



# Auto Cable

User manual · Version 1.1 · Super BIM Lab

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## 1. What is Auto Cable?

Auto Cable is a Revit add-in that draws **conduits** along **cable trays** for you. You pick the trays, choose how many conduits and which sizes, and the tool lays them side by side along the whole run, with elbows at every corner. It replaces drawing each conduit by hand.

It lives in its own tab, **Super BIM Lab**, with three tools:



### Single Run

One tray run with no branches. Several conduits side by side.



### Multi-Way

A branching tray network: one source, several destinations. Conduits are arranged so they never cross.



### Clear Conduits

Remove the conduits (and their elbows) that Auto Cable created along the trays you select.

### Before you start

Auto Cable creates and deletes real Revit elements. **Try it on a copy of your model first.** Every creation or deletion is a single step: press **Ctrl + Z** in Revit to undo it. This version has been tested on **Revit 2022**; Revit 2023 and 2024 are expected to work but have not been fully tested.

## 2. Install and uninstall

### Requirements

- Windows 10 or 11.
- Autodesk Revit 2022 (tested). Revit 2023 and 2024 can be selected in the installer but are not yet fully tested. Revit 2025 and later are **not supported** by this version.
- No administrator rights needed. The installer works for the current Windows user only.

### Install

- 1 **Unzip** the file you downloaded (do not run the installer from inside the zip). If you also received a licence file ( `.sb1` ), keep it in the same folder.
- 2 **Save your work and close Revit.** The installer will not continue while Revit is open.
- 3 Run `SuperBIMLab_AutoCable_Setup_1.1.0.exe` . If Windows shows a blue "*Windows protected your PC*" screen, click **More info**, then **Run anyway** (the file is not code-signed yet).
- 4 Accept the agreement, choose the Revit versions (the ones found on your computer are ticked), and click **Install**.
- 5 Open Revit. The first time, Revit asks whether to trust the add-in: choose **Always Load**. Look for the **Super BIM Lab** tab.

## Update

Just run the newer installer again. Your licence and trial information stay as they are.

## Uninstall

Close Revit, open **Windows Settings** → **Apps**, find **Auto Cable (Super BIM Lab)** and click Uninstall. The licence and trial record are kept on purpose, so reinstalling does not restart the trial.

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## 3. Trial and licence

- **14-day trial.** Every feature works for 14 days, counted from the first time you open a tool on that computer.
- **After the trial** you can still open the tools, select trays and see the preview, but **creating and deleting conduits is locked** until you activate a licence.
- **Licence file.** After purchase you receive a personal file ending in `.sb1`. It carries your name and is for your own use; please do not share it.

### Where to see the status

At the bottom of every window there is a small coloured text:

| Text                   | Meaning                                             |
|------------------------|-----------------------------------------------------|
| Trial · 9 days left    | Trial running. Everything works.                    |
| Trial ended · Activate | Create and Delete are locked. Click it to activate. |
| Licensed to your name  | Activated. Everything works.                        |

### Activate a licence

- 1 Open any tool and click the coloured text at the bottom of the window.
- 2 In the **Licence** window click **Choose licence file...** and select your `.sb1` file.
- 3 You should see **Licence activated**. The buttons unlock immediately; no restart is needed.

### Good to know

The licence covers all 1.x versions. It is saved for the current Windows user. To use it on a new computer, install Auto Cable there and activate again with the same file (or ask Super BIM Lab for help through the website where you downloaded this manual).

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## 4. Quick start (5 minutes)

Your first conduits, step by step, using **Single Run**:

- 1 Open a 3D view or plan that shows a cable tray run. Click **Super BIM Lab** → **Single Run**.
- 2 Click **Select Trays**. The window folds away and a small floating panel appears at the left of Revit. Select the tray run in the normal Revit way: click, or hover and press **Tab** to highlight a whole chain, or drag a window. Include the fittings (bends). The panel shows a live count.
- 3 Click **Finish** on that panel. The window comes back showing the tray size.
- 4 Choose the **Conduit type** and set the number of conduits with the – and + buttons. Pick a size for each conduit.
- 5 Look at the **Live preview** at the top right: it shows the tray cross-section with your conduits and the fill percentage.
- 6 Click **Create Conduits**. If there are warnings you will be asked to confirm. Done: the conduits and elbows are in your model.
- 7 Not happy? Press **Ctrl** + **Z** once in Revit.

