

# FUJITSU Construction Industry Solution Building Facilities CAD CADEWA Smart V2.0 English Edition

Full 3D CAD with "smartness" to solve problems in the building industry





shaping tomorrow with you 社会とお客様の豊かな未来のために

# Smart, Fast, Easy!

# **Smart** to find risks

### **Construction check**

It checks if the construction way is preferable\*. It enables you to draw high quality drawing.



#### Introduction of Construction check example

- Duct aspect ratio
- Duct elbow curvature
- Hopper angle
- Different uses
- Different types of pipesTorii piping
- Piping gradient
- Beam penetration sleep
- Number of speakers installed
- Piping penetration of electrical room / EPS
- Sprinkler diffusion radius
- Installation of indoor and outdoor fire hydrants
- Mounting position of sprinkler head
  - FD placement of fire protection compartment penetration duct Walking distance
- (fire extinguisher installation, smoke exhaust port, detector, transmitter, Emergency alarm equipment, evacuation exit guide lights, passage guide lights)

total

\*based on Japanese standard

# **Automatic Generation of required parts**

It can generate required parts for pumping. It helps you draw fast and also prevents from forgetting to draw required parts.





### Automatic Generation of Anti vibration steel

At the same time as the insert drawing, you can draw the hanging parts that meets the earthquake resistance standards\*.



### **High-precision interference check**

High-precision interference check judging by the open/close area and open space of the objects. Also, alerts nearby objects and piping regarding of heat insulation material.



# Fast to save your time

### **Compatible with Revit®**

Reads / outputs Autodesk<sup>®</sup> Revit<sup>®</sup> \* native files (.rvt) directly without using intermediate data. Revit® and Smart allow you to check for mutual interference for drawing and integrated adjustment. In addition, a check function (Revit® add-in) is provided that allows you to check for missing shapes that occur during data compatibility on an object-by-object basis. Therefore, it contributes to shortening the time by highly accurate integrated adjustment.



# Easy for everyone

### **Properties**

#### Information is aggregated in the property.

Information such as material, style, level, etc.

- · Materials for pipes and fittings
- Types of valves and dampers
- Change the pipe size from the pipe flow rate
- Duct size change from duct air volume and more.

can be changed directly. Immediately reflect on objects on the drawing.

# Handle operation

You can draw and edit directly from handle buttons. There are many types of handles, and you can switch the type of handle by pressing the [Space] key.



# **Real-time material counting**

The number of parts can be grasped in real time from the drawn and edited drawings. Not only the number but also weight and capacity can be aggregated. The object selected in the list will be highlighted in the drawing.



# **High-speed processing of Large** capacity data

Despite the high-precision depiction of objects, you can handle it smoothly.



# **Ribbon UI**

By integrating commands into Ribbon UI, it allows you to select command more intuitively than previous series.



### **Snap function**

When drawing a route, guides such as



You can also set specific length and angle by entering numbers.



# **CADEWA Smart screen**

# 1 Quick Access Toolbar

Always displays frequently used function icons

# Selection Panel

You can filter your selection so that you can select specific object quickly.

Filtering example: function, color, layer etc.

# Various Panels

You can layout these panels as you like.

There are various functions to assist you.

- Construction check: Check if any problem has occurred.
- Aggregation results: Display aggregation result of specified area.
- Drawing and view management: Make floor view, section view,
- paper layout, reference other file of drawing, raster and etc.
- Layer: manage layer (checking and changing layers)
- Block management : Create / edit block
- Viewport management: Create / edit viewport
- Sheet management: Create / edit sheets
- Jump relay: Select the items to copy when "jump"

# Drawing and view

<u>management panel</u> It can manage definition of view, floor info, paper layout, reference drawing, raster(pdf/image data) for one drawing here.

# Reference drawing and

<u>raster</u> Reference drawing and raster can be placed easily

#### Paper layout

in the view.

User can cut out multiple layouts for printing from drawing. By cutting out area as viewport, if user changes the view, it reflects the change to paper layout at the same time.

