

# Domoticz

Open Source Home Automation System

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## Introduction

Domoticz is a Home Automation system design to control various devices and receive input from various sensors. The Main hardware component is a RF Receiver/Transmitter from RFXCOM.

For example this system can be used with:

- Light switches
- Door sensors
- Doorbells
- Security devices
- Weather sensors like: UV/Rain/Wind Meters
- Temperature Sensors
- ...

## System Requirements

This system is designed to run on most common hardware, this includes:

- Raspberry Pi (Model B/2 advised)
- Unix
- Windows

256MB memory recommended, 200MB free hard disk space, Firefox/Chrome/Safari browser.  
A screen resolution SXGA = 1200x1024 or higher is recommended.

Internet Explorer is NOT supported at the moment.

Consult the RFXCOM website for supported devices. (<http://www.rfxcom.com>)

## Installation

### Unix/Linux/Raspberry Pi/...

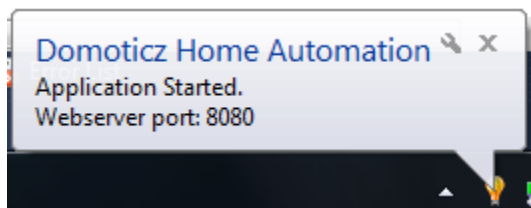
See the Install.txt file for installation/compile instructions.

### Windows Users

An installer is provided for easy installation.

**When updating the software, do not uninstall, just reinstall, or the central database is deleted!**

When the application is started under Windows, a system tray popup message will display the port used to connect to:



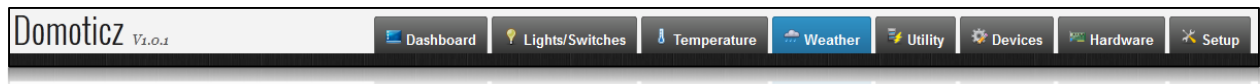
## Usage

The core application runs at the background, and has a web-based user interface.

The default port of the web interface is 8080. For a local setup you can connect to <http://127.0.0.1:8080>

To access the system from a remote location, consult your router manual to forwarding/NAT a port to your system.

## Navigation



Navigation is done by pressing the tabs at the top of the webpage.

Most tabs are automatically refreshed every 10 seconds. (Except Devices/Hardware/Setup)

## Setup

There are various application settings. One of the most important parts when you want to control light/switches when it is dark/light (Sun Set/Sun Rise) is to setup your location.

### Location Setup

To setup your location click on the 'Setup' tab, and enter the Latitude/Longitude parameters.

The image shows a 'Location:' section in the web interface. It contains two input fields: 'Latitude:' and 'Longitude:'. Below these fields is a text prompt: 'To find your location click [Here](#)'.

If you do not know these parameters, press the 'Here' link and enter your address:

The image shows a dialog box titled 'Find your Geo location'. It has an 'Address:' label followed by a text input field containing 'My Street' and a subtext '(Example: Streetname Number City Country)'. Below the address field is a button labeled 'GetLatLong'. Underneath this button are two more input fields: 'Latitude:' with the value '31.329620' and 'Longitude:' with the value '-85.843533'. At the bottom right of the dialog are 'OK' and 'Cancel' buttons.

When pressing OK the parameters are taken over.

Press the SAVE button to store the settings.

## Hardware Setup

One of the first things to be done is setup your hardware.

The following devices are supported:

- RFXCOM - RFXtrx315 USB 310Mhz or 315Mhz Transceiver
- RFXCOM - RFXtrx433 USB 433.92Mhz Transceiver
- RFXCOM – RFXtrx connected to a LAN-USB interface
- Domoticz - Remote Server

### Setting up a USB device

First make sure the device is recognized in the system.

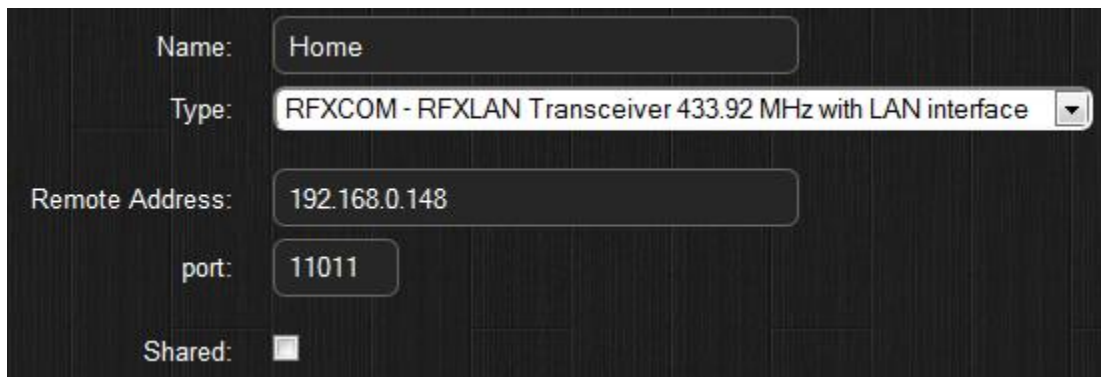
Domoticz automatically detects the USB port.



A screenshot of the Domoticz hardware setup interface. The background is dark with light-colored text and input fields. The 'Name' field contains 'Home'. The 'Type' dropdown menu is open, showing 'RFXCOM - RFXtrx433 USB 433.92MHz Transceiver'. The 'Serial Port' dropdown menu shows 'COM4'. The 'Shared' checkbox is unchecked.

