

# 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.**

Additional hardware support for: P1 Smart Meter (serial):

<http://www.smartmeterdashboard.nl/webshop>

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.

***If you want to use Internet Explorer, you need version 10+.***

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

## Installation

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

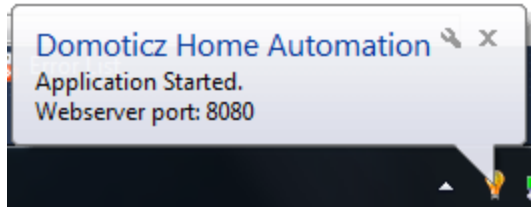
See the Install.txt file for installation/compile instructions.

### 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:



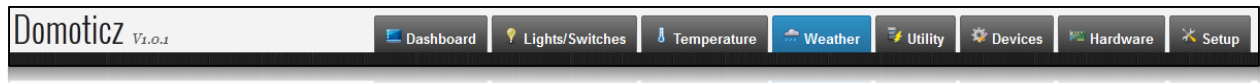
## Usage

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)

## Command Line parameters

The following command line parameters are available:

- www port (for example -www 8080)
- dbase file\_path (for example D:\domoticz.db or /opt/domoticz/domoticz.db)
- verbose x (where x=0 is none, x=1 is debug)
- startupdelay seconds (default=0)
- nowwwpwd (in case you forgot the webserver username/password)

## Unix Startup Script

To start Domoticz automatically when the system starts perform the following steps:

```
sudo cp domoticz.sh /etc/init.d
sudo chmod +x /etc/init.d/domoticz.sh
```

Edit the startup script and point the DEAMON location to point to the installation folder:  
`sudo vi /etc/init.d/domoticz.sh`

```
DAEMON=/home/pi/domoticz/domoticz
```

If you want to use another web interface port change:

```
OPTIONS="-www 8080"
```

You can now start domoticz with:  
`/etc/init.d/domoticz.sh start`

To stop:

```
/etc/init.d/domoticz.sh stop
```

To check if Domoticz is running:

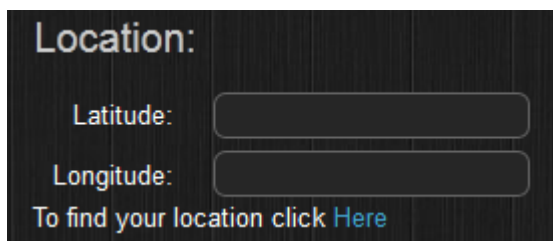
```
/etc/init.d/domoticz.sh status
```

## Setup

There are various application settings. For control of Light/Switches based on Sun Set /Sunrise timings, it is important to setup your location.

### Location Setup

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

A dark-themed form titled "Location:". It contains two input fields: "Latitude:" and "Longitude:". Below the fields, it says "To find your location click [Here](#)".

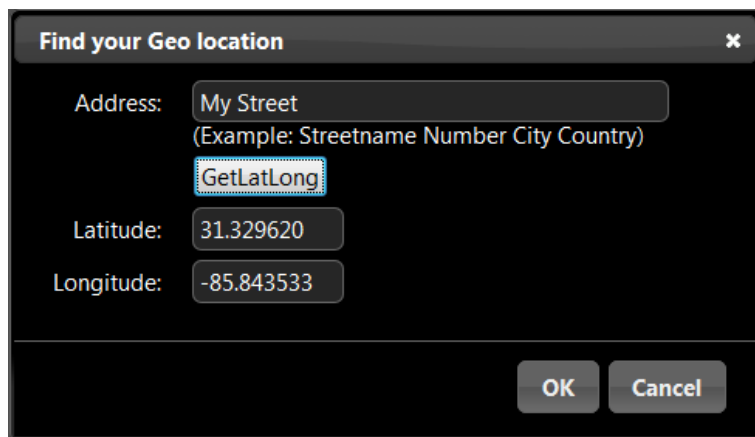
Location:

Latitude:

Longitude:

To find your location click [Here](#)

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

A dark-themed dialog box titled "Find your Geo location" with a close button (x). It contains an "Address:" label, a text input field with "My Street", and a subtext "(Example: Streetname Number City Country)". Below the input field is a "GetLatLong" button. Further down are "Latitude:" and "Longitude:" labels, each followed by a text input field containing "31.329620" and "-85.843533" respectively. At the bottom right are "OK" and "Cancel" buttons.

