



NEMA Standards Publication BIM 100-2021

*BIM Data Requirements for Electrical Products in Support of
Design, Construction, Operation, and Maintenance*

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Foreword

This publication is a Standard for the data definitions and implementation levels of BIM data for electrical products and creating product libraries that can be interoperable to support electrical systems information beyond 3-D geometry. A Shared Parameters list is developed as part of this Standard to identify parameters that best serve the industry, without relying on BIM authoring tools.

This Standard was developed in response to the many questions from the user public and has been developed from the experience of the Member companies working with their customers and users. It provides information that will be useful to architects, electrical engineers, electrical contractors, maintenance engineers, and others who are responsible for design, specification, installation, and maintenance of the electrical products covered by this Standard.

NEMA publications are subject to periodic review. It was approved in accordance with the bylaws of NEMA. Any comments or proposed revisions to this Standard should be submitted to:

NEMA Technical Operations Department
National Electrical Manufacturers Association
1300 North 17th Street, Suite 900
Rosslyn, Virginia 22209

This Standard's publication was developed by the NEMA BIM Work Group. Approval of the Standard does not necessarily imply that all work group Members voted for its approval or participated in its development.

NEMA acknowledges the contribution of the following individuals for their expertise in developing the shared parameters file and the content of this Standard:

Steven Bunker, P.E., S.C. Bunker Consulting, LLC
Blake Guither, P.E., LEED AP O+M, BEMP, Gausman & Moore Associates
Shawn Zirbes, CTC Software
Krishnan Gowri, Ph.D., LEED AP, BEMP, Fellow, ASHRAE, Intertek ATI

1 Scope

This Standard provides a list of properties and data types for electrical products to enhance BIM models with interoperable data for design, construction, operation, and maintenance of electrical systems in buildings. The following electrical products are covered by this Standard:

- a. Light fixtures
- b. Electrical devices (receptacles, switches)
- c. Electrical appliances (refrigerators, ranges, etc.)
- d. Electrical equipment (circuits, panels and transformers)

This Standard is not intended to cover geometry for creating 3-D BIM models, but rather it defines electrical product data requirements with optional levels of compliance to support electrical system design, construction, operation, and maintenance. This Standard groups the data parameters in the following eight generic categories to support electrical system design functions and data interoperability as needed for the above products:

- a. Dimension
- b. Electrical circuit
- c. Electric lighting
- d. Electrical loads
- e. Electrical design
- f. Energy analysis
- g. General
- h. Identity



2 Referenced Standards

This Standard is intended to be used in creating BIM models with any BIM authoring tool; however, Revit-specific built-in parameters, group names, and GUIDs are generated and included for adoption. Specifically, the parameters are intended to support Revit 2020¹ and later. Parameters identified in this Standard include references from the following documents. When these documents are superseded by a published revision, the revision shall apply.

COBie: The Construction Operations Building Information Exchange open BIM Standard.

Organizations that have developed and manage Standards for BIM data include:

ASHRAE BIM-MTG: 1801-RP

ASHRAE Online BIM Data Exchange Protocol

ASHRAE Standard SPC 224P *Standard for the Application of Building Information Modeling*
(draft Standard, yet to be published as of August 2021)

¹ Revit shared parameters are not backward compatible, and therefore the accompanying shared parameter file cannot be used on previous versions of Revit. The file may be used in more recent versions of Revit but may not take advantage of new Revit features.

3 Data Content Description

BIM electrical product libraries shall have parameters with the following attributes that are common and interoperable:

3.1 Name

Parameter name reflective of the function and data content.
e.g., Apparent power.

3.2 Purpose/Use

Purpose of the parameter within the BIM model and the functional use.
e.g., Apparent power required, used, or consumed by the device or equipment. This load is reported to the electrical system.

3.3 Data Type

The parameter's data type as represented in the BIM model.
e.g., Length, integer, electrical potential.

