



DrawingXpert

Manual

ENGINEERED EFFICIENCY



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Contents

1.1	General conventions.....	4
	Typefaces	4
	Symbols	4
2.1	Licence	5
	Site licence (local).....	5
	Floating (server) licence	5
5.1	ScanResult	10
5.2	ScanResultLinks	10
5.3	FindReplace	11
5.4	Coordinate	13
5.5	ChangeCoordinate	13
5.6	ClearBlock.....	13
5.7	TitleBlock	14
5.8	TitleBlockDefinition	14

1 Introduction

DrawingXpert (DX) is a highly automated and highly flexible Tool for modifying the content of SmartSketch drawings based on various rules. The tool can process either single drawings or folders and sub-folders. The tool is able to run interactively or command line mode.

1.1 General conventions

This document contains many visual cues to help you understand the meaning of certain words or phrases. The use of different fonts for different types of information allows you to scan the document for key concepts or commands. Symbols help abbreviate and identify commonly used words, phrases, or groups of related information

Typefaces

<i>Italic</i>	Indicates a system response, which is an explanation of what the software is doing. For example, <i>The text is placed in the viewing plane.</i>
Bold	Indicates a command name, parameter name, or dialog box title. Command paths are shown using an arrow between command names. For example, Choose File → Open to load a new file.
Normal typewriter	Indicates an actual file or directory name. For example, The ASCII report is stored in the layout.rpt file.
Bold typewriter	Indicates what you literally type in. For example, Key in original.dat to load the ASCII file.

Symbols

This document uses the following symbols to identify special information:

-  Note – important supplemental information.
-  Map or path – shows you how to get to a specific command or form.
-  More information – indicates there is additional or related information.

2 Installation

Requirements:

- Microsoft Windows 7
- Microsoft Windows 8
- Microsoft Excel 2003 or higher
- Intergraph SmartSketch 2014 R1 or higher

2.1 Licence

CAXperts software supports two types of licences:

Site licence (local)

Domain based licences are restricted to machines within a 5 miles (8 kilometres) radius at a specific geographic location (building) for which the licence key file was issued for. There is no limitation regarding the number of users or machines.

CAXperts will need your **Current domain name** to issue a licence file (.lic).

The licence file has to be stored on a local or network location accessible by the machine running the CAXperts product; a licence server is not required.

The location of the licence file should be defined on every machine with the CAXperts product installed, which can be done

- Either by setting the environment variable
CAXPERTS_LICENSE_FILE=C:\Program Files (x86)\CAXperts\Licensing\
- Or by setting the registry key
HKEY_CURRENT_USER\Software\FLEXlm License
Manager\CAXPERTS_LICENSE_FILE=C:\Program Files
(x86)\CAXperts\Licensing\

Multiple licence key file locations should be separated by semicolons (“;”).

 Note: If the licence key file location is not defined, “C:\Program Files (x86)\CAXperts\Licensing\” is used

 Note: The licence key file may be renamed (including the extension). The CAXperts product will check the content of all files in the licence folder(s) for valid keys.

 Note: Changes to the key path (in the environment variable or registry key) are read during the next start of the CAXperts product.

Floating (server) licence

Floating licences require a FlexNET server (ladmin or lmgrd) accessible by the machine running the CAXperts product. The licence key file is typically located on the FlexNET server machine. The licence key file defines the maximum number of seats which can be used at the same time.

 Note: Every running instance of the CAXperts software product will require one seat, no matter if the application is running multiple times on the same or different machine(s).

New instances can only be started as long as seats are available and the FlexNET server is accessible.

The location of the licence server must be defined on every machine with the CAXperts product installed, which can be done

- Either by setting the environment variable
CAXPERTS_LICENSE_FILE=@YourServerName
- Or by setting the registry key
HKEY_CURRENT_USER\Software\FLEXlm License Manager\CAXPERTS_LICENSE_FILE=@YourServerName