	Drawing and View Management	×
	Drawing (Untitled 1)	^
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	Ta Left side	
	T Right side	
Ν.	c. Ca Plane	
	L- Default	
	Section View	
	🚖 🦲 3D view	
	L- Z 3D View	
	Paper layout	
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#### Context menu (right click)

by right clicking on drawn objects, lately used commands/ related command will be shown. User can select commands



	Continuous wir	ng
	m Move route	
	Property Annot	ation
	Replace parts	
	Hit Change Scale a	nd Angle
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	m List	
	JUP/DOWN	
	Set hidden line	view
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Set sheet Sheet Name Defaul

HVA

Electricit

Disp/detection Disp/detection 3DCG display Depend on the shee

Visibility Do not change color fied Color White/Black

#### Free layout (multi display)

Views and panels can pop-up. Using dual display can make drawing area wider.







#### <u>Jump</u>

Right click on the placed objects/elements Then select "Jump". It automatically activates the commands same as the objects/elements setting the same conditions. It enables faster drawing.



#### **Batch convert drawings**

Close menu (\_E)

Jump (J)

It can convert multiple data to different format of CAD data at once.

It helps to speed up exchanging files with related companies.

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# Sheet

You can draw in different sheets according to use and division. You can set display/detection setting and 3D display setting for each sheet. You can also assign the display / non-display status for each layer to the sheet.

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Action					
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View

In addition to ground plan, elevation surface and side view, you can set as many views as they like and can draw or edit in any view.

By pressing "CG" button, view can be shifted between normal view and 3DCG view.



-you can set operation way of display and view direction with this tool bar.

-with this box you can change views easily.

#### <u>Printing /</u> <u>Batch print</u>

Multiple views including ground plan, section, CG view paper layout can be printed. User can set line type / line width depending on colors. The setting can be saved as printing setting. Multiple files can be printed out in one go with selected paper size.



#### Auto snap

Detecting elements' origin point, midpoint, end point and intersection and showing it with marks can help user to draw quickly.

ellipse, text, raster center
d half points of circle and ellipse
aster Corners
rame
:

# **Electrical Equipment**

Wiring drawing We offer a variety of -07 -01 ----wiring drawings such as single drawing, batch 100 -----------0-0 wiring, and one-stroke 101 101 writing mode. 0 CO. \_\_\_\_\_ \_\_\_\_ <u>α</u> Là. Diagonal cross section Type None Color (128, 128, 128)

-Pattern wiring with R, automatic hiding line, elision symbol drawing.

-Drawing appropriate wiring type construction methods judging from the objects.

-Level of wiring can be set for each construction methods in advance.

In addition, a function to set multiple wiring information for one wiring and a trace function to easily draw wiring on a cable rack are provided.



#### Double line route drawing

You can draw various electric double line routes such as cable racks, raceways, bus ducts, metal ducts, writing ducts, and metal moldings. It can also be split into lengths specified by user. Along with the insert, hanging materials that meets seismic standard can also be drawn at once.



#### **Equipment**

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-0-1

-

Japan Electrical Construction Association "JECA Symbol" are prepared in the object catalog as standard installation. It also supports batch placement of multiple equipment. You can also draw dimensions at the same time as arranging the equipment.



#### Each symbol has 6 sided view and full-3D solid models.



#### **Editing**

Various editing can be done: Equipment magnification, angle. Material replacement, move route, level change, number of cable core, elision symbol, end cover, hidden line and etc.

Dimension can be drawn by batch. If the drawn dimension is changed, the object also moves to the right position according to the dimension.



#### **Convert Part**

Converts electrical drawings drawn with general-purpose CAD into electrical members without redrawing.



