Home center 2.7
Logic protocol

The logic interface functionality is available exclusively on the VMBHIS

Revision 26-03-2014

(More info http://www.homecenter.be)
Things marked in red may change in the future

Table of Contents

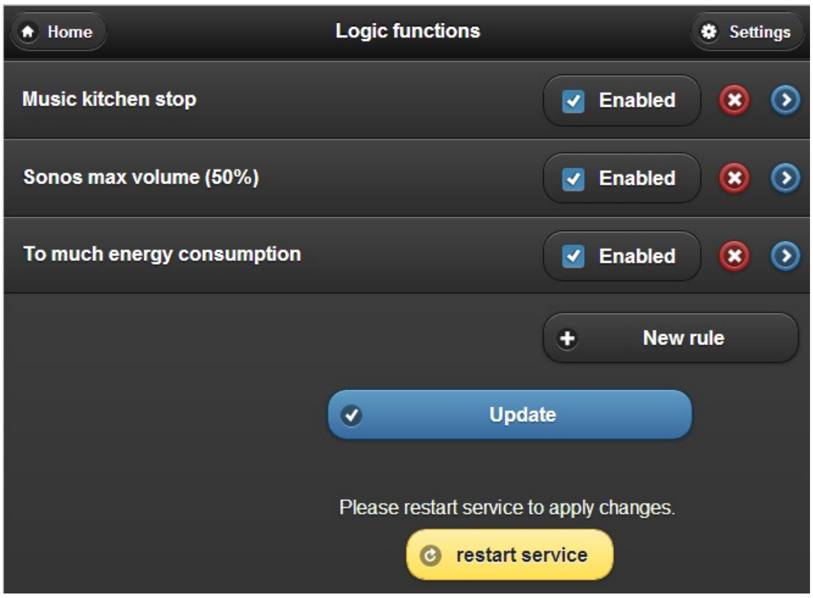
1 Basic concepts

1.1 Principle of rules

A **rule** is activated when an input or output is triggered

- on the home automation bus Velbus
- in Home center
- by a Sonos player associated with Home center.

You create a list of these rules in the VMBHIS.



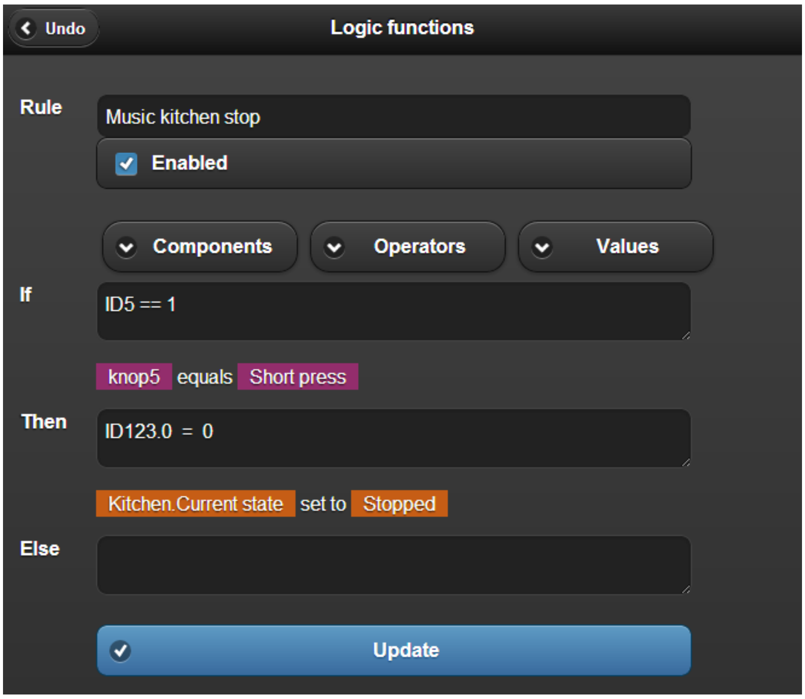
Music kitchen stop ☑ Enabled

Sonos max volume (50%) ☑ Enabled

To much energy consumption ☑ Enabled

Please restart service to apply changes.

Click a rule to manage the rule. The detail screen of a rule looks like this:



Rule: Music kitchen stop

☑ Enabled

If: ID5 == 1

knop5 equals Short press

Then: ID123.0 = 0

Kitchen.Current state set to Stopped

Else:

Rule	a name to identify the rule
Enable	on/off, this makes the rule active or not
IF	condition
THEN	action(s) to execute if condition is met
ELSE	action(s) to execute if condition is not met (optional)
Components Operators Values	These 3 drop down lists assist in building the rules. When you select an item from the list, it is added to the box where the cursor was last: IF, THEN or ELSE

1.2 When is a rule evaluated and activated?

Evaluating the rules (**IF**) occurs:

1. When a command is put on the bus by a Velbus **input or output module** that occurs in the IF condition
2. When a **Sonos player** that occurs in the IF condition sends out a message
3. When **starting the VMBHIS** (all states of input and output modules are checked)

The **activation** of a rule:

- **THEN** When a rule is evaluated, and the IF condition is met, then the actions in the THEN are executed.
- **ELSE** When a rule is evaluated, and the IF condition is NOT met, then the actions in the ELSE are executed.

1.3 How many rules can I make?

You can make up to 15 rules. If you would like to have additional rules, your license will have to be extended. Contact your dealer for this.

2 IF conditions

2.1 Logic operators for IF conditions

2.1.1 Basic operators

Use these logic operators to build conditions:

Operators value	–, !
Binary operators	*, /, %, +, -, <, <=, >, >=, ==, !=, &, ^, !,
Logic operators	&&, ||, ^

Examples of IF conditions	
1	ID1 == 1
2	ID1 > 0
3	ID14.0 <= 10

ID<no.> will be replaced by the current value of the input, output or other component (eg. Sonos) with this ID. These ID's are an internal number used in Home center and are not related to the addresses of the Velbus modules.

In the above examples, rules 1 and 2 will be evaluated when an action happens on the input or output on the bus with internal ID 1. Rule 3 will be evaluated when an action happens on input/output with internal ID 14.

A component can combine multiple properties. Eg. thermostat: current temperature, active regime .... These values can be chosen by eg. ID14.0 for the current temperature or ID14.1 for the active regime.

2.1.2 Evaluating multiple values

The IF condition can be 1 condition or composed by multiple conditions. Multiple conditions must then be combined with logic operators:

AND	&&
OR	||
XOR	^

With parentheses priority rules can be applied

Set priority	( )

Examples of IF combined conditions	
1	ID1 > 0 || ID2 > 0
2	ID1 == 0 && ID2 == 0
3	(ID1 > 0 || ID2 > 0) && ID3 > 0

In the above examples, rules 1, 2 and 3 will be evaluated when an action happens on the input or output on the bus with internal ID 1 or ID 2. Rule 3 will also be evaluated when an actions happens on input/output with internal ID 3.

Rule 3 has parentheses ( ) applied to set priorities.

