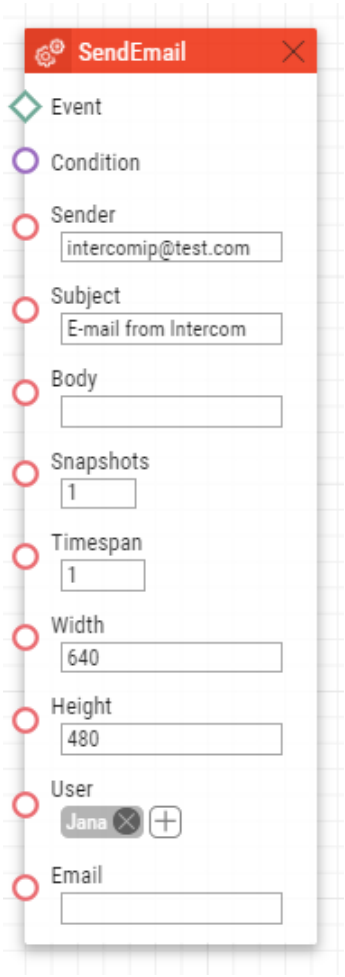
- Width – define the resolution width for the camera image to be enclosed. Make sure that the snapshot width complies with one of the supported intercom resolution options.
  - The parameter is optional; the default value is 640.
- Height – define the resolution height of the camera image to be enclosed. Make sure that the snapshot height complies with one of the supported intercom resolution options
  - The parameter is optional; the default value is 480.
- User – define the user to whom the e-mail will be sent.
- E-mail – define the e-mail address to which the e-mail will be sent. Enter more e-mail addresses if necessary, separated with a comma in inverted commas.
  - Valid values:
    - user@domain_name
    - user@ip_address
    - user@domain_name, user@ip_address

**Tip**

- The User parameter is preferred to the E-mail parameter.

## Example

Send an e-mail to the e-mail address set at user Jana:




**Caution**

- The **User** parameter is limited to up to 10 users.

# SetOnvifVirtualInput

The **SetOnvifVirtualInput** block defines the sending action for a change of the virtual input level via the ONVIF protocol. The ONVIF Device Manager (version 2.2.250) can be used for the test.

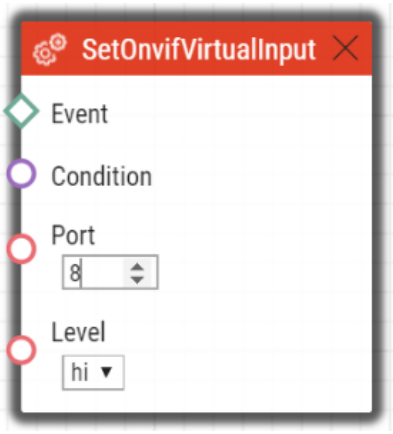
## Parameters

- **Event** – define the event to launch the action.
- **Condition** – define the condition to be met to execute the action. This parameter is optional.
- **Port** – define the virtual port ID.
  - Valid values:
    - **0–10** – port ID

  **Level** – define the input level.
  - Valid values:
    - **hi** – set logical value to true
    - **lo** – set logical value to false.
  - The parameter is optional; the default value is hi (true).

## Example

Send information that port 8 has changed its value to 1 via the O NVIF protocol if the event defined on row 2 arises:




The following is sent to ONVIF:

- InputToken: onvif_port_08
- LogicalState:true

# SendWiegandCode

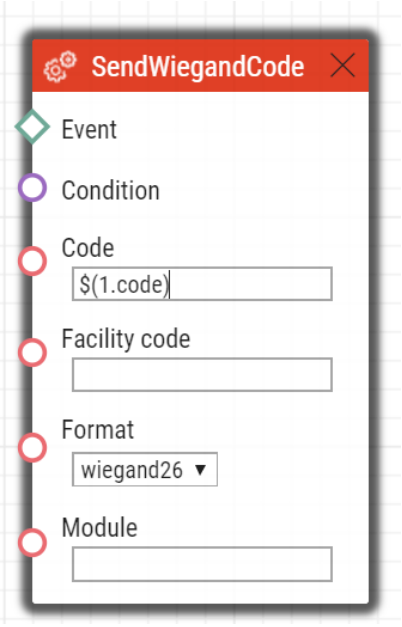
The **SendWiegandCode** block defines the action for sending of an entered code to another device via the Wiegand interface.

## Parameters

- **Event** – define the event to launch the action.
- **Condition** – define the condition to be met to execute the action. This parameter is optional.
- **Code** – define the code to be sent via the Wiegand interface. If the entered code exceeds the capacity of the message transferred via the Wiegand interface, the high-order bits are cut.
  - Valid values:
    - decimal number
- **Facility code** – facility code. The setting applies only to "wiegand26".
  - Valid values:
    - decimal number in a range of **0–255**
  - The parameter is optional; if not set, then unused.
- **Format** – define the format of the message sent via Wiegand.
  - Valid values:
    - **wiegand26** – 26 bits
    - **wiegand32** – 32 bits
    - **wiegand37** – 37 bits
  - The parameter is optional; the default value is **wiegand26**.
- **Module** – define the module via which the code is to be sent.
  - Valid values:
    - module name configured in the Module name parameter in the Hardware / Extenders / Modules / Wiegand module menu.
  - The parameter is mandatory for Verso but not applied for other models.