3.4 Typical Units

Typical units of measurement applicable to the parameter. Units are not defined by the parameter but are rather specified by the user within the project environment. The Standard specifies typical units to be supported by the parameter.
e.g., VA, kVA, MVA.

3.5 Group

Each parameter must be assigned a group within Revit. This Standard provides Revit-specific Standard groups. Shared parameter group organization, both within a shared parameter file and within a Revit project, may be adjusted by users to meet the user's preferences or needs.
e.g., Electrical - Loads.

3.6 Tooltip

Informational message that displays when a mouse hovers over the parameter within the project environment.
e.g., Device or equipment load (not rated power or power rating).

3.7 GUID

Globally Unique Identifier. This is provided for reference, and product library developers are expected to use the accompanying shared parameter file; this needs to be retained as provided. Any manual editing of the GUID may make the BIM data for this parameter unusable.
e.g., 69db3809-9f23-485f-9984-3a842a8fef29.

4 BIM Electrical Data Parameters

4.1 Dimension

4.1.1 Parameter Name	Product Length
Purpose/Use	Length dimension of product, typically nominal.
Data Type	LENGTH
Typical Units	in., mm
Group	Dimensions
GUID	51782a3a-e0cb-45b4-86b1-2788dd5d6148
Note	This parameter is intended to be displayed in a schedule. Its value should typically represent the overall, nominal, rather than actual, dimension and may or may not drive family geometry.

4.1.2 Parameter Name	Product Width
Purpose/Use	Width dimension as shown on product cutsheets.
Data Type	LENGTH
Typical Units	in., mm
Group	Dimensions
GUID	b3d433e9-f085-469f-810a-ead142e20f7e
Note	This parameter is intended to be displayed in a schedule. Its value should typically represent the overall, nominal, rather than actual, dimension and may or may not drive family geometry.

4.1.3 Parameter Name	Product Height
Purpose/Use	Height dimension of product, typically nominal.
Data Type	LENGTH
Typical Units	in., mm
Group	Dimensions
GUID	8822b540-105f-47d1-847d-e3df372faa1e
Note	This parameter is intended to be displayed in a schedule. Its value should typically represent the overall, nominal, rather than actual, dimension and may or may not drive family geometry.

4.1.4 Parameter Name	Product Depth
Purpose/Use	Depth dimension of product, typically nominal.
Data Type	LENGTH
Typical Units	in., mm
Group	Dimensions
GUID	038052b7-7d2c-45e2-981f-7dc0b042c255
Note	This parameter is intended to be displayed in a schedule. Its value should typically represent the overall, nominal, rather than actual, dimension and may or may not drive family geometry.

4.1.5 Parameter Name	Product Diameter
Purpose/Use	Diameter dimension of product, typically nominal.
Data Type	LENGTH
Typical Units	in., mm
Group	Dimensions
GUID	c59a50f1-6e72-4981-ad58-2a65b8fbc846
Note	This parameter is intended to be displayed in a schedule. Its value should typically represent the overall, nominal, rather than actual, dimension and may or may not drive family geometry.

4.1.6 Parameter Name	Product Size
Purpose/Use	Size or dimensional data that is typically reported via means other than length.
Data Type	TEXT
Typical Units	-
Group	Dimensions
GUID	73912b3d-aeac-4142-b464-9eaa1037ba1d
Note	This parameter is intended to be displayed in a schedule and its value should be formatted appropriately for a schedule field.

4.1.7 Parameter Name	Product Volume
Purpose/Use	Volume of product.
Data Type	VOLUME
Typical Units	ft. ³ , in. ³ , mm ³
Group	Dimensions
GUID	48a78f76-f2fd-4595-a989-e14a6c12735d
Note	

4.1.8 Parameter Name	Product Weight
Purpose/Use	Weight of product.
Data Type	WEIGHT
Typical Units	lbf, kg
Group	Dimensions
GUID	4c6b9b09-4acf-401b-9095-e282ea2ecb39
Note	This weight is intended to be reported to the structural engineer for structural support. As such, this value should report the weight of the equipment while in operation.