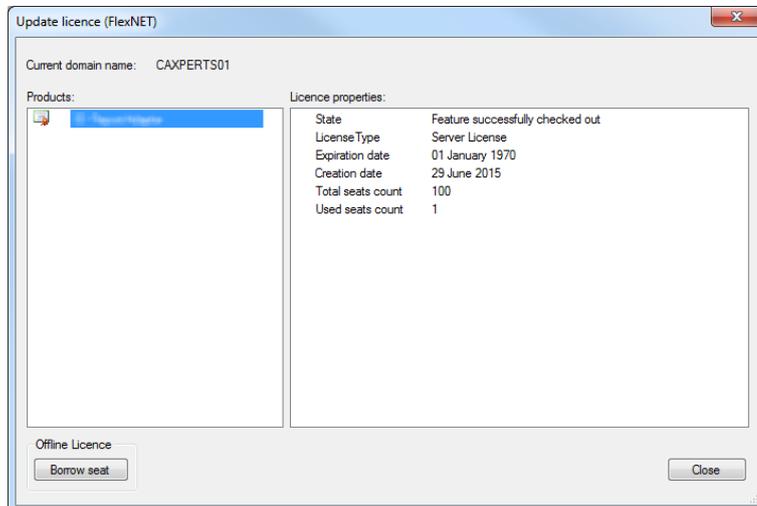
Every computer name must be preceded by the @ symbol. Multiple licence server locations should be separated by semicolons (“;”).

YourServerName is the Windows computer name of the machine running lmadm (FlexNET server). If lmadm is running on a non-default port, the port number should be defined like this: port@ YourServerName.

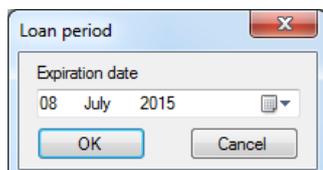
 Note: Changes to the server path (in the environment variable or registry key) are read during the next start of the CAXperts product.

Borrowed licences

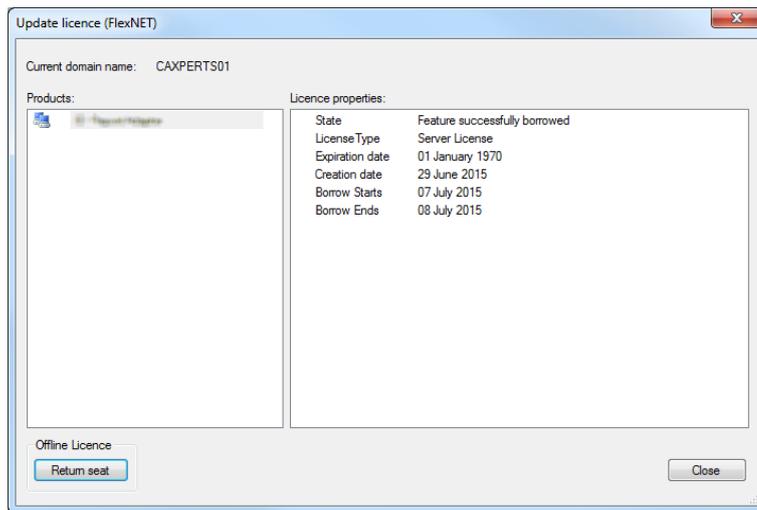
Licence seats can be borrowed for a period of time from the server and saved to the local machine. Once the seat has been borrowed the CAXperts application can be used without any connection to the FlexNET server.



To borrow a licence seat press the **Borrow seat** button, define the loan period (up to 7 days) and press OK. When the borrowed seat expires it gets automatically returned back to the FlexNET server.



The seat can be returned earlier by pressing the **Return borrowed seat** button.