## Example

Send a code entered by Event.CodeEntered via the Wiegand interface:




For Verso and Access Unit the second line should look like as follows:

# UploadSnapshotToFtp

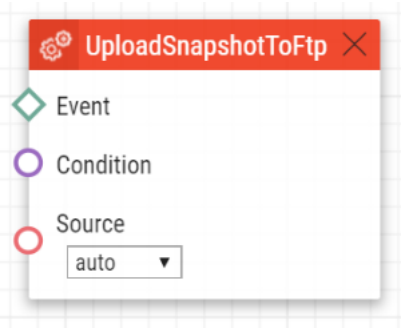
The **UploadSnapshotToFtp** block defines the action that sends a camera snapshot to the FTP server. The FTP and snapshot parameters are configured in the Services / Streaming / FTP menu.

## Parameters

- **Event** – define the event to launch this action.
- **Condition** – define the condition to be met for the action to be executed. This parameter is optional.
- **Source** – define the video source for the picture to be uploaded to the FTP server.
  - Valid values:
    - **auto** – the video source is chosen according to the Hardware / Camera / Common Setting / Default Video Source settings.
    - **internal** – internal camera
    - **external** – external camera.
  - The parameter is optional; the default value is **auto**.

## Example

Upload a picture from the camera to the FTP server if the event defined on row 2 arises:



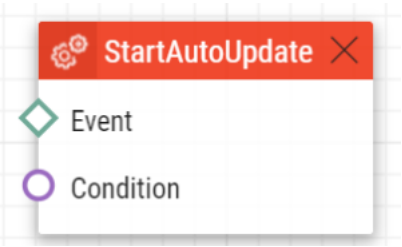
# StartAutoUpdate

The StartAutoUpdate block defines the action that runs firmware and configuration auto update. The auto provisioning parameters are configured in the System / Auto Provisioning menu.

## Parameters

- Event – define the event to launch this action.
- Condition – define the condition to be met for the action to be executed. This parameter is optional.

Send an email to the email address set to user2@domain_name if event 1 arises:



# OpenDoor

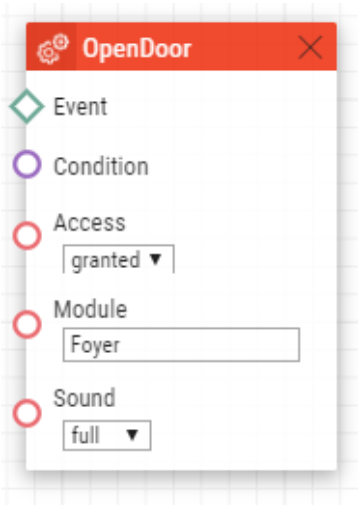
The **OpenDoor** block defines an action for light and sound signalling of valid/invalid access via a **2N® IP Verso** card reader.

## Parameters

- **Event** – define the event to launch this action.
- **Condition** – define the condition to be met for the action to be executed. This parameter is optional.
- **Access** – signal the access validity:
  - granted – valid
  - denied – invalid
- **Module** – define the card reader module name.
- **Sound** – define sound signalling.
  - Valid values:
    - **full** – sound signalling for both valid and invalid accesses
    - **none** – no sound signalling

## Example

Signal a valid access at the hall card reader with light and sound.



**Note**

Other setting examples

- Access granted / Sound – none = green light, sound as set for the switch in HW
- Access denied / Sound – none = red light, no sound

**Caution**

- The card reader modules connected with the DoorOpen block must be excluded from access control in Hardware / Extending modules. Set Door / Unused for the given model.
- Unnameable modules can be addressed via ext <module_position> , e.g. "ext3".

# 5. Conditions

Automation defines the following types of conditions:

- True – always true condition
- False – always false condition
- ProfileState – time profile state
- CallState – current call state
- AccountState – SIP account registration state
- InputState – digital input state
- FlipFlopRS – RS-type flip-flop
- FlipFlopD – D-type flip-flop
- LogicalAnd – logical AND of conditions
- LogicalOr – logical OR of conditions
- LogicalNot – condition negation
- LockdownState – emergency lockdown
- OnvifVirtualOutputState – VMS virtual port state
- OutputState – output state

See below for details on the conditions and their parameters and use.

# True

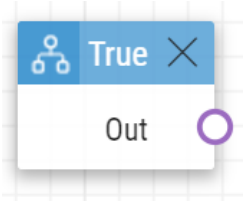
The **True** block defines the condition to be met each time.

## Output parameters

- Out

## Example

The condition is always met:



# False

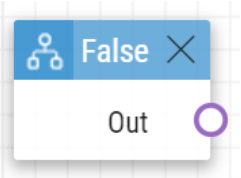
The **False** block defines the condition not to be met any time.

## Output parameters

- Out

## Example

The condition is always not met.



# ProfileState

The **ProfileState** block defines the condition to be met in the case of active/inactive time profile.

## Input parameters

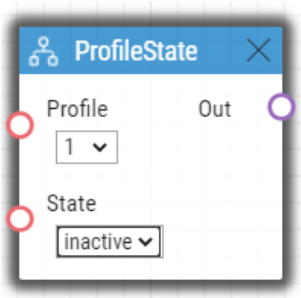
- **Profile** – define the time profile number (1–20 depending on the intercom model).
- **State** – define the required profile state. This parameter is optional.
  - Valid values:
    - **active** – active profile (default value)
    - **inactive** – inactive profile.

## Output parameters

- Out

## Example

The condition is met for inactive time profile 1:



# CallState

The **CallState** block defines the condition to be met in the case of a defined state of the currently made call.