### Setting up a LAN device

First make sure you know the IP address and port of the device.



A screenshot of the Domoticz hardware setup interface for a LAN device. The background is dark with light-colored text and input fields. The 'Name' field contains 'Home'. The 'Type' dropdown menu is open, showing 'RFXCOM - RFXLAN Transceiver 433.92 MHz with LAN interface'. The 'Remote Address' field contains '192.168.0.148'. The 'port' field contains '11011'. The 'Shared' checkbox is unchecked.

### Sharing a USB Port over TCP/IP (Unix)

If you want to access the RFXCOM device via TCP/IP you can use the program called 'socat'

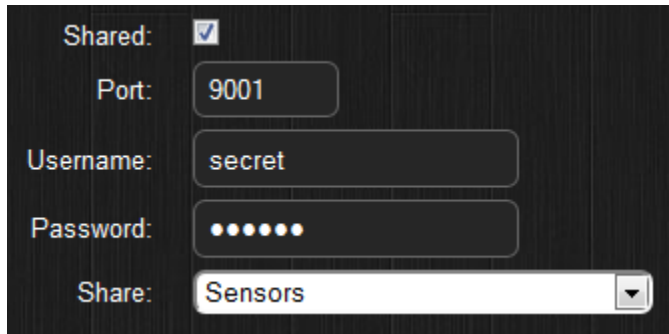
```
% socat TCP-LISTEN:4161,fork,reuseaddr FILE:/dev/ttyUSB0,b38400,raw
```

This will make the USB0 device available on port 4161 (you can now use the RFXLan as hardware)

## Sharing Devices

It is possible to share your sensors with friends. For instance you can share your Rain Meter.

To do so, check the checkbox next to 'Shared' and enter TCP Port, and (optional) a username/password:



A screenshot of a configuration window for sharing devices. It features a dark background with white text and input fields. The 'Shared' checkbox is checked. The 'Port' field contains '9001'. The 'Username' field contains 'secret'. The 'Password' field is masked with dots. The 'Share' dropdown menu is set to 'Sensors'.

Shared:	<input checked="" type="checkbox"/>
Port:	9001
Username:	secret
Password:	••••••
Share:	Sensors

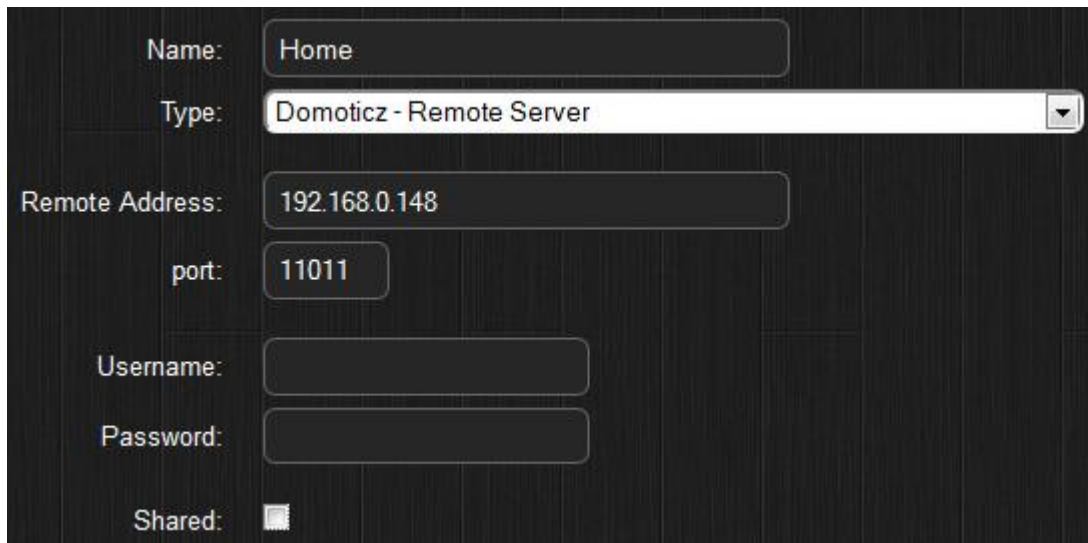
The TCP port has to be a free port, not in use by the system.

To enable this share from outside your home, you will have to add a rule to the firewall/router.

Consult the documentation of the router on how to setup a Firewall/NAT/Forward rule.

## Domoticz Remote Server

This device can connect to a Shared Hardware device.



A screenshot of a configuration window for a Domoticz Remote Server. It features a dark background with white text and input fields. The 'Name' field contains 'Home'. The 'Type' dropdown menu is set to 'Domoticz - Remote Server'. The 'Remote Address' field contains '192.168.0.148'. The 'port' field contains '11011'. The 'Username' and 'Password' fields are empty. The 'Shared' checkbox is unchecked.

Name:	Home
Type:	Domoticz - Remote Server
Remote Address:	192.168.0.148
port:	11011
Username:	
Password:	
Shared:	<input type="checkbox"/>

By pressing the ADD button, the hardware is added to the system and will automatically start.

You can see a debug console (windows) by pressing the right mouse button on the Domoticz icon in the system tray.