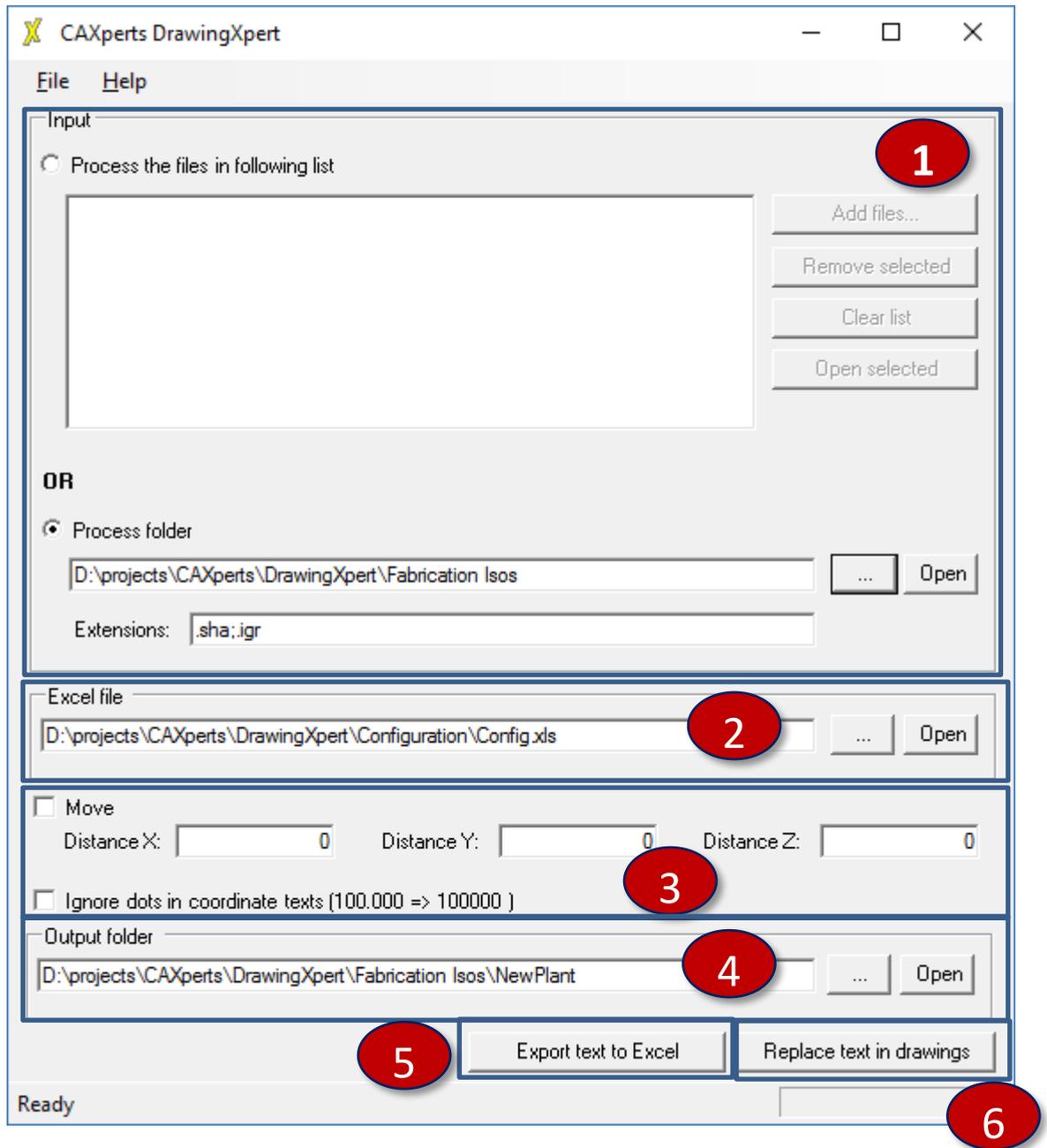


 Note: Without a valid licence file the software will run in demo mode.

3 General functions and Graphic User Interface

DX has different sections for Input, Configuration, Coordinate Shift and Output.

When DX is started a log file in the default location %temp%/DrawingXpert is created.



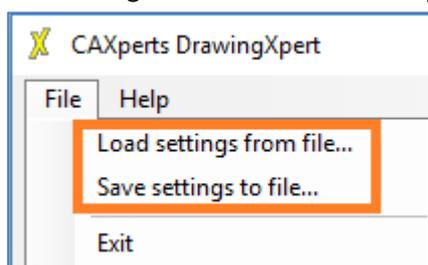
- 1 This is the area where the input is defined. You can select either single files or folders. In case of a folder, DrawingXpert (DX) also searches in all subfolders. Only files with defined extension are processed.
- 2
 - Location of the config-file where the rules for the modification in the drawings are defined
- 3 Section where the “Movement” can be defined. Move means that these are the relative distances for the Coordinate-labels on a drawing. DX reads and calculates the new values for the coordinate labels.
- 4 Output folder for the drawings after the modifications. There are 2 options possible: If the input-folder is the same as the output-folder then the drawings are overwritten with the changes. By defining a different output-folder the modified drawings are saved to this location. The source-files are kept unchanged. Anyway DX creates a Backup of all drawings that are processed
- 5 “Export text to Exce” button extracts all texts from SmartkSketch and stores it in the Excel config-file, sheet “ScanResult” and “ScanResultLink”. If Excel file doesn’t exist a new file is created automatically, if the file already exists, existing sheets are extended by new text. All extracted textes are exported only once per file (to avoid duplicates).
- 6
 - “Replace in Drawings” starts the processing of the drawings (text replacement and if enabled transformation to a new coordinates).