2.1.3 Comparing values of components

You can also use the value of 2 or more components to make a condition:

Examples of IF conditions comparing component value	
1	ID1 != ID2
2	ID1 – ID2 != 0
3	ID1 + ID2 + ID3 > 0

In the above examples, rules 1, 2 and 3 will be evaluated when an action happens on the input or output on the bus with internal ID 1 or ID 2. Rule 3 will also be evaluated when an actions happens on input/output with internal ID 3.

Note that rule 1 and rule 2 will have the same result.

2.2 Building IF conditions for modules

The values that components can have, depends on the type of modules: toggle, dimmer, thermostat, Sonos player, ...

2.2.1 Input/Macro

Eg. a push button with internal ID 1

The input has only one value that can be evaluated.

Evaluate	Sub-ID	Value	Example IF
Current state of the push button	0	1 = Short press 2 = Long press 0 = Release	ID1.0 == 1 ID1.0 == 2 ID1.0 == 0
Alternative		*Is pressed (short or long)*	*ID1.0 > 0* *ID1.0 >= 1*

2.2.2 Toggle

Eg. light with internal ID 7

The toggle has only one value that can be evaluated.

Evaluate	Sub-ID	Value	Example IF
Current state of the toggle	0	255 = on 0 = off	ID7.0 == 255 ID7.0 == 0
Alternative		*Light is turned on*	*ID7.0 > 0*

2.2.3 Dimmer

Eg. LED dimmer with internal ID 9

The dimmer has only one value that can be evaluated.

Evaluate	Sub-ID	Value	Example IF
Current state of the dimmer *	0	0 = off 100 = 50% 200 = 100%	ID9.0 == 0 ID9.0 == 100 ID9.0 == 200
Alternative		*Value is more then 50%* *Value is less then 15%*	*ID9.0 > 100* *ID9.0 < 30*

* Note: The (internal) value of a dimmer is multiplied by 2!

2.2.4 Shutter/blind

Eg. Blind with internal ID 12

The blind has two values that can be evaluated, the current state (sub-ID 0) and the last state of the blind (sub-ID 1).

Evaluate	Sub-ID	Value	Example IF
Current state of the blind	0	1 = blind going up 2 = blind going down 0 = blind stopped	ID12.0 == 1 ID12.0 == 2 ID12.0 == 0
Alternative		*Blind is moving (going up or down)*	*ID12.0 > 0*
Last state of the blind*	1	1 = open 2 = closed	ID12.1 == 1 ID12.1 == 2

* This is the last move that was made by the blind. This state is set when the blind stops (ID12.0 == 0)

2.2.5 Thermostat

Eg. Thermostat with internal ID 14

The thermostat has 5 values (5 sub-ID's) that can be evaluated.

Evaluate	Sub-ID	Value	Example IF
Current measured temperature *	0	0 = 0°C 30 = 15°C 43 = 21,5°C	ID14.0 == 0 ID14.0 == 30 ID14.0 == 43
Alternative		*the measured temp. is more then 22 °C* *the measured temp. is less then 5 °C*	*ID14.0 > 44* *ID14.0 < 10*
Regime currently set	1	2 = Stand by 3 = Night 4 = Day 5 = Comfort	ID14.1 == 2 ID14.1 == 3 ID14.1 == 4 ID14.1 == 5
The set temperature *	2	10 = temp. 5°C 36 = temp. 18 °C 45 = temp. 22,5 °C	ID14.2 == 10 ID14.2 == 36 ID14.2 == 45
Alternative		*the set temp. is more then 21°C*	*ID14.2 > 42*
Heater active	3	1 = heater active	ID14.3 == 1
Cooler active	4	1 = cooler active	ID14.4 == 1

* Note: The (internal) temperature value is multiplied by 2!

2.2.6 Energy meter

Eg. Energy meter with internal ID 17

The energy meter can measure energy generation or consumption. It has two values that can be evaluated.

Evaluate	Sub-ID	Value	Example IF
Total consumed or generated energy (kWh) (with 2 decimal places)	0	Energy generated/consumed up to now	ID17.0 > 0
Alternative		*Total generated energy kWh is a multiple of 1000*	*ID17.0 % 1000 ==0*
Current energy consumption or generation (W)	1	Amount of energy generated right now or No energy generation	ID17.1 > 0 or ID17.1 == 0
Alternative		*The current consumption/generation is more then 1000 W*	*ID17.1 > 1000*

2.2.7 Sonos

Eg. Sonos Play:1 with internal ID 99

The Sonos player has 4 values that can be evaluated.

Evaluate	Sub-ID	Value	Example IF
Current state	0	0 = stopped 1 = playing 2 = paused	ID99.0 == 0 ID99.0 == 1 ID99.0 == 2
Mute	2	0 = mute off 1 = mute on	ID99.2 == 0 ID99.2 == 1
Volume*	3	0 = volume off 50 = volume 25% 200 = volume 100%	ID99.3 == 0 ID99.3 == 50 ID99.3 == 200
Select previous/next song	4	1 = previous song 2 = next song	ID99.4 == 1 ID99.4 == 2
Alternative		*Next or previous song selected or started*	*ID99.4 > 0*

* Note: The (internal) value for volume is multiplied by 2!

Note: the Sonos player is not part of the home automation bus. It is a property of the Sonos player to send out the current status often. This happens when the next songs starts playing automatically but also at regular intervals, not only from a modification.

2.3 Examples of combining conditions

Example	Using AND and OR
IF	(ID7 > 0 && ID8 > 0) || (ID7 == 0 && ID8 == 0)
ID7 and ID8 are 2 lights: Both lights are switched on or off together	

Example	Using GREATER THEN and SUBSTRACTION
IF	ID13.1 > ID12.1
IF	ID13.1 – ID12.1 > 0
ID12 = energy meter monitoring the output of solar panels *ID13 = energy meter monitoring energy consumption* *Both statements check if the current consumption is greater than the current generated energy*	

3 THEN/ELSE action

3.1 Basics

When the evaluated condition in the IF is met, the action(s) in the THEN part are executed. If the condition is not met, the optional action(s) in the ELSE are executed.

The use of ELSE is optional. Also, be aware that using else is not always a good idea and should be carefully tested. See 3.2 CAUTION with using ELSE

3.1.1 Action: assign a numerical value

A numerical value is assigned to a component, or component with a sub-ID, with an assignment.

Example	ID7.0 = 50

Notice: use only a single **=**

The ID's are internal numbers used in Home center and are not related to the addresses of the Velbus modules or Sonos.

3.1.2 Assign values of other components

It is possible to use the current value of another component to set a value of a component.

Example	ID7.0 = ID8.0

3.1.3 Use of operators

Use operators to assign a value

Example	ID7.0 = ID8.0 + 10

3.1.4 Combining multiple actions

The THEN/ELSE can be composed of one or more actions.

Separate multiple actions with	;

	Examples of combining THEN actions
1	ID20 = 1; ID7.0 = ID8.0 + 10

2	ID60 = 0; ID61 = 0; ID62 = 0;
	ID63 = 0; ID64 = 0

Also see 3.5 Combine actions

3.2 CAUTION with using ELSE

If you are using ELSE, it can be activated very often!