If you have sensors like Rain/Temperature meters, wait a few minutes and the system has recognized them. This can be seen in the 'Devices' tab.

## Devices

Once the system is running, it will collect all devices found/received, and starts logging.

	Name	ID	Value	Description	Type	Status	Last Update	Action
	Home	36710	0	Wind Meter	Wind	TFA	0, 202 00,SSW;13.25;8.7;8.3	✗ 2012-12-02 09:00
	Home	12302	1	Temp. Livingroom	Temp + Humidity	Cresta, TFA TS34C	23.5 C, 34 %	✗ 2012-12-02 09:00
	Home	22798	2	Temp. Outside	Temp + Humidity	Cresta, TFA TS34C	4.0 C, 94 %	✗ 2012-12-02 09:00
	Home	32780	0	Rain Meter	Rain	TFA	0, 0.672.7	✗ 2012-12-02 09:00
	Home	0674EE6	10	LightSwitch Hobby Room	Lighting 2	AC	On, Level: 100 %	✗ 2012-12-02 09:00
	Home	36624	0	UV Meter	UV	TFA	0.1 UVI, 7.0° C	✗ 2012-12-02 09:00
	Emma	69	2	not used	Lighting 1	ARC	On	🟢 2012-12-02 09:00
	Home	073E33A	10	Dusk Detector	Lighting 2	AC	Off	✗ 2012-12-02 09:00
	Home	04DDB3E	1	Outside Light	Lighting 2	AC	Off	✗ 2012-12-02 09:00
	Home	79	4	not used	Lighting 1	ARC	Off	🟢 2012-12-02 09:00
	Home	79	2	not used	Lighting 1	ARC	Off	🟢 2012-12-02 09:00
	Home	79	3	not used	Lighting 1	ARC	Off	🟢 2012-12-02 09:00
	Home	79	1	Sunset Switch	Lighting 1	ARC	Off	✗ 2012-12-02 09:00
	Home	049D532	1	Doorbell Side	Lighting 2	AC	Group On, Level: 100 %	✗ 2012-12-01 11:00
	Home	07F0FF	1	not used	Lighting 5	BBSB new	On	🟢 2012-12-01 11:00
	Home	07FFFF	1	not used	Lighting 5	BBSB new	On	🟢 2012-12-01 11:00
	Home	01E4E4	4	not used	Lighting 2	BBSB new	On	🟢 2015-15-01 11:00
	Home	01E4E4	4	not used	Lighting 2	BBSB new	On	✗ 2015-15-01 11:00
	Home	018D23S	4	Doorbell Side	Lighting 5	VC	Group On, Level: 100 %	✗ 2015-15-05 00:00
	Home	18	4	Sunset Switch	Lighting 1	ARC	Off	✗ 2015-15-05 00:00
	Home	18	3	not used	Lighting 1	ARC	Off	🟢 2015-15-05 00:00
	Home	18	2	not used	Lighting 1	ARC	Off	🟢 2015-15-05 00:00

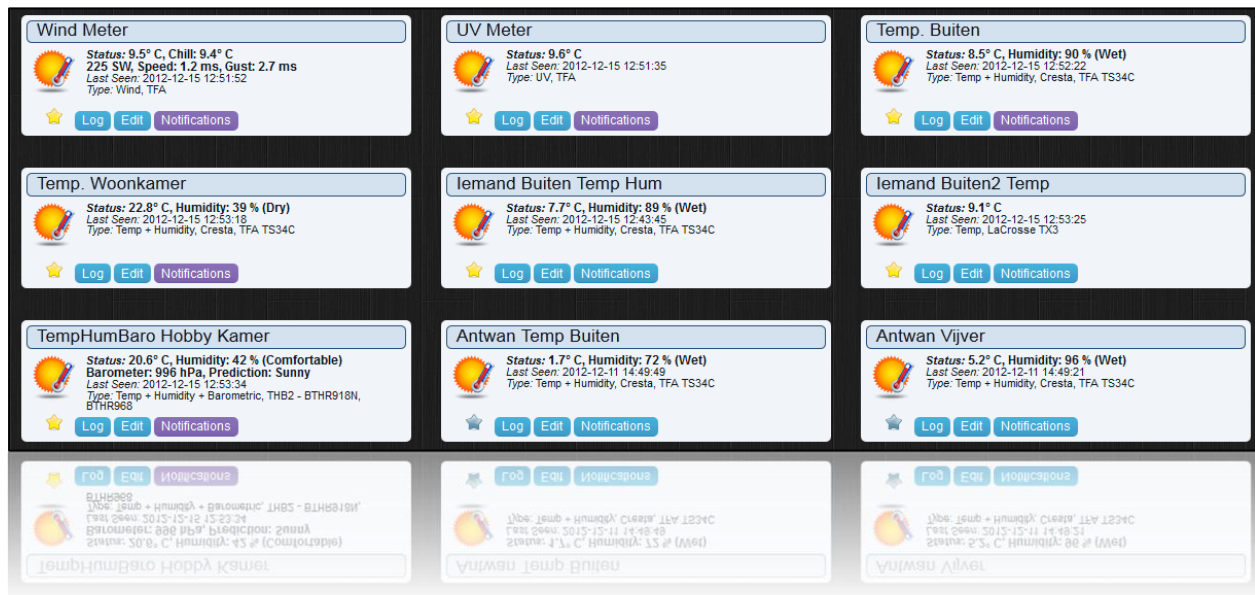
Devices can be Added/Removed from this tab. Light devices can also be added to the system from the 'Lights/Switches' tab.