## Input parameters

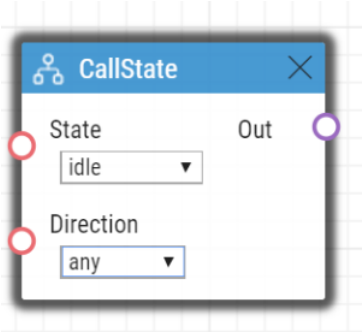
- **State** – define the call state.
  - Valid values:
    - **idle** – call is not being made
    - **connecting** – call setup in progress (outgoing calls only)
    - **ringing** – ringing in progress
    - **connected** – call connected.
- **Direction** – define the call direction.
  - Valid values:
    - **incoming** – incoming calls
    - **outgoing** – outgoing calls
    - **any** – both directions.
  - The parameter is optional, the default value is **any**.

## Output parameters

- Out

## Example

The condition is met for an inactive call:



# AccountState

The **AccountState** block defines the condition to be met in the case of a SIP account registered state.

## Input parameters

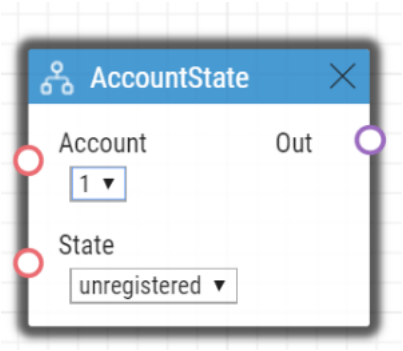
- **Account** – define the used SIP account
  - Valid values:
    - **1** – account 1
    - **2** – account 2
  - The parameter is optional, the default value is **1**.
- **State** – Define the registration state
  - Valid values:
    - **registered** – the account is registered
    - **unregistered** – the account is not registered
  - The parameter is optional, the default value is **registered**.

## Output parameters

- **Out**

## Example

The condition is met for not registered 1 account:



# InputState

The InputState block defines the condition to be met in case the defined logic level gets connected to the defined digital input.

## Input parameters

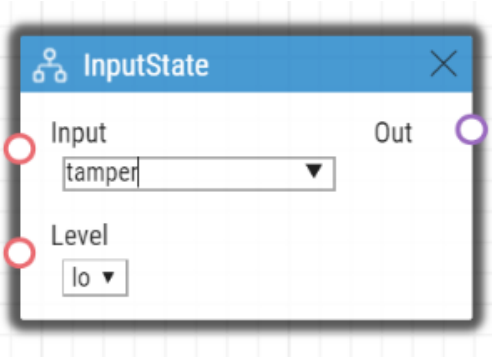
- Input – define the digital input.
  - Valid values:
    - tamper – tamper switch
    - input1 – digital input 1
    - input2 – digital input 2
    - cr_input1 – digital input 1 on card reader
    - cr_input2 – digital input 2 on card reader.
  - There may be different lists of valid values for different 2N IP intercom models; refer to the Available Digital Inputs and Outputs subsection.
- Level – define the required digital input level. The parameter is optional.
  - Valid values:
    - lo – logic 0
    - hi – logic 1 (default value).

## Output parameters

- Out

## Example

The condition is met for an activated tamper switch (device not open):



# FlipFlopRS

The **FlipFlopRS** block is a one-bit memory cell (output parameter), whose state changes to 1 or 0 at the rise of defined events. The FlipFlopRS output can be used as a condition for action control in rather complex **2N® Automation** applications. It is a simulation of an RS-type flip-flop circuit.

## Input parameters

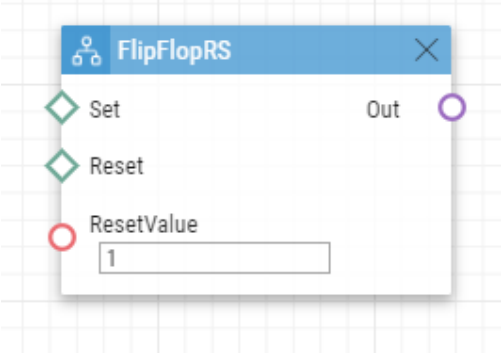
- **Set** – define the event to set the condition into the 'met' state (1).
- **Reset** – define the event to set the condition into the 'not met' state (0).
- **ResetValue** – set the condition default value upon restart. The parameter is optional.
  - Valid values:
    - **0** – condition is not met (default value)
    - **1** – condition is met.

## Output parameters

- Out

## Example

The condition is met at the rise of event 1 and not met at the rise of event 2:



# FlipFlopD

The **FlipFlopD** block is a one-bit memory cell (output parameter), which records the state of another condition at the moment of rise of the defined event for later use. The FlipFlopD output can be used as a condition for action control in rather complex **2N®** **Automation** applications. It is a simulation of a D-type flip-flop circuit.

## Input parameters

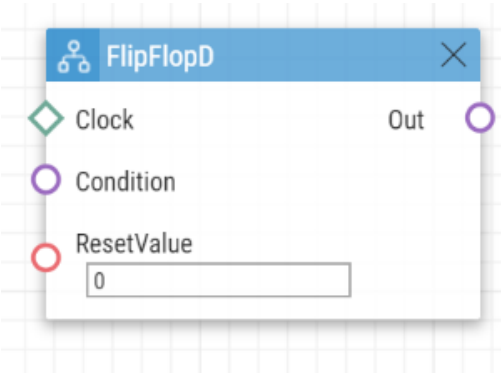
- **Clock** – define the event during which the current state of the condition is to be recorded.
- **Condition** – define the condition to be recorded at the rise of the ClockEvent.
- **ResetValue** – set the condition default value upon restart. The parameter is optional.
  - Valid values:
    - **0** – condition is not met (default value)
    - **1** – condition is met.