Eg. Rule 1

	Rule 1	
IF	dimmer X == 100%	*If dimmer X is at 100%*
THEN	dimmer Y = 0	*Then turn dimmer Y off*
ELSE	dimmer Y = 100%	*Else let dimmer Y go to 100%*

If dimmer X is at 0%, this rule will also be evaluated and the ELSE part will be executed. So dimmer Y will be lit to 100%.

But the ELSE will also be carried out when dimmer X is at 99%. So if dimmer Y is set to 50% for example, it will be set to 100%.

Define another rule:

Rule 2

	Rule 2	
IF	dimmer Y == 100%	*If dimmer Y is at 100%*
THEN	dimmer X = 0	*Then turn off dimmer X*
ELSE	–	-

This will create a **snowball effect**:

Put dimmer Y to 100% -> this will activate rule 2: dimmer X turns off.

The status van dimmer X changes, so rule 1 is activated: dimmer X is not 100% so the ELSE is executed: dimmer Y turns off. While you have just turned it on...

Note

It is advisable to carefully consider what you put in the ELSE.
Possibly it is better to make separate rules with only THEN actions.
If you do use ELSE, test it profoundly!

3.3 Building actions for modules

The value that can be assigned will depend on the type of modules: toggle, dimmer, thermostat, Sonos player, ...

3.3.1 Input/ Macro

Simulate pressing a push button

Eg. push button with internal ID 1

Set	Sub-ID	Value	Example

Button	0	1 = Short press
		2 = Long press
		0 = Release
			ID1.0 = 1
			ID1.0 = 2
			ID1.0 = 0

To simulate a **macro** assigned to a button, execute 2 actions:

Set	Sub-ID	Value	Example
Button	0	1 = Short press AND 0 = Release	ID1.0 = 1**;** ID1.0 = 0

Notice the semicolon (**;**) to combine 2 actions

3.3.2 Toggle

Operate a toggle.

Eg. a light with internal ID 7

ID7=255: turn on the light
ID7=0: turn off the light

Set	Sub-ID	Value	Example

Toggle	0	255 = on
		0 = off
			ID7.0 = 255
			ID7.0 = 0

3.3.3 Dimmer

Operate a dimmer. Set to a certain value, make it go up or down.

Eg. LED dimmer with internal ID 9

Set	Sub-ID	Value	Example

Dimmer value *	0	0 = off
		100 = 50%
		200 = 100%
			ID9.0 = 0
			ID9.0 = 100
			ID9.0 = 200

Dimmer pre-set value (if supported by module)	0	201 = default ON value	ID9.0 = 201

Dimmer movement	0	220 = dimmer up
		210 = dimmer up stop
		221 = dimmer down
		211 = dimmer down
			ID9.0 = 220
			ID9.0 = 210
			ID9.0 = 221
			ID9.0 = 211

		stop	

* Note: The (internal) value of a dimmer is multiplied by 2!

3.3.4 Blind/shutter

Make a blind go up or down.

Eg. blind with internal ID 12

Set	Sub-ID	Value	Example

Blind	0	1 = blind up
		2 = blind down
		0 = blind stop
			ID12.0 = 1
			ID12.0 = 2
			ID12.0 = 0

3.3.5 Thermostat

Operate the thermostat.

A thermostat has two separate items that can be set: the desired temperature and the regime. A sub-id is used to distinguish the 2 possible actions.

Eg. Thermostat with internal ID 14

Set	Sub-ID	Value	Example

Regime	1	2 = Stand by
		3 = Night
		4 = Day
		5 = Comfort
			ID14.1 = 2
			ID14.1 = 3
			ID14.1 = 4
			ID14.1 = 5

Desired temperature*	2	10 = temp. 5°C
		36 = temp. 18 °C
		45 = temp. 22,5 °C
			ID14.2 = 10
			ID14.2 = 36
			ID14.2 = 45

* Note: The (internal) temperature value is multiplied by 2!

3.3.6 Energy meter

Not changeable, can only be read.

Set	Sub-ID	Value	Example
–	–	–	-

3.3.7 Sonos

Operate a Sonos player.

Eg. Sonos Play:1 with internal ID 99

With a Sonos player several things can be set:

Set	Sub-ID	Value	Example

Status	1	0 = stop
		1 = start
		2 = pause
			ID99.1 = 0
			ID99.1 = 1
			ID99.1 = 2

Mute	2	0 = mute off
		1 = mute on
			ID99.2 = 0
			ID99.2 = 1

Volume *	3	0 = volume off
		50 = volume 25%
		200 = volume 100%
			ID99.3 = 0
			ID99.3 = 50
			ID99.3 = 200

Select previous/next song	4	1 = previous song
		2 = next song
			ID99.4 = 1
			ID99.4 = 2

* Note: The (internal) value of volume is multiplied by 2!

3.4 URL

A URL, for example a camera link, can be opened. Use the following action:

	Action to open camera URL
IF	*<condition to trigger camera>*
THEN	URL=http://www.kokoloco.be/de-kwinte/webcam

This action will open this Web page on the clients.

This works in the Windows Home center client, iPhone / iPad app, Android web app.

Note

the URL should be reachable for the client. If the client is outside of the home network and the URL is an internal address, this will not work.

3.5 Combine actions

Put multiple actions together in a rule by separating them with a semicolon (**;**)

Eg. All off

	Combined actions
Then	ID7=0**;** ID9=0**;** ID14.1=2**;** ID99.1=0

This raises the following actions

ID7=0	: light off
ID9=0	: dimmer off
ID14.1=2	: regime of the thermostat to 'Stand by'
ID99.1=0	: stop Sonos Play:1

Velbus components can also be executed along with a button that has been programmed. (Eg. input button with ID 1 = All Off)

	Combined actions
Then	ID1=1**;** ID1=0**;** ID99.0=0

ID1=1; ID1=0	: Simulate pressing and releasing the button
ID99.0=0	: stop Sonos Play:1

Link this action to the IF condition that checks the button with ID 1, then you only need the action on the Sonos:

	Conditions/Actions
If	ID1=1
Then	ID99.1=0

A URL can also be added to the actions:

	Conditions/Actions
If	ID1=1
Then	ID99.0=0; URL=http://www.kokoloco.be/de-kwinte/webcam

