DrawIO symbol definition and svg export plugin

# Overview

[DrawIO](https://www.diagrams.net/) (transitioning to diagrams.net) is an [open source](https://github.com/jgraph/drawio) technology for building diagramming applications. The application has been chosen to produce the symbols used within the DISC DEXPI project.

In addition to the functionality provided as-is by the product it was also necessary to build an additional plug-in to provide bulk export of svg files with support for layers and dimensioning of the symbol.

The plug-in has been developed by [pnb plants & bytes GmbH](https://www.plants-and-bytes.de/en/) for Equinor

This document describes:

* The structure of the symbol definition with reference to use of layers, special symbols and property values
* How to install the plug-in
* The configuration settings for the plug-in.

# DrawIO symbol definition

The symbol definition applied within the DISC DEXPI project provides the details needed to ensure that the CAD vendors can create each symbol using defined dimensions along with specified origin and connection point ordinates.

## Layer definition

Each symbol is drafted with the following layers. Layers can be turn on/off as required to view the information pertaining to that layer. The case sensitive layer name is used within the configuration of the svg export plug-in to define which layer information shall be exported within the given export file. (Ref: Configuration Options)

* Symbol - the ‘raw’ symbol that will be drafted in the 2D CAD tool
* Origo - red circle designating the origin point of the symbol
* Label - general label placement and lookup code for attributes within the label
* Connection - green circles designating key connection points for the symbol
* Option *#*  - \*\* optional layer(s) e.g., Option1 & Option2 displaying the symbol for different attribute settings (example: PV003A has 3 variants based on open/close settings)

## ‘Special’ symbol definition

The DISC DEXPI symbol legend uses special coloured circle symbols to identify origin and connection points: the centre of the circle provides the exact x,y ordinates of the origin / connection point. The use of coloured circles allows for both human and machine readable interpretation of this important information.

**Origin (origo):** Identified by red (RGB: 255,0,0 Hex: #ff0000) circle

**Connection Points:** Identified by green (RGB: 0, 255,0 Hex: #00FF00) circle

## Property definition

### Dimension:

Each symbol must be specified with a primary width and height dimension line. Properties of these lines are used within the svg export plugin to redimension the exported symbol to the correct size and add dimension lines to the output file via settings in the export configuration.

A screenshot of a computer

Description automatically generatedThe dimension properties must be added to the Symbol layer.

**Width:** indicates primary width dimension as a numeric value

**Height:** indicates primary height dimension as a numeric value

**UoM:** Unit of Measure – currently only mm is supported.

### Connection Point:

Connection point symbols are defined with the following properties to aid with validation of the DEXPI file and for use in other applications where dynamic connection lines are used.

**Direction:** Comma delimited list of values in degrees indicating the valid direction at which a connecting line can intercept the symbol. E.g. Direction: 180 indicates a connecting line can only intersect with the symbol from the left side of the symbol along the x-axis plane. **0o start point is given along the positive x-axis as shown.**

**Chart, pie chart

Description automatically generated**

Figure 1: Connection line angle intercept value reference

**LabelConnector:** Indicates if the connection point allows label connection lines

**PipingConnector:** Indicates if the connection point allows piping connection lines

**SignalConnector:** Indicates if the connection point allows signal connection lines

## Example file:



# SVG Plug-in

## Install

Execute following steps to install and use the plugin:

1. Install draw.io (plugin is developed and tested with version 20.3.0)
2. Start draw.io with the command line argument --enable-plugins

* You can add it to the link of draw.io
* The argument is needed to add the plugin and also to use the plugin

1. Choose the plugin file in the open file dialog Extras|Plugins…|Add|External Plugins|Select File…
2. Draw.io adds the plugin file to the folder: C:\Users$(User)\AppData\Roaming\draw.io\plugins
   * Add the file “svg\_bulk\_export.config.json” to this folder
3. After restart of draw.io three new menu items should be added to the bottom of menu “Extras”
   * SVG bulk export – Single symbol
   * SVG bulk export – All symbols
   * SVG bulk export - Create zip file with folder structure' to menu 'Extras'

## Configuration Options

Please refer to the readme.pdf file.