## Output parameters

- Out

## Example

The state of the condition is same as the state of condition 2 at the rise of event 1:



# LogicalAnd

The LogicalAnd block helps you create groups of conditions. The block is fulfilled if all the conditions in the defined group are met.

## Input parameters

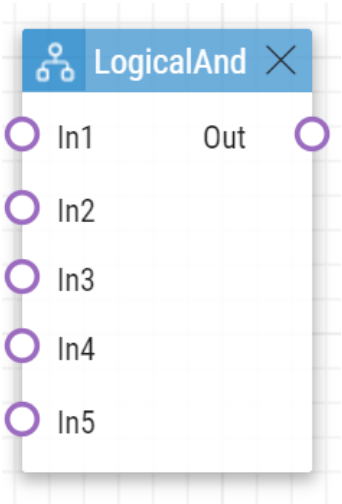
- In1 – define the condition to be met.
- In2 – define the condition to be met.
- In3 – define the condition to be met.
- In4 – define the condition to be met.
- In5 – define the condition to be met.

Output Parameters

- Out

## Example

The condition is met if conditions 1, 2 and 3 are met at the same time:



# LogicalOr

The LogicalOr block helps you create groups of conditions. The block is fulfilled if one condition at least of the defined group is met.

## Input parameters

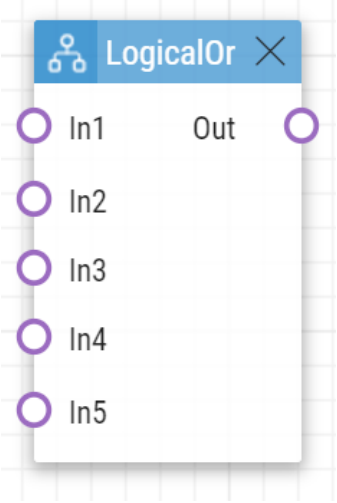
- In1 – define the condition to be met.
- In2 – define the condition to be met.
- In3 – define the condition to be met.
- In4 – define the condition to be met.
- In5 – define the condition to be met.

## Output parameters

- Out

## Example

The condition is met if conditions 1, 2 or 3 are met:



# LogicalNot

The **LogicalNot** block defines the condition to be met in case another defined condition is not met.

## Input parameters

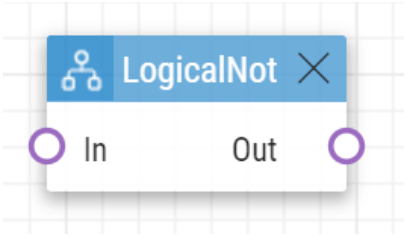
- In

## Output parameters

- Out

## Example

The condition is met in case condition 1 is not met:



# LockdownState

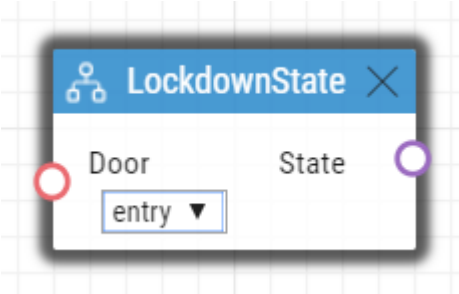
The **LockdownState** block defines the condition to be met when the emergency lockdown is active.

## Input parameters

- **Door** – define the condition to be met. The valid values are entry and exit.

## Output parameters

- State



# OnvifVirtualOutputState

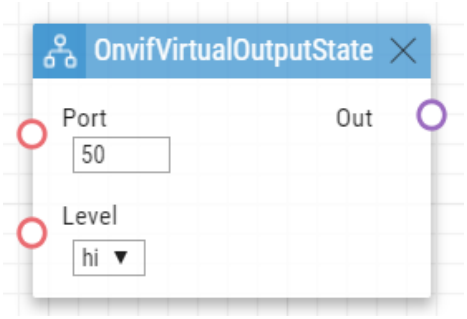
The OnvifVirtualOutputState block defines the condition to be met when the set virtual port state is active.

## Input parameters

- Port – define the port to be observed. The valid values are 50–54.
- Level – define the logical value of the port to be observed. The valid values are high and low.

## Output parameters

- Out



# OutputState

**OutputState** defines the condition that matches the logical state of the output.

## Input parameters

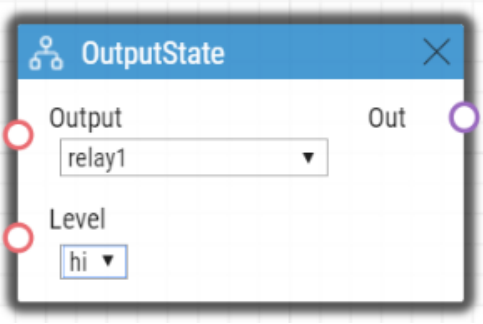
- **Output** – define the digital input.
  - Valid values:
    - **relay1** – relay 1 on basic unit
    - **relay2** – relay 2 on basic unit
    - **output1** – output 1 on basic unit
    - **output2** – output 2 on basic unit
  - There may be different valid values for different **2N IP** intercom models; refer to Subs. Available Digital Inputs and Outputs.
- **Level** – define the required digital input level. The parameter is optional.
  - Valid values:
    - **lo** – logical 0
    - **hi** – logical 1 (default value)

## Output parameters

- Out

Example

The condition is met if relay 1 is active.



# 6. Utilities

Automation defines the following types of events:

# Formatter

The Formatter block helps you use output parameters from Events in Actions and format access to the Actions parameters.

## Parameters

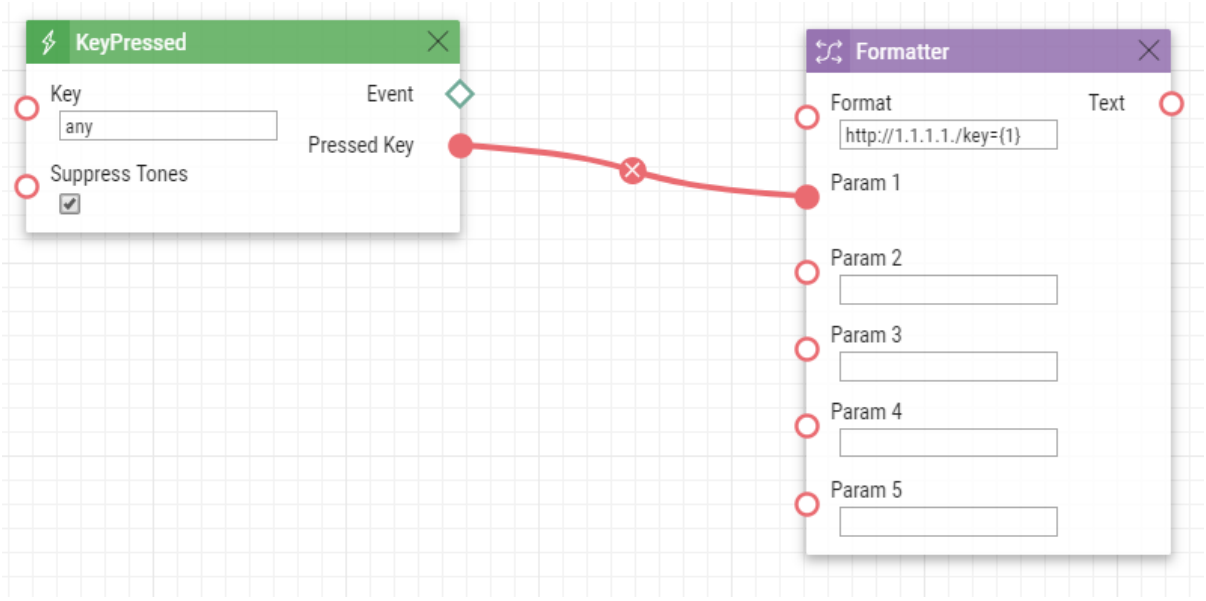
- Format – define the text to be sent to the output of the Text variable. Use braces {} to enter the Param1 value.
  - Example of use
    - http://1.1.1.1/key={1} (save the text with the output parameter value from Param 1).
- Param 1 – set an output parameter for the Format parameter. Typically, it is connected to the Events variable.
- Param 2 – set an output parameter for the Format parameter. Typically, it is connected to the Events variable.
- Param 3 – set an output parameter for the Format parameter. Typically, it is connected to the Events variable.
- Param 4 – set an output parameter for the Format parameter. Typically, it is connected to the Events variable.
- Param 5 – set an output parameter for the Format parameter. Typically, it is connected to the Events variable.

## Output parameters

- Text – final Format text with the set output parameters if any. In Param 1.

## Example

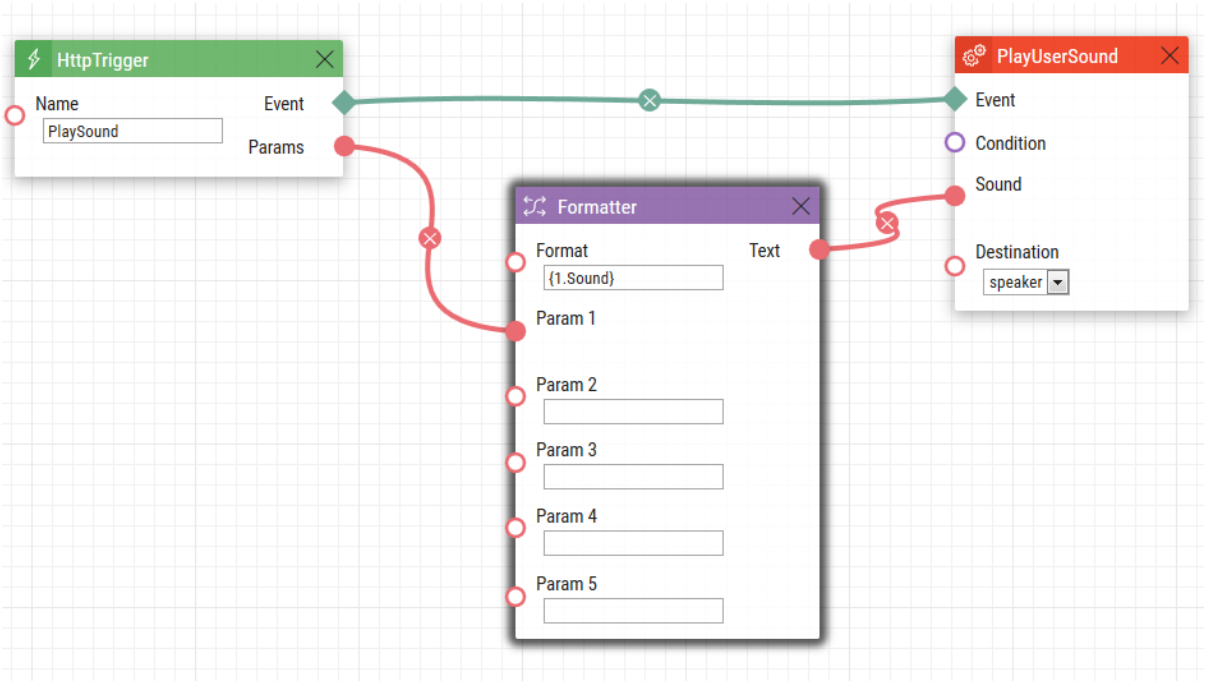
Prepare an HTTP command including the value of the key pressed in KeyPressed.



## Example

Use the parameter value received via HTTP as an action variable.

When the following command is sent to the device: http://<device_address>/enu/trigger/id?param1=value1&param2=value2 , the variables are available via the {param_input.param_name} command.




HTTP command to be sent: **http://10.27.24.15/enu/trigger/PlaySound?Sound=3**

Format: {1.Sound}

Use sound to be played: 3

# 7. Available Digital Inputs and Outputs

In this section, the digital inputs and outputs available on each 2N IP intercom model are described.

- 2N® IP Vario
- 2N® IP Force/Safety
- 2N® IP Audio/Video Kit
- 2N® IP Verso/LTE Verso
- 2N® IP Solo
- 2N® SIP Audio Converter
- 2N Access Unit
- 2N® IP Base

# 2N ® IP Vario

## Outputs

- relay1 – relay output on basic unit
- relay2 – relay output on additional switch (if installed)
- cr_relay1 – relay output 1 on card reader (if installed)
- cr_relay2 – relay output 2 on card reader (if installed)
- led_secured – red LED indicator under name tags (for display-less 9137xxxU models only)

## Inputs

- cr_input1 – digital input 1 on card reader (if installed)
- cr_input2 – digital input 2 on card reader (if installed)

# 2 N ® IP Force/Safety

## Outputs

- relay1 – relay output on basic unit
- output1 – active digital output on basic unit (for board version 555v3 and higher, active digital output is connected with relay output 1 in 555v2 boards)
- relay2 – relay output on additional switch (if installed)
- output2 – active digital output on additional switch (if installed)
- cr_relay1 – relay output on card reader (if installed)
- cr_output1 – active digital output on card reader (if installed)
- led_secured – red LED indicator on card reader (if installed)
- led_ringing – orange LED indicator of ringing (for models with pictograms only)
- led_connected – blue LED indicator of connected call (for models with pictograms only)
- led_door – green LED indicator of door opening (for models with pictograms only)
- led_key1 – first button backlight at Safety
- led_key2 – second button backlight at Safety
- led_key3 – third button backlight at Safety

## Inputs

- tamper – tamper switch (if installed)
- cr_input1 – digit input 1 on card reader (if installed)
- cr_input2 – digital input 2 on card reader (if installed)
- input2 – digital input 2 on additional switch (if installed)

# 2N ® IP Audio/Video Kit

## Outputs

- relay1 – relay output
- output1 – digital output 1
- output2 – digital output 2
- led1 – LED 1 control output
- led2 – LED 2 control output
- led3 – LED 3 control output

## Inputs

- input1 – digital input 1
- input2 – digital input 2

# 2N ® IP Verso/LTE Verso

## Basic Unit

Outputs

- output1 – digital output
- relay1 – relay output
- led_secured – red LED indicator at the panel

Inputs

- input1 – digital input on basic unit

## I/O Module

The inputs / outputs are addressed as follows: <module_name>.<input/output_name>, e.g. module5.relay1.

The module name is configured in the Module name parameter in the Hardware / Extenders menu.

Outputs

- relay1 – relay output 1
- relay2 – relay output 2

Inputs

- input1 – digital input 1
- input2 – digital input 2
- tamper – tamper switch (if installed)

## Wiegand Module

The input is addressed as follows: <module_name>.<input_name>, e.g. module2. tamper

The module name is configured in the Module name parameter in the Hardware / Extenders menu.

Outputs

- output1 – output LED OUT

Inputs

- **input1 –** vstup LED IN
- **tamper** – tamper switch (if installed)

# 2N ® IP Solo

Outputs

- output1 – digital output
- relay1 – relay output
- led_secured – red LED indicator at the panel

Inputs

- input1 – digital input on basic unit
- tamper – tamper switch

# 2N ® SIP Audio Converter

## Outputs

- relay1 – relay output

## Inputs

- Unavailable
- It is possible to use Event.KeyPressed: Key=%1 for events generated at LOGIC IN input

# 2N Access Unit

## Basic Unit

Outputs

- output1 – digital output
- relay1 – relay output
- led_secured – red LED indicator at the front panel

Inputs

- input1 – digital input No. 1 on basic unit
- input2 – digital input No. 2 on basic unit
- input3 – digital input No. 3 on basic unit
- tamper – tamper switch

## I/O Module

The inputs / outputs are addressed as follows: <module_name>.<input/output_name>, e.g. module5.relay1.

The module name is configured in the Module name parameter in the Hardware / Extenders menu.

Outputs

- relay1 – relay output 1
- relay2 – relay output 2
- led_secured – red LED indicator at the panel

Inputs

- input1 – digital input 1
- input2 – digital input 2
- tamper – tamper switch (if installed)

## Wiegand Module

The input is addressed as follows: <module_name>.<input_name>, e.g. module2. tamper

The module name is configured in the Module name parameter in the Hardware / Extenders menu.

Outputs

- **output1** – output LED OUT

Inputs

- **input1** – vstup LED IN
- **tamper** – tamper switch (if installed)

# 2N ® IP Base

Outputs

- output1 – digital output
- relay1 – relay output
- led_secured – red LED indicator at the panel

Inputs

- input1 – digital input on basic unit
- tamper – tamper switch

# 8. Examples of Use

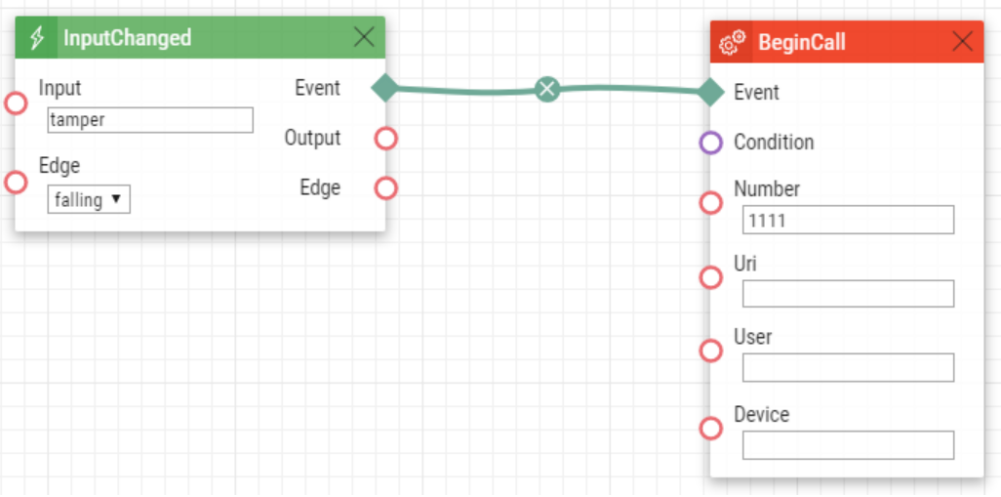
### Calling to Dispatching Office in Case of Unauthorised Door Opening

#### Specification

Call the selected telephone number whenever the tamper switch gets disconnected (device opened).e

#### Block diagram

The rising edge on the tamper input (1: Event.InputChanged) initiates calling to the defined telephone number (2: Action.BeginCall).



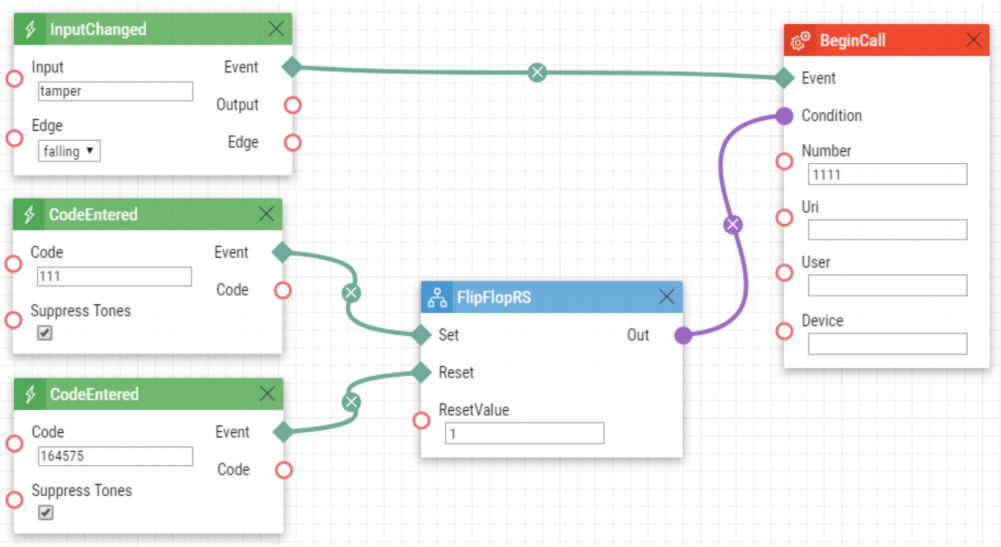
## Calling to Dispatching Office in Case of Unauthorised Door Opening with Service Code Blocking Option

### Specification

Call the selected telephone number whenever the tamper switch gets disconnected (device opened). Enable blocking and re-enable numeric code alarm entered from the intercom keypad.

### Block diagram

The rising edge on the tamper input (1: Event.InputChanged) initiates calling to the defined telephone number (5: Action.BeginCall) in case the defined condition is met. The condition (4: Condition.FlipFlopRS) is validated by the intercom restart or entering the selected code (2: Condition.CodeEntered) on the numeric keypad. If another code is entered (3: Condition.CodeEntered), the condition will be invalid.



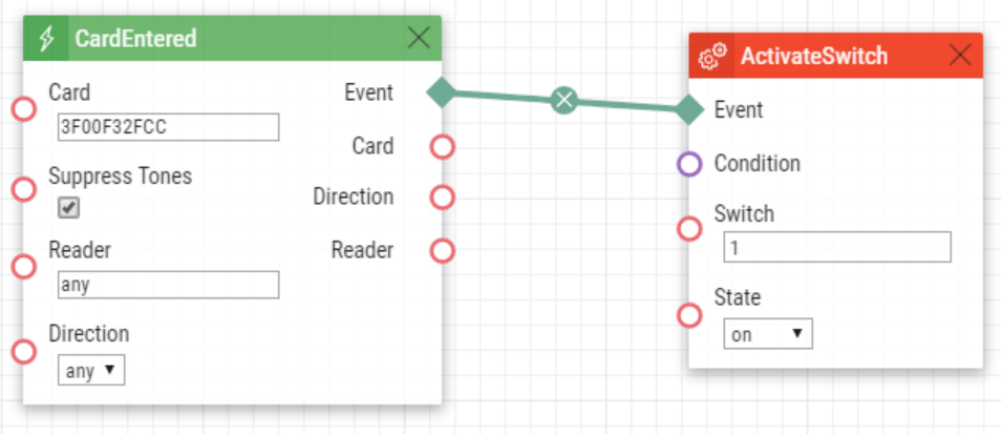
## Door Opening by RFID Card

### Specification

Activate the door contact switch by tapping/swiping the proper RFID card on /through the reader.

### Block diagram

Entering an RFID card with the defined ID (1: Event.CardEntered) activates switch 1 (2: Action.ActivateSwitch).



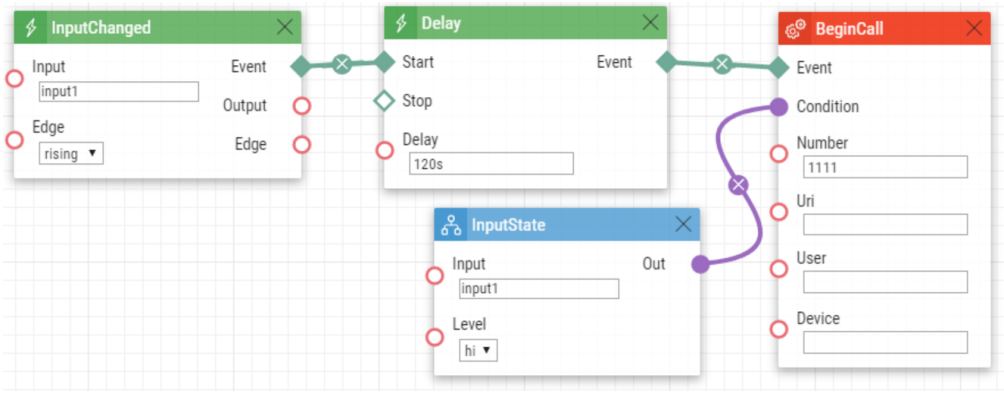
### Alarm (Dispatching Office Call) Caused by Over 2-Min Long Door Opening

#### Specification

Call the dispatching office in case the door remains open for more than 2 minutes. It is supposed that the door opening signalling contact is connected to Input1.

#### Block diagram

Whenever the door opens, the rising edge on Input1 signal (1: Event.InputChanged) calls the defined telephone number (4: Action.BeginCall) with a 120 s delay (2: Event. Delay).The call is only executed if the door remains open for more than 120 s (3: Condition.InputState).



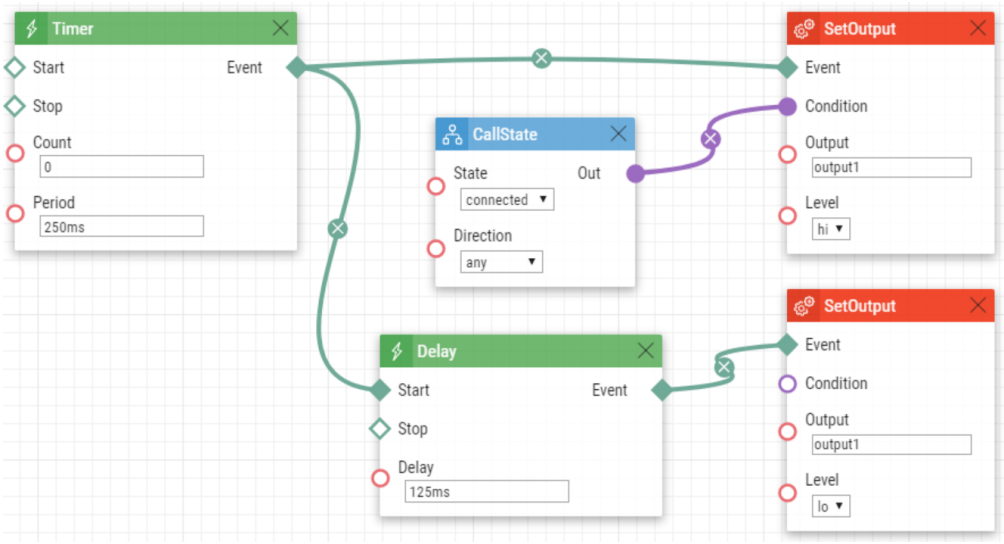
## LED Flashing during Call / Electric Door Lock Opening

### Specification

Enable LED flashing during an active call.

### Block diagram

Enable LED flashing by a combination of the periodic timer (1: Event.Timer) and delay (2: Event.Delay). These two blocks define the period (250 ms) and duty cycle of the signal or the LED shining period (125 ms). These two events are tied with the on-switching (4: Action.SetOutput) and off-switching (5: Action.SetOutput) actions. The LED switch-on action is conditioned by the active call (3: Condition.CallState).



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