Find your Geo location

Address:

(Example: Streetname Number City Country)

Latitude:

Longitude:

When pressing OK the parameters are accepted by the application.

Press the SAVE button to store the settings.

## Hardware Setup

Before you can use the application to control devices you must setup the communication hardware device(s).

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
- P1 Smart Meter USB cable
- P1 Smart Meter connected to a LAN-USB interface

### Setting up a USB device

First make sure the device is recognized in the system.

Domoticz automatically detects the USB port.

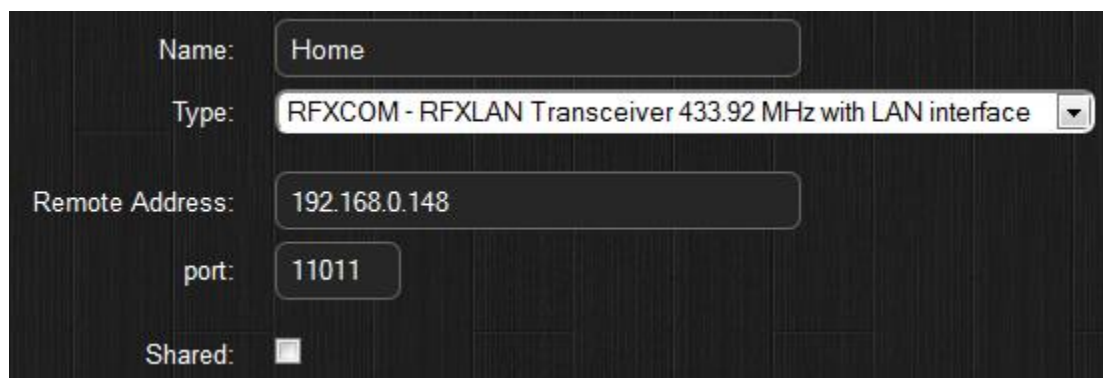


A screenshot of the Domoticz hardware setup window. The window has a dark background with light-colored text and input fields. The 'Name' field contains 'Home'. The 'Type' dropdown menu is open, showing 'RFXCOM - RFXtrx433 USB 433.92MHz Transceiver'. The 'Serial Port' dropdown menu is open, showing 'COM4'.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

Name:	Home
Type:	RFXCOM - RFXtrx433 USB 433.92MHz Transceiver
Serial Port:	COM4
Shared:	<input type="checkbox"/>

### Setting up a LAN device

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



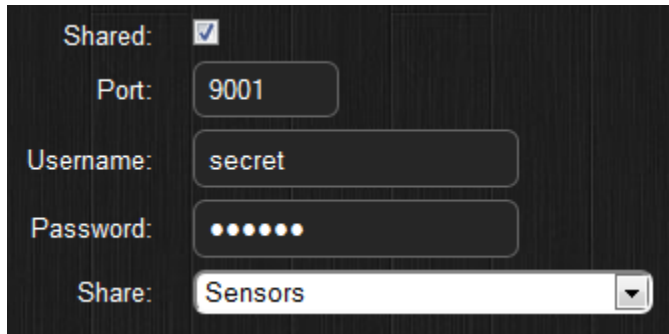
A screenshot of the Domoticz hardware setup window. The window has a dark background with light-colored text and input fields. The 'Name' field contains 'Home'. The 'Type' dropdown menu is open, showing 'RFXCOM - RFXLAN Transceiver 433.92 MHz with LAN interface'. The 'Remote Address' field contains '192.168.0.148'.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

Name:	Home
Type:	RFXCOM - RFXLAN Transceiver 433.92 MHz with LAN interface
Remote Address:	192.168.0.148
port:	11011
Shared:	<input type="checkbox"/>

