AutoCAD File Tag Importer

Import tags from AutoCAD DXF and DWG drawings, one tag per INSERT block reference.

Reference Solution Designer Settings and Tools Import Tags AutoCAD File

Version 10.1.5+

The AutoCAD File Tag Importer reads DXF and DWG drawings and produces one FrameworX tag per INSERT block reference. Block attribute tags (ATTRIB) are extracted into naming tokens so you build tag names, descriptions, and addresses from the ATTRIB values the drafter already set on each symbol.

Use this wizard on P&ID and one-line drawings where each equipment symbol carries its ISA-5.1 or site tag as an ATTRIB. Every INSERT in the drawing becomes a tag with its own attributes, layer, and insertion point.

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Supported File Formats

Format	Extensions	Feature Source	Notes
DXF (AutoCAD Drawing Exchange Format)	.dxf	INSERT entities	Text-based format. All versions supported by ACadSharp are read.
DWG (AutoCAD native binary)	.dwg	INSERT entities	Binary format. Version support follows ACadSharp.

Only INSERT block references are extracted in 10.1.5. Geometry primitives without an enclosing INSERT (LINE, CIRCLE, ARC, LWPOLYLINE, TEXT) are not emitted as tags. External references (XREFs) are not resolved. Z coordinates are discarded.

ATTRIB to Tag Mapping

An INSERT entity has a block name, a layer, an insertion point, and zero or more ATTRIB tag-value pairs attached to it by the drafter. The importer maps these to a FrameworX feature as follows.

INSERT property	Feature field	Naming token
First ATTRIB with tag *TAG* or *NAME*, otherwise the block name	Name	{Name}
Layer name	Layer	{Layer}
Block name	FeatureType	{FeatureType}
Insertion point X	Longitude	{Lon}
Insertion point Y	Latitude	{Lat}
All ATTRIB tag-value pairs	Attributes dictionary	{Attr:TAGNAME}

An INSERT with no ATTRIB tags falls back to the block name. {Attr:xxx} tokens referring to missing ATTRIB tags resolve to an empty string.

Import Process

Open **Solution Import Tags AutoCAD File**. The wizard has the same five steps as the GIS File Tag Importer, with the file filter limited to .dxf and .dwg.

Step 1. File Select

1. Click **Browse** and choose a .dxf or .dwg file.
2. Step 1 loads the drawing and reports the INSERT count, the distinct block names found, the layer list, and the distinct ATTRIB tag keys across all INSERTs.
3. Review the summary. Drawings with zero INSERTs disable the Next button and show "0 features".

Step 2. Protocol

1. Select a **Protocol**.
2. Set the **Channel Name Pattern**, the **Node Name Pattern**, and the **Station Address Pattern** using the naming tokens listed below.

Step 3. Mapping

1. Set the **Tag Name Pattern**. Typical CAD choice is *{Attr:TAG}* or *{Attr:EQUIP_NO}*.
2. Choose the **Tag Type**.
3. Map the **Description Attribute** to an ATTRIB key.
4. Set the **Address Pattern** and the **Access Type**.
5. Optionally save the configuration as a mapping profile for reuse.

Step 4. Preview

The wizard shows the first 50 INSERTs with resolved names.

Step 5. Generate

Click **Start**. The wizard yields INSERTs from the in-memory CadDocument into the device-creation pipeline.

Naming Tokens

Every pattern field supports the tokens below.

Token	Source	Typical use
{Name}	First ATTRIB with tag TAG or NAME, or the block name.	Tag Name Pattern.
{Layer}	INSERT's AutoCAD layer.	Channel Name Pattern (one channel per layer).
{FeatureType}	Block name (PUMP, VALVE, TX, and so on).	Node Name Pattern grouped by block type.
{Id}	Drawing-assigned handle if present.	Less common in CAD.
{Index}	Ordinal within the INSERT stream.	Fallback naming when ATTRIB is missing.
{Lat} / **{Lon}**	Insertion point Y / X. See Coordinate Handling below.	Address patterns when the drawing is georeferenced.
{Attr:TAGNAME}	Value of the ATTRIB with tag TAGNAME on the INSERT.	Tag Name Pattern, Address Pattern, Description.

Import Options

Option	Description	Default
Tag Name Pattern	Pattern used for each new tag name.	{Name}
Tag Type	Data type applied to created tags.	Analog
Description Attribute	ATTRIB key whose value populates the tag Description.	(none)
Protocol	Device protocol used for the channel.	ModbusTCPIP
Channel Name Pattern	Channel name pattern.	{Layer} _Channel
Node Name Pattern	Node name pattern. Nodes are shared across features with the same resolved node name.	{Name}
Station Address Pattern	Protocol-specific station address used on the node.	(empty)
Address Pattern	Address written to each device point.	{Attr:Address}
Access Type	Access mode for the device point.	ReadWrite
Update Existing	When on, re-importing the same drawing updates existing rows. When off, duplicate names are skipped.	On

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Coordinate Handling

CAD drawings use arbitrary X and Y units. The importer treats the INSERT insertion point X as longitude and Y as latitude regardless of whether the drawing is georeferenced. Z is discarded.

Georeferenced drawings

AutoCAD Map 3D and Civil 3D drawings carry real-world coordinates. The insertion point is in lat/lon, UTM, or state plane. Auto-detection of georeferencing is not performed in 10.1.5, so coordinates are used as given. Non-WGS84 inputs produce offset positions in the display generator until a reprojection step is added.

Non-georeferenced drawings

P&ID and one-line drawings typically use abstract CAD coordinates (X=350, Y=200 means "350 units right, 200 up from origin"). The tag importer is unaffected, since device creation does not care about geography. The GIS/CAD Display Generator uses the same X/Y values as canvas coordinates via a relative-range projection, so non-georeferenced drawings render correctly in Canvas mode.

Tutorial

Import a small P&ID and verify the resulting tags.

1. Open a solution in Designer.
2. Choose **Solution Import Tags AutoCAD File**.
3. Click **Browse** and pick a .dxf with known INSERTs. Click **Next**. The summary lists the INSERT count, block names, layers, and ATTRIB keys.
4. Pick **ModbusTCPIP**. Keep the default channel and node patterns. Click **Next**.
5. Set **Tag Name Pattern** to *{Attr:TAG}* (substitute the ATTRIB tag your drawings use). Set **Description Attribute** to *SERVICE*. Click **Next**.
6. Review the preview. Click **Next**, then **Start**.
7. Open **Edit Unified Namespace Tags** and confirm the new tags.

Edge Cases and Limitations

- **INSERT-only extraction.** LINE, CIRCLE, ARC, LWPOLYLINE, and TEXT are not emitted as tags in 10.1.5.
- **No XREF resolution.** External references are not walked. One-line diagrams that split equipment across XREF'd DWGs must be flattened by the drafter before import.
- **Nested blocks.** INSERTs inside a block definition are part of the definition, not of the instance stream. Only the outer INSERT is emitted.
- **Scale and rotation.** Non-unit scale and non-zero rotation on an INSERT are ignored for position. Device creation is unaffected. In the display generator, symbols appear un-rotated.
- **Password-protected DWG.** Parsing fails at Step 1 with a clean error. Remove the password and retry.
- **Memory use.** ACadSharp loads the whole drawing into memory. A 50 MB DWG with 100,000 INSERTs consumes several hundred megabytes during import.
- **File-type spoofing.** The importer currently detects format by extension. A .dxf file with non-DXF content is rejected by the parser at Step 1 with a parse error.

Related Pages

- CSV files Tag Importer
- GIS File Tag Importer
- GIS/CAD Display Generator

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