To Add temperature/weather sensors press the add button, and enter a name. You will now find them in their respective tabs.



## Temperature

The temperature tab includes all sensors that have a temperature sensor.



A temperature sensor can also include a Humidity sensor.

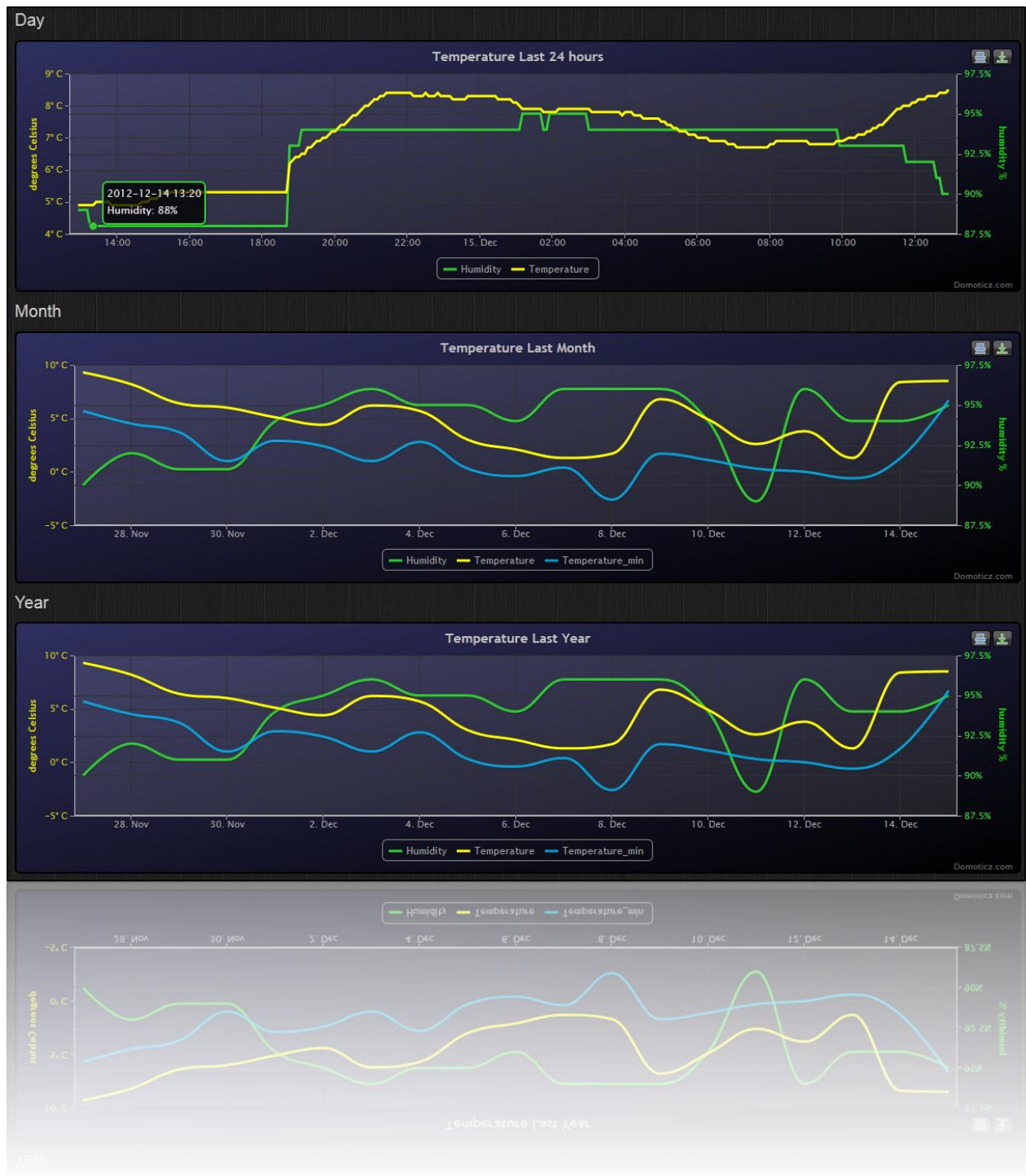
Each item has the following options:

- Favorite push icon (to display this device on the Dashboard tab)
- Log (Displays the log)
- Edit (Edit device parameters)
- Notifications (see Notification chapter)

By Dragging/Dropping the sensor items, you can setup the device positions.

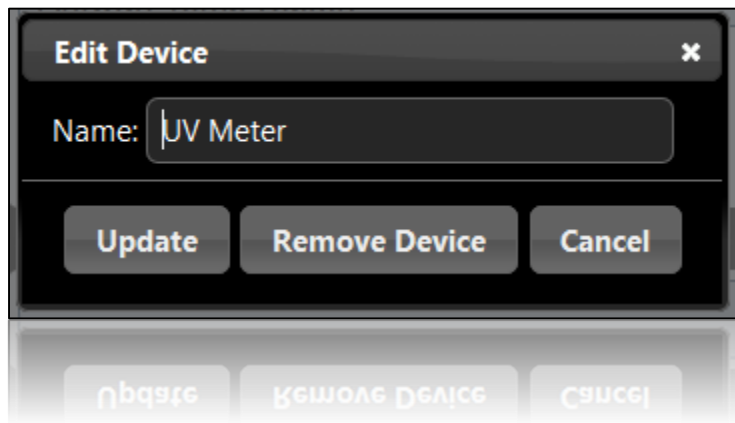
## Log

By pressing the log button you can see the log of the sensor. It is possible to zoom in/out.