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## 5. Single Run

Use it for **one tray run with no branches**. If your trays have tees or crosses, use Multi-Way instead.

## The window

| Area                                         | What it does                                                                                                                                                            |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Left: <b>Cable tray</b>                      | Select Trays / Reselect Trays and the result of the selection (number of segments and tray size).                                                                       |
| Left: <b>Conduit type</b>                    | The conduit type from your project. Its size table decides which sizes you can pick.                                                                                    |
| Left: <b>Conduits</b>                        | How many conduits (1 to 12) and the size of each. Each size shows its outer diameter.                                                                                   |
| Right top: <b>Live preview</b>               | Cross-section of the tray with the conduits, plus <b>Tray fill</b> . It stays in view while you change settings. Conduits that stick out of the tray get a red outline. |
| Right: <b>Placement, Checks, Bend radius</b> | See "Settings explained".                                                                                                                                               |
| Bottom                                       | Status line, licence status and the <b>Create Conduits</b> button.                                                                                                      |
| Top right                                    | Light or Dark theme.                                                                                                                                                    |



a = edge clearance · b = gap between conduits · c = offset up from the tray floor

## Create Conduits

- The button is available once trays are selected and a layout exists (and the trial/licence allows it).
- **Warnings never block you.** If conduits stick out of the tray, or the fill is above your limit, a box lists the warnings and asks *Create anyway?*
- The **Last run** card on the left summarises what was created, including the bend radius result and any elbows that could not be set.

### Shallow trays

The conduits lie on the tray floor by default (offset 0). In a 50 mm tray, a 100 mm conduit will stand about 50 mm above the tray top. That is allowed: you get a warning, not an error.

## 6. Multi-Way

Use it when trays **branch** (tees, crosses). You choose **one source** and **several destinations**. Each source-to-destination path is a **Route** with its own group of conduits. Auto Cable then arranges all conduits inside each tray segment so that **routes never cross**.

### Step by step

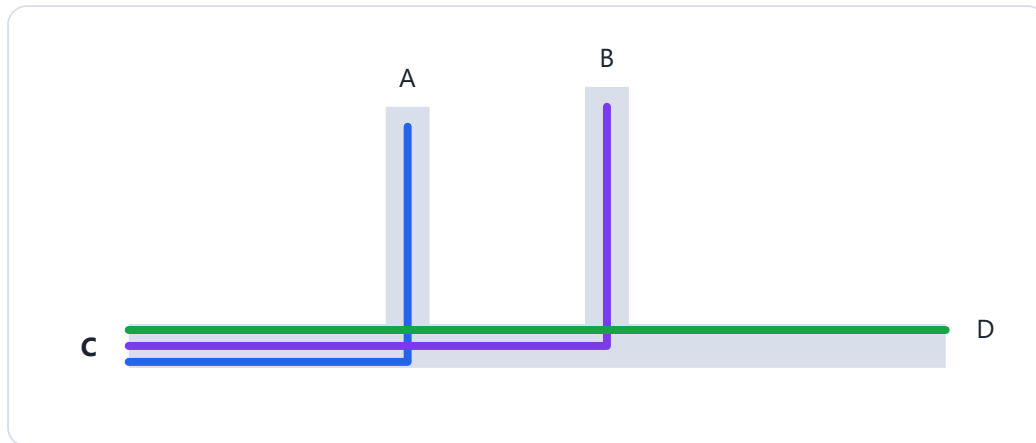
- 1 Click **Select Network** and select **all** the trays and fittings of the network (drag a window, or press **Tab** on each chain). Click **Finish**.
- 2 The scan reports, for example, *26 tray(s) · 3 junction(s) · 5 open end(s)*. Check that these numbers match your drawing.
- 3 In the **Network preview** (plan view) the open ends are circles with letters A, B, C... Click the end where the cables **start**: it becomes the **source**.
- 4 Click the other ends one by one: each becomes a destination and a Route card appears (for example C → A). Click an end again to remove its route.
- 5 On each **Route card** set the number of conduits (– / +) and the size of each.
- 6 Check the **Lane plan** and the **Tray section** (top right). Use the drop-down to look at any segment.
- 7 Click **Create All Routes**.

### The preview

- **Zoom:** mouse wheel, or the + / – buttons. **Fit** shows the whole network again.
- **Pan:** drag with the left mouse button on an empty area, or with the middle button.
- Each route is drawn in its own colour, side by side in the order the conduits will really lie.
- Under the source and destinations a small label shows the **room** found at that end (number, name, area). If no room is found it shows *12/521* (not specified).

