BLOG/NEWS

HOW MANY TYPES OF CABLE TRAYS ARE THERE?

If you're completing a plant engineering project (https://prosupportsolutions.ca/projects/), you may have wondered how many types of cable trays there are and what options you have when choosing one. You may also be wondering how many types of cable tray fittings there are and how many cable tray materials are available from plant engineering component vendors. There are quite a few to choose from, but don't panic. This article will explain how many types of cable trays, fittings, and materials there are and how to choose a cable tray for your project.

What is a cable tray, and what are the main types?

Cable trays are units or systems that support insulated electrical cables. This cable support system is different from the conduit and open wiring systems and is ideal for engineers who may need to change the system. Cable tray units feature different sections and fittings that create a rigid structural system, helping to fasten wires (https://prosupportsolutions.ca/10-management-systems-for-heavy-wires-you-should-know/), cables, or raceways. If you want to know how many types of cable tray there are, the main types you can choose from are:

- Ladder cable trays
- Solid bottom cable trays
- Wire mesh cable trays
- Perforated cable trays

Find out more about these four cable trays in the following sections.

Ladder cable trays

Composed of two rails joined by several rungs, Ladder cable trays are efficient support systems because engineers can access the cables with minimal effort. Whether you need to make changes to cables at the top of the ladder cable tray or the bottom, the rungs make it easier to alter them. A ladder cable tray's many rungs also provide anchorage for fastening cables. Keep reading to find out how many types of cable tray there are.

Solid bottom cable trays

Solid bottom cable trays are one of the best options for fiber-optic cable installation. With solid bottoms, they're not supported but are ideal for situations where you need to avoid cable droop. One key reason you may select a solid bottom cable tray is that they prevent any electromagnetic interference that can affect the performance of your wires or cables.

Wire mesh cable trays

The other name for a wire mesh cable tray is "basket cable tray." Manufacturers make them with wires made of stainless steel and weld each wire together to create a basket. Engineers select wire mesh cable trays when they need to support low voltage cables, such as telecommunication cables.

Perforated cable trays

With a ventilated base and rails on each side, perforated cable trays support cables more robustly than ladder cable trays.

How many types of cable tray fittings are there?

As well as knowing how many types of cable tray there are, knowing what some of the critical cable tray fittings are is crucial. If you want to find out how many types of cable tray fittings there are the main ones you should be aware of include:

- T-joints
- Elbows
- Inside and outside risers

- Joint plates
- Nut bolts

The sections below contain more information on these five main types of cable tray fittings.

T-joints

T-joints are a type of tray fitting that connects three separate cable trays 90 degrees apart. You can use T-joints when all three cable trays are on the same plane. Engineers also refer to this type of fitting as a tee-joint. Continue reading to find out how many types of cable tray fittings there are.

Elbows

Also named "bends," elbows are ideal for alterations to a cable tray's direction. This type of fitting comes in two different main types:

1. A horizontal 45-degree elbow

You can select the 45-degree horizontal elbow to make a 45-degree angle alteration to a cable tray's direction.

2. A horizontal 90-degree elbow

You can select the 90-degree horizontal elbow to make a 90-degree angle alteration to a cable tray's direction.

Inside and outside risers

Inside and outside risers are internal and external risers, respectively. Engineers use these two different types of bends when installing cable trays.

1. Internal risers

The internal riser is the best fit to transition a cable tray's direction to an upper level from a lower level.

2. External risers

The external riser is the best fit to transition a cable tray's direction to a lower level from a higher level.

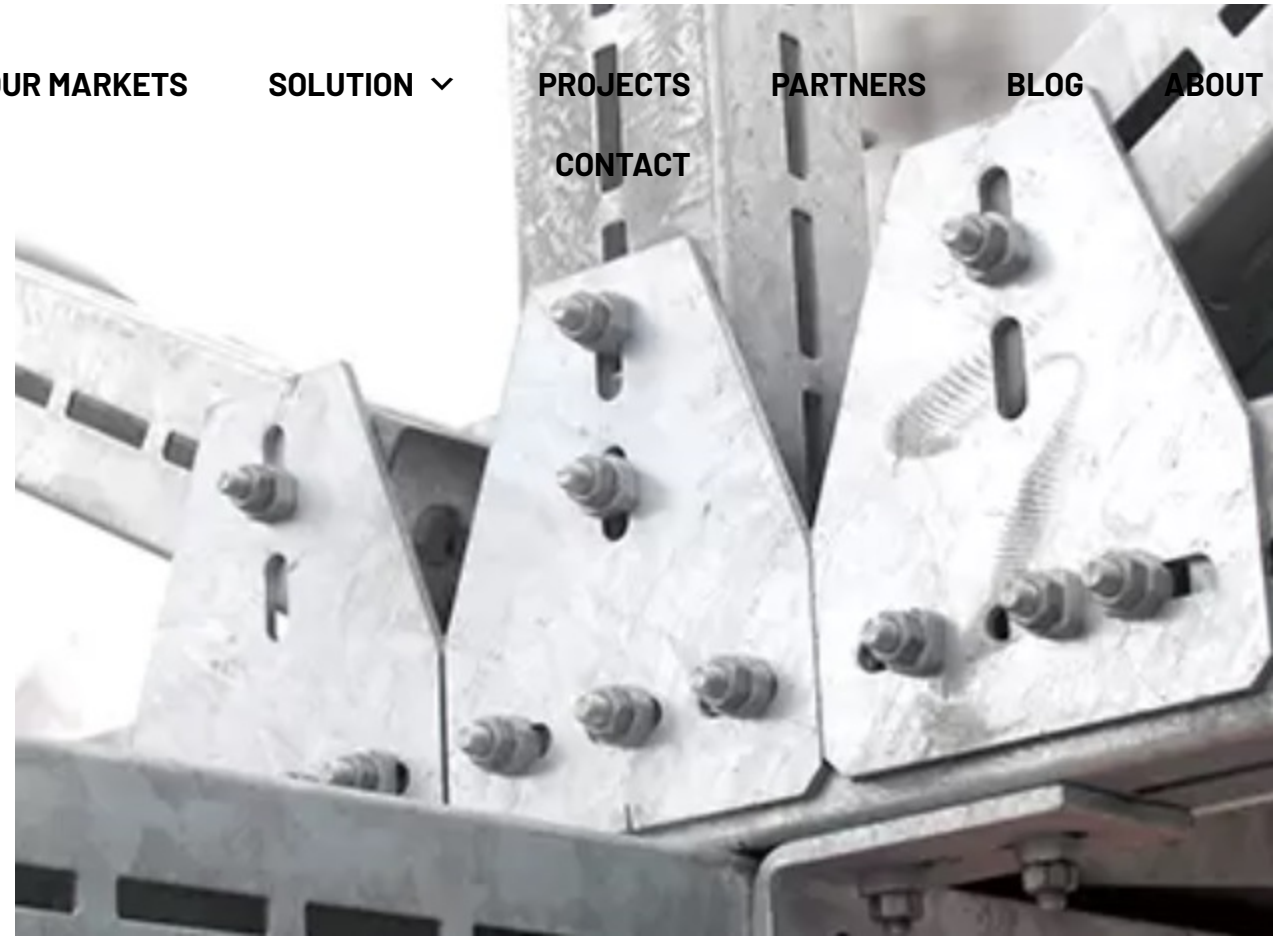
Joint plates

Need to connect two different cable trays? Joint plates are the fitting that will help you get the job done. They're also called splice plates or couplers, and the three main types are:

- Straight connectors. A straight connector provides structural transitions between cable trays that engineers have arranged in straight sections.
- Angle connectors. Engineers use angle connectors to create connections between two angled cable trays.
- Adjustable connectors. You can purchase vertical or horizontal adjustable connectors. Vertical connectors help you make adjustments to the cable tray in vertical planes. Horizontal connectors help you make adjustments to the cable tray in horizontal planes.

Nut bolts

Nut bolts (https://prosupportsolutions.ca/bolts-vs-screws-the-critical-differences-and-when-to-use-them/) are a type of washer and a nut. Use them to affix different fittings to cable trays and secure them.



How do I choose a cable tray?

As well as knowing how many types of cable tray fittings and how many types of cable tray there are, you should also know how to choose a cable tray. The short answer is that you should choose a cable tray that has the right components or features (https://www.mefa.de/en/product-overview/Working-Accessories-Tools-on-demand-) that best suit your project. There are a couple of rules for choosing cable trays for single conductor cables and locations that the National Electric Code classes as class II division 2 environments, which are:

1. If you use single conductor cables, you must install them in a ladder or a ventilated trough cable tray. According to the National Electric Code, you cannot install such cables in solid bottom cable trays.
2. In hazardous, dusty environments, you must avoid solid bottom cable trays. Always use ventilated trough or ladder cable trays when installing cables in this environment, which the National Electric Code class as Class II, Division 2 Hazardous Locations.

However, in other situations you should consider the properties of your cable tray and match them to your project's requirements.

When to use a ladder cable tray

Consider a ladder cable tray if you need to install a cable tray in a humid environment. Ladder cable trays (https://prismpipesolutions.com) permit moisture accumulation. If you need to install cables with small diameters such as PLTC or TC cables, a ladder cable tray is also one option to prevent any cable drooping.

When to use ventilated trough cable trays

If aesthetics are important and you don't want to see any small cables drooping, a ventilated trough cable tray is ideal. This type of cable tray provides better support than a ladder cable tray.

When to use solid bottom cable trays

If you want to avoid electromagnetic interference and shield sensitive circuits (https://www.dg-skid.com/index.php/en/industrial-plc) from such interference, a solid bottom cable tray is the best choice. You may choose a steel covered solid bottom tray to get exceptional shielding levels. However, keep in mind that if you install cable trays in a humid environment, a solid bottom cable tray isn't the best option since it permits moisture accumulation.

Which steps should you follow to choose a cable tray?

We recommend that you follow the five steps when choosing a cable tray: Consider the material, load class, type, size, and fittings of the tray. Find out more on each of these steps in the following sections.

1. Choose the material

When you choose a cable tray, think about materials first. Is the material corrosion resistant (https://www.mefa.de/en/product-overview/TSP-r—3-coating), such as steel or aluminum alloy? Are there any finishes such as top surface protection that can protect the material even more?

2. Choose the load class of the tray

Second, think about the load capacity of the tray. Consider how many pounds per foot the cable tray can support and bear in mind the labor and installation costs for different load classes.

3. Select the type of cable tray

We have outlined the three main types of cable tray above. You can choose between Ladder cable trays, wire mesh, ventilated, and solid bottom cable trays. Each has different costs, and the most cost-effective cable tray is the ladder tray in many situations, but consider your options.

4. Select the size of the tray

You can get cable trays in different widths. Consider the diameters of your cables and choose the appropriate size tray for your project.

5. Choose the tray fittings

As mentioned, you must select several fittings when installing a cable tray. Consider which sizes and angles your project requires. For example, you might find that standard angles are not suitable for your project when choosing a splice plate so you may choose an adjustable fitting in that case.

How many types of cable tray materials are there?

There are a few main cable tray materials that you can choose from when selecting a cable tray, including aluminum, steel, and hot-dip galvanized steel. Here's more information on each of these cable tray materials.

Aluminum

Aluminum cable trays are lightweight. They are 50% lighter than steel trays and are easy to install. Their corrosion-resistant properties (https://prosupportsolutions.ca/protecting-building-materials-why-you-should-choose-surface-protection/) are the ideal choice in corrosive environments (https://prosupportsolutions.ca/non-corrosive-surface-protection-strengthening-building-materials/), but always test the resistance before installing to avoid any issues for your project.

Steel

Steel cable trays are robust and a cost-efficient option. Unfortunately, they are heavy and don't have a high (https://prosupportsolutions.ca/) corrosion resistance. However, there are some finishes you can select to make the material more corrosion resistant.

Hot-dip galvanized steel

Hot-dip galvanized steel is more of a finishing process than a manufacturing step. It involves bathing the cable tray in zinc or nickel to reinforce the steel material. We highly recommend this process for cable trays placed in outdoor environments or chemical engineering plants.

Choose a cable tray for your project to complete it efficiently

Knowing how many types of cable tray, fittings, and materials are available is important as it can help you choose a cable tray for your project. If you're looking for an expert plant engineering component vendor from which you can buy exceptional-quality cable trays, choose Pro Support Solutions and MEFA (https://www.mefa.de/). We have the expertise and robust materials to help you efficiently complete your project.Go to Pro Support Solutions (https://prosupportsolutions.ca/) for more information and get the right cable tray for your project.

Previous (https://prosupportsolutions.ca/what-is-the-difference-between-a-cable-tray-and-a-cable-ladder/)
Next (https://prosupportsolutions.ca/what-components-make-up-a-cable-support-system/)

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