4 Examples

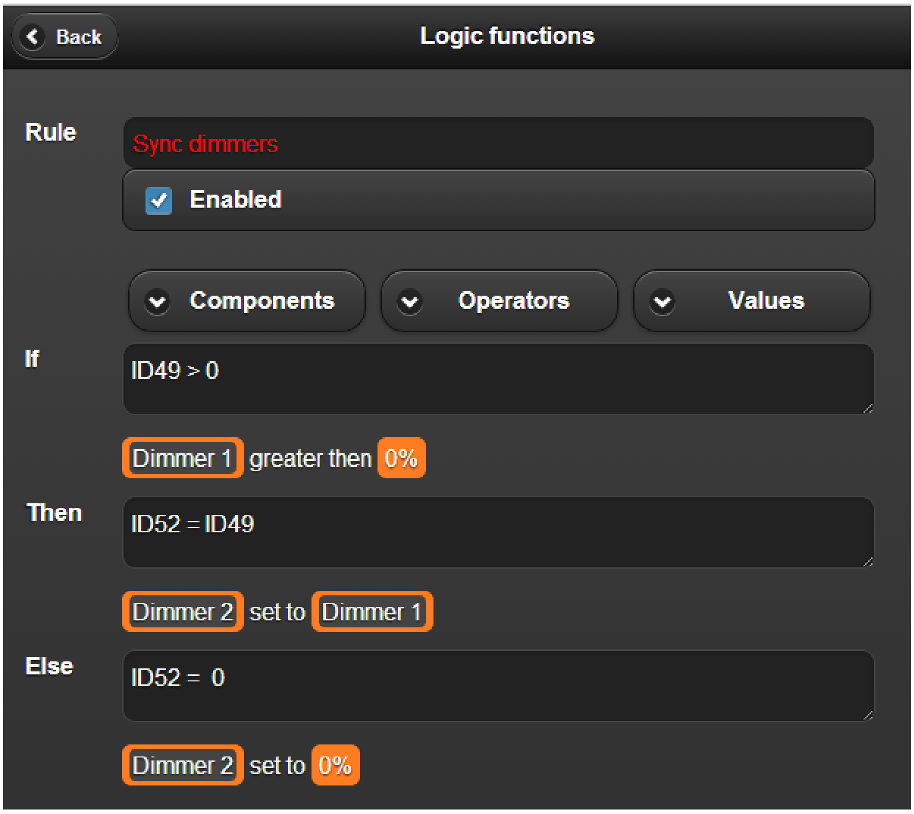
4.1 Dimmer 2 follows Dimmer 1

A status change of Dimmer 1 (ID49) triggers this rule.

Is the value of Dimmer 1 > 0, then the THEN action is executed: Dimmer 2 (ID52) gets the value of Dimmer 1.

Is the dimmer off (= 0), then through the ELSE action Dimmer 2 is also put to 0.

Still, it is possible to operate Dimmer 2 separately. But once Dimmer 1 changes, Dimmer 2 will follow this again.



Rule: Sync dimmers

☑ Enabled

If: ID49 > 0

Dimmer 1 greater then 0%

Then: ID52 = ID49

Dimmer 2 set to Dimmer 1

Else: ID52 = 0

Dimmer 2 set to 0%

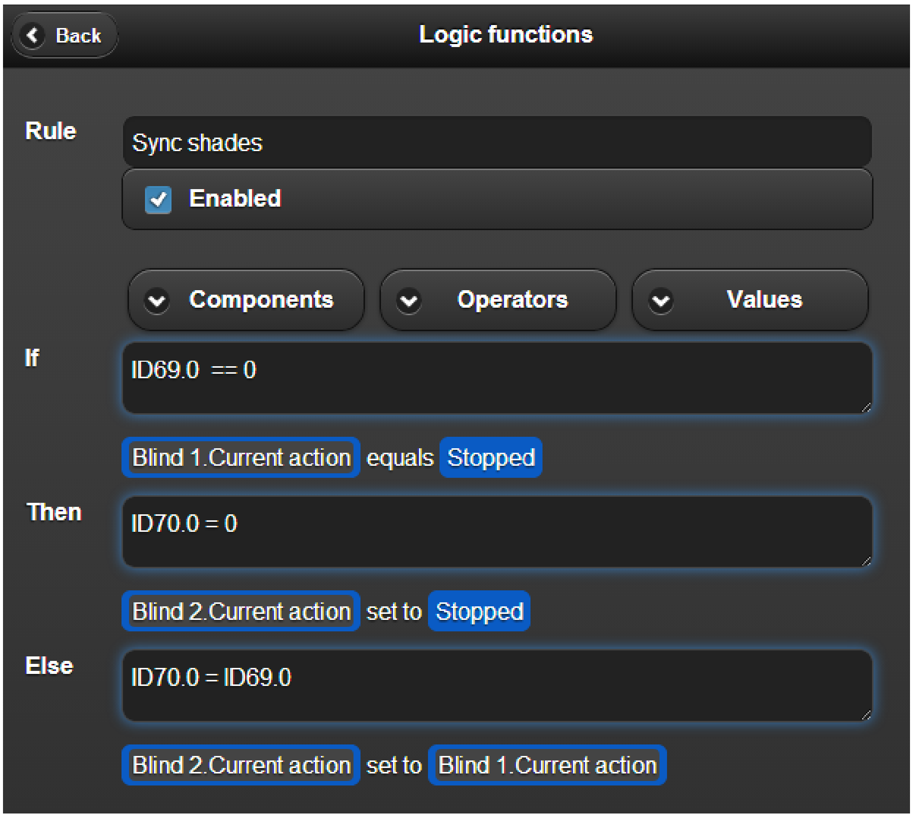
4.2 Blind 2 follows blind 1

Similar to example 1 but then for shades/blinds.

Blind 2 (ID70) will follow the commands of blind 1 (ID69), including the stop command.

Here, blind 2 can also be operated separately.

But once blind 1 changes, blind 2 will follow again.



Rule: Sync shades

☑ Enabled

If: ID69.0 == 0

Blind 1.Current action equals Stopped

Then: ID70.0 = 0

Blind 2.Current action set to Stopped

Else: ID70.0 = ID69.0

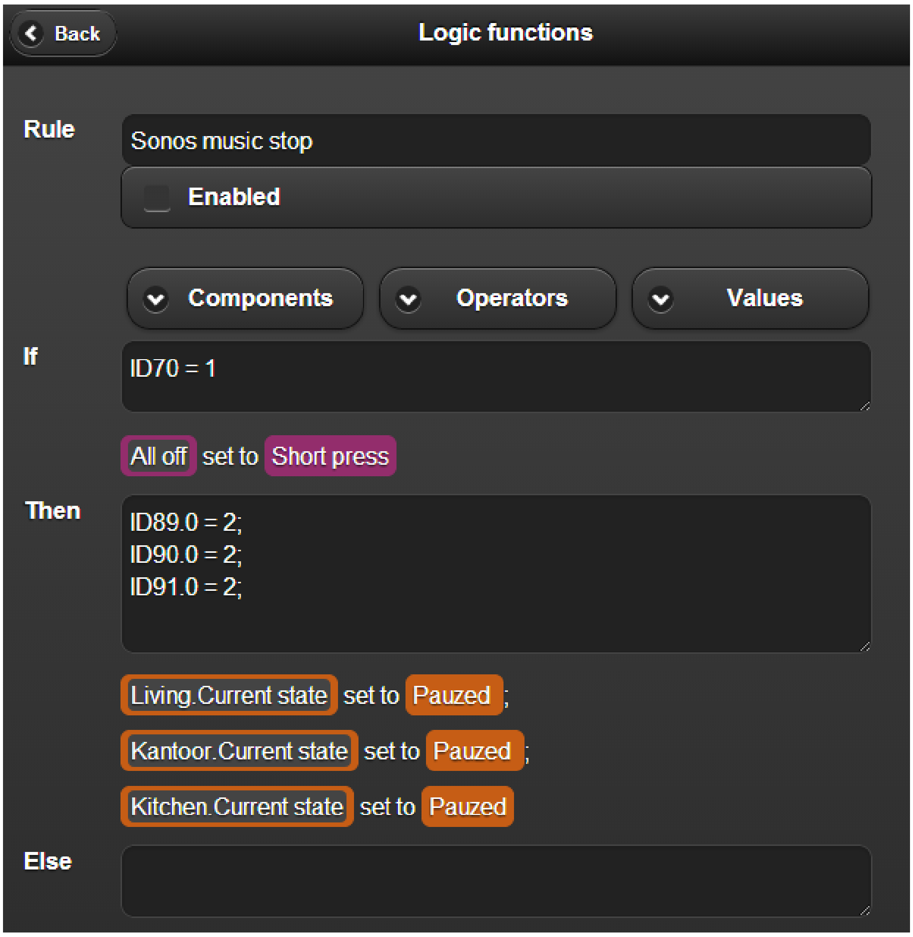
Blind 2.Current action set to Blind 1.Current action