4 Settings

All settings made on UI (like the path to the Excel config file, input, output folders) are saved in a settings.ini which is by default saved in:

....user\AppData\Roaming\CAXperts\DrawingXpert\settings.ini.

This settings file can be saved to any other location and also load from there by using these options:



5 Excel Configuration file

This file contains a set of rules for the modification on a drawing.

This file is delivered with the software and contains already some predefined examples.

The default location for the Configuration is:

"C:\Program Files (x86)\CAXperts\DrawingXpert\Config\Config.xls"

From that location you should copy that into a project specific folder in order to make the project specific adaptations.

5.1 ScanResult

With “Export text to Excel” all texts from the selected drawings are written to the tab in “Scan Result”.

For the export of your textnodes you can either use your existing config-file from 2 Or you can create a new Excel-Workbook just by defining a new Excel-Workbook.

DX creates this new workbook which just contains the sheets “ScanResult” and “ScanResultLinks”



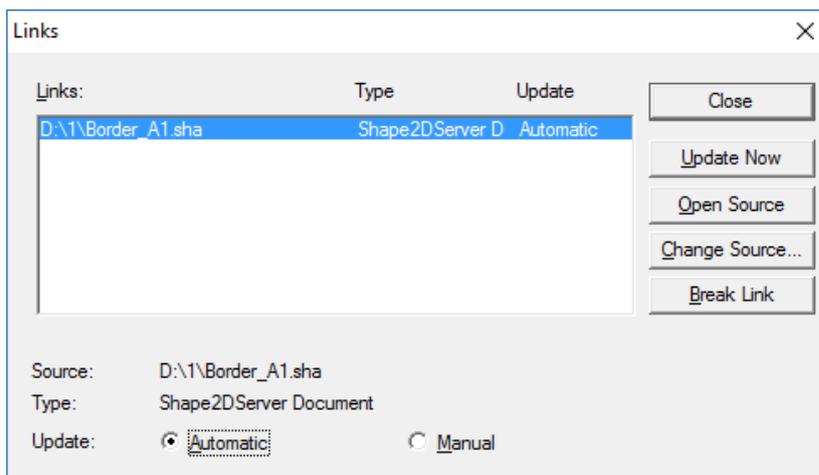
All text nodes are grouped by drawing:

Text	Drawing File Name
COOLING WATER RETURN	D:\projects\CAXperts\DrawingXpert\Fabrication Isos\Plant 1\Plant1-CWR-010.sha
COOLING WATER RETURN	D:\projects\CAXperts\DrawingXpert\Fabrication Isos\Plant 1\Plant1-CWR-011.sha
COOLING WATER RETURN	D:\projects\CAXperts\DrawingXpert\Fabrication Isos\Plant 1\Plant1-CWR-012.sha
DESCRIPTION	D:\projects\CAXperts\DrawingXpert\Fabrication Isos\Plant 1\Plant1-CWR-010.sha
DESCRIPTION	D:\projects\CAXperts\DrawingXpert\Fabrication Isos\Plant 1\Plant1-CWR-011.sha
DESCRIPTION	D:\projects\CAXperts\DrawingXpert\Fabrication Isos\Plant 1\Plant1-CWR-012.sha
Drawing View	D:\projects\CAXperts\DrawingXpert\Fabrication Isos\Plant 1\Plant1-CWR-010.sha
Drawing View	D:\projects\CAXperts\DrawingXpert\Fabrication Isos\Plant 1\Plant1-CWR-011.sha
Drawing View	D:\projects\CAXperts\DrawingXpert\Fabrication Isos\Plant 1\Plant1-CWR-012.sha
E 9918'3.11/16"	D:\projects\CAXperts\DrawingXpert\Fabrication Isos\Plant 1\Plant1-CWR-010.sha
E 9934'6.9/16"	D:\projects\CAXperts\DrawingXpert\Fabrication Isos\Plant 1\Plant1-CWR-012.sha
E 9935'3.1/4"	D:\projects\CAXperts\DrawingXpert\Fabrication Isos\Plant 1\Plant1-CWR-010.sha
E 9935'3.1/4"	D:\projects\CAXperts\DrawingXpert\Fabrication Isos\Plant 1\Plant1-CWR-012.sha
E 9941'11.1/8"	D:\projects\CAXperts\DrawingXpert\Fabrication Isos\Plant 1\Plant1-CWR-010.sha
E 9941'11.1/8"	D:\projects\CAXperts\DrawingXpert\Fabrication Isos\Plant 1\Plant1-CWR-011.sha

Both sheets have informal character. A change in that sheet has no effect on the drawings.