By pressing the BACK button you return to the overview.

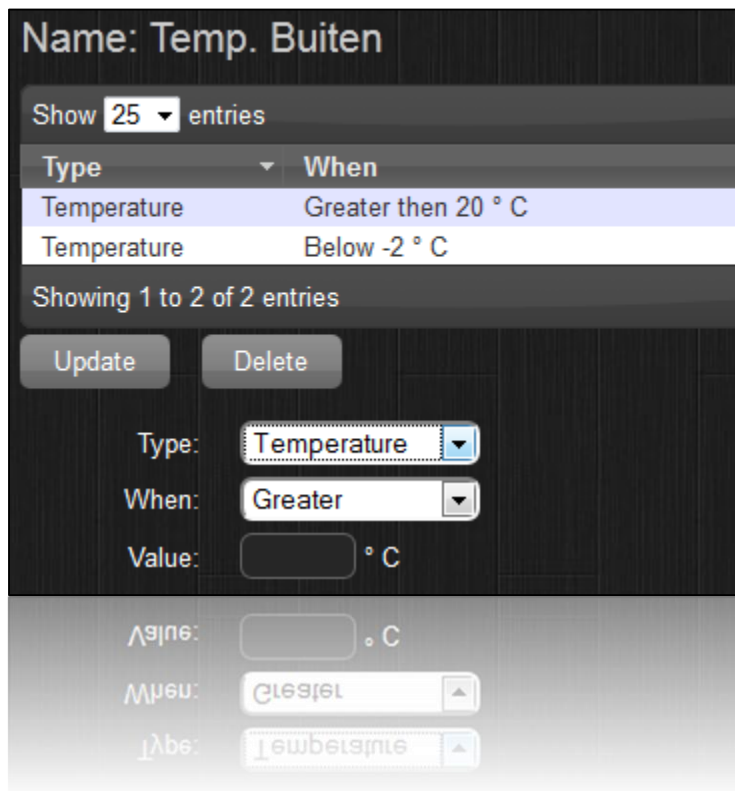
Edit



The 'Edit Device' dialog box features a title bar with a close button. Below the title bar is a text input field labeled 'Name:' containing the text 'UV Meter'. At the bottom of the dialog are three buttons: 'Update', 'Remove Device', and 'Cancel'.

In this dialog you can rename the device, or remove it

Notifications



The 'Notifications' dialog box has a title bar. Below it is a text input field labeled 'Name:' containing 'Temp. Buiten'. Underneath is a 'Show' dropdown menu set to '25' and the text 'entries'. A table with two columns, 'Type' and 'When', lists two notifications: 'Temperature' with 'Greater then 20 ° C' and 'Temperature' with 'Below -2 ° C'. Below the table is the text 'Showing 1 to 2 of 2 entries'. At the bottom are 'Update' and 'Delete' buttons. Below these buttons are three sets of controls for adding a new notification: 'Type:' with a dropdown menu showing 'Temperature', 'When:' with a dropdown menu showing 'Greater', and 'Value:' with a text input field followed by '° C'.

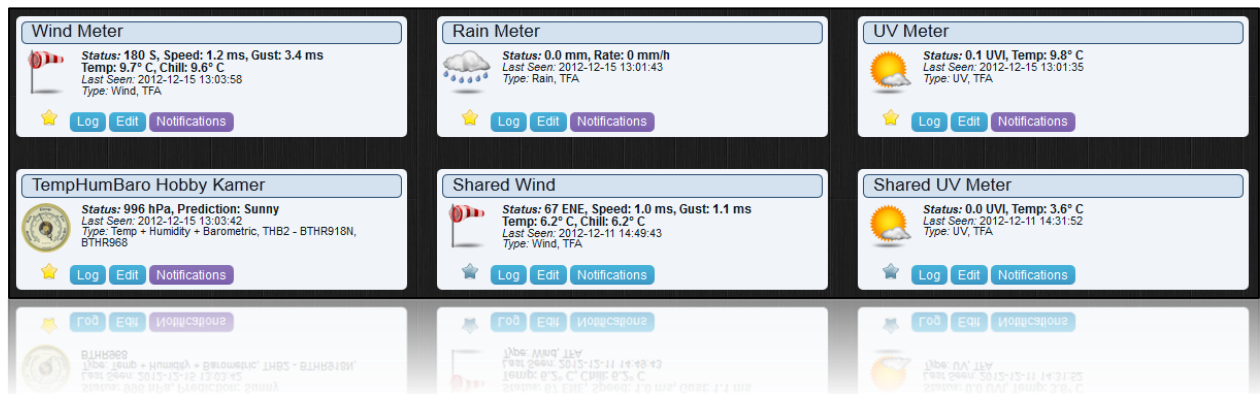
Each device has different notifications (depending on the hardware options).

For instance when the temperature is below -2 degrees you want to be notified.

See the Notification chapter for more details.

## Weather

The weather tab includes all sensors that are related to weather...