## 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 six dots. The 'Share' dropdown menu is set to 'Sensors'.

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

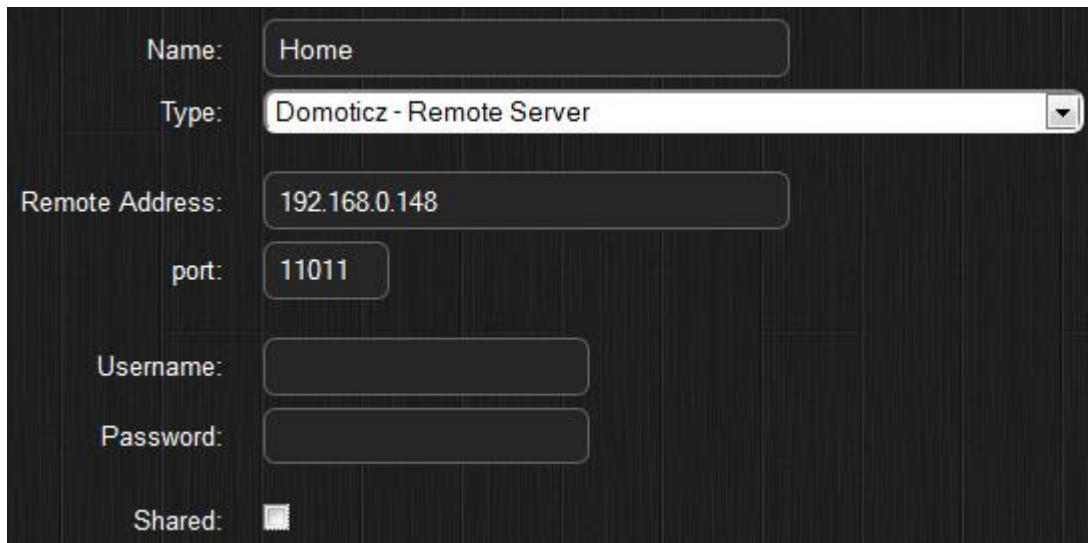
The TCP port has to be a free port, not being used by the system.

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 application is running it will collect all devices found/received and begin logging the messages.

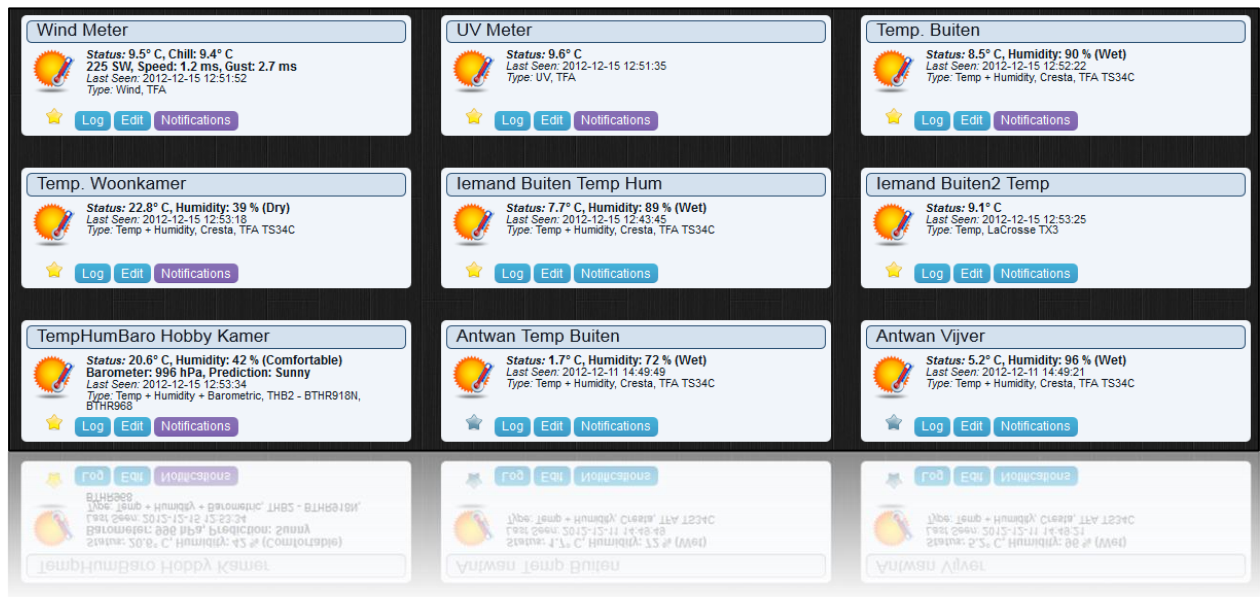
Home	36116	0	Wind Meter	Wind	TFA	0, 202.00,SSW,13.25,8.7,8.3	✗	2012-12-0
Home	12302	1	Temp. Livingroom	Temp + Humidity	Cresta, TFA TS34C	23.5 C, 34 %	✗	2012-12-0
Home	22798	2	Temp. Outside	Temp + Humidity	Cresta, TFA TS34C	4.0 C, 94 %	✗	2012-12-02
Home	32780	0	Rain Meter	Rain	TFA	0, 0.672.7	✗	2012-12-02
Home	0674EE6	10	LightSwitch Hobby Room	Lighting 2	AC	On, Level: 100 %	✗	2012-12-02
Home	36624	0	UV Meter	UV	TFA	0.1 UVI, 7.0° C	✗	2012-12-02
Emma	69	2	not used	Lighting 1	ARC	On	➡	2012-12-02
Home	073E33A	10	Dusk Detector	Lighting 2	AC	Off	✗	2012-12-02
Home	04DDB3E	1	Outside Light	Lighting 2	AC	Off	✗	2012-12-02
Home	79	4	not used	Lighting 1	ARC	Off	➡	2012-12-02
Home	79	2	not used	Lighting 1	ARC	Off	➡	2012-12-02
Home	79	3	not used	Lighting 1	ARC	Off	➡	2012-12-02
Home	79	1	Sunset Switch	Lighting 1	ARC	Off	➡	2012-12-02
Home	049D532	1	Doorbell Side	Lighting 2	AC	Group On, Level: 100 %	✗	2012-12-02
Home	07FDFF	1	not used	Lighting 5	BBSB new	On	➡	2012-12-01 11:
Home	07FFFF	1	not used	Lighting 5	BBSB new	On	➡	2012-12-01 11:
Home	01E4E4	4	not used	Lighting 2	BBSB new	On	➡	2015-15-04 11:
Home	01E4E4	4	not used	Lighting 2	BBSB new	On	➡	2015-15-04 11:
Home	01E4E4	4	Doorbell Side	Lighting 2	AC	Group On, Level: 100 %	✗	2015-15-05 00:
Home	18	1	Sunset Switch	Lighting 1	ARC	Off	✗	2015-15-05 00:
Home	18	3	not used	Lighting 1	ARC	Off	➡	2015-15-05 00:
Home	18	5	not used	Lighting 1	ARC	Off	➡	2015-15-05 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.

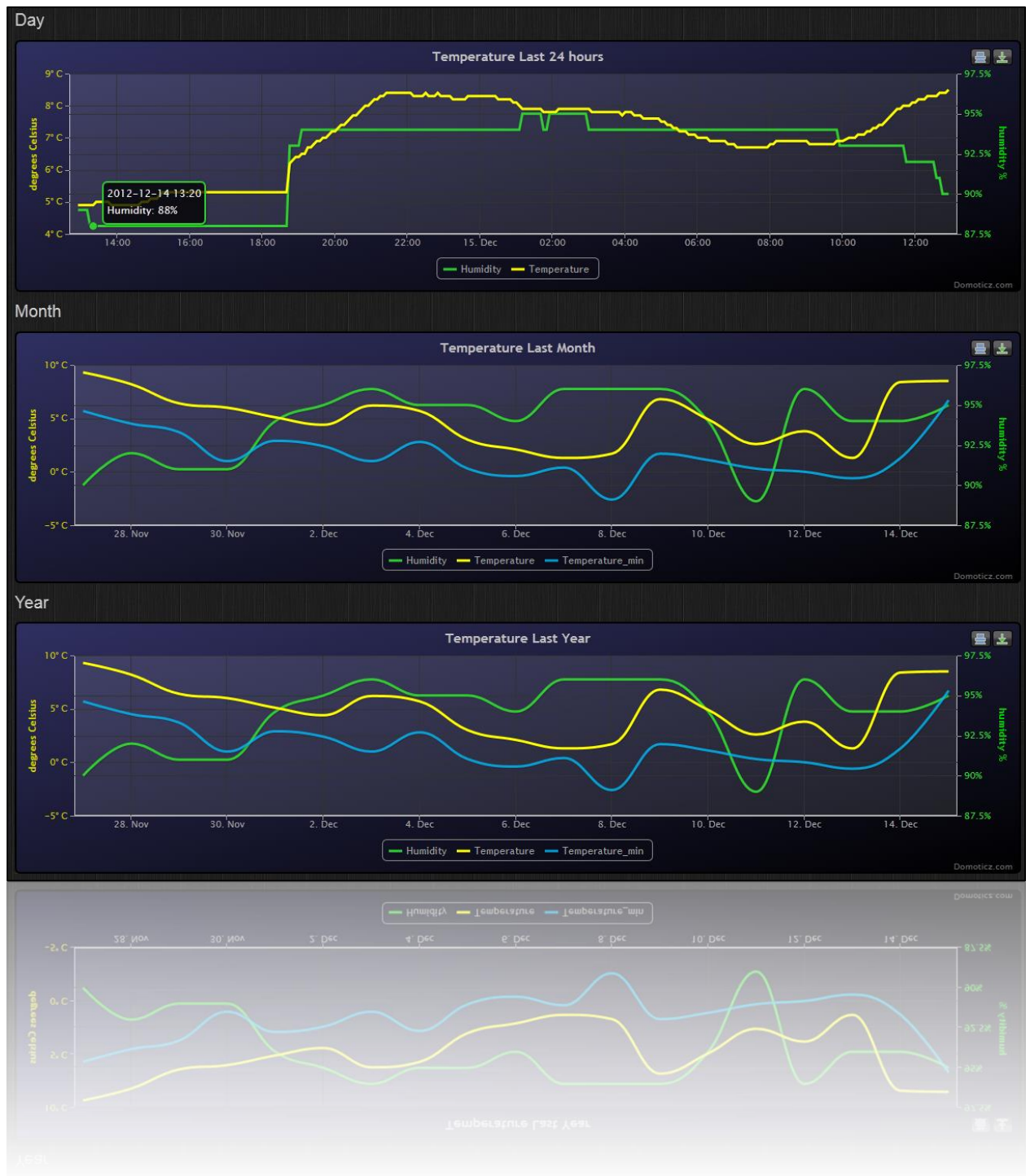
Each item has the following options:

- 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 change the position of the devices in the window.

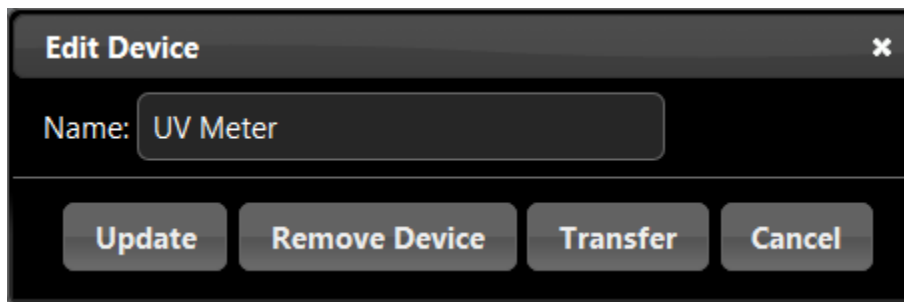
## Log

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

A dark-themed dialog box titled "Edit Device" with a close button (X) in the top right corner. Below the title bar, there is a text input field labeled "Name:" containing the text "UV Meter". At the bottom of the dialog, there are four buttons: "Update", "Remove Device", "Transfer", and "Cancel".

**Edit Device** ×

Name:

**Update** **Remove Device** **Transfer** **Cancel**

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

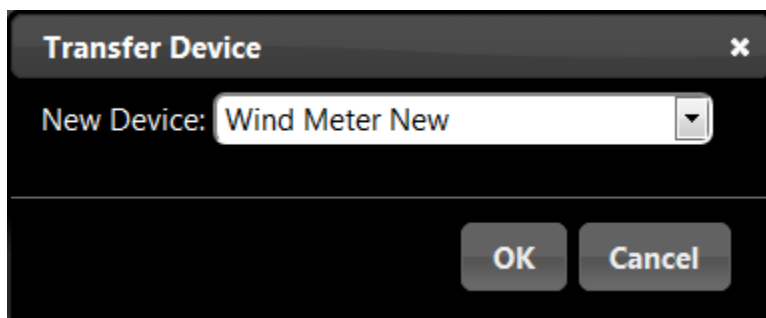
Transfer

Some devices change their unique ID when a new battery is installed.

To transfer the old Log to the new device act as follow:

First, add the new device to the system, and call it for example 'Wind Meter New'.

Next press the Edit button on the Old device, select transfer and select the new Device. (In this case the devices called 'Wind Meter New'.

A dark-themed dialog box titled "Transfer Device" with a close button (X) in the top right corner. Below the title bar, there is a dropdown menu labeled "New Device:" with the text "Wind Meter New" and a downward arrow. At the bottom of the dialog, there are two buttons: "OK" and "Cancel".

**Transfer Device** ×

New Device:

**OK** **Cancel**

Next press OK, and the old device logs are transferred to the new Device.

Now you can rename the new device back to 'Wind Meter', and position it back.

## Notifications

The screenshot shows a configuration window for a notification named 'Temp. Buiten'. At the top, it says 'Name: Temp. Buiten'. Below this is a 'Show' dropdown set to '25' with the text 'entries' to its right. A table with two columns, 'Type' and 'When', lists two entries: 'Temperature' with 'Greater then 20 ° C' and 'Temperature' with 'Below -2 ° C'. Below the table, it says 'Showing 1 to 2 of 2 entries'. There are 'Update' and 'Delete' buttons. At the bottom, there are input fields for 'Type' (set to 'Temperature'), 'When' (set to 'Greater'), and 'Value' (empty) with a '° C' unit. A faint, mirrored version of these fields is visible below.

Name: Temp. Buiten

Show 25 entries

Type	When
Temperature	Greater then 20 ° C
Temperature	Below -2 ° C

Showing 1 to 2 of 2 entries

Update Delete

Type: Temperature

When: Greater

Value: ° C

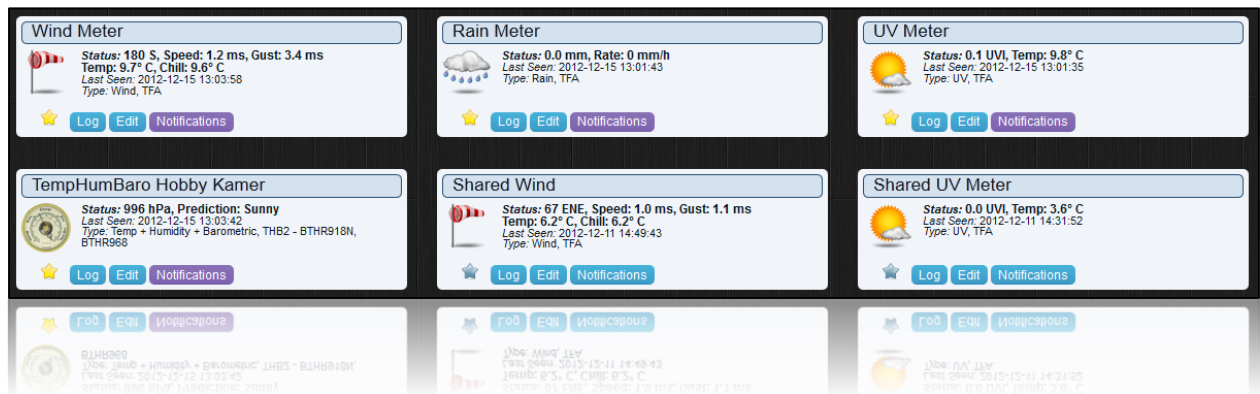
Each device has different notifications (depending on the hardware options).

For example, in the above screenshot, you want to be notified if the temperature drops below -2 degrees.

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)

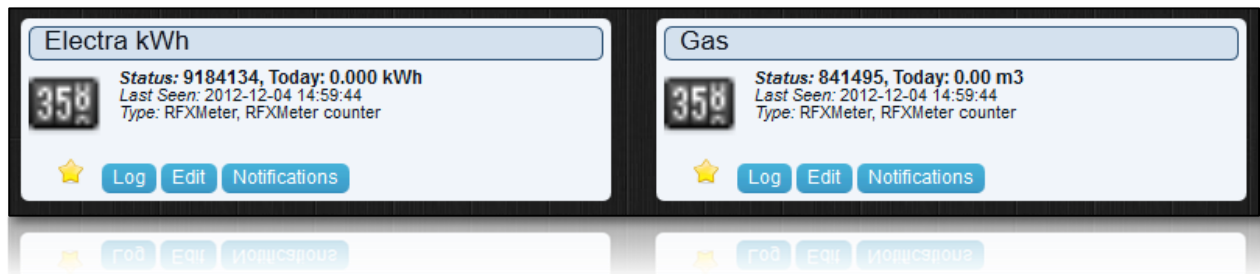
By Dragging/Dropping the sensor items, you can change the position of the devices in the window.

Log



## Utility

The utility tab includes Meter Sensors (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 change the position of the devices in the window.

## Labels

When using the dashboard in compact or mobile mode, there is limited room for the current status.

Therefor the following labels apply:

R = Return

T = Today

U = Usage

A = Actual

\*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:

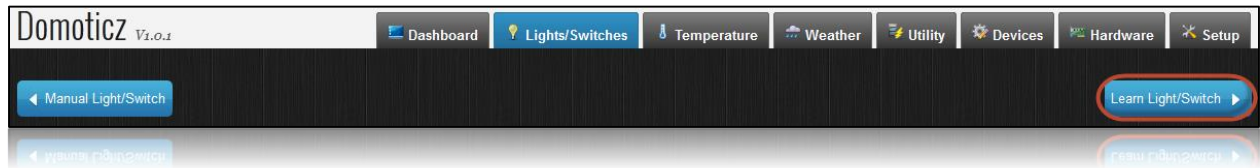
- Status icon that can be push to toggle on/off status (depending on the hardware)
- Favorite push icon (to display this device on the Dashboard tab)
- Log (Displays the log)
- Edit (Edit device parameters, and Sub/Slave Devices)
- Notifications (see Notification chapter)

By Dragging/Dropping the sensor items, you can change the position of the devices in the window.

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.

If this time is too short you should position yourself nearer the remote/switch/sensor by using a portable computer such as Tablet or Smartphone

Once you press the button the following screen is presented:

The image shows a dialog box titled 'Add Light/Switch Device' with 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'. Below the dialog, there's a faint, larger version of the same dialog box visible in the background.

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

Add Device Cancel

As: ☒ Main Device ☐ Sub/Slave Device

## 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

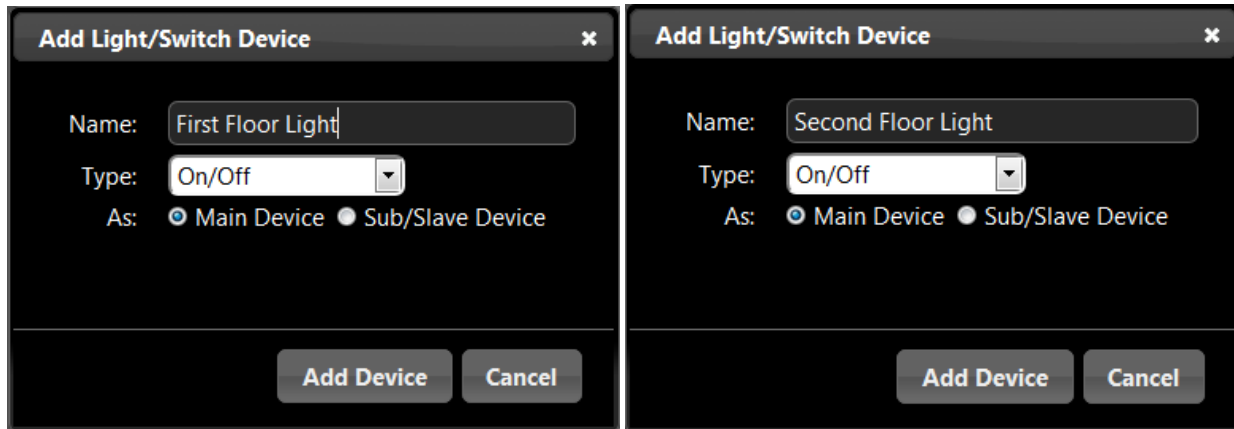
Device: Outdoor Light ▼

Add Device Cancel

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:

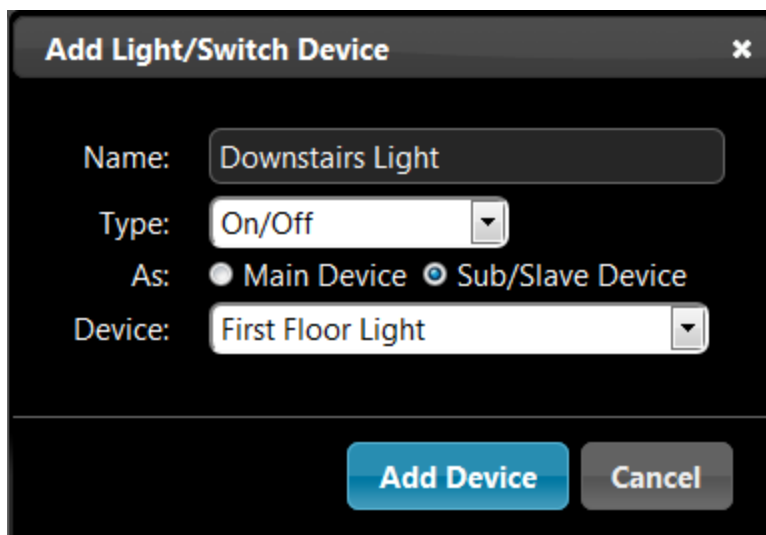


**Add Light/Switch Device** ✕  
Name:   
Type:   
As: ☒ Main Device ☐ Sub/Slave Device

**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:

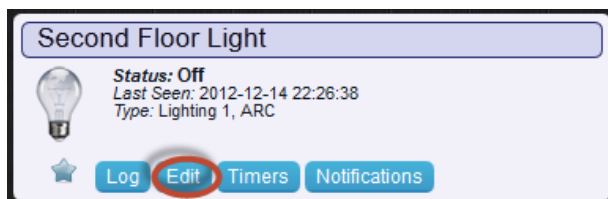




**Add Light/Switch Device** ✕  
Name:   
Type:   
As: ☐ Main Device ☒ Sub/Slave Device  
Device:

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: Second Floor Light  
 Type: On/Off  
 Save

Sub/Slave Devices:

Search:

Name
No data available in table

Showing 0 to 0 of 0 entries

Delete Clear

Sub/Slave Device: Downstairs Light Add

Sub/Slave Device: Downstairs Light 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: Second Floor Light  
 Type: On/Off  
 Save

Sub/Slave Devices:

Search:

Name
Downstairs Light

Showing 1 to 1 of 1 entries

Delete Clear

Sub/Slave Device: Downstairs Light Add

Sub/Slave Device: Downstairs Light Add

Delete Clear

Showing 1 to 1 of 1 entries

**\*Note:** When adding a Sub/Slave device, this will not be visible in the 'Lights' tab by default. You see this device in the 'Edit' screen from the device you added it too.

If you also want to control or see the Sub/Slave device, you will have to add this device again, and set it up as Main device.

## 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 mobile application interface for setting up notifications. It features two main sections: 'Prowl (iPhone/iPad notification system):' and 'NMA (Android notification system):'. Each section contains a text input field for an 'API Key' with the value '626daEbc13a201510c8e46927f94b631e45c42af' and a blue 'Test' button. Below each input field is a link that says 'To get a free account/API key click [Here](#)'. A third, partially visible section at the bottom shows a similar setup with a different API key and a 'Test' button.

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)



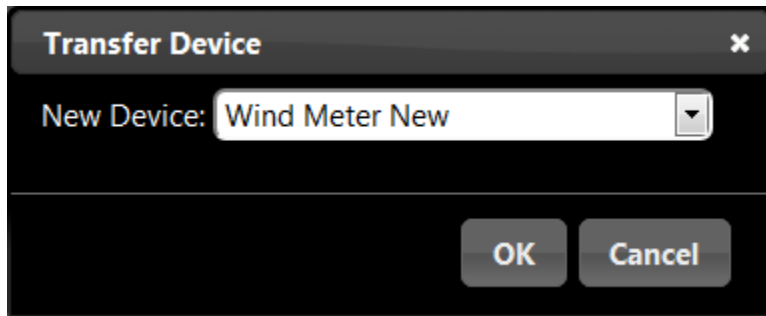
## Replacing Batteries

Some devices change their unique ID when a new battery is installed.

To transfer the old Log to the new device act as follow:

First, add the new device to the system, and call it for example 'Wind Meter New'.

Next press the Edit button on the Old device, select transfer and select the new Device. (In this case the devices called 'Wind Meter New'.



Next press OK, and the old device logs and settings are transferred to the new Device.

Now you can rename the new device back to 'Wind Meter', and position it back.

## Browser Cache

The web frontend is set to be cached. This will speed up the application launch time, and is perfect if you create a shortcut on the home screen of an iPhone/iPad/....

If for some reason, the page does not load correctly in Firefox / Chrome, clear this cache.

### Chrome

From inside the Chrome browser browse to the following URL:

`chrome://appcache-internals/`

You will now see all web applications that are cached.

Find the Domoticz cache and press 'Remove'.

### Firefox

From the options page, go to the 'Advanced' page.

At the bottom you will see all web applications that are cached.

Select the Domoticz application, and press 'Remove'.

### Internet Explorer 10+

From the options page, go to 'General', Under 'Browser History' select settings, then select the 'Caches and databases' tab.

Select the Domoticz application, and press 'Delete'.

## 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 of the problem 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.

## IPhone / iPad

If you browse on your iPhone/iPad to the Domoticz site (for example <http://192.168.0.3:8080>), and add a shortcut to the home screen, the application will launch 90% faster, and works as a stand-alone application. It is best to add a shortcut for 'internal' and 'external' use. (Internal = from inside your house, External = from outside your house). For external usage, you need to add a firewall rule in your router.

## Sharing USB Devices over LAN

If you would like to share USB devices via TCP/IP you can use the applications 'Ser2Net' or Socat.

## 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.