4.3 Extend Velbus *All off* macro with Sonos players

Do you have an 'All off' button programmed in Velbus (ID70)?

Create a rule to disable all Sonos devices along with this macro.

So, when this button is pressed (The value of ID70 > 0), it will activate this rule in the VMBHIS and a stop will be send to the Sonos devices (ID89, ID90 and ID91).



Rule: Sonos music stop

□ Enabled

If:

```
ID70 = 1
```

All off set to Short press

Then:

```
ID89.0 = 2;
ID90.0 = 2;
ID91.0 = 2;
```

Living.Current state set to Pauzed ;

Kantoor.Current state set to Pauzed ;

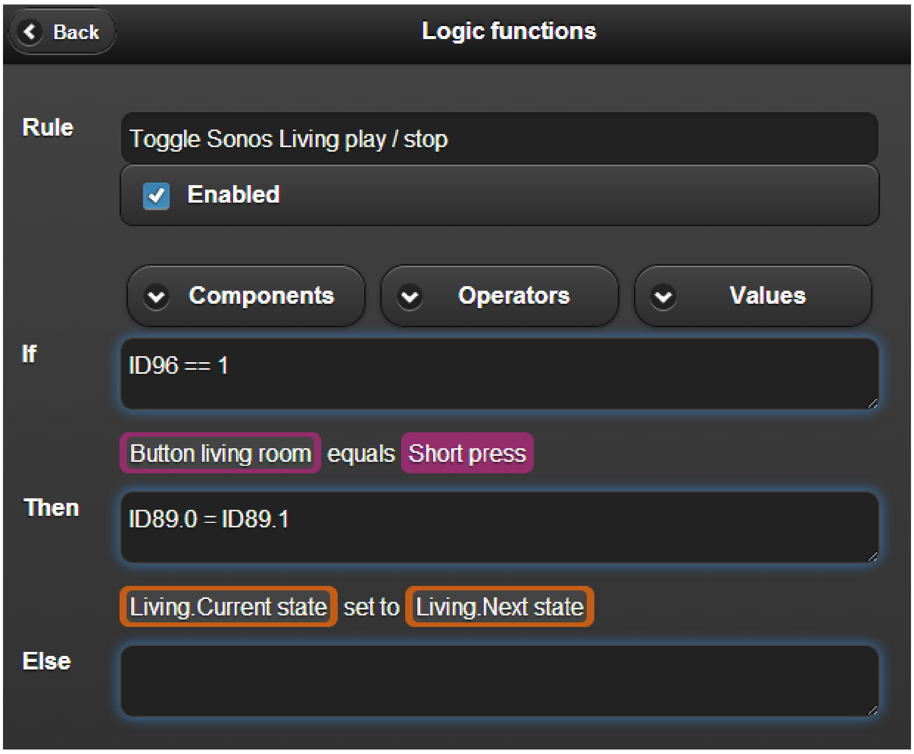
Kitchen.Current state set to Pauzed

Else:

4.4 Sonos toggle play / stop with a Velbus button

You can program a button in your living room (ID96) to start or stop the Sonos player (ID89).

If you press the button when the Sonos player is not playing, it will start playing. If you press it again, it will stop playing.



Rule: Toggle Sonos Living play / stop

☑ Enabled

If:

```
ID96 == 1
```

Button living room equals Short press

Then:

```
ID89.0 = ID89.1
```

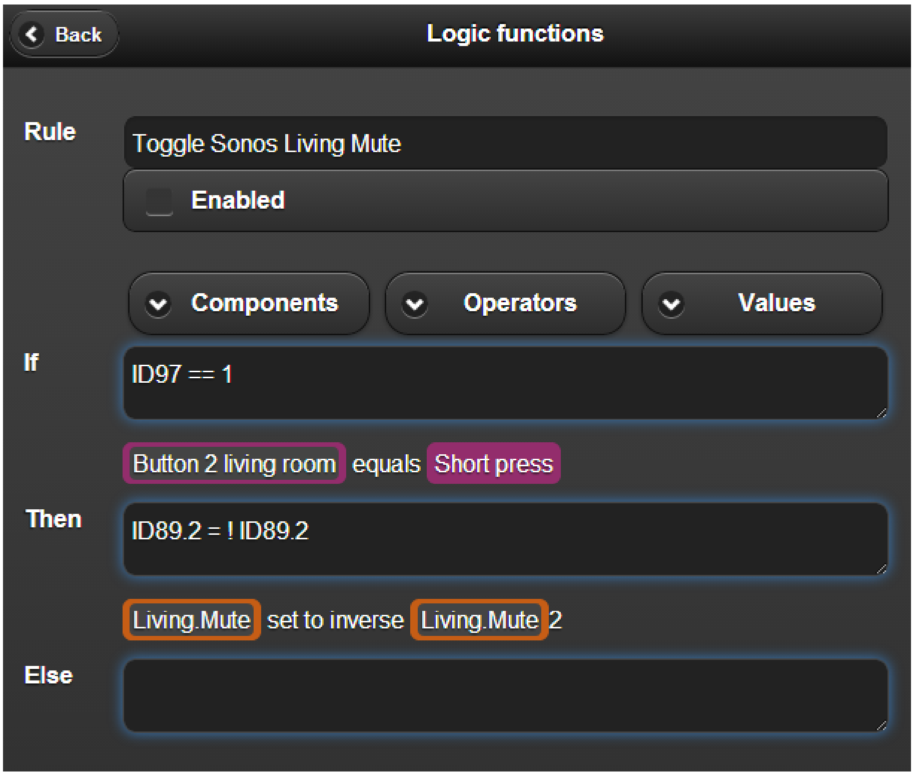
Living.Current state set to Living.Next state

Else:

4.5 Sonos toggle mute with a Velbus button

You can program a button in your living room (ID97) to toggle the mute of the Sonos player (ID89).

If you press the button when the Sonos player is playing, it will be muted. If you press it again, it will be unmuted.