A weather sensor can be:

- Rain Meter
- Wind Meter
- UV Meter
- Barometer

Each item has the following options:

- Favorite push icon (to display this device on the Dashboard tab)
- Log (Displays the log)
- Edit (Edit device parameters)
- Notifications (see Notification chapter)

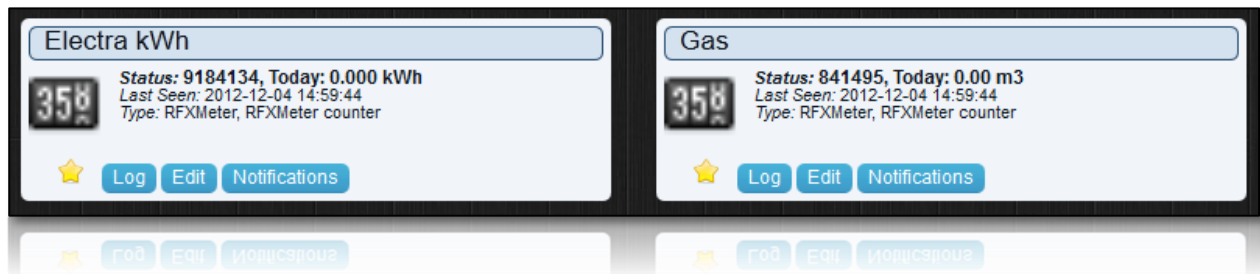
By Dragging/Dropping the sensor items, you can setup the device positions.

Log



## Utility

The utility tab includes sensors Meters (Energy/Gas/P1)



Each item has the following options:

- Favorite push icon (to display this device on the Dashboard tab)
- Log (Displays the log)
- Edit (Edit device parameters)
- Notifications (see Notification chapter)

By Dragging/Dropping the sensor items, you can setup the device positions.

\*to-do: this chapter needs to be updated

## Lights/Switches

The lights/switches tab includes devices like:

- Light Switches
- Door sensors
- Blinds
- Doorbells
- Security
- Sirens
- ...



This chapter can be the most difficult part to setup. (Depending on your needs)

Each item has the following options:

- Status icon that can be push to toggle on/off status (depending on the hardware)
- Favorite push icon (to display this device on the Dashboard tab)
- Log (Displays the log)
- Edit (Edit device parameters)
- Notifications (see Notification chapter)

By Dragging/Dropping the sensor items, you can setup the device positions.

Lights and Switches can be added by:

- Auto Learning
- Manual Setup
- From the devices tab



## Adding a Light/Switch by Auto Learning



By pressing the 'Learn Light/Switch' button you have 5 seconds to press the remote/switch/sensor.

When this time is too short, for instance if you want to add a doorbell or a light far away, you can use a Tablet/Smartphone.

Once you press the button the following screen is presented:

The image shows a modal dialog box titled 'Add Light/Switch Device'. It has a close button (X) in the top right corner. Inside the dialog, there are three fields: 'Name:' with the value 'Switch 1', 'Type:' with a dropdown menu showing 'On/Off', and 'As:' with two radio buttons: 'Main Device' (selected) and 'Sub/Slave Device'. At the bottom of the dialog, there are two buttons: 'Add Device' and 'Cancel'. The dialog is overlaid on a blurred background of the Domoticz interface.

For the switch type there are various options to choose from:

- On/Off (a normal switch/remote button)
- Doorbell
- Contact (like a door sensor)
- Blinds
- X10 Siren device

Normally you setup a new light as a 'Main' device, but it can also be a Sub/Slave device.

More about Sub/Slave devices later.



### Adding a Light/Switch Manually

If you know the switch brand/type/address it is also possible to enter the parameters by hand.

It is also possible to create a new 'virtual' device that can control a light without having to buy a remote/switch.

**Add Manual Light/Switch Device** ✕

Hardware: Home

Name:

Type: On / Off

Type: ARC

House Code: A

Unit Code: 9

Test

As: ☒ Main Device ☐ Sub/Slave Device

Add Device Cancel

## Sub/Slave Devices

(One of the most difficult chapters)

### What is a Sub/Slave Device

Most Lights can be controlled from up to 6 remotes.

See the following two examples:

#### **Example 1 (Outdoor Light)**

Imagine you have an outdoor light that is controlled by a switch (**\*a**) from inside the house.

It is possible to buy small remote controllers (**\*b**) for on a keychain.

When you also want to control the outside light from this small remote, the small remote (**\*b**) is a Sub/Slave device from the main switch (**\*a**).

#### **Example 2 (Floor Lights)**

Imagine you have a house with two floors, each floor has its own switch (**\*a, first floor**) and (**\*b, second floor**).

Downstairs next to your exit door you have a switch (**\*c**) to turn ON / OFF ALL the lights.