#### <u>List</u>

Search for the number of wiring lines and equipment drawn in the drawing, and automatically draw the "electrical equipment table" and "wiring note table".

electrical equipment table

ymbols not specified in the figure are as follows.														
Parts name	Symbol	Height	Quentity	Perrarks										
Light distribution board (self-supporting / single-sided)		0	1											
LED embedded ceiling light Shading angle 20 degree (LPS3SA20-4750LM)		2500	21											
LED embedded coling light Shading angle 20 degree (LRS6SA20-2100LN)		2500	12											
Evacuation ext guide light, ceiling embedded type, single-sided with individual control method automatic inspection function, class C SHI-FRF20P-C		2500	12											
3-wey suitch 3815A		1300	4											
Double outlet 2P13Ax2		300	3											
Single outlet 2P15Ax1		2500	20											
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#### wiring note table

(Notices)		
Symbols not specified in the figure are as	s follows.	
Member shape	Parts name	Remarks
	EM-EEF-1.6-2Cx2	
	EM-EEF-1.6-3C	
	EM-EEF-1.6-2Cx3	
	EM-EEF-2.0-2C	
	EM-EEF-1.6-2C	

#### **Calculation function**

You can create "illuminance calculation" according to architectural design standards. It also supports Excel output. In addition, it is possible to consider and arrange lighting equipment based on the required illuminance using room information.

	Α	В	C	D	E	F	G	н	1	1	K	L	м	Ν	0	Р	Q	R	S	Т	U	W	х	Y	
1	Illur	ninance stat	tement					в	uilding	name		CADEV	VA Buil	ding								2021/1/04			
2				Lumino	Design		Room	n size		Work	Equip	Differ	Room	index	Re	flectar	ice	IIIum ina	Mainte Ra	nance te	Fauin	Desi	gn		
3	Floor	Room name	Name	us Flux F(Im)	Lllumi nat E(lx)	Openi ng X(m)	Dept h Y(m)	Area A(m2)	Heigh t Z(m)	Heigh t h1(m)	Drop h2(m)	Heigh t H(m)	Index	Symb ol	Ceilin g (%)	Wall (%)	Floor (%)	tion Rate U	Ambie nt Enviro n	м	Count	Equip Count N	ina tion E(lx)	Remarks	
4	1F	Workplace	LED embedded ceiling light (LRS3-1500LM-2)	1,500	152	4.8	3.7	17.8	2.5	0	0	2.5	0.84	1	70	50	10	0.78	Normal	0.77	3.0	3	152		
5	1F	Waiting hall	LED embedded ceiling light (LRS4-4300LM)	4,300	311	5.3	3.1	16.4	2.5	0	0	2.5	0.78	1	70	50	10	0.76	Normal	0.77	2.0	3	459		
6	2F	Women's toilet	LED direct ceiling light (LSS1-3150LM)	3,150	112	6.7	2.0	13.4	2.5	0	0	2.5	0.62	1	70	50	10	0.78	Normal	0.81	0.8	1	149		
7	ЗF	Rooftop	Emergency lighting Direct celling (K1-ISS4-JE9)	1	0	14.2	1.3	18.5	2.5	0	0	2.5	0.48	1	70	50	10	1.00	Normal	0.60	0	0	0		
8	1F	Sales area	Ceiling light with direct LED square (LSR2M 20000LM)	20,000	951	5.5	4.9	27.0	2.5	0	0	2.5	1.04	н	70	50	10	0.84	Normal	0.77	2.0	2	960		
9	1F	Vault room	LED bracket rainproof type (LBF2RP-1000LM)	1,000	0	4.2	1.3	5.5	2.0	0	0	2.0	0.50	J.	70	50	10	1.00	Normal	0.60	0	0	0		
10	1F	Boiler room	LED bracket rainproof type (LBF2RP-1000LM)	1,000	0	3.5	4.1	14.4	2.0	0	0	2.0	0.94	н	70	50	10	1.00	Normal	0.60	0	o	0		
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#### Material count(Electrical)

The quantity, weight, length, electric capacity, estimated price and etc. can be aggregated.

- -Counting at the same time as drawing.
- -It can count per drawing or per sections which user choses.
- -The result can be out put in excel format.