4.1.9 Parameter Name	Top Installation Clearance
Purpose/Use	Depth of manufacturer-required clearance for operation, maintenance, or installation.
Data Type	LENGTH
Typical Units	in., mm
Group	Dimensions
GUID	becb1d0e-2e31-44ca-a551-fcf902f8a79f
Note	The manufacturer content provider should specify only clearances that are required for the proper operation, maintenance, or installation of equipment and not clearances that may be defined by building codes.

4.1.10 Parameter Name	Bottom Installation Clearance
Purpose/Use	Depth of manufacturer-required clearance for operation, maintenance, or installation.
Data Type	LENGTH
Typical Units	in., mm
Group	Dimensions
GUID	661b6bcc-96ee-4a35-9c2d-1aa551071d49
Note	The manufacturer content provider should specify only clearances that are required for the proper operation, maintenance, or installation of equipment and not clearances that may be defined by building codes.

4.1.11 Parameter Name	Front Installation Clearance
Purpose/Use	Depth of manufacturer-required clearance for operation, maintenance, or installation.
Data Type	LENGTH
Typical Units	in., mm
Group	Dimensions
GUID	2464cac2-0326-42e6-ae00-ec45400cb455
Note	The manufacturer content provider should specify only clearances that are required for the proper operation, maintenance, or installation of equipment and not clearances that may be defined by building codes.

4.1.12 Parameter Name	Back Installation Clearance
Purpose/Use	Depth of manufacturer-required clearance for operation, maintenance, or installation.
Data Type	LENGTH
Typical Units	in., mm
Group	Dimensions
GUID	9c963503-5d77-4daa-a99d-b792b49bd0c5
Note	The manufacturer content provider should specify only clearances that are required for the proper operation, maintenance, or installation of equipment and not clearances that may be defined by building codes.

4.1.13 Parameter Name	Left Installation Clearance
Purpose/Use	Depth of manufacturer-required clearance for operation, maintenance, or installation.
Data Type	LENGTH
Typical Units	in., mm
Group	Dimensions
GUID	c6908b27-af10-479d-8509-6b243b362d40
Note	The manufacturer content provider should specify only clearances that are required for the proper operation, maintenance, or installation of equipment and not clearances that may be defined by building codes.

4.1.14 Parameter Name	Right Installation Clearance
Purpose/Use	Depth of manufacturer-required clearance for operation, maintenance, or installation.
Data Type	LENGTH
Typical Units	in., mm
Group	Dimensions
GUID	bdabe7a8-f296-4d02-8efd-9b44303fa59d
Note	The manufacturer content provider should specify only clearances that are required for the proper operation, maintenance, or installation of equipment and not clearances that may be defined by building codes.

4.1.15 Parameter Name	Installation Clearance Visible
Purpose/Use	Visibility of built-in installation clearances.
Data Type	YESNO
Typical Units	-
Group	Dimensions
GUID	7abe34ef-0c49-4b87-b854-6f93a9d5ae3b
Note	Visibility of clearance object(s), if the content provider chooses to include clearance object(s) within the family.

4.2 Electrical Circuit

4.2.1 Parameter Name	Bussing
Purpose/Use	See note and parameter "Current Rating."
Data Type	TEXT
Typical Units	-
Group	Electrical - Circuiting
GUID	Built-In Type Parameter (Electrical Equipment Families)
Note	Revit's built-in "Bussing" parameter is typically used to specify the rating of the bus in amperes, but the parameter is a TEXT data type. Therefore, this Standard recommends using the parameter "Current Rating," which is an ELECTRICAL_CURRENT data type and locking out the "Bussing" parameter via the formula "Do Not Use; Use Current Rating."

4.2.2 Parameter Name	Modifications
Purpose/Use	Specification of unique modifications to particular installations of equipment.
Data Type	TEXT
Typical Units	-
Group	Electrical - Circuiting
GUID	Built-In Instance Parameter (Electrical Equipment Families)
Note	Value typically left blank by content provider, for use by project modeler. Not to be confused with "Additional Features," which may be a type parameter.

4.2.3 Parameter Name	Circuit Naming
Purpose/Use	See note.
Data Type	-
Typical Units	-
Group	Electrical - Circuiting
GUID	Built-In Instance Parameter (Electrical Equipment Families)
Note	Although this parameter is available within the family editor, it should be left blank by the content provider. It is used to define circuit naming/numbering within the project.

4.2.4 Parameter Name	Circuit Prefix
Purpose/Use	See note.
Data Type	TEXT
Typical Units	-
Group	Electrical - Circuiting
GUID	Built-In Instance Parameter (Electrical Equipment Families)
Note	Although this parameter is available within the family editor, it should be left blank by the content provider. It is used to define circuit naming/numbering within the project.

4.2.5 Parameter Name	Circuit Prefix Separator
Purpose/Use	See note.
Data Type	TEXT
Typical Units	-
Group	Electrical - Circuiting
GUID	Built-In Instance Parameter (Electrical Equipment Families)
Note	Although this parameter is available within the family editor, it should be left blank by the content provider. It is used to define circuit naming/numbering within the project.

4.2.6 Parameter Name	Distribution System
Purpose/Use	See note.
Data Type	-
Typical Units	-
Group	Electrical - Circuiting
GUID	Built-In Instance Parameter (Electrical Equipment Families)
Note	Although this parameter is available within the family editor, it should be left blank by the content provider. It is used to define the distribution system within the project.

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4.2.7 Parameter Name	Feed
Purpose/Use	Identifies the direction of the incoming feed (e.g., top or bottom) (independent of main device position).
Data Type	TEXT
Typical Units	-
Group	Electrical - Circuiting
GUID	Built-In Instance Parameter (Electrical Equipment Families)
Note	The default should be set equal to the main device position, when the main device position is defined by top or bottom, but users may adjust per instance if necessary.

4.2.8 Parameter Name	Feed Through Lugs
Purpose/Use	Indicates presence or absence of feed-thru lugs—built-in parameter with limitations. See note and information for parameter "Feed-Thru Lugs."
Data Type	YESNO
Typical Units	-
Group	Electrical - Circuiting
GUID	Built-In Instance Parameter (Electrical Equipment Families)
Note	Revit's built-in "Feed Through Lugs" parameter is an instance parameter, meaning separate instances of a particular type may have different values. Since the presence of feed-through lugs determines equipment geometry and model/catalog number, it may more appropriately be a type parameter. Therefore, this Standard recommends adding a separate "Feed-Thru Lugs" shared parameter as a type parameter if desired. This type parameter may drive the built-in instance parameter via a formula.

4.2.9 Parameter Name	Ground Bus
Purpose/Use	Indicates presence or absence of a ground bus.
Data Type	YESNO
Typical Units	-
Group	Electrical - Circuiting
GUID	Built-In Type Parameter (Electrical Equipment Families)
Note	

4.2.10 Parameter Name	Mains
Purpose/Use	Rating of the equipment mains, as defined by Mains Type.
Data Type	ELECTRICAL_CURRENT
Typical Units	-
Group	Electrical - Circuiting
GUID	Built-In Instance Parameter (Electrical Equipment Families)
Note	This value may be used for both MLO and MCB equipment. Revit's built-in "MCB Rating" type parameter cannot be changed to an instance parameter, is redundant, and should be locked out via a formula forcing it to 1A. When the mains type is MLO, Mains Rating should equal Bus Rating. Although the rating of the MCB for merchandised equipment is typically defined by model/catalog number, its rating may be adjusted (or the entire device replaced) for individual pieces of equipment. Therefore, this Standard recommends using this built-in instance parameter and setting its default value per the catalog number, where appropriate.

4.2.11 Parameter Name	Mains Type
Purpose/Use	Type of main (e.g., main circuit breaker, main lugs only).
Data Type	TEXT
Typical Units	-
Group	Electrical - Circuiting
GUID	Built-In Type Parameter (Electrical Equipment Families)
Note	Typically reported as "MCB" or "MLO," though this practice may vary among users.

4.2.12	
Parameter Name	Max #1 Pole Breakers
Purpose/Use	Number of breakers positions (poles) of distribution equipment. See note and parameter "Breaker Positions."
Data Type	INTEGER
Typical Units	-
Group	Electrical - Circuiting
GUID	Built-In Instance Parameter (Electrical Equipment Families)
Note	Revit's built-in "Max #1 Pole Breakers" parameter controls how many circuits may be connected to equipment within the project. It is an instance parameter, meaning separate instances of a particular type may have different values. Since the number of breaker positions determines equipment geometry and model/catalog number, it may more appropriately be a type parameter. Therefore, for manufacturer-provided content, if it is desired for the parameter to be per type rather than per instance, this Standard recommends adding a separate "Breaker Positions" shared parameter as a type parameter. This type parameter may drive the built-in instance parameter via a formula.

4.2.13	
Parameter Name	Neutral Bus
Purpose/Use	Indicates presence or absence of a neutral bus.
Data Type	YESNO
Typical Units	-
Group	Electrical - Circuiting
GUID	Built-In Type Parameter (Electrical Equipment Families)
Note	This parameter may be used, but also see note for parameter "Neutral Type."

4.2.14	
Parameter Name	Neutral Rating
Purpose/Use	Rating (expressed in percentage) of the neutral bus or conductor.
Data Type	ELECTRICAL_DEMAND_FACTOR
Typical Units	-
Group	Electrical - Circuiting
GUID	Built-In Type Parameter (Electrical Equipment Families)
Note	This parameter may be used, but also see note for parameter "Neutral Type."

4.2.15 Parameter Name	Neutral Type
Purpose/Use	Presence or rating of neutral (e.g., None, 100%, 200%).
Data Type	TEXT
Typical Units	-
Group	Electrical Circuiting
GUID	bf293b30-6245-4657-8e0a-d0e288fa874c
Note	The built-in parameters "Neutral Bus" and "Neutral Rating" may be used. However, users generally prefer to report neutral in a single field that displays typical values (e.g., None, 100%, 200%) rather than separate fields. Where no neutral is specified, the presence of the neutral rating field may be confusing. Limitations within Revit prevent Neutral Bus and Neutral Rating from being combined into a single field. Therefore, this Standard recommends this text parameter for reporting in schedules, with values such as "None," "100%," "200%," or other values as may be appropriate.

4.2.16 Parameter Name	Short Circuit Rating
Purpose/Use	See note and parameter "SCCR/AIC."
Data Type	TEXT
Typical Units	-
Group	Electrical - Circuiting
GUID	Built-In Instance Parameter (Electrical Equipment Families)
Note	Revit's built-in "Short Circuit Rating" parameter is an instance parameter with a TEXT data type. Since SCCR typically affects model/catalog number, it may more appropriately be a type parameter. Although a TEXT data type may allow more information to be presented (e.g., Symmetrical), the value is typically expressed in kiloamps. An ELECTRICAL_CURRENT data type allows checking and manipulation of this data, especially with third-party system analysis add-ins, that is not possible with a TEXT data type. Therefore, this Standard recommends using the parameter "SCCR/AIC" and defining Short Circuit Rating via the formula "Do Not Use; Use SCCR/AIC."

4.3 Electrical Lighting

4.3.1 Parameter Name	Lamp Type
Purpose/Use	Lamp type for lighting fixtures.
Data Type	TEXT
Typical Units	-
Group	Electrical - Lighting
GUID	3cd5049e-0b1e-4cd7-963c-6a59f1b87ee4
Note	This parameter is intended to be displayed in a schedule and its value should be formatted appropriately for a schedule field.

4.3.2 Parameter Name	Lamp Quantity
Purpose/Use	Lamp quantity for lighting fixtures.
Data Type	INTEGER
Typical Units	-
Group	Electrical - Lighting
GUID	645a1d97-cd6f-4820-b1b4-ebe20ffe0e9c
Note	-

4.3.3 Parameter Name	Lens/Louver
Purpose/Use	Type of lens or louver for lighting fixture.
Data Type	TEXT
Typical Units	-
Group	Electrical - Lighting
GUID	7ba8f720-3738-4128-9a84-371d793f5807
Note	This parameter is intended to be displayed in a schedule and its value should be formatted appropriately for a schedule field.

4.3.4 Parameter Name	Lighting Efficacy
Purpose/Use	Efficacy of lighting fixture.
Data Type	ELECTRICAL_EFFICACY
Typical Units	lm/W
Group	Electrical - Lighting
GUID	dd00796d-b0ce-4bba-aec3-94a90180fb10
Note	

4.3.5 Parameter Name	Projected Life
Purpose/Use	Projected life of lighting fixture (typically used for LED fixtures).
Data Type	TIMEINTERVAL
Typical Units	Hours
Group	Electrical - Lighting
GUID	1c639aca-6ffa-4efc-924d-e8d85195d7d2
Note	

4.3.6 Parameter Name	Ballast/Driver
Purpose/Use	Ballast or driver type for lighting fixtures.
Data Type	TEXT
Typical Units	-
Group	Electrical - Lighting
GUID	215f54a0-e23e-4b3e-80f1-c186c586cb6e
Note	This parameter is intended to be displayed in a schedule and its value should be formatted appropriately for a schedule field.

4.3.7 Parameter Name	CCT
Purpose/Use	Correlated color temperature (CCT) of lamp or lighting fixture.
Data Type	COLOR_TEMPERATURE
Typical Units	K
Group	Electrical - Lighting
GUID	f7178ba9-536c-4e6f-87d7-03de5d4bf781
Note	-

4.3.8 Parameter Name	CRI
Purpose/Use	Color rendering index (CRI) of lamp or lighting fixture.
Data Type	INTEGER
Typical Units	-
Group	Electrical - Lighting
GUID	ffc78103-ce36-4051-932e-fd0e3033707a
Note	-

4.3.9 Parameter Name	Direct Luminous Flux
Purpose/Use	Direct (typically downward) component of total lighting fixture luminous flux.
Data Type	ELECTRICAL_LUMINOUS_FLUX
Typical Units	Lumens
Group	Electrical - Lighting
GUID	bdedad0d-3661-4878-9a5e-fa835b561973
Note	-

4.3.10 Parameter Name	Emergency Component
Purpose/Use	Emergency component, typically for lighting fixtures (e.g., dual-feed or battery backup).
Data Type	TEXT
Typical Units	-
Group	Electrical - Lighting
GUID	38862638-72cf-4e17-a5ad-0a830809feef
Note	This parameter is intended to be displayed in a schedule and its value should be formatted appropriately for a schedule field.

4.3.11 Parameter Name	Emergency Luminous Flux
Purpose/Use	Lighting fixture luminous flux when operating in emergency mode.
Data Type	ELECTRICAL_LUMINOUS_FLUX
Typical Units	Lumens
Group	Electrical - Lighting
GUID	9cfefef9-0589-486e-8f2a-29fa65cbf4f7
Note	-

4.3.12	
Parameter Name	Indirect Luminous Flux
Purpose/Use	Indirect (typically upward) component of total lighting fixture luminous flux.
Data Type	ELECTRICAL_LUMINOUS_FLUX
Typical Units	Lumens
Group	Electrical - Lighting
GUID	22cd0f44