5.2 ScanResultLinks

There is also a sheet for the linked documents referenced to the drawing. The links are store in the Link-table in SmartSketch:



DX is able to read out these links and store this information in ScanResultLinks-sheet:

Linked File Name	Drawing File name
D:\1\Border_A1.sha	D:\projects\CAXperts\DrawingXpert\Fabrication Isos\Plant 1\Plant1-CWR-010.sha
D:\1\Border_A1.sha	D:\projects\CAXperts\DrawingXpert\Fabrication Isos\Plant 1\Plant1-CWR-011.sha
D:\1\Border_A1.sha	D:\projects\CAXperts\DrawingXpert\Fabrication Isos\Plant 1\Plant1-CWR-012.sha
D:\1\Border_A1.sha	D:\projects\CAXperts\DrawingXpert\Fabrication Isos\Plant 1\Plant1-P-003.sha
D:\1\Border_A1.sha	D:\projects\CAXperts\DrawingXpert\Fabrication Isos\Plant 1\Plant1-P-004.sha
D:\1\Border_A1.sha	D:\projects\CAXperts\DrawingXpert\Fabrication Isos\Plant 1\Plant1-P-005.sha

FindReplace	Coordinate	ChangeCoordinates	ClearBlock	TitleBlock	TitleBlockDefinition	ScanResultLinks	ScanResult	Information
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DX is able to change also these links to referenced documents.

The change for the path to the reference file must be defined in the “FindReplace” sheet.

5.3 FindReplace

In that sheet you define the rules for the modifications on the drawings.

The rules are based on regular expressions.

Find	Replace	Stop flag	Xmin (m)	Ymin (m)	Xmax (m)	Ymax (m)
(\s ^)A-140(\d*)	\$1A-140\$2	1				
(\s ^)\(1-40	\${1}2-40					
(\s ^)140(\d+)	\${1}240\$2		0.56	0.058	0.59	0.068
(\s ^)140(\d+)	\${1}240\$2		1.107	0.088	1.13	0.103
(AREA: *)140	\${1}240					
[0123]\d(V \.)[01]\d(V \.)\d\d\d\d	23\${1}01\${2}2017	1	0	0.055	0.0075	0.08
[0123]\d(V \.)[01]\d(V \.)\d\d	23\${1}01\${2}17		0	0.055	0.0075	0.08
(\\)([^\]+)(\\)	\$1Computer2\$3					
(.*\\)(Border .sha)	\$1Border_new.sha					

change server name in path to 'Computer2'
change file name 'Border.sha' to 'Border_new.sha'

A detailed explanation and description how to use these regular expression are available in the information tab:

FindReplace	Coordinate	ChangeCoordinates	ClearBlock	TitleBlock	TitleBlockDefinition	ScanResultLinks	ScanResult	Information
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In the Find-column you define the rule WHAT string should be found.

In the Replace Column you define the replace-string.

All rules are executed top-down -> more than one rule can be applied on the same text element. To change this behaviour “Stop flag” can be set. If “Stop flag” is set to 1 for a particular rule which matches some text element, no further rules are executed on the same element. This prevents multiple replacements on the same text element.

Xmin (m), Ymin (m), Xmax (m), Ymax (m):

Here you can define an area on the drawing where the rules are executed. Only text elements within defined range will be processed.

With that you can easily define the area for the title-block or area for the revisions.

This makes sure that the specific rules do not affect other parts of the drawing where the rules may also fit for.

5.4 Coordinate

This is the Coordinate-recognition tab.

Here you define how a coordinate-string can be distinguished from other textnodes

X+	X-	Y+	Y-	Z+	Z-
<code>^E V .? +(ld*(?.\,))?(ld+)</code>	<code>^W V .? +(ld*(?.\,))?(ld+)</code>	<code>^N V .? +(ld*(?.\,))?(ld+)</code>	<code>^S V .? +(ld*(?.\,))?(ld+)</code>	<code>(?:\s)(?:.EL E I) V.* +\+ *(ld*(?.\,))?(ld+)</code>	<code>(?:\s)(?:.EL E I) V.* +\+ *(ld*(?.\,))?(ld+)</code>
<code>^E +(ld*(?.\,))?(ld+)</code>	<code>^W +(ld*(?.\,))?(ld+)</code>	<code>^N +(ld*(?.\,))?(ld+)</code>	<code>^S +(ld*(?.\,))?(ld+)</code>	<code>(?:\s)(?:.EL E I) *\+ *(ld*(?.\,))?(ld+)</code>	<code>(?:\s)(?:.EL E I) *\+ *(ld*(?.\,))?(ld+)</code>
<code>^E *= *(ld*(?.\,))?(ld+)</code>	<code>^W *= *(ld*(?.\,))?(ld+)</code>	<code>^N *= *(ld*(?.\,))?(ld+)</code>	<code>^S *= *(ld*(?.\,))?(ld+)</code>	<code>(?:\s)(?:.EL E I) *= *\+ *(ld*(?.\,))?(ld+)</code>	<code>(?:\s)(?:.EL E I) *= *\+ *(ld*(?.\,))?(ld+)</code>
				<code>(?:\s)(?:.TOS BOBP CL) *\+ *(ld*(?.\,))?(ld+)</code>	<code>(?:\s)(?:.TOS BOBP CL) *\+ *(ld*(?.\,))?(ld+)</code>

According these rules the coordinates are categorized in X+, X-, Y+, Y-, Z+ and Z- category

5.5 ChangeCoordinate

The coordinate are changed according the values that are defined in section 3

With this you can obtain a coordinate change in the drawings.

In the ChangeCoordinate tab you define the behaviour what happens when a coordinate changes from e.g. West (-X) to East (+X).

You even can change the complete meaning of the Coordinate Prefix/Suffix.

With that a change from X -12000 to East +24000 is possible.

5.6 ClearBlock

In that section you can define areas on the drawing that can be cleared from their content.

You also can define dedicated object-types with in combination with a specific color.

This functionality is very useful to empty complete revision blocks or dedicated fields in a title block.

X Min (m)	Y Min (m)	X Max (m)	Y Max (m)	Type	Color	Text
-10000	-10000	10000	10000	Group	Red	
0.841	0.143	1.183	0.172	TextBox		

Description

Search for all elements with type = Group and Color = Red in given range

Search for all elements with type = Group and ANY color and ANY text value in given range (for A0 Wide and 3 rows in revision block)

Supported Colors:

- Black
- Dk Red
- Red
- Dk Green
- Green
- Dk Yellow
- Yellow
- Dk Blue
- Blue
- Dk Magenta
- Magenta
- Dk Cyan
- Cyan
- Dk Gray
- Lt Gray
- Charcoal Gray
- Gray
- White
- Or #RRGGBB

Supported Types:

- Group
- TextBox

All default SmartSketch colors are supported + ALL Hex-Code colors!

5.7 TitleBlock

With that functionality you can “fill” your TitleBlock fields again that you have deleted before with the new values.

Here you define the name of the single parts of a line for a revision:

e.g.

CellName	DrawingName	Value
Revision1_Number		1
Revision1_Date		09.01.2017
Revision1_Purpose		IFI - Issued for information
Revision1_Drawn		AA
Revision1_Checked		BB
Revision1_Approved		CC

5.8 TitleBlockDefinition

In the Title Block definition you define where these cells are placed on the drawing together with the Font, Font size, Color and Typewrite.

CellName	X (m)	Y (m)	Font	Fontsize (mm)	Color	Bold/Italic/Underline
Revision1_Number	0.847	0.152	Arial	3	Black	
Revision1_Date	0.86	0.152	Arial	3	Black	
Revision1_Purpose	0.967	0.152	Arial	3	Black	
Revision1_Drawn	1.102	0.152	Arial	3	Black	
Revision1_Checked	1.131	0.152	Arial	3	Black	
Revision1_Approved	1.159	0.152	Arial	3	Black	

With that definition you are able to produce new entries on a drawing.

6 Technical support

Need more help? Contact CAXperts support by email, online, or phone:

<mailto:support@caxperts.com>

<http://www.caxperts.com/contact/>