In this case the switch (**\*c**) is a Sub/Slave device for switch (**\*a, first floor**) and (**\*b, second floor**)

**Consult your hardware manual on how to setup two/multiple switches for one light.**

### Example 1 (Outdoor Light) Setup

First you add the normal in-house switch (**\*a**) like adding a normal Main light/switch as shown above:

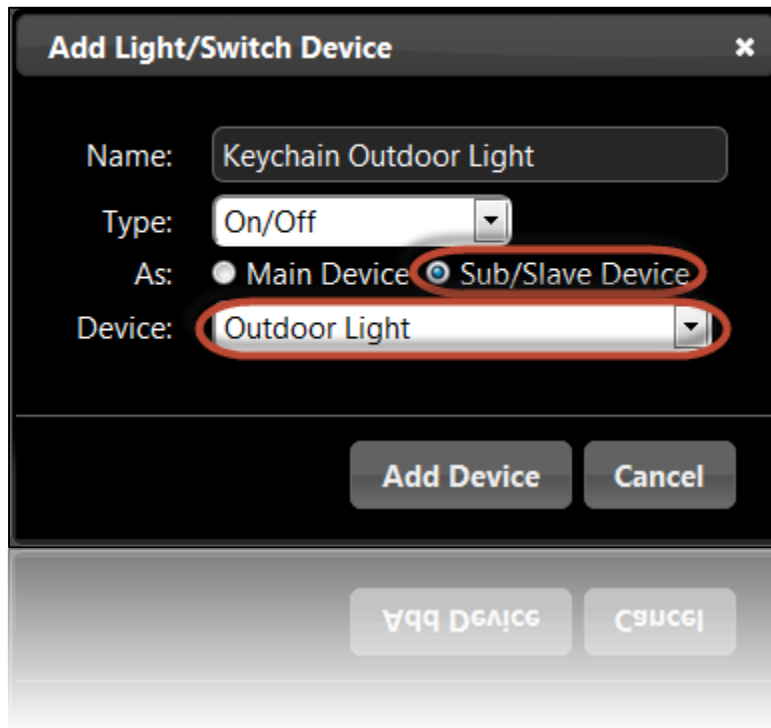
**Add Light/Switch Device** [X]

Name:

Type:

As: ☒ Main Device ☐ Sub/Slave Device

Next we are going to add the keychain remote (**\*b**) , but instead of choosing to set it up as Main device, we are selecting 'Sub/Slave' device:



**Add Light/Switch Device** ✕

Name: Keychain Outdoor Light

Type: On/Off ▼

As: ☐ Main Device ☒ Sub/Slave Device

Device: Outdoor Light ▼

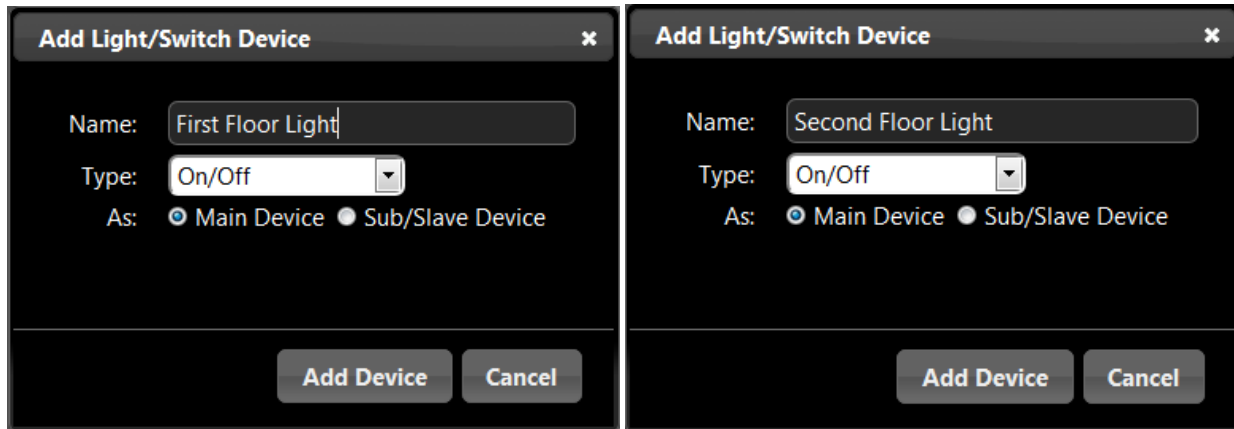
Add Device Cancel

Add Device Cancel

When selecting 'Sub/Slave' Device, a new option will become visible, and here we select the 'Main' device, in this case the 'Outdoor Light'.

## Example 2 (Floor Lights) Setup

First you add the two floor lights (**\*a**) and (**\*b**) like adding a normal Main light/switch as shown above:

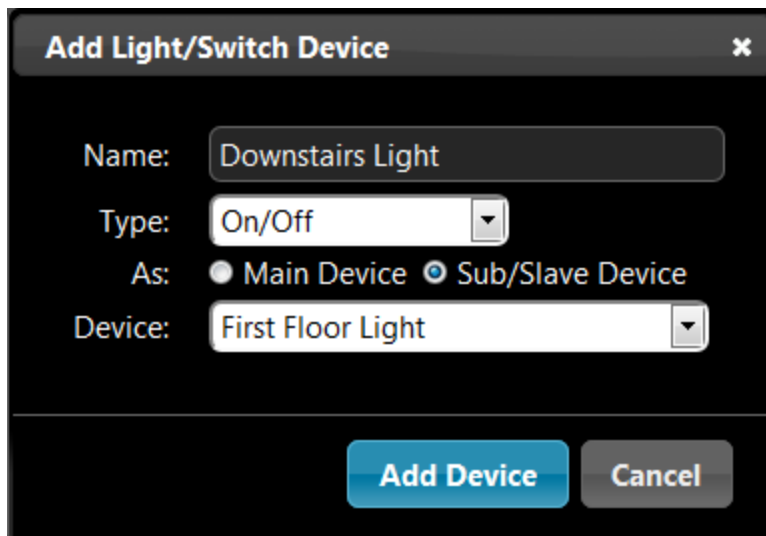


**Add Light/Switch Device** ✕  
Name:   
Type:   
As: ☒ Main Device ☐ Sub/Slave Device

**Add Light/Switch Device** ✕  
Name:   
Type:   
As: ☒ Main Device ☐ Sub/Slave Device

Next we are going to add the downstairs switch (**\*c**) that can turn ON / OFF both floor lights.