# **HVAC and SAN**

#### Piping / duct drawing

For piping and duct routing, you can set size level presets (layers, colors, line widths, etc.) in the properties, and draw complicated up-down routes with a single stroke while switching between plane and front view. If you change the size during drawing, joints such as hoppers will be automatically generated and drawn.



It is also possible to determine the size of pipes and ducts from various calculation results and draw routes.

Piping

Size calculation based on

- -flow velocity or flow rate
- -water supply load unit
- -drainage load unit
- -cumulative load flow volume



Size calculation based on Air velocity(m/s) or pressure loss(Pa/m)

Drawing / editing

Nominal dia 50

▼ Pipe

Pipes for general use

1/2-line Single line Do

Pipe Polyvinyl chloride

Preset 🛞 vater supply pipe(-) 💌



#### Route connection

Various connection patterns for piping and ducts are available. You can easily draw by switching the pattern candidates by pressing the [Space] key.



You can easily connect pipes by pressing the [Space] key while switching between multiple connection pattern candidates.



Route editing

Calculation measurements

Calculated based o

Calculated based on water su Calculated based on drainage

There are abundant editing functions for already drawn routes.

- Move route
- Stretch route
- Change joints
- Change level
- Material change
- Route deformation

on flow velocity or flow rate

Constant value for calculation

Calculate size

Cumulative load flo... 150.

Cal result

- Change size
- Change function



#### Change the size of piping and ducts

You can obtain load units and air volumes from multiple appliances to calculate the appropriate size and to resize pipes and ducts.

rawing / editing		
Change size	-	Drawing /
<ul> <li>Change size</li> </ul>		
	Duct size calculation -	
▼ Size cal		v Change
<ul> <li>Duct size cal</li> </ul>		
Grant size	Rectangular duct Circular duct	x Size ca
Pressure drop and wind :	speed settings	- Mate
Pressure loss (Pa/m)	V 1.0 -	* wate
Air velocity (m/s)	✓ 5.0 -	Metr
Size standard when duct	is rectangular	Flow ve
Calculation standard	Width reference Height reference	Flo
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Function of Equip	Wash valve wash tan	k
Constant value for c	Public Private ro alculation	om

#### Joint placement / change joint direction

If the joint is placed independently as a member, route drawing is possible after determining the joint position. In addition, you can easily change the flow direction of valves and strainers, and the direction of the handle.



#### Automatic placement of air control port

Use the room information setting command to acquire the room name, area, and ceiling height, calculate the simple air volume, and place the air control port (anemo line).



#### **Gradient**

Gradient can be entered for the entire route. You can easily move the route even after adding the gradient.



#### <u>List</u>

It can detect the equipment drawn in the drawing and automatically draw the sanitary equipment list and air control port list.

toilet							
Equipment name							
Washlet integrated toilet tankless CES9788CR	2						
Automatic cleaning urinal wall-mounted UFS900JS	3						
Wall-mounted washbasin LSF135CC	2						
Cleaning sink SK322	1						
Clean Dry TYC320W	1						

Office												
Function	Equipment name	Air volume	BOX size	Inside the BOX	Count							
HVAC air supply duct(SA)	Air outlet C2 # 20	500 CMH	BOX 400W × 400H × 300L	Inside the BOX GW sheet 24K-25	6							
HVAC air supply duct(SA)	Air outlet KLS-J 1000W×46H	500 CMH	BOX 1200W × 200H × 300L	Inside the BOX GW sheet 24K-25	3							

#### **Refrigerant size table**

It is possible to draw a refrigerant size table and add the size information of the table to the drawn refrigerant piping.



#### Material count

It aggregates the number of appliances, the material and length of piping, the area of each duct thickness, and etc. It aggregates by each heat insulating materials or construction place, and by the number of flexible pieces. You can also make a rationale list.

# Architecture

#### 3D building data creation from general-purpose architectural drawings

It is possible to efficiently convert a 2D architectural drawing read from data such as DXF into 3D by "Convert parts".

