

Design Master Electrical RT User Manual

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Design Master Electrical RT

You are reading the user manual for Design Master Electrical RT 1.4.

You can [download a PDF version of the user manual](#) for printing and offline documentation purposes.

Technical Support

M - F, 9am - 5pm Eastern
support@designmaster.biz
1-866-516-9497 x2

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Overview

Design Master Electrical RT is an add-in that adds a number of electrical engineering improvements to Revit MEP 2014, Revit MEP 2015, Revit MEP 2016, Revit 2017, Revit 2018, Revit 2019, and Revit 2020.

One-Line Riser Diagram: Create a one-line riser diagram based upon the electrical system in your Revit MEP model. Automatically keep your one-line riser diagram up-to-date as your project changes.

Feeder Sizing: Feeders are size automatically based upon the upstream overcurrent protection for a piece of distribution equipment. You have complete control of the chosen feeder size and can override it when necessary.

Branch Circuit Sizing: Branch circuit breakers and wire sizes are sized automatically based upon the connected load. You have complete control of the breaker and wire size and can override it when necessary. Size motor breakers based upon equipment MCA and MOCP.

Fault Calculations: Available fault current is calculated for each piece of distribution equipment. The calculated fault current can be used to set the AIC rating for the device.

Voltage Drop Calculations: The voltage drop is calculated between each piece of distribution equipment. Feeders that exceed the maximum 3% voltage drop allowed can be easily resized.

Arc-Flash Calculations: Arc-flash calculations are performed at each piece of distribution equipment. An arc-flash schedule can be created that displays the calculated values. Arc-flash warning labels can be printed to be put on devices in the field.

Training Videos

- [Design Master Electrical RT Overview](#)

Getting Started

This section walks you through getting starting with Design Master Electrical RT. It does not cover all of the information about every command. For complete details, see the [Revit Ribbon Command Reference](#) and [AutoCAD Ribbon Command Reference](#) sections.

[The Ribbon Tab:](#) How to find the Design Master Electrical RT commands in Revit.

[Editing Panels:](#) How to add information to distribution equipment necessary for calculations and one-line diagrams.

[One-Line Diagram:](#) How to create a one-line diagram in AutoCAD using your Revit model.

[Editing Circuits:](#) How to set the sizing settings for branch circuits and view the values in the panel schedule.

[Circuit Descriptions:](#) How to set descriptions on circuits.

[Motor and Mechanical Equipment Sizing:](#) How to size branch circuit breakers and conductors correctly for motors and mechanical equipment.

[Calculating:](#) How to run the calculations.

[Viewing Schedules:](#) How to view the calculated values in schedules.

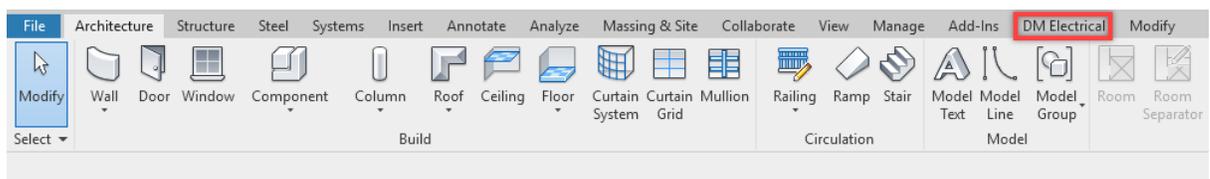
[Arc-Flash Basics:](#) How to calculate arc-flash.

[Customization Basics:](#) How to customize Design Master Electrical RT.

The Ribbon Tab

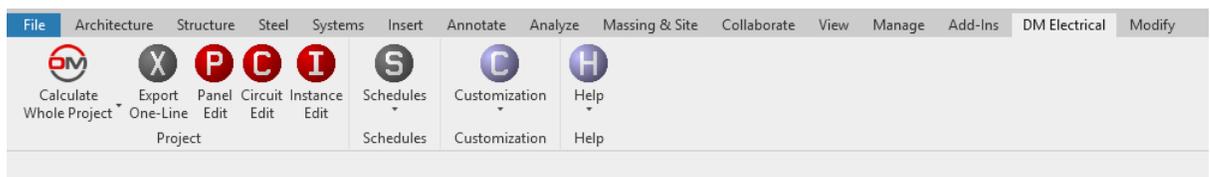
All of the commands for Design Master Electrical RT are on a ribbon tab labeled **DM Electrical**.

To access the commands, select the **DM Electrical** tab from the list.



The commands for Design Master Electrical RT will be displayed when the **DM Electrical** tab is selected.

In a project, the **DM Electrical** tab looks like this:



In a family, the **DM Electrical** tab looks like this:



Definitions: Distribution Equipment and Branch Circuit Device

We have two definitions that are unique to our software: distribution equipment and branch circuit device. Revit does not have categories that exactly match these terms. The electrical industry as a whole does not have words that match these terms. We use these terms in our software because they help explain how our calculations use the Revit model.

Distribution Equipment

Distribution equipment refers to the equipment in the project that provides power to other equipment or devices.

In real-world terms, distribution equipment includes panels, transformers, switchboards, bus ducts, and other similar equipment.

In Revit, distribution equipment includes all of the distribution equipment that have their *Part Type* set to **Panelboard**, **Other Panel**, **Transformer**, or **Switchboard**.

In Design Master Electrical RT, the settings for distribution equipment are set in the [Panel Edit](#) command. They are fed by feeders. Fault and arc-flash calculations happen only at distribution equipment, not at branch circuit devices.

Branch Circuit Device

Branch circuit device refers to electrical devices that are connected to distribution equipment and do not have anything else connected to them.

In real-world terms, branch circuit devices include receptacles, light fixtures, switches, mechanical equipment, kitchen equipment, and other similar devices.

In Revit, branch circuit devices are either electrical fixtures or electrical equipment with their *Part Type* set to **Equipment Switch**.

In Design Master Electrical RT, branch circuit device settings are set in the [Instance Edit](#) and the [Circuit Edit](#) command. They are fed by branch circuits.

Making Changes: Don't Modify the Shared Parameters

When using Design Master Electrical RT, make changes to the model using the [Panel Edit](#), [Circuit Edit](#), and

[Instance Edit](#) commands.

Do not make changes to the shared parameters that are used by the add-in, either through the **Properties** window, **Schedules**, or **Panel Schedules**. Those values are used only for output purposes. They are not used for input. The add-in will overwrite any changes you make to those values the next time an update happens.

The built-in circuit *Rating* value for electrical systems is also controlled by our add-in. Previously, to change a breaker size, you would set it in the panel schedule. That does not work using our add-in. Instead, you need to change the value that controls the breaker size. For feeders, use the [Panel Edit](#) command to change the overcurrent protection value for the distribution equipment. For branch circuits, use the [Circuit Edit](#) command to change the size of a breaker. You can also use the [Instance Edit](#) and [Family Edit](#) commands to set breaker sizing values for mechanical equipment and motors.

The built-in circuit description value for electrical systems is also controlled by our add-in. The [Circuit Descriptions](#) section describes how to change the description. Do not try to change it in the panel schedule. Your changes will be overwritten if you do.

Editing Panels

To use Design Master Electrical RT, you need to add some additional information to your current electrical model.

Start by going to the [Panel Edit](#) command. All of the distribution equipment in your project will be listed here. You will need to:

- Review the feeder settings for each piece of equipment and confirm they are correct.
- Set the kVA for each transformer.
- Set the starting fault at the equipment connected to the utility.

Review Feeder Settings

Go to the *Feeder Settings* section for each piece of distribution equipment. The feeder size is based upon the *Conductor Amps* setting. *Conductor Amps* will default to **Size Automatically**, which means the feeder size will be based upon the *Upstream OCP* setting.

For panels, the default value of *Upstream OCP* is **Same as main disconnect or bus amps**. The feeder will be sized based upon the *Mains / Bus Amps* value in the *Definition* section.

For transformers, the default value of *Upstream OCP* is **Size to match kVA**. The feeder will be sized based upon the *Transformer kVA* value in the *Definition* section.

To override the feeder size, use the *Conductor Amps*, *Neutral*, and *Ground* fields.

The feeder length is calculated automatically and displayed in the dialog box. You can override the length if necessary. You do not have to use the calculated length.

Set Transformer kVA

For transformers, you need to specify the *Transformer kVA* in the *Definition* section. Using a standard Revit model, there is no standard transformer kVA field. You have to manually set the kVA a second time if you do not make any changes to your families.

Set Starting Fault

Go to the transformer connected to the utility or the topmost piece of distribution equipment in your model. In the *Fault Calculations* section, set the *Fault at Device* to the appropriate value.

If you do not enter the fault at the distribution equipment at the top of the tree in your model, an infinite fault from the utility is assumed. The fault schedule will display UTILITY for the fault value.

One-Line Diagram

[How to Use One-Line Diagrams](#): This article on our knowledge base provides detailed information on creating a one-line diagram.

Quick Start

To create a one-line diagram immediately, follow the instructions in these two articles:

1. [Creating Your Model in Revit](#): This article teaches you how to set up your electrical model in Revit so that it can be used with the one-line diagram feature.
2. [Automatic Generation and Customization Options](#): This article shows you how to immediately create a one-line based upon your Revit model.

After you have created your one-line diagram, consult the other articles listed in the [How to Use One-Line Diagrams](#) article to learn how to modify the one-line diagram that is generated.

Customization

The one-line diagram that is generated will not match your existing company standards. Use the [Block Creation](#) commands to customize the graphics used.

If you need help customizing the graphics, you can send a sample of a one-line diagram to support@designmaster.biz. We will help you configure your customization so that the one-line diagram matches your current graphics.

Editing Circuits

Branch circuit breakers and wire sizes can be set automatically based upon the connected load of the branch circuit.

If you open a current project, all of the breaker sizes will be locked to match your current breaker sizes. Locking the breaker sizes ensures drastic changes are not made to the breaker sizes in your current project when loading the add-in.

On new projects, the breaker sizes will be set to **Size Automatically**. They will be sized based upon 125% of the connected load of the branch circuit.

To override the sizes, use the [Circuit Edit](#) command. This command allows you to set specific breaker and wire sizes. This functionality is useful when you need to adjust a breaker size for a piece of equipment or the wire size to account for voltage drop. You can also use this command on current projects to change the breaker size back to **Size Automatically**.

The branch circuit breaker size uses the *Rating* value of the circuit. It should be displayed automatically for you

in your panel schedule.

The branch circuit wire sizes use custom shared parameter values. You have to manually modify your panel schedule to display these values. See the [Modifying Panel Schedules](#) section for more information on how to make these values appear.

Circuit Descriptions

Circuit descriptions can be changed in a number of different places to give you greater control over the values displayed in the panel schedule. The workflow for setting circuit descriptions is different when using Design Master Electrical RT.

Do Not Change Descriptions in Panel Schedules or Circuits

Do not change the circuit description in the panel schedule. Do not change the *Load Name* field in the electrical circuit.

These values are now controlled by our add-in, and any changes made directly to these values will be overwritten. Instead, use the various `EDIT` commands to set the circuit description.

Previous Projects Are Not Affected

For projects created before you started using our add-in, the *Description Replacement* value for each circuit is set to the current description for the circuit. The circuit description is locked at the current value, preventing any automatic changes to it.

To manually change the value, use the `EDIT` commands described below. Start by using the [Circuit Edit](#) command and setting the *Description Replacement* value to be blank.

New Projects Use New Circuit Description Settings

For projects created after you started using our add-in, the circuit description is controlled by the settings in the family, instance, and circuit.

You can change the circuit description for a family using the [Family Edit](#) command.

You can change the circuit description for a specific device in a project using the [Instance Edit](#) command. It can override the value set in the [Family Edit](#) command or specify one if the family has not been modified with our add-in.

You can add additional information to a circuit description or replace it entirely using the [Circuit Edit](#) command.

Families that have not been modified with the [Family Edit](#) command are ignored when setting the circuit description. If all of the families on a circuit are ignored, the default circuit description from Revit is used. To change the circuit description, use the [Circuit Edit](#) command or the [Instance Edit](#) command. Do not use the *Load Name* field in the electrical circuit. Changes to that field will appear to be saved, but will be lost if a family that is not ignored is added to the circuit. Using the [Circuit Edit](#) command or the [Instance Edit](#) command ensures the changes you make will be preserved no matter what happens to the circuit.

Motor and Mechanical Equipment Sizing

Breakers and conductors can be sized using *NEC 430.52* and *440.22*. You can specify the FLA, BCSC, MCA, MOCP, and specific criteria for sizing the breaker and conductors.

To set these values for a single instance in a project, use the [Instance Edit](#) command.

To set these values for an entire family, edit the family and use the [Family Edit](#) command. Change the *Device Type* to **Branch circuit device: Equipment connection**.

Calculating

After you make changes to your model using any of our `EDIT` commands or the standard Revit interface, you will need to manually run the [Calculate](#) command.

Automatically running the calculations slows down the software significantly. Calculations are run manually for this reason.

Viewing Schedules

Once you enter the necessary information for your panels and run the calculations, you can then view the results in the three included schedules. To view the schedules, use the [Schedules->Feeder](#), [Schedules->Fault](#), and [Schedules->Voltage Drop](#) commands.

The schedules display shared parameters filled in by Design Master Electrical RT. Once the schedules are created, you can modify them as needed for your purposes. You are also able to use the shared parameters anywhere else in Revit where they are appropriate.

To make any changes, use the [Panel Edit](#) command. Do not make changes using the shared parameters. Any changes to the shared parameter values on the distribution equipment will be overwritten the next time the [Calculate](#) command is run.

Panel Schedules

Design Master Electrical RT uses standard Revit panel schedules.

You will need to modify your panel schedule to use our shared parameters. A complete list of parameters that are available can be found in the [Circuit Shared Parameters](#) section.

There are two built-in Revit parameters in particular you will continue to use: the *Rating* parameter is used for the breaker trip size on a circuit; the *Load Name* parameter is used for the circuit description on a circuit.

Arc-Flash Basics

Design Master Electrical RT can also calculate arc-flash values for each piece of distribution equipment. Calculating arc-flash requires additional information, such as the electrode configuration of the device and the arcing time for the breaker. The arcing time is based upon the fault at the device and the time-current curve from the manufacturer.

Run the [Panel Edit](#) command and enter values in the *Arc-Flash Calculations* section for the panels you want to calculate arc-flash for.

Once the values are input and you have run the calculations, you can view the final values in-schedule using the

[Schedules->Arc-Flash](#) command. You can also print stickers using the [Schedules->Arc-Flash Stickers](#) command.

Customization Basics

Design Master Electrical RT sizes feeders using its own settings, rather than the ones included in Revit. You have complete control over how the feeders are sized. Use the commands in the [Customization](#) tab to customize the sizing.

The [Wire Sizes](#) command is used to add or remove wire sizes and to create new wire materials.

The [Conduit Sizes](#) command is used to add or remove conduit sizes and to create new conduit materials.

A common request is to not use 1/2" conduit for feeders. That is easily accomplished by using this command and deleting the 1/2" conduit size.

The [Wire Ampacities](#) command is used to specify the wire sizes used for a specific feeder ampacity. This command also sets the impedance for the feeders. The default impedances are based upon *NEC Table 9*, but can be changed if desired.

The [Options](#) command has several other options you can set, from the changing the appearance of wire callouts to modifying how wire lengths and voltage drop are calculated.

The [Family Edit](#) command allows you to set default values in your families. You can set information once in your families with this command instead of modifying them for every project using the [Panel Edit](#) or [Instance Edit](#) commands.

Where to Learn More

This section covers the basics of Design Master Electrical RT. It does not cover all of the features and functionality you might use on a project. Here are a few ways you can learn more about the add-in.

Complete the Tutorial

The [Design Master Electrical RT Tutorial](#) teaches you how to use our add-in through firsthand experience in a controlled setting.

Visit the Knowledge Base

The [Knowledge Base](#) on our website features in-depth articles covering more features of Design Master Electrical RT.

Send Us Your Project

For specific questions, sending us a copy of the project is usually the fastest way to get help.

Use the `Send Project` command in [Revit](#) or in [AutoCAD](#) to send us a copy of your project. Run the command in the Revit project or AutoCAD drawing you have a question about. It will send the necessary files to us along with your question.

Not all networks allow our commands to send the project to us. If that is the case, it will save a file to your desktop with your project in it. You will need to manually send that file to support@designmaster.biz.

Once we receive your project, we will take a look at it and get back to you with an answer.

Our official support hours are Monday through Friday, 9am to 5pm Eastern time.

Limited support is available evenings and weekends if you send a project or an email.

Call Us

You can call us for support at 866-516-9497 x2.

Our official support hours are Monday through Friday, 9am to 5pm Eastern time.

Phone support is only available during our official support hours.

For evening and weekend support, send us a project or an email.

Attend Online Training

Online training for Design Master Electrical RT is offered the first Thursday of every month.

Visit the [Online Training](#) page on our website for more details and information on how to attend the training.

Revit Ribbon Command Reference

This section explains the commands on the **DM Electrical** ribbon tab in Revit.

Project: Commands for working with a project.

Schedules: Commands for creating and viewing the schedules that display the values calculated by Design Master Electrical RT.

Customization: Commands for customizing Design Master Electrical RT.

Family: Commands for working with a family.

Help: Commands for obtaining help and managing your Design Master Electrical RT installation.

Project

The **Project** panel appears on the **DM Electrical** tab when you have a project open in Revit. It includes commands for making changes to the electrical settings in your project.

Calculate Whole Project: Performs all of the electrical calculations in the project.

Calculate Part of Project: Performs all of the electrical calculations for part of the project.

Export One-Line: Exports the electrical model to AutoCAD for the one-line diagram.

Panel Edit: Allows you to add additional information to distribution equipment used in the calculations.

Circuit Edit: Allows you to add sizing information to branch circuits.

Instance Edit: Allows you to make changes to a specific family instance in the project.

Calculate Whole Project

Calculates all of the values for the entire electrical model and updates the associated shared parameters.

For distribution equipment:

- Feeder sizes
- Fault
- Voltage drop
- Arc-flash

For branch circuits:

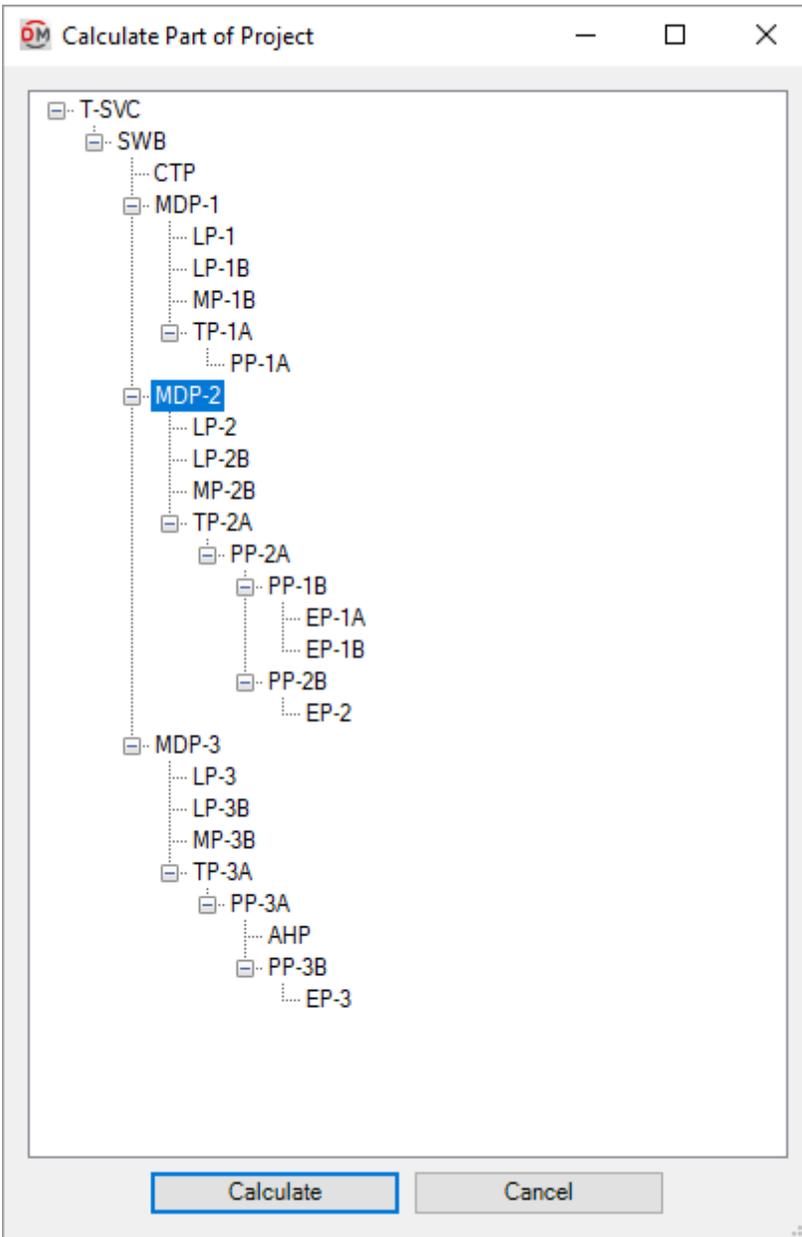
- Breaker sizes
- Wire sizes

Run this command after you make changes to your model, either by changing the values using Revit or one of the other Design Master Electrical RT commands. The values are not calculated automatically when you make changes to the model.

Calculate Part of Project

Calculates all of the values for part of the electrical model and updates the associated shared parameters. Opens the **Calculate Part of Project** dialog box:

Calculate Part of Project Dialog Box



Select the distribution equipment to start the calculation from. The selected distribution equipment and everything below it in the tree will be calculated. Other distribution equipment will not be calculated. Distribution equipment with multiple sources, such as transfer switches, may not be calculated correctly depending upon the model.

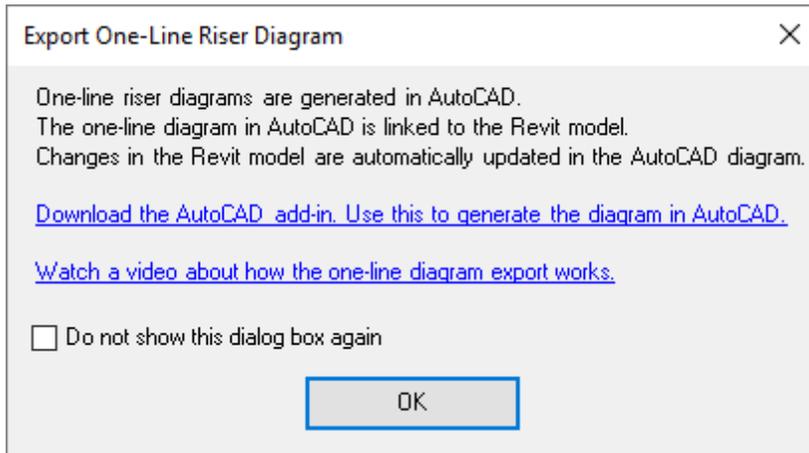
In the dialog box shown above, MDP-2 and everything below it will be calculated. Other distribution equipment,

such as MDP-1 and MDP-3, will not be calculated.

Export One-Line

Exports the information from the Revit model to AutoCAD for use in creating a one-line diagram.

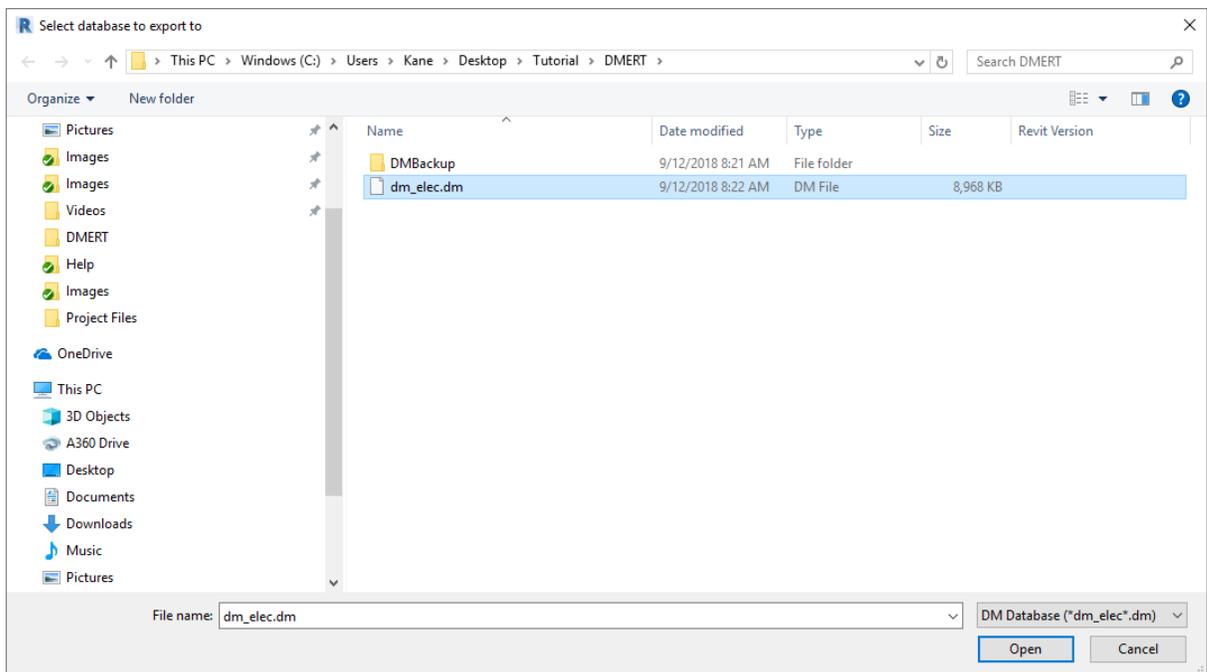
The first time you run the command, the **Export One-Line Riser Diagram** dialog box will open:



This dialog box explains how the one-line diagram in AutoCAD works with the Revit model. Links are provided to download the AutoCAD add-in from the website and watch a video describing the `Export One-Line` command process.

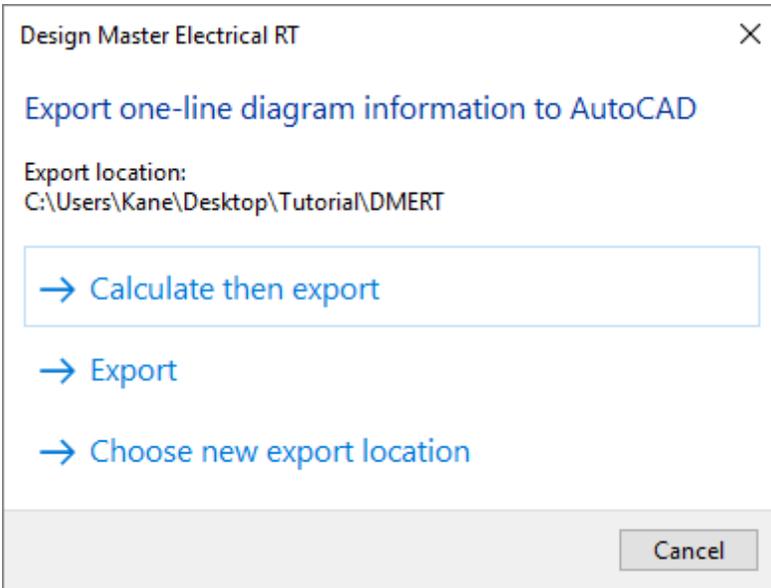
Check **Do not show this dialog box again** to prevent this dialog box from appearing in the future.

The first time you run the command in a project, the **Select database to export to** dialog box will open:



Select the DM file to which you want to export the information. The DM file must be created in AutoCAD using the [Start New Electrical RT Project](#) command before you run this command.

The next time you run the command in a project, a **Design Master Electrical RT** dialog box will open:



The location of the folder to which the information will be exported is listed.

Calculate then export: Press this button to run the [Calculate](#) command before exporting the information. This action will update all of the information in the model so that it is correct, but will take a moment to run.

Export: Press this button to export the information as it currently exists. This action allows you to export immediately if you have recently run the [Calculate](#) command or know your model has not changed since your last export.

Choose new export location: Press this button to choose a new location to which to export the information. The **Select database to export to dialog box** will be shown.

After the information has been exported, go to AutoCAD and use the [Update One-Line Diagram](#) command to update the values on your AutoCAD drawing.

Panel Edit

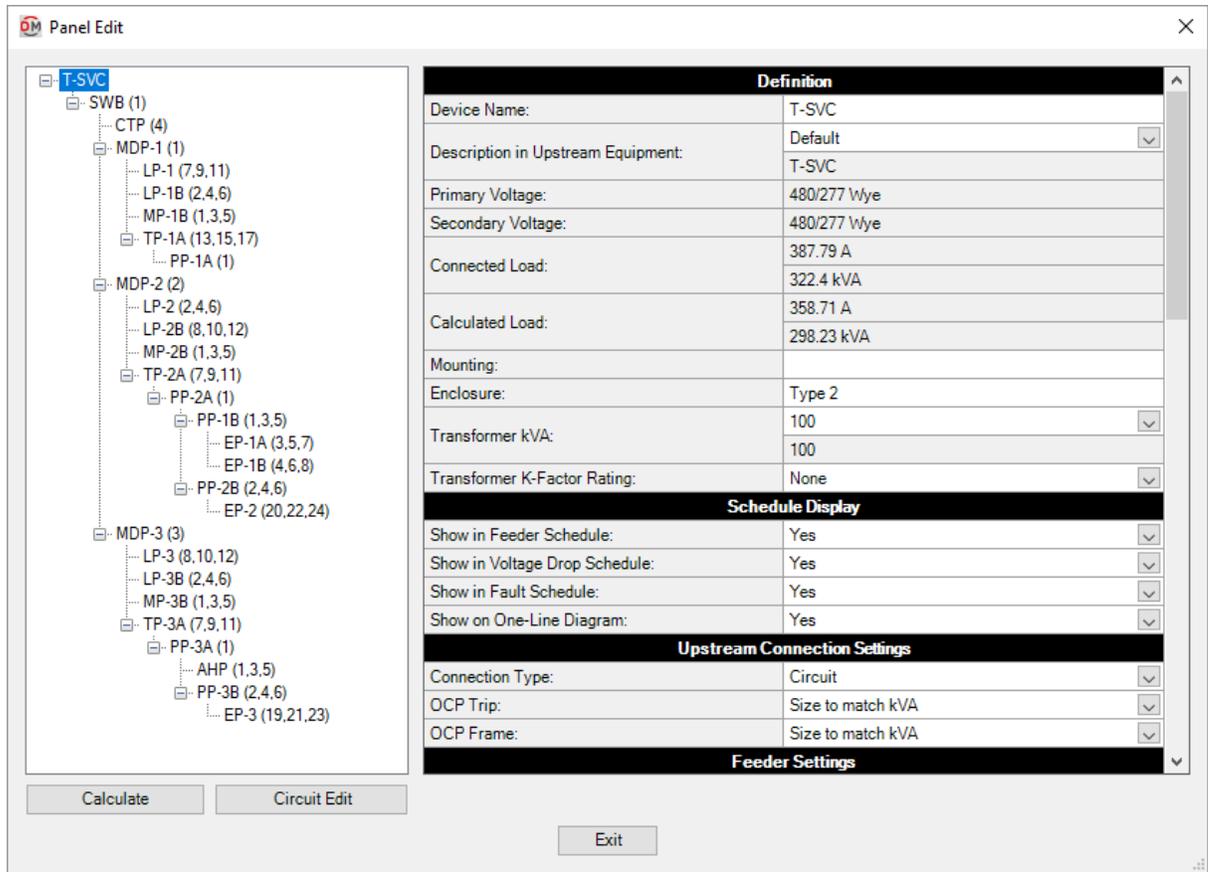
Allows you to view and edit the information on distribution equipment in your project.

Training Videos

- [The Panel Edit Command](#)

Opens the **Panel Edit** dialog box:

Panel Edit Dialog Box



Distribution Equipment Tree: The tree on the left side of the dialog box lists all of the distribution equipment in your project. The equipment is organized based upon the connections in the model.

Calculate: Press this button to run the [Calculate Whole Project](#) command.

Circuit Edit: Press this button to close this dialog box and run the [Circuit Edit](#) command. The currently selected distribution equipment will be selected in the **Circuit Edit** dialog box.

Swap Feeders: This button appears when you select a piece of distribution equipment with two feeders. The two feeders are arbitrarily assigned to be feeder 1 or feeder 2. Feeder 1 is considered the main feeder for the equipment and should lead back to the utility. Feeder 2 should be used for the emergency or bypass feeder. Press this button to change which feeder is assigned which number.

Definition

Device Name: The name of the distribution equipment. This is the same value as the *Panel Name* parameter. Changing the *Device Name* in this dialog box will also change the *Panel Name*. It will also update the name of the panel schedule associated with this distribution equipment.

Description in Upstream Equipment: The description for the distribution equipment that will appear in the circuit description of the upstream panel schedule.

- **Default:** The description in the upstream panel schedule will be the same as the device name.
- **Custom:** Enter a custom description in the field provided.

Primary Voltage: The primary voltage of the distribution equipment. This is the same value as the *Distribution System* parameter. Use the standard Revit interface to change this value.

Secondary Voltage: The secondary voltage of the distribution equipment. This is the same value as the *Secondary Distribution System* parameter. Use the standard Revit interface to change this value. This field is only displayed for transformers.

Connected Load: The total connected load on the distribution equipment. These fields are the same values as the *Total Connected* and *Total Connected Current* parameters.

Calculated Load: The total calculated demand load on the distribution equipment. These fields are the same values as the *Total Estimated Demand* and *Total Estimated Demand Current* parameters.

Mains / Bus Amps: The size of the bus. This field is the same value as the *Mains* parameter that can be set in the *Electrical - Circuiting* section of the **Properties** panel for distribution equipment. This field is only displayed for panels and switchboards.

- **Specific ampacity:** The mains value is set to the specific size chosen from the list.
- **Custom:** Enter a custom mains value in the field provided.

This value can be set in the family definition using the [Family Edit](#) command. If it is, the value cannot be changed in the instance in the project.

Main Disconnect Type: The type of disconnect for the device. The graphics on the panel bus on the one-line diagram are controlled by this field. This field is only displayed for panels and switchboards.

- **Family default:** The type has been set in the family using the [Family Edit](#) command. The value from the family will be used.
- **Main Lugs Only:** The bus bar on the one-line diagram does not have a disconnect.
- **Breaker:** The bus bar on the one-line diagram includes a breaker graphic.
- **Fused Switch:** The bus bar on the one-line diagram includes a fused switch graphic.

Main Disconnect Trip: The trip rating of the main disconnect breaker or fused switch. This field is only displayed for panels and switchboards.

- **Family default:** The trip rating has been set in the family using the [Family Edit](#) command. The value from the family will be used.
- **Same as bus amps:** The trip rating is the same as the *Mains / Bus Amps* value.
- **Specific ampacity:** The trip rating is set to the specific size chosen from the list.

Main Disconnect Frame: The frame size of the main disconnect breaker or fused switch. This field is only displayed for panels and switchboards.

- **Family default:** The frame size has been set in the family using the [Family Edit](#) command. The value from the family will be used.
- **Same as bus amps:** The frame size is the same as the *Mains / Bus Amps* value.
- **Specific ampacity:** The frame size is set to the specific size chosen from the list.

Mounting: The *Mounting* parameter that can be set in the *General* section of the **Properties** panel for distribution equipment.

Enclosure: The *Enclosure* parameter that can be set in the *General* section of the **Properties** panel for distribution equipment.

Lugs: The lugs used on the distribution equipment. This setting controls the type of connection you can make on downstream distribution equipment using the *Upstream Connection Type* field and the graphics displayed on the bus bar on the one-line diagram.

- **Standard:** One set of lugs located at the top of the bus.
- **Double:** Double lugs located at the top of the bus. Enables the **Top Lugs** option in the *Upstream Connection Type* field of downstream distribution equipment.
- **Feed Through:** Lugs located at the top and bottom of the bus. Enables the **Feed Through** option in the *Upstream Connection Type* field of downstream distribution equipment.

In Revit 2020, this value is set in the panel definition. It cannot be set in this dialog box. If the *Feed Through Lugs* parameter is enabled, this field will be set to **Feed Through**. If the *Feed Through Lugs* parameter and *SubFeed Lugs* parameter are enabled, this field will be set to **Double**.

Transformer kVA: The size of the transformer. Select the size from the list or manually enter the value. This field is only displayed for transformers.

This value can be set in the family definition using the [Family Edit](#) command. If it is, the value cannot be changed in the instance in the project.

Transformer K-Factor Rating: The specific K-factor rating of the transformer for handling the harmonic content of the load. This field is only displayed for transformers.

This value can be set in the family definition using the [Family Edit](#) command. If it is, the value cannot be changed in the instance in the project.

Schedule Display

Show in Feeder Schedule: Whether the distribution equipment is displayed in the feeder schedule in AutoCAD.

Show Feeder 2 in Feeder Schedule: Whether the second feeder to the distribution equipment is displayed in the feeder schedule in AutoCAD.

Show in Voltage Drop Schedule: Whether the distribution equipment is displayed in the voltage drop schedule.

Show in Fault Schedule: Whether the distribution equipment is displayed in the fault current schedule.

Show on One-Line Diagram: Whether the distribution equipment is displayed on the one-line diagram.

Upstream Connection Settings

Connection Type: How the distribution equipment is connected to the upstream distribution equipment.

- **Circuit:** The distribution equipment is connected to a circuit. This selection is the default value for this field.
- **Top Lugs:** The distribution equipment is connected to the top lugs of the upstream distribution equipment. This selection is only available if the *Lugs* field is set to **Double** in the upstream distribution equipment. On each piece of distribution equipment, only one connected piece of distribution equipment can be connected this way. If this is set for one piece of distribution equipment, it will not be displayed for other distribution equipment connected to the same distribution equipment.
- **Feed Through:** The distribution equipment is connected to the feed-through lugs of the upstream distribution equipment. This selection is only available if the *Lugs* field is set to **Feed Through** in the upstream distribution equipment. On each piece of distribution equipment, only one connected piece of distribution equipment can be connected this way. If this is set for one piece of distribution equipment, it will not be displayed for other distribution equipment connected to the same distribution equipment.

In Revit 2020, this field is not available. The connection type is based upon the panel definition. If the *Feed Through Lugs* parameter is enabled, the **Feed Through** connection type will be used. If the *Feed Through Lugs*

parameter and *SubFeed Lugs* parameter are enabled, the **Top Lugs** connection type will be used.

OCP Trip: The trip rating of the overcurrent protection (OCP) in the device upstream of the distribution equipment. Used to set the *Rating* value of the connected circuit.

- **Same as main disconnect or bus amps:** The OCP is sized to match the *Mains* parameter. This choice is available for panels and switchboards.
- **Size to match kVA:** The OCP is sized to match the *Transformer kVA* field set in this dialog box. This choice is available for transformers.
- **Lugs or N/A:** There is no OCP for this device. The *Rating* value of the connected electrical system is set to 0.
- **Specific ampacity:** The OCP is set to the specific size chosen from the list.

OCP Frame: The frame size of the overcurrent protection (OCP) in the device upstream of the distribution equipment. Used to set the *Rating* value of the connected circuit.

- **Same as main disconnect or bus amps:** The frame is sized to match the *Mains* parameter. This choice is available for panels and switchboards.
- **Size to match kVA:** The frame is sized to match the *Transformer kVA* field set in this dialog box. This choice is available for transformers.
- **Specific ampacity:** The frame size is set to the specific size chosen from the list.

Feeder Settings

Fed From: The upstream distribution equipment to which this distribution equipment is connected.

Feeder Length: The length of the feeder.

- **Default:** The length is calculated using the *Feeder length calculation method* option set in the upstream distribution equipment.
- **Straight line:** The length is calculated based upon the straight line distance between the distribution equipment and upstream distribution equipment. This calculation approximates lengths for wires running directly between devices, typically underground.
- **Right angles:** The length is calculated based upon the distance along the axes of the building between the distribution equipment and upstream distribution equipment. This calculation approximates lengths for wires running along the walls of the building.
- **Revit calculated length:** The feeder length is based upon the distance that Revit calculates using the **Circuit Path** feature.
- **Fixed:** Enter the length of the feeder in feet in the field provided.

Building Angle: The orientation of the building used when *Feeder Length* is set to **Right angles**.

Feeder Make-Up: Additional length of wire added to automatically calculated feeder lengths to represent make-up in the field.

- **Default:** The length is based upon the *Feeder make-up length* option set in the [Options](#) command.
- **Custom:** Enter a custom length in the field provided.

Conductor Amps: The ampacity of the feeder conductors.

- **Size automatically:** The conductors are sized based upon the *Upstream OCP* setting.
- **None:** There is no feeder to this distribution equipment. The feeder callout will be blank.
- **Specific ampacity:** The conductors are sized to match the wire ampacity chosen from the list.

Neutral: Sets the size of the neutral wire in the feeder.

- **Family default:** The neutral size has been set in the family using the [Family Edit](#) command. The value from the family will be used.

- **Same as phase:** The neutral wire is the same size as the phase wires specified in the *Conductor Amps* field.
- **Double phase:** The neutral wire is twice the size of the phase wires specified in the *Conductor Amps* field. This is accomplished by using two neutral wires.
- **None:** No neutral wire is included in the feeder. See the [Neutrals](#) section for more information about this option.
- **Specific wire size:** The neutral wire is sized to match the wire size chosen from the list.

Ground: Sets the size of the ground wire in the feeder.

- **Family default:** The ground size has been set in the family using the [Family Edit](#) command. The value from the family will be used.
- **Size automatically:** The ground wire is sized based upon the *Upstream OCP* setting. If the distribution equipment is fed from a transformer, the service ground size is used. Otherwise, the equipment ground size is used.
- **NEC 250.122 Equipment:** The ground wire is sized based upon the *Equipment Ground* setting for the wire ampacity specified in the *Conductor Amps* field.
- **NEC 250.102 Service:** The ground wire is sized based upon the *Service Ground* setting for the wire ampacity specified in the *Conductor Amps* field.
- **None:** No ground wire is included in the feeder.
- **Specific wire size:** The ground wire is sized to match the wire size chosen from the list.

IG Conductor: Whether the feeder includes an isolated ground.

- **Family default:** The need for an isolated ground has been set in the family using the [Family Edit](#) command. The value from the family will be used.
- **Yes:** An isolated ground will be included in the feeder.
- **No:** An isolated ground will not be included in the feeder.

Conduit Size: Sets the size of the conduit for the feeder.

- **Size automatically:** The conduit is sized automatically based upon the wires in the feeder. All conduits are sized using a 40% conduit fill (*NEC Table 1*).
- **None:** No conduit is included for the feeder.
- **Specific conduit size:** The conduit is sized to match the conduit size chosen from the list.

Conduit Fill: The conduit fill percentage for the feeder.

Feeder Size: The callout for the feeder, listing all of the wire sizes.

Feeder Voltage Drop: The voltage drop in the feeder to this distribution equipment.

Total Voltage Drop: The cumulative voltage drop from the utility to this distribution equipment.

Upstream Connection 2 Settings

If the distribution equipment has two feeders, the settings for the second upstream connection are listed in this section. The settings are the same as the ones available in the **Upstream Connection Settings** section described above.

Feeder 2 Settings

If the distribution equipment has two feeders, the settings for the second feeder are listed in this section. The settings are the same as the ones available in the **Feeder Settings** section described above.

Circuit Settings

Feeder Length Calculation Method: How the lengths are calculated for feeders between this distribution equipment and distribution equipment connected to it.

- **Default:** The lengths are calculated based upon the *Feeder length calculation method* option set in the [Options](#) command.
- **Straight line:** The lengths are calculated based upon the straight line distance between the distribution equipment and other distribution equipment connected to it. This calculation approximates lengths for wires running directly between devices, typically underground.
- **Right angles:** The lengths are calculated based upon the distance along the axes of the building between the distribution equipment and other distribution equipment connected to it. This calculation approximates lengths for wires running along the walls of the building.
- **Revit calculated length:** The lengths are based upon the distance that Revit calculates using the **Circuit Path** feature.

Branch Circuit Length Calculation Method: How the lengths are calculated for branch circuits between this distribution equipment and devices connected to it.

- **Default:** The lengths are calculated based upon the *Branch circuit length calculation method* option set in the [Options](#) command.
- **Straight line:** The lengths are calculated based upon the straight line distance between the distribution equipment and devices connected to it. This calculation approximates lengths for wires running directly between devices, typically underground.
- **Right angles:** The lengths are calculated based upon the distance along the axes of the building between the distribution equipment and devices connected to it. This calculation approximates lengths for wires running along the walls of the building.
- **Revit calculated length:** The lengths are based upon the distance that Revit calculates using the **Circuit Path** feature.

Building Angle: The orientation of the building used when the *Feeder Length Calculation Method* or *Branch Circuit Length Calculation Method* is set to **Right angles**.

Branch Circuit Make-Up: Additional length of wire added to automatically calculated branch circuit lengths to represent make-up in the field.

- **Default:** The length is based upon the *Branch circuit make-up length* option set in the [Options](#) command.
- **Custom:** Enter a custom length in the field provided.

Add Branch Circuit Make-Up For Each Device: Whether the length specified in *Branch Circuit Make-Up* is added for each device on the circuit. The default is based upon the *Add branch circuit make-up for each device* option set in the [Options](#) command.

- **Yes:** The length is added for each device on the circuit.
- **No:** The length is added once, regardless of the number of devices on the circuit.

Fault Calculations

Total Fault Including Motors: The total fault at the distribution equipment including both utility fault and motor fault. This field is for informational purposes to be used while defining the distribution equipment. To set a specific fault value, use the *Utility Fault at Device* field below.

Utility Fault at Device: The fault at the distribution equipment from the utility. Motor fault values are not included in this value.

- **Calculated:** The fault at the distribution equipment is calculated based upon the model.
- **Fixed:** Enter the fault at the distribution equipment in the field provided.

Utility Fault X/R Ratio: The X/R ratio of the utility fault at the device. If *Utility Fault at Device* is set to **Fixed**, you can manually set this value.

Transformer Impedance % : The impedance through the transformer, as a percentage. As this value increases, the fault current on the secondary of the transformer decreases. This field is only displayed for transformers.

- **Calculated:** A default transformer impedance is used based upon the kVA of the transformer:

Transformer kVA	Default Transformer Impedance %
0 - 100	1.75%
112.5 - 300	2%
500	2.5%
750+	5.75%

- **Fixed:** Enter the transformer impedance in the field provided. It can typically be obtained from the transformer manufacturer.

This value can be set in the family definition using the [Family Edit](#) command. If it is, the value cannot be changed in the instance in the project.

Transformer X/R Ratio: The X/R Ratio of the transformer. This field is only displayed for transformers.

- **Calculated:** A default X/R ratio of 5 is used for the transformer.
- **Fixed:** Enter the X/R ratio in the field provided. It can typically be obtained from the transformer manufacturer.

This value can be set in the family definition using the [Family Edit](#) command. If it is, the value cannot be changed in the instance in the project.

AIC Rating: The ampere interrupting capacity (AIC) rating for the distribution equipment. This value is not automatically calculated. You must specify this value for all of the distribution equipment in the project. This field is the same value as the *Short Circuit Rating* parameter set in the *Electrical - Circuiting* section of the **Properties** panel for distribution equipment.

- **Specific AIC Rating:** A list of common AIC ratings is available. Choose a value from the list to use it as the AIC rating for the distribution equipment.
- **Custom:** Choose this selection when the AIC rating for the distribution equipment is not available in the default list. Enter the AIC rating in the field provided.

Arc-Flash Calculations

Calculate Arc-Flash: Whether arc-flash is calculated for the distribution equipment. Equipment that is not calculated will not be displayed in the arc-flash schedule on the drawing and will not have stickers created. Because it is difficult to sustain an arc-flash below 208V, equipment with voltages below 208V do not need arc-flash calculations performed and will have this option set to **No** by default.

Electrode Configuration: The electrode configuration as described in *IEEE Std 1584-2018 Table 9*. Horizontal configurations generally have higher incident energy than vertical configurations. Enclosed configurations generally have higher incident energy than open configurations. Most distribution equipment inside buildings should be set to an enclosed configuration. See the [Electrode Configurations for Arc-Flash Calculations](#) article in the knowledge base for more information on these configurations.

- **Unknown:** This setting should be used if the electrode configuration is unknown. The calculations provide conservative results.
- **Vertical conductors or electrodes inside a metal box or enclosure:** This setting has the lowest incident energy among enclosed configurations.

- **Vertical conductors or electrodes terminated in an insulating barrier inside a metal box or enclosure:** This setting has a lower incident energy than **Horizontal conductors or electrodes inside a metal box or enclosure**, but higher than **Vertical conductors or electrodes inside a metal box or enclosure**.
- **Horizontal conductors or electrodes inside a metal box or enclosure:** This setting has the highest incident energy among all configurations.
- **Vertical conductors or electrodes in open air:** This setting has the lowest incident energy among all configurations.
- **Horizontal conductors or electrodes in open air:** This setting has the highest incident energy among open configurations.

Enclosure Size: The dimensions of the enclosure. The smaller the enclosure, the higher the incident energy. The size of the enclosure does not affect arcing current and arcing times.

- **Unknown:** This setting should be used if the dimensions are unknown. The calculations will be based upon a 20" x 20" x 9" enclosure.
- **Known:** Enter values for the *Enclosure Width* and *Enclosure Height* fields and set **Enclosure Depth** manually. If possible, set the dimensions based upon the manufacturer's specifications. Typical enclosure dimensions are listed in *IEEE Std 1584-2018 Table 8*. Dimensions for equipment between 208V and 600V are listed in the table below.

Equipment Type	Enclosure Size (H x W x D)
Switchgear	20" x 20" x 20"
MCC	14" x 12" x 8"
Panel	14" x 12" x 8"
Cable Junction Box	14" x 12" x 8"

Enclosure Height: The height of the enclosure.

Enclosure Width: The width of the enclosure.

Enclosure Depth: The depth of the enclosure.

- **Typical:** The calculations will be based upon a depth greater than 8".
- **Shallow:** The calculations will be based upon a depth of 8" or less.
- **Specific:** Enter a value for the *Enclosure Depth* field manually.

Gap Between Conductors: The gap between the conductors. For devices between 208V and 600V, the most accurate calculation can be used when the gap between conductors is between 0.25" and 3". Within that range, the larger the gap, the higher the incident energy. For gaps outside this range, the calculations provide conservative results.

- **Unknown:** This setting should be used if the gap is unknown. For devices between 208V and 600V, the calculations will be based upon a gap of 3". For devices above 600V, the calculations will be based upon a gap of 10".
- **Known:** Enter a value for the *Gap Between Conductors* manually. If possible, set the gap based upon the manufacturer's specifications. Typical gaps between conductors are listed in *IEEE Std 1584-2018 Table 8*. Gaps for devices between 208V and 600V are listed in the table below.

Equipment Type	Gap Between Conductors
Switchgear	1.25"
MCC	1"

Equipment Type	Gap Between Conductors
Panel	1"
Cable Junction Box	0.5"

Working Distance: The distance from the possible arc point to the torso of the person working on the distribution equipment. The incident energy will be calculated at this distance from the equipment. The farther away from the equipment, the lower the incident energy. Any part of the body closer to the equipment than this distance will be exposed to higher incident energy than is calculated.

- **Unknown:** This setting should be used if the working distance is unknown. The calculations will be based upon a working distance of 12".
- **Known:** Enter a value for the *Working Distance* manually. If possible, set the working distance based upon the actual dimensions of the equipment. Typical working distances are listed in *IEEE Std 1584-2018 Table 10*. Working distances for equipment between 208V and 600V are listed in the table below.

Equipment Type	Working Distance
Switchgear	24"
MCC	18"
Panel	18"
Cable Junction Box	18"

Arcing Current (Maximum): The maximum predicted three-phase arcing current used to determine the operating time for the protective devices.

Arcing Current (Reduced): The minimum predicted three-phase arcing current used to determine the operating time for the protective devices.

Arcing Time @ Maximum Current and Reduced Current: The duration of the arc-flash at the *Arcing Current (Maximum)* and *Arcing Current (Reduced)*. The duration has a significant impact on the incident energy in seconds. The longer you are exposed to the flash, the more intense the burn. The arcing time is based upon the time-current curve for the specific breaker you are using. These values are provided by the manufacturer and can typically be found on their website.

The incident energy is a function of the arcing current and the duration. Lower arcing currents that take longer to close the breaker can result in higher incident energy values than high arcing currents. To account for this, incident energy is calculated using both the *Arcing Current (Maximum)* and *Arcing Current (Reduced)*.

Fuses must be handled differently from breakers. The time-current curves for fuses may include both melting and clearing times. Use the clearing time if it is provided. If only the melting time is provided, you can approximate the clearing time by adding 10% to the melting time if it is greater than 0.3 seconds, or 15% if it is less than 0.3 seconds.

If the arcing current is above the total clearing time at the bottom of the curve (0.01 seconds), use 0.01 seconds.

Incident Energy @ Maximum Current and Reduced Current: The total incident energy based upon the arcing current, arcing times, and working distance.

Arc-Flash Boundary Distance: The limited approach boundary for unprotected workers. At this distance, the

harm inflicted upon an unprotected worker during an arc-flash incident will be limited to second-degree burns.

Related Options

Display neutral wire count separately from phase wire count: Sets whether the neutral wire is displayed for the *Feeder Size* callout.

Conduit location: Sets where the conduit size is displayed in the *Feeder Size* callout.

Feeder length calculation method: Sets the default for the *Feeder Length* setting.

Building angle: Sets the default value for the *Building Angle* field.

Feeder make-up length: Sets the default value for the *Feeder Make-Up* field.

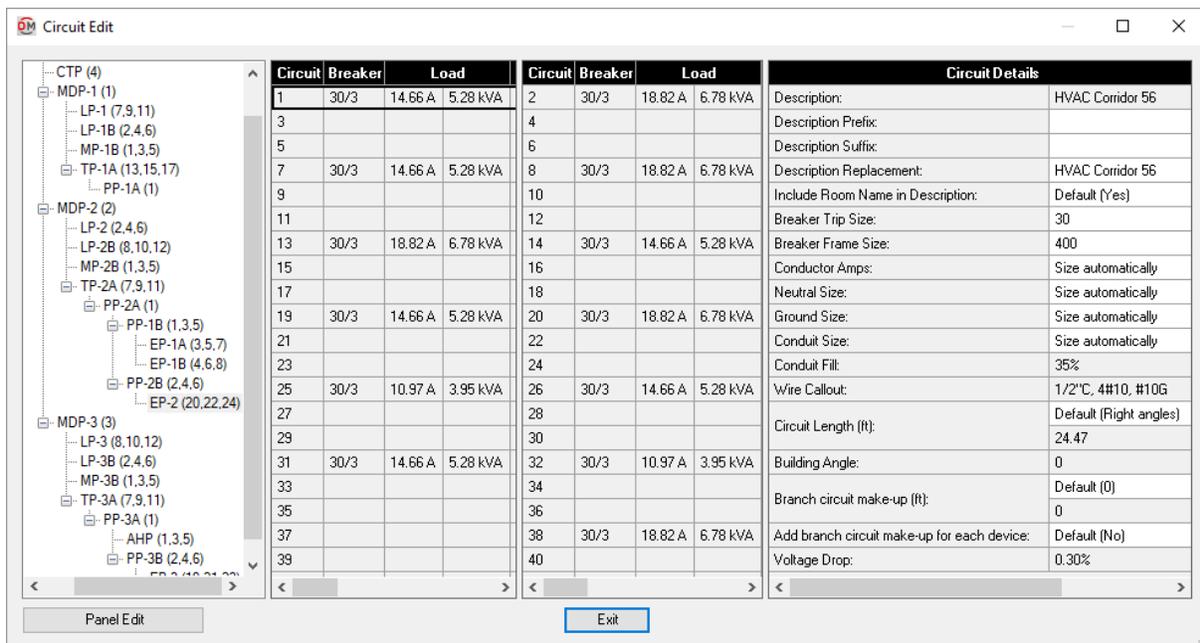
Branch circuit make-up length: Sets the default value for the *Branch Circuit Make-Up* field.

Add branch circuit make-up for each device: Sets the default value for the *Add Branch Circuit Make-Up For Each Device* field.

Circuit Edit

Allows you to set information used for sizing branch circuits. Opens the **Circuit Edit** dialog box:

Circuit Edit Dialog Box



The wire size values that are calculated are stored in shared parameters on the circuits. These shared parameters can be displayed in your panel schedule in addition to or instead of built-in Revit parameters. See the [Modifying Panel Schedules](#) section for more information.

Distribution Equipment Tree: The tree on the left side of the dialog box lists all of the distribution equipment in your project. The equipment is organized based upon the connections in the model.

Panel Edit: Press this button to close this dialog box and run the [Panel Edit](#) command. The currently selected distribution equipment will be selected in the **Panel Edit** dialog box.

Circuit Lists: The two middle sections list all of the circuits on the selected distribution equipment. If the distribution equipment is a panel with odd and even sides, the odd circuits are listed on the left and the even circuits are listed on the right. Otherwise, all of the circuits are listed on the left and the grid on the right will be blank.

Circuit Details: Information about the selected circuit is displayed in this section.

When a feeder to a downstream piece of distribution equipment is selected, basic information about the feeder is displayed. To make changes to the feeder, use the [Panel Edit](#) command. Select the distribution equipment connected to the circuit and make changes in the **Feeder Settings** section.

When a space is selected that has nothing connected to it, you will not be able to make any changes.

When a branch circuit is selected, changes can be made to the circuit using the fields described below.

Description: The description for the circuit as it will appear on the distribution equipment schedule. This value is added before any other descriptions on the circuit from connected devices.

Description Prefix: Text that will be added to the front of the circuit description.

Description Suffix: Text that will be added to the end of the circuit description. It will be added before the room names if they are included.

Description Replacement: Text that will completely replace the circuit description. The circuit description on the device, *Description Prefix*, and *Description Suffix* will not be used.

Include Room Name in Description: Whether the rooms served by the circuit are included in the circuit description.

- **Default:** Use the *Include Room Name in Description* option set in the [Options](#) command.
- **Yes:** Include room names at the end of the circuit description. The names of each area containing devices on this circuit will be listed. This list of rooms may be different from what Revit would show. Revit only shows a single room name if multiple rooms are on the circuit.
- **No:** Room names are not included in the circuit description.

Breaker Trip Size: Sets the size of the breaker for the branch circuit. Used to set the *Rating* value of the branch circuit.

- **Size automatically:** The breaker is sized to 125% of the connected load.
- **None:** No breaker is used for the branch circuit. The *Rating* value is set to 0.
- **Specific ampacity:** The breaker is sized to match the ampacity chosen from the list.

Breaker Frame Size: Sets the size of the frame for the branch circuit. Used to set the *Frame* value of the branch circuit.

- **Same as trip:** The frame is sized to match the *Breaker Trip Size* value.
- **None:** No frame is used for the branch circuit. The *Rating* value is set to 0.
- **Specific ampacity:** The breaker is sized to match the ampacity chosen from the list.

Conductor Amps: Sets the size of the conductors.

- **Size automatically:** The conductors are sized based upon the *Breaker Size* ampacity.
- **None:** The branch circuit does not have any wires. The *Wire Callout* is set to a blank value.
- **Specific ampacity:** The conductors are sized to match the ampacity chosen from the list.

Neutral Size: Sets the size of the neutral wire.

- **Size automatically:** The neutral wire is sized to match the phase wire.
- **None:** No neutral wire is included. See the [Neutrals](#) section for more information about this option.
- **Specific wire size:** The neutral wire is sized to match the wire size chosen from the list.

Ground Size: Sets the size of the ground wire.

- **Size automatically:** The ground wire is sized automatically based upon the *Equipment* ground setting of the ampacity of the branch circuit.
- **None:** No ground wire is included.
- **Specific wire size:** The ground wire is sized to match the wire size chosen from the list.

Conduit Size: Sets the size of the conduit.

- **Size automatically:** The conduit is sized automatically based upon the wires. All conduits are sized using a 40% conduit fill (*NEC Table 1*).
- **None:** No conduit is included for the feeder.
- **Specific conduit size:** The conduit is sized to match the conduit size chosen from the list.

Conduit Fill: The conduit fill percentage for the branch circuit wire.

Wire Callout: The callout for the branch circuit, listing all of the wire sizes.

Circuit Length: The average distance from the distribution equipment to the devices on the branch circuit.

- **Default:** The lengths are calculated based upon the *Circuit Calculation Method* option set in the panel in the [Panel Edit](#) command.
- **Straight line:** The lengths are calculated based upon the straight line distance between the distribution equipment and the devices on this circuit. This calculation approximates lengths for wires running directly between devices, typically underground.
- **Right angles:** The lengths are calculated based upon the distance along the axes of the building between the distribution equipment and the devices on this circuit. This calculation approximates lengths for wires running along the walls of the building.
- **Revit calculated length:** The lengths are based upon the distance that Revit calculates using the **Circuit Path** feature.
- **Fixed:** Enter the length of the branch circuit in feet in the field provided.

Building Angle: The orientation of the building used when *Circuit Length* is set to **Right angles**.

Branch circuit make-up: Additional length of wire added to automatically calculated branch circuit lengths to represent make-up in the field.

- **Default:** The length is based upon the *Branch Circuit Make-Up* option set in the panel in the [Panel Edit](#) command.
- **Custom:** Enter a custom length in the field provided.

Add Branch Circuit Make-Up For Each Device: Whether the length specified in *Branch circuit make-up* is added for each device on the circuit. The default is based upon the *Add Branch Circuit Make-Up For Each Device* option set in the panel in the [Panel Edit](#) command.

- **Yes:** The length is added for each device on the circuit.
- **No:** The length is added once, regardless of the number of devices on the circuit.

Voltage Drop: The voltage drop on the branch circuit. This value is based upon the load on the circuit, the wire size, and the circuit length. The calculation assumes the whole load is located at a distance equal to the *Circuit Length* away from the distribution equipment.

Related Options

[Display neutral wire count separately from phase wire count:](#) Sets whether the neutral wire is displayed for the *Wire Callout* field.

[Conduit location:](#) Sets where the conduit size is displayed in the *Wire Callout* field.

[Include room names in circuit descriptions:](#) Sets the default for the *Include Room Name in Description* setting.

[Branch circuit length calculation method:](#) Sets the default for the *Circuit Length* setting.

[Building angle:](#) Sets the default value for the *Building Angle* field.

Instance Edit

Allows you to edit information on a specific family instance in your project.

If nothing is selected, you will be prompted to select a family instance to edit.

If a family instance is selected, or after you select a family instance, one of the following **Instance Edit** dialog boxes will appear:

[Branch circuit device: Other:](#) The settings displayed when the selected family instance has the type set to **Branch circuit device: Other** or has not been configured using the [Edit Family](#) command.

[Branch circuit Device: Equipment connection:](#) The settings displayed when the selected family instance has the type set to **Branch circuit device: Equipment connection**.

[Distribution Equipment:](#) The settings displayed when the selected family instance is not a piece of electrical equipment and has the type set to **Distribution equipment: Other**, **Distribution equipment: Panel**, or **Distribution equipment: Transformer**.

If a piece of electrical equipment is selected, the [Panel Edit](#) dialog box will open with the selected electrical equipment active.

Branch circuit device: Other

When the selected family instance has the type set to **Branch circuit device: Other** or has not been configured using the [Edit Family](#) command, this **Instance Edit** dialog box appears:

Instance Edit Dialog Box

Key	Value
Device Type:	Branch circuit device: Other
Family Name:	M_Cooling Tower - Closed Circuit - Counterflow - 67-189 kW
Family Type:	177 kW
Circuit Description:	
Override Circuit Description	No
Load:	42.3 kVA
Isolated Ground:	Family default (No)
Show on One-Line Diagram:	Default (No)
FLA / BCSC:	N/A
MCA:	N/A
MOCP:	N/A
Breaker Size:	Size automatically (based upon load)
Wire Size:	Size automatically (based upon breaker, or loads if breaker based upon motor)

OK Cancel

Device Type: The *Device Type* set for the family in the [Family Edit](#) command.

Family Name: The name of the Revit family for the selected instance.

Family Type: The type of the Revit family for the selected instance.

Circuit Description: The circuit description set for the family in the [Family Edit](#) command.

Override Circuit Description: Whether the circuit description set in the family should be overridden for this instance. If set to **Yes**, enter the circuit description to use for the instance in the field provided.

Load: The load of the selected instance as set in Revit.

Isolated Ground: Whether the branch circuit requires an isolated ground wire. If set to **Yes**, an isolated ground wire is included in the wire callout for the branch circuit connected to this device.

Show on One-Line Diagram: Whether to show the instance as an equipment connection on the one-line diagram.

- **Default (No):** The default when *Device Type* is set to **Branch circuit device: Other** is to not show the device on the one-line diagram. If the family is later changed to an [Equipment connection](#), the family default value can be set to **Yes** or **No**. The default will update to the family default value.
- **Yes:** The instance will be shown on the one-line diagram.

- **No:** The instance will not be shown on the one-line diagram.

FLA / BCSC: The full load amps (FLA) or branch circuit selection current (BCSC).

- **N/A:** The default value. The device does not have an FLA or BCSC.
- **Custom:** Specify the value for the FLA or BCSC in the field provided.

MCA: The minimum circuit amps (MCA).

- **N/A:** The default value. The device does not have an MCA.
- **Custom:** Specify the value for the MCA in the field provided.

MOCP: The minimum overcurrent protection (MOCP).

- **N/A:** The default value. The device does not have an MOCP.
- **Custom:** Specify the value for the MOCP in the field provided.

Breaker Size: How to size the breaker for the branch circuit to which the equipment is connected.

- **Size automatically (based upon load):** The breaker is sized based upon 125% of the connected load. FLA / BCSC, MCA, and MOCP are all ignored.
- **Motor-compressor, \leq MOCP:** The breaker is sized to be less than the MOCP (see *NEC 440.22(C)*).
- **Motor-compressor, \leq 175% of BCSC, \leq MOCP:** The breaker is sized to be less than 175% of the BCSC and less than the MOCP (see *NEC 440.22(A) & (C)*).
- **Motor-compressor, \leq 225% of BCSC, \leq MOCP:** The breaker is sized to be less than 225% of the BCSC and less than the MOCP (see *NEC 440.22(A) & (C)*).
- **Motor, dual element fuse, \leq 175% of FLA:** The breaker is sized to be less than 175 of the FLA (see *NEC 430.52*).
- **Motor, dual element fuse, \leq 225% of FLA:** The breaker is sized to be less than 225% of the FLA (see *NEC 430.52(C)(1) Exception No. 2(2)*).
- **Motor, inverse time breaker, \leq 250% of FLA:** The breaker is sized to be less than 250% of the FLA (see *NEC 430.52*).
- **Specific ampacity:** The breaker size is set to the specific size chosen from the list.

Wire Size: How to size the conductors for the branch circuit to which the equipment is connected.

- **Size automatically (based upon breaker, or loads if breaker based upon motor):** The conductors are sized automatically. The conductors are sized to match the breaker, or match the load if *Breaker Size* is set to one of the Motor choices.
- **Multimotor, \geq MCA:** The conductors are sized to be greater than the MCA (see *NEC 440.35*).
- **Motor-compressor, \geq 100% of BCSC + 25% of max BCSC:** The conductors are sized to be greater than 100% of the combined BCSC, plus 25% of the largest BCSC on the circuit (see *NEC 440.32 & 33*).
- **Size based upon loads:** The conductors are sized based upon 125% of the connected load.
- **Size based upon breaker:** The conductors are sized based upon the breaker size.
- **Specific ampacity:** The wire size is set to the specific size chosen from the list.

Branch circuit device: Equipment connection

When the selected family instance has the type set to **Branch circuit device: Equipment connection**, this **Instance Edit** dialog box appears:

Instance Edit Dialog Box

Key	Value
Device Type:	Branch circuit device: Equipment connection
Family Name:	M_Cooling Tower - Closed Circuit - Counterflow - 67-189 kW
Family Type:	177 kW
Circuit Description:	M_Cooling Tower - Closed Circuit - Counterflow - 67-189 kW
Override Circuit Description	No
Load:	42.3 kVA
Isolated Ground:	Family default (No)
Show on One-Line Diagram:	Family default (No)
FLA / BCSC:	Family default (0)
MCA:	Family default (0)
MOCP:	Family default (0)
Breaker Size:	Family default (Size automatically (based upon load))
Wire Size:	Family default (Size automatically (based upon breaker, or loads if breaker based upon motor))
Motor Multiplier:	4
Motor X/R Ratio:	5

Device Type: The *Device Type* set for the family in the [Family Edit](#) command.

Family Name: The name of the Revit family for the selected instance.

Family Type: The type of the Revit family for the selected instance.

Circuit Description: The circuit description set for the family in the [Family Edit](#) command.

Override Circuit Description: Whether the circuit description set in the family should be overridden for this instance. If set to **Yes**, enter the circuit description to use for the instance in the field provided.

Load: The load of the selected instance as set in Revit.

Isolated Ground: Whether the equipment requires an isolated ground wire. If set to **Yes**, an isolated ground wire is included in the wire callout for the branch circuit connected to this device.

Show on One-Line Diagram: Whether to show the instance as an equipment connection on the one-line diagram.

- **Family default:** Whether to show the instance is based upon the value set in the [Family Edit](#) command.
- **Yes:** The instance will be shown on the one-line diagram.
- **No:** The instance will not be shown on the one-line diagram.

FLA / BCSC: The full load amps (FLA) or branch circuit selection current (BCSC). BCSC is used to size the breaker and wires for motor-compressors (see *NEC 440.22 (A) & (C)*, *NEC 440.32 & 33*). FLA is used to size breakers for motors (see *NEC 430.52*).

- **Family default:** The FLA or BCSC is based upon the value set in the [Family Edit](#) command.
- **N/A:** The default value. The device does not have an FLA or BCSC.
- **Custom:** Specify the value for the FLA or BCSC in the field below.

MCA: The minimum circuit amps (MCA). Used to size wires for multimotors (see *NEC 440.35*).

- **Family default:** The MCA is based upon the value set in the [Family Edit](#) command.
- **N/A:** The default value. The device does not have an MCA.
- **Custom:** Specify the value for the MCA in the field below.

MOCP: The maximum overcurrent protection (MOCP). Used to size the breaker for motor-compressors (see *NEC 440.22(A) & (C)*).

- **Family default:** The MOCP is based upon the value set in the [Family Edit](#) command.
- **N/A:** The default value. The device does not have an MOCP.
- **Custom:** Specify the value for the MOCP in the field below.

Breaker Size: How to size the breaker for the branch circuit to which the equipment is connected.

- **Family default:** The breaker is sized based upon the value set in the [Family Edit](#) command.
- **Size automatically (based upon load):** The breaker is sized based upon 125% of the connected load. FLA / BCSC, MCA, and MOCP are all ignored.
- **Motor-compressor, \leq MOCP:** The breaker is sized to be less than the MOCP (see *NEC 440.22(C)*).
- **Motor-compressor, \leq 175% of BCSC, \leq MOCP:** The breaker is sized to be less than 175% of the BCSC and less than the MOCP (see *NEC 440.22(A) & (C)*).
- **Motor-compressor, \leq 225% of BCSC, \leq MOCP:** The breaker is sized to be less than 225% of the BCSC and less than the MOCP (see *NEC 440.22(A) & (C)*).
- **Motor, dual element fuse, \leq 175% of FLA:** The breaker is sized to be less than 175 of the FLA (see *NEC 430.52*).
- **Motor, dual element fuse, \leq 225% of FLA:** The breaker is sized to be less than 225% of the FLA (see *NEC 430.52(C)(1) Exception No.2(2)*).
- **Motor, inverse time breaker, \leq 250% of FLA:** The breaker is sized to be less than 250% of the FLA (see *NEC 430.52*).
- **Specific ampacity:** The breaker size is set to the specific size chosen from the list.

Wire Size: How to size the conductors for the branch circuit to which the equipment is connected.

- **Family default:** The wire is sized based upon the value set in the [Family Edit](#) command.
- **Size automatically (based upon breaker, or loads if breaker based upon motor):** The conductors are sized automatically. The conductors are sized to match the breaker, or match the load if *Breaker Size* is set to one of the Motor choices.
- **Multimotor, \geq MCA:** The conductors are sized to be greater than the MCA (see *NEC 440.35*).
- **Motor-compressor, \geq 100% of BCSC + 25% of max BCSC:** The conductors are sized to be greater than 100% of the combined BCSC, plus 25% of the largest BCSC on the circuit (see *NEC 440.32 & 33*).
- **Size based upon loads:** The conductors are sized based upon 125% of the connected load.
- **Size based upon breaker:** The conductors are sized based upon the breaker size.
- **Specific ampacity:** The wire size is set to the specific size chosen from the list.

Motor Multiplier: The multiplier used in fault calculations set in the [Family Edit](#) command.

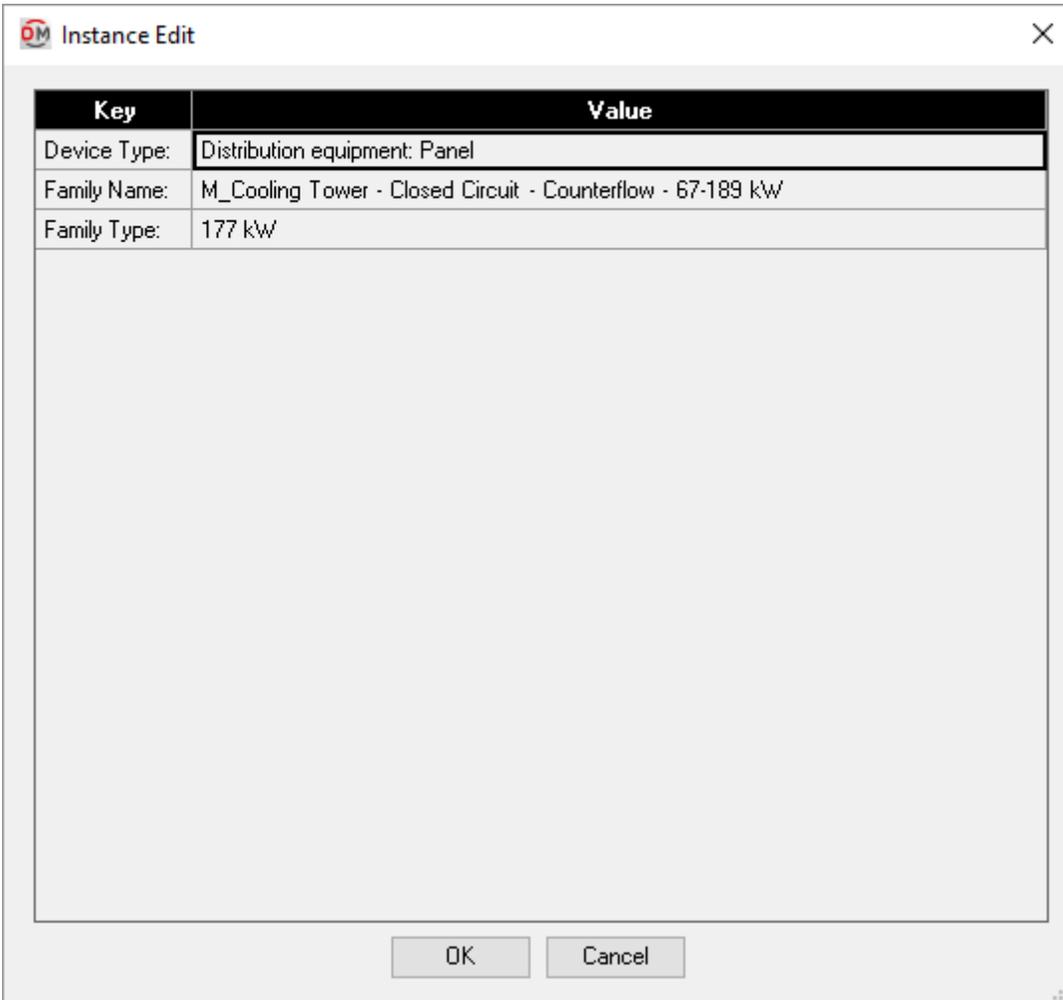
Motor X/R Ratio: The X/R ratio used in fault calculations set in the [Family Edit](#) command.

Distribution Equipment

When the selected family instance is not a piece of electrical equipment and has the type set to **Distribution equipment: Other**, **Distribution equipment: Panel**, or **Distribution equipment: Transformer**, the **Instance Edit** dialog box below appears.

If the family instance is a piece of electrical equipment, the [Panel Edit](#) command will open instead. In general, the **Distribution equipment** types should only be used with electrical equipment. The values displayed in this dialog box are for informational purposes only.

Instance Edit Dialog Box



Device Type: The *Device Type* set for the family in the [Family Edit](#) command.

Family Name: The name of the Revit family for the selected instance.

Family Type: The type of the Revit family for the selected instance.

Schedules

The **Schedules** panel appears on the **DM Electrical** tab when you have a project open in Revit. It includes commands for creating and viewing the schedules that display the calculated electrical values.

[Feeder:](#) Goes to a schedule that lists the feeders in the project. Creates the schedule if it does not already exist.

Fault: Goes to a schedule that displays the fault at each piece of distribution equipment. Creates the schedule if it does not already exist.

Voltage Drop: Goes to a schedule that displays the voltage drop on the feeder to each piece of distribution equipment. Creates the schedule if it does not already exist.

Arc-Flash: Goes to a schedule that displays the arc-flash values at each piece of distribution equipment. Creates the schedule if it does not already exist.

Arc-Flash Stickers: Prints the arc-flash values on a sticker that can be placed on the equipment in the field.

Training Videos

- [Fault, Voltage Drop, and Arc-Flash Schedules](#)

Feeder

Creates a schedule called **FEEDER SCHEDULE** and sets it to the active view. If a schedule of that name already exists, this command sets the schedule to the active view but does not otherwise modify it.

The default schedule layout is shown below. Each piece of distribution equipment in the project is listed with its corresponding feeder size. The distribution equipment is grouped by the ampacity of the upstream OCP.

Once the schedule is created, you can modify it using standard Revit tools.

<FEEDER SCHEDULE>	
A	B
DEVICE	CALLOUT
100	
AHP	1-1/2"C,3#1,#1
CTP	1-1/2"C,3#1,#1
EP-1A	1-1/2"C,3#1,#1
EP-1B	1-1/2"C,3#1,#1
EP-2	1-1/2"C,3#1,#1
EP-3	1-1/2"C,3#1,#1
LP-1	1-1/4"C,3#1,#8
LP-1B	1-1/2"C,3#1,#1
LP-2	1-1/2"C,3#1,#1
LP-2B	1-1/2"C,3#1,#1
LP-3	1-1/2"C,3#1,#1
LP-3B	1-1/2"C,3#1,#1
MDP-1	1-1/2"C,3#1,#1
MDP-2	1-1/2"C,3#1,#1
MDP-3	1-1/2"C,3#1,#1
MP-1B	1-1/2"C,3#1,#1
MP-2B	1-1/2"C,3#1,#1
MP-3B	1-1/2"C,3#1,#1
PP-1A	1-1/2"C,3#1,#1
PP-1B	1-1/2"C,3#1,#1
PP-2A	1-1/2"C,3#1,#1
PP-2B	1-1/2"C,3#1,#1
PP-3A	1-1/2"C,3#1,#1
PP-3B	1-1/2"C,3#1,#1
175	
T-SVC	2"C,3-2/0,2/0N,
TP-1A	2"C,3-2/0,2/0N,
TP-2A	2"C,3-2/0,2/0N,
TP-3A	2"C,3-2/0,2/0N,
300	
SWB	3"C,3-350kcmil,

Related Options

Output shared parameter values as uppercase: Sets whether shared parameter outputs are displayed only in uppercase letters.

Fault

Creates a schedule called **FAULT CURRENT SCHEDULE** and sets it to the active view. If a schedule of that name already exists, this command sets the schedule to the active view but does not otherwise modify it.

The default schedule layout is shown below. Information about the fault at each piece of distribution equipment in the project is listed. The devices are ordered based upon the connections between devices in the model.

The *FAULT AT DEVICE* column uses the **DMET_Fault_FaultAtDevice** shared parameter by default. This parameter displays a warning in the value for any fault values that exceed that **AIC Rating** of the distribution equipment. To display the fault without any warnings, replace the column with the **DMET_Fault_FaultAtDevice_NoWarnings** shared parameter.

Once the schedule is created, you can modify it using standard Revit tools.

<FAULT CURRENT SCHEDULE>								
A	B	C	D	E	F	G	H	I
DEVICE	FAULT AT DEVICE	AIC RATING	VOLTAGE	FEEDER		TRANSFORMER		FAULT AT PRIMARY
				SIZE	LENGTH	KVA	Z%	
T-SVC	65,000		480V	2/0		100	1.75	
...SWB	51,407		480V	350kcmil	23'-3"			
....CTP	6,982		480V	#1	231'-4"			
.....MDP-1	39,306		480V	#1	15'-2"			
.....LP-1B	35,305		480V	#1	6'-4"			
.....MP-1B	33,230		480V	#1	10'-0"			
.....TP-1A	13,228		480V	2/0	21'-10"	100	1.75	30,291
.....PP-1A	12,708		208V	#1	4'-1"			
.....MDP-2	34,568		480V	#1	22'-9"			
.....LP-2	7,456		480V	#1	192'-5"			
.....LP-2B	31,608		480V	#1	5'-8"			
.....MP-2B	29,628		480V	#1	9'-11"			
.....TP-2A	13,219		480V	2/0	12'-10"	100	1.75	29,855
.....PP-2A	12,587		208V	#1	4'-11"			
.....PP-1B	3,356		208V	#1	185'-4"			
.....EP-1	3,294		208V	#1	4'-4"			
.....EP-1	3,267		208V	#1	6'-4"			
.....PP-2B	3,503		208V	#1	175'-7"			
.....EP-2	3,434		208V	#1	4'-6"			
.....MDP-3	29,072		480V	#1	33'-11"			
.....LP-3	6,646		480V	#1	210'-3"			
.....LP-3B	26,923		480V	#1	5'-5"			
.....MP-3B	25,528		480V	#1	9'-4"			
.....TP-3A	12,953		480V	2/0	12'-7"	100	1.75	25,600
.....PP-3A	12,324		208V	#1	4'-11"			
.....AHP	3,079		208V	#1	204'-2"			
.....PP-3B	3,253		208V	#1	190'-8"			
.....EP-3	3,189		208V	#1	4'-9"			

Related Options

Output shared parameter values as uppercase: Sets whether shared parameter outputs are displayed only in uppercase letters.

Feeder make-up length: Sets additional length to be added to feeders for connections.

Voltage Drop

Creates a schedule called **VOLTAGE DROP SCHEDULE** and sets it to the active view. If a schedule of that name already exists, this command sets the schedule to the active view but does not otherwise modify it.

The default schedule layout is shown below. Information about the voltage drop at the upstream feeder for each piece of distribution equipment in the project is listed. The devices are ordered based upon the connections between devices in the model.

The *VOLTAGE DROP* column uses the **DMET_VoltageDrop_Feeder_IgnoreXFMR** shared parameter by default. This parameter displays a warning in the value for any voltage drop that exceeds 3%. To display the fault without any warnings, replace the column with the **DMET_VoltageDrop_Feeder_IgnoreXFMR_NoWarnings** shared parameter.

There are three ways to calculate the voltage drop through transformers. Each calculation method is available as a separate shared parameter. Use the shared parameter in your schedule that corresponds to your preferred calculation method. See the [Voltage Drop and Transformers Options](#) article in the knowledge base for more information.

- **Ignore Voltage Drop in Transformers:** The voltage drop through the transformers is ignored. Use the **DMET_VoltageDrop_Feeder_IgnoreXFMR** shared parameter. This is the default parameter used in the schedule.
- **Include Voltage Drop in Transformers:** The voltage drop through the transformers is included. Use the **DMET_VoltageDrop_Feeder_IncludeXFMR** shared parameter.
- **Reset Voltage Drop at Transformers:** The voltage drop is reset to 0% at transformers. Use the **DMET_VoltageDrop_Feeder_ResetAtXFMR** shared parameter.

Once the schedule is created, you can modify it using standard Revit tools.

<VOLTAGE DROP SCHEDULE>						
A	B	C	D	E	F	G
DEVICE	FEEDER		BRANCH CIRCUIT			TOTAL VOLTAGE DROP
	VOLTAGE DROP	WIRE SIZE	MAX VOLTAGE DROP	CIRCUIT NUMBER	WIRE SIZE	
T-SVC	0.00 %	2/0				0.00 %
. SWB	0.12 %	600kcmil				0.12 %
. CTP	0.78 %	#1	0.03 %	1,3,5	1/0	0.81 %
. MDP-1	0.15 %	#1	0.21 %	8,10,12	#12	0.36 %
. LP-1	0.15 %	#1				0.15 %
. LP-1B	0.15 %	#1				0.15 %
. MP-1B	0.15 %	#1				0.15 %
. TP-1A	0.17 %	2/0				0.45 %
. PP-1A	0.08 %	#1	!!! 6.97 % !!!	3	#12	!!! 7.49 % !!!
. MDP-2	0.35 %	#1				0.35 %
. LP-2	0.52 %	#1	0.72 %	12	#12	1.24 %
. LP-2B	0.35 %	#1				0.35 %
. MP-2B	0.35 %	#1				0.35 %
. TP-2A	0.45 %	2/0				2.03 %
. PP-2A	0.47 %	#1	0.24 %	7	#12	2.74 %
. PP-1B	0.70 %	#1	1.01 %	2	#12	3.75 %
. EP-1A	0.70 %	#1				2.73 %
. EP-1B	0.70 %	#1				2.73 %
. PP-2B	!!! 6.36 % !!!	#1	!!! 10.36 % !!!	2	#12	!!! 18.75 % !!!
. EP-2	!!! 6.66 % !!!	#1	2.34 %	31,33,35	#10	!!! 11.03 % !!!
. MDP-3	0.55 %	#1				0.55 %
. LP-3	0.70 %	#1	0.73 %	20	#12	1.44 %
. LP-3B	0.55 %	#1				0.55 %
. MP-3B	0.55 %	#1				0.55 %
. TP-3A	0.71 %	2/0				3.12 %
. PP-3A	0.71 %	#1				3.84 %
. AHP	!!! 4.11 % !!!	#1	!!! 7.27 % !!!	1,3,5	#12	!!! 14.51 % !!!
. PP-3B	!!! 7.27 % !!!	#1	!!! 9.89 % !!!	9	#12	!!! 20.28 % !!!
. EP-3	!!! 7.59 % !!!	#1	!!! 3.70 % !!!	37,39,41	#10	!!! 14.42 % !!!

Training Videos

- [Voltage Drop Calculations in Revit](#)

Related Options

[Transformer voltage drop calculation method](#): Sets how voltage drop is calculated through transformers.

[Feeder voltage drop percentage limit](#): Sets the maximum voltage drop percentage allowed on feeders.

[Output shared parameter values as uppercase](#): Sets whether shared parameter outputs are displayed only in uppercase letters.

[Feeder make-up length](#): Sets additional length to be added to feeders for connections.

[Calculate voltage drop based upon 80% of panel capacity](#): Sets whether voltage drop for each device is based upon its calculated load or 80% of total capacity.

[Voltage drop power factor](#): Sets whether the power factor is based upon the settings for the family or a fixed value.

Arc-Flash

Creates a schedule called **ARC-FLASH SCHEDULE** and sets it to the active view. If a schedule of that name already exists, this command sets the schedule to the active view but does not otherwise modify it.

The default schedule layout is shown below. Information about the arc-flash for each piece of distribution equipment in the project is listed. The devices are ordered based upon the connections between devices in the model.

Once the schedule is created, you can modify it using standard Revit tools.

<ARC-FLASH SCHEDULE>				
A	B	C	D	E
DEVICE	VOLTAGE	INCIDENT ENERGY	WORKING DISTANCE	ARC-FLASH BOUNDARY
T-SVC	480V	143.12 cal/cm ²	1'-0"	10'-7"
SWB	480V	79.86 cal/cm ²	1'-0"	7'-11"
CTP	480V	50.98 cal/cm ²	1'-0"	6'-4"
MDP-1	480V	75.50 cal/cm ²	1'-0"	7'-8"

Related Options

[Output shared parameter values as uppercase](#): Sets whether shared parameter outputs are displayed only in uppercase letters.

Arc-Flash Stickers

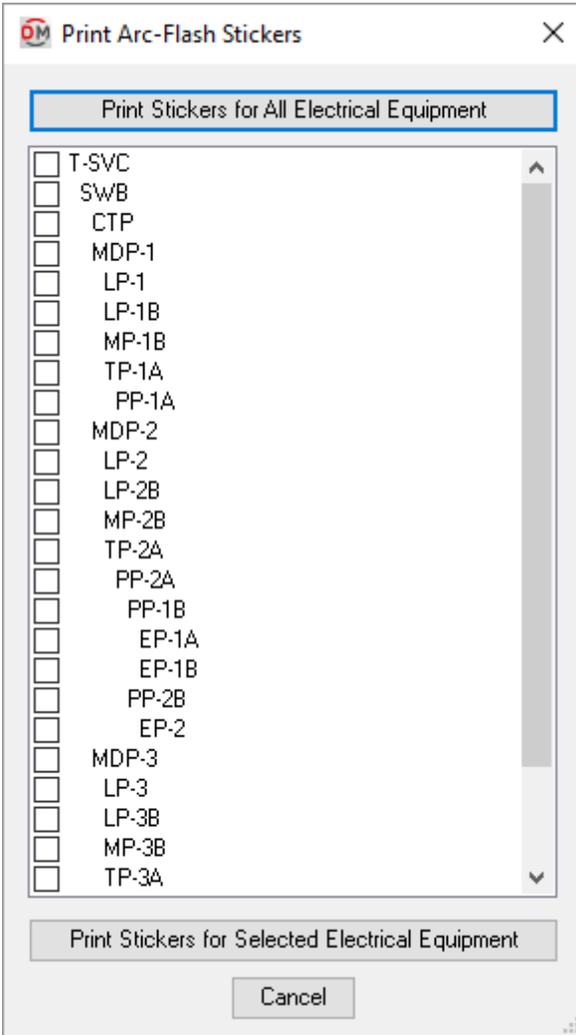
Allows you to create a sticker for each distribution equipment that has *Calculate Arc-Flash* set to **Yes** using the [Panel Edit](#) command.

The sticker will also display the shock protection information for the device. Shock protection is a function of the voltage of the distribution equipment. Shock protection values are based upon *NFPA 70E-2018, Table 130.4*

(D)(a).

Opens the **Print Arc-Flash Stickers** dialog box:

Print Arc-Flash Stickers Dialog Box



Distribution Equipment List: A list of all distribution equipment inserted on the drawing.

Print Stickers for All Electrical Equipment: Press this button to print stickers for all of the distribution equipment in the project.

Print Stickers for Selected Electrical Equipment: Press this button to print stickers for the selected distribution equipment.

Customization

The **Customization** panel appears on the **DM Electrical** tab when you have a project open in Revit. It includes commands for customizing the settings used by Design Master Electrical RT.

Options: Sets various options that control how Design Master Electrical RT works.

Wire Sizes: Sets the wire materials and sizes available for sizing feeders.

Conduit Sizes: Sets the conduit materials and sizes available for sizing feeders.

Wire Ampacities: Sets the wire configuration options available for each wire ampacity.

Export: Exports customization settings to an external file.

Import: Imports customization settings from an external file.

Training Videos

- [Wire Sizing Customization in Revit](#)
- [Options in Revit](#)

Options

Allows you to control the output of Design Master Electrical RT to match your preferred standards. Opens the **Options** dialog box:

Options Dialog Box

Key	Value
Display neutral wire count separately from phase wire count:	No
Conduit location:	Start of wire callout
Transformer voltage drop calculation method:	Include transformers in voltage drop
Feeder voltage drop percentage limit:	3%
Include room names in circuit descriptions:	Yes
Feeder length calculation method:	Right angles
Branch circuit length calculation method:	Right angles
Building angle:	0
Output shared parameter values as uppercase:	No
Feeder make-up length:	10
Branch circuit make-up length:	0
Add branch circuit make-up for each device	No
Calculate voltage drop based upon 80% of panel capacity:	No
Voltage drop power factor:	Based upon Revit settings

Display neutral wire count separately from phase wire count: Whether neutral and hot wires are listed together or separately when they are the same size.

- **Yes:** The neutral wire count is listed separately from the phase wire count. Example: 1/2" C,3#12,#12N,#12G
- **No:** The neutral wire count and the phase wire count are added together. Example: 1/2" C,4#12,#12G

Conduit location: Where the conduit size is displayed in the wire callout.

- **Start of wire callout:** The conduit size is located at the start of the wire callout. Example: 1/2" C,3#12,#12N,#12G
- **End of wire callout:** The conduit size is located at the end of the wire callout. Example: 3#12,#12N,#12G,1/2" C.

Transformer voltage drop calculation method: There are three options for addressing transformers when calculating voltage drop. See the [Voltage Drop and Transformers Options](#) article in the knowledge base for more information.

- **Include transformers in voltage drop:** The voltage drop through the transformer is calculated and added to the voltage drop on the feeder. The voltage drop through the upstream feeders is carried through the transformer.
- **Ignore transformers:** The voltage drop through the transformer is ignored when the voltage drop for the system is calculated. The voltage drop through the upstream feeders is carried through the transformer.
- **Reset voltage drop at transformers:** The voltage drop is reset to 0% at each transformer. The voltage drop through the transformer is ignored. The voltage drop through the upstream feeders is ignored.

Feeder voltage drop percentage limit: The maximum voltage drop percentage allowed on feeders. Voltage drop percentages above this value will be highlighted in the parameter output.

- **3% :** Feeders are allowed to have a 3% voltage drop as described in *2020 NEC 215.2(A)(1) Informational Note No. 2*.
- **2% :** Feeders are limited to a 2% voltage drop. Some state energy codes impose this requirement.

Include room names in circuit descriptions: Whether circuit descriptions include room names.

- **Yes:** Circuit descriptions include a list of all of the rooms served by the circuits. The names of each area containing devices on the circuit will be listed. Each area is listed once in the circuit description.
- **No:** Circuit descriptions do not include room names.

Feeder length calculation method: How the feeder lengths are calculated between distribution equipment.

- **Straight line:** The lengths are calculated based upon the straight line distance between the distribution equipment and item connected to it. This calculation approximates lengths for wires running directly between devices, typically underground.
- **Right angles:** The lengths are calculated based upon the distance along the axes of the building between the distribution equipment and item connected to it. This calculation approximates lengths for wires running along the walls of the building.

Branch circuit length calculation method: How the branch circuit lengths are calculated between distribution equipment and connected devices.

- **Straight line:** The lengths are calculated based upon the straight line distance between the distribution equipment and item connected to it. This calculation approximates lengths for wires running directly between devices, typically underground.
- **Right angles:** The lengths are calculated based upon the distance along the axes of the building between the distribution equipment and item connected to it. This calculation approximates lengths for wires running along the walls of the building.

Building angle: The orientation of the building used when the *Feeder length calculation method* or *Branch circuit length calculation method* is set to **Right angles**.

Output shared parameter values as uppercase: The format used for the case of default shared parameter values. User-specified values always use the text exactly as input by the user.

- **Yes:** Shared parameters use all uppercase letters for fixed values.
- **No:** Shared parameters use a mix of uppercase and lowercase letters for fixed values.

Feeder make-up length: Additional length of wire added to automatically calculated feeder lengths to represent make-up in the field.

Branch circuit make-up length: Additional length of wire added to automatically calculated branch circuit lengths to represent make-up in the field.

Add branch circuit make-up for each device: Whether the length specified in *Branch circuit make-up length* is added for each device on the circuit.

- **Yes:** The length is added for each device on the circuit.
- **No:** The length is added once, regardless of the number of devices on the circuit.

Calculate voltage drop based upon 80% of panel capacity: The load used when calculating voltage drop on distribution equipment.

- **Yes:** The calculation is made based upon 80% of panel capacity.
- **No:** The calculation is made based upon the calculated load on the distribution equipment.

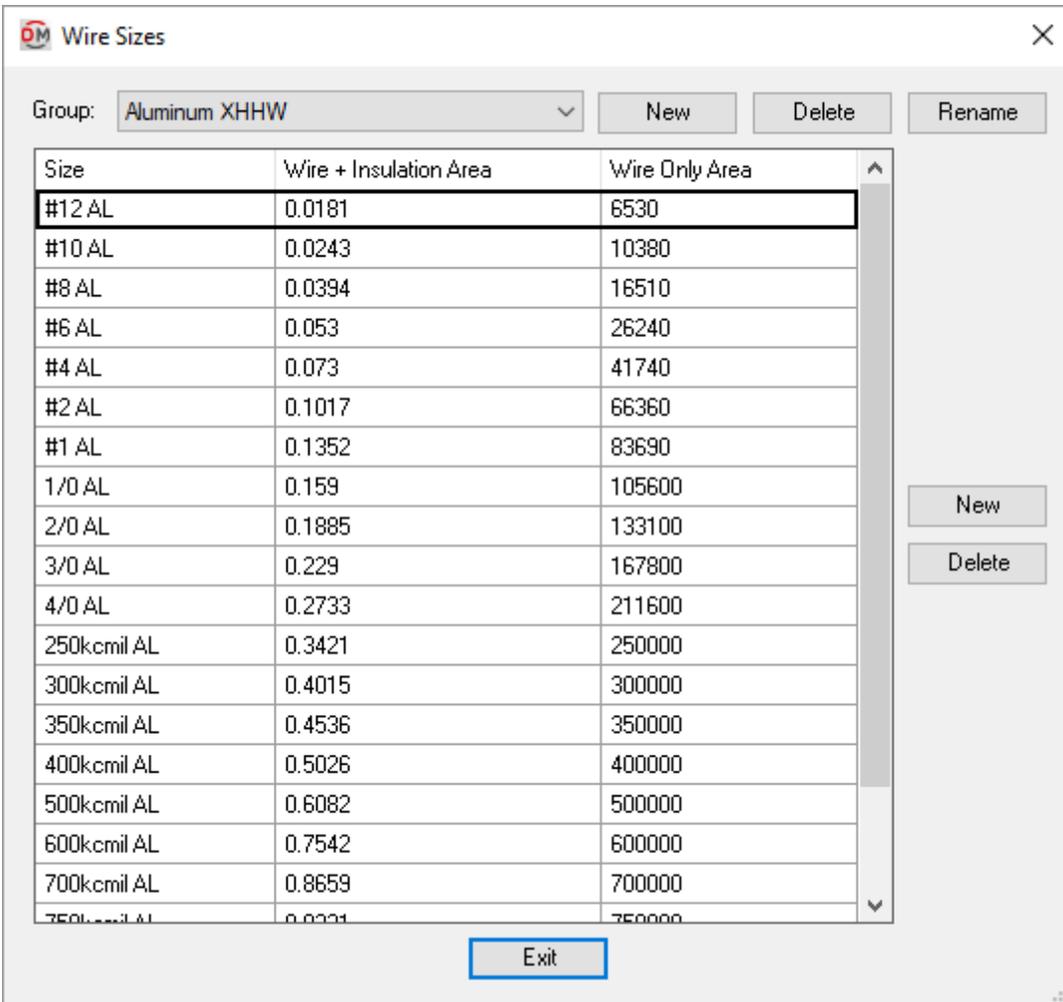
Voltage drop power factor: The power factor used when calculating voltage drop.

- **Based upon Revit settings:** The power factor is based upon the connector settings for the family.
- **Fixed at 0.85:** The power factor is set to 0.85.

Wire Sizes

Allows you to create wire sizes and wire size groups. Opens the **Wire Sizes** dialog box:

Wire Sizes Dialog Box



Group Section

Wire size groups are used to organize wire sizes. In general, each group corresponds to a different wire material type. All of the wires in a specific ampacity configuration must come from the same group.

Group: Sets the current group. The wire sizes listed all belong to the current group.

New: Creates a new group.

Delete: Deletes the current group.

Rename: Renames the current group.

Wire Size Section

Each row in the grid lists a wire size in the current group.

Size: A description of the size of the wire. This value is for informational purposes and is used when selecting the wire in other dialog boxes. It is also used in the feeder callout.

Area: The area of the wire. The wires are sorted based upon the area. The conduit fill is calculated using the area.

The units for this value are left undefined intentionally. The default values are square inches. You can use any units you want as long as they match the units used for conduit area.

New: Creates a new wire size. The new wire size will be added to the bottom of the list when it is created. When you close and reopen the dialog box, the size will be sorted to the correct location in the list based upon the area.

Delete: Deletes the current wire size.

Conduit Sizes

Allows you to create conduit sizes and conduit size groups. Opens the **Conduit Sizes** dialog box:

Conduit Sizes Dialog Box

Size	Area	Standard
1/2"EMT	0.304	<input checked="" type="checkbox"/>
3/4"EMT	0.533	<input checked="" type="checkbox"/>
1"EMT	0.864	<input checked="" type="checkbox"/>
1-1/4"EMT	1.496	<input checked="" type="checkbox"/>
1-1/2"EMT	2.036	<input checked="" type="checkbox"/>
2"EMT	3.356	<input checked="" type="checkbox"/>
2-1/2"EMT	5.858	<input checked="" type="checkbox"/>
3"EMT	8.846	<input checked="" type="checkbox"/>
3-1/2"EMT	11.545	<input checked="" type="checkbox"/>
4"EMT	14.753	<input checked="" type="checkbox"/>

Below the table are 'New' and 'Delete' buttons. At the bottom center is an 'Exit' button.

Group Section

Conduit size groups are used to organize conduit sizes. In general, each group corresponds to a different conduit

material type. All of the conduits in a specific ampacity configuration must come from the same group.

Group: Sets the current group. The conduit sizes listed all belong to the current group.

New: Creates a new group.

Delete: Deletes the current group.

Rename: Renames the current group.

Conduit Size Section

Each row in the grid lists a conduit size in the current group.

Size: A description of the size of the conduit. This value is for informational purposes and is used when selecting the conduit in other dialog boxes. It is also used in the feeder callout.

Area: The area of the conduit. The conduits are sorted based upon the area. The conduit fill is calculated using the area.

The units for this value are left undefined intentionally. The default values are square inches. You can use any units you want as long as they match the units used for wire size area.

Standard: Whether the conduit size is used when automatically sizing. Conduit sizes that do not have this value checked can be chosen manually, but they will not be used automatically.

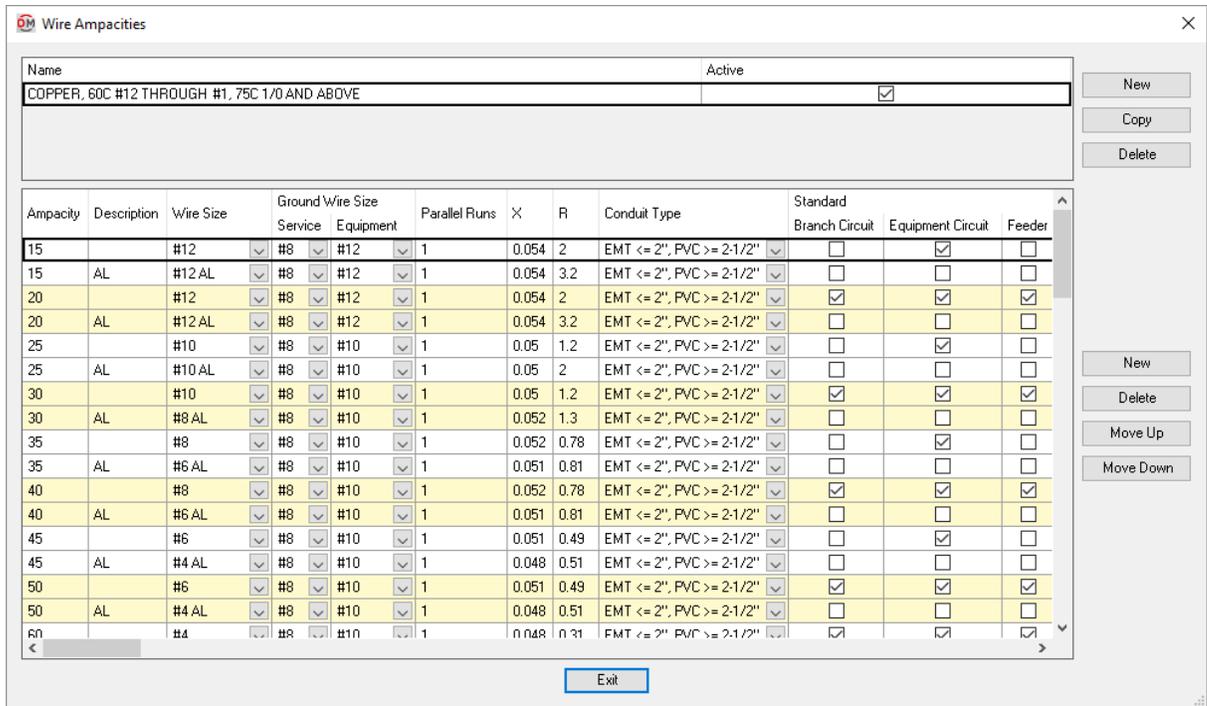
New: Creates a new conduit size. The new conduit size will be added to the bottom of the list when it is created. When you close and reopen the dialog box, the size will be sorted to the correct location in the list based upon the area.

Delete: Deletes the current conduit size.

Wire Ampacities

Allows you to create wire ampacity configurations and wire sizing options. Opens the **Wire Ampacities** dialog box:

Wire Ampacities Dialog Box



Sizing Option Section

Each row in the grid lists a sizing option. Each sizing option controls which wire ampacity configurations are used when sizing wires automatically. The selected sizing option controls the values displayed in the *Standard* column in the wire ampacity section.

Name: The name of the sizing option.

Active: The sizing option that is currently being used to size feeders.

New: Creates a new sizing option.

Delete: Deletes the current sizing option.

Wire Ampacity Section

Each row in the grid lists a wire ampacity configuration. Each ampacity can have multiple configurations. One configuration will be selected as the default and used when sizing feeders automatically. The other configurations can be chosen when sizing feeders manually.

Ampacity: The ampacity of the wire.

Description: A label used to differentiate wire ampacities of the same size. The combination of the *Ampacity* and *Description* fields must be unique for each row. The label will be displayed in other dialog boxes. It is not displayed in the schedules or on the plan.

Wire Size: The size of the phase wires.

Ground Wire Size, Service: The size of the service ground. This sizing should be selected based on the NEC for service ground sizing.

Ground Wire Size, Equipment: The size of the equipment ground. This sizing should be selected based on the NEC for equipment ground sizing.

Parallel Runs: The number of parallel runs of conduits. Each run contains the same size wires

X: The reactance for a single run of this size wire. See *NEC Table 9* for values. This value is divided by the number of parallel runs to determine the final reactance for the wire ampacity.

R: The resistance for a single run of this size wire. See *NEC Table 9* for values. This value is divided by the number of parallel runs to determine the final reactance for the wire ampacity.

Conduit Type: The conduit group that will be used when sizing the conduit.

Standard, Branch Circuit: Whether the breaker size is used when sizing standard branch circuits. Only one breaker of each size can have this box checked. You do not need to have this box checked for each size breaker.

Standard, Equipment Circuit: Whether the breaker size is used when sizing branch circuits based upon the MCA and MOCP of equipment connected to them. Only one breaker of each size can have this box checked. You do not need to have this box checked for each size breaker.

Standard, Feeder: Whether the wire ampacity is used when sizing feeders. Only one wire ampacity of each size can have this box checked. You do not need to have this box checked for each wire ampacity.

New: Creates a new wire ampacity. The new wire ampacity will be added to the bottom of the list when it is created. When you close and reopen the dialog box, the size will be sorted to the correct location in the list based upon the ampacity.

Delete: Deletes the current wire ampacity.

Move Up: Moves the current wire ampacity up in the list. Use this button to sort wire ampacities of the same size in the list. It cannot be used to move wire ampacities so they are no longer in numerical order.

Move Down: Moves the current wire ampacity down in the list. Use this button to sort wire ampacities of the same size in the list. It cannot be used to move wire ampacities so they are no longer in numerical order.

Export

Exports customization settings to an external ".dmc" file. This file can be imported into other projects. You will be prompted for a file location and name.

The command exports all of the values set in the

- [Options](#) command
- [Wire Sizes](#) command
- [Conduit Sizes](#) command
- [Wire Ampacities](#) command

Import

Imports customization settings previously exported using the [Export Customization](#) command.

You will be prompted to select a ".dmc" file from which to import.

All of your customization settings will be overwritten. These settings include all of the values set in the

- [Options](#) command
- [Wire Sizes](#) command
- [Conduit Sizes](#) command
- [Wire Ampacities](#) command

Family

The **Family** panel appears on the **DM Electrical** tab when you have a family open in Revit. It includes a single command for adding information specific to Design Master Electrical RT to a family.

[Family Edit](#): Allows you to add additional electrical information to your families.

Family Edit

Allows you to view and edit additional electrical information added to a family.

Training Videos

- [Creating Custom Families](#)

Opens the **Family Edit** dialog box:

Family Edit Dialog Box

Family Edit

Family Settings	
Device Type:	Branch circuit device: Other
Circuit Description:	M_Cooling Tower - Closed Circuit - Counterflow - 67-189 kW
Load:	42.3 kVA
Isolated Ground:	No

Type Settings	
	177 kW
Override Circuit Description:	No
Circuit Description:	M_Cooling Tower - Closed Circuit - Counterflow - 67-189 kW
Load:	42.3 kVA
Isolated Ground:	Same as Family Settings (No)

OK Cancel

Device Type: Controls how the family is handled by Design Master Electrical RT. Each selection provides a different set of values that can be specified.

- **Branch circuit device: Other:** A generic branch circuit device. Includes the option to set the circuit description, whether the device needs an isolated ground, and nothing else.
- **Branch circuit device: Equipment connection:** An equipment connection. Includes options for setting breaker and wire sizing as well as some motor-specific values for fault calculations.
- **Distribution equipment: Other:** A generic distribution equipment. Includes options for ground and neutral wire sizing, setting descriptions in the upstream distribution equipment, and nothing else.
- **Distribution equipment: Panel:** A panel. Includes options for setting main disconnect information.
- **Distribution equipment: Transformer:** A transformer. Includes options for setting transformer-specific information.

Branch circuit device: Other

These values are displayed when the *Device Type* is set to **Branch circuit device: Other**.

Family Edit Dialog Box

The screenshot shows a dialog box titled "Family Edit" with a close button (X) in the top right corner. The dialog is divided into two main sections: "Family Settings" and "Type Settings".

Family Settings

Device Type:	Branch circuit device: Other
Circuit Description:	M_Cooling Tower - Closed Circuit - Counterflow - 67-189 kW
Load:	42.3 kVA
Isolated Ground:	No

Type Settings

	177 kW
Override Circuit Description:	No
Circuit Description:	M_Cooling Tower - Closed Circuit - Counterflow - 67-189 kW
Load:	42.3 kVA
Isolated Ground:	Same as Family Settings (No)

At the bottom of the dialog, there are two buttons: "OK" and "Cancel".

Family Settings

The settings for the family. The values set in this section are used unless they are overridden by settings in the bottom *Type Settings* section.

Device Type: The type of electrical device. Each type has different values that can be set. Displayed here are the settings for **Branch circuit device: Other**.

Circuit Description: The description that will be displayed on circuits to which this device is connected.

Load: The load defined on the connectors in the family. This value is read-only and cannot be changed in this dialog box. Modify the values in the connectors to change this value.

Isolated Ground: Whether the branch circuit needs an isolated ground wire. If set to **Yes**, an isolated ground wire is included in the wire callout for the branch circuit connected to this device.

Type Settings

The settings for specific types in the family. Values set here override the values set in the *Family Settings* section.

Override Circuit Description: Whether to override the circuit description set in the *Family Settings* section for this family type.

Branch circuit device: Equipment connection

These values are displayed when the *Device Type* is set to **Branch circuit device: Equipment connection**.

Family Edit Dialog Box

Family Edit X

Family Settings	
Device Type:	Branch circuit device: Equipment connection <input type="button" value="v"/>
Circuit Description:	M_Cooling Tower - Closed Circuit - Counterflow - 67-189 kW
Load:	42.3 kVA
Isolated Ground:	No <input type="button" value="v"/>
Show on One-Line Diagram:	No <input type="button" value="v"/>
FLA / BCSC:	0
MCA:	0
MOCP:	0
Breaker Size:	Size automatically (based upon load) <input type="button" value="v"/>
Wire Size:	Size automatically (based upon breaker, or loads if breaker based upon motor) <input type="button" value="v"/>
Motor Multiplier:	Default <input type="button" value="v"/> 4
Motor X/R Ratio:	Default <input type="button" value="v"/> 5

Type Settings	
	177 kW
Override Circuit Description:	No <input type="button" value="v"/>
Circuit Description:	M_Cooling Tower - Closed Circuit - Counterflow - 67-189 kW
Load:	42.3 kVA
Isolated Ground:	Same as Family Settings (No) <input type="button" value="v"/>
Override Equipment Values:	No <input type="button" value="v"/>
FLA / BCSC:	0
MCA:	0
MOCP:	0
Breaker Size:	Size automatically (based upon load)
Wire Size:	Size automatically (based upon breaker, or loads if breaker based upon motor)
Motor Multiplier:	Default 4
Motor X/R Ratio:	Default 5

Family Settings

The settings for the family. The values set in this section are used unless they are overridden by settings in the bottom *Type Settings* section.

Device Type: The type of electrical device. Each type has different values that can be set. Displayed here are the settings for **Branch circuit device: Equipment connection**.

Circuit Description: The description that will be displayed on circuits to which this device is connected.

Load: The load defined on the connectors in the family. This value is read-only and cannot be changed in this dialog box. Modify the values in the connectors to change this value.

Isolated Ground: Whether the equipment needs an isolated ground wire. If set to **Yes**, an isolated ground wire is included in the wire callout for the branch circuit connected to this device.

Show on One-Line Diagram: Whether the equipment should be shown on the one-line diagram. This setting can be overridden for each instance using the [Edit Instance](#) command.

FLA / BCSC: The full load amps (FLA) or branch circuit selection current (BCSC). BCSC is used to size the breaker and wires for motor-compressors (see *NEC 440.22 (A) & (C), NEC 440.32 & 33*). FLA is used to size breakers for motors (see *NEC 430.52*).

MCA: The minimum circuit amps (MCA). Used to size wires for multimotors (see *NEC 440.35*).

MOCP: The maximum overcurrent protection (MOCP). Used to size the breaker for motor-compressors (see *NEC 440.22(A) & (C)*).

Breaker Size: How to size the breaker for the branch circuit to which the equipment is connected.

- **Size automatically (based upon load):** The breaker is sized based upon 125% of the connected load. FLA / BCSC, MCA, and MOCP are all ignored.
- **Motor-Compressor, \leq MOCP:** The breaker is sized to be less than the MOCP (see *NEC 440.22(C)*).
- **Motor-Compressor, \leq 175% of BCSC, \leq MOCP:** The breaker is sized to be less than 175% of the BCSC and less than the MOCP (see *NEC 440.22(A) & (C)*).
- **Motor-Compressor, \leq 225% of BCSC, \leq MOCP:** The breaker is sized to be less than 225% of the BCSC and less than the MOCP (see *NEC 440.22(A) & (C)*).
- **Motor, Dual Element Fuse, \leq 175% of FLA:** The breaker is sized to be less than 175% of the FLA (see *NEC 430.52*).
- **Motor, Dual Element Fuse, \leq 225% of FLA:** The breaker is sized to be less than 225% of the FLA (see *NEC 430.52(C)(1) Exception No.2(2)*).
- **Motor, Inverse Time Breaker, \leq 250% of FLA:** The breaker is sized to be less than 250% of the FLA (see *NEC 430.52*).
- **Custom:** The breaker size is set to the value you specify. Enter a value that corresponds to an ampacity in the [Wire Ampacities](#) command in your project.

Wire Size: How to size the conductors for the branch circuit to which the equipment is connected.

- **Size automatically (based upon breaker, or loads if breaker based upon motor):** The conductors are sized automatically. The conductors are sized to match the breaker, unless the Breaker Size is set to one of the Motor choices. Then the conductors are sized to match the load.
- **Multimotor, \geq MCA:** The conductors are sized to be greater than the MCA (see *NEC 440.35*).
- **Motor-Compressor, \geq 100% of BCSC + 25% of max BCSC:** The conductors are sized to be greater than 100% of the combined BCSC, plus 25% of the largest BCSC on the circuit (see *NEC 440.32 & 33*).
- **Size based upon loads:** The conductors are sized based upon 125% of the connected load.
- **Size based upon breaker:** The conductors are sized based upon the breaker size.
- **Custom:** The wire size is set to the value you specify. Enter a value that corresponds to a *Wire Size* value

set in the [Wire Sizes](#) command in your project.

Motor Multiplier: The multiplier applied to the motor load when it is used during fault calculations.

Motor X/R Ratio: The X/R ratio of the motor load when it is used during fault calculations.

Type Settings

The settings for specific types in the family. Values set here override the values set in the *Family Settings* section.

Override Circuit Description: Whether to override the circuit description set in the *Family Settings* section for this family type.

Override Equipment Values: Whether to override the equipment connection values set in the *Family Settings* section for this family type.

Distribution equipment: Other

These values are displayed when the *Device Type* is set to **Distribution equipment: Other**.

Family Edit Dialog Box

The screenshot shows a dialog box titled "Family Edit" with a close button (X) in the top right corner. It is divided into two main sections: "Family Settings" and "Type Settings".

Family Settings

Device Type:	Distribution equipment: Other	▼
Upstream Description Prefix:		
Upstream Description Suffix:		
Neutral:	Same as phase	▼
Ground:	Size automatically	▼
IG Conductor:	No	▼

Type Settings

	177 kW	
Override Family Values:	No	▼
Upstream Description Prefix:		
Upstream Description Suffix:		
Neutral:	Same as phase	
Ground:	Size automatically	
IG Conductor:	No	

At the bottom of the dialog box are two buttons: "OK" and "Cancel".

Family Settings

The settings for the family. The values set in this section are used unless they are overridden by settings in the bottom *Type Settings* section.

Device Type: The type of electrical device. Each type has different values that can be set. Displayed here are the settings for **Distribution equipment: Other**.

Upstream Description Prefix: A prefix added to the start of the circuit description in the upstream equipment. The default description is the name of the family instance.

Upstream Description Suffix: A suffix added to the end of the circuit description in the upstream equipment. The default description is the name of the family instance.

Neutral: Sets the size of the neutral wire in the feeder.

- **Same as phase:** The neutral wire will be the same size as the phase wires.
- **Double phase:** The neutral wire will be twice the size of the phase wires. This is accomplished by using two neutral wires.
- **None:** No neutral wire will be included in the feeder.
- **Custom:** The neutral wire is set to the value you specify. Enter a value that corresponds to a *Wire Size* value set in the [Wire Sizes](#) command in your project.

Ground: Sets the size of the ground wire in the feeder.

- **Size automatically:** The ground wire is sized based upon the *Upstream OCP* setting. If the distribution equipment is fed from a transformer, the *Service Ground* setting for the conductor ampacity is used. Otherwise, the *Equipment Ground* setting for the conductor ampacity is used.
- **NEC 250.122 Equipment:** The ground wire is sized based upon the *Equipment Ground* setting for the conductor ampacity.
- **NEC 250.102 Service:** The ground wire is sized based upon the *Service Ground* setting for the conductor ampacity.
- **None:** No ground wire is included in the feeder.
- **Custom:** The ground wire is set to the value you specify. Enter a value that corresponds to a *Wire Size* value set in the [Wire Sizes](#) command in your project.

IG Conductor: Whether the feeder includes an isolated ground.

- **Yes:** An isolated ground will be included in the feeder.
- **No:** An isolated ground will not be included in the feeder.

Type Settings

The settings for specific types in the family. Values set here override the values set in the *Family Settings* section.

Override Family Values: Whether to override the settings in the *Family Settings* section for this family type.

Distribution equipment: Panel

These values are displayed when the *Device Type* is set to **Distribution equipment: Panel**.

Family Edit Dialog Box

The screenshot shows a dialog box titled "Family Edit" with a close button (X) in the top right corner. It contains two main sections: "Family Settings" and "Type Settings".

Family Settings

Device Type:	Distribution equipment: Panel
Upstream Description Prefix:	
Upstream Description Suffix:	
Neutral:	Same as phase
Ground:	Size automatically
IG Conductor:	No
Bus Amps:	100

Type Settings

	177 kW
Override Family Bus Amps:	No
Bus Amps:	100
Override Family Values:	No
Upstream Description Prefix:	
Upstream Description Suffix:	
Neutral:	Same as phase
Ground:	Size automatically
IG Conductor:	No

At the bottom of the dialog box are "OK" and "Cancel" buttons.

Family Settings

The settings for the family. The values set in this section are used unless they are overridden by settings in the bottom *Type Settings* section.

Device Type: The type of electrical device. Each type has different values that can be set. Displayed here are the settings for **Distribution equipment: Panel**.

Upstream Description Prefix: A prefix added to the start of the circuit description in the upstream equipment. The default description is the name of the family instance.

Upstream Description Suffix: A suffix added to the end of the circuit description in the upstream equipment. The default description is the name of the family instance.

Neutral: Sets the size of the neutral wire in the feeder.

- **Same as phase:** The neutral wire will be the same size as the phase wires.
- **Double phase:** The neutral wire will be twice the size of the phase wires. This is accomplished by using two neutral wires.
- **None:** No neutral wire will be included in the feeder.
- **Custom:** The neutral wire is set to the value you specify. Enter a value that corresponds to a *Wire Size* value set in the [Wire Sizes](#) command in your project.

Ground: Sets the size of the ground wire in the feeder.

- **Size automatically:** The ground wire is sized based upon the *Upstream OCP* setting. If the distribution equipment is fed from a transformer, the *Service Ground* setting for the conductor ampacity is used. Otherwise, the *Equipment Ground* setting for the conductor ampacity is used.
- **NEC 250.122 Equipment:** The ground wire is sized based upon the *Equipment Ground* setting for the conductor ampacity.
- **NEC 250.102 Service:** The ground wire is sized based upon the *Service Ground* setting for the conductor ampacity.
- **None:** No ground wire is included in the feeder.
- **Custom:** The ground wire is set to the value you specify. Enter a value that corresponds to a *Wire Size* value set in the [Wire Sizes](#) command in your project.

IG Conductor: Whether the feeder includes an isolated ground.

- **Yes:** An isolated ground will be included in the feeder.
- **No:** An isolated ground will not be included in the feeder.

Mains / Bus Amps: The size of the bus.

- **Specific ampacity:** The value is set to the specific size chosen from the list.
- **Custom:** Enter a custom value in the field provided.

Main Disconnect Type: The type of disconnect for the device. The graphics on the panel bus on the one-line diagram are controlled by this field.

- **Main Lugs Only:** The bus bar on the one-line diagram does not have a disconnect in it.
- **Breaker:** The bus bar on the one-line diagram includes a breaker graphic.
- **Fused Switch:** The bus bar on the one-line diagram includes a fused switch graphic.

Main Disconnect Trip: The trip rating of the main disconnect breaker or fused switch.

- **Same as bus amps:** The trip rating is the same as the *Bus Amps* value.
- **Custom:** The trip rating is set to the specific size chosen from the list.

Main Disconnect Frame: The frame size of the main disconnect breaker or fused switch.

- **Same as bus amps:** The frame size is the same as the *Bus Amps* value.
- **Custom:** The frame size is set to the specific size chosen from the list.

Type Settings

The settings for specific types in the family. Values set here override the values set in the *Family Settings* section.

Override Family Bus Amps: Whether to override the *Bus Amps* value in the *Family Settings* section for this family type.

Override Family Values: Whether to override the settings in the *Family Settings* section for this family type.

Distribution equipment: Transformer

These values are displayed when the *Device Type* is set to **Distribution equipment: Transformer**.

Family Edit Dialog Box

The screenshot shows a dialog box titled "Family Edit" with a close button (X) in the top right corner. It is divided into two main sections: "Family Settings" and "Type Settings".

Family Settings

Device Type:	Distribution equipment: Transformer
Upstream Description Prefix:	
Upstream Description Suffix:	
Neutral:	Same as phase
Ground:	Size automatically
IG Conductor:	No
Transformer kVA:	100
	100

Type Settings

	177 kW
Override Family Values:	No
Upstream Description Prefix:	
Upstream Description Suffix:	
Neutral:	Same as phase
Ground:	Size automatically
IG Conductor:	No
Transformer kVA:	100
	100
Transformer K-Factor Rating:	None

At the bottom of the dialog box, there are two buttons: "OK" and "Cancel".

Family Settings

The settings for the family. The values set in this section are used unless they are overridden by settings in the bottom *Type Settings* section.

Device Type: The type of electrical device. Each type has different values that can be set. Displayed here are the settings for **Distribution equipment: Transformer**.

Upstream Description Prefix: A prefix added to the start of the circuit description in the upstream equipment.

The default description is the name of the family instance.

Upstream Description Suffix: A suffix added to the end of the circuit description in the upstream equipment. The default description is the name of the family instance.

Neutral: Sets the size of the neutral wire in the feeder.

- **Same as phase:** The neutral wire will be the same size as the phase wires.
- **Double phase:** The neutral wire will be twice the size of the phase wires. This is accomplished by using two neutral wires.
- **None:** No neutral wire will be included in the feeder.
- **Custom:** The neutral wire is set to the value you specify. Enter a value that corresponds to a *Wire Size* value set in the [Wire Sizes](#) command in your project.

Ground: Sets the size of the ground wire in the feeder.

- **Size automatically:** The ground wire is sized based upon the *Upstream OCP* setting. If the distribution equipment is fed from a transformer, the *Service Ground* setting for the conductor ampacity is used. Otherwise, the *Equipment Ground* setting for the conductor ampacity is used.
- **NEC 250.122 Equipment:** The ground wire is sized based upon the *Equipment Ground* setting for the conductor ampacity.
- **NEC 250.102 Service:** The ground wire is sized based upon the *Service Ground* setting for the conductor ampacity.
- **None:** No ground wire is included in the feeder.
- **Custom:** The ground wire is set to the value you specify. Enter a value that corresponds to a *Wire Size* value set in the [Wire Sizes](#) command in your project.

IG Conductor: Whether the feeder includes an isolated ground.

- **Yes:** An isolated ground will be included in the feeder.
- **No:** An isolated ground will not be included in the feeder.

Transformer kVA: The size of the transformer in kVA.

Transformer K-Factor Rating: The specific K-factor rating of the transformer for handling the harmonic content of the load.

Transformer Impedance % : The impedance of the transformer for fault calculations and voltage drop calculations.

Transformer X/R Ratio: The X/R ratio of the transformer for fault calculations.

Type Settings

The settings for specific types in the family. Values set here override the values set in the *Family Settings* section.

Override Family Values: Whether to override the settings in the *Family Settings* section for this family type.

Help

The **Help** panel includes commands for obtaining help and managing the installation of Design Master Electrical RT.

[Help](#): Displays this Help file.

Remote Support: Allows you to connect your computer to the support team at Design Master Software so we can assist you with a problem you are having.

Send Email: Creates an email addressed to us.

Send Project: Takes you to a website where you can upload a project for us to review.

Update License: Allows you to enter new license information after you have purchased Design Master Electrical RT.

Check In Floating License: Allows you to check in a floating license so another user can start using the add-in immediately.

Check for Updates: Checks if there is an update to the add-in available.

Remove Parameters: Removes all of the shared parameters added to the current project by Design Master Electrical RT.

About: Displays information about your current version of Design Master Electrical RT.

Help

Opens up this user manual on our website.

Remote Support

Allows Design Master support staff to connect to your computer over the internet. We will be able to see your screen and perform actions on your computer.

The remote support program will run and allow us to connect to your computer. An ID number will be displayed, which you will need to read aloud to us.

We use TeamViewer for our remote support. You can visit their website at <http://www.teamviewer.com>. Information about security is available at <http://www.teamviewer.com/en/products/security.aspx>.

Send Email

Opens a draft email in your preferred email client addressed to support@designmaster.biz.

Send Project

Allows you to send us a copy of your project for technical support purposes. The command opens your web browser to <http://www.designmaster.biz/send/>.

Providing us with your project helps us recreate the problem you are having and find a solution to it. It is our preferred way for you to report a problem or ask a question. Many problems are specific to a project and having that immediately helps us assist you.

Update License

Allows you to update the license for Design Master Electrical RT stored on your computer.

Update Design Master Electrical RT License

License expires on
Enter your license ID in the box below and press the "Activate" button.

License ID:

Activation Password (Leave blank if you do not have one):

Activate Cancel

Enter your *License ID* and *Activation Password* in the fields provided. If you did not receive a password, leave the *Activation Password* field blank.

Press the **Activate** button to update your license.

Check In Floating License

Used with floating licenses to immediately check in the license so that another person can use the add-in. Floating licenses are checked out in 10-minute intervals. If no commands are run for 10 minutes, the license is automatically released and another person can use the add-in.

If another person attempts to use the add-in before the license is released, a warning message will be displayed for the new user, stating that no license is available. The new user can choose to ignore the warning and immediately start using the add-in. However, a license overuse exception will be recorded in the license database. The license database is reviewed each year when you renew the add-in. If there are too many overuse exceptions, you will need to purchase another license.

Using this command, the original user can check in the floating license when they are done with it. The new user can then use the add-in immediately without causing a license overuse exception to be recorded.

Check for Updates

Checks if there is an update to the add-in available.

If an update is available, you will be prompted to go to our website to see the changes in the new version. You can download and install the update from our website.

Remove Parameters

Removes all of the shared parameters added by Design Master Electrical RT to the current project. Use this command if shared parameters were accidentally added to a project where you are not using Design Master Electrical RT.

This command only removes the shared parameters from the project. It does not remove the internal information set by Design Master Electrical RT. Keeping the internal information protects you from losing any data if you run this command accidentally.

If you run this command accidentally, the shared parameters will be reloaded the next time you run a Design

Master Electrical RT command in the project.

About

Displays information about the current version of Design Master Electrical RT you are running.

When providing you with support, we may ask you to provide us with the version and build number from this dialog box. This tells us exactly which version of the add-in you are running.

AutoCAD Ribbon Command Reference

This section explains the commands on the **DM Electrical RT** and **DMERT: Customization** ribbon tabs in AutoCAD.

One-Line Diagram: Commands for generating and updating the one-line diagram.

Distribution Equipment: Commands for inserting and making changes to distribution equipment on the one-line diagram.

Change: Commands for changing graphics, layer systems, and database records for entities on the one-line diagram.

Labels: Commands for managing labels on the one-line diagram.

Meters: Commands for inserting and removing meters on the one-line diagram.

Bus: Commands for managing bus graphics on the one-line diagram.

Tab: Commands for inserting and removing panel tabs for entities on the one-line diagram.

Feeders: Commands for managing feeders on the one-line diagram and the feeder schedule.

Utilities: Commands for obtaining help and managing the installation of Design Master Electrical RT.

Customization: Commands for customizing Design Master Electrical RT.

DM Electrical RT Ribbon

All of the commands for using Design Master Electrical RT are on a ribbon tab labeled **DM Electrical RT**.

To access the commands, select the **DM Electrical RT** tab from the list.



The commands for Design Master Electrical RT will be displayed when the **DM Electrical** tab is selected:



The commands are also available in the **DM Electrical RT** pulldown menu.

One-Line Diagram

The **One-Line Diagram** panel includes commands for generating and updating the one-line diagram.

Update: Updates your one-line diagram to reflect changes to your design.

Generate One-Line: Creates a diagram for distribution equipment and any downstream distribution equipment and equipment connections in a vertical, one-line configuration.

Generate Riser: Creates a diagram for distribution equipment and any downstream distribution equipment and equipment connections in a horizontal, riser configuration.

Training Videos

- [One-Line Diagram Overview](#)
- [The Generate One-Line and Generate Riser Commands](#)
- [Feeder Drafting Techniques](#)

Update

Updates your one-line diagram and the feeder schedule to reflect any changes to your design. The one-line diagram and schedule are not automatically updated when changes are made. You must manually update them.

To update the one-line diagram and feeder schedule, go to

Ribbon: DM Electrical RT->One-Line Diagram->  Update

Pulldown Menu: DM Electrical RT->Update One-Line Diagram

This command will update:

- all of the labels on the one-line diagram
- any connections between devices, removing feeders that no longer exist and adding ones that are missing
- all of the layers, colors, and text styles to match your current customization settings
- all of the information in the feeder schedule

Generate One-Line

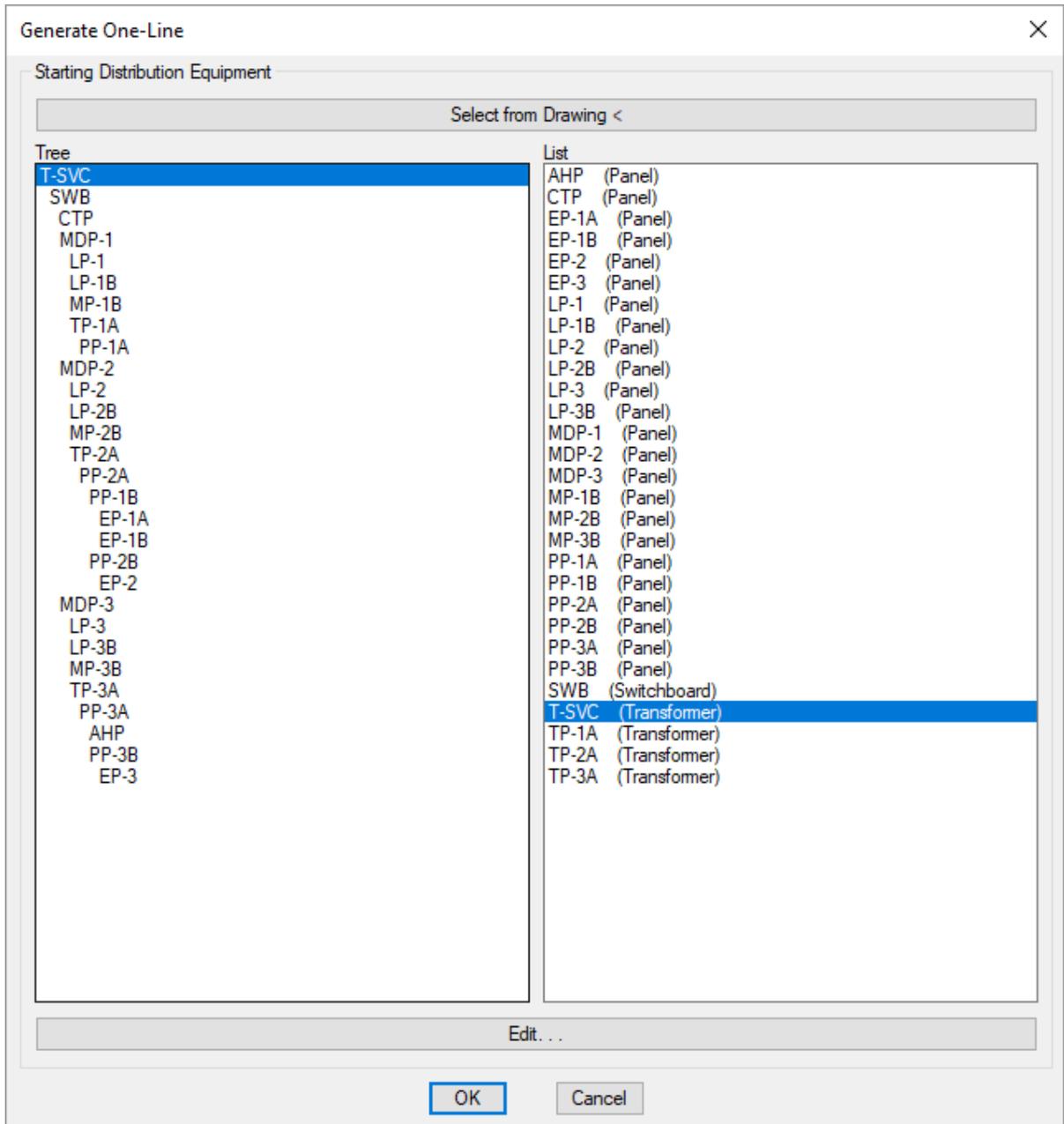
Creates a diagram for distribution equipment and any downstream distribution equipment and equipment connections in a vertical, one-line configuration.

To generate a one-line diagram, go to

Ribbon: DM Electrical RT->One-Line Diagram->  Generate One-Line

Pulldown Menu: DM Electrical RT->Generate->Generate One-Line

Generate One-Line Dialog Box



Select from Drawing

Press the **Select from Drawing** button to generate a one-line from an existing distribution equipment on the drawing.

You will be prompted to select a distribution equipment on the drawing.

Select distribution equipment to start at:

Any downstream distribution equipment and devices connected to the equipment will be generated. Feeders will be inserted between anything that is connected.

Select from Tree / List

All distribution equipment in the current project is listed in a tree corresponding to how the equipment are connected to each other, and alphabetically by callout.

Press the **Edit** button to open the [Edit Distribution Equipment](#) dialog box for the selected equipment.

Press the **OK** button to insert the selected equipment on the drawing.

You will be prompted for the insertion point.

Select insertion point:

The selected distribution equipment and any downstream equipment and devices will be generated. Feeders will be inserted between anything that is connected.

Related Options

[Distribution equipment sort order](#): Sets the order in which downstream equipment connections are generated on the diagram.

[Feeder offset multiplier](#): Sets the offset distance between feeders generated on the diagram.

[Default feeder layer system](#): Sets the default layer system for feeders.

[Default one-line blocks](#): Sets the default blocks used for each distribution equipment type when the diagram is generated.

[Automatically create feeder IDs](#): Sets whether feeder IDs are created automatically when the diagram is generated.

There are several other options that affect the overall appearance of the one-line diagram. See the [Options](#) section for more information.

Generate Riser

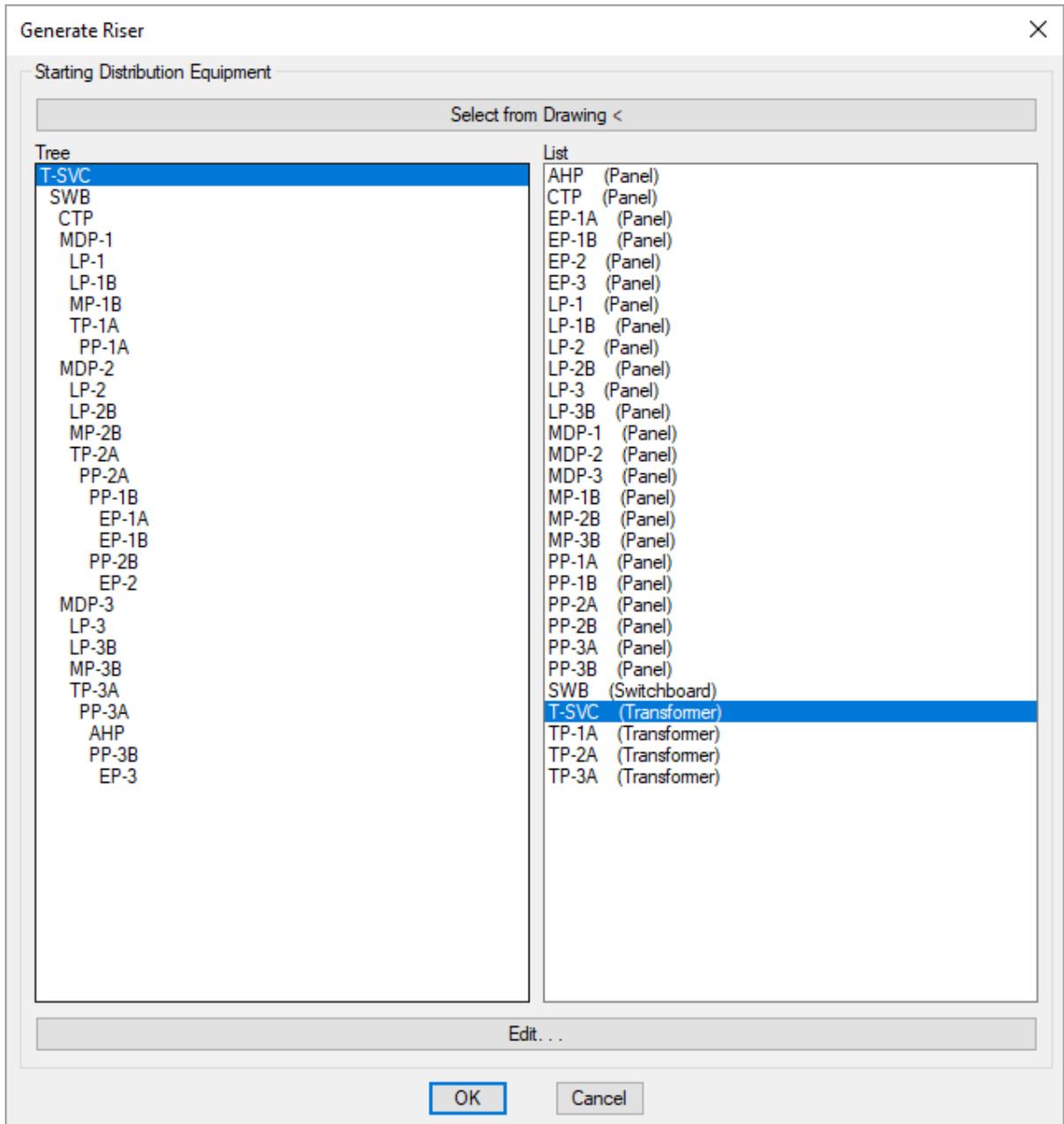
Creates a diagram for distribution equipment and any downstream distribution equipment and equipment connections in a horizontal, riser configuration. Devices with a specified elevation are stacked vertically according to elevation.

To generate a riser diagram, go to

Ribbon: DM Electrical RT->One-Line Diagram->  Generate Riser

Pulldown Menu: DM Electrical RT->Generate->Generate Riser

Generate Riser Dialog Box



Select from Drawing

Press the **Select from Drawing** button to generate a riser from an existing distribution equipment on the drawing.

You will be prompted to select a distribution equipment on the drawing.

Select distribution equipment to start at:

Any downstream distribution equipment and devices connected to the equipment will be generated. Feeders will be inserted between anything that is connected.

Select from Tree / List

All distribution equipment in the current project is listed in a tree corresponding to how the equipment are connected to each other, and alphabetically by callout.

Press the **Edit** button to open the [Edit Distribution Equipment](#) dialog box for the selected equipment.

Press the **OK** button to insert the selected equipment on the drawing.

You will be prompted for the insertion point.

Select insertion point:

The selected distribution equipment and any downstream equipment and devices will be generated. Feeders will be inserted between anything that is connected.

Related Options

[Distribution equipment sort order](#): Sets the order in which downstream equipment connections are generated on the diagram.

[Feeder offset multiplier](#): Sets the offset distance between feeders generated on the diagram.

[Riser height multiplier](#): Sets the distance between elevations when the diagram is generated.

[Default fed from](#): Sets whether feeders connect to the top or bottom of devices when the diagram is generated.

[Feeder connection location in riser to panels with no bus](#): Sets where feeders connect to pieces of distribution equipment with no bus bar.

[Default feeder layer system](#): Sets the default layer system for feeders.

[Default riser blocks](#): Sets the default blocks used for each distribution equipment type when the diagram is generated.

[Automatically create feeder IDs](#): Sets whether feeder IDs are created automatically when the diagram is generated.

There are several other options that affect the overall appearance of the one-line diagram. See the [Options](#) section for more information.

Distribution Equipment

The **Distribution Equipment** panel contains commands for inserting and making changes to distribution equipment on the one-line diagram.

[Insert](#): Inserts distribution equipment on the one-line diagram.

[Edit](#): Changes the blocks for distribution equipment on the one-line diagram.

Move: Moves distribution equipment on the one-line diagram.

Insert

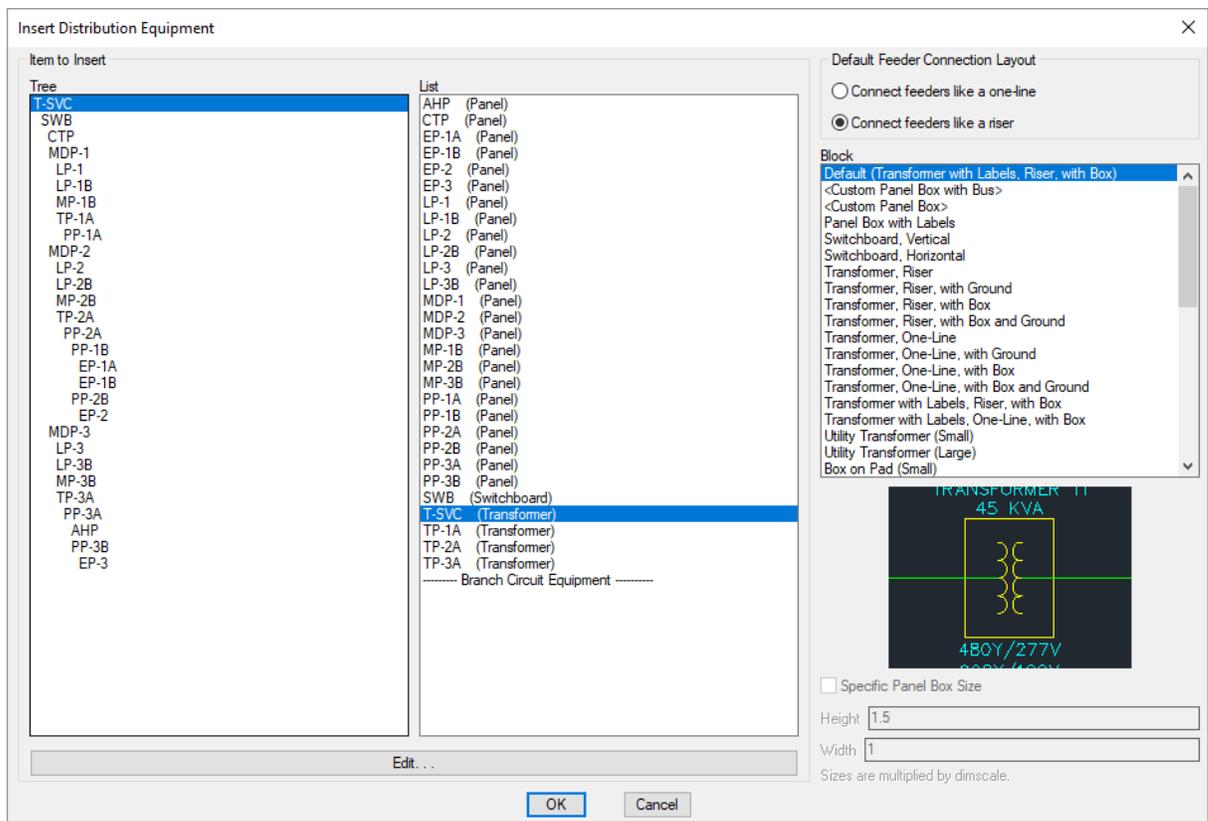
Used to insert distribution equipment and equipment connections on the drawing for the one-line diagram.

To insert distribution equipment or an equipment connection, go to

Ribbon: DM Electrical RT->Distribution Equipment->  Insert

Pulldown Menu: DM Electrical RT->Distribution Equipment->Insert Distribution Equipment

Insert Distribution Equipment Dialog Box



Tree / List: All distribution equipment and equipment connections in the current project. They are listed in a tree corresponding to how the equipment are connected to each other, and alphabetically by callout.

Default Feeder Connection Layout: Whether feeders are connected to the selected block in a one-line configuration or a riser configuration.

Block: The block that will be used for the distribution equipment or equipment connection. You can add more blocks to this list using the [Project Customization->Distribution Equipment Blocks](#) command. There are two special entries in the list:

- **<Custom Panel Box with Bus>:** A box representing the panel with a bus bar inserted in the middle of it.

- **<Custom Panel Box>**: A box representing the panel. No bus bar is inserted.

Specific Panel Box Size: If you selected either **Custom Panel Box and Bus** or **Custom Panel Box** from the *Block* list, you can check this box to set the dimensions for the block.

Press the **Edit** button to open the [Edit Distribution Equipment](#) dialog box for the selected distribution equipment.

Press the **OK** button to insert the distribution equipment or equipment connection on the drawing.

Inserting a Panel Box

If you selected either **Custom Panel Box and Bus** or **Custom Panel Box** from the *Block* list and did not check **Specific Panel Box Size**, you will be prompted for the first corner of the panel box.

First corner of panel:

Select the location of the panel corner. You will then be prompted for the second corner of the panel box.

Second corner:

If you selected **Custom Panel Box and Bus**, you will be prompted to specify the starting point of the bus bar or press **ENTER** to insert it in the default location. The size of the panel block will affect the direction in which the bus will be inserted. The bus will be inserted in a direction matching the longest side of the box. A short, wide box will result in the bus being inserted horizontally. A tall, thin box will result in a vertical bus.

Feeders will be inserted between the distribution equipment or equipment connection and anything it is connected to that is already on the drawing.

Inserting a Distribution Equipment Diagram Block

If you selected a different block, or checked *Specific Panel Box Size*, you will be prompted for the insertion point.

Select insertion point:

If you selected **Custom Panel Box and Bus**, you will be prompted to specify the starting point of the bus bar or press **ENTER** to insert it in the default location. The size of the panel block will affect the direction in which the bus will be inserted. The bus will be inserted in a direction matching the longest side of the box. A short, wide box will result in the bus being inserted horizontally. A tall, thin box will result in a vertical bus.

Feeders will be inserted between the distribution equipment or equipment connection and anything it is connected to that is already on the drawing.

Related Options

[Include vertical main breaker on horizontal panels](#): Sets whether the main breaker on horizontal panel blocks is inserted along the bus bar.

[Default panel box height](#): Sets the default value for the *Specific Panel Box Size Height* field.

[Default panel box width](#): Sets the default value for the *Specific Panel Box Size Width* field.

[Default feeder connection layout](#): Sets the default for the *Default Feeder Connection Layout* setting.

There are several other options that affect the overall appearance of the one-line diagram. See the [Options](#) section for more information.

Edit

Used to change the blocks of distribution equipment and equipment connections on the drawing.

To edit distribution equipment and equipment connections, go to

Ribbon: DM Electrical RT->Distribution Equipment->  Edit

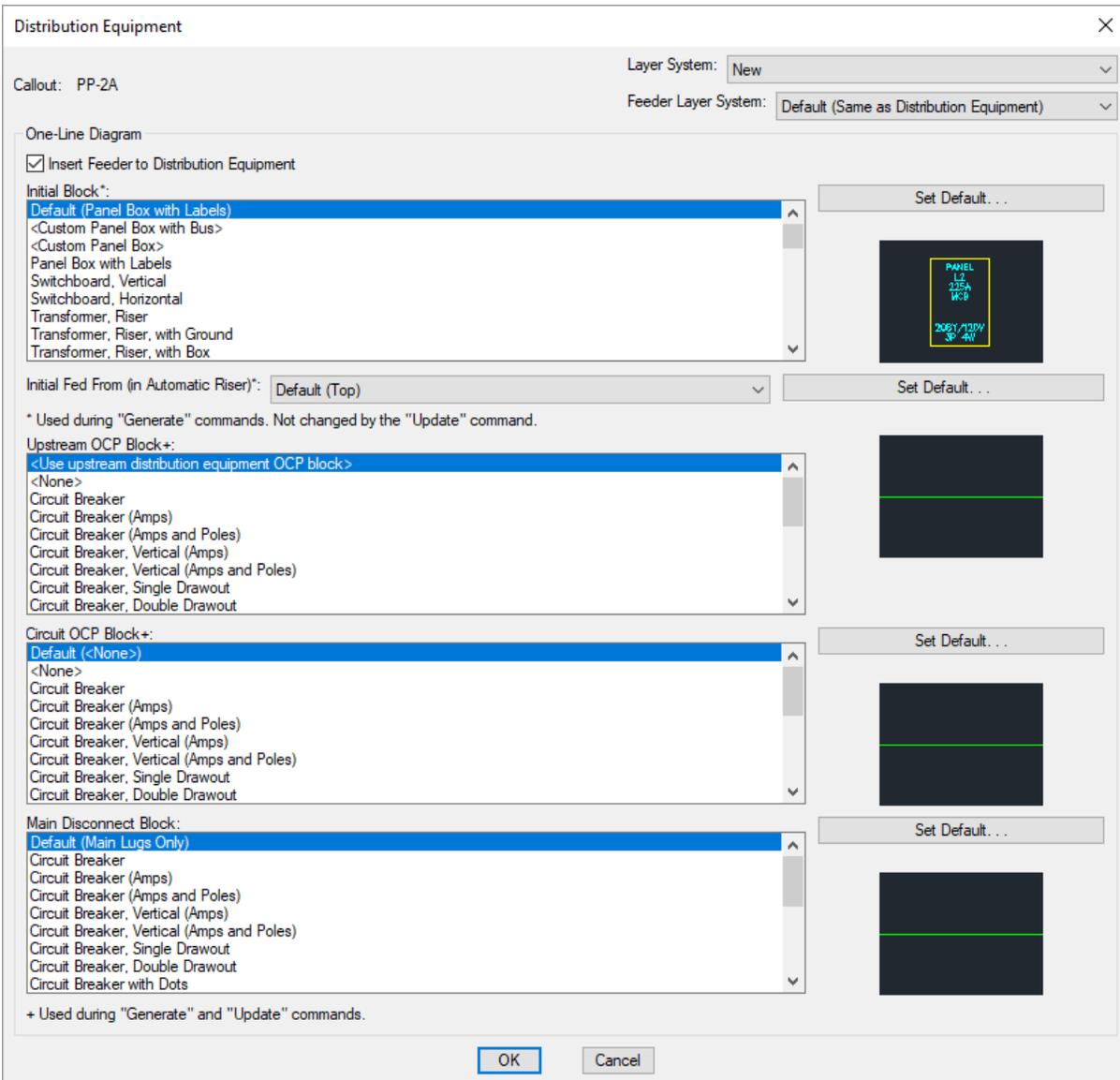
Pulldown Menu: DM Electrical RT->Distribution Equipment->Edit Distribution Equipment

You will be prompted to select the distribution equipment or equipment connection to be changed.

Select distribution equipment or equipment connection to edit:

Specify a distribution equipment or equipment connection. Press **ENTER** to open the **Edit Distribution Equipment** dialog box to select the distribution equipment from a list.

Distribution Equipment Dialog Box



This dialog box sets the blocks used for the distribution equipment and its connections on the one-line diagram. The **Set Default** button allows you to change the default for each block in the [One-Line Diagram](#) options section.

Callout: The name of the distribution equipment or equipment connection.

Layer System: The layer system used when the device is inserted on the drawing. See the [Layers](#) section for more information.

Do not change the layer directly in AutoCAD. If you do, it will likely be changed back at some point in the future. Use this dialog box or the [Change Layer System](#) command.

Feeder Layer System: The layer system used for the feeders when the device is inserted on the drawing. See the [Layers](#) section for more information.

Do not change the layer directly in AutoCAD. If you do, it will likely be changed back at some point in the future. Use this dialog box or the [Change Layer System](#) command.

Insert Feeder to Distribution Equipment: Whether the upstream feeder going into the distribution equipment is included on the one-line diagram.

Initial Block: The block used for the distribution equipment itself when it is generated. Changing the initial block does not affect blocks already on the one-line diagram.

Initial Fed From: Whether the feeder is drawn to the top or bottom of the block when it is generated. Changing this setting does not affect blocks already on the one-line diagram.

Upstream OCP Block+: The block for the upstream OCP. **<Use upstream distribution equipment OCP block>** uses the same OCP block as the upstream distribution equipment. Changing this setting will affect blocks already on the one-line diagram.

Upstream OCP Block 2+: The block for the second upstream OCP. Applies only to distribution equipment with two feeders.

Circuit OCP Block+: The block for downstream OCP. Changing this setting will affect blocks already on the one-line diagram.

Main Disconnect Block: The block for the main disconnect. Only visible if *Initial Block* is set to **<Custom Panel Box with Bus>**. Not available if *Main Disconnect Type* is set to **Main Lugs Only**. Does not apply to transformers.

Related Options

[Default fed from:](#) Sets the default for the *Initial Fed From* setting.

[Default feeder layer system:](#) Sets the default for the *Feeder Layer System* setting.

[Default blocks:](#) Sets the default blocks used for the *Initial Block*, *Circuit OCP Block*, and *Main Disconnect Block*.

Move

Used to move distribution equipment on the drawing. Using this command will also move any feeders and downstream connections attached to the equipment.

To move distribution equipment, go to

Ribbon: DM Electrical RT->Distribution Equipment->  Move

Pulldown Menu: DM Electrical RT->Distribution Equipment->Move Distribution Equipment

You will be prompted to select the distribution equipment to move.

Select distribution equipment to move:

You can then move the selected distribution equipment the same way you would using the AutoCAD **MOVE**

command.

Change

The **Change** panel contains commands for making changes to graphics on the one-line diagram.

Change Graphics: Changes the graphics displayed for distribution equipment and feeders on the one-line diagram.

Change Layer System: Changes the layer system for distribution equipment and feeders on the one-line diagram.

Match Labels and Graphics: Changes the labels and graphics of distribution equipment or feeders to match an existing equipment or feeder on the one-line diagram.

Change Linked Database Record: Changes which distribution equipment or feeder is represented by a graphic on the one-line diagram.

Change Graphics

Used to change the graphics displayed for distribution equipment, equipment connections, and feeders on the drawing. Blocks can be added to the start and the end of feeders. The block used for the OCP in the feeder can also be changed.

To insert or change the graphics on distribution equipment, equipment connections, or feeders, go to

Ribbon: DM Electrical RT->Change->  Change Graphics

Pulldown Menu: DM Electrical RT->Change->Change Graphics

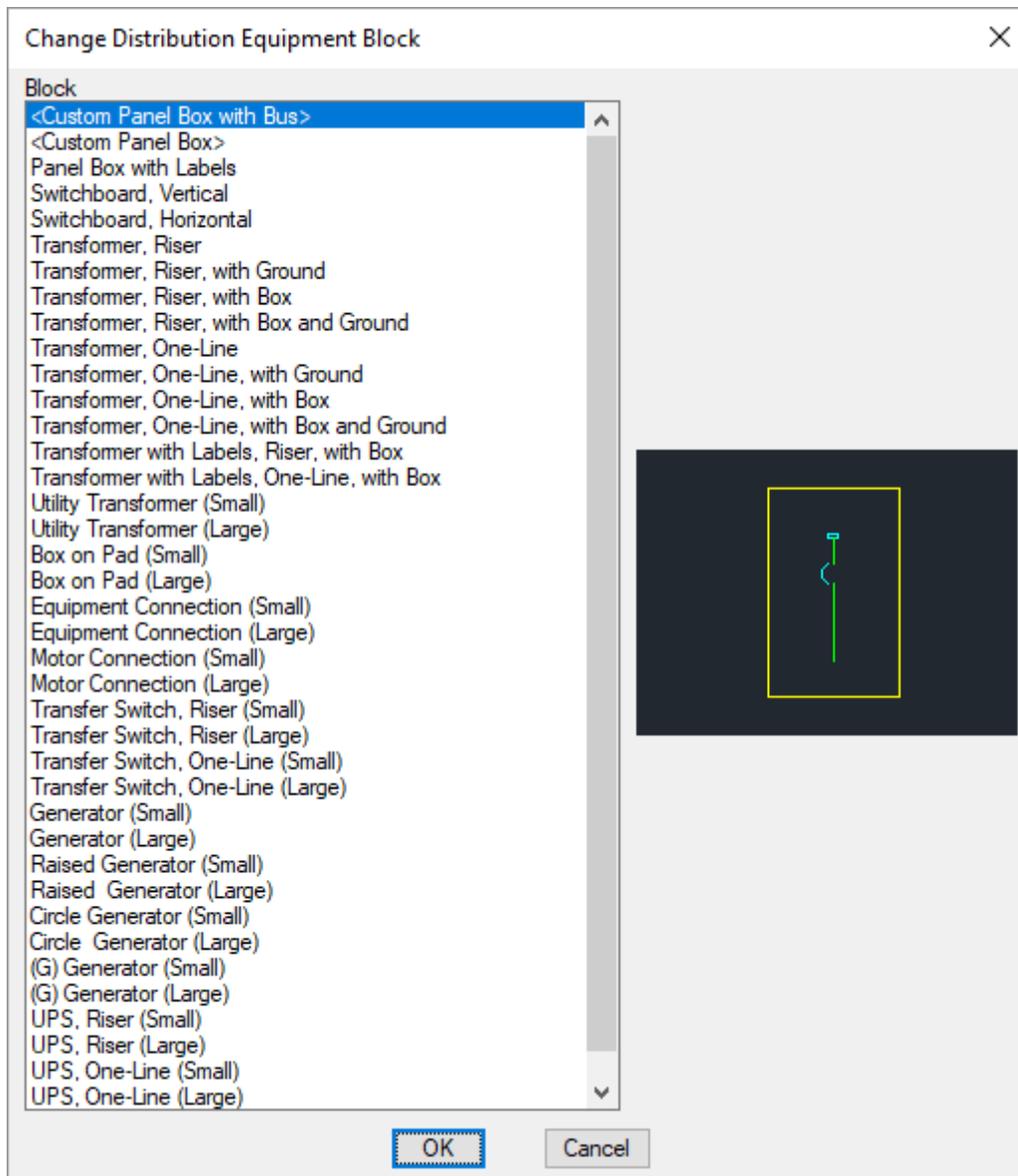
You will be prompted to select a distribution equipment or one or more feeders to edit.

Select distribution equipment or feeders to change graphics of:

After you make your selection(s), the **Change Distribution Equipment Block** or **Change Feeder Blocks** dialog box will open.

If you select both distribution equipment and feeders, an alert box will prompt you to choose which type you want to change.

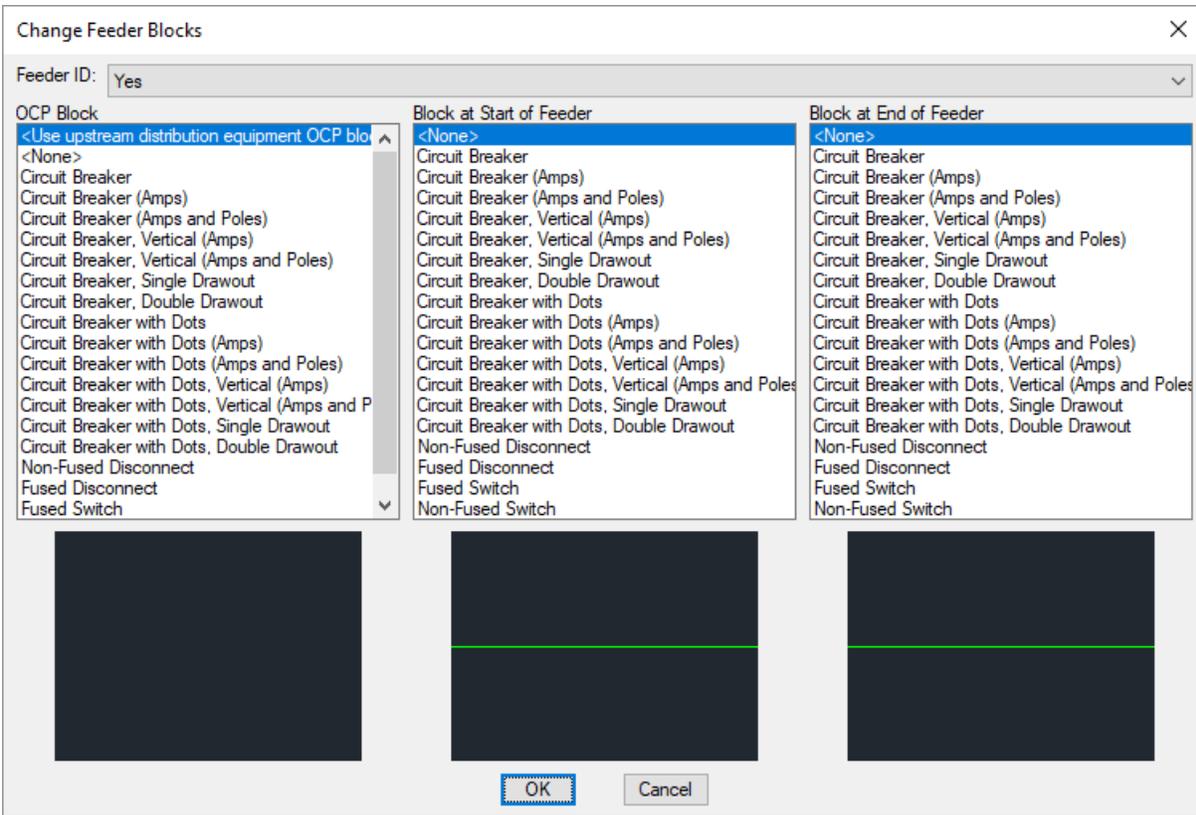
Change Distribution Equipment Block Dialog Box



Block: The block or graphic used on the drawing for the distribution equipment or equipment connection. Select a new block to change the block used on the drawing.

Press the **OK** button to save the changes made to the distribution equipment or equipment connection.

Change Feeder Blocks Dialog Box



Feeder ID: Whether the feeder ID is displayed on the feeder.

OCP Block: The block used for the overcurrent protection on the feeder. The OCP block can be moved along the feeder wire.

- **<Use upstream distribution equipment OCP block>:** Select this entry to use the same OCP block as the upstream distribution equipment.
- **<None>:** Select this entry to remove the OCP block.

Disconnect Block: Applies only to feeders connected to an equipment connection. The block used for the disconnect on the feeder. The disconnect block can be moved along the feeder wire.

- **<None>:** Select this entry to remove the disconnect block.

Block at Start of Feeder: The block inserted at the start of the feeder. The location of this block cannot be moved.

- **<None>:** Select this entry to remove the block at the start of the feeder.

Block at End of Feeder: The block inserted at the end of the feeder. The location of this block cannot be moved.

- **<None>:** Select this entry to remove the block at the end of the feeder.

Press the **OK** button to save the changes made to the feeder.

Related Options

[Insert feeder IDs inside feeder lines:](#) Sets the default for the *Feeder ID* setting.

There are several other options that affect the overall appearance of the one-line diagram. See the [Options](#) section for more information.

Change Layer System

Used to change the layer system for distribution equipment and feeders on the drawing.

To change the layer system of distribution equipment or feeders, go to

Ribbon: DM Electrical RT->Change->  Change Layer System

Pulldown Menu: DM Electrical RT->Change->Change Layer System

You will be prompted to select one or more distribution equipment or feeders.

Select distribution equipment or feeder to change layer system of:

After you make your selections, the **Change Layer System** dialog box will open.

See the [Layers](#) section for more information.

Do not change the layer directly in AutoCAD. If you do, it will likely be changed back at some point in the future. Use this command or the [Edit Distribution Equipment](#) command.

Match Labels and Graphics

Used to change the labels and graphics of one or more distribution equipment or feeders to match an existing equipment or feeder on the drawing.

To match labels and graphics, go to

Ribbon: DM Electrical RT->Change->  Match Labels and Graphics

Pulldown Menu: DM Electrical RT->Change->Match Labels and Graphics

You will be prompted to select a distribution equipment or feeder from which the graphics and labels will be copied.

Select source distribution equipment or feeder:

You will then be prompted to select one or more distribution equipment or feeders, depending upon your source, to change.

Select destination <Source type>:

Press **ENTER** to change the labels and graphics of the selected distribution equipment or feeders.

Change Linked Database Record

Used to change which distribution equipment or feeder is represented by a graphic on the drawing. This can be useful when copying a block on the one-line diagram, as the copy will not have an equipment linked to it.

To change a database record displayed on the one-line diagram, go to

Ribbon: DM Electrical RT->Change->  Change Linked Database Record

Pulldown Menu: DM Electrical RT->Change->Change Linked Database Record

You will be prompted to select a distribution equipment or feeder.

Select distribution equipment or feeder to link to a new database record:

If you select a distribution equipment, the **Change One-Line Diagram Item** dialog box will open. Select a distribution equipment from the list and press the **OK** button.

Labels

The **Labels** panel contains commands for inserting, removing, and making changes to labels for distribution equipment, feeders, and equipment connections on the one-line diagram.

Insert / Modify: Inserts, edits, and removes the labels on distribution equipment, feeders, and equipment connections on the one-line diagram.

Move: Moves labels on distribution equipment, feeders, and equipment connections on the one-line diagram.

Rotate: Rotates labels on distribution equipment, feeders, and equipment connections on the one-line diagram.

Insert Leader: Adds a leader to a label or group of labels.

Remove Leader: Removes a leader from a label or group of labels.

Group: Groups together labels on distribution equipment, feeders, and equipment connections on the one-line diagram.

Remove from Group: Removes labels from a group.

Reorder in Group: Reorders labels in a group.

Insert / Modify

Used to insert, edit, and remove the labels on distribution equipment, feeders, and equipment connections on the one-line diagram.

To insert and modify labels, go to

Ribbon: DM Electrical RT->Labels->  Insert/Modify

Pulldown Menu: DM Electrical RT->Labels->Insert and Modify Labels

You will be prompted to select the distribution equipment or feeder label to edit.

Select distribution equipment or feeder to edit:

Select the distribution equipment, feeder, or equipment connection to be labeled.

Insert and Modify Labels Dialog Box

	Field	Value	Prefix	Suffix	Alignment	Scale
<input checked="" type="checkbox"/>	Description	PANEL H1	PANEL		Top Left	1
<input checked="" type="checkbox"/>	Volts	480Y/277V 3P 4W			Top Left	1
<input type="checkbox"/>	Volts Only	480Y/277V			Top Left	1
<input type="checkbox"/>	Bus Amps	225			Top Left	1
<input type="checkbox"/>	Main Disconnect Type	MCB			Top Left	1
<input type="checkbox"/>	Main Trip Amps	225			Top Left	1
<input type="checkbox"/>	Main Trip Amps (MLO)	225			Top Left	1
<input type="checkbox"/>	Main Trip Amps and Poles	225/3			Top Left	1
<input type="checkbox"/>	Main Trip Poles	3			Top Left	1
<input type="checkbox"/>	Main Frame Amps	225			Top Left	1
<input type="checkbox"/>	Mounting	FLUSH			Top Left	1
<input type="checkbox"/>	Neutral	100%			Top Left	1
<input type="checkbox"/>	Lugs	STANDARD			Top Left	1
<input type="checkbox"/>	Number of Poles	42			Top Left	1
<input checked="" type="checkbox"/>	Fault @ Device (A)	FAULT=25,752	FAULT=		Top Left	1
<input type="checkbox"/>	Fault @ Device (kA)	25.75			Top Left	1
<input type="checkbox"/>	Utility Fault @ Device (A)	25,496			Top Left	1
<input type="checkbox"/>	Utility Fault @ Device (kA)	25.5			Top Left	1
<input type="checkbox"/>	Connected Load (kW)	107			Top Left	1

Checkbox: Whether the label corresponding to the row is inserted on the drawing.

Field: A description of the value that will be inserted.

Value: The text that will appear on the drawing. It includes the prefix, the value from the database, and the suffix. The prefix and suffix can be changed in this dialog box. The value from the database must be changed in the device definition itself.

Prefix: Text that is added before the value associated with the field in the database.

Suffix: Text that is added after the value associated with the field in the database.

Alignment: The alignment of the text within the text boundary.

Scale: The scale factor of the text.

Press the **OK** button when you are finished changing the notes for the distribution equipment, feeder, or equipment connection. Any labels that were removed or changed will be updated on the drawing.

You will be prompted to insert any new labels on the drawing.

Select insertion point or [Next label/<Group with other label>]:

Insertion point: Specify a point on the drawing. The top left corner of the label will be inserted at that point.

Next label: If you checked multiple labels to be inserted, type **N** to cycle to the next label.

Group with other label: Press **ENTER** or type **G** to group the label with another label on the drawing. You will be prompted to select a label to group with. See the [Group Labels](#) section for more information.

Insert below last label: After placing the first label, if you checked multiple labels to be inserted, press **ENTER** or type **I** to insert the label below the last label inserted. You will be prompted to insert any new labels on the drawing.

Related Options

[Insert labels inside feeder lines:](#) Sets whether labels are inserted inside or to the side of feeders.

["Main Lugs Only" label:](#) Sets the default value for the *Main Disconnect Type*, *Main Trip Amps*, and *Main Trip Amps and Poles* fields when the main disconnect for the distribution equipment is set to **Main Lugs Only**.

There are several other options that affect the overall appearance of the one-line diagram. See the [Options](#) section for more information.

Move

Used to move labels on distribution equipment, feeders, and equipment connections on the one-line diagram.

To move a label, go to

Ribbon: DM Electrical RT->Labels->  Move

Pulldown Menu: DM Electrical RT->Labels->Move Label

You will be prompted to select the label to move.

Select label to move:

You can then specify a new location for the selected label.

Rotate

Used to rotate labels on distribution equipment, feeders, and equipment connections on the one-line diagram.

To rotate a label, go to

Ribbon: DM Electrical RT->Labels->  Rotate

Pulldown Menu: DM Electrical RT->Labels->Rotate Label

You will be prompted to select the label to rotate.

Select label to rotate:

You can then specify a rotation angle for the selected label.

Insert Leader

Used to add a leader to a label or group of labels.

To insert a leader, go to

Ribbon: DM Electrical RT->Labels->  Insert Leader

Pulldown Menu: DM Electrical RT->Labels->Insert Leader

You will be prompted to specify a label to which to add the leader.

Select label to add a leader to:

You will then be prompted to specify an end point for the leader.

Specify end point of leader:

Specify a point on the drawing. The leader will be drawn from the selected label to that point.

Related Options

You can customize the block used for the leader arrow and its length. See the [Options](#) section for more information.

Remove Leader

Used to remove a leader from a label or group of labels.

To remove a leader, go to

Ribbon: DM Electrical RT->Labels->  Remove Leader

Pulldown Menu: DM Electrical RT->Labels->Remove Leader

You will be prompted to select the label from which the leader is to be removed.

Select label to remove a leader from:

After you select the label, the leader will be removed.

Group

Used to group together labels on distribution equipment, feeders, and equipment connections on the one-line diagram. Labels in a group can be modified all at once using the [Move Label](#) and [Rotate Label](#) commands and the *Alignment* and *Scale* columns of the [Insert and Modify Labels](#) dialog box.

To group labels together, go to

Ribbon: DM Electrical RT->Labels->  Group Labels

Pulldown Menu: DM Electrical RT->Labels->Group Labels

You will be prompted to select a label, which will be positioned at the top of the group.

Select label in correct location:

You can then select one or more labels, including other groups of labels, to add to the group.

Remove from Group

Used to remove labels from a group.

To remove a label from a group, go to

Ribbon: DM Electrical RT->Labels->  Remove from Group

Pulldown Menu: DM Electrical RT->Labels->Remove Label from Group

You will be prompted to select the group from which the label will be removed.

Select label group to remove label from:

The **Remove Label from Group** dialog box will open. Select the label you want to remove and press the **OK** button.

You will then be prompted to specify a location for the selected label.

Specify insertion point or [Group with other label/<Remove label>]:

Insertion point: Specify a point on the drawing. The top left corner of the label will be inserted at that point.

Group with other label: Type **G** to group the label with another label on the drawing. You will be prompted to select a label to group with.

Remove label: Press **ENTER** or type **R** to remove the label.

Reorder in Group

Used to reorder labels in a group.

To reorder labels in a group, go to

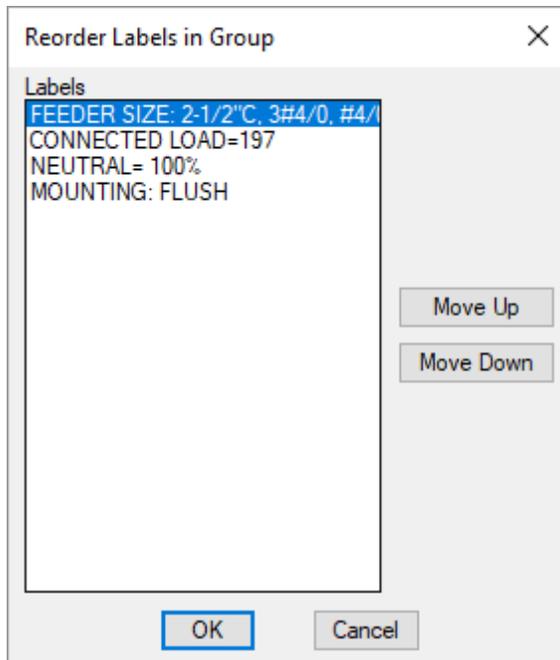
Ribbon: DM Electrical RT->One-Line Diagram->  Reorder Labels in Group

Pulldown Menu: DM Electrical RT->One-Line Diagram->Reorder Labels in Group

You will be prompted to select the group of labels you want you reorder.

Select label group to reorder:

Reorder Labels in Group Dialog Box



Select a label from the list. Press the **Move Up** and **Move Down** buttons to move the selected label.

Press the **OK** button to save your changes and update the label group.

Meters

The **Meters** panel contains commands for inserting and removing meters on feeders on the one-line diagram.

Insert: Inserts a meter on the one-line diagram.

Remove: Removes a meter from the one-line diagram.

Training Videos

- [One-Line Diagram Meters](#)

Insert

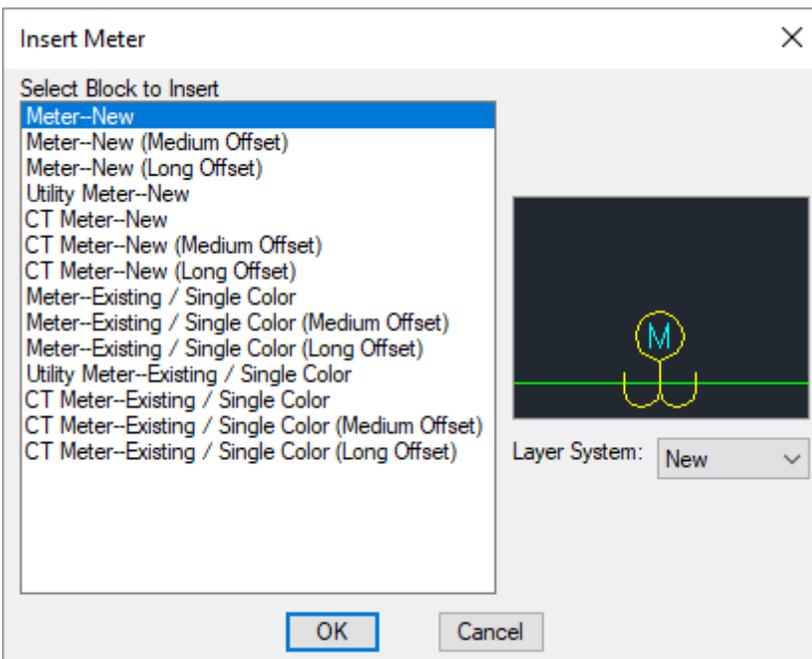
Used to insert a meter on the one-line diagram. Meters are for informational purposes only and are not otherwise used.

To insert a meter, go to

Ribbon: DM Electrical RT->Meters->  Insert

Pulldown Menu: DM Electrical RT->Meters->Insert Meter

Insert Meter Dialog Box



Select Block to Insert: The block to be used on the drawing for the meter.

Layer System: The layer system used when the meter is inserted on the drawing. See the [Layers](#) section for more information.

Do not change the layer directly in AutoCAD. If you do, it will likely be changed back at some point in the future. Use this dialog box or the [Change Layer System](#) command.

Press the **OK** button. You will be prompted to select a feeder or bus onto which the meter will be inserted.

Select feeder or bus to insert meter on:

After you select the feeder or bus, the meter will be inserted on the drawing.

Remove

To remove a meter from a drawing, go to

Ribbon: DM Electrical RT->Meters->  Remove

Pulldown Menu: DM Electrical RT->Meters->Remove Meter

You will be prompted to select the feeder or bus to which the meter is connected.

Select feeder or bus to remove meter from:

After you select the feeder or bus, the connected meter will be removed from the drawing.

Bus

The **Bus** panel contains commands for showing, hiding, and flipping the bus bar in distribution equipment on the one-line diagram.

Show: Makes the bus visible in a distribution equipment block.

Hide: Hides the bus in a distribution equipment block.

Flip: Flips the bus in a distribution equipment block.

Show

To show the bus in a distribution equipment, go to

Ribbon: DM Electrical RT->Bus->  Show

Pulldown Menu: DM Electrical RT->Bus->Show Bus

You will be prompted to select the distribution equipment in which the bus is to be shown.

Select distribution equipment to insert bus on:

Select the distribution equipment and the bus will be shown in the graphic.

Hide

To hide the bus in a distribution equipment, go to

Ribbon: DM Electrical RT->Bus->  Hide

Pulldown Menu: DM Electrical RT->Bus->Hide Bus

You will be prompted to select the distribution equipment in which the bus is to be hidden.

Select distribution equipment to remove bus from:

Select the distribution equipment and the bus will be hidden.

Only the bus graphic will be hidden. Any other text or labels will remain.

Flip

To flip the bus in a distribution equipment, go to

Ribbon: DM Electrical RT->Bus->  Flip

Pulldown Menu: DM Electrical RT->Bus->Flip Bus

You will be prompted to select the distribution equipment in which the bus is to be flipped.

Select distribution equipment to flip bus on:

Select the distribution equipment and the bus will be flipped.

For vertical bus bars, if the feeder was being fed to the top of the distribution equipment, it will now be fed to the bottom. If the feeder was being fed to the bottom of the distribution equipment, it will now be fed to the top.

Tab

The **Tab** panel contains commands for inserting and removing tabs on panel blocks on the one-line diagram.

Insert: Inserts a tab on a panel block.

Remove: Removes a tab from a panel block.

Insert

Used to change the appearance of custom panel blocks on the one-line diagram. It is for drafting purposes only and is not otherwise used.

To insert a panel tab on a distribution equipment, go to

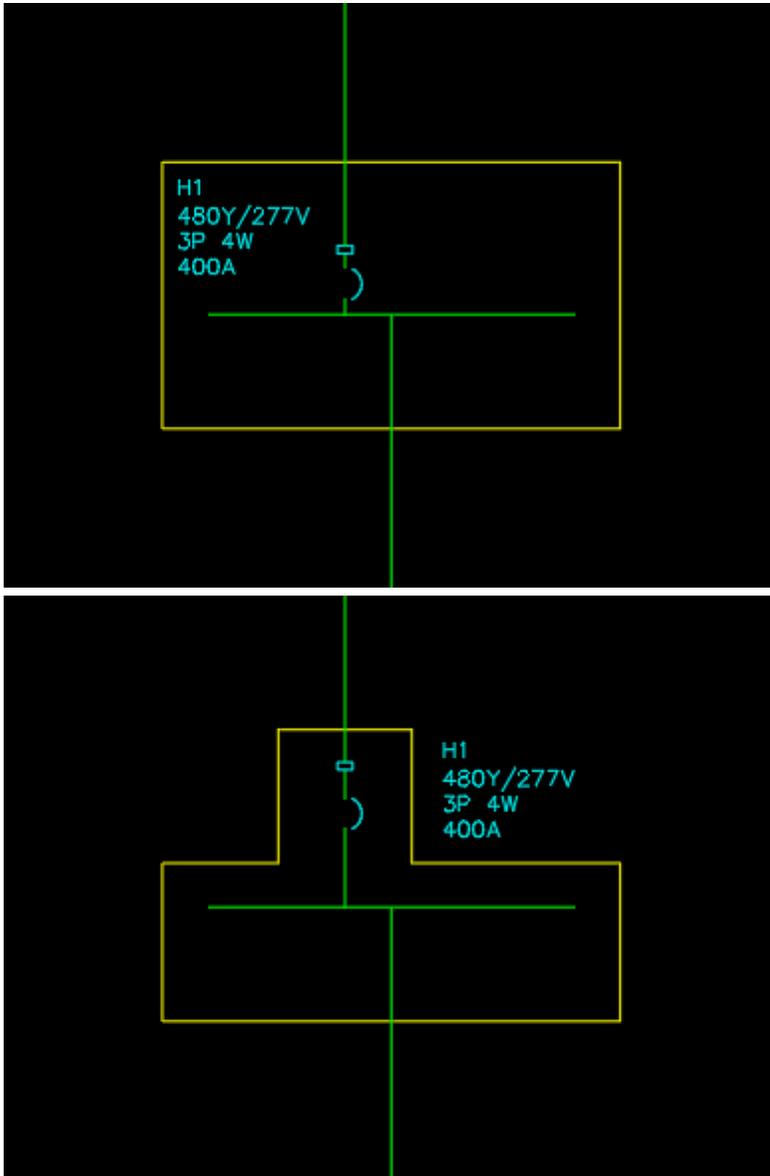
Ribbon: DM Electrical RT->Tab->  Insert

Pulldown Menu: DM Electrical RT->Bus->Insert Panel Tab

You will be prompted to select the distribution equipment on which to insert the panel tab.

Select distribution equipment to add tab to:

Select the distribution equipment and the tab will appear on the block as shown below.



Remove

To remove a panel tab from a distribution equipment, go to

Ribbon: DM Electrical RT->Tab->  Remove

Pulldown Menu: DM Electrical RT->Bus->Remove Panel Tab

You will be prompted to select the distribution equipment from which the panel tab is to be removed.

Select distribution equipment to remove tab from:

After you select the distribution equipment, the tab will be removed from the graphic.

Feeders

The **Feeders** panel contains commands for inserting and managing the feeder schedule, and modifying feeders on the one-line diagram.

Redraw: Redraws feeders.

Insert: Inserts additional feeders.

Align: Aligns parallel feeders with a specified feeder.

Offset: Sets the space between parallel feeders.

Swap: Transposes two parallel feeder segments.

Add Segment to Middle: Adds a segment to the middle of a feeder.

Add Segment to End: Adds a segment to the end of a feeder.

Remove Segment: Removes segments from feeders.

Insert Break: Inserts a break in a feeder.

Remove Break: Removes breaks from feeders.

Insert Schedule: Inserts the feeder schedule for the project.

Redraw

Used to redraw feeders on the one-line diagram.

To redraw a feeder, go to

Ribbon: DM Electrical RT->Feeders->  Redraw

Pulldown Menu: DM Electrical RT->Feeders->Redraw Feeder

You will be prompted to select a feeder or downstream distribution equipment.

Select one-line diagram feeder or distribution equipment being fed to redraw:

If you select a feeder, you will then be prompted to select a start point at the upstream distribution equipment from which to begin drawing the feeder. If you select a distribution equipment, you will be prompted to select a start point at the downstream distribution equipment from which to begin drawing the feeder.

Specify start point at <upstream/downstream> distribution equipment or [Reverse direction / Offset from other feeder / <use Default starting point>]:

Start point: Specify a point on the drawing. The feeder will start at that point.

Reverse direction: Type **R** to toggle between specifying a start point at the upstream or downstream

distribution equipment.

Offset from other feeder: Type **O** to offset the feeder from another feeder. You will be prompted to select a feeder from which to offset.

Only available if you specify a starting point at the upstream distribution equipment.

Use default starting point: Press **ENTER** or type **D** to use the default feeder starting point for the distribution equipment.

After you have selected a starting point, you will then be prompted to specify additional points to which the feeder will be drawn.

Specify next point or [Undo / Finish / Offset from other feeder]:

Next point: Specify a point on the drawing. The feeder will extend in a straight horizontal or vertical line to a point parallel to the specified point.

Undo: Type **U** to return to the previous command prompt.

Finish: Type **F** to automatically connect the feeder to the downstream distribution equipment.

Only available if you specified a starting point at the upstream distribution equipment.

Offset from other feeder: Type **O** to offset the feeder being redrawn from another feeder. You will be prompted to specify the feeder from which the redrawn feeder is being offset. Temporarily, object snap points for the selected feeder will be offset from the feeder itself.

Type **N** to undo this command.

After you have redrawn the feeder, you will be prompted to specify a location on the feeder for the feeder ID block to be inserted.

Specify feeder block insertion location or [<Default location>]:

Insertion location: Specify a point on the drawing along the feeder. The feeder ID block will be inserted at that point.

Default location: Press **ENTER** or type **D** to insert the feeder ID block at the default location along the feeder.

Insert

Used to insert feeders on the one-line diagram. Feeders inserted using this command are for informational purposes only. To insert feeders that correctly show how they are connected to distribution equipment and other devices, use the [Redraw Feeder](#) command.

To insert a feeder, go to

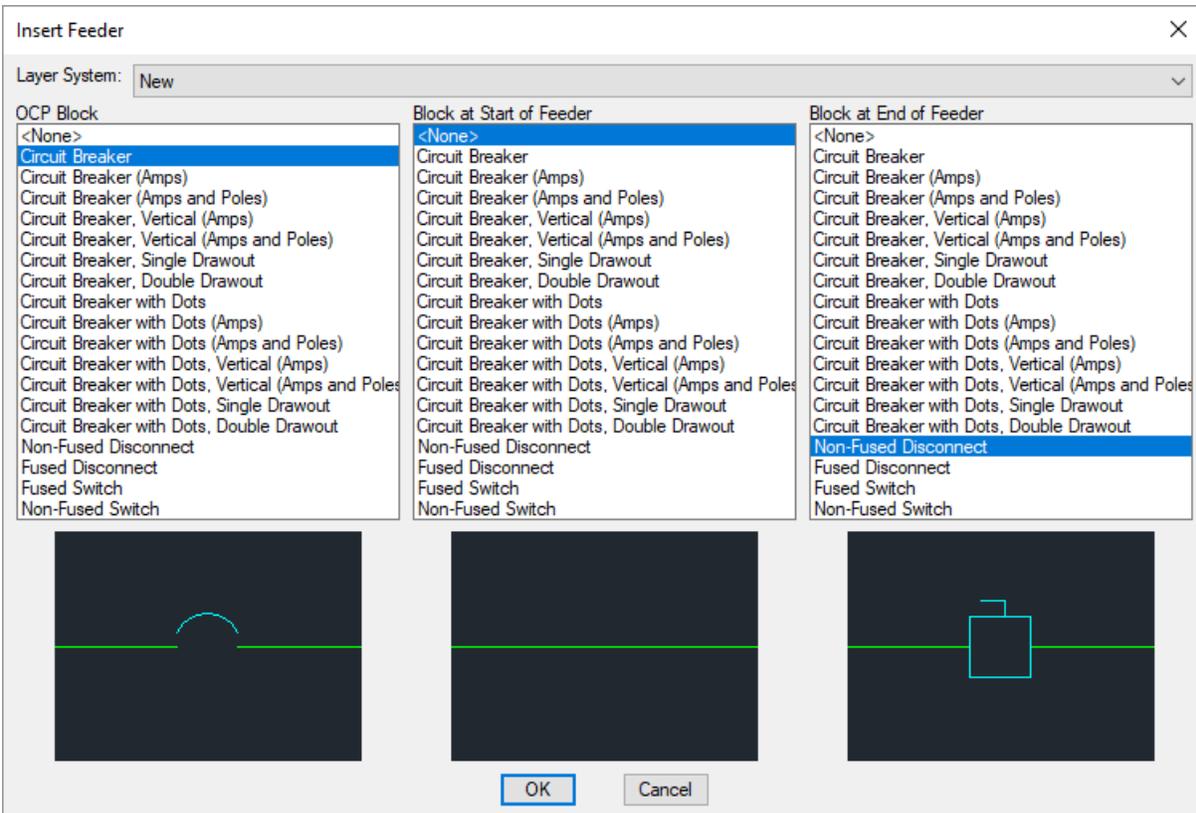
Ribbon: DM Electrical RT->Feeders->  Insert

Pulldown Menu: DM Electrical RT->Feeders->Insert Feeder

You will be prompted to select an upstream distribution equipment to which the feeder will be connected.

Select upstream distribution equipment to connect to:

Insert Feeder Dialog Box



Layer System: The layer system used for the feeder when it is inserted on the drawing. See the [Layers](#) section for more information.

Do not change the layer directly in AutoCAD. If you do, it will likely be changed back at some point in the future. Use this dialog box or the [Change Layer System](#) command.

OCP Block: The block used for the overcurrent protection on the feeder. The OCP block can be moved along the feeder wire.

Block at Start of Feeder: The block inserted at the start of the feeder. The location of this block cannot be moved.

Block at End of Feeder: The block inserted at the end of the feeder. The location of this block cannot be moved.

Press the **OK** button. You will then be prompted to select a start point at the upstream distribution equipment from which to begin drawing the feeder.

Specify start point at upstream distribution equipment or [Reverse direction / Offset from other feeder / <use Default starting point>]:

Start point: Specify a point on the drawing. The feeder will start at that point.

Reverse direction: Type **R** to toggle between specifying a start point at the upstream or downstream distribution equipment.

Offset from other feeder: Type **O** to offset the feeder from another feeder. You will be prompted to select a feeder from which to offset.
Only available if you specify a starting point at the upstream distribution equipment.

Use default starting point: Press **ENTER** or type **D** to use the default feeder starting point for the distribution equipment.

After you have selected a starting point, you will then be prompted to specify additional points to which the feeder will be drawn.

Specify next point or [Undo / Finish / Offset from other feeder]:

Next point: Specify a point on the drawing. The feeder will extend in a horizontal or vertical line to a point parallel to the specified point.

Undo: Type **U** to return to the previous command prompt.

Finish: Type **F** to complete the feeder.
Only available if you specified a starting point at the upstream distribution equipment.

Offset from other feeder: Type **O** to to offset the feeder being redrawn from another feeder. You will be prompted to specify the feeder from which the redrawn feeder is being offset. Temporarily, object snap points for the selected feeder will be offset from the feeder itself.
Type **N** to undo this command.

Align

Used to align parallel segments of different feeders on the one-line diagram.

To align feeders, go to

Ribbon: DM Electrical RT->Feeders->  Align

Pulldown Menu: DM Electrical RT->Feeders->Align Feeder

You will be prompted to select a feeder segment to which the other feeder segments will be aligned.

Select feeder segment in correct location:

You will then be prompted to select one or more feeder segments to align to the first feeder segment.

Select feeder segment to align with first segment:

Selected feeder segments will be moved to align with the first segment.

Offset

Used to set the amount of space between a feeder segment and parallel segments of other feeders on the one-line

diagram.

To offset feeders, go to

Ribbon: DM Electrical RT->Feeders->  Offset

Pulldown Menu: DM Electrical RT->Feeders->Offset Feeder

You will be prompted to select a feeder segment from which the other feeder segments will be offset.

Specify feeder segment in correct location or [set Distance]:

Feeder segment: Specify a feeder segment.

Set distance: Set the distance by which other feeder segments will be offset.

You will then be prompted to select a feeder segment to offset from the first segment.

Select feeder segment to offset from first segment or [set Distance]:

You will then be prompted to specify on which side of the first segment the selected segment will be offset.

Select point on side of first segment to offset:

Specify a point on either side of the first segment. The selected feeder segment will be offset on that side.

You can select the same feeder segment multiple times to increase the offset. If you select a different segment, it will be offset from the previously selected feeder segment. Press **ENTER** to finish the command.

Related Options

Feeder offset multiplier: Sets the offset distance between feeders when the diagram is generated.

There are several other options that affect the overall appearance of the one-line diagram. See the [Options](#) section for more information.

Swap

Used to transpose two parallel feeder segments on the one-line diagram.

To swap feeders, go to

Ribbon: DM Electrical RT->Feeders->  Swap

Pulldown Menu: DM Electrical RT->Feeders->Swap Feeder

You will be prompted to select a feeder segment.

Select first feeder segment to swap:

You will then be prompted to select a feeder segment to transpose with the first feeder segment.

Select second feeder segment to swap:

The two feeder segments will be transposed. The other segments of each feeder will be redrawn if necessary.

Add Segment to Middle

To add a segment to the middle of a feeder, go to

Ribbon: DM Electrical RT->Feeders->  Add Segment to Middle

Pulldown Menu: DM Electrical RT->Feeders->Add Segment to Middle of Feeder

You will be prompted to identify the location on the feeder where you want a segment to be added.

Select point on feeder to insert segment at:

Select the feeder where the segment is to be added. A new segment will be inserted. The appearance of the feeder will not change, but you will have new grips that you can use to drag the feeder into the correct shape.

Add Segment to End

To add a segment to the end of a feeder, go to

Ribbon: DM Electrical RT->Feeders->  Add Segment to End

Pulldown Menu: DM Electrical RT->Feeders->Add Segment to End of Feeder

You will be prompted to identify the feeder where a segment is to be added at the end.

Select feeder near end:

Select the feeder near the end where the segment is to be added. A segment will be added to the end of the feeder. The feeder will move slightly to accommodate this new section.

Remove Segment

To remove a segment from a feeder, go to

Ribbon: DM Electrical RT->Feeders->  Remove Segment

Pulldown Menu: DM Electrical RT->Feeders->Remove Segment from Feeder

You will be prompted to identify the segment to be removed.

Select segment on feeder to remove:

The feeder segment will be removed.

Insert Break

To insert a break in a feeder, go to

Ribbon: DM Electrical RT->Feeders->  Insert Break

Pulldown Menu: DM Electrical RT->Feeders->Insert Break in Feeder

You will be prompted to select where on the feeder to insert the break.

Specify point on feeder to insert break at:

A break will be inserted on the selected location on the feeder.

The break can be moved to a new location or made larger or smaller using the grips on the wire.

The appearance of the break can be customized by setting the block that is used in the [Project Options](#).

Remove Break

To remove a break from a feeder, go to

Ribbon: DM Electrical RT->Feeders->  Remove Break

Pulldown Menu: DM Electrical RT->Feeders->Remove Break in Feeder

You will be prompted to identify the broken feeder to be rejoined.

Select feeder near break to remove:

The break in the wire will be removed.

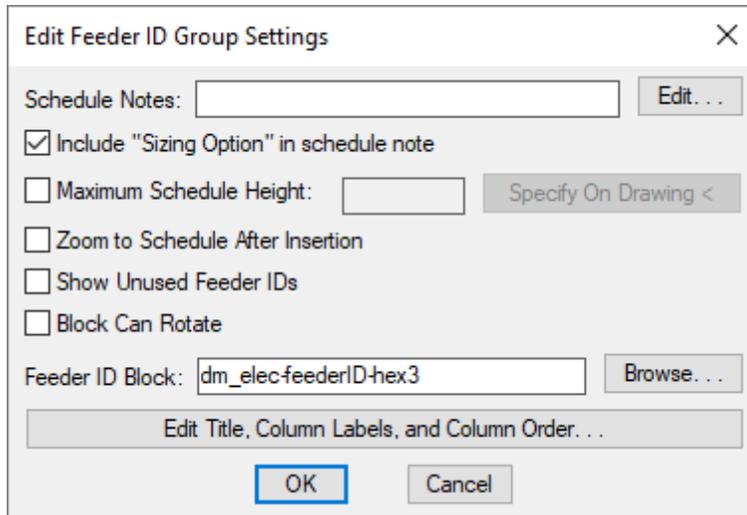
Insert Schedule

To insert or update the feeder schedule, go to

Ribbon: DM Electrical RT->Feeders->  Insert Schedule

Pulldown Menu: DM Electrical RT->Feeders->Insert Feeder Schedule

Edit Feeder ID Group Settings Dialog Box



The **Edit Feeder ID Group Settings** dialog box is used to set options for the feeder schedule. It is also used to set options for feeder ID blocks when they appear on the one-line diagram.

Include "Sizing Option" in schedule note: Inserts a note displaying the sizing method for the feeders that will appear below the schedule when inserted on the drawing.

Schedule Notes: A note that will appear below the schedule when inserted on the drawing.

Maximum Schedule Height: Whether the schedule has a maximum height. This height corresponds to inches on the printed page.

If this is not checked, the schedule will be in a single schedule.

If this is checked, you can specify the maximum height of the schedule. When the schedule exceeds this height, it will be continued in a second schedule next to the first. The label of the second schedule will have the *Schedule Title Continued Label* option added to it to indicate that it is a continuation of the first schedule.

Specify on Drawing: Press this button to specify the *Maximum Schedule Height* on the drawing. The dialog box will be closed and you will be prompted to specify the height.

Specify maximum schedule height:

The distance that you enter on the drawing will be used as the maximum height. It is simplest to draw a line straight down to where the bottom of the schedule should be located.

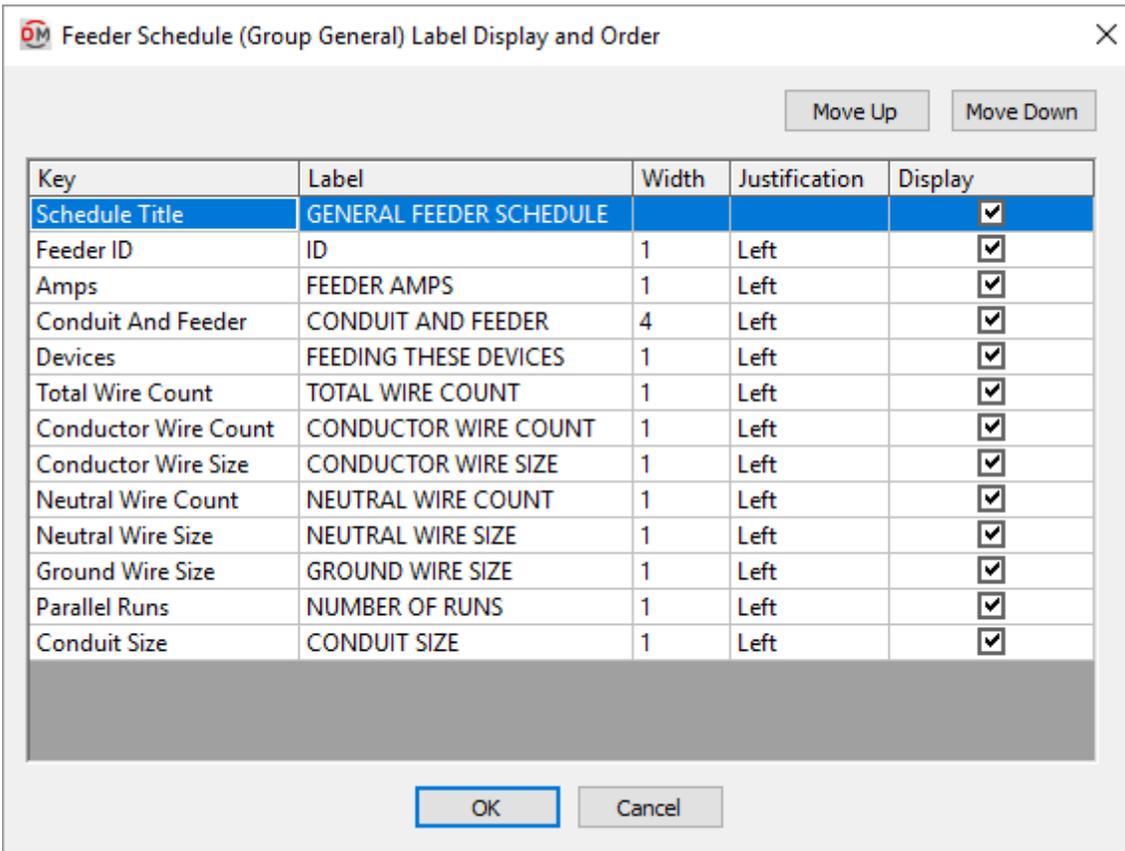
Zoom to Schedule After Insertion: Whether the display will be moved to the schedule location after it has been inserted or updated. Check this box if you are having difficulty locating your schedule on a busy drawing.

Block Can Rotate: Whether feeder ID blocks rotate when placed on feeders, depending upon the insertion point along the feeder.

Feeder ID Block: Sets the block that is displayed for feeder IDs. Press the **Browse** button to select a new block.

Edit Title, Column Labels, and Column Order: Press this button to modify the layout of the schedule on the drawing. Opens the **Feeder Schedule Label Display and Order** dialog box:

Feeder Schedule Label Display and Order Dialog Box



Move Up: Move the selected row up in the list. On the schedule, this moves the corresponding column to the left.

Move Down: Move the selected row down in the list. On the schedule, this moves the corresponding column to the right.

Key: The identifier for the column, describing what value it will display. The value in this column is fixed and cannot be changed.

The **Schedule Title** key is a special key. The *Label* of this key is the title of the schedule. The *Width* and *Display* values of this key are ignored. The width of the title is based upon the width of the columns in the schedule. The title is always displayed with the schedule.

Other values in the *Key* column are listed alphabetically below:

Amps: The ampacity of the feeder.

Conductor Wire Count: The number of conductor wires for the feeder.

Conductor Wire Size: The conductor wire size for the feeder.

Conduit and Feeder: The size of the feeder, including the conduit size and all wire sizes.

Conduit Size: The conduit size for the feeder.

Devices: The distribution equipment fed by this size feeder.

Feeder ID: The feeder ID for this size feeder.

Ground Wire Size: The ground wire size for the feeder.

Neutral Wire Count: The number of neutral wires for the feeder.

Neutral Wire Size: The neutral wire size for the feeder.

Parallel Runs: The number of parallel runs for the feeder.

Total Wire Count: The total number of conductor and neutral wires for the feeder.

Label: The name that will be displayed for the column.

You can define a second header for a column by separating the two headers with a | character. The first header will be merged across multiple columns with the same first header. See the [Column Subheadings in Schedules](#) article in the knowledge base for more information.

Width: The width in inches on the printed drawing.

Justification: The justification of the text values in the column.

- **Left:** The text is left-justified.
- **Center:** The text is center-justified.
- **Right:** The text is right-justified.

Display: Whether the column is shown on the schedule. If this is not checked, the value will not be displayed.

Inserting the Schedule the First Time

If the feeder schedule is not currently inserted on the drawing, you will be prompted for the insertion location of the schedule.

Specify insertion point for feeder schedule:

The location you specify will be used as the top-left corner for the feeder schedule.

Updating the Schedule Already on the Drawing

If the feeder schedule is already inserted on the drawing, it will be updated in its current location.

You must update the schedule on the drawing when you make changes to the project. The schedule will not update automatically.

The feeder schedule will also be updated when the [Update](#) command is run.

If you have manually inserted graphics, such as revision clouds, over the schedule graphic, be sure to check their

location after updating the schedule.

Utilities

The **Utilities** panel contains commands for providing assistance and maintaining the integrity of your project database and one-line diagram.

[Start New Electrical RT Project:](#) Starts a new project database.

[Import from Revit:](#) Imports a project from Revit.

[Rename Database:](#) Renames the current project database.

[Delete DM Backups Over 30 Days Old:](#) Deletes old backups of project databases.

[Find Lost Toolbars:](#) Relocates toolbars that have become unusable.

[Reload Ribbons:](#) Reloads Design Master ribbons if they are not visible.

[Copy Drawing and Remove Links to Database:](#) Creates a copy of the drawing that is not linked to the project database.

[Copy Drawing and Remove All DM Entities:](#) Creates a copy of the drawing that has all Design Master Electrical RT entities removed.

[Disconnect Database from Drawing:](#) Disconnects the link between the current drawing and the project database.

[Copy or Backup Project:](#) Creates a copy of the current project and all related drawings.

[Check In Floating License:](#) Checks in a floating license for Design Master Electrical RT.

[Help:](#) Displays this Help file.

[Go to Design Master Support Website:](#) Opens our support website.

[Send Email to Design Master Support:](#) Creates an email addressed to us.

[Send Project to Design Master Support:](#) Allows you to send project files to us so we can assist you with a problem you are having.

[Send Master and Standards Databases to Design Master Support:](#) Allows you to send database files to us so we can assist you with a problem you are having.

[Set Email Address:](#) Sets your email address and other contact information.

[Remote Support:](#) Allows you to connect your computer to the support team at Design Master Software so we can assist you with a problem you are having.

[Installation Settings:](#) Configures your installation settings.

[Update Local Install from Network:](#) Updates your location installation from the network.

Check for Updates: Checks if there is an update to the software available.

Install Patch: Installs a patch for the software.

Install License: Allows you to enter license information after you have purchased Design Master Electrical RT.

About: Displays information about your current version of Design Master Electrical RT.

Start New Electrical RT Project

Used to start a new project.

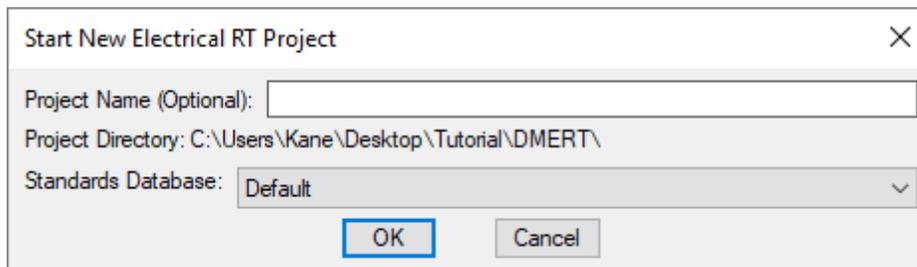
When you start a new project, a database file will be created in the same folder as the current drawing. The file name will be "dm_elec<Name>.dm", where <Name> is the name of the project. This is the database file where all of the information about your project is stored.

To create a new database file, go to

Ribbon: DM Electrical RT->Utilities->^{NEW} **PROJ** Start New Electrical RT Project

Pulldown Menu: DM Electrical RT->Start New Electrical RT Project

Start New Electrical RT Project Dialog Box



Project Name (Optional): The project name that is added to the end of the file name. This name is only used on the file name. It is not used anywhere else in the project. If you leave this field blank, the project database name will be "dm_elec.dm".

Project Directory: The folder in which the database will be created. The folder displayed and used is the folder that contains the current drawing.

Standards Database: Select the standards database from which to copy project options and settings.

The standards database stores the following information:

- Cable tray groups
- Conduit groups
- Label group settings
- Layer systems
- Layer definitions
- Options settings
- Text styles

Import from Revit

Used to import information from a Revit project into the current project. This command is used following the [Export One-Line](#) command to ensure the information has successfully been transferred.

To import project information from Revit, go to

Ribbon: DM Electrical RT->Utilities->  Import from Revit

Pulldown Menu: DM Electrical RT->Import from Revit

The information will be imported from your Revit project.

You will not need to run this command again after the information has been transferred. The project information is updated automatically each time you use a one-line diagram command.

Rename Database

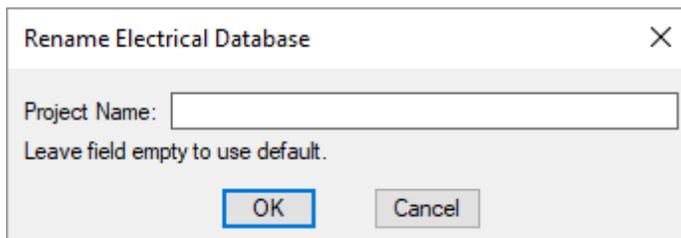
Used to change the name of the database file associated with the current drawing. It will change the suffix of the file when viewed in Windows Explorer. Nothing else in the project will be changed.

To rename the database, go to

Ribbon: DM Electrical RT->Utilities->  ->Rename Database

Pulldown Menu: DM Electrical RT->Utilities->Rename Database

Rename Electrical Database Dialog Box



Project Name: The new name of the database.

Enter the new *Project Name* and press the **OK** button. The suffix of the database file associated with the current drawing will be changed. No other changes will be made in the project.

Delete DM Backups Over 30 Days Old

Used to delete files from the DMBackup folder. Backups are made on a regular basis for projects and when certain utility commands are run. When a project is opened, any backups over 30 days old are automatically deleted. However, if a project is not opened, backups over 30 days old will not be deleted.

This command will erase all of the backups that it finds in any subfolders of the selected folder. If you have a folder that contains all your projects, you can select the main folder and have all backups from all projects deleted.

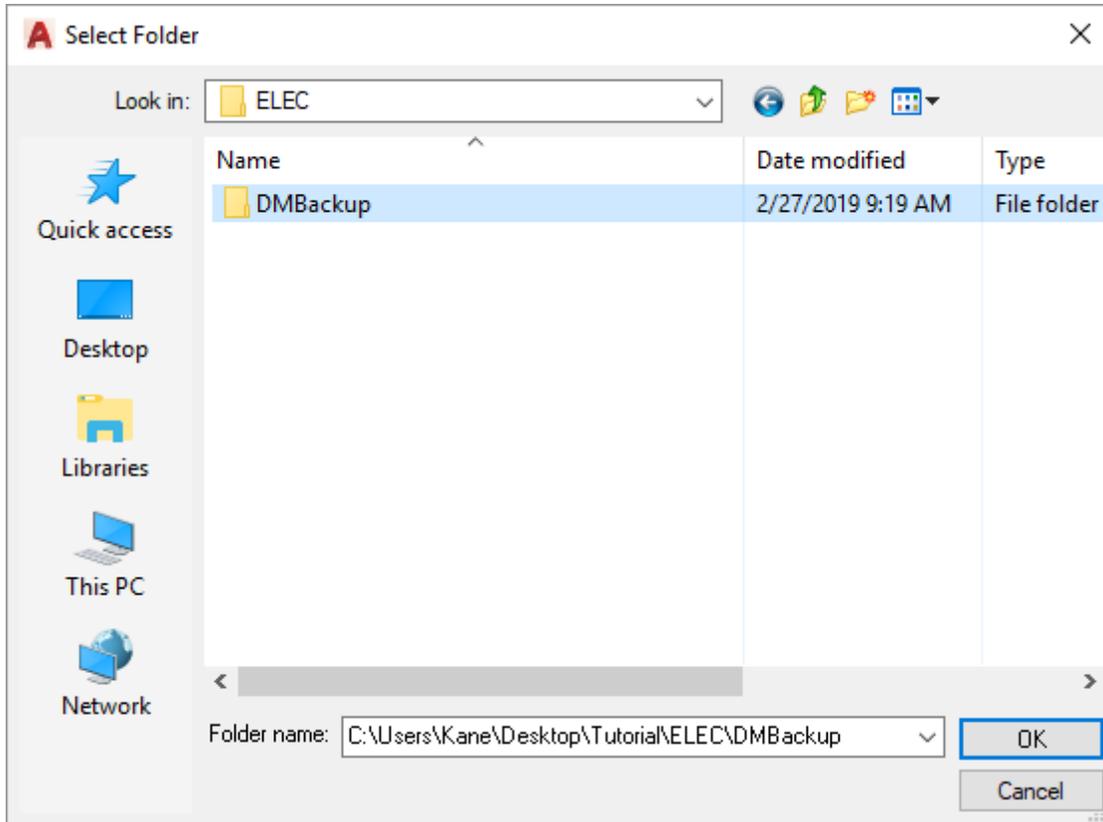
Backups less than 30 days old will not be deleted. You must use Windows Explorer to delete these folders.

To deleted backup files that are over 30 days old, go to

Ribbon: DM Electrical RT->Utilities->  ->Delete DM Backups Over 30 Days Old

Pulldown Menu: DM Electrical RT->Utilities->Delete DM Backups Over 30 Days Old

Select Folder Dialog Box



Select the folder to delete backups from. All backups over 30 days old will be deleted.

Find Lost Toolbars

Used to move all of the toolbars to a visible location on the screen. If AutoCAD moves the toolbars to a location that cannot be seen, the toolbars are made unusable. Moving all of the toolbars is the simplest solution to this problem.

To find lost toolbars, go to

Ribbon: DM Electrical RT->Utilities->  ->Find Lost Toolbars

Pulldown Menu: DM Electrical RT->Utilities->Find Lost Toolbars

Once this command is entered, all of the toolbars will be displayed. Move any toolbars you want visible to the correct location. Close any toolbars that you do not use.

Reload Ribbons

Used to reload the Design Master Electrical RT ribbon tabs. Use this command if the tabs have disappeared from your ribbon.

To reload the ribbon tabs, go to

Pulldown Menu: DM Electrical RT->Utilities->Reload Ribbons

Once this command is run, the ribbon tabs should be reloaded and visible on your ribbon.

Copy Drawing and Remove Links to Database

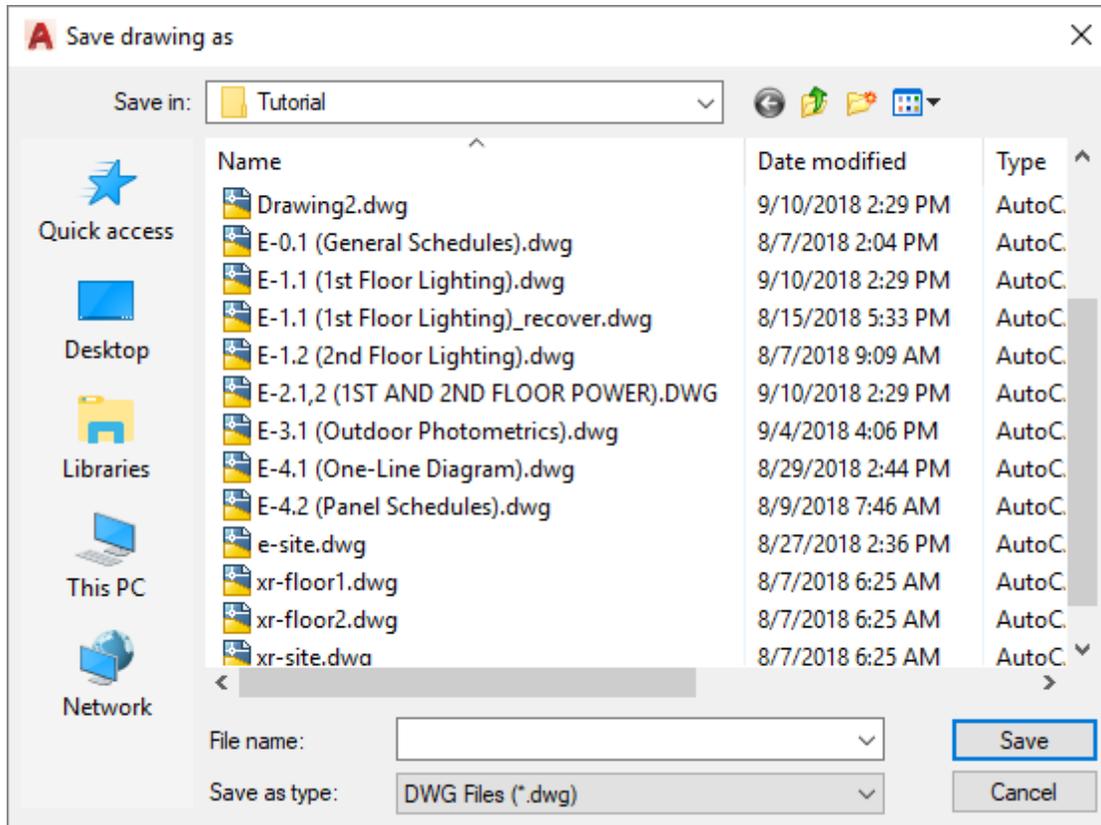
Used to make a copy of a drawing and remove all of the links between the Design Master Electrical RT entities on the drawing and the database. The appearance of the drawing will not change. All entities on the drawing will remain. However, they will be converted to AutoCAD entities and their connection to the database will be removed.

To copy a drawing and remove all of the links to the database, go to

Ribbon: DM Electrical RT->Utilities->  ->Copy Drawing and Remove Links to Database

Pulldown Menu: DM Electrical RT->Utilities->Copy Drawing and Remove Links to Database

Save Drawing as Dialog Box



Select a location and for the copy, enter a file name, and press the **OK** button. A copy of the current drawing will be made using the new name. All of the Design Master Electrical RT links to the project database will be removed.

The project database will not be modified during this command.

Copy Drawing and Remove All DM Entities

Used to make a copy of a drawing with all of the Design Master Electrical RT entities on it erased.

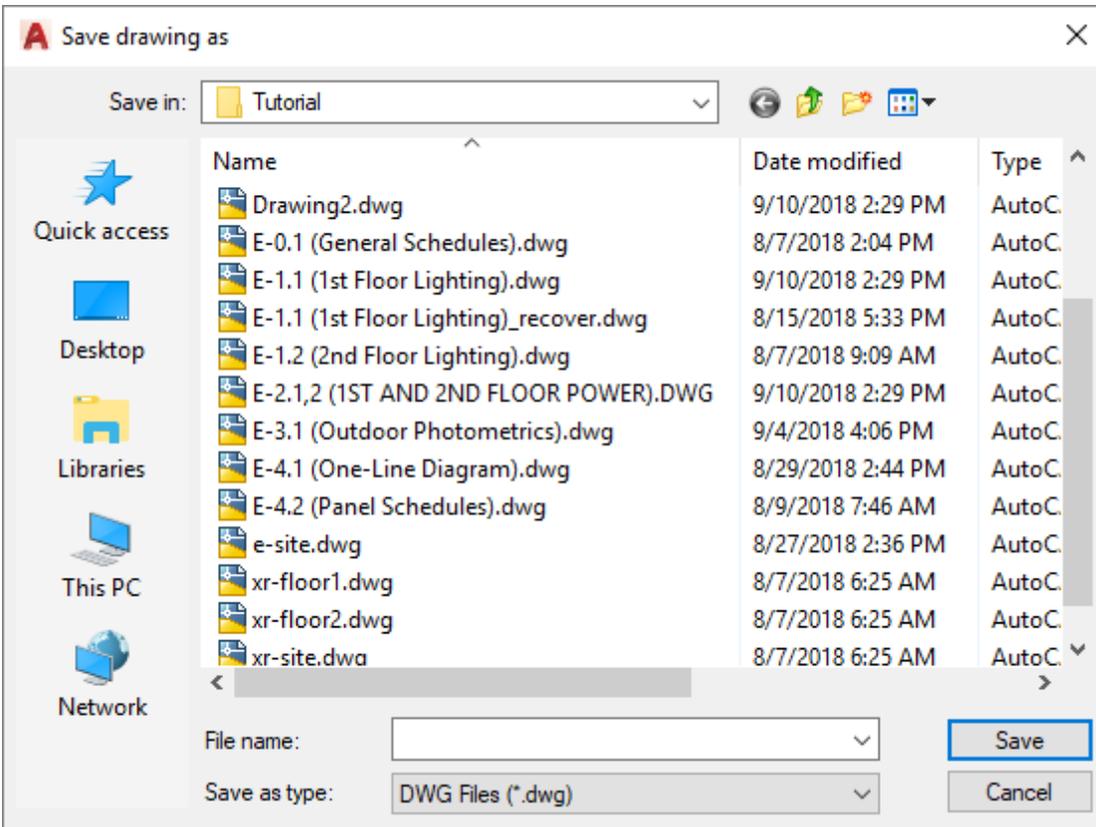
This command is useful when you want to create a new drawing with the same settings as an existing drawing. Using other methods, the copied drawing will copy the Design Master Electrical RT entities. Cleaning up these extra devices can cause problems if not done correctly. This command will remove all of the devices for you, leaving you with a new drawing that you can immediately start working in.

To copy a drawing and remove all of the Design Master Electrical RT entities, go to

Ribbon: DM Electrical RT->Utilities->  ->Copy Drawing and Remove All DM Entities

Pulldown Menu: DM Electrical RT->Utilities->Copy Drawing and Remove All DM Entities

Save Drawing as Dialog Box



Select a location and for the copy, enter a file name, and press the **OK** button. A copy of the current drawing will be made using the new name. All of the Design Master Electrical RT entities on the new drawing will be erased.

The project database will not be modified during this command.

Disconnect Database from Drawing

Used to remove all of the links between the Design Master Electrical RT entities on the current drawing and the database. The appearance of the drawing will not change. All entities on the drawing will remain. However, they will be converted to AutoCAD entities and their connection to the database will be removed.

To disconnect the database from the current drawing, go to

Ribbon: DM Electrical RT->Utilities->  ->Disconnect Database from Drawing

Pulldown Menu: DM Electrical RT->Utilities->Disconnect Database from Drawing

The project database will not be modified during this command.

Copy or Backup Project

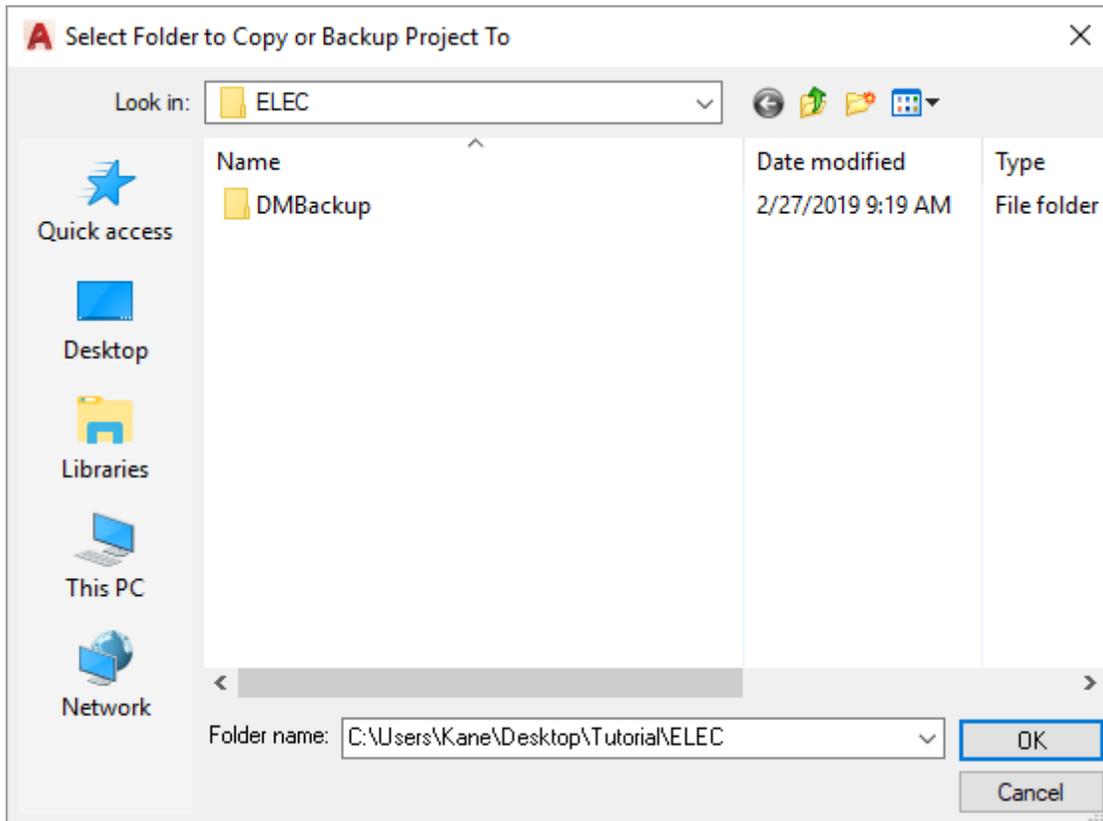
Used to make a complete copy or backup of the current project. When you copy or back up a project, it is important to copy all of the drawings and the Design Master database files. This command will copy all of the necessary files. Use this command if you want to make a backup of the current state of the project or if you want to make a copy to try a different design approach.

To copy or back up a project, go to

Ribbon: DM Electrical RT->Utilities->  ->Copy or Backup Project

Pulldown Menu: DM Electrical RT->Utilities->Copy or Backup Project

Select Folder to Copy or Backup Project To Dialog Box



Select the folder to copy or back up the project to and press the **OK** button. All files associated with the project will be copied and saved to the folder.

Check In Floating License

Used with floating licenses to immediately check in the license so that another person can use the software. Floating licenses are checked out in 10-minute intervals. If no commands are run for 10 minutes, the license is automatically released and another person can use the software.

If another person attempts to use the software before the license is released, a warning message will be displayed for the new user, stating that no license is available. The new user can choose to ignore the warning and immediately start using the software. However, a license overuse exception will be recorded in the license database. The license database is reviewed each year when you renew the software. If there are too many overuse exceptions, you will need to purchase another license.

Using this command, the original user can check in the floating license when they are done with it. The new user can then use the software immediately without causing a license overuse exception to be recorded.

To check in the floating license, go to

Ribbon: DM Electrical RT->Utilities->  ->Check In Floating License

Pull-down Menu: DM Electrical RT->Utilities->Check In Floating License

The floating license will be checked in and will be available for another person to use.

Help

To open the Design Master Electrical RT User Manual (which you are currently viewing), go to

Ribbon: DM Electrical RT->Utilities->  ->Help

Pull-down Menu: DM Electrical RT->Help->Help

The user manual will be opened in your web browser.

Go to Design Master Support Website

To open the Design Master Support Website, go to

Ribbon: DM Electrical RT->Utilities->  ->Go to Design Master Support Website

Pull-down Menu: DM Electrical RT->Help->Go to Design Master Support Website

The support page will be opened in your web browser. This page has useful links and information to help you when you have trouble with our software.

Send Email to Design Master Support

To send an email to us, go to

Ribbon: DM Electrical RT->Utilities->  ->Send Email to Design Master Support

Pull-down Menu: DM Electrical RT->Help->Send Email to Design Master Support

A draft email addressed to support@designmaster.biz will be opened in your preferred email client. Enter your message and send the email.

Send Project to Design Master Support

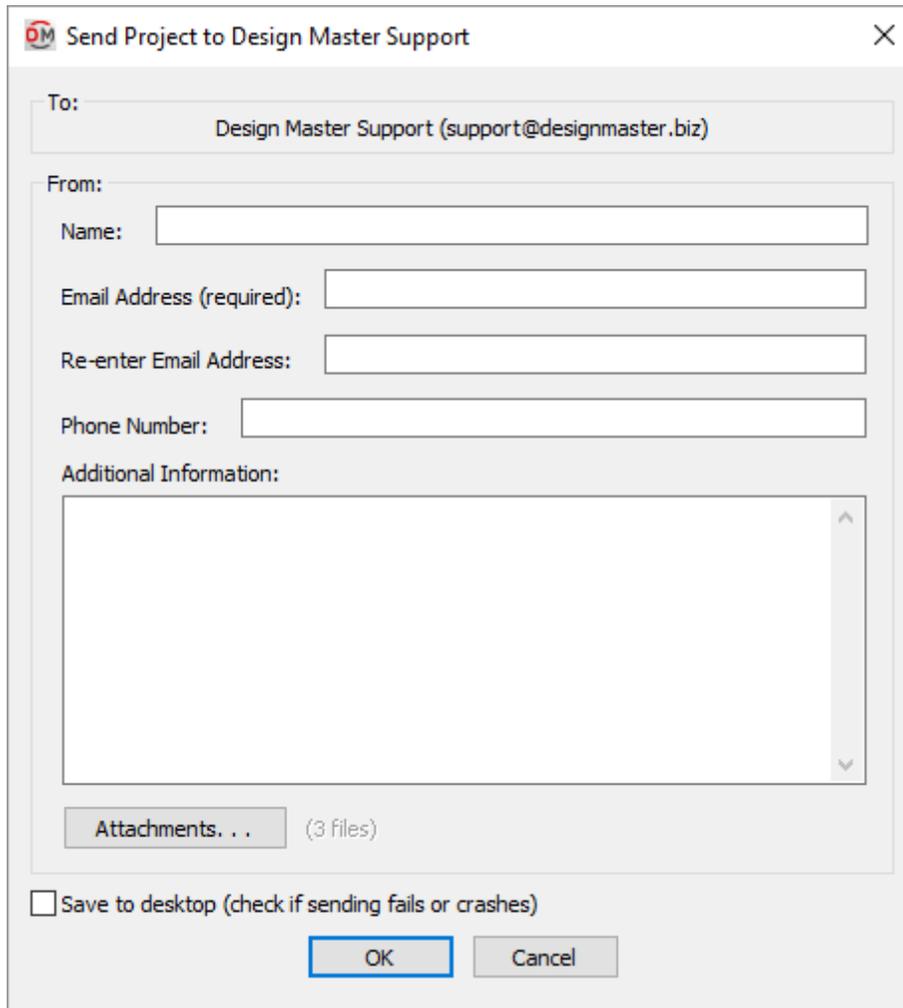
Used to send us the current drawing and the associated project database. Providing us with your project helps us recreate the problem you are having and find a solution to it. It is our preferred way for you to report a problem or ask a question. Many problems are specific to a project and having that immediately helps us assist you.

To send a copy of your project's current drawing and database to us, go to

Ribbon: DM Electrical RT->Utilities->  ->Send Project to Design Master Support

Pulldown Menu: DM Electrical RT->Help->Send Project to Design Master Support

Send Project to Design Master Support Dialog Box



To: Design Master Support (support@designmaster.biz)

From:

Name:

Email Address (required):

Re-enter Email Address:

Phone Number:

Additional Information:

Attachments... (3 files)

Save to desktop (check if sending fails or crashes)

OK Cancel

Name: Your name.

Email Address: Your email address. If possible, we will respond to your support request by email.

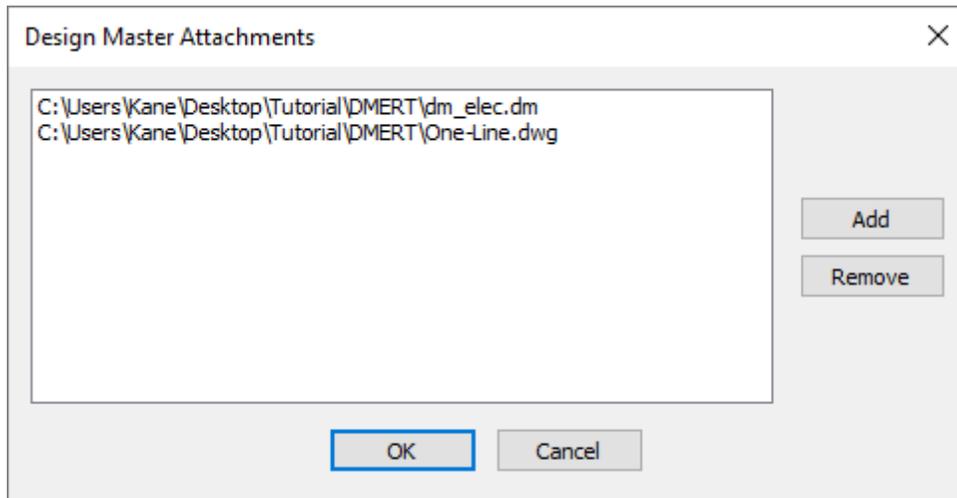
Phone Number: Your phone number. If we need additional information beyond what we can gather by email, we will call you.

Additional Information: A description of the problem you are having. The more information you can provide about your problem, the more likely we will be able to solve it for you. Examples include specific distribution equipment or feeders that exhibit the problem you are having.

Your Design Master Electrical RT version, AutoCAD version, and Windows version will be sent automatically with the support request. You do not need to include that information here.

Attachments: Press this button to change the files that will be sent with the support request.

The **Design Master Attachments** dialog box will appear.



By default, the current drawing and electrical database will be included in the list of files to send.

Add: Press this button to select additional files to send.

Remove: Press this button to remove the selected file from the list to send.

Save to desktop: Whether the support request is sent directly to us or saved to your desktop for you to email.

By default, this box is not checked. Support requests are automatically sent with no further input from you.

Some companies block outgoing messages from programs other than your email client. When this happens, you will be given a chance to save a ZIP file to your desktop that you can send to us manually. Detecting this configuration can take a long time.

When this box is checked, the attempt to send the message directly is skipped and you are immediately prompted to save a ZIP file to your desktop. Skipping the attempt to send saves time.

Send Master and Standards Databases to Design Master Support

Used to send us your master and standards customization database files. We will occasionally ask for these files when helping you solve problems related to your customization.

To send a copy of your master and standards databases to us, go to

Ribbon: DM Electrical RT->Utilities->  ->Send Master and Standards Databases to Design Master Support

Pulldown Menu: DM Electrical RT->Help->Send Master and Standards Databases to Design Master Support

Send Master and Standards Databases to Design Master Support Dialog Box

The dialog box is titled "Send Master and Standards Databases to Design Master Support". It features a "To:" field with the text "Design Master Support (support@designmaster.biz)". The "From:" section includes input fields for "Name", "Email Address (required)", "Re-enter Email Address", and "Phone Number". A large text area is provided for "Additional Information". Below this area is an "Attachments..." button indicating "(2 files)". At the bottom, there is a checkbox labeled "Save to desktop (check if sending fails or crashes)" and two buttons: "OK" and "Cancel".

Name: Your name.

Email Address: Your email address. If possible, we will respond to your support request by email.

Phone Number: Your phone number. If we need additional information beyond what we can gather by email, we will call you.

Additional Information: A description of the problem you are having. The more information you can provide about your problem, the more likely we will be able to solve it for you. Examples include specific distribution equipment or feeders that exhibit the problem you are having.

Your Design Master Electrical RT version, AutoCAD version, and Windows version will be sent automatically with the support request. You do not need to include that information here.

Save to desktop: Whether the support request is sent directly to us or saved to your desktop for you to email.

By default, this box is not checked. Support requests are automatically sent with no further input from you.

Some companies block outgoing messages from programs other than your email client. When this happens, you will be given a chance to save a ZIP file to your desktop that you can send to us manually. Detecting this configuration can take a long time.

When this box is checked, the attempt to send the message directly is skipped and you are immediately prompted to save a ZIP file to your desktop. Skipping the attempt to send saves time.

Set Email Address

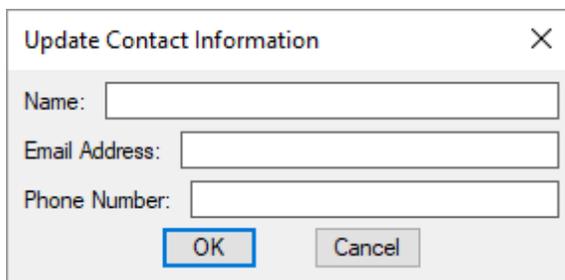
Used to set your default email address and other contact information used when sending support cases to us.

To set your default email address, go to

Ribbon: DM Electrical RT->Utilities->  ->Set Email Address

Pulldown Menu: DM Electrical RT->Help->Set Email Address

Update Contact Information Dialog Box



Name: Your name.

Email Address: Your email address. If possible, we will respond to your support request by email.

Phone Number: Your phone number. If we need additional information beyond what we can gather by email, we will call you.

Remote Support

Used to allow us to connect to your computer over the internet. We will be able to see your screen and perform actions on your computer.

To allow us to connect to your computer, go to

Ribbon: DM Electrical RT->Utilities->  ->Remote Support

Pulldown Menu: DM Electrical RT->Help->Remote Support

The remote support program will run and allow us to connect to your computer.

An ID number will be displayed, which you will need to read aloud to us.

We use TeamViewer for our remote support. You can visit their website at <http://www.teamviewer.com>. Information about security is available at <http://www.teamviewer.com/en/products/security.aspx>.

Installation Settings

Used to display the current installation settings. It can be used to verify the installation settings are correct, and modify them if necessary.

To view and modify the installation settings, go to

Ribbon: DM Electrical RT->Utilities->  ->Installation Settings

Pulldown Menu: DM Electrical RT->Help->Installation Settings

There are three different installation types.

Local

A local install should be used when there is only one person using Design Master Electrical RT in your office. All program and customization files are stored directly on the computer. This install type should be used even if the one person is installing the software on a laptop.

See the [Local Install](#) section for more information about this install type.

Network

A network install should be used when there are multiple people using Design Master Electrical RT in your office. The program files are stored on the computer and are automatically updated from the network. The customization files are stored on the network and are shared between users.

See the [Network Install](#) section for more information about this install type.

Network Laptop

A network laptop install should be used if the computer is a laptop and multiple people are using Design Master Electrical RT in your office. The program files are stored on the laptop and are automatically updated from the network. The customization files are stored on both the network and the laptop. The network customization files will be used when the laptop is connected to the network. The local customization files will be used when the laptop is away from the office and disconnected from the network.

See the [Network Laptop Install](#) section for more information about this install type.

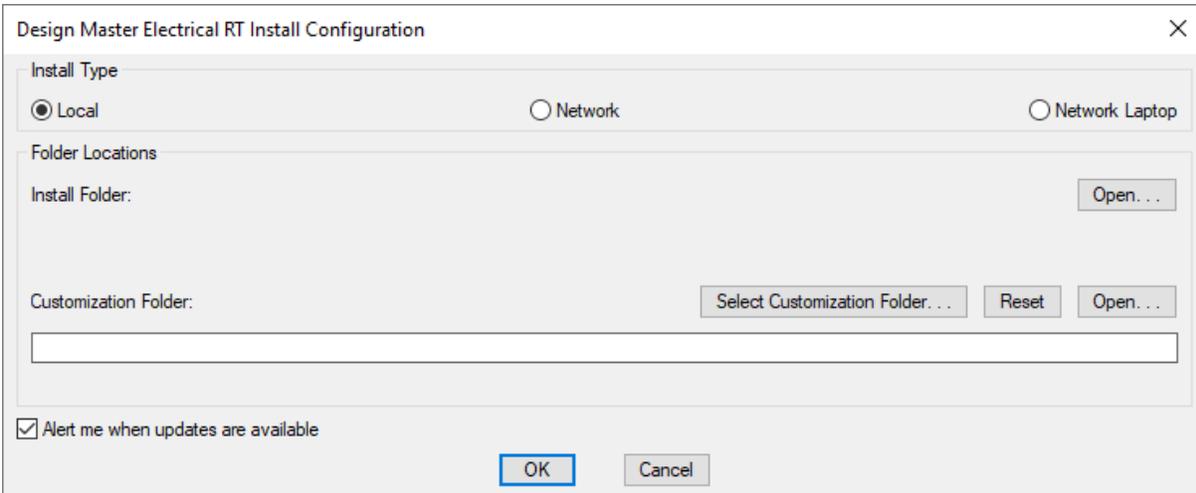
The local customization will automatically be updated with any changes to the network customization once a day. Use the `Update Laptop Customization` command to manually update the customization stored on the computer. See the [Update Laptop Customization](#) section for more information.

Local Install

This section describes configuring Design Master Electrical RT for a local install. A local install should be used when there is only one person using Design Master Electrical RT in your office. All program and customization files are stored directly on the computer. This install type should be used even if the one person is installing the software on a laptop.

If you have floating licenses, this install type should not be used.

Configuring an Installation on a Local Computer



Install Type: The type of installation. The dialog box will change depending upon the type selected.

- **Local:** The installation type described in this section.
- **Network:** See the [Network Install](#) section for more information about this install type.
- **Network Laptop:** See the [Network Laptop Install](#) section for more information about this install type.

Install Folder: The folder where Design Master Electrical RT is installed. This folder is forced to be located in your Application Data folder.

Customization Folder: The folder where the electrical customization files are stored.

Select Customization Folder: Press this button to select a new location for the customization folder.

Reset: Press this button to reset the electrical customization to the default location, located in your Application Data folder.

Floating License Server Folder: The folder on the network where the license database file is located. Applies only if a floating license is installed.

Open: There are two or three **Open** buttons in the dialog box, depending upon whether a floating license is installed. Press this button to open Windows Explorer to one of the folders listed in the dialog box. The first button opens the install folder. The second button opens the customization folder. The third button is available if a floating license is installed and opens the license server folder.

Alert me when updates are available: Whether updates are checked for automatically. If this is checked, an update check will occur the first time you run a command each day. An alert will appear if an update is available.

Network Install

This section describes configuring Design Master Electrical RT for a network install. A network install should be used when there are multiple people using Design Master Electrical RT in your office. The program files are stored on the computer and are automatically updated from the network. The customization files are stored on the network and are shared between users.

Configuring an Installation on a Network

The screenshot shows the 'Design Master Electrical RT Install Configuration' dialog box. It features three radio buttons under 'Install Type': 'Local', 'Network' (which is selected), and 'Network Laptop'. Below this, the 'Folder Locations' section contains three rows of input fields and buttons: 'Local Install Folder' with an 'Open...' button; 'Network Install Folder' with a 'Select Network Install Folder...' button and an 'Open...' button; and 'Customization Folder' with a 'Select Customization Folder...' button and an 'Open...' button. At the bottom, there is a checked checkbox for 'Alert me when updates are available' and 'OK' and 'Cancel' buttons.

Install Type: The type of installation. The dialog box will change depending upon the type selected.

- **Local:** See the [Local Install](#) section for more information about this install type.
- **Network:** The installation type described in this section.
- **Network Laptop:** See the [Network Laptop Install](#) section for more information about this install type.

Local Install Folder: The folder on the local computer where Design Master Electrical RT is installed. This folder is forced to be located in your Application Data folder.

Network Install Folder: The folder on the network where Design Master Electrical RT is installed. This folder should be on the network. All computers in your office should use the same network install folder.

Updates should be installed to this folder. Updates to this folder will automatically be copied to the local install folder.

Customization Folder: The folder where the electrical customization files are stored. This folder should be on the network. All computers in your office should use the same electrical customization folder.

Select Customization Folder: Press this button to select a new location for the customization folder.

Floating License Server Folder: The folder on the network where the license database file is located. Applies only if a floating license is installed.

Open: There are three or four **Open** buttons in the dialog box, depending upon whether a floating license is

installed. Press this button to open Windows Explorer to one of the folders listed in the dialog box. The first button opens the local install folder. The second button opens the local install folder. The third button opens the customization folder. The fourth button is available if a floating license is installed and opens the license server folder.

Alert me when updates are available: Whether updates are checked for automatically. If this is checked, an update check will occur the first time you run a command each day. An alert will appear if an update is available.

Network Laptop Install

This section describes configuring Design Master Electrical RT for a network laptop install. A network laptop install should be used if the computer is a laptop and multiple people are using Design Master Electrical RT in your office. The program files are stored on the laptop and are automatically updated from the network. The customization files are stored on both the network and the laptop. The network customization files will be used when the laptop is connected to the network. The local customization files will be used when the laptop is away from the office and disconnected from the network.

Configuring an Installation on a Laptop

The screenshot shows the 'Design Master Electrical RT Install Configuration' dialog box. It features a title bar with a close button (X). The 'Install Type' section contains three radio buttons: 'Local', 'Network', and 'Network Laptop', with 'Network Laptop' selected. Below this is the 'Folder Locations' section, which includes four rows of folder selection options. Each row has a text input field, a 'Select' button, and an 'Open...' button. The 'Local Install Folder' row has an 'Open...' button. The 'Network Install Folder' row has a 'Select Network Install Folder...' button and an 'Open...' button. The 'Local Customization Folder' row has a 'Select Local Customization Folder...' button, a 'Reset' button, and an 'Open...' button. The 'Network Customization Folder' row has a 'Select Network Customization Folder...' button and an 'Open...' button. At the bottom of the dialog, there is a checked checkbox labeled 'Alert me when updates are available' and two buttons: 'OK' and 'Cancel'.

Install Type: The type of installation. The dialog box will change depending upon the type selected.

- **Local:** See the [Local Install](#) section for more information about this install type.
- **Network:** See the [Network Install](#) section for more information about this install type.
- **Network Laptop:** The installation type described in this section.

Local Install Folder: The folder on the local computer where Design Master Electrical RT is installed. This folder is forced to be located in your Application Data folder.

Network Install Folder: The folder on the network where Design Master Electrical RT is installed. This folder

should be on the network. All computers in your office should use the same network install folder.

Updates should be installed to this folder. Updates to this folder will automatically be copied to the local install folder.

Local Customization Folder: The folder where the local electrical customization files are stored. This customization folder is used if a network connection is not available.

Select Local Customization Folder: Press this button to select a new location for the customization folder.

Reset: Press this button to reset the electrical customization to the default location, located in your Application Data folder.

Network Customization Folder: The folder where the electrical customization files are stored. This folder should be on the network. All computers in your office should use the same electrical customization folder.

This folder is used when the computer is connected to the network. The files in this folder are copied to the local customization folder once each day.

Select Network Customization Folder: Press this button to select a new location for the customization folder.

Floating License Server Folder: The folder on the network where the license database file is located. Applies only if a floating license is installed.

Open: There are four or five **Open** buttons in the dialog box, depending upon whether a floating license is installed. Press this button to open Windows Explorer to one of the folders listed in the dialog box. The first button opens the local install folder. The second button opens the local install folder. The third button opens the local customization folder. The fourth button opens the network customization folder. The fifth button is available if a floating license is installed and opens the license server folder.

Alert me when updates are available: Whether updates are checked for automatically. If this is checked, an update check will occur the first time you run a command each day. An alert will appear if an update is available.

Update Local Install from Network

Used to update the program files on your computer from the program files on the network if you have a [network install](#) or [network laptop install](#).

This process should take place automatically. Only use this command if there is a problem.

To update the local install from the network, go to

Ribbon: DM Electrical RT->Utilities->  ->Update Local Install from Network

Pulldown Menu: DM Electrical RT->Help->Update Local Install from Network

The program files on your computer will be updated.

Check for Updates

Compares the version of Design Master Electrical RT you have installed with the latest version that is available on our website. You will be given instructions for installing a newer version if one is available.

To check for updates, go to

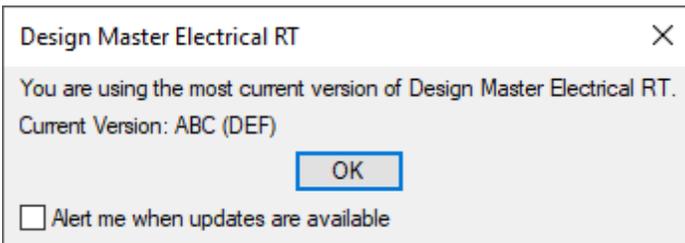
Ribbon: DM Electrical RT->Utilities->  ->Check for Updates

Pulldown Menu: DM Electrical RT->Help->Check for Updates

The dialog box that appears depends upon whether an update is available from our website.

Update Not Available

If an update is not available on our website, the following dialog box is displayed.

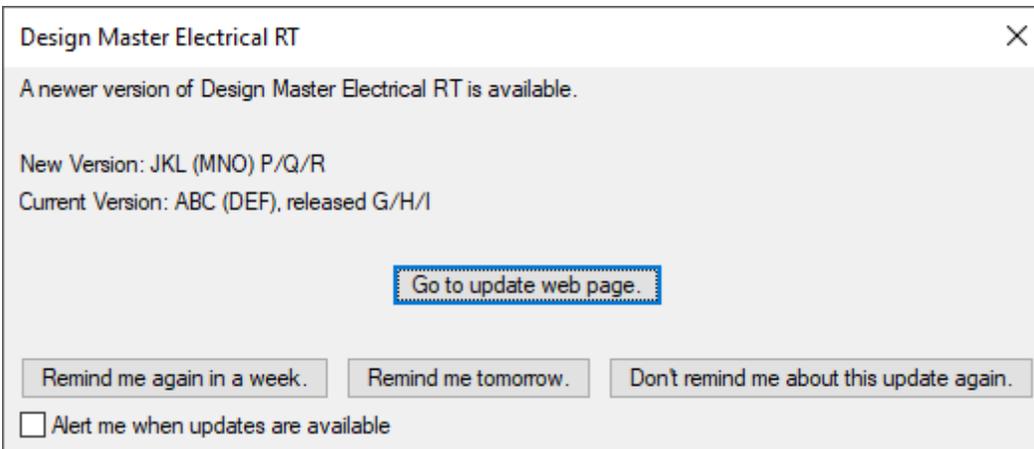


Current Version: The current version of the software. **ABC** will be replaced with the release number. **DEF** will be replaced with the build number.

Alert me when updates are available: Whether updates are checked for automatically. If this is checked, an update check will occur the first time you run a command each day. An alert will appear if an update is available.

Update Available

If the versions are different, you will be prompted to install the latest version.



New Version: The new version of the software available from our website. **JKL** will be replaced with the new release number. **MNO** will be replaced with the new build number. **P/Q/R** is the date the new version was released.

Current Version: The current version of the software. **ABC** will be replaced with the currently installed release number. **DEF** will be replaced with the currently installed build number. **G/H/I** is the date the currently installed version was released.

Go to update web page: Press this button to go to a page on our website about the new release. The page will include a list of new features, install instructions, and a download link.

Remind me again in a week: Press this button to close the dialog box and be reminded about the new version again in one week.

Remind me tomorrow: Press this button to close the dialog box and be reminded about the new version again tomorrow.

Don't remind me about this update again: Press this button to close the dialog box. You will not be reminded about the new version again.

Alert me when updates are available: Whether updates are checked for automatically. If this is checked, an update check will occur the first time you run a command each day. An alert will appear if an update is available.

Install Patch

Used to install patches we send to you. These patches will be ZIP files sent in response to crash reports or support requests. We send patches to specific users to solve problems they are currently having. They are not posted to our website.

We regularly release updated versions of Design Master Electrical RT that include all of the patches we sent to customers. These updates are available from our website. You do not need to use this command to install these updates.

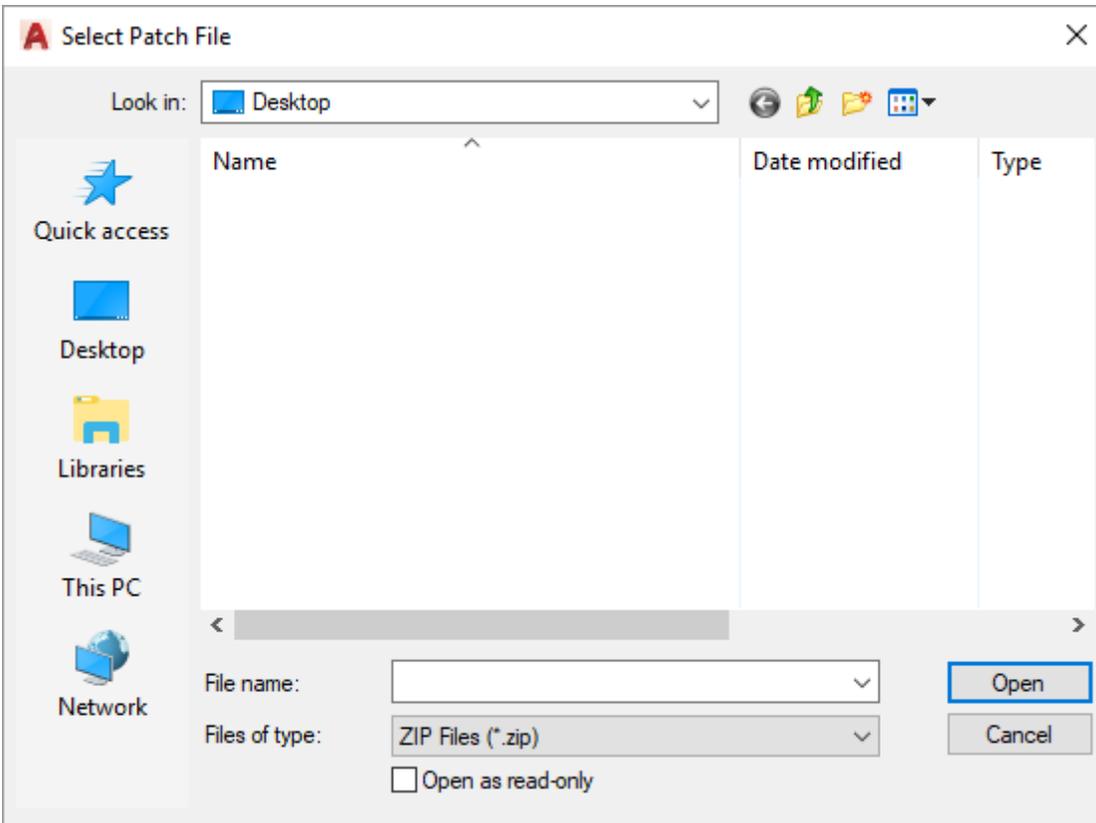
Once you have installed a patch, you will not need to install it again. All future patches or updates you receive will include the patch.

To install a software patch, go to

Ribbon: DM Electrical RT->Utilities->  ->Install Patch

Pulldown Menu: DM Electrical RT->Help->Install Patch

Select Patch File Dialog Box



Select the patch ZIP file and press the **Open** button. The patch will be installed on your computer. If you have a [network install](#), it will also be installed on the network. Installing it to the network will update all of the other computers in your office.

The patch file will be erased after it is installed. It is erased to discourage you from installing it again in the future.

Restart AutoCAD after installing the patch. The error you were seeing should now be resolved.

Install License

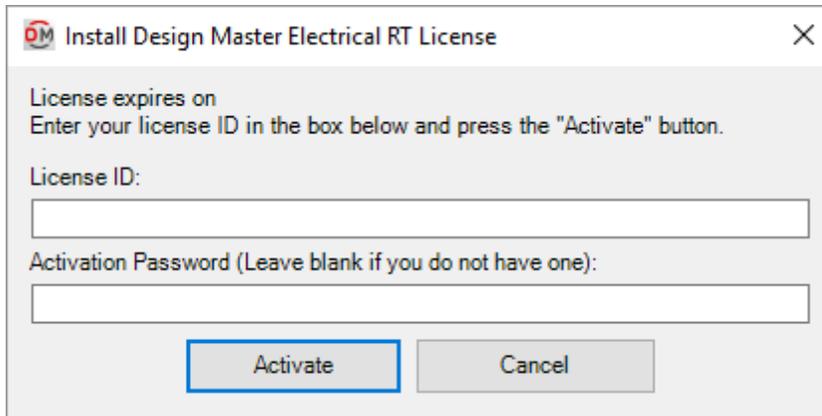
Used to activate the license for Design Master Electrical RT.

To activate a license, go to

Ribbon: DM Electrical RT->Utilities->  ->Install License

Pulldown Menu: DM Electrical RT->Help->Install License

Install Design Master Electrical RT License Dialog Box



Enter your *License ID* and *Activation Password* in the fields provided. If you did not receive a password, leave the *Activation Password* field blank.

Press the **Activate** button to activate your license.

About

To view general information on the Design Master Electrical RT software, go to

Ribbon: DM Electrical RT->Utilities-> ? ->About

Pulldown Menu: DM Electrical RT->Help->About

A dialog box will appear that includes the version of software you are running and your current license status.

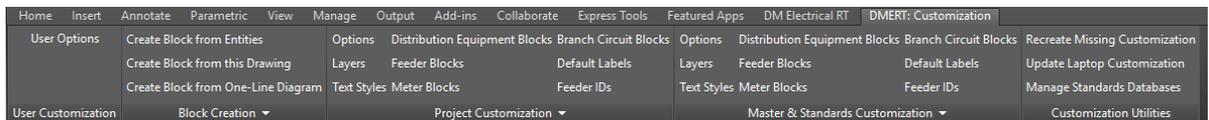
DMERT: Customization Ribbon

All of the commands for customizing Design Master Electrical RT are on a ribbon tab labeled **DMERT: Customization**.

To access the commands, select the **DMERT: Customization** tab from the list.



The commands for customizing Design Master Electrical RT will be displayed when the **DMERT: Customization** tab is selected:



The commands are also available in the **DM Electrical RT** pulldown menu.

User Customization

The **User Customization** panel contains a command for customizing user information and preferences.

User Options: Sets default user information and preferences when running certain commands.

User Options

Allows you to customize settings that are specific to you. These settings are stored on your computer, not in the project, master, or standards database. Some of these settings are shared with other Design Master programs you have installed on your computer.

To update your user settings, go to

Ribbon: DMERT: Customization->User Customization->User Options

Pulldown Menu: DM Electrical RT->Customization->User Options

Design Master User Settings Dialog Box

Name	Value
User Support Information	
Name	
Email	
Phone	
Save support emails to the desktop (set to "Yes" if sending fails or crashes)	No
Drawing Options	
Zoom to schedule after insertion	No
Automatically open drawings that need to be updated	No
Electrical	
Alert me when updates are available	Yes

User Support Information

Name: Your name.

Email: Your email address. This is the email address we will use when replying to support requests from you.

Phone: Your phone number. This phone number will be sent with any support requests you send. It is not a required field, but having it in the support requests helps us call you if we need additional information.

Save support emails to the desktop (set to "Yes" if sending fails or crashes): Support requests and bug reports

can be emailed directly from Design Master Electrical RT. Some company's networks disable this ability, causing the send to fail or crash. When this happens, the information is saved to a file on your desktop that you can email to us manually.

- **Yes:** Design Master Electrical RT does not attempt to send the email directly to us. Instead, it saves it to the desktop. Choose this setting if you consistently have trouble sending us support emails through our software. Determining that the send step will fail can take time. When you know it will fail, skipping it will save you time.
- **No:** Design Master Electrical RT will attempt to send the email directly to us. When possible, this is the setting you should use.

Drawing Options

Zoom to schedule after insertion: After you insert a schedule on the drawing, you can specify whether the drawing should zoom to the schedule or remain at the same location.

- **Yes:** The drawing will zoom to the schedule after it has been inserted.
- **No:** The drawing will remain at the same location after a schedule is inserted.

Automatically open drawings that need to be updated: Design Master Electrical RT projects can span multiple drawings. Changes in one drawing can require that changes be made in another drawing. In order to make the changes in the other drawing, it must be opened in AutoCAD.

- **Yes:** When a change in another drawing is required, the other drawing will be opened. This will take a moment, but when it is finished, the current drawing will remain active. If the other drawing is already open, nothing will happen.
- **No:** When a change in another drawing is required, you will be alerted at the command line, but it will not automatically be opened. The alert will continue to appear at the command line until you manually open the drawing and it is updated.

Electrical

Alert me when updates are available: Whether updates are checked for automatically. If this is checked, an update check will occur the first time you run a command each day. An alert will appear if an update is available.

Editing a Setting

To edit an option setting, select the *Value* in the list and enter a new value.

Press the **OK** button to save your changes.

Block Creation

The **Block Creation** panel contains commands for creating custom blocks for your one-line diagram.

[Create Block from Entities:](#) Creates a custom block from entities on the current drawing.

[Create Block from this Drawing:](#) Creates a custom block from the current drawing.

[Create Block from One-Line Diagram:](#) Creates a custom block from blocks on the one-line diagram.

[Create Slide:](#) Creates a slide for a custom block.

[Open Block from Drawing:](#) Opens the drawing a block is based upon.

[Redefine Block in this Drawing](#): Updates the appearance of a block that has been changed.

Create Block from Entities

Used to create a block that can be used on your one-line diagram. Specific entities on the current drawing are used to create the block. The entities selected will be removed from the drawing during this process.

To create the block, go to

Ribbon: DMERT: Customization->Block Creation->Create Block from Entities

Pulldown Menu: DM Electrical RT->Customization->Block Creation->Create Block from Entities

Create One-Line Diagram Block Dialog Box

Create One-Line Diagram Block

Block Drawing File Name:

C:\DMSupport_Customization\

Move entities to layer 0 (if unsure, leave this checked)

Block Type

Distribution Equipment

Branch Circuit Device

Feeder

Meter

Upstream Connection Points:

Upstream Feeder Connection Direction:

Downstream Connection Point:

Downstream Feeder Connection Direction:

Slide Settings

Create slide

Block Color:

Database Settings

Create record in project database

Create record in master database

Display Name:

Block Drawing File Name: The name of the drawing file for the block.

Folder: The folder where the block will be saved. The default location is your customization folder.

Set Folder: Press this button to change the folder where the block will be saved.

Move entities to layer 0: Whether the entities you select for the block are moved to layer 0 or left on the layer they are currently on. If you are not sure what this means, leave this box checked.

See the AutoCAD help for more information on setting layers in blocks.

Block Type: The type of device that the one-line diagram block is used to represent.

If you select **Feeder** or **Meter**, the connection point settings below will be disabled.

Upstream Connection Points: Sets the number of upstream connection points for the block.

If **None** is selected and an upstream connection is required on the one-line diagram, the feeder will connect to the insertion point of the block.

Select **Two** if the block will be used to represent transfer switches or UPSs.

Upstream Feeder Connection Direction: The direction from which the upstream feeder connects to the block.

Downstream Connection Point: Whether the block has a downstream connection point.

If **No** is selected and a downstream connection is required on the one-line diagram, the feeder will connect to the insertion point of the block.

Downstream Feeder Connection Direction: The direction from which the downstream feeder connects to the block.

Slide Settings

Create slide: Whether a slide for the block will be created automatically. The slide is used in dialog boxes to display the graphics.

If you do not create a slide for a block, an "X" will be shown in the dialog boxes. The block will still display properly on the drawing.

You can manually create the slide later using the [Create Slide](#) command.

Block Color: The color to use for the block in the slide.

Select Block Color: Press this button to set *Block Color* using the AutoCAD **Select Color** dialog box.

Database Settings

Create record in project database: Whether the block is added to the project database.

Create record in master database: Whether the block is added to the master database.

Display Name: The name of the block in the drawing and in the selected databases.

Enter the information needed to create the block and press the **OK** button.

If you did not set *Upstream Connection Points* to **None**, you will be prompted to specify the upstream connection point for the block.

Specify upstream connection point:

If you set *Upstream Connection Points* to **Two**, you will be prompted to specify a second upstream connection point.

If you set *Downstream Connection Point* to **Yes**, you will then be prompted to specify the downstream connection point for the block.

Specify downstream connection point:

If you set *Block Type* to **Feeder** or **Meter**, you will then be prompted to specify the mirroring point. This point is displayed as a grip when the block is inserted and is used to mirror the block.

Specify mirroring point:

The block, slide, and database records will be created for you. The entities selected for the block will be removed from the drawing.

If a slide is created, the screen will flash during the creation process. When it is finished, you should return to your original view of the drawing.

Create Block from this Drawing

Used to configure your current drawing to work as a custom block on your one-line diagram.

You can manually create a slide for the block using the [Create Slide](#) command.

To configure the current drawing, go to

Ribbon: DMERT: Customization->Block Creation->Create Block from This Drawing

Pull-down Menu: DM Electrical RT->Customization->Block Creation->Create Block from This Drawing

A **Design Master Electrical RT** dialog box will appear, asking if the block will be used as a feeder or meter block.

Yes: The block will be a feeder or meter block. Feeder wire blocks are able to be inserted at the ends or in the middle of feeders. The block can also be used to represent distribution equipment or equipment connections on the one-line diagram.

No: The block will not be a feeder or meter block. The block can only be used to represent distribution equipment or equipment connections on the one-line diagram. It cannot be used in a feeder.

Creating a Feeder Block

You will be prompted to specify the location of the upstream connection point. This is the point that the feeder from the upstream device will connect to by default.

Specify upstream connection point:

You will then be prompted to specify the location of the downstream connection point. This is the point that the feeder to the downstream device will connect to by default.

Specify downstream connection point:

You will then be prompted to specify the mirroring point. This point is displayed as a grip when the block is inserted. It is used to mirror the block over the feeder line.

Specify mirroring point:

Creating a Non-Feeder Block

A **Design Master Electrical RT** dialog box will appear, asking whether the block has an upstream connection point. If you press the **Yes** button, you will be prompted to specify the location of the upstream connection point. This is the point that the feeder from the upstream device will connect to by default.

Specify upstream connection point:

You will then be asked if the block has a second upstream connection point. If you press the **Yes** button, you will be prompted to specify its location. The second point is used for the second upstream connection on transfer switches and UPSs.

If an upstream connection point is not inserted but is required on the one-line diagram, the feeder will connect to the insertion point of the block.

A **Design Master Electrical RT** dialog box will appear, asking whether the block has a downstream connection point. If you press the **Yes** button, you will be prompted to specify the location of the downstream connection point. This is the point that the feeder to the downstream device will connect to by default.

Specify downstream connection point:

If a downstream connection point is not inserted but is required on the one-line diagram, the feeder will connect to the insertion point of the block.

Create Block from One-Line Diagram

Used to configure entities on a one-line diagram to work as a custom block on other one-line diagrams. This command can be used to create blocks that will be inserted with labels.

You can manually create a slide for the block using the [Create Slide](#) command.

To configure a one-line diagram block, go to

Ribbon: DMERT: Customization->Block Creation->Create Block from One-Line Diagram

Pulldown Menu: DM Electrical RT->Customization->Block Creation->Create Block from One-Line Diagram

Create One-Line Diagram Block

Create One-Line Diagram Block

Block Drawing File Name:

C:\DMSupport_Customization\ Set Folder...

Move entities to layer 0 (if unsure, leave this checked)

Block Type

Distribution Equipment

Branch Circuit Device

Feeder

Meter

Database Settings

Create record in project database

Create record in master database

Display Name:

Block Drawing File Name: The name of the drawing file for the block.

Folder: The folder where the block will be saved. The default location is your customization folder.

Set Folder: Press this button to change the folder where the block will be saved.

Move entities to layer 0: Whether the entities you select for the block are moved to layer 0 or left on the layer they are currently on. If you are not sure what this means, leave this box checked.

See the AutoCAD help for more information on setting layers in blocks.

Block Type: The type of device that the one-line diagram block is used to represent.

Database Settings

Create record in project database: Whether the block is added to the project database.

Create record in master database: Whether the block is added to the master database.

Display Name: The name of the block in the drawing and in the selected databases.

Enter the information needed to create the one-line diagram block and press the **OK** button.

You will be prompted to specify a distribution equipment or feeder block.

Select distribution equipment or feeder to create block from:

You must specify a block that corresponds to the selected *Block Type*.

You will then be prompted to select any other entities you want to add to the block.

Select other entities to add to block:

If you selected **Feeder** or **Meter** for the *Block Type*, you will then be prompted to specify a label to include in the block.

Select label to include in block:

The block will be created for you.

Create Slide

Used to create a slide using an area of your drawing. A slide is an image file that is displayed in dialog boxes to represent the block that is selected.

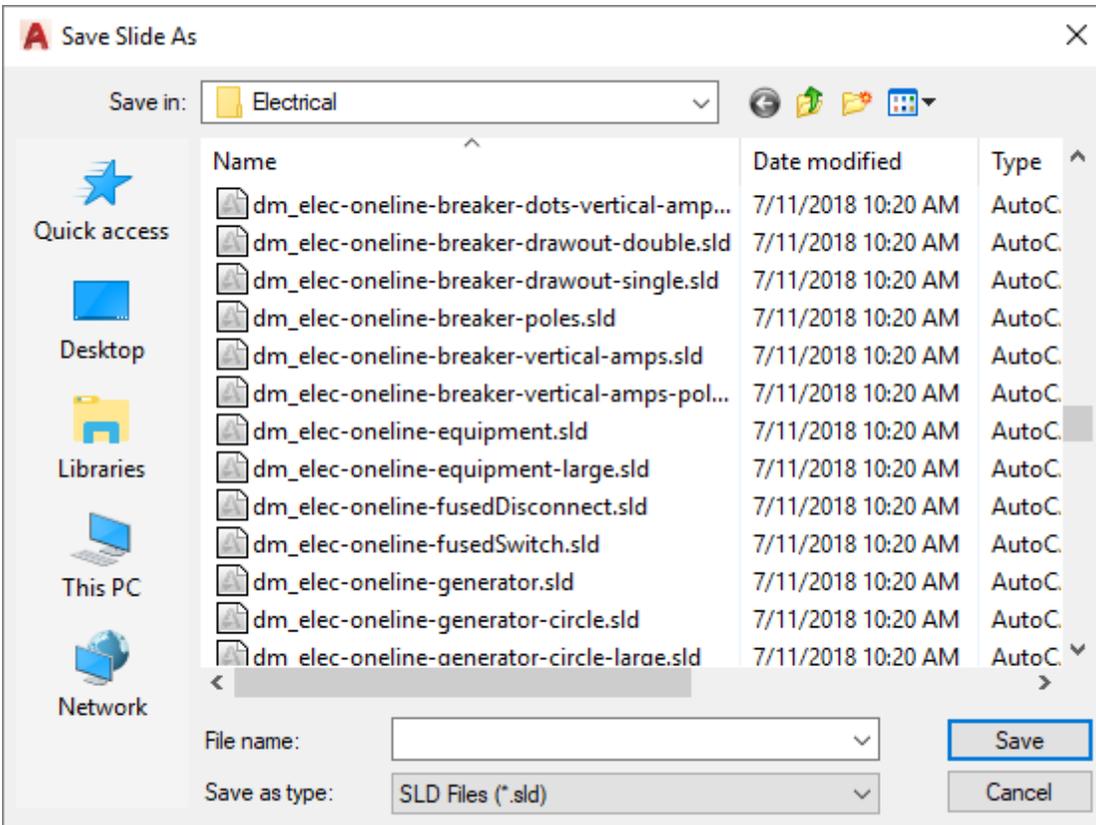
The slide file must have the same name as the block that it represents. If a block is selected that does not have a corresponding slide, an "X" will be shown in the dialog box instead. The block will still insert properly if a corresponding slide does not exist.

To create a slide, go to

Ribbon: DMERT: Customization->Block Creation->Create Slide

Pulldown Menu: DM Electrical RT->Customization->Block Creation->Create Slide

Save Slide As Dialog Box



Specify the name of the slide file to create, then press the **Save** button to create the slide.

You will be prompted to draw a box on your drawing. A snapshot of everything inside the box will be saved in the slide.

Specify first corner of slide:

You will then be asked to specify the opposite corner of the box.

Specify second corner:

The screen will flash while the slide is being created.

Open Block from Drawing

Used to select a block on the drawing and open it in AutoCAD. This command is useful when making changes to your customization. To make a change to a block that appears on your drawing, you can select it using this command.

To open a block from the current drawing, go to

Ribbon: DMERT: Customization->Block Creation->Open Block from Drawing

Pulldown Menu: DM Electrical RT->Customization->Open Block from Drawing

You will be prompted to select the block to be opened.

Select block to open:

The drawing that the selected block is based upon will be opened. Use standard AutoCAD commands to make changes to the block.

After changes are made to the block, use the [Redefine Block in this Drawing](#) command to update the block definition on the current drawing. Otherwise, none of the changes you made will appear on your drawing.

Redefine Block in this Drawing

Used to update a block definition in a drawing after changes have been made to the drawing the block is based upon.

When a block is inserted on the drawing, the definition for that block is stored on the drawing. If the drawing that the block is based upon is later changed, the definition on the drawings where it has been inserted is not updated. You must update the block definition manually. It is possible to do this using the **INSERT** command in AutoCAD, but the `Redefine Block in this Drawing` command simplifies the process.

To update a block on your drawing, go to

Ribbon: DMERT: Customization->Block Creation->Open Block from Drawing

Pulldown Menu: DM Electrical RT->Customization->Redefine Block in this Drawing

You will be prompted to select the block to be updated.

Select block to redefine:

The definition for the selected block will be updated to match the drawing that it is based upon.

Customization

The **Project Customization** and **Master & Standards Customization** panels contain commands for customizing the software. A wide variety of customization options are included to allow you to match the drawings that are created to your existing company standards.

[Options:](#) Customizes general options for the one-line diagram.

[Layers:](#) Customizes layers and layer systems.

[Text Styles:](#) Customizes text styles.

[Distribution Equipment Blocks:](#) Customizes blocks used for distribution equipment on the one-line diagram.

[Feeder Blocks:](#) Customizes blocks used for feeders on the one-line diagram.

[Meter Blocks:](#) Customizes blocks used for meters on the one-line diagram.

[Branch Circuit Blocks:](#) Customizes blocks used for branch circuit devices on the one-line diagram.

Default Labels: Customizes labels for blocks on the one-line diagram.

Feeder IDs: Customizes feeder IDs.

General Customization Commands

Most of the customization sections include four commands:

- Edit Project List
- Edit Master List or Edit Standards List
- Copy Project List to Master or Copy Project List to Standards
- Copy Master List to Project or Copy Standards List to Project

The command name and how it functions varies slightly depending upon whether the default settings are stored in the master database or the standards database.

This section describes these general commands and how they work for the customization commands.

Edit Project List

The `Edit Project List` command is the first command listed in each customization section in the pulldown menu and corresponds to the command in the **Project Customization** panel. It is used to modify the customization settings in the current project database. It allows you to make changes to a specific project without affecting other projects.

Edit Master List

The `Edit Master List` command is one of the commands that may be listed second in each customization section in the pulldown menu and corresponds to the command in the **Master & Standards Customization** panel. It is used to modify the customization settings in the master database. These settings will be used when you start a new project. Changes here do not affect any projects already created.

Edit Standards List

The `Edit Standards List` command is one of the commands that may be listed second in each customization section in the pulldown menu and corresponds to the command in the **Master & Standards Customization** panel. It is used to modify the customization settings in a standards database. These settings can be used when you start a new project. Changes here do not affect any projects already created.

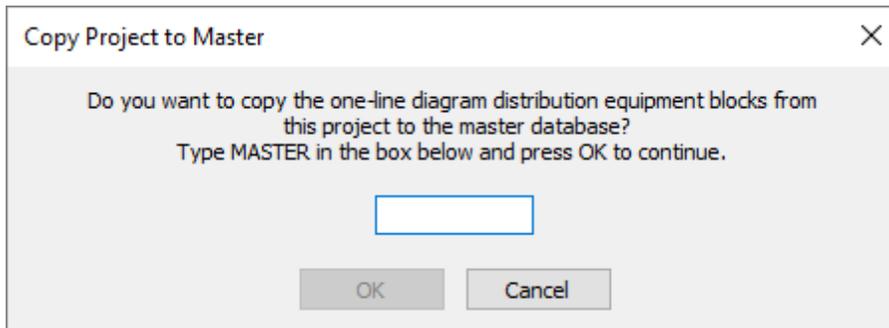
If only one standards database exists, the command will immediately start editing that database using the appropriate dialog box.

If more than one standards database exists, you will be prompted to select the standards database to edit. After you select the standards database to edit, the appropriate dialog box will appear with the settings from that standards database displayed.

Copy Project List to Master

The `Copy Project List to Master` command will copy the settings from the project database to the master database. Often, it is simplest to start your first project and customize it as you go. When you are finished, you can use this command to copy the settings for use with future projects.

The **Copy Project to Master** dialog box will appear.



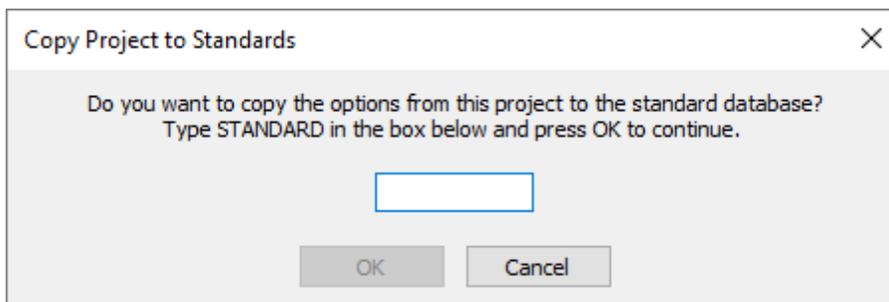
To copy the settings, type **MASTER** and press the **OK** button. This step helps prevent you from accidentally overwriting the settings in your master database.

Copy Project List to Standards

The `Copy Project List to Standards` command will copy the settings from the project database to a standards database. Often, it is simplest to start your first project and customize it as you go. When you are finished, you can use this command to copy the settings for use with future projects.

If only one standards database exists, the settings will be copied to that standards database. The **Copy Project to Standards** dialog box will appear immediately.

If more than one standards database exists, you will be prompted to select a standards database to which the settings will be copied. After you make your selection, the **Copy Project to Standards** dialog box will appear.



To copy the settings, type **STANDARD** and press the **OK** button. This step helps prevent you from accidentally overwriting the settings in your standards database.

Copy Master List to Project

The `Copy Master List to Project` command will copy the settings from the master database to the project database. You can use this to update projects you have already started with new settings you have set in your master database.

Copy Standards List to Project

The `Copy Standards List to Project` command will copy the settings from a standards database to the project database. You can use this to update projects you have already started with new settings you have set in your standards database.

If only one standards database exists, the settings will be copied from that standards database.

If more than one standards database exists, you will be prompted to select the standards database from which the settings will be copied.

Options

Allows you to customize a variety of settings that affect the appearance of your drawings.

See the [General Customization Commands](#) section for more information about how the `Edit Project List`, `Edit Standards List`, `Copy Project List to Standards`, and `Copy Standards List to Project` commands work.

To edit the options project list, go to

Ribbon: DMERT: Customization->Project Customization->Options

Pulldown Menu: DM Electrical RT->Customization->Options->Edit Project List

To edit the options standards list, go to

Ribbon: DMERT: Customization->Master & Standards Customization->Options

Pulldown Menu: DM Electrical RT->Customization->Options->Edit Standards List

Training Videos

- [One-Line Diagram Options](#)

Design Master Electrical Options Dialog Box

Key	Value
One-Line Diagram	
Distribution equipment sort order	Equipment name
Display lugs on panels with main breakers	Yes
Insert feeder IDs inside feeder lines	Yes
Include vertical main breaker on horizontal panels	Yes
Insert labels inside feeder lines	No
Feeder offset multiplier	0.3
Riser height multiplier	0.5
Default panel box height	1.5
Default panel box width	1
Default fed from (in automatic riser)	Top
Default feeder connection layout	Connect feeders like a one-line
Feeder connection location in riser to panels with no bus	Side
"Main Lugs Only" label	MLO
Default feeder layer system	Same as Distribution Equipment
Default riser blocks	
Panel	dm_elec-oneline-panelBox1
Switchboard	dm_elec-oneline-swbdBoxVertical1
Transformer	dm_elec-oneline-xfmrLabels1
Transfer switch	dm_elec-oneline-transferSwitch-horizontal
Default one-line blocks (multiple downstream panels)	
Panel	dm_elec-oneline-swbdBoxHorizontal1
Switchboard	dm_elec-oneline-swbdBoxHorizontal1
Transformer	dm_elec-oneline-xfmrLabels2
Transfer switch	dm_elec-oneline-transferSwitch
Default one-line blocks (0 or 1 downstream panels)	
Panel	<Same As Riser Block>
Switchboard	dm_elec-oneline-panelBox1
Transformer	dm_elec-oneline-xfmrLabels2
Transfer switch	dm_elec-oneline-transferSwitch
Default equipment connection block	dm_elec-oneline-equipment
Default equipment disconnect block	<None>
Default circuit OCP block	<None>
Main breaker block	dm_elec-oneline-breaker
Main fused switch block	dm_elec-oneline-fusedSwitch
Main non-fused switch block	dm_elec-oneline-nonFusedSwitch
Standard lugs block	dm_elec-oneline-standardLugs
Double lugs block	dm_elec-oneline-standardLugs
Feedthrough lugs top block	dm_elec-oneline-standardLugs
Feedthrough lugs bottom block	dm_elec-oneline-standardLugs
Wire break block	dm_elec-oneline-break
Feeder ID format	Short
Automatically create feeder IDs	Yes
Copy feeder IDs to master schedule when created	Yes
Transfer feeder IDs from master schedule if possible	Yes
Leaders	
Leader arrow block	DM_ELEC-ARROWHEAD
Leader arrow length	0.125

One-Line Diagram Options

Distribution equipment sort order: When generating the one-line diagram, this option determines how downstream equipment connections are ordered on the diagram:

- **Breaker size:** Generation order is based upon the breaker size.
- **Circuit number:** Generation order is based upon the circuit to which the downstream equipment is connected.
- **Distance:** Generation order is based upon the distance between the upstream and downstream equipment.
- **Equipment name:** Generation order is based upon the name of the equipment.

Display lugs on panels with main breakers: Whether lugs are displayed on panels with main breakers.

- **Yes:** Lugs are displayed on all bus bars.
- **No:** Lugs are not displayed on bus bars with main breakers.

This option does not change whether the lugs exist on the panel, only whether they are displayed.

Insert feeder IDs inside feeder lines: Whether feeder IDs appear on the one-line diagram.

Include vertical main breaker on horizontal panels: Whether the main breaker on a horizontal custom panel block is inserted vertically.

- **Yes:** The main breaker is inserted perpendicular to the horizontal panel bus.
- **No:** The main breaker is inserted along the horizontal panel bus.

Insert labels inside feeder lines: Whether feeder labels can snap to inside feeder lines when being inserted.

Feeder offset multiplier: This value sets the default distance when offsetting feeders. This value is multiplied by `DIMSCALE` to determine the distance.

Riser height multiplier: This value sets the default distance between elevations when generating a riser diagram.

Default panel box height: When inserting a custom block on the diagram, the *Specific Panel Box Size* height is set to this value. See the [Insert](#) section for more information.

Default panel box width: When inserting a custom block on the diagram, the *Specific Panel Box Size* width is set to this value. See the [Insert](#) section for more information.

Default fed from (in automatic riser): Whether distribution equipment blocks are fed from the top or the bottom when generating a riser diagram.

Default feeder connection layout: Sets how feeders are drawn for distribution equipment inserted into the diagram using the [Insert](#) command. This option can also be set in the **Insert Distribution Equipment** dialog box.

Feeder connection location in riser to panels with no bus: Sets how feeders are drawn for distribution equipment blocks with no bus when generating a riser diagram.

"Main Lugs Only" label: Sets the text for the *Main Disconnect Type* label when the main disconnect for the distribution equipment is set to **Main Lugs Only**.

Default feeder layer system: Sets the default layer system for feeders when generating a one-line diagram.

- **<Same as Distribution Equipment>:** Uses the same layer system as the upstream distribution equipment.

Default riser blocks: Sets the default block for each distribution equipment type when generating a riser diagram.

Default one-line blocks (multiple downstream panels): Sets the default block for each distribution equipment

type that is connected to multiple downstream distribution equipment when generating a one-line diagram.

- **<Same as Riser Block>**: Uses the same default block as the *Default riser blocks* option.

Default one-line blocks (0 or 1 downstream panels): Sets the default block for each distribution equipment type that is connected to one or fewer downstream distribution equipment when generating a one-line diagram.

- **<Same as Riser Block>**: Uses the same default block as the *Default riser blocks* option.

Default equipment connection block: Sets the default block for equipment connections on the one-line diagram.

Default equipment disconnect block: Sets the default block for the equipment disconnect on the one-line diagram.

Default circuit OCP block: Sets the default block for OCP on the one-line diagram.

Main breaker block: Sets the default block for main breakers on the one-line diagram.

Main fused switch block: Sets the default block for main fused switches on the one-line diagram.

Main non-fused switch block: Sets the default block for main non-fused switches on the one-line diagram.

Standard lugs block: Sets the default block for standard lugs on the one-line diagram.

Double lugs block: Sets the default block for double lugs on the one-line diagram.

Feedthrough lugs top block: Sets the default block for feedthrough lugs connected at the top on the one-line diagram.

Feedthrough lugs bottom block: Sets the default block for feedthrough lugs connected at the bottom on the one-line diagram.

Wire break block: Sets the default block for wire breaks on the one-line diagram.

Feeder ID format: Sets how feeder IDs are generated. See the [Feeder ID Formats](#) article in the knowledge base for more information.

Automatically create feeder IDs: Whether feeder IDs are automatically generated.

- **Yes**: Feeder IDs are generated automatically based upon the *Feeder ID format*.
- **No**: When a feeder ID is generated, the **New Feeder Callout ID** dialog box will appear. You can then set the feeder ID, feeder ID group, whether feeder IDs should be automatically generated in the future, and whether the feeder ID should be added to the master schedule.

Copy feeder IDs to master schedule when created: Whether feeder IDs are copied to the master schedule when they are generated.

Transfer feeder IDs from master schedule if possible: When a feeder ID is generated with the same specifications as an existing feeder ID in the master schedule, this option sets whether a new feeder ID is generated or the existing feeder ID is used.

Leaders Options

Leader arrow block: The block used for leader arrowheads.

Leader arrow length: The length of the leader arrowhead.

Editing a Setting

To edit an option setting, select the *Value* in the list and enter a new value.

Press the **OK** button to save your changes.

Layers

Used to customize the layers used when inserting items on the drawing.

See the [General Customization Commands](#) section for more information about how the Edit Project List, Edit Standards List, Copy Project List to Standards, and Copy Standards List to Project commands work.

To customize the layers project list, go to

Ribbon: DMERT: Customization->Project Customization->Layers

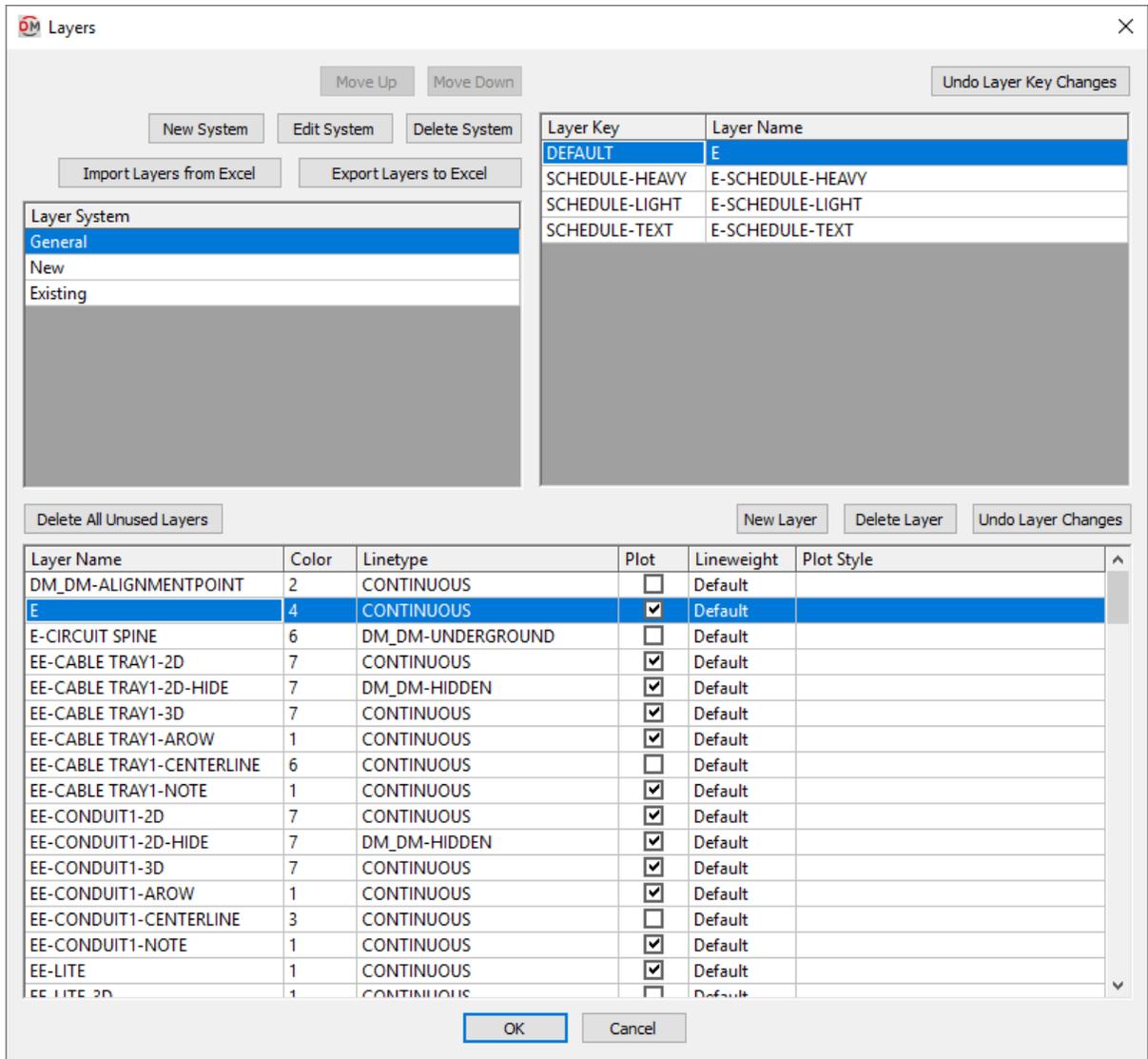
Pulldown Menu: DM Electrical RT->Customization->Layers->Edit Project List

To customize the layers standards list, go to

Ribbon: DMERT: Customization->Master & Standards Customization->Layers

Pulldown Menu: DM Electrical RT->Customization->Layers->Edit Standards List

Layers Dialog Box



Layer Systems

Move Up: Press this button to move the selected row up in the *Layer System* list.

Move Down: Press this button to move the selected row down in the *Layer System* list.

New System: Press this button to create a new layer system.

Edit System: Press this button to open the **Layer System Options** dialog box for the selected layer system.

Layer System: The name of the layer system.

Delete System: Press this button to delete the selected layer system.

Layer System: The list of layer systems currently defined.

General: This layer system is used to store all of the layers not associated with devices, such as schedules. Devices cannot be assigned to this layer system. It cannot be deleted or moved.

Layer Keys

Undo Layer Key Changes: Press this button to revert the layer key settings to their values when the dialog box was opened.

Layer Key: This column lists all of the different items that can be inserted using the software. The names in this column are fixed. Each layer key can be mapped to a layer that will be used when that type of item is inserted on the drawing. Multiple layer keys can use the same layer.

Layer Name: This column lists the layer that will be used when inserting items of the corresponding *Layer Key* type on the drawing. The layers you can choose from are defined in the lower section of the dialog box.

Layers

The layer list displays all of the layers that can be assigned to layer keys. The AutoCAD settings for each layer can be set in the list.

Layer Name: The name of the layer.

Color: The AutoCAD color number of the layer.

Linetype: The linetype of the layer.

Plot: Whether the layer will be plotted.

Lineweight: The lineweight of the layer. Only used when plotting with STBs.

Plot Style: The plot style of the layer. Only used when plotting with STBs.

Managing Layers

The following buttons in the **Layers** dialog box can be used to manage the layers in the dialog box.

Delete All Unused Layers: Press this button to delete all layers that are not associated with a layer key.

New Layer: Press this button to add a new layer.

Delete Layer: Press this button to delete the selected layer.

Undo Layer Changes: Press this button to revert the layer settings to their values when the dialog box was opened.

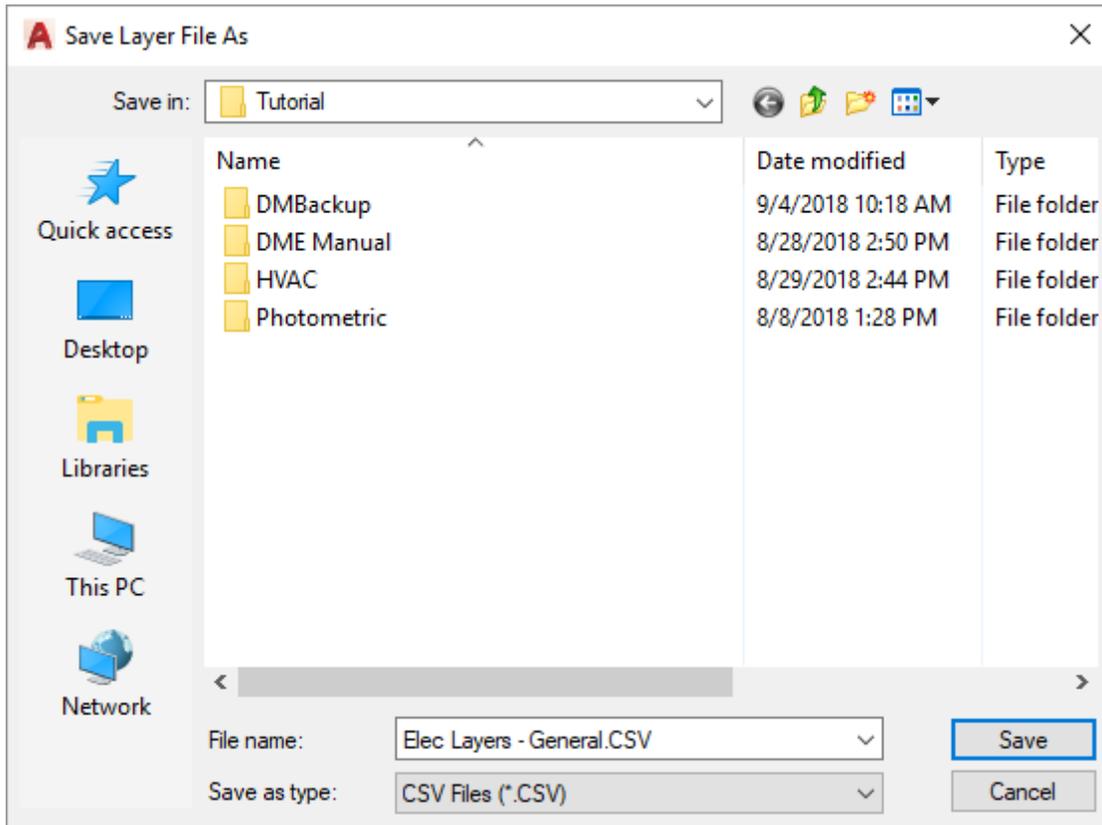
Using Excel to Modify Layer Settings

The **Import Layers from Excel** and **Export Layers to Excel** buttons are used to import and export the layer

settings to Excel. Using Excel is recommended when modifying large numbers of layer settings.

Import Layers from Excel: Press this button to load the layer setting information entered in Excel into the dialog box. The layer settings will be applied to the selected layer system.

Export Layers to Excel: Press this button to export the layer settings to a CSV file that can be opened in Excel. The **Save Layer File As** dialog box will appear.



The selected layer system will be saved to the file you select. The file will be opened for immediate editing. When modifying the file, do not change the header rows, the first column, or the last column. Restrict your changes to the *Layer Name*, *Color*, *Linetype*, *Plot*, *Lineweight*, and *Plot Style* columns.

The screenshot shows an Excel spreadsheet titled 'Elec Layers - General'. The spreadsheet contains a table with the following data:

Layer Key	Layer Name	Color	Linetype	Plot	Lineweight	Plot Style	DO NOT EDIT
DM ELEC	Version 1 General Layer System						
Don't modify anything above this							
ALIGNME	DM_DM-A		2 CONTINU	No	Default		ALIGNMENT POINT
CIRCUIT SI	E-CIRCUIT		6 DM_DM-L	No	Default		CIRCUIT SPINE
COORDIN	E-LITE-CO		6 CONTINU	Yes	Default		COORDINATION DIFFUSERS
DEFAULT	E		4 CONTINU	Yes	Default		DEFAULT
DEFAULT	DM_DM		7 CONTINU	Yes	Default		DEFAULT DM LAYER
DEFAULT	E		4 CONTINU	Yes	Default		DEFAULT ELECTRICAL LAYER
EGRESS BC	E-LITE-PH		7 CONTINU	No	Default		EGRESS BOUNDARY
EGRESS CC	E		4 CONTINU	Yes	Default		EGRESS CONTOUR
EGRESS TE	E		4 CONTINU	Yes	Default		EGRESS TEXT
LIGHTING	E-LTGGRO		4 CONTINU	No	Default		LIGHTING GROUP LABEL
LIGHTING	E-LTGGRO		1 CONTINU	Yes	Default		LIGHTING GROUP LEADER
LIGHTING	E-LTGGRO		3 CONTINU	No	Default		LIGHTING GROUP OUTLINE
PANEL SCI	E-SCHEDU		7 CONTINU	Yes	Default		PANEL SCHEDULE
PHOTOME	E-LITE-PH		7 CONTINU	No	Default		PHOTOMETRIC BOUNDARY
PHOTOME	E-LITE-PH		7 CONTINU	No	Default		PHOTOMETRIC CONTOUR
PHOTOME	E-LITE-PH		6 CONTINU	No	Default		PHOTOMETRIC SOLID

Update Drawing Layers to Match Project List

Used to update the layer definitions on the drawing. Once a layer is created in a drawing, it is not modified. Changes you make to the color, lineweight, or other attributes are not overwritten. This command is the only way to modify layers that already exist.

To update existing layers on a drawing to match new definitions in the project list, go to

Ribbon: DMERT: Customization->Project Customization->Update Drawing Layers to Match Project List

Pulldown Menu: DM Electrical RT->Customization->Layers->Update Drawing Layers to Match Project List

The layer definitions on the drawing will be updated to match the definitions in the project list.

Text Styles

Allows you to customize the text heights and fonts used for labels and schedules.

See the [General Customization Commands](#) section for more information about how the Edit Project List, Edit Standards List, Copy Project List to Standards, and Copy Standards List to Project commands work.

To customize text styles in the current project, go to

Ribbon: DMERT: Customization->Project Customization->Text Styles

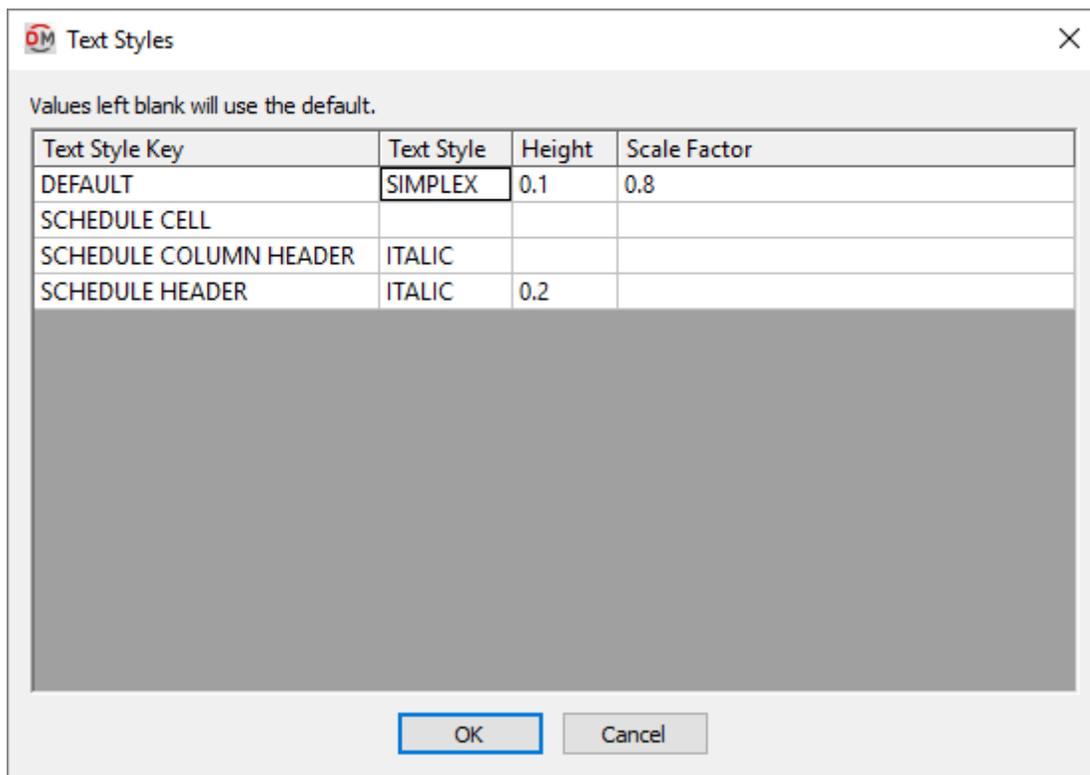
Pulldown Menu: DM Electrical RT->Customization->Text Styles->Edit Project List

To customize standard text styles, go to

Ribbon: DMERT: Customization->Master & Standards Customization->Text Styles

Pulldown Menu: DM Electrical RT->Customization->Text Styles->Edit Standard List

Text Styles Dialog Box



Text Style Key: This list indicates where the text style is used. These values cannot be edited.

Text Style: Sets the AutoCAD text style to be associated with the corresponding *Text Style Key*. The **Default** key must have a text style defined. The text style in other keys may be left blank. Blank keys will use the text style defined for the **Default** key.

If the text style currently exists on the drawing, it will be used as defined.

If the text style does not exist, it will be created using an SHX file of the same name. If an SHX file cannot be found, the **Standard** text style will be used.

To use a TrueType font, create the text style and associate it with the desired font.

Height: Sets the text height for the key. The **Default** key must have a height defined. The height in other keys

may be left blank. Blank keys will use the height defined for the **Default** key.

The units for the height are inches on the printed page. To set 1/10" text for the drawing, use the value **0.1**. To set 1/8" text, use **0.125**. When text is inserted, this value will be multiplied by **DIMSCALE** to determine the height of the text on the drawing.

Scale Factor: Sets the character spacing for the text. This value is not currently used.

Distribution Equipment Blocks

Allows you to customize the list of blocks available to be used for distribution equipment on the one-line diagram.

See the [Block Creation](#) section for more information about creating new blocks.

See the [General Customization Commands](#) section for more information about how the `Edit Project List`, `Edit Master List`, `Copy Project List to Master`, and `Copy Master List to Project` commands work.

To edit the distribution equipment blocks project list, go to

Ribbon: DMERT: Customization->Project Customization->Distribution Equipment Blocks

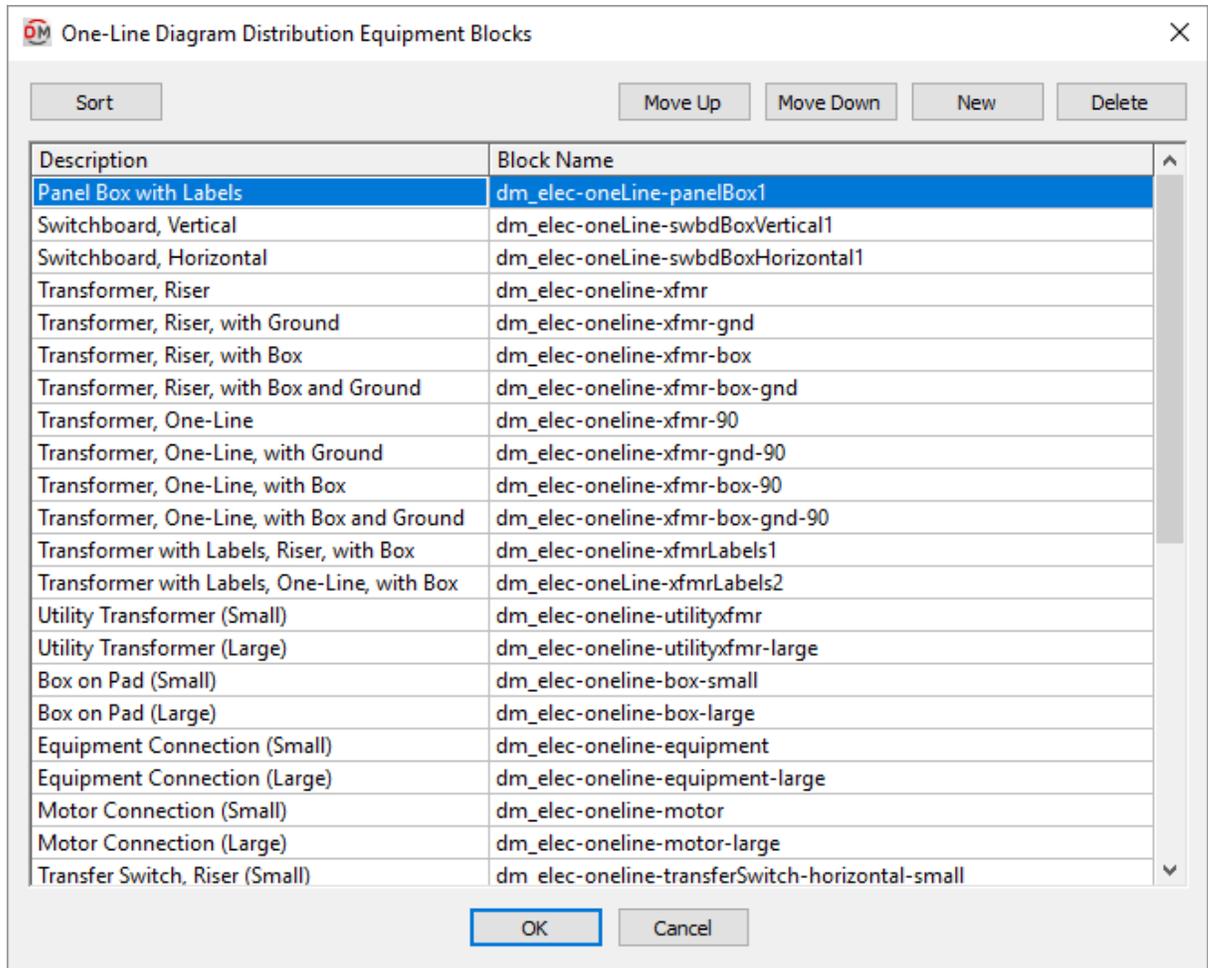
Pull-down Menu: DM Electrical RT->Customization->Distribution Equipment Blocks->Edit Project List

To edit the distribution equipment blocks master list, go to

Ribbon: DMERT: Customization->Master & Standards Customization->Distribution Equipment Blocks

Pull-down Menu: DM Electrical RT->Customization->Distribution Equipment Blocks->Edit Master List

One-line Diagram Distribution Equipment Blocks Dialog Box



Sort: Press this button to sort the list of blocks alphabetically by the *Description* column.

Move Up: Press this button to move the selected block up in the list.

Move Down: Press this button to move the selected block down in the list.

New: Press this button to create a new block.

Delete: Press this button to delete the selected block. If the block is currently used, you will be asked if you want to replace the block in the schedule with another block.

Description: The name of the block that is displayed when you select the block in a dialog box.

Block Name: The file name of the block displayed on the one-line diagram.

Feeder Blocks

Allows you to customize the list of blocks available to be used for feeders on the one-line diagram.

See the [Block Creation](#) section for more information about creating new blocks.

See the [General Customization Commands](#) section for more information about how the Edit Project List, Edit Master List, Copy Project List to Master, and Copy Master List to Project commands work.

To edit the feeder blocks project list, go to

Ribbon: DMERT: Customization->Project Customization->Feeder Blocks

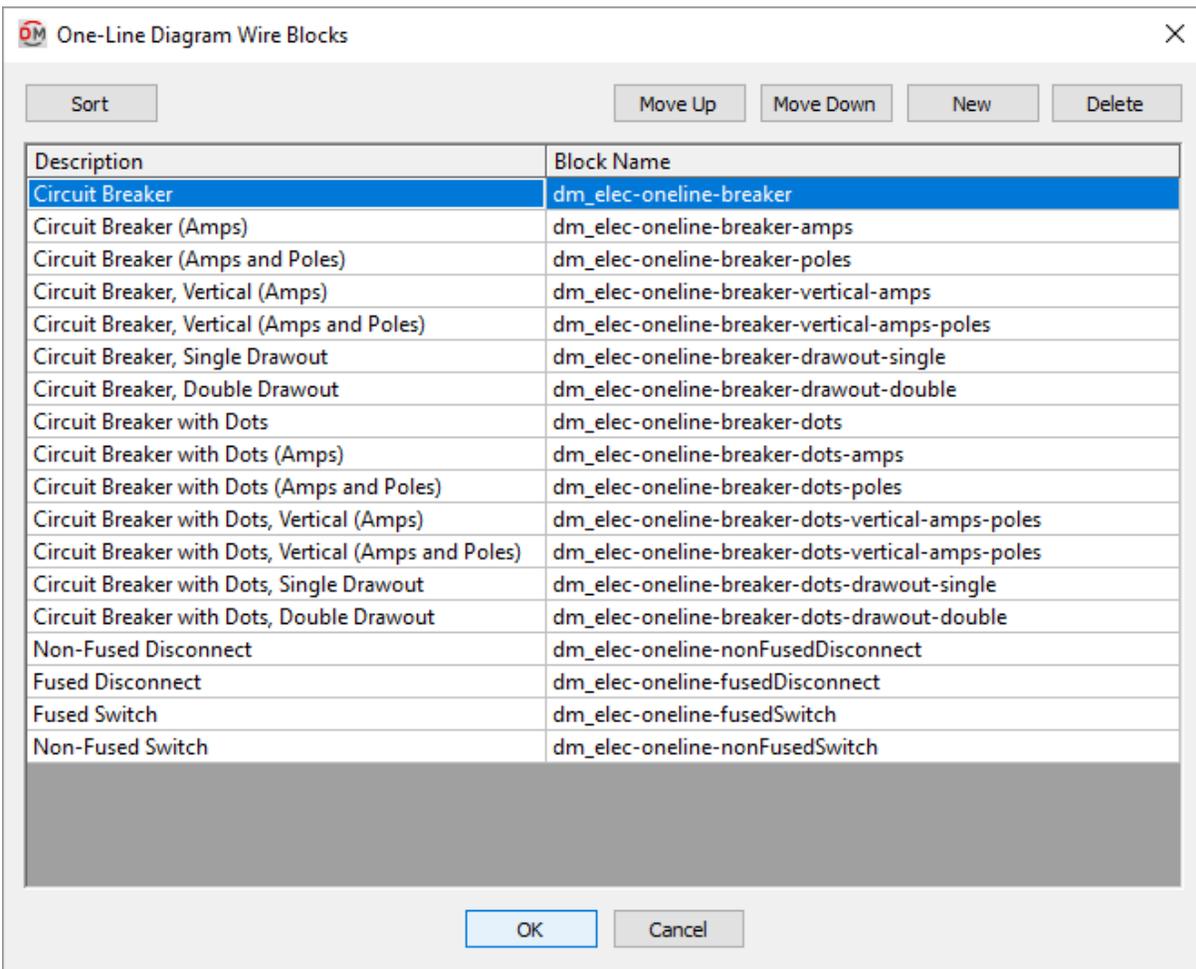
Pulldown Menu: DM Electrical RT->Customization->Feeder Blocks->Edit Project List

To edit the feeder blocks master list, go to

Ribbon: DMERT: Customization->Master & Standards Customization->Feeder Blocks

Pulldown Menu: DM Electrical RT->Customization->Feeder Blocks->Edit Master List

One-line Diagram Wire Blocks Dialog Box



Sort: Press this button to sort the list of blocks alphabetically by the *Description* column.

Move Up: Press this button to move the selected block up in the list.

Move Down: Press this button to move the selected block down in the list.

New: Press this button to create a new block.

Delete: Press this button to delete the selected block. If the block is currently used, you will be asked if you want to replace the block in the schedule with another block.

Description: The name of the block that is displayed when you select the block in a dialog box.

Block Name: The file name of the block displayed on the one-line diagram.

Meter Blocks

Allows you to customize the list of blocks available to be used for meters on the one-line diagram.

See the [Block Creation](#) section for more information about creating new blocks.

See the [General Customization Commands](#) section for more information about how the Edit Project List, Edit Master List, Copy Project List to Master, and Copy Master List to Project commands work.

To edit the meter blocks project list, go to

Ribbon: DMERT: Customization->Project Customization->Meter Blocks

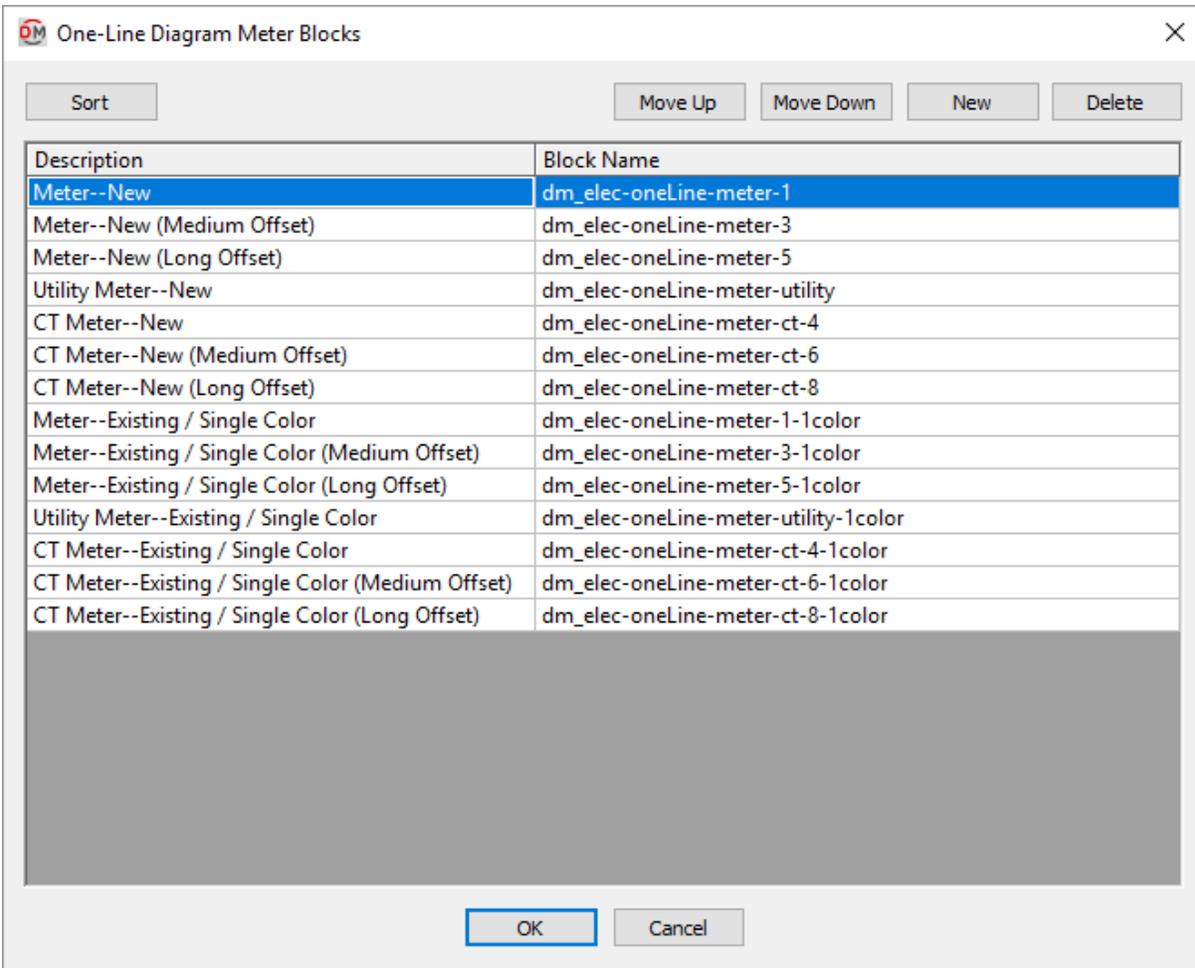
Pulldown Menu: DM Electrical RT->Customization->Meter Blocks->Edit Project List

To edit the meter blocks master list, go to

Ribbon: DMERT: Customization->Master & Standards Customization->Meter Blocks

Pulldown Menu: DM Electrical RT->Customization->Meter Blocks->Edit Master List

One-line Diagram Meter Blocks Dialog Box



Sort: Press this button to sort the list of blocks alphabetically by the *Description* column.

Move Up: Press this button to move the selected block up in the list.

Move Down: Press this button to move the selected block down in the list.

New: Press this button to create a new block.

Delete: Press this button to delete the selected block. If the block is currently used, you will be asked if you want to replace the block in the schedule with another block.

Description: The name of the block that is displayed when you select the block in a dialog box.

Block Name: The file name of the block displayed on the one-line diagram.

Branch Circuit Blocks

Allows you to customize the list of blocks available to be used for branch circuit devices on the one-line diagram.

See the [Block Creation](#) section for more information about creating new blocks.

See the [General Customization Commands](#) section for more information about how the Edit Project List, Edit Master List, Copy Project List to Master, and Copy Master List to Project commands work.

To edit the branch circuit blocks project list, go to

Ribbon: DMERT: Customization->Project Customization->Branch Circuit Device Blocks

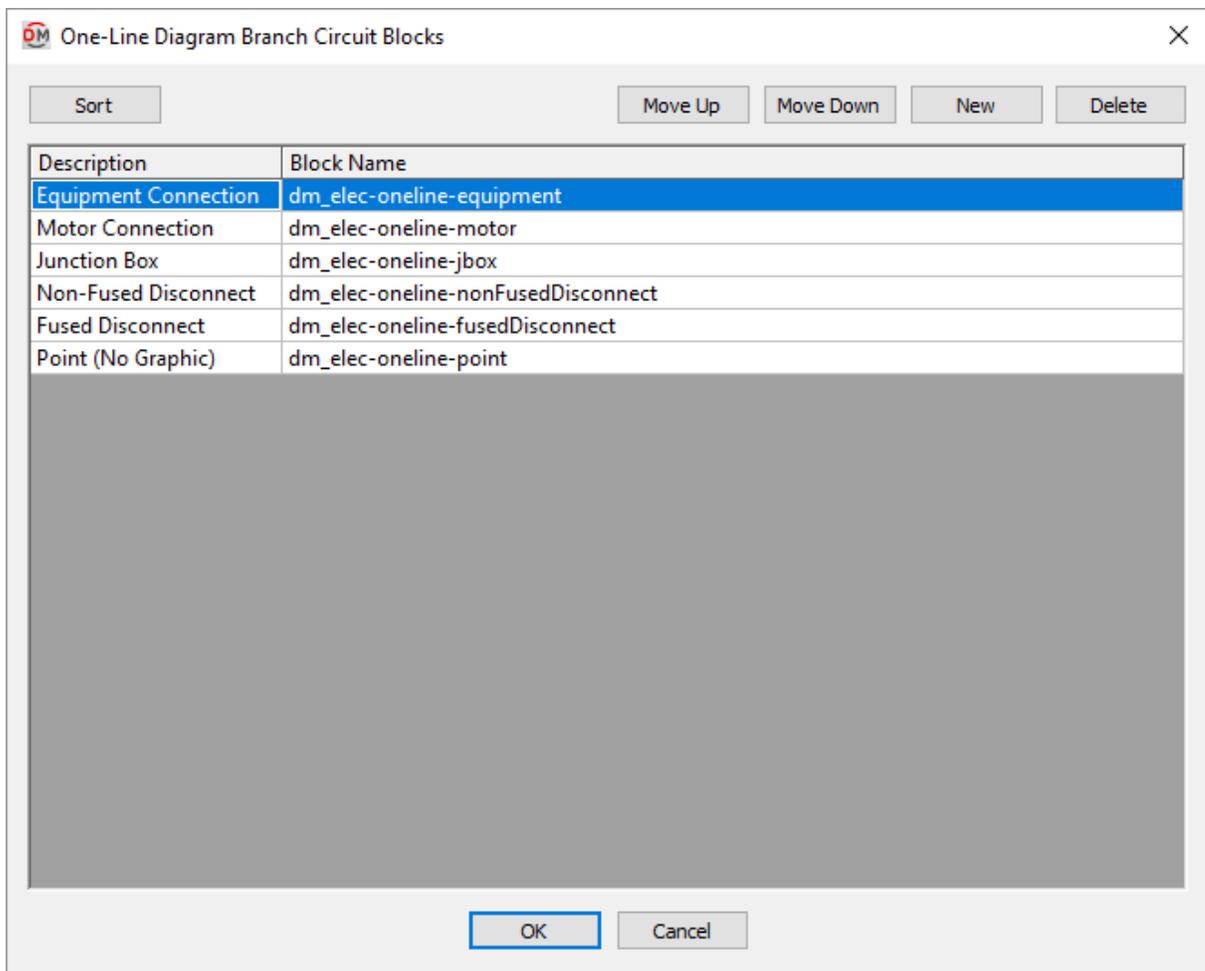
Pulldown Menu: DM Electrical RT->Customization->Branch Circuit Device Blocks->Edit Project List

To edit the branch circuit blocks master list, go to

Ribbon: DMERT: Customization->Master & Standards Customization->Branch Circuit Device Blocks

Pulldown Menu: DM Electrical RT->Customization->Branch Circuit Device Blocks->Edit Master List

One-line Diagram Branch Circuit Blocks Dialog Box



Sort: Press this button to sort the list of blocks alphabetically by the *Description* column.

Move Up: Press this button to move the selected block up in the list.

Move Down: Press this button to move the selected block down in the list.

New: Press this button to create a new block.

Delete: Press this button to delete the selected block. If the block is currently used, you will be asked if you want to replace the block in the schedule with another block.

Description: The name of the block that is displayed when you select the block in a dialog box.

Block Name: The file name of the block displayed on the one-line diagram.

Default Labels

Allows you to customize the default settings for labels available to be inserted on the one-line diagram.

See the [General Customization Commands](#) section for more information about how the Edit Project List, Edit Master List, Copy Project List to Master, and Copy Master List to Project commands work.

To edit the default one-line diagram labels project list, go to

Ribbon: DMERT: Customization->Project Customization->Default Labels

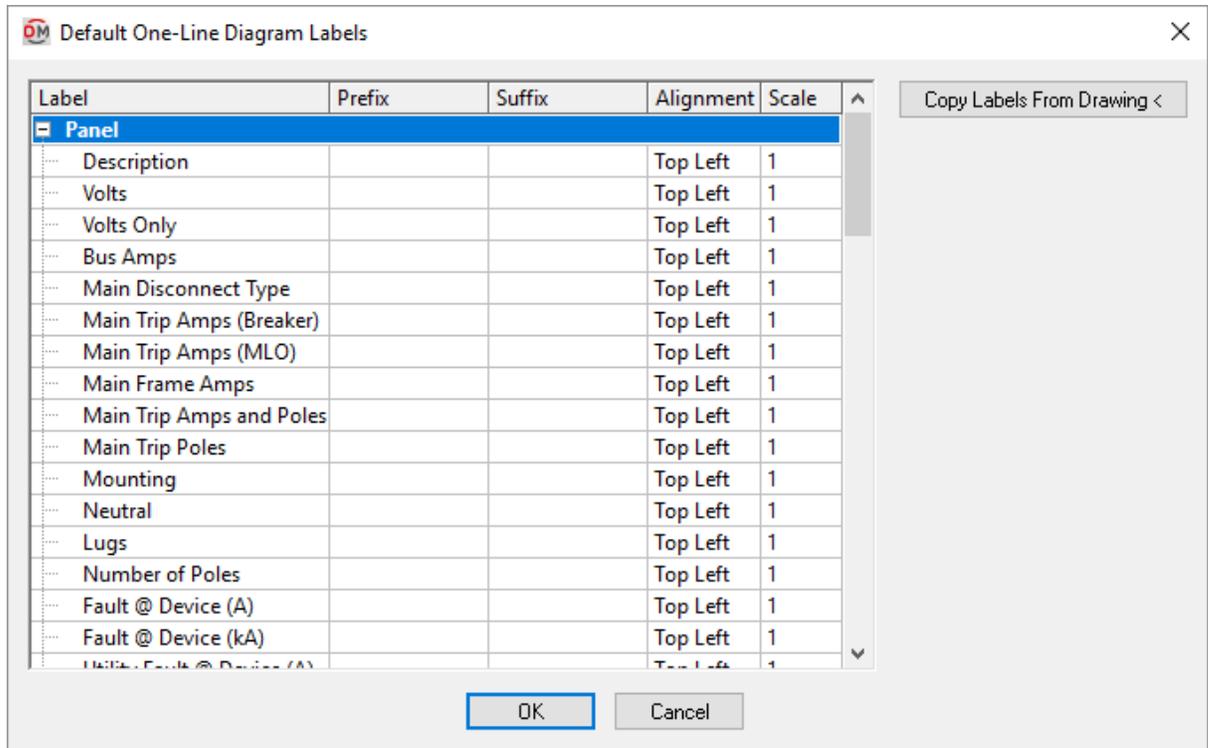
Pulldown Menu: DM Electrical RT->Customization->Default Labels->Edit Project List

To edit the default one-line diagram labels standards list, go to

Ribbon: DMERT: Customization->Master & Standards Customization->Default Labels

Pulldown Menu: DM Electrical RT->Customization->Default Labels->Edit Standards List

Default One-Line Diagram Labels Dialog Box



Copy Labels From Drawing: Press this button to copy the current label settings from an entity on the one-line diagram.

You will be prompted to specify the entity from which the label settings will be copied.

Select one-line entity to copy:

The label settings for the selected entity will be copied.

Label: The name of the label.

Prefix: Text that is added before the value associated with the label in the database.

Suffix: Text that is added after the value associated with the label in the database.

Alignment: The alignment of the text within the text boundary.

Scale: The scale factor of the text.

Feeder IDs

Allows you to customize the feeder IDs available to be used on the one-line diagram.

See the [General Customization Commands](#) section for more information about how the `Edit Project List` and `Edit Master List` commands work.

To edit the feeder ID project schedule, go to

Ribbon: DMERT: Customization->Project Customization->Feeder IDs

Pulldown Menu: DM Electrical RT->Customization->Feeder IDs->Edit Project List

To edit the feeder ID master schedule, go to

Ribbon: DMERT: Customization->Master & Standards Customization->Feeder IDs

Pulldown Menu: DM Electrical RT->Customization->Feeder IDs->Edit Master List

The `Edit Project List` command opens the **Feeder ID Project Schedule** dialog box. The `Edit Master List` command opens the **Feeder ID Master Schedule** dialog box.

Training Videos

- [Feeder IDs Overview](#)

Feeder ID Project Schedule Dialog Box

The screenshot shows the 'Feeder ID Project Schedule' dialog box. At the top, it displays 'Current Group: General' and a 'Select Group...' button. Below this is a 'Move to Another Group...' button. The 'Feeder ID' field contains '70/3NG', with 'Rename...' and 'Find...' buttons to its right. Navigation buttons '<-- Previous' and '. Next -->' are located below the Feeder ID field. The 'Feeder Callout' field contains '1-1/4"C,3#4,#4N,#8G'. The 'Ampacity' field contains '70'. Below the Ampacity field is an 'Edit Schedule Settings...' button. At the bottom, there are three buttons: 'Save', 'Delete', and 'Delete Multiple'. Below these are three more buttons: 'Import from Another Database...', 'Import from Feeder Callout Master Schedule...', and 'Create Feeder IDs...'. The 'Exit' button is highlighted with a blue border at the very bottom.

See the [Import from Another Database](#) and [Import from Feeder Callout Master Schedule](#) pages for more information about importing feeder IDs to the current project from other locations.

Current Group: The active feeder ID group. All of the IDs that are created and modified will be associated with this group.

Select Group: Press this button to open the **Feeder ID Groups** dialog box. In addition to allowing you to select a new group, the **Groups** dialog box also allows you to create and modify the groups.

Move to Another Group: Press this button to open a list of available groups to which the feeder ID can be moved.

Rename: Press this button to rename the displayed feeder ID in the schedule. Any labels on the drawing will be updated.

Find: Press this button to select a feeder ID from a list of all of the IDs in the schedule. The feeder ID you select will be displayed in the dialog box, allowing you to view and modify it.

Previous: Press this button to select and display the previous feeder ID in the schedule. The previous feeder ID is determined by sorting the entries in the schedule alphabetically. If you press this button when viewing the first feeder ID, it will wrap to the ending and display the last ID.

Next: Press this button to select and display the next feeder ID in the schedule. The next feeder ID is determined by sorting the entries in the schedule alphabetically. If you press this button when viewing the last feeder ID, it will wrap back to the beginning and display the first ID.

Feeder ID: The name of the feeder ID. This will be displayed when the feeder ID is inserted on a drawing.

Feeder Callout: The full callout of the feeder.

Ampacity: The ampacity of the feeder.

Edit Schedule Settings: Press this button to open the [Feeder ID Schedule Settings](#) dialog box.

If the feeder schedule is not currently set to display any of the information set in the the **Feeder ID Schedule Settings** dialog box, a warning dialog box will appear with instructions on how to change the display settings. See the [Insert Feeder Schedule](#) section for more information.

Save: Press this button to save any changes made to the displayed feeder ID. If you make changes and do not press this button, you will be prompted to save your changes before selecting a new feeder ID or closing the schedule dialog box.

Delete: Press this button to delete the displayed feeder ID from the schedule.

Delete Multiple: Press this button to remove multiple feeder IDs from the schedule. A dialog box will appear showing the list of feeder IDs.

Select the feeder IDs to delete. You can select multiple items in the list using the **SHIFT** or **CTRL** keys. Press the **OK** button to remove them from the schedule.

Create Feeder IDs: Press this button to open the [Create Feeder ID](#) dialog box. Available only in the **Feeder ID Project Schedule** dialog box.

Edit Schedule Settings

Used to make changes to the callout for the selected feeder ID.

Feeder ID Schedule Settings Dialog Box

The **Feeder ID Schedule Settings** dialog box is used to change the wire size, number of wires, and other wire properties listed for the selected Feeder ID. These values are for informational purposes only and are not otherwise used.

Conductor Wire Size: The size of the conductor wire.

Conductor Wires: The number of conductor wires.

Neutral Wire Size: The size of the neutral wire.

Neutral Wires: The number of neutral wires.

Ground Wire Size: The size of the ground wire.

Isolated Ground: Whether the ground is isolated.

Conduit Size: The size of the conduit.

Parallel Runs: The number of parallel runs.

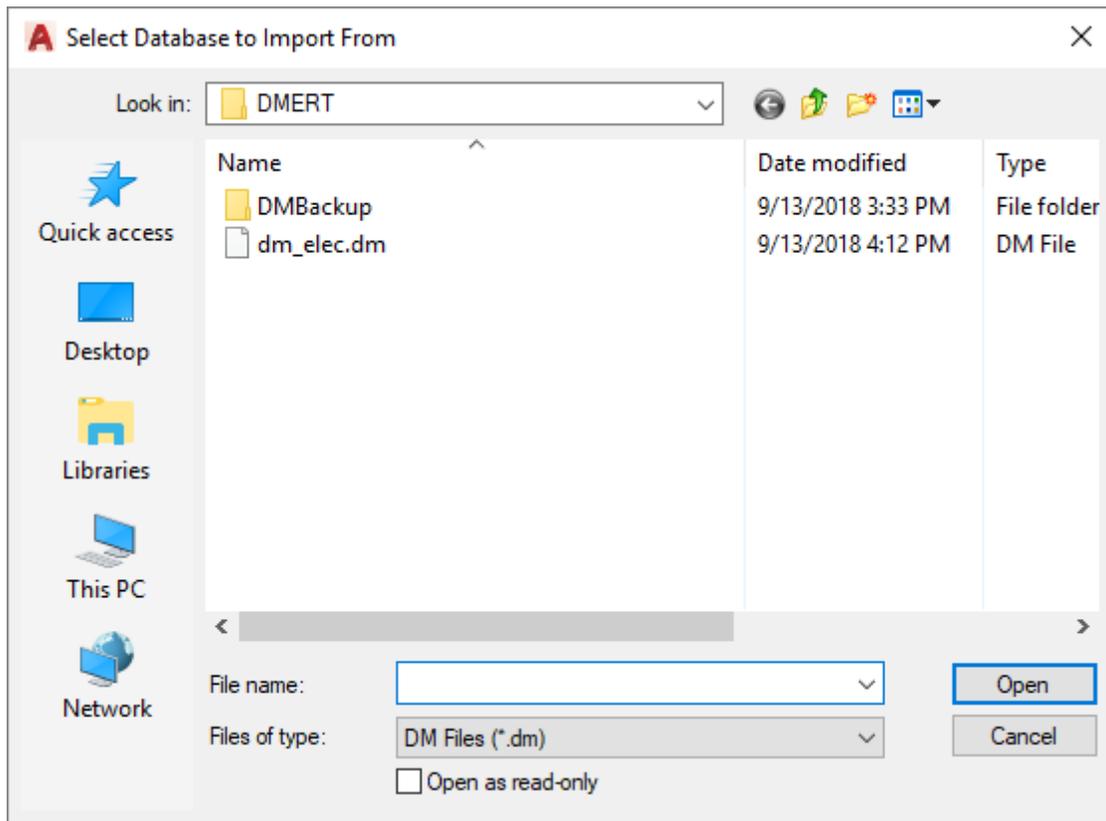
Press the **OK** button to save your changes.

Import from Another Database

Used to import feeder IDs in another project to the current project. This button can be used to copy an entire schedule or a single ID. This button allows you to reuse feeder IDs in new projects.

When you press this button, the **Select Database to Import From** dialog box will appear and prompt you to select the project from which the feeder IDs will be imported.

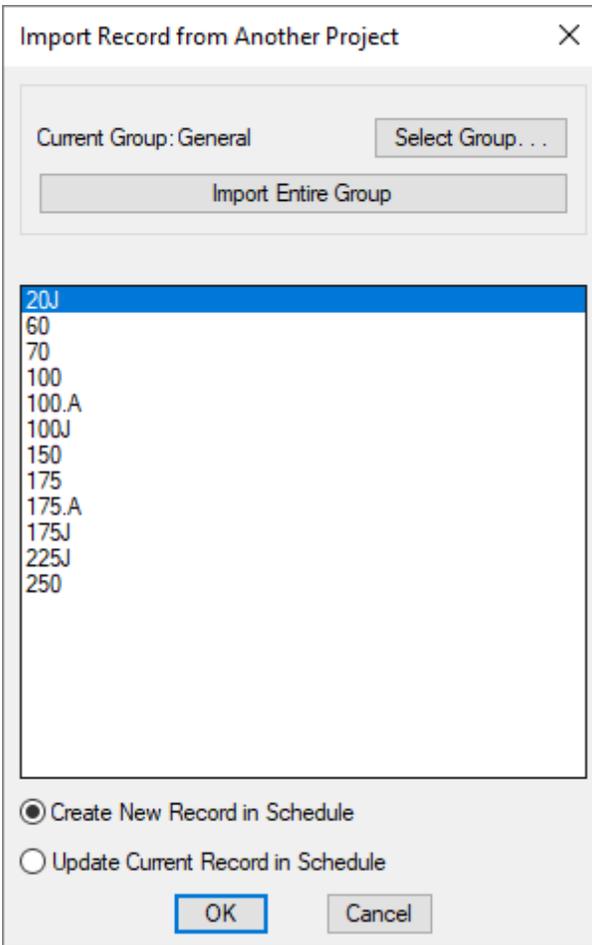
Select Database to Import From Dialog Box



Select the database from which to import. You must select a Design Master Electrical RT database. The database must be updated to the most current version. If it is not, you will be prompted to open a drawing in the project to convert the database. After it is updated, you will then be able to import from it.

After you select the database, the **Import Record from Another Project** dialog box will appear and prompt you to select the feeder IDs to import.

Import Record from Another Project Dialog Box



Current Group: The group in the other project schedule from which the feeder IDs will be imported.

Select Group: Press this button to select a new group from which to import feeder IDs.

Import Entire Group: Press this button to import all of the feeder IDs from the *Current Group* to the project. **[[Functionality under review. Importing entire group works okay and IDs are just overwritten (I think)]]**

New feeder IDs will be created in the project for each ID being imported. If an ID already exists in the current schedule, the information will be overwritten.

You will be prompted if you want to delete all of the existing feeder IDs in the project schedule.

Record List: The list of feeder IDs in the *Current Group*. Select the IDs to import from this list. You can select multiple IDs using the **SHIFT** and **CTRL** keys.

Create New Record in Schedule: Select this option to create a new feeder ID in the project schedule for each ID being imported. If an ID already exists in the current schedule, the information will be overwritten. **[[Under review. Importing individual IDs that already exist in the schedule causes a crash]]**

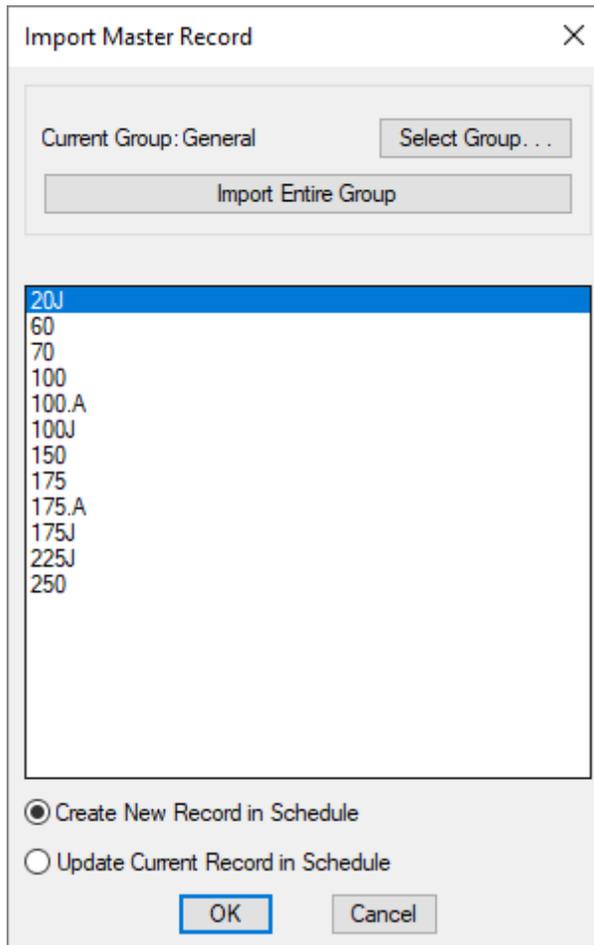
Update Current Record in Schedule: Select this option to update the current feeder ID in the project schedule with the information from the selected ID in the other project. All of the information in the project schedule will be overwritten.

Import from Feeder Callout Master Schedule

Used to import records from the master feeder ID schedule to the project schedule after the project has been created. This button allows you to import an entire group or individual IDs.

When you press this button, the **Import Master Record** dialog box will appear.

Import Master Record Dialog Box



Current Group: The group in the master schedule from which the feeder IDs will be imported. [\[\[See Import from Another Database for notes on importing existing IDs\]\]](#)

Select Group: Press this button to select a new group from which to import feeder IDs.

Import Entire Group: Press this button to import all of the feeder IDs from the *Current Group* to the project.

New feeder IDs will be created in the project for each ID being imported. If an ID already exists in the current schedule, the information will be overwritten.

You will be prompted if you want to delete all of the existing feeder IDs in the project schedule.

Record List: The list of feeder IDs in the *Current Group*. Select the ID to import from this list. You can select multiple IDs using the **SHIFT** and **CTRL** keys.

Create New Record in Schedule: Select this option to create a new feeder ID in the project schedule for each ID being imported. If an ID already exists in the current schedule, the information will be overwritten.

Update Current Record in Schedule: Select this option to update the current feeder ID in the project schedule with the information from the selected ID in the master schedule. All of the information in the project schedule will be overwritten.

Create Feeder IDs

Used to manually create new feeder IDs.

Create Feeder ID Dialog Box

Create Feeder ID

Use CTRL or SHIFT to select multiple entries in lists

Ampacity

- 15
- 15 AL
- 20
- 20 AL
- 25
- 25 AL
- 30
- 30 AL
- 35
- 35 AL
- 40
- 40 AL
- 45
- 45 AL
- 50
- 50 AL
- 60
- 60 AL
- 70
- 70 AL
- 80
- 80 AL
- 90
- 90 AL
- 100
- 100 AL
- 110
- 110 AL
- 125

Number of Conductors

- 1
- 2
- 3

Neutral Size

- Same as Phase
- Double Phase
- None

Ground Size

- NEC 250.122: Equipment Grounding Conductor
- NEC 250.102: Supply-Side Bonding Jumper (Service)
- None

Include IG

- Yes
- No

Automatically create feeder IDs

Create feeder ID in master schedule

Create Feeder IDs

Exit

The **Create Feeder ID** dialog box is used to manually create one or more feeder IDs. Multiple settings can be selected to create feeder IDs for each combination of the selected settings.

Ampacity: The ampacity of the feeder.

Number of Conductors: The number of conductor wires.

Neutral Size: The size of the neutral wires.

Ground Size: The size of the ground wires.

Include IG: Whether the ground will be isolated.

Automatically create feeder IDs: Whether the feeder IDs are created automatically.

If this box is not checked, the **New Feeder Callout ID** dialog box will appear when you press the **Create Feeder IDs** button. For each feeder ID created, you can set the feeder ID, feeder ID group, whether feeder IDs should be automatically generated in the future, and whether the feeder ID should be added to the master schedule.

Create feeder ID in master schedule: Whether the feeder IDs will be inserted in the feeder ID master schedule.

Press the **Create Feeder IDs** button to create the feeder IDs.

Customization Utilities

The **Customization Utilities** panel contains commands for managing your customization databases and local customization.

Recreate Missing Customization: Recreates customization that is missing in the project or standards database.

Update Laptop Customization: Updates your local customization from the network.

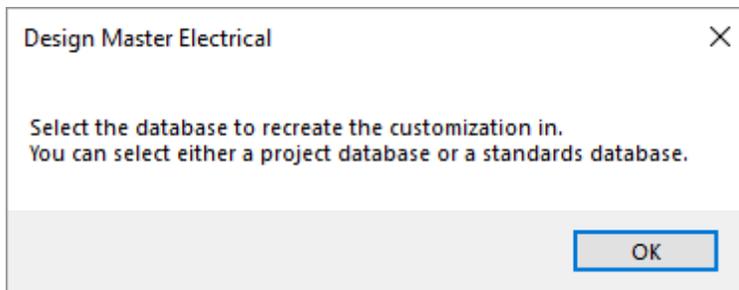
Manage Standards Databases: Manages the customization standards databases.

Recreate Missing Customization

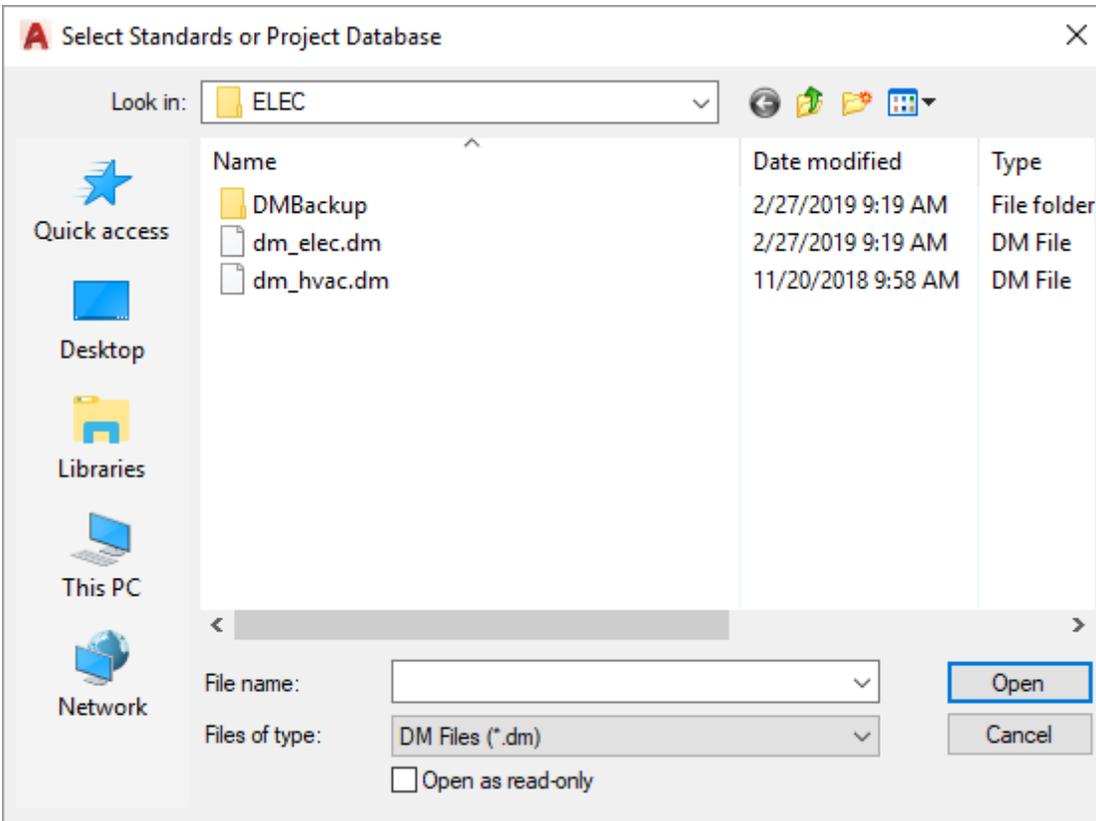
To recreate customization that is missing in the a project or standards database, go to

Ribbon: DMERT: Customization->Customization Utilities->Recreate Missing Customization

Pulldown Menu: DM Electrical RT->Customization->Recreate Missing Customization



Press the **OK** button. The **Select Standards or Project Database** dialog box will appear.



Select the standards or project database and press the **Open** button. Any missing customization records will be added to the database. It will not change any existing customization values.

The **Select Standards or Project Database** dialog box will open the current project folder by default. To update your standards database, you must browse to your customization folder.

The default location for the customization folder is C:\Users\\AppData\Roaming\Design Master Software\Electrical RT Customization where <User Name> is the name you use to log in to your computer.

Update Laptop Customization

Used to update the local customization on a laptop to match the customization stored on the network. The local customization is automatically updated once a day when you open AutoCAD. This command is used to manually update the local customization. It is only necessary to use this command if the customization on your network has changed during the day.

To update the local customization on a laptop, go to

Ribbon: DMERT: Customization->Customization Utilities->Update Laptop Customization

Pulldown Menu: DM Electrical RT->Customization->Update Laptop Customization

The customization will be copied from the network to the local drive.

See the [Installation Settings](#) section for more information on configuring your computer as a laptop.

Manage Standards Databases

Used to create, modify, and delete standards databases. Each standards database has its own set of customization settings. Multiple standards databases are used when more than one set of standards is used in a company.

To manage your standards databases, go to

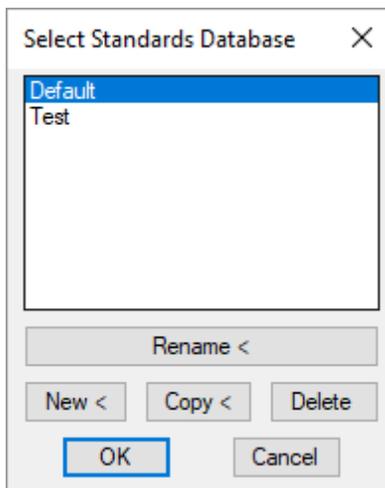
Ribbon: DMERT: Customization->Customization Utilities->Manage Standards Databases

Pulldown Menu: DM Electrical RT->Customization->Manage Standards Databases

If only one standards database exists, you will be prompted to create a new one. If you do not create another database, the command will end. If you do create another database, the **Select Standards Database** dialog box will then appear.

If more than one standards database exists, the **Select Standards Database** dialog box will appear.

Select Standards Database Dialog Box



Each standards database is a separate file stored in your customization folder. The file name will be "dm_elec-standards<Name>.dm", where <Name> is the name of the standards database as displayed in the dialog box. The default standards database is named "dm_elec-standards.dm".

The default location for the customization folder is C:\Users\<User Name>\AppData\Roaming\Design Master Software\Electrical RT Customization where <User Name> is the name you use to log in to your computer.

Rename: Press this button to rename the selected standards database. The name that is displayed and the name of the file will be changed.

New: Press this button to create a new standards database. A new standards database file will be created in the customization folder.

Copy: Press this button to copy the selected standards database. A new standards database file with the same settings will be created in the customization folder.

Delete: Press this button to delete the selected standards database.

Advanced Topics

This section covers advanced topics about Design Master Electrical RT.

[Feeder Sizing Basis](#): How feeders are sized.

[Fault Calculation Basis](#): How fault current is calculated.

[Voltage Drop Calculation Basis](#): How voltage drop is calculated.

[Arc-Flash Calculation Basis](#): How arc-flash is calculated.

[Modifying Panel Schedules](#): How to modify panel schedules to use the calculated branch circuit wire sizes.

[Setting Default Customization Values](#): How to change the default customization settings and use the settings in new projects.

[Neutrals](#): How neutral wires are used in feeders and branch circuits.

[Schedule Fields / Shared Parameters](#): Descriptions of all of the shared parameters added by Design Master Electrical RT.

Feeder Sizing Basis

The wire size for a given ampacity is set in the **Wire Sizing** dialog box. See the [Wire Ampacity](#) section for more information on setting these values.

The default wire sizes are based upon *NEC Table 310.16*. The *60°C Copper* column is used for wires up to #1. The *75°C Copper* column is used for wires 1/0 and larger. These wire sizes are used when the wire size is chosen automatically.

Fault Calculation Basis

The fault calculations are based upon *IEEE Std 242-2001: IEEE Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems*.

The fault that is calculated is the three-phase line-to-line fault.

$$\text{Fault} = \text{Voltage} / \sqrt{(\text{Resistance}^2 + \text{Reactance}^2)}$$

The feeder impedance values are based upon *NEC Table 9*. These values can be modified by the user using the [Wire Ampacities](#) command.

The transformer impedance values are for dry-type indoor transformers. These values can be modified by the user using the [Panel Edit](#) command or [Family Edit](#) command.

Voltage Drop Calculation Basis

$$\text{Three-Phase \% Voltage Drop} = \text{Calculated Load in Amps} * \text{Effective Z} * (\text{Wire Length} / 1,000) * 100 / \text{Line-to-Neutral Voltage}$$

$$\text{Single-Phase \% Voltage Drop} = \text{Calculated Load in Amps} * \text{Effective } Z * (\text{Wire Length} / 1,000) * 100 * 2 / \text{Voltage}$$

$$\text{Effective } Z = R \cos(\theta) + X \sin(\theta)$$
 (See *NEC Table 9 Note 2*)

R = Resistance set in the [Wire Ampacity](#) command.

X = Reactance set in the [Wire Ampacity](#) command.

θ = Power factor of the electrical system.

Line-to-Neutral Voltage is used for three-phase calculations based upon *NEC Table 9 Note 2*: "Multiplying current by effective impedance gives a good approximation for line-to-neutral voltage drop."

Voltage is the line-to-neutral voltage for single-pole circuits and line-to-line voltage for two-pole circuits.

The feeder impedance values are based upon *NEC Table 9*. These values can be modified by the user using the [Wire Ampacities](#) command.

Feeder Values

Calculated Load in Amps is the *Total Estimated Demand Current* on the distribution equipment. This load is calculated by Revit based upon the loads connected to the distribution equipment and the demand factors.

Wire Length is the *Feeder Length* value for the panel. Set the feeder length using the [Panel Edit](#) command.

Branch Circuit Values

Calculated Load in Amps is the *Apparent Current* on the circuit. This load is calculated by Revit based upon the devices connected to the circuit.

Wire Length is the *Circuit Length* value for the circuit. Set the circuit length using the [Circuit Edit](#) command. The voltage drop calculation assumes the entire circuit load is located this distance from the panel.

Transformer Voltage Drop Basis

The transformer impedance values are for dry-type indoor transformers. These values can be modified by the user using the [Panel Edit](#) command or [Family Edit](#) command.

The voltage drop through transformers can be included, ignored, or reset to 0%. Use the **Transformer voltage drop calculation method** option in the [Options](#) command to control how the voltage drop is calculated.

Arc-Flash Calculation Basis

Arc-flash calculations are based upon *IEEE Std 1584-2018*.

Modifying Panel Schedules

The wire sizes calculated by Design Master Electrical RT do not use the built-in wire size parameters in Revit. To display the values in your panel schedules, you need to modify your schedule template and change the values

that are displayed.

To modify your panel schedules:

1. Go to **Manage->Panel Schedule Templates->Edit a Template**.
2. Select the schedule to modify and press the **Open** button.
3. Use the **Modify Panel Schedule Template->Parameters** commands to change the values that are displayed in the template.
In the shared parameters pulldown menu, all of the Design Master Electrical RT shared parameters will be at the bottom of the list in the **Other** section. See the [Circuit Shared Parameters](#) section for a list of the shared parameters you can add.
4. Use the **Modify Panel Schedule Template->Columns and Rows** commands to add columns as necessary.

Setting Default Customization Values

Default customization values can be set using either a Revit template or the [Export Customization](#) and [Import Customization](#) commands.

Revit Template

Open the project template in Revit. Use the [Customization](#) commands to make changes to the wire sizes, conduit sizes, and wire ampacities.

When you start a new project using the template, the new project will use the modified customization values.

To make changes to your default customization, open the Revit template and modify the customization settings there.

Export Customization and Import Customization Commands

Open a project in Revit. Use the [Customization](#) commands to make changes to the wire sizes, conduit sizes, and wire ampacities.

Save the customization to a file using the [Export Customization](#) command.

When you start a new project, load the customization using the [Import Customization](#) command.

To make changes, open a new project and import the customization. Modify the customization settings, then export the customization to a file again.

Neutrals

Design Master Electrical RT includes neutrals in feeders and branch circuits based upon settings in Revit.

Distribution Equipment

A neutral is included on the feeder to a piece of distribution equipment based upon the settings of the *Distribution System* chosen for the equipment.

Three-Phase, with Neutral: Set *Phase* to **Three** and *Wires* to **4**.

Three-Phase, no Neutral: Set *Phase* to **Three** and *Wires* to **3**.

Single-Phase, Single Pole, with Neutral: Set *Phase* to **Single** and *Wires* to **2**. Single-pole equipment always has a neutral.

Single-Phase, Two Pole, with Neutral: Set *Phase* to **Single** and *Wires* to **3**. Set *L-G Voltage* to the appropriate voltage value.

Single-Phase, Two Pole, no Neutral: Set *Phase* to **Single** and *Wires* to **3**. Set *L-G Voltage* to **None**.

You can modify the *Distribution System* settings by using the **Manage->MEP Settings->Electrical Settings** command. Select **Distribution Settings** from the tree on the left.

Branch Circuits

Revit includes a neutral on branch circuits if the load is unbalanced or the wiring type requires a neutral.

Edit the family to set the *System Type* on the connector to **Power - Balanced** or **Power - Unbalanced**.

To set the neutral requirement, use the **Manage->MEP Settings->Electrical Settings** command. Select **Wiring->Wiring Types** from the tree on the left. Check or uncheck the *Neutral Required* box as appropriate.

To change the *Wire Type* of a circuit, select an instance connected to the circuit. Select the **Electrical Circuits** tab on the ribbon. In the **Properties** window, you can change the *Wire Type* value.

Video Demonstration

To watch a video demonstration of how to set up neutrals, see the [Configuring Neutrals](#) article in the knowledge base.

Schedule Fields / Shared Parameters

Design Master Electrical RT adds shared parameters to distribution equipment and branch circuits in Revit. These are standard shared parameters and can be used like any other shared parameters. The add-in uses some of them in the default schedules that are created.

To make them easy to find, all of the shared parameters are prefixed with **DME**.

Shared parameters starting with **DMET** are text values.

Shared parameters starting with **DMEN** are numeric values. These parameters use appropriate units where possible.

Shared parameters starting with **DMEB** are yes/no values.

[Distribution Equipment Shared Parameters](#): A list of the shared parameters added to distribution equipment.

[Circuit Shared Parameters](#): A list of shared parameters added to circuits.

[Fixture Shared Parameters](#): A list of shared parameters added to electrical fixtures.

Related Options

[Output shared parameter values as uppercase](#): Sets whether shared parameter outputs are displayed only in uppercase letters.

Distribution Equipment Shared Parameters

The shared parameters added to distribution equipment.

[Panel Shared Parameters](#): General shared parameters for distribution equipment.

[Transformer Shared Parameters](#): Shared parameters for transformers.

[Arc-Flash Shared Parameters](#): Shared parameters related to arc-flash calculations.

[Fault Shared Parameters](#): Shared parameters related to fault calculations.

[Feeder Shared Parameters](#): Shared parameters related to feeders.

[Voltage Drop Shared Parameters](#): Shared parameters related to voltage drop calculations.

Panel Shared Parameters

The general shared parameters added to distribution equipment.

Numeric Parameters

Parameter types in this section are set to number unless otherwise noted.

DMEN_Panel_LineToLineVoltage: The line-to-line voltage of the distribution equipment as an electrical potential parameter.

DMEN_Panel_LineToNeutralVoltage: The line-to-neutral voltage of the distribution equipment as an electrical potential parameter.

DMEN_Panel_MainDisconnectFrameSize: The frame size of the main disconnect as a current parameter.

DMEN_Panel_MainDisconnectTripSize: The trip size of the main disconnect as a current parameter.

Text Parameters

Parameter types in this section are set to text.

DMET_Panel_BusAmps: The bus amps of the distribution equipment.

DMET_Panel_Distribution_System: The distribution system of the distribution equipment. The built-in Revit *Distribution System* property cannot be included in schedules. Use this parameter to include the value in a schedule.

DMET_Panel_LineToLineVoltage: The line-to-line voltage of the distribution equipment.

DMET_Panel_LineToNeutralVoltage: The line-to-neutral voltage of the distribution equipment.

DMET_Panel_Lugs: The type of lugs specified for the distribution equipment.

DMET_Panel_MainDisconnect: The main disconnect type, trip, and frame size, together in a single shared parameter. The numbers listed below are example values.

- **MLO:** The main disconnect is main lugs only.
- **MCB 100A:** The main disconnect is a main circuit breaker with the same size frame and trip.
- **MCB 60AT, 100AF:** The main disconnect is a main circuit breaker with different frame and trip sizes. The trip size is labeled AT (for "amps trip") and the frame size is labeled AF (for "amps frame").
- **FS 100A:** The main disconnect is a fused switch with the same size frame and trip.
- **FS 60AT, 100AF:** The main disconnect is a fused switch with different frame and trip sizes. The trip size is labeled AT (for "amps trip") and the frame size is labeled AF (for "amps frame").

DMET_Panel_MainDisconnectFrameSize: The frame size of the main disconnect.

DMET_Panel_MainDisconnectTripSize: The trip size of the main disconnect.

DMET_Panel_MainDisconnectType: The type of main disconnect.

- **MLO:** The main disconnect is main lugs only.
- **MCB:** The main disconnect is a main circuit breaker.
- **FS:** The main disconnect is a fused switch.

DMET_PanelTree_Label: The name of the distribution equipment, indented based upon its position in the model. The indent begins with a period because Revit removes any leading spaces in the value.

DMET_PanelTree_SortOrder: A number representing the position of the distribution equipment in the panel tree. When the schedule is sorted by this parameter, the **DMET_PanelTree_Label** will display the panel tree.

DMET_Panel_UpstreamDescription: The description for the distribution equipment as it appears in the circuit description of the upstream panel schedule.

DMET_Panel_UpstreamDescription2: The description for the second feeder of the distribution equipment as it appears in the circuit description of the upstream panel schedule.

Transformer Shared Parameters

The shared parameters added to transformers.

Numeric Parameters

Parameter types in this section are set to number unless otherwise noted.

DMEN_Transformer_VA: The size of the transformer as a power parameter.

DMEN_Transformer_XRRatio: The X/R ratio of the transformer.

DMEN_Transformer_Z: The impedance of the transformer.

Text Parameters

Parameter types in this section are set to text.

DMET_Transformer_KFactor: The K-factor rating of the transformer.

DMET_Transformer_kVA: The size of the transformer in kVA.

DMET_Transformer_Secondary_Distribution_System: The secondary distribution system of the distribution equipment. The built-in Revit *Secondary Distribution System* property cannot be included in schedules. Use this parameter to include the value in a schedule.

DMET_Transformer_XRRatio: The X/R ratio of the transformer.

DMET_Transformer_Z: The impedance of the transformer.

Arc-Flash Shared Parameters

The shared parameters added to distribution equipment related to arc-flash calculations.

Numeric Parameters

Parameter types in this section are set to number unless otherwise noted.

DMEN_ArcFlash_ArcingCurrentMaximum: The maximum arcing current in amps.

DMEN_ArcFlash_ArcingCurrentReduced: The reduced arcing current in amps.

DMEN_ArcFlash_ConductorGap: The conductor gap in inches.

DMEN_ArcFlash_EnclosureDepth: The depth of the enclosure in inches.

DMEN_ArcFlash_EnclosureHeight: The height of the enclosure in inches.

DMEN_ArcFlash_EnclosureWidth: The width of the enclosure in inches.

DMEN_ArcFlash_IncidentEnergyAtMaximumCurrent: The incident energy at maximum arcing current in Joules/cm².

DMEN_ArcFlash_IncidentEnergyAtReducedCurrent: The incident energy at reduced arcing current in Joules/cm².

DMEN_ArcFlash_MaximumIncidentEnergy: The maximum arc-flash incident energy in Joules/cm².

DMEN_ArcFlash_ProtectionBoundaryDistance: The arc-flash-protection boundary distance as a length parameter.

DMEN_ArcFlash_WorkingDistance: The working distance as a length parameter.

Text Parameters

Parameter types in this section are set to text.

DMET_ArcFlash_ArcingCurrentMaximum: The maximum arcing current in amps.

DMET_ArcFlash_ArcingCurrentReduced: The reduced arcing current in amps.

DMET_ArcFlash_Calculate: A **Yes** or **No** value that indicates whether the arc-flash is calculated for the distribution equipment. It also is used to indicate whether the distribution equipment should be displayed in the arc-flash schedule. The default arc-flash schedule includes this parameter as a hidden column. Any distribution equipment with the value set to **No** is not included in the schedule. Pieces of electrical equipment with their *Part Type* set to **Equipment Switch** are automatically set to **No** so they are not displayed in the schedule.

DMET_ArcFlash_ConductorGap_inch: The conductor gap in inches.

DMET_ArcFlash_ConductorGap_mm: The conductor gap in millimeters.

DMET_ArcFlash_ElectrodeConfiguration: The electrode configuration for the distribution equipment.

DMET_ArcFlash_EnclosureDepth_inch: The depth of the enclosure in inches.

DMET_ArcFlash_EnclosureDepth_mm: The depth of the enclosure in millimeters.

DMET_ArcFlash_EnclosureHeight_inch: The height of the enclosure in inches.

DMET_ArcFlash_EnclosureHeight_mm: The height of the enclosure in millimeters.

DMET_ArcFlash_EnclosureWidth_inch: The width of the enclosure in inches.

DMET_ArcFlash_EnclosureWidth_mm: The width of the enclosure in millimeters.

DMET_ArcFlash_IncidentEnergyAtMaximumCurrent_cal: The incident energy at maximum arcing current in calories/cm².

DMET_ArcFlash_IncidentEnergyAtMaximumCurrent_J: The incident energy at maximum arcing current in Joules/cm².

DMET_ArcFlash_IncidentEnergyAtReducedCurrent_cal: The incident energy at reduced arcing current in calories/cm².

DMET_ArcFlash_IncidentEnergyAtReducedCurrent_J: The incident energy at reduced arcing current in Joules/cm².

DMET_ArcFlash_MaximumIncidentEnergy_cal: The maximum arc-flash incident energy in calories/cm².

DMET_ArcFlash_MaximumIncidentEnergy_J: The maximum arc-flash incident energy in Joules/cm².

DMET_ArcFlash_ProtectionBoundaryDistance_ft: The arc-flash-protection boundary distance in feet.

DMET_ArcFlash_ProtectionBoundaryDistance_mm: The arc-flash-protection boundary distance in millimeters.

DMET_ArcFlash_WorkingDistance_ft: The working distance in feet.

DMET_ArcFlash_WorkingDistance_mm: The working distance in millimeters.

Fault Shared Parameters

The shared parameters added to distribution equipment related to fault calculations.

Numeric Parameters

Parameter types in this section are set to number unless otherwise noted.

DMEN_Fault_FaultAtDevice: The available fault current at the distribution equipment as a current parameter. Includes both the utility fault and motor contributions.

DMEN_Fault_FaultMotorDirectlyConnected: The fault due to motors directly connected to the distribution equipment as a current parameter.

DMEN_Fault_FaultMotorTotal: The total fault due to all motors in the system as a current parameter.

DMEN_Fault_FaultUtility: The fault at the distribution equipment from the utility as a current parameter.

DMEN_Fault_FedFromFault: The available fault current at the upstream distribution equipment as a current parameter.

DMEN_Fault_FedFromFault1: The available fault current at the upstream distribution equipment connected to feeder 1 as a current parameter.

DMEN_Fault_FedFromFault2: The available fault current at the upstream distribution equipment connected to feeder 2 as a current parameter.

DMEN_Fault_Transformer_FaultAtPrimary: The available fault at the primary of a transformer as a current parameter. Set to 0 if the distribution equipment is not a transformer.

DMEN_Fault_Transformer_VA: The VA of the transformer as an apparent power parameter. Set to 0 if the distribution equipment is not a transformer.

DMEN_Fault_Transformer_XRRatio: The X/R ratio of the transformer. Set to 0 if the distribution equipment is not a transformer.

DMEN_Fault_Transformer_ZPercent: The transformer impedance percentage. Set to 0 if the distribution equipment is not a transformer.

Text Parameters

Parameter types in this section are set to text.

DMET_Fault_Display: A **Yes** or **No** value that indicates whether the distribution equipment should be displayed in the fault current schedule. The default fault current schedule includes this parameter as a hidden column. Any distribution equipment with the value set to **No** is not included in the schedule. Pieces of electrical equipment with their *Part Type* set to **Equipment Switch** are automatically set to **No** so they are not displayed in the schedule.

DMET_Fault_FaultAtDevice: The available fault current at the distribution equipment. A warning is displayed if the fault exceeds the AIC rating of the distribution equipment. Includes both the utility fault and motor contributions.

DMET_Fault_FaultAtDevice_NoWarnings: The available fault current at the distribution equipment. Includes both the utility fault and motor contributions.

DMET_Fault_FaultMotorDirectlyConnected: The fault due to motors directly connected to the distribution equipment.

DMET_Fault_FaultMotorTotal: The total fault due to all motors in the system.

DMET_Fault_FaultUtility: The fault at the distribution equipment from the utility.

DMET_Fault_FedFromFault: The available fault current at the upstream distribution equipment.

DMET_Fault_Transformer_FaultAtPrimary: The available fault at the primary of a transformer. Blank if the distribution equipment is not a transformer.

DMET_Fault_Transformer_kVA: The kVA of the transformer. Blank if the distribution equipment is not a transformer.

DMET_Fault_Transformer_XRRatio: The XR ratio of the transformer. Blank if the distribution equipment is not a transformer.

DMET_Fault_Transformer_Z: The transformer impedance percentage. Blank if the distribution equipment is not a transformer.

Feeder Shared Parameters

The shared parameters added to distribution equipment related to the feeder to the distribution equipment.

Numeric Parameters

Parameter types in this section are set to number unless otherwise noted.

DMEN_Feeder_ConductorWireArea: The area of the conductor wire as an area parameter. The area is for a single conductor wire. It does not account for parallel runs or the number of poles.

DMEN_Feeder_ConduitArea: The area of the conduit as an area parameter.

DMEN_Feeder_ConduitFill: The conduit fill as a percentage.

DMEN_Feeder_FrameSize: The frame size of the upstream OCP for the distribution equipment as a current parameter.

DMEN_Feeder_GroundWireArea: The area of the ground wire as an area parameter.

DMEN_Feeder_Length: The length of the feeder as a length parameter.

DMEN_Feeder_NeutralWireArea: The area of the neutral wire as an area parameter.

DMEN_Feeder_NeutralWireCount: The number of neutral wires.

DMEN_Feeder_ParallelRuns: The number of parallel runs.

DMEN_Feeder_RPer1000ft: The resistance per 1,000' for the feeder.

DMEN_Feeder_TripSize: The trip size of the upstream OCP for the distribution equipment as a current parameter.

DMEN_Feeder_WireAmpacity: The ampacity of the feeder as a current parameter.

DMEN_Feeder_XPer1000ft: The reactance per 1,000' for the feeder.

DMEN_Feeder_ZPer1000ft: The impedance per 1,000' for the feeder.

DMEN_Feeder2_ConductorWireArea: The area of the conductor wire of the second feeder as an area parameter. The area is for a single conductor wire. It does not account for parallel runs or the number of poles.

DMEN_Feeder2_ConduitArea: The area of the conduit of the second feeder as an area parameter.

DMEN_Feeder2_ConduitFill: The conduit fill of the second feeder as a percentage.

DMEN_Feeder2_FrameSize: The frame size of the upstream OCP of the second feeder for the distribution equipment as a current parameter.

DMEN_Feeder2_GroundWireArea: The area of the ground wire of the second feeder as an area parameter.

DMEN_Feeder2_Length: The length of the feeder of the second feeder as a length parameter.

DMEN_Feeder2_NeutralWireArea: The area of the neutral wire of the second feeder as an area parameter.

DMEN_Feeder2_NeutralWireCount: The number of neutral wires of the second feeder.

DMEN_Feeder2_ParallelRuns: The number of parallel runs of the second feeder.

DMEN_Feeder2_RPer1000ft: The resistance per 1,000' for the feeder of the second feeder.

DMEN_Feeder2_TripSize: The trip size of the upstream OCP for the distribution equipment of the second feeder

as a current parameter.

DMEN_Feeder2_WireAmpacity: The ampacity of the second feeder as a current parameter.

DMEN_Feeder2_XPer1000ft: The reactance per 1,000' for the feeder of the second feeder.

DMEN_Feeder2_ZPer1000ft: The impedance per 1,000' for the feeder of the second feeder.

Text Parameters

Parameter types in this section are set to text.

DMET_Feeder_ConductorWireArea: The area of the conductor wire. The area is for a single conductor wire. It does not account for parallel runs or the number of poles. If there are two feeders, both conductor sizes are shown, separated by a slash. The default feeder schedule includes this parameter as a hidden column and sorts the schedule using it.

DMET_Feeder_ConductorWireSize: The number of parallel runs and the size of the conductor wires. Displayed in the default fault current schedule. If there are two feeders, both feeder sizes are shown, separated by a slash.

DMET_Feeder_ConductorWireSizeOnly: The size of the conductor wires. If there are two feeders, both feeder sizes are shown, separated by a slash.

DMET_Feeder_ConduitFill: The conduit fill as a percentage. If there are two feeders, both conduit fills are shown, separated by a slash.

DMET_Feeder_ConduitSize: The size of the conduit. If there are two feeders, both conduit sizes are shown, separated by a slash.

DMET_Feeder_Display: A **Yes** or **No** value that indicates whether the feeder should be displayed in the feeder schedule. The default feeder schedule includes this parameter as a hidden column. Any distribution equipment with the value set to **No** is not included in the schedule. Pieces of electrical equipment with their *Part Type* set to **Equipment Switch** are automatically set to **No** so they are not displayed in the schedule.

DMET_Feeder_FeederID: The feeder ID on the one-line diagram of the first feeder.

DMET_Feeder_FrameSize: The frame size of the upstream OCP of the first feeder for the distribution equipment.

DMET_Feeder_GroundWireSize: The size of the ground wire. If there are two feeders, both ground wire sizes are shown, separated by a slash.

DMET_Feeder_IGConductor: A **Yes** or **No** value that indicates whether the first feeder includes an IG conductor.

DMET_Feeder_Length_ft: The length of the feeder in feet. If there are two feeders, both lengths are shown, separated by a slash. Displayed in the default fault current schedule.

DMET_Feeder_Length_m: The length of the feeder in meters. If there are two feeders, both lengths are shown, separated by a slash.

DMET_Feeder_NeutralWireSize: The size of the neutral wire. If there are two feeders, both neutral wire sizes are shown, separated by a slash.

DMET_Feeder_ParallelRuns: The number of parallel runs of the first feeder.

DMET_Feeder_RPer1000ft: The resistance of the feeder per 1,000'. If there are two feeders, both resistances are shown, separated by a slash.

DMET_Feeder_TripSize: The trip size of the upstream OCP of the first feeder for the distribution equipment.

DMET_Feeder_Trip_Poles: The trip size and number of poles of the upstream OCP of the first feeder for the distribution equipment. The trip and poles are separated by a slash, for example, 100/3.

DMET_Feeder_WireAmpacity: The ampacity of the feeder wire of the first feeder.

DMET_Feeder_WireCallout: The callout of the first feeder. The callout lists the conduit size and all of the wire sizes, separated by a comma and a space.

DMET_Feeder_WireCalloutCompact: The callout of the first feeder. The callout lists the conduit size and all of the wire sizes, separated by a comma.

DMET_Feeder_XPer1000ft: The reactance of the feeder per 1,000'. If there are two feeders, both reactances are shown, separated by a slash.

DMET_Feeder_ZPer1000ft: The impedance of the feeder per 1,000'. If there are two feeders, both impedances are shown, separated by a slash.

DMET_Feeder1_ConductorWireArea: The area of the conductor wire of the first feeder. The area is for a single conductor wire. It does not account for parallel runs or the number of poles.

DMET_Feeder1_ConductorWireSize: The number of parallel runs and the size of the conductor wires of the first feeder.

DMET_Feeder1_ConductorWireSizeOnly: The size of the conductor wires of the first feeder.

DMET_Feeder1_ConduitSize: The size of the conduit of the first feeder.

DMET_Feeder1_GroundWireSize: The size of the ground wire of the first feeder.

DMET_Feeder1_Length_ft: The length in feet of the first feeder.

DMET_Feeder1_Length_m: The length in meters of the first feeder.

DMET_Feeder1_NeutralWireSize: The size of the neutral wire of the first feeder.

DMET_Feeder1_RPer1000ft: The resistance per 1,000' of the first feeder.

DMET_Feeder1_XPer1000ft: The reactance per 1,000' of the first feeder.

DMET_Feeder1_ZPer1000ft: The impedance per 1,000' of the first feeder.

DMET_Feeder2_ConductorWireArea: The area of the conductor wire of the second feeder. The area is for a single conductor wire. It does not account for parallel runs or the number of poles.

DMET_Feeder2_ConductorWireSize: The number of parallel runs and the size of the conductor wires of the second feeder.

DMET_Feeder2_ConductorWireSizeOnly: The size of the conductor wires of the second feeder.

DMET_Feeder2_ConduitFill: The conduit fill of the second feeder as a percentage.

DMET_Feeder2_ConduitSize: The size of the conduit of the second feeder.

DMET_Feeder2_Display: A **Yes** or **No** value that indicates whether the feeder should be displayed in the feeder schedule. Pieces of electrical equipment with their *Part Type* set to **Equipment Switch** are automatically set to **No** so they are not displayed in the schedule.

DMET_Feeder2_FeederID: The feeder ID on the one-line diagram of the second feeder.

DMET_Feeder2_FrameSize: The frame size of the upstream OCP of the second feeder for the distribution equipment.

DMET_Feeder2_GroundWireSize: The size of the ground wire of the second feeder.

DMET_Feeder2_IGConductor: A **Yes** or **No** value that indicates whether the second feeder includes an IG conductor.

DMET_Feeder2_Length_ft: The length in feet of the second feeder.

DMET_Feeder2_Length_m: The length in meters of the second feeder.

DMET_Feeder2_NeutralWireSize: The size of the neutral wire of the second feeder.

DMET_Feeder2_ParallelRuns: The number of parallel runs of the second feeder.

DMET_Feeder2_RPer1000ft: The resistance per 1,000' of the second feeder.

DMET_Feeder2_TripSize: The trip size of the upstream OCP of the second feeder for the distribution equipment.

DMET_Feeder2_WireAmpacity: The ampacity of the second feeder.

DMET_Feeder2_WireCallout: The callout of the second feeder. The callout lists the conduit size and all of the wire sizes, separated by a comma and a space.

DMET_Feeder2_WireCalloutCompact: The callout of the second feeder. The callout lists the conduit size and all of the wire sizes, separated by a comma.

DMET_Feeder2_XPer1000ft: The reactance per 1,000' of the second feeder.

DMET_Feeder2_ZPer1000ft: The impedance per 1,000' of the second feeder.

Yes/No Parameters

Parameter types in this section are set to yes/no.

DMEB_Feeder_NeutralDouble: Whether the neutral wire of the first feeder is set to double the phase wire.

DMEB_Feeder2_NeutralDouble: Whether the neutral wire of the second feeder is set to double the phase wire.

Voltage Drop Shared Parameters

The shared parameters added to distribution equipment related to voltage drop calculations.

Numeric Parameters

Parameter types in this section are set to number unless otherwise noted.

DMEN_VoltageDrop_Feeder: The cumulative voltage drop on the feeder to the distribution equipment. If the distribution equipment has two feeders, this value is the largest of the two voltage drops.

DMEN_VoltageDrop_Feeder1: The voltage drop on feeder 1 to the distribution equipment.

DMEN_VoltageDrop_Feeder2: The voltage drop on feeder 2 to the distribution equipment.

DMEN_VoltageDrop_MaxCircuit: The largest voltage drop on all of the branch circuits on the distribution equipment.

DMEN_VoltageDrop_MaxCircuit_Length: The length of the branch circuit with the largest voltage drop as a length parameter

DMEN_VoltageDrop_Total: The total voltage drop from the utility to the branch circuit devices. It is calculated as the sum of the largest branch circuit voltage drop and the larger of the two feeder voltage drops.

DMEN_VoltageDrop_Transformer: The voltage drop through the transformer if the distribution equipment is a transformer.

Text Parameters

Parameter types in this section are set to text.

DMET_VoltageDrop_Display: A **Yes** or **No** value that indicates whether the distribution equipment should be displayed in the voltage drop schedule. The default voltage drop schedule includes this parameter as a hidden column. Any distribution equipment with the value set to **No** is not included in the schedule. Pieces of electrical equipment with their *Part Type* set to **Equipment Switch** are automatically set to **No** so they are not displayed in the schedule.

DMET_VoltageDrop_Feeder: The cumulative voltage drop on the feeder to the distribution equipment. If the distribution equipment has two feeders, this value is the largest of the two voltage drops. A warning is displayed if this value exceeds 2% or 3%, depending upon the *Feeder voltage drop percentage limit* setting in the [Options](#) command.

DMET_VoltageDrop_Feeder_NoWarnings: The cumulative voltage drop on the feeder to the distribution equipment. If the distribution equipment has two feeders, this value is the largest of the two voltage drops.

DMET_VoltageDrop_Feeder1: The voltage drop on feeder 1 to the distribution equipment.

DMET_VoltageDrop_Feeder2: The voltage drop on feeder 2 to the distribution equipment.

DMET_VoltageDrop_MaxCircuit: The largest voltage drop on all of the branch circuits on the distribution equipment. A warning is displayed if this value exceeds 3%.

DMET_VoltageDrop_MaxCircuit_ConductorWireSize: The number of parallel runs and the size of the conductor wires of the branch circuit with the largest voltage drop.

DMET_VoltageDrop_MaxCircuit_ConductorWireSizeOnly: The size of the conductor wires of the branch circuit with the largest voltage drop.

DMET_VoltageDrop_MaxCircuit_Length_ft: The length of the branch circuit with the largest voltage drop in feet.

DMET_VoltageDrop_MaxCircuit_Length_m: The length of the branch circuit with the largest voltage drop in meters.

DMET_VoltageDrop_MaxCircuit_NoWarnings: The largest voltage drop on all of the branch circuits on the distribution equipment.

DMET_VoltageDrop_MaxCircuit_Number: The circuit number of the branch circuit with the largest voltage drop.

DMET_VoltageDrop_MaxCircuit_WireCallout: The callout of the branch circuit with the largest voltage drop. The callout lists the conduit size and all of the wire sizes, separated by a comma and space.

DMET_VoltageDrop_MaxCircuit_WireCalloutCompact: The callout of the branch circuit with the largest voltage drop. The callout lists the conduit size and all of the wire sizes, separated by a comma.

DMET_VoltageDrop_Total: The total voltage drop from the utility to the branch circuit devices. It is calculated as the sum of the largest branch circuit voltage drop and the larger of the two feeder voltage drops. A warning is displayed if this value exceeds 5%.

DMET_VoltageDrop_Total_NoWarnings: The total voltage drop from the utility to the branch circuit devices. It is calculated as the sum of the largest branch circuit voltage drop and the larger of the two feeder voltage drops.

DMET_VoltageDrop_Transformer: The voltage drop through the transformer if the distribution equipment is a transformer.

Circuit Shared Parameters

The shared parameters added to circuits.

Numeric Parameters

Parameter types in this section are set to number unless otherwise noted.

DMEN_Circuit_ConductorWireArea: The area of the conductor wire as an area parameter. The area is for a single conductor wire. It does not account for parallel runs or the number of poles.

DMEN_Circuit_ConduitArea: The area of the conduit as an area parameter.

DMEN_Circuit_ConduitFill: The conduit fill as a percentage.

DMEN_Circuit_FaultAtDevice: The available fault current at the distribution equipment connected to the circuit as a current parameter. Includes both the utility fault and motor contributions.

DMEN_Circuit_FaultMotorDirectlyConnected: The fault due to motors directly connected to the distribution equipment connected to the circuit as a current parameter.

DMEN_Circuit_FaultMotorTotal: The total fault due to all motors in the system at the distribution equipment connected to the circuit as a current parameter.

DMEN_Circuit_FaultUtility: The fault from the utility at the distribution equipment connected to the circuit as a current parameter.

DMEN_Circuit_GroundWireArea: The area of the ground wire as an area parameter.

DMEN_Circuit_Length: The length of the circuit as a length parameter.

DMEN_Circuit_NeutralWireArea: The area of the neutral wire as an area parameter.

DMEN_Circuit_ParallelRuns: The number of parallel runs.

DMEN_Circuit_Poles: The number of poles.

DMEN_Circuit_VoltageDrop: The voltage drop of the circuit.

Text Parameters

Parameter types in this section are set to text.

DMET_Circuit_ConductorWireSize: The number of parallel runs and the size of the conductor wires.

DMET_Circuit_ConductorWireSizeOnly: The size of the conductor wires.

DMET_Circuit_ConduitFill: The conduit fill as a percentage.

DMET_Circuit_ConduitSize: The size of the conduit.

DMET_Circuit_FaultAtDevice: The available fault current at the distribution equipment connected to the circuit. A warning is displayed if the fault exceeds the AIC rating of the distribution equipment. Includes both the utility fault and motor contributions.

DMET_Circuit_FaultAtDevice_NoWarnings: The available fault current at the distribution equipment connected to the circuit. Includes both the utility fault and motor contributions.

DMET_Circuit_FaultMotorDirectlyConnected: The fault due to motors directly connected to the distribution equipment connected to the circuit.

DMET_Circuit_FaultMotorTotal: The total fault due to all motors in the system at the distribution equipment connected to the circuit.

DMET_Circuit_FaultUtility: The fault from the utility at the distribution equipment connected to the circuit.

DMET_Circuit_FeederID: The feeder ID used for the circuit on the one-line diagram.

DMET_Circuit_GroundWireSize: The size of the ground wire.

DMET_Circuit_Length_ft: The length of the circuit in feet.

DMET_Circuit_Length_m: The length of the circuit in meters.

DMET_Circuit_NeutralWireSize: The size of the neutral wire.

DMET_Circuit_Number: The circuit number.

DMET_Circuit_ParallelRuns: The number of parallel runs.

DMET_Circuit_VoltageDrop: The voltage drop of the circuit.

DMET_Circuit_WireCallout: The wire callout for the circuit using the calculated or specified wire size settings. Wire sizes are separated by a comma and a space.

DMET_Circuit_WireCalloutCompact: The wire callout for the circuit using the calculated or specified wire size settings. Wire sizes are separated by a comma.

Branch Circuit Device Shared Parameters

The shared parameters added to branch circuit devices.

Numeric Parameters

Parameter types in this section are set to number unless otherwise noted.

DMEN_Fixture_Elevation: The elevation of the device as a length parameter. Uses the built-in *Elevation* parameter if it exists. Otherwise uses the maximum Z value of the family geometry.

DMEN_Equipment_FLA: The FLA or BCSC of the fixture as a current parameter.

DMEN_Equipment_MCA: The MCA of the fixture as a current parameter.

DMEN_Equipment_MOCP: The MOCP of the fixture as a current parameter.

DMEN_Feeder_ConductorWireArea: The area of the conductor wire of the branch circuit connected to this device as an area parameter. The area is for a single conductor wire. It does not account for parallel runs or the number of poles.

DMEN_Feeder_ConduitArea: The area of the conduit of the branch circuit connected to this device as an area parameter.

DMEN_Feeder_FrameSize: The frame size of the branch circuit connected to this device as a current parameter.

DMEN_Feeder_GroundWireArea: The area of the ground wire of the branch circuit connected to this device as an area parameter.

DMEN_Feeder_Length: The length of the branch circuit connected to this device as a length parameter.

DMEN_Feeder_NeutralWireArea: The area of the neutral wire of the branch circuit connected to this device as an area parameter.

DMEN_Feeder_ParallelRuns: The number of parallel runs of the branch circuit connected to this device.

DMEN_Feeder_TripSize: The trip size of the branch circuit connected to this device as a current parameter.

DMEN_VoltageDrop_Feeder: The voltage drop on the branch circuit connected to this device.

Text Parameters

Parameter types in this section are set to text.

DMET_Feeder_ConductorWireSize: The number of parallel runs and the size of the conductor wires of the branch circuit connected to this device.

DMET_Feeder_ConductorWireSizeOnly: The size of the conductor wires of the branch circuit connected to this device.

DMET_Feeder_ConduitSize: The size of the conduit of the branch circuit connected to this device.

DMET_Feeder_FeederID: The feeder ID on the one-line diagram of the branch circuit connected to this device.

DMET_Feeder_FrameSize: The frame size of the branch circuit connected to this device.

DMET_Feeder_GroundWireSize: The size of the ground wire of the branch circuit connected to this device.

DMET_Feeder_Length_ft: The length of the branch circuit connected to this device in feet.

DMET_Feeder_Length_m: The length of the branch circuit connected to this device in meters.

DMET_Feeder_NeutralWireSize: The size of the neutral wire of the branch circuit connected to this device.

DMET_Feeder_ParallelRuns: The number of parallel runs of the branch circuit connected to this device.

DMET_Feeder_TripSize: The trip size of the branch circuit connected to this device.

DMET_Feeder_Trip_Poles: The trip size and number of poles of the branch circuit connected to this device. The trip and poles are separated by a slash, for example, 100/3.

DMET_Feeder_WireCallout: The callout of the branch circuit connected to this device. The callout lists the conduit size and all of the wire sizes.

DMET_Instance_CircuitDescription: The circuit description of the branch circuit connected to this device.

DMET_VoltageDrop_Feeder: The voltage drop on the branch circuit connected to this device.

Technical Support

Technical support is available by phone, email, or live chat on our website. We are available Monday through Friday, 9am to 5pm Eastern time.

Limited support by email is available evenings, weekends, and holidays.

Email: support@designmaster.biz

Phone: 1-866-516-9497 x2

Live Chat: <http://www.designmaster.biz/chat/>

System Requirements

To run Design Master Electrical RT, you need:

A computer capable of running Autodesk Revit 2014 or later.

Autodesk Revit MEP 2014 or later, including:

- Autodesk Revit 2020
- Autodesk Revit 2019
- Autodesk Revit 2018
- Autodesk Revit 2017
- Autodesk Revit 2016
- Autodesk Revit MEP 2015
- Autodesk Revit MEP 2014

Older versions of Revit MEP are not supported.

To generate the one-line diagram, you need:

A computer capable of running Autodesk AutoCAD 2007 or later.

Autodesk AutoCAD 2007 or later, including:

- AutoCAD 2020
- AutoCAD 2019
- AutoCAD 2018
- AutoCAD 2017
- AutoCAD 2016
- AutoCAD 2015
- AutoCAD 2014
- AutoCAD 2013
- AutoCAD 2012
- AutoCAD 2011
- AutoCAD 2010
- AutoCAD 2009
- AutoCAD 2008
- AutoCAD 2007

Older versions of AutoCAD and AutoCAD LT are not supported.

Purchasing

Prices start at \$400 / user / year.

[Complete pricing information is available on our website.](#)