Remember to select Sub/Slave Device:

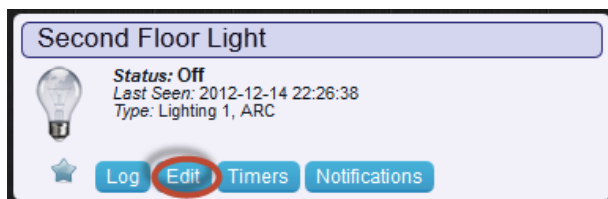




**Add Light/Switch Device** ✕  
Name:   
Type:   
As: ☐ Main Device ☒ Sub/Slave Device  
Device:

Select the First Floor Light (**\*a**) as the Main device.

Now that we have added the 'Downstairs Light' we can also make this a Sub/Slave device for another Main Device.

To add the 'Downstairs Light' as a Sub/Slave device for the 'Second Floor Light' (**\*b**) press the 'Edit' button:



**Second Floor Light**  
 **Status: Off**  
Last Seen: 2012-12-14 22:26:38  
Type: Lighting 1, ARC  


◀ Back

Name:

Type:

Save

Sub/Slave Devices:

Search:

Name
No data available in table

Showing 0 to 0 of 0 entries

Delete Clear

Sub/Slave Device:  Add

Sub/Slave Device:  Add

Delete Clear

Showing 0 to 0 of 0 entries

From the Sub/Slave devices select the Downstairs Light (\*c) and press ADD.

Now this Sub/Slave device is also assigned to this device.

◀ Back

Name:

Type:

Save

Sub/Slave Devices:

Search:

Name
Downstairs Light

Showing 1 to 1 of 1 entries

Delete Clear

Sub/Slave Device:  Add

Sub/Slave Device:  Add

Delete Clear

Showing 1 to 1 of 1 entries

## Notifications

### What are Notifications?

Notifications can be used when you want to know if a switch is pressed (for example a doorbell), or when a temperature is below/above a certain degree, or when your power usage is above xxx Watt, etc.

Each device has different parameters for notifications, a switch might have an On/Off state, a temperature device might have a temperature/humidity and a wind meter might have wind force/speed/chill...

### Setting up the Notification System

Notifications are sent via the Prowl (iPhone) or NMA (Android) system.

You need to create a (free) account for one/all of the above systems. Then the API key has to be specified in the Settings tab:

The image shows a screenshot of a settings interface for notifications. It has a dark background with light text. The first section is titled "Prowl (iPhone/iPad notification system):". Below this title, there is a label "API Key:" followed by a text input field containing the alphanumeric string "626daEbc13a201510c8e46927f94b631e45c42af". To the right of the input field is a blue button labeled "Test". Below the input field, there is a line of text: "To get a free account/API key click [Here](#)". The second section is titled "NMA (Android notification system):". It has the same layout as the first section, with the same "API Key:" label, the same alphanumeric string in the input field, the same "Test" button, and the same link text. At the bottom of the image, there is a third, partially visible section that appears to be a duplicate or a continuation of the same form, with the same labels and input field content.

If you use one of the above systems, you need to download the client on your mobile/tablet device.

The price of the client is around 3 dollars. (On most devices, buy one time, use on all your devices)

## Receiver improvements

Another antenna is officially not allowed because the RFXtrx is certified with the supplied antenna.

But to increase the receiving range you can connect (for example) a 190073 Conrad 433MHz ground plane, however this will also increase the radiated transmit power which is illegal! (If you are not licensed to it.)

The following adapter can be used for SMA- to BNC:

[http://www.ebay.com/itm/BNC-female-SMA-male-plug-coax-connector-adapter-/180454327185?pt=LH\\_DefaultDomain\\_0&hash=item2a03ea8391](http://www.ebay.com/itm/BNC-female-SMA-male-plug-coax-connector-adapter-/180454327185?pt=LH_DefaultDomain_0&hash=item2a03ea8391)

The location of the sensor and the RFXCOM is also important if the RF signal has to pass through walls. See chapter 2.4 in the RFXtrx User Guide

<http://www.rfxcom.com/documents/RFXtrx%20User%20Guide.pdf>

It is expected that RF interference is happening if sensor signals disappear for several hours. RF interference will also occur if sensors of the same type are configured to the same channel.

If sensors disappear for a longer period the source can be another transmitter that is transmitting continuously or with short intervals. If X10 MS13 sensors are in use check the battery in this sensor because when the battery becomes almost empty the MS13 starts transmitting a weak continuous RF signal but just enough to disturb the sensitive RFXCOM receiving.

## Participation

We always welcome talented C++/HTML5/JQuery developers.

If you think you want to help, please contact us at [Info@Domoticz.com](mailto:Info@Domoticz.com)

## Thanks

Thanks go out to all people that have helped during development and testing.