Toggle Sonos Living Mute

□ Enabled

ID97 == 1

Button 2 living room equals Short press

ID89.2 = ! ID89.2

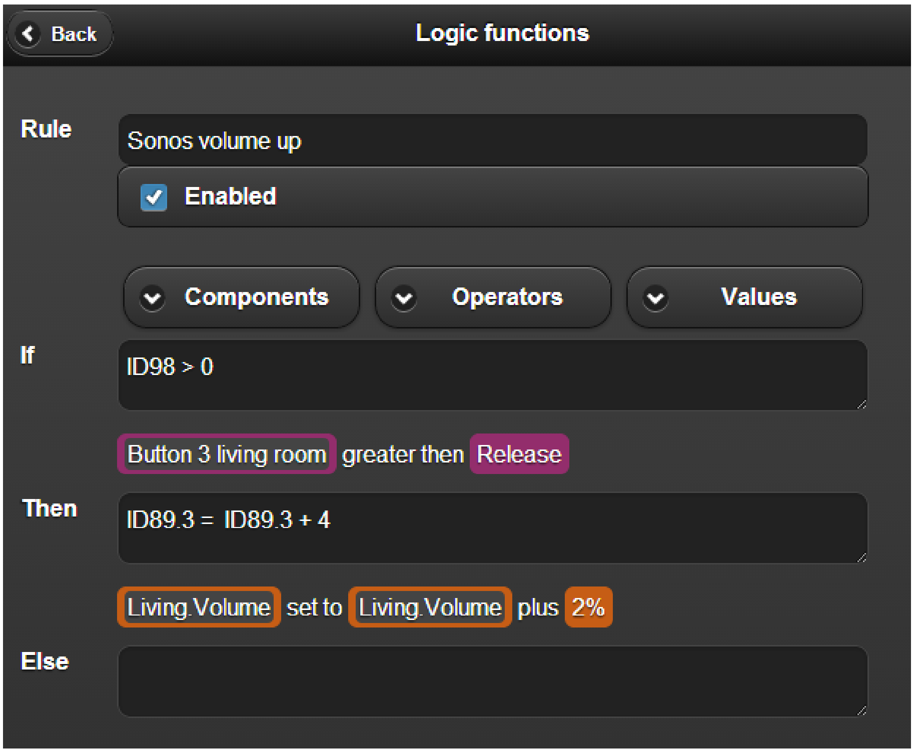
Living.Mute set to inverse Living.Mute 2

4.6 Sonos volume up (or down)

You can program a button in your living room (ID98) to increase the volume of the Sonos player (ID89).

In the example, if you press the button the volume will go up with 2%.

To program a button to make the volume go down, make a similar rule for another button and use - 4 to change the volume.



Sonos volume up

☑ Enabled

ID98 > 0

Button 3 living room greater then Release

ID89.3 = ID89.3 + 4

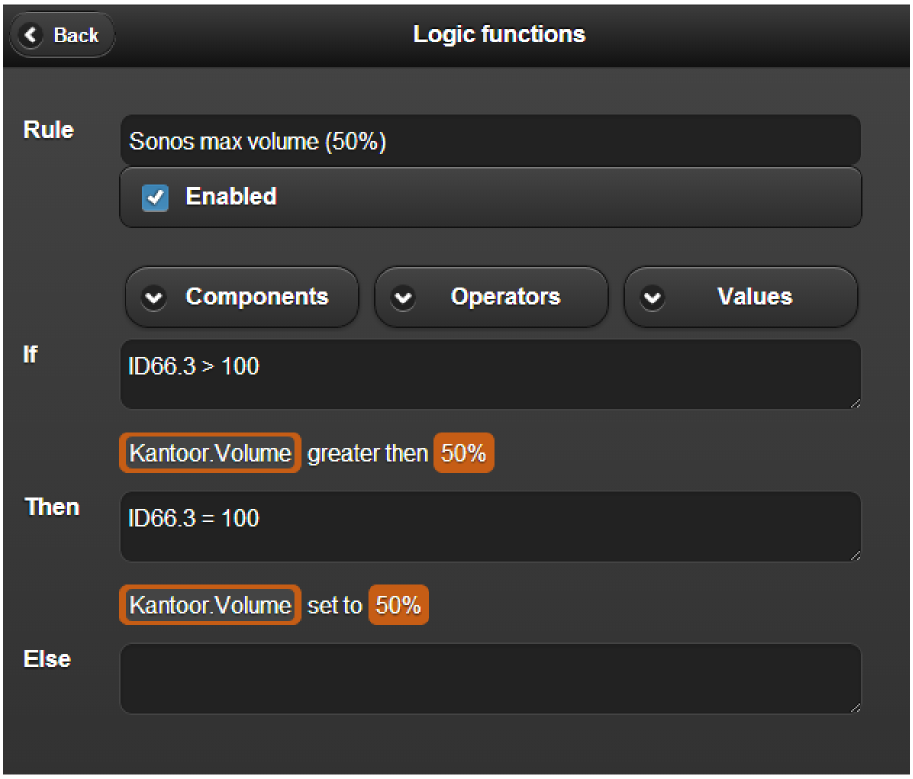
Living.Volume set to Living.Volume plus 2%

4.7 Do not allow a volume of Sonos above 50%.

As soon as the volume is put higher then 50% (with the Sonos software or in Home center) this rule will turn the volume back down to 50%.

Note the used value is multiplied by 2: so 50% is translated to value 100.

Neighbors no longer complain about music being to loud.



Rule: Sonos max volume (50%)

☑ Enabled

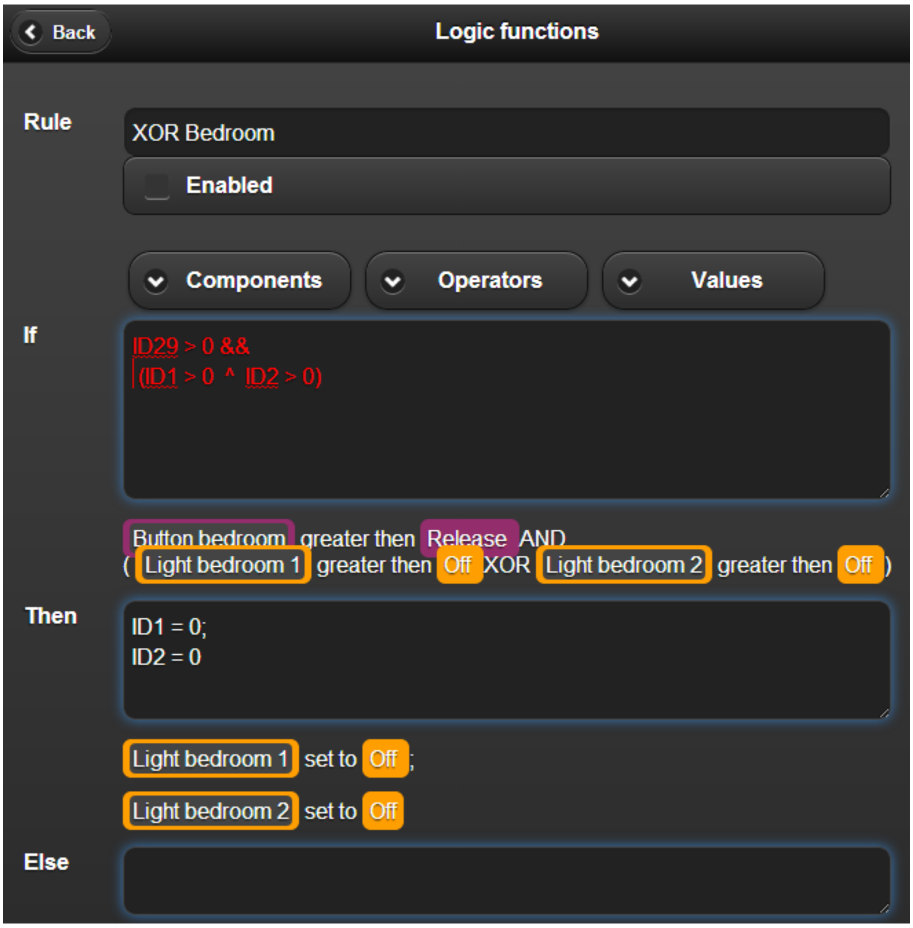
If:
```
ID66.3 > 100
```
Kantoor.Volume greater then 50%

