



# REVIT MEP: Introduction to REVIT Family Parameters

An Online Continuing Education Course for Engineers

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# REVIT MEP: Introduction to REVIT Family Parameters

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## Course Overview

In this course the reader will learn the following:

- 1) What is a REVIT FAMILY?
- 2) What is a REVIT PARAMETER?
- 3) What is a REVIT FAMILY PARAMETER
- 4) Definitions of most commonly used REVIT FAMILY PARAMETERS
- 5) Classifications of REVIT FAMILY PARAMETERS
- 6) Naming REVIT FAMILY PARAMETERS
- 7) Creating and Modifying REVIT FAMILY PARAMETERS
- 8) Categorizing REVIT FAMILY PARAMETERS as *FIXED*, *SHARED*, or *PROJECT*
- 9) How to create a *Fixed* REVIT FAMILY PARAMETER
- 10) How to create a *Shared* REVIT FAMILY PARAMETER
- 11) How to create a *Project* REVIT FAMILY PARAMETER
- 12) How to modify a *Fixed* REVIT FAMILY PARAMETER
- 13) How to modify a *Shared* REVIT FAMILY PARAMETER
- 14) How to modify a *Project* REVIT FAMILY PARAMETER

All the content within this course is for *REFERENCE* only. The reader *DOES NOT* need to have access to the software, REVIT MEP, to complete this course.

## What is a REVIT FAMILY?

A *REVIT FAMILY* is a set of curves or surfaces (**Geometric Objects**) whose equations or values are controlled by parameters.

## What is a REVIT PARAMETER?

A *REVIT PARAMETER* is any set of analytical properties whose values determine the characteristics or behavior of a Family.

## What is a REVIT FAMILY PARAMETER?

Basically, a *REVIT FAMILY PARAMETER* is an analytical property whose equations or values determine the characteristics or behavior of a set of curves or surfaces (**Geometric Figures**).

There can be many types of **REVIT FAMILY PARAMETERS** generated when creating a **REVIT FAMILY**. The most *COMMON* types of **REVIT FAMILY PARAMETERS** are:

- 1) Dimensional Parameters
- 2) Visibility Parameters
- 3) Constraint Parameters
- 4) Angular Parameters

## **Definition Of Most Common Types REVIT Family Parameter**

### *DIMENSIONAL FAMILY PARAMETERS*

A parameter that controls the characteristics of a REVIT FAMILY based on changing the following: **Length, Width, Height, Depth, Diameter, Radius, etc.** in a project.

### *VISIBILITY FAMILY PARAMETERS*

A parameter that controls the behavior of a REVIT FAMILY by determining if the REVIT FAMILY is to be seen or not to be seen in a project. *PARAMETER TYPE: YES/NO*

### *CONSTRAINT FAMILY PARAMETERS*

A parameter that limits or restricts the action or behavior of a REVIT FAMILY.

*PARAMETER TYPE: YES/NO*

### *ANGULAR FAMILY PARAMETERS*

A parameter that controls the degree of an angle within a REVIT FAMILY.

### *CONSTRAINT/VISIBILITY FAMILY PARAMETER*

A parameter that controls the visibility and action or behavior of an object in a REVIT FAMILY.

## Classification Of REVIT Family Parameters

There are two types of classifications of a **REVIT FAMILY PARAMETER**:

- 1) *Instance*
- 2) *Type*

**INSTANCE** – Allows the user to change the properties of a REVIT FAMILY at that moment and the change does not affect any other REVIT FAMILIES of the FAMILY TYPE. **INSTANCE Revit Family Parameters** will appear in the **Properties Box** when editing a REVIT FAMILY in a REVIT Project File.

- The word *DEFAULT* appears in *PARENTHESIS* when a **Revit Family Parameter** is classified as an **INSTANCE Revit Family Parameter**. See below.

Parameter	Value	Formula	Lock
<b>Dimensions</b> ^			
LENGTH (default)	0' 0"	=	<input type="checkbox"/>

**TYPE** – Allows the user to change the properties of a REVIT FAMILY at that moment and the change does affect any other REVIT FAMILIES of the FAMILY TYPE. **TYPE Revit Family Parameters** will appear in the **EDIT TYPE Box** of the *Properties Box* when editing a REVIT FAMILY in a REVIT Project File.

**NOTE:** **INSTANCE** and **TYPE Revit Family Parameters** can exist in the same REVIT Family.

## Naming REVIT Family Parameters

### DIMENSIONAL REVIT FAMILY PARAMETERS

When naming a **DIMENSIONAL Family Parameters**, the user should name the Family Parameter starting with the Object that is *ASSOCIATED* with the **DIMENSIONAL Family Parameter** in the REVIT Family. See below:

Ex. **Table\_Length**: *TABLE* is the Object and *LENGTH* is the DIMENSIONAL Parameter.

Some common **DIMENSIONAL Family Parameter** Names: *LENGTH, WIDTH, HEIGHT, THICKNESS*

### ANGULAR REVIT FAMILY PARAMETERS

When naming a **ANGULAR Family Parameters**, the user should name the Family Parameter like the **DIMENSIONAL Family Parameter** is named. Like the **DIMENSIONAL Family Parameter**, the *NAME* should start with the Object that is *ASSOCIATED* with the **ANGULAR Family Parameter** in the REVIT FAMILY. See below:

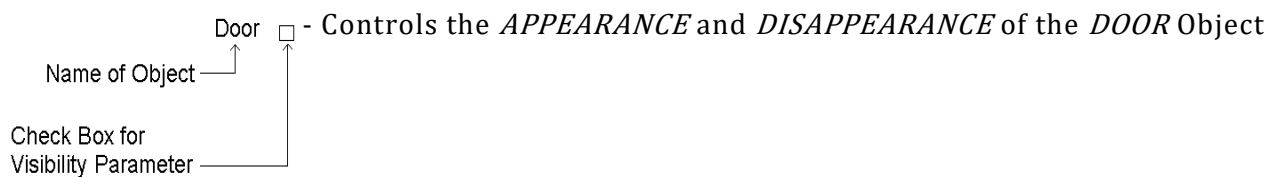
Ex. **Door\_Angle**: *DOOR* is the Object and *ANGLE* is the **ANGULAR Parameter**.

Some common **ANGULAR Family Parameter** Names: *ANGLE, SWING, ROTATION, TILT, etc.*

### VISIBILITY REVIT FAMILY PARAMETERS

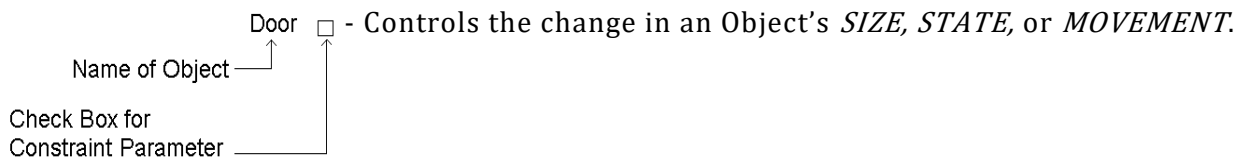
When naming a **VISIBILITY Family Parameter**, the user should name the Family Parameter the same name as the Object that it will be controlling in the REVIT Family.

See below:



### CONSTRAINT REVIT FAMILY PARAMETERS

Like the **VISIBILITY Family Parameter**, when *NAMING* a **CONSTRAINT Family Parameter**, the user should name the Family Parameter the same name as the Object that it will be controlling in the REVIT Family. See below:



**NOTE:** User must remember that **Family Parameter NAMING** is *CASE SENSITIVE*.

## Creating And Modifying Revit Family Parameters

When a user is building a *REVIT FAMILY* or working in a *REVIT PROJECT*, he or she will have the desire to create or modify the *REVIT FAMILY PARAMETERS*. There are (5) areas in which the user must determine when creating or modifying a *REVIT FAMILY PARAMETER* and they are as follows:

- 1) Name
- 2) Discipline
- 3) Parameter Type (*Type of Parameter*)
- 4) Parameter Group (*Group Parameter*)
- 5) Instance or Type

The **NAME** is the area where the user can define the name of the a *REVIT FAMILY PARAMETER*.

The **DISCIPLINE** is the area where the user can define a Discipline for a *REVIT FAMILY PARAMETER*. Below are the following default Disciplines that are available:

- 1) **Common** - used for *dimensions, numbers, angles, integers, yes/no, etc.*
- 2) **Electrical** - used for *Electrical only*
- 3) **HVAC** - used for *Mechanical only*
- 4) **Structural** - used for *Structural only*
- 5) **Piping** - used for *Plumbing only*
- 6) **Energy** - can be used for LEED (*energy savings*) projects

The **PARAMETER TYPE** is the area where the user can define a what type of a parameter a *REVIT FAMILY PARAMETER* will be. Below are the default Disciplines with their **PARAMETER TYPES** in **BOLD** letters:

- 1) **Common** - contains **integers, numbers, angles, length (all dimensions), yes/no, etc.**
- 2) **Electrical** - contains **current, watts, potential difference, apparent power, etc.**
- 3) **HVAC** - contains **duct size, air flow, temperature, velocity, etc.**
- 4) **Structural** - contains **force, moment, mass, weight, etc.**
- 5) **Piping** - contains **density, pipe size, flow, volume, etc.**
- 6) **Energy** - contains **thermal mass, thermal resistance, specific heat, etc.**

A **DISCIPLINE** must be selected prior to selecting a **PARAMETER TYPE**.

The **PARAMETER GROUP** is the area where the user can group the *REVIT FAMILY PARAMETER*.

Below are some following groups:

- DIMENSIONS
- ELECTRICAL
- FIRE PROTECTION
- STRUCTURAL
- MECHANICAL
- PLUMBING

The **INSTANCE or TYPE** is the area where the user will classify the **REVIT FAMILY PARAMETER**

## Example 1

1) If the user desired to **CREATE** a **REVIT FAMILY PARAMETER** of the **DIMENSIONAL** type, he or she would perform the following steps:

STEP1: OPEN a current version of REVIT MEP

STEP2: Determine whether the **REVIT FAMILY PARAMETER** will be created in a **REVIT FAMILY** or a **REVIT PROJECT**.

STEP3: Determine the naming convention on the naming convention on Page 3.

STEP 4: Determine the **REVIT FAMILY PARAMETER TYPE**. Since this **REVIT FAMILY PARAMETER** should be **COMMON**. See page 4, **PARAMETER TYPES**.

STEP 5: Determine the **REVIT FAMILY PARAMETER GROUP**. Since this **REVIT FAMILY PARAMETER TYPE** should be **COMMON**. See page 4, **PARAMETER TYPES**. **LENGTH** because of the naming convention.

STEP 6: Determine the **REVIT FAMILY PARAMETER GROUP**. Since this **REVIT FAMILY PARAMETER TYPE** should be **COMMON**. See page 4, **PARAMETER TYPES**. **DIMENSIONS**. Because the user can group **PARAMETER GROUP** should be **COMMON**. See page 4, **PARAMETER TYPES**.

STEP7: Determine if the **REVIT FAMILY PARAMETER** will be created as an **INSTANCE** or **TYPE**. See page 2.