It is also possible to easily create 3D architectural data by tracing the architectural drawing as a sketch.



#### Architectural drawing / editing

We also have a wide variety of materials necessary for drawing new architectural drawings with CADEWA.

-Drawing of Column grid line -Batch drawing of columns -Wall drawing and trimming Simultaneous drawing of framework notation -Beam drawing (H beam, haunch, drop, etc.) Single -Drawing of foundation, floor, ceiling, 3 sliding 1 1 -Drawing room / zone information Single -Drawing of fittings HVAC/SAN ed (Double doors, sliding windows, etc.)

#### Support steels

You can draw and edit support steel materials and combination steel materials.



#### Support steels

-Stairs

roof

You can easily create general-purpose 3D figures. "Extrude" to turn 2D elements into 3D figures. Various figures can be drawn by combining "3D shapes" (sum, difference, product). The created 3D figure can also be used when registering user parts (symbol registration).

3D



#### 3D-PDF

You can output 3D data as 3D-PDF. Since it can be viewed on tablets such as Android devices and iOS devices, it is useful for meetings on-site or on the go.



#### **Opening and closing of inspection doors and doors**

Doors can be opened and closed for inspection ports and fire hydrants. By looking at the open / closed state of the object on the drawing, you can check whether it can be handled and the maintenance space.



#### Scene panel / Save as movie

Register the viewpoint (scene) you want to see from the scene panel. It is possible to save the registration of multiple scenes in the WMV file format. Those who do not have this product can also play it with video playback software.



#### Data compatibility

Readable data		Exportable data	
CADEWA Smart	*.ZDW	CADEWA Smart	*.ZDW
CADEWA Real 2015- 2017	*.ZDU	AutoCAD®	*.DWG (AutoCAD® R14-2021)
CADEWA Real 2013	*.ZDX	AutoCAD <sup>®</sup> 's DXF	*.DXF (AutoCAD® R14-2021)
AutoCAD®	*.DWG (AutoCAD® R14-2021)	IFC Equipment IFC data usage standard V1.3	*.IFC(2 × 3)
AutoCAD <sup>®</sup> 's DXF	*.DXF (AutoCAD <sup>®</sup> R14-2021)		
		Parasolid data	*.x_t, *.x_b
IFC	*.IFC(2×3)		
		PDF 3D-PDF	*.PDF
Parasolid data	*.x_t, *.x_b *xmt_txt *.xmt_bin		
*)		Revit®	*.rvt,*.rfa (only Revit® 2020)
Revit®	*.rvt,*.rfa (Revit <sup>®</sup> 2017-2020)	STL	*.stl

-\*.ZDX can only be read for shapes. (No member conversion)
 -Revit® compatible (input / output) is not compatible with the family. Compatible as a general-purpose 3D model.
 -The consistency check tool works only with Revit® 2020 currently.

#### License

You can obtain a license by online authentication method using a product key. After obtaining the license, it can be operated online (up to 30 days after authentication).

When you do not use the license, you can "return" the license. If you do not use the license, you can return the license. Then, you can activate the license on another PC.



#### **Operating environment**

Recommended operating environment				
OS		Windows 10 64bit、Windows 8.1 64bit		
CPU		Core i7, Core i9~ (CPU Core4~/High frequency recommended)		
Memory		More than 16GB		
Free hard disk space		More than 10G(M.2 SSD(NVMe connection) is recommended for the system drive		
Display	Resolution	Full HD(1920×1080)		
	Number of colors	Full color support		
	Touch panel	Not necessary		
Graphic	Supported versions of OpenGL	OpenGL 4.0~		
	Compatible version of DirectX	DirectX 11~		
	Performance	OpenGL dedicated compatible card recommended (example: Nvidia Quadro series)		
Others		Mouse with wheel, keyboard, DVD-R drive, Internet connection environment (at the time of Web authentication)		

#### Viewer

You can download it for free. Anyone can view and print the drawings of CADEWA Smart.



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