Then:
```
ID66.3 = 100
```
Kantoor.Volume set to 50%

Else:

4.8 XOR

If one of the two bedroom lights (ID1 and ID2) is on, pressing the button (ID29) turns it off. If they were both already off, no action is taken.



Rule: XOR Bedroom

□ Enabled

If:
```
ID29 > 0 &&
(ID1 > 0 ^ ID2 > 0)
```
Button bedroom greater then Release AND
(Light bedroom 1 greater then Off XOR Light bedroom 2 greater then Off)

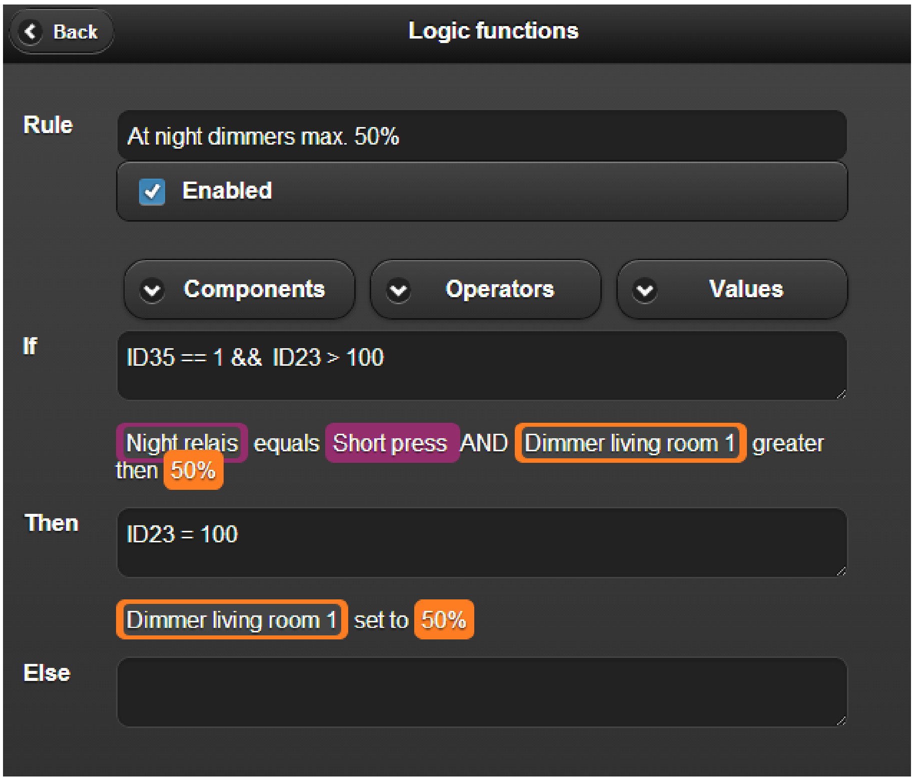
Then:
```
ID1 = 0;
ID2 = 0
```
Light bedroom 1 set to Off ;

Light bedroom 2 set to Off

Else:

4.9 Limit the value of dimmers to 50% in the evening.

When the relay of the night switch (ID35) is enabled and the value of the dimmer in the living room (ID23) exceeds 50%, turn it back down to 50%



Rule: At night dimmers max. 50%

☑ Enabled

If: ID35 == 1 && ID23 > 100

Night relais equals Short press AND Dimmer living room 1 greater then 50%

Then: ID23 = 100

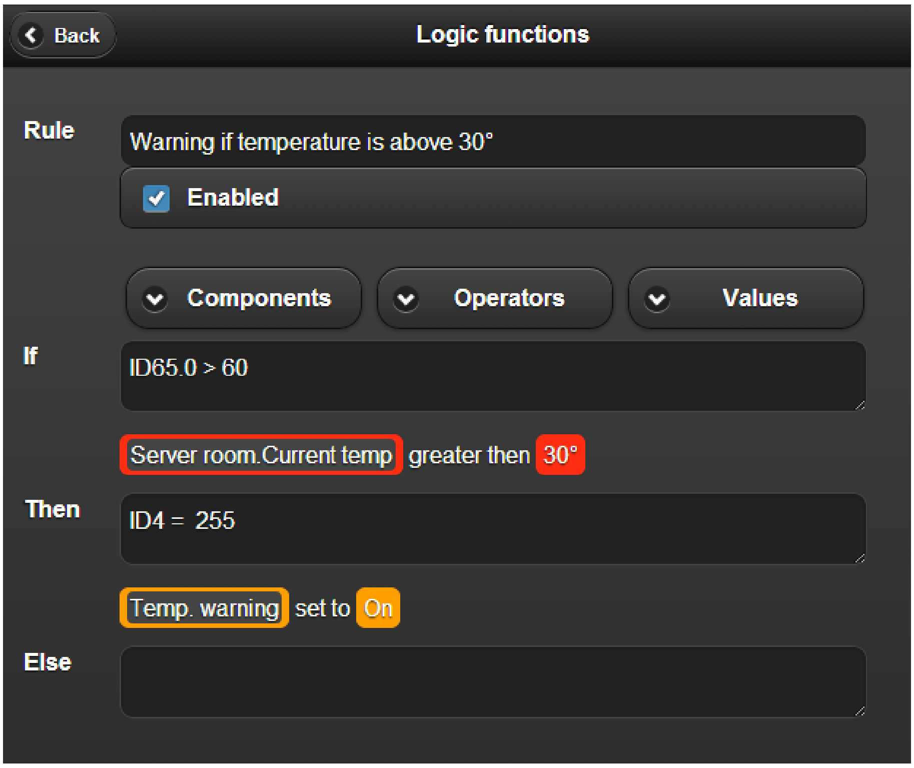
Dimmer living room 1 set to 50%

Else:

4.10 Warn when temperature rises above 30°C

Monitor the temperature in a room and give a warning if the room becomes too hot

If the measured temperature in the server room (ID65) is higher then 30°C, then set the warning signal (ID4).



Rule: Warning if temperature is above 30°

☑ Enabled

If: ID65.0 > 60

Server room.Current temp greater then 30°

Then: ID4 = 255

Temp. warning set to On

Else:

4.11 Monitor if temperature differs more then 3°

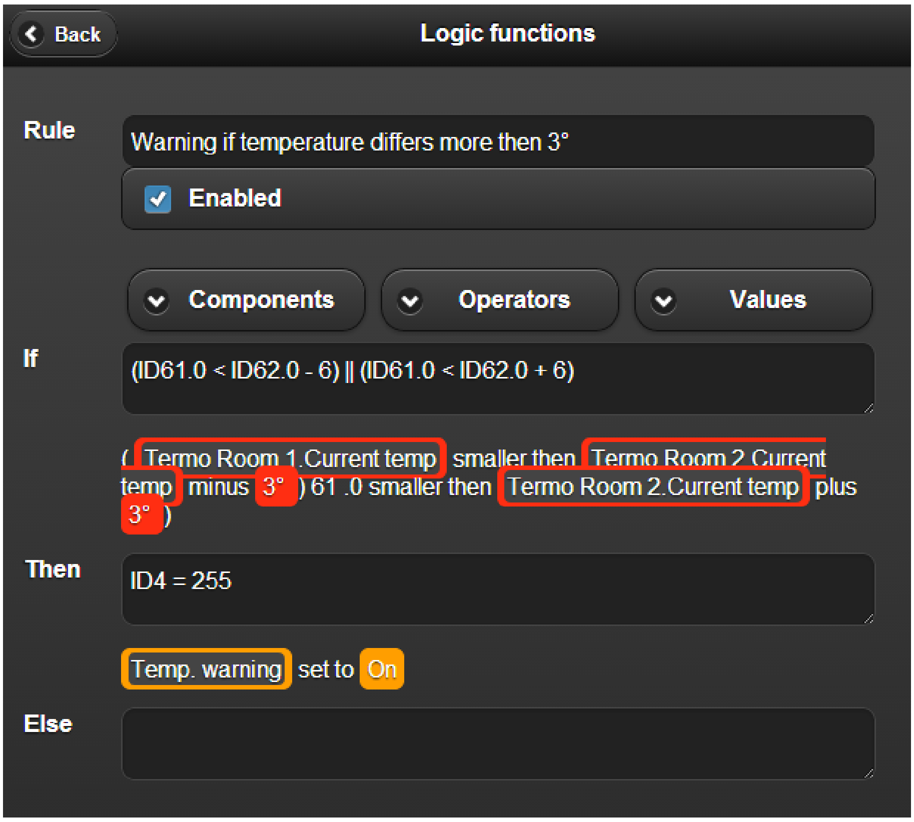
A variation on the previous example.

Check if the temperature in room 2 (ID62) is 3°C warmer or colder then room 1 (ID61).

If this is the case, then set the warning signal (ID4).

Example: if room 1 is 20°C and room 2 is 23,5°C, then the signal will be activated.

Also if room 1 is 20°C and room 2 is 16,5°, then the signal will be activated.



Rule: Warning if temperature differs more then 3°

☑ Enabled

If:

```
(ID61.0 < ID62.0 - 6) || (ID61.0 < ID62.0 + 6)
```

(Termo Room 1.Current temp smaller then Termo Room 2.Current temp minus 3°) 61 .0 smaller then Termo Room 2.Current temp plus 3°)

Then:

```
ID4 = 255
```

Temp. warning set to On

Else:

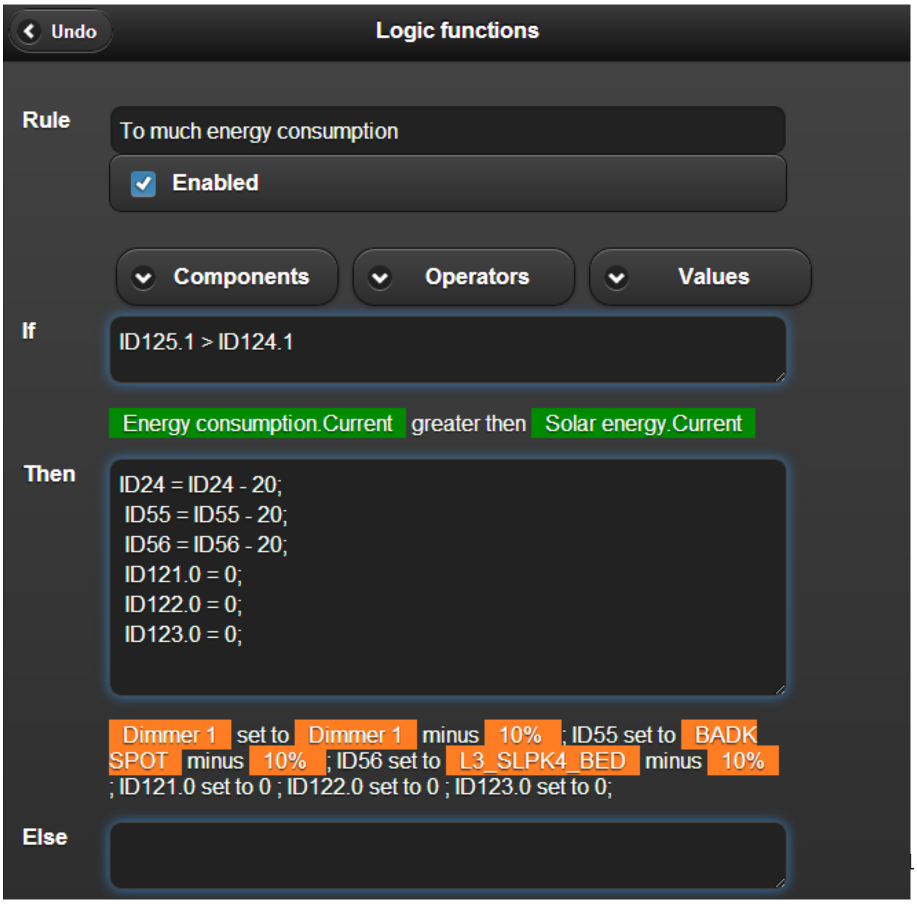
4.12 Limit energy consumers.

Smart home!

If you have solar panels, you can monitor energy production (ID124) and also energy consumption (ID125).

You can create a rule to limit or stop the energy consumption of certain consumers connected to the bus.

In the example dimmers ID24, 55 and 56 are diminished by 10% and relays 121, 122 and 123 are turned off.



Rule: To much energy consumption

☑ Enabled

If:

```
ID125.1 > ID124.1
```

Energy consumption.Current greater then Solar energy.Current

Then:

```
ID24 = ID24 - 20;
 ID55 = ID55 - 20;
 ID56 = ID56 - 20;
 ID121.0 = 0;
 ID122.0 = 0;
 ID123.0 = 0;
```

Dimmer 1 set to Dimmer 1 minus 10% ; ID55 set to BADK SPOT minus 10% ; ID56 set to L3_SLPK4_BED minus 10% ; ID121.0 set to 0 ; ID122.0 set to 0 ; ID123.0 set to 0;

Else: