★★☆

Basic / **Advanced** / Expert

Application note

Fetch weather forecast to spaceLYnk

Use weather information from yahoo.com, openweathermap.org and wunderground.com.

Schneider Electric

Safety Information

Important Information

Read these instructions carefully before trying to install, configure, or operate this software. The following special messages may appear throughout this bulletin or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of either symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠DANGER
DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING
WARNING indicates a potentially hazardous situation which, if not avoided, can result in death or serious injury.

⚠CAUTION
CAUTION indicates a potentially hazardous situation which, if not avoided, can result in minor or moderate injury.

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Safety Precautions

⚠WARNING

HAZARD OF INCORRECT INFORMATION

- Do not incorrectly configure the software, as this can lead to incorrect reports and/or data results.
- Do not base your maintenance or service actions solely on messages and information displayed by the software.
- Do not rely solely on software messages and reports to determine if the system is functioning correctly or meeting all applicable standards and requirements.
- Consider the implications of unanticipated transmission delays or failures of communications links.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

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Failure to observe this information can result in injury or equipment damage.

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1 Introduction

This application note describes how the weather information can be fetched into spaceLYnk. It shows how to get weather data from **weather.yahoo.com** and from **openaweathermap.org**. Data are obtained from the servers and written into KNX group addresses.
Actual weather information and the forecasted values can be displayed in spaceLYnk visualization. Obtained weather data can also be used as variable for the control systems. Few examples of weather data usage:

- Sunrise and sunset time – enable/disable outdoor movement sensor for light control.
- Wind speed – secure the building from strong wind without need of weather station installed.
- Forecasted temperature – optimize your heating system(e.g. turn on the heating earlier, if you expect cold evening)

Information obtained from weather.yahoo.com and openweathermap.org are quite complex and are suitable for further use in scripts and customized visualization. Document also describes usage of ready-to-use visualization provided by **wunderground.com.** It is very quick and easy to use (refer to chapter 2.4).

Competencies

This document is intended for readers who have been trained on spaceLYnk, spaceLYnk products. The integration should not be attempted by someone who is new to the installation of either products. In addition it is mandatory to have a knowledge in KNX technology and basic knowledge in Lua scripting.

System prerequisites

Software	Version	Download
spaceLYnk	1.0 and newer	http://www.schneider-electric.com
spaceLYnk ASCII fix update	1.0	http://www.schneider-electric.com

Table 1: software versions of used software

NOTE: It is mandatory, that the spaceLYnk is connected to the internet!

NOTE: ASCII fix update needs to be installed in spaceLYnk FW version 1.0 and lower in order to achieve proper fetch of ASCII values! File named *spaceLYnk_ASCII_fix.lmup* is attached to this application note together with other backup files. In order to install this update go to spaceLYnk *Configurator* >> *Utilities* >> *Install updates*.

2 Configuration

2.1 Weather forecast from openweathermap.org

Fetching weather from openweathermap.org into spaceLYnk has been done separately for:

- Current weather (resident script: *weather_data_openweathermap_current*)
- Four days forecast (resident script: *weather_data_openweathermap_forecast)*

There are two ready-to-use scripts and it is up to you , whether you want to use the current or forecasted weather data or both.

2.1.1 Current weather from openweathermap.org

In order to fetch current weather information into spaceLYnk, please follow the steps below.

1. Restore the script *weather_data_openweathermap_current*
2. Modify the script
3. Create objects in spaceLYnk
4. Turn on the script
5. Check the function

Step 1 Restore the script *weather_data_openweathermap_current*.

a) Open your web browser
b) Type IP address of your spaceLYnk
c) Click *Configurator*
d) Click *Scripting*
e) Click *Tools*
f) Select *Restore scripts*
g) Chose "*AN013_Weather_scripting-backup.tar.gz*"
   - Choose "*Append keeping existing scripts*" to preserve existing scripts in your spaceLYnk
h) Click Save
   - Your spaceLYnk is rebooting now, wait approximately 1 minute to startup
i) Keep the script *weather_data_openweathermap_current* **turned off!**

Step 2 Modify the script

a. Click the Editor icon of your script *weather_data_openweathermap_current* in order to open the script editor window.

b. Modify the parameters in USER MODIFICATION AREA (see **Chyba! Nenalezen zdroj odkazů.**)

- **searchBy** – set to 0 if you want to search the location using city name. Set to 1, if you want search the location using city ID.
- **city** – name of the city (e.g. 'Prague', 'London', 'Koln').
- **cityID** – ID of the city. This option is suitable for smaller cities, which might be difficult to search by name. Search the city on the web openweathermap.org and find the ID in the the URL address.
- **timezone** – in order to show correct time of sunset and sunrise it is needed to fill the correct time zone of your city (e.g. 2 for Prague or 8 for Hong Kong)
- **units –** set to 'metric' or 'imperial'. All the displayed values will be shown in the unit system you are used to.
- **lang –** Choose the language used for describing the weather condition (e.g. 'en' for English, 'de' for German, 'tr' for Turkish, …). The complete list of languages is available in the script comment.
- **proxy** – Specify a proxy server if needed. In case of no proxy set this parameter to nil.
- **apikey –** API key can be retrieved after registration on http://openweathermap.org/appid.

```
7  --*********************************************************
8  -->>>>>>>>>>>>>>USER MODIFICATION AREA (BEGIN)<<<<<<<<<<<<<<<
9  --*********************************************************
10
11 local searchBy = 0                -- 0-search by city name; 1-search by cityID
12 local city = 'Prague,CZ'          --city name
13 local cityID= '3067696'           --city ID (see openweathermap.org)
14 local timezone= 1                 --add a timeshift of your timezone (eg. timezone = 2 for Prague)
15
16 local units = 'metric'            --units of measured values: metric/imperial
17 local lang = 'en'                 --[[language of weather description
18                                     English - en, Russian - ru, Italian - it, Spanish - es (or sp),
19                                     Ukrainian - uk (or ua), German - de, Portuguese - pt, Romanian - ro,
20                                     Polish - pl, Finnish - fi, Dutch - nl, French - fr, Bulgarian - bg,
21                                     Swedish - sv (or se), Chinese Traditional - zh_tw,
22                                     Chinese Simplified - zh (or zh_cn), Turkish - tr, Croatian - hr, Catalan - ca --]]
23 local proxy='http://10.154.24.21:8080/' --set proxy server e.g. 'http://10.10.10.10/'. If no proxy is needed set proxy=nil
24
25 local apikey='d3e7869ddf2ad1c8b7c3e7120e8597a8'--API key can be retrieved after registration on http://openweathermap.org/appid
26 --*********************************************************
27 -->>>>>>>>>>>>>>USER MODIFICATION AREA (END)<<<<<<<<<<<<<<<<
28 --*********************************************************
```

Picture 1: User Modification Area in the script

NOTE: Starting from 9 October 2015 you have to register on http://openweathermap.org/appid in order to receive valid APPID. If you have set your weather fetching based on older version of this application note, it would not be working anymore. Please use the updated scripts from this application note, register on http://openweathermap.org/appid and enter your APPID into User Modification Area of the script.

Step 3 Create objects in spaceLYnk

Script processes the data from weather server and saves it into KNX group address. It is needed to have prepared the objects in spaceLYnk. There are two options you can use to create the objects:

- Use the complete spaceLYnk backup in order to restore the scripts together with all objects
- You can create objects manually according to table below

NOTE: If the bus sniffer is enabled and the script is turned on, the objects will be created in spaceLYnk automatically. Be aware that some datapoint types will be set wrongly, because KNX telegram does not contain information about the datapoint type. We recommend to create the objects manually without the use of bus sniffer.

Table 2: Objects for current weather data, openweathermap.org

Group address	Data type	Description
5/0/1	09.001 Temperature	Current temperature
5/0/2	09.001 Temperature	Minimum temperature at the moment. This is deviation from current temp that is possible for large cities and megalopolises geographically expanded (use these parameter optionally)
5/0/3	09.001 Temperature	Maximum temperature at the moment. This is deviation from current temp that is possible for large cities and megalopolises geographically expanded (use these parameter optionally)
5/0/4	09. 2 byte floating point	Atmospheric pressure (on the sea level, if there is no sea_level or grnd_level data), hPa
5/0/5	09. 2 byte floating point	Wind speed, mps
5/0/6	05.003 angle	Wind direction, degrees (meteorological)
5/0/7	09. 2 byte float	Cloudiness, %
5/0/8	07. 2 byte unsigned integer	Weather condition id
5/0/9	16. 14 byte ASCII	Group of weather parameters (Rain, Snow, Extreme etc.)
5/0/10	16. 14 byte ASCII	Weather condition within the group
5/0/11	16. 14 byte ASCII	Weather icon id
5/0/12	09. 2 byte floating point	Precipitation volume for last 3 hours, mm
5/0/13	09. 2 byte floating point	Snow volume for last 3 hours, mm
5/0/14	10. 3 byte time / day	Sunrise time, UTC
5/0/15	10. 3 byte time / day	Sunset time, UTC
5/0/16	09. 2 byte floating point	City geographical location - Longitude
5/0/17	09. 2 byte floating point	City geographical location - Latitude

Step 4 **Turn on the script.**

a. In spaceLYnk *Configurator* go to *Scripting >> Resident*.
b. Change status of script *weather_data_openweathermap_current* to active.

Step 5 **Check the function**

Check that all the objects show valid values.

2.1.2 Forecasted weather from openweathermap.org

The second ready-to-use script reads the forecasted weather information and stores it in KNX group addresses. The configuration is done in exactly same way as described in previous subchapter 2.1.1.

In order to fetch forecasted weather information into spaceLYnk, please follow the steps below.

1. Restore the script *weather_data_openweathermap_forecast*
2. Modify the script
3. Create objects in spaceLYnk
4. Turn on the script
5. Check the function

Step 1 **Restore the script *weather_data_openweathermap_forecast*.**

Procedure of script restoring is described step-by-step in previous chapter 2.1.1.

Step 2 **Modify the script**

The script setting in “USER MODIFICAION AREA” of the script is almost the same as described in chapter 2.1.1. Only difference is in absence of time zone parameter.

Step 3 Create objects in spaceLYnk

Script processes the data from weather server and saves it into KNX group address. It is needed to have prepared the objects in spaceLYnk. There are two options you can use to create the objects:

- Use the complete spaceLYnk backup in order to restore the scripts together with all objects.
- You can create objects manually according to table below

NOTE: If the bus sniffer is enabled and the script is turned on, the objects will be created in spaceLYnk automatically. Be aware that some datapoint types will be set wrongly, because KNX telegram does not contain the information about the datapoint type. We recommend to create the objects manually without the use of bus sniffer.

Table 3: Objects for forecated weather data, openweathermap.org

Group address	Data type	Description
5/1/1	09.001 Temperature	Day temperature
5/1/2	09.001 Temperature	Minimum daily temperature
5/1/3	09.001 Temperature	Maximum daily temperature
5/1/4	09.001 Temperature	Night temperature
5/1/5	09.001 Temperature	Evening temperature
5/1/6	09.001 Temperature	Morning temperature
5/1/7	09. 2 byte floating point	Atmospheric pressure (on the sea level, if there is no sea_level or grnd_level data), hPa
5/1/8	09. 2 byte floating point	Humidity, %
5/1/9	09. 2 byte floating point	Wind speed, mps
5/1/10	05. 003 angle	Wind direction, degrees (meteorological)
5/1/11	05. 001 scale	Cloudiness, %
5/1/12	07. 2 byte unsigned integer	Weather condition id
5/1/13	16. 14 byte ASCII string	Group of weather parameters (Rain, Snow, Extreme etc.)
5/1/14	16. 14 byte ASCII string	Weather condition within the group
5/1/15	16. 14 byte ASCII string	Weather icon id
5/1/16	09. 2 byte floating point	Precipitation volum, mm
5/1/17	09. 2 byte floating point	Snow volume, mm

Table above describes objects for 1 of 4 days from the forecast. Rest of the objects follows the scheme from Table 3. Middle part of the group address defines the day of the forecast as follows:

- 5/1/x – Objects of forecasted data for current day
- 5/2/x – Objects of forecasted data for tomorrow
- 5/3/x – Objects of forecasted data for day after tomorrow
- 5/4/x – Objects of forecasted data for two days after tomorrow

For example group address 5/2/9 is object for estimated wind speed for tomorrow.

Step 4 Turn on the script.

a. In spaceLYnk *Configurator* go to *Scripting >> Resident*.
b. Change status of script *weather_data_openweathermap_forecast* to active

Step 5 Check the function

Check that all the object are successfully read.

NOTE: Weather data provided by openweatherma.org can be few hours old, if you use the free service only. Because of high traffic on free accessible service the API returns data stored cache. If you want to get more reliable weather data, you need to become a professional subscriber.

2.2 Weather forecast from weather.yahoo.com

Weather forecast from weather.yahoo.com works in the same principle as the openweathermap.org described in the previous chapter (2.1). The slight differences are mainly in the obtained data. Because the amount of parameters provided by weather.yahoo.com is not so huge in comparisonto openweathermap.org, there is only one resident script used for data loading (current and forecasted weather is not split into two separated scripts). There is one user script, which has to be added as well.

Follow the steps below in order to set your spaceLYnk to receive the yahoo weather information:

1. Restore the resident script *weather_data_yahoo* and user script *user.YahooWeatherForecast*
2. Modify the script
3. Create objects in spaceLYnk
4. Turn on the script

5. Check the function

Step 1 Restore the resident script *weather_data_yahoo* and user script *user.YahooWeatherForecast*

Procedure of script restoring is described step-by-step in previous chapter 2.1.1.

The script are part of the same package of scripts used in previous version.

NOTE: Do not turn on the script yet. If the bus sniffer is enabled and the script is turned on, the objects will be created in spaceLYnk automatically. Be aware that some of datapoint types will be set wrongly, because KNX telegram does not contain information about the datapoint type. We recommend to create the objects manually without the use of bus sniffer.

Step 2 Modify the scripts

a. Click the Editor icon of your script *weather_data_yahoo* in order to open the script editor window.

b. Modify the parameters in USER MODIFICATION AREA (see Picture 2)

- **cityID** – the location of the city you want know the weather about is specified by WOEID (Where On Earth ID). This ID can be found on weather.yahoo.com. Simply search weather for your place by name and then copy the number in the url line of your browser.
- **units –** for metric units (Celsius degree, meters, …) set this parameter to 'c', for imperial units (Fahrenheit degrees, miles, ..) set the parameter to nil.
- **proxy –** if your spaceLYnk does not have direct access to the internet, you can optionally set the proxy server in following format *local proxy = 'http:///10.20.30.40'*. If no proxy is used, set the parameter to nil.
- **timeout** – set the timeout for receiving the answer from the weather server. It is set to nil by default, which means 5 seconds. For other values write number of seconds in following format: *local timeout = 10*

```
3
4  --************************************************************
5  -->>>>>>>>>>>>>>USER MODIFICATION AREA (BEGIN)<<<<<<<<<<<<<<
6  --************************************************************
7  local cityID= 802199     --WOEID (Where On Earth ID), find on weather.yahoo.com
8
9  local units = 'c'        -- 'c'=metric, nil=imperial
10
11 local proxy = nil        --e.g. "http://10.154.24.21:8080/", nil=no proxy used
12
13 local timeout = nil      --reponse timeout in seconds. nil=5s(default)
14
15 --************************************************************
16 -->>>>>>>>>>>>>>USER MODIFICATION AREA (END)<<<<<<<<<<<<<<
17 --************************************************************
```

Picture 2: User Modification Area in the script

Step 3 Create objects in spaceLYnk

Table 4: Objects for weather data, weather.yahoo.com

Current weather data		
Group address	Data type	Description
5/5/1	16. 14 byte ASCII string	a textual description of conditions, for example, "Partly Cloudy"
5/5/2	09.001 temperature	the current temperature
5/5/3	09. 2 byte floating point	the condition code for this forecast. You could use this code to choose a text description or image
5/5/4	09. 2 byte floating point	wind chill in degrees
5/5/5	05. 1 byte unsigned integer	wind direction, in degrees
5/5/6	09. 2 byte floating point	wind speed
5/5/7	05.001 scale	humidity, in percent
5/5/8	09. 2 byte floating point	visibility, in the units specified by the distance attribute of the yweather:units element (mi or km). Note that the visibility is specified as the actual value * 100. For example, a visibility of 16.5 miles will be specified as 1650. A visibility of 14 kilometers will appear as 1400.
5/5/9	09. 2 byte floating point	barometric pressure, in the units specified by the pressure attribute of the yweather:units element (in or mb). (float)
5/5/10	05. 1 byte unsigned integer	state of the barometric pressure: steady (0), rising (1), or falling (2). (integer: 0, 1, 2).
5/5/11	16. 14 byte ASCII string	today's sunrise time.
5/5/12	16. 14 byte ASCII string	today's sunset time.
5/5/13	09. 2 byte floating point	The latitude of the location.
5/5/14	09. 2 byte floating point	The longitude of the location.

Forecast for 1st day (today)		
Group address	**Data type**	**Description**
5/5/15	16. 14 byte ASCII string	a textual description of conditions, for example, "Partly Cloudy"
5/5/16	09. 2 byte floating point	the forecasted low temperature for this day
5/5/17	09. 2 byte floating point	the forecasted high temperature for this day
5/5/18	07. 2 byte unsigned integer	the condition code for this forecast. You could use this code to choose a text description or image for the forecast. All possible values in Tab XX.
Forecast for 2nd day (tomorrow)		
Group address	**Data type**	**Description**
5/5/19	16. 14 byte ASCII string	a textual description of conditions, for example, "Partly Cloudy"
5/5/20	09. 2 byte floating point	the forecasted low temperature for this day
5/5/21	09. 2 byte floating point	the forecasted high temperature for this day
5/5/22	07. 2 byte unsigned integer	the condition code for this forecast. You could use this code to choose a text description or image for the forecast. All possible values in Tab XX.
Forecast for 3th day		
Group address	**Data type**	**Description**
5/5/23	16. 14 byte ASCII string	a textual description of conditions, for example, "Partly Cloudy"
5/5/24	09. 2 byte floating point	the forecasted low temperature for this day
5/5/25	09. 2 byte floating point	the forecasted high temperature for this day
5/5/26	07. 2 byte unsigned integer	the condition code for this forecast. You could use this code to choose a text description or image for the forecast. All possible values in Tab XX.
Forecast for 4th day		
Group address	**Data type**	**Description**
5/5/27	16. 14 byte ASCII string	a textual description of conditions, for example, "Partly Cloudy"
5/5/28	09. 2 byte floating point	the forecasted low temperature for this day
5/5/29	09. 2 byte floating point	the forecasted high temperature for this day
5/5/30	07. 2 byte unsigned integer	the condition code for this forecast. You could use this code to choose a text description or image for the forecast. All possible values in Tab XX.

Step 6 Turn on the script

c. In spaceLYnk *Configurator* go to *Scripting >> Resident*

d. Change status of script *weather_data_yahoo* to active

Step 4 Check the function

Check that all the objects are successfully read.

2.3 Weather icons in spaceLYnk visualization

Both of weather services described above (Yahoo and Openweathermap) provides integer code, which describes a weather situation. Each value of this code corresponds to some weather condition. It can be easily used in visualization to show weather icons. In Picture 3 you can see example of weather visualization. Even if you use different source of data (weather.yahoo.com or openweathermap.org), you can achieve the same look, which is fully customizable.

Picture 3: Example of weather visualization.

In order to create a weather icon in visualization, follow the steps below:

1. Download icons from openweathemap or other internet source
2. Upload icons to spaceLYnk
3. Add object to spaceLYnk visualization plan
4. Check the function

Step 1 Download icons from yahoo or openweathermap

First of all it is needed to get a set of weather icons, which can be downloaded openweathermap or other available internet sources.

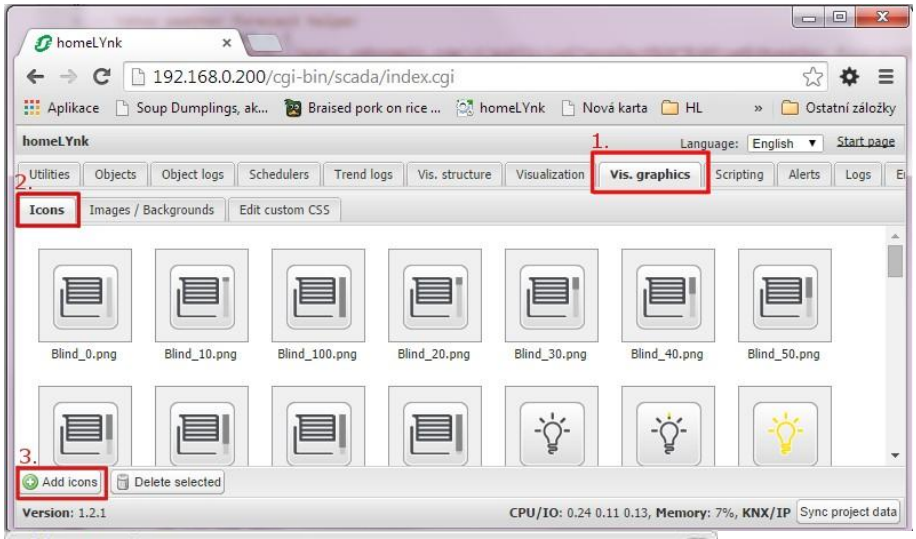
- http://openweathermap.org/weather-conditions (Right click on icon and download Save image as…)
- http://www.flaticon.com/categories/weather (Select icons you like and download them together as a zip archive. Choose PNG or SVG file format.)

You can use other icons from your sources as well.

Step 2 Upload icons to spaceLYnk

Once you have your icons ready, archive them into zip file and upload into spaceLYnk.

See the steps in the pictures below.



Step 3 Add objects to spaceLYnk visualization

a. Chose a visualization plan you want and unlock it for editing.

b. Add a new object giving the weather ID number(see in the table below):

Openweathermap.org		Weather.yahoo.com	
5/0/8	Current weather code	5/5/3	Current weather code
5/1/12	Weather code of 1st forecasted day(today)	5/5/18	Weather code of 1st forecasted day
5/2/12	Weather code of 2nd forecasted day(tomorrow)	5/5/22	Weather code of 2nd forecasted day
5/3/12	Weather code of 3rd forecasted day	5/5/26	Weather code of 3rd forecasted day
5/4/12	Weather code of 4th forecasted day	5/5/30	Weather code of 4th forecasted day

c. Choose some *Default icon*

d. Click on the button *Additional icons*

e. Click on the button *Add icon* and add the number of lines you need

f. Each line assigns an icon to a value of the object (or value range)
Chose the code number and assign an image to it. The code values and its meaning are described in Table 5 and Table 6

g. Hit *Save* button

h. Add object to the plan clicking on *Add to plan*

Step 4 Check the function

Go to spaceLYnk visualization view and check that the icons are correctly shown and correspond to the weather description.

Table 5: Weather codes, openweathermap.org

Code	Description	Code	Description
200 – 232	Thunderstorm	**741**	Fog
300 – 321	Drizzle	**800**	Clear Sky
500 – 531	Rain	**801**	Few clouds
600 – 622	Snow	**802**	Scattered clouds
701	Mist	**803**	Broken clouds
721	Haze	**804**	Overcast clouds

NOTE: For more detailed description of the weather codes go to http://openweathermap.org/weather-data.

Table 6: Weather codes, weather.yahoo.com

Code	Description	Code	Description
0	tornado	25	cold
1	tropical storm	26	cloudy
2	hurricane	27	mostly cloudy (night)
3	severe thunderstorms	28	mostly cloudy (day)
4	thunderstorms	29	partly cloudy (night)
5	mixed rain and snow	30	partly cloudy (day)
6	mixed rain and sleet	31	clear (night)
7	mixed snow and sleet	32	sunny
8	freezing drizzle	33	fair (night)
9	drizzle	34	fair (day)
10	freezing rain	35	mixed rain and hail
11	showers	36	hot
12	showers	37	isolated thunderstorms
13	snow flurries	38	scattered thunderstorms
14	light snow showers	39	scattered thunderstorms
15	blowing snow	40	scattered showers
16	snow	41	heavy snow
17	hail	42	scattered snow showers
18	sleet	43	heavy snow
19	dust	44	partly cloudy
20	foggy	45	thundershowers

2.4 Weather stickers from wunderground.com

Another way to present a weather information in spaceLYnk visualization is to use a service, which provides ready-to-use “sticker”, what is remote picture containing all the information needed. There can be several local websites, which offers easy-to-use configuration of such a stickers. In this chapter we focus on wunderground.com.

Please follow the steps below in order to use the wunderground stickers in your visualization:

1. Get your sticker from wunderground.com/sticker
2. Add the sticker into your visualization
3. Check the function

Step 1 Get your sticker from wunderground.com/sticker

a) Open your web browser and open URL wunderground.com/stickers/
b) Write name of your location in field named “Input your location” and hit “Find” button
c) Choose the preferred weather station source and units system
d) Pick the sticker you like, right-mouse click on it and select Copy image URL
e) You have the image URL in your clipboard now

Step 2 Add the sticker into your visualization

a) Go to your spaceLYnk configurator and log in, if needed
b) Select card Visualization and choose the plan you want and unlock it for editing
c) In the Plan editor select image
d) Set image source to remote
e) Set image url to the one you have in your clipboard (paste it there)
f) Hit “Add to plan” button
g) Save and reload plan

Step 3 Check the function

a) Go to spaceLYnk visualization view
b) Open the specific plan and check, if the weather sticker is present

NOTE: The URL of the image copied from wunderground.com/stickers can be modified. You can change the language of the weather description by changing the last parameter “language =XY” (EN for English, DL for German or DK for Danish). Full list of languages codes can be found on the following website: http://www.wunderground.com/weather/api/d/docs?d=language-support.

Picture 4: Example of two versions of widgets available on wunderground.com

3 Conclusion

Document describes how weather data can be read from weather.yahoo.com and openweathermap.org. Provided scripts are used in order to save the weather parameters to KNX group address. Obtained parameters can be used in visualization. Special chapter is focused on conditional image visualization.

Be aware that all the weather services depend on internet connection. Your spaceLYnk must have access to the internet. If your network uses proxy server, you can set it as a parameter in the scripts (described in chapters above).

If you are looking for any more detailed information about the services described in this application note, please refer to the sources in Table 7

Functional example of full spaceLYnk backup containing all objects and visualization is attached to this application note (*AN013_Weather_backup.tar.gz*).

NOTE: Working with ACII object in spaceLYnk with firmware version 1.2.1 needs an update installation, which brings a minor fix to this firmware version.

4 Appendix

4.1 References

Document title	Reference
Openweathermap API documentation	http://openweathermap.org/api
Weather Yahoo API documentation	https://developer.yahoo.com/weather/
Wunderground weather stickers	http://www.wunderground.com/stickers/

Table 7: references

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