## How the conduits are arranged (no crossing)

Looking along the direction of travel, away from the source: at every junction the branches are ordered from left to right, and the conduits are laid out in the same order. A route that **leaves first** therefore lies on the **outer side** of the direction it turns to, and no route has to cross another.



Source C. The route to A leaves first (left), then B (left), and D goes straight on: the lanes keep this order, so nothing crosses.

## Tray section (top right)

A fixed card that draws the cross-section of **one tray segment** with the conduits of every route that passes through it. Use the drop-down to choose another segment. It starts on the most crowded segment. Conduits that stick out of the tray get a red outline and the note under the card says by how much.

## After a branch leaves (optional)

After a branch has left, the conduits that go straight on may no longer sit where you want them (for example no longer in the centre of the tray). Under **Placement** → **After a branch leaves** choose:

- **Keep their lane** (default): they stay where they were.
- **Move back to the alignment**: the group moves sideways together, using a gentle **jog** (two small bends) in the straight tray after the junction, back to the alignment you chose (for example Center). The jog is longer when the bend radius is larger.

### Needs room

The jog needs enough straight tray after the junction. If there is not enough, that conduit keeps its lane and a warning tells you.

## 7. Clear Conduits

Removes the conduits (and the elbows only they use) that run along the trays you select.

- 1 Click **Super BIM Lab** → **Clear Conduits** (or select the trays first, then click it).
- 2 Click **Select Trays** and pick the trays you want to clear, then **Finish**.
- 3 The report shows how many conduit segments and fittings will be removed, by size.
- 4 Click **Highlight in Revit** to select them in the model so you can check.
- 5 Click **Delete** and confirm. Press **Ctrl + Z** to undo.

### Which conduits?

| Option                                            | Meaning                                                                                                                                 |
|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Only conduits made by Auto Cable</b> (default) | Safe. Only conduits that Auto Cable created (it marks them with hidden data; nothing is written in the Comments field).                 |
| <b>All conduits inside the trays</b>              | Removes <b>every</b> conduit lying in the trays, whoever made it. A red warning is shown. Use <i>Highlight in Revit</i> to check first. |
| <b>Leave them alone</b> (default)                 | Conduits that continue beyond the tray ends (for example running to a panel) are kept.                                                  |
| <b>Delete them too</b>                            | Also removes those conduits.                                                                                                            |

#### Not deleted

Pinned elements, and elements owned by another user in a workshared model, are skipped and counted in the result. Fittings are removed only when every conduit connected to them is also removed.

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## 8. Settings explained

| Setting                                   | Meaning                                                                                                          | Default     |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Conduit type</b>                       | The conduit type used for new conduits. It decides the size list.                                                | Last used   |
| <b>Conduits (– / +)</b>                   | How many conduits (Multi-Way: per Route).                                                                        | 4           |
| <b>Size of each conduit</b>               | Nominal size in mm from the project's conduit size table. The outer diameter is used for spacing and fill.       | about 25 mm |
| <b>Gap between conduits (mm)</b>          | Clear distance between the outer surfaces of neighbouring conduits. Pick 25 / 50 / 75 / 100 or type a value.     | 50          |
| <b>Alignment</b>                          | Where the group of conduits sits across the tray width: Left, Center or Right.                                   | Center      |
| <b>Edge clearance (mm)</b>                | Space kept between the group and the tray side wall (for Left and Right).                                        | 25          |
| <b>Offset up from the tray floor (mm)</b> | Distance from the tray floor to the underside of the conduits. 0 means lying on the floor.                       | 0           |
| <b>Warn when tray fill exceeds (%)</b>    | Fill = total cross-section of the conduits ÷ cross-section of the tray. Above your limit you only get a warning. | 40          |
| <b>Bend radius</b>                        | See the next section.                                                                                            | ×8          |
| <b>After a branch leaves (Multi-Way)</b>  | Keep their lane, or move back to the alignment with a jog.                                                       | Keep        |

Your settings are remembered for the next time.

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## 9. Bend radius

The elbows Auto Cable creates have a **Bend Radius**. By default Revit uses the radius from the project's conduit size table, which is often small (for example 4.5 × the conduit diameter). In the **Bend radius** card you can ask for a bigger one.

- **Target radius = multiplier × conduit outer diameter.** Presets: ×6, ×8, ×10, ×12, or type your own number.

- **Set the radius on new elbows** (default): each new elbow gets that radius. **Keep Revit's own radius**: the tool does not touch it.
- The list in the card compares the radius in your project's size table with your target (green = already enough, yellow = lower than the target).

| Conduit outer diameter | ×6     | ×8     | ×10      | ×12      |
|------------------------|--------|--------|----------|----------|
| 26.9 mm                | 161 mm | 215 mm | 269 mm   | 323 mm   |
| 103 mm                 | 618 mm | 824 mm | 1,030 mm | 1,236 mm |

### A bigger radius needs more straight conduit

A 90° bend at ×8 on a 103 mm conduit takes about 920 mm from the corner on each side. If the straight conduit between two corners is too short, that elbow **keeps Revit's own radius** and the Last run card says how many. Check the bends in 3D, especially near tray corners.

## 10. Warnings and messages

| Message                                                              | What it means / what to do                                                                                                      |
|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Conduits are wider than the tray ... they stick out by about X mm    | The group needs more width than the tray has. You may still create. Use fewer or smaller conduits, a smaller gap, or accept it. |
| Conduits are taller than the tray ... stick out above it             | The conduits are taller than the tray walls (common in shallow trays).                                                          |
| Tray fill X% exceeds the limit                                       | Total conduit area is above your fill limit. Warning only.                                                                      |
| Segment J1-C: ... (Multi-Way)                                        | The same warnings, for the named tray segment.                                                                                  |
| The straight tray after a junction is too short for the sideways jog | The re-align option could not fit a jog there; the conduit keeps its lane.                                                      |
| Bend radius ... kept Revit's own radius                              | Not enough straight conduit between two corners, or Revit would not accept the radius.                                          |
| This elbow family has no editable Bend Radius                        | The elbow family of the chosen conduit type cannot be changed this way. Revit's radius is kept.                                 |
| The tray network contains a closed loop                              | Multi-Way needs a branching layout without loops.                                                                               |
| The destination is not connected to the source                       | Select all the trays and fittings between them, then scan again.                                                                |
| Junction J2 has a vertical branch                                    | Left/right order may be wrong at a junction where a branch goes up or down.                                                     |
| The trial has ended. Activate a licence ...                          | Click the red text at the bottom and choose your licence file.                                                                  |
| Could not tag the conduits                                           | The conduits were created but Clear Conduits may not recognise them as Auto Cable's. Contact support.                           |

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## 11. Troubleshooting and FAQ

### I do not see the "Super BIM Lab" tab.

Close and reopen Revit. Make sure you installed for your Revit version (Revit 2022, 2023 or 2024) and that you chose **Always Load** when Revit asked. Reinstall if needed.

### The installer says Revit is running.

Save your work and close Revit completely, then press Next again.

### I selected the trays but nothing is created.

Check the footer: the trial may have ended, or there may be an error. In Single Run the tray must be one run without branches. Select the fittings too.

### The size list shows other sizes than I expected.

Sizes come from the conduit size table of the project for the **conduit type's standard**. Change the conduit type, or edit the sizes in Revit's conduit settings.

### Conduits are not attached to the elbows.

Press **Ctrl + Z**. Try **Keep Revit's own radius** or a smaller multiplier, and check the straight tray lengths. Send us a screenshot.

### Room labels say "ไม่ระบุ".

No room was found at that end (no room placed there, the linked model is not loaded, or the tray end is far above the room). It does not affect the conduits.

### The text at the bottom of the window is cut off.

Hover over it: the tooltip shows the full message.

### Can I use it on a computer without internet?

Yes. Auto Cable does not connect to the internet and does not send your models anywhere. The licence and trial information stay on your computer.

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## 12. Limitations

- Tested on **Revit 2022**. Revit 2023 and 2024 are not yet fully tested. Revit 2025 and later are not supported by this version.

- Multi-Way needs a **branching layout without closed loops, one source** and one or more destinations at open tray ends.
- Junctions with a branch going **up or down** are not fully supported (a warning is shown; the left-right order may be wrong there). Vertical drops at the **end** of a run (for example down to a panel) are fine.
- The re-align jog works on **horizontal** runs only.
- Room labels are only information. They do not change the conduits.
- The tool checks the layout it draws, not electrical or code requirements. You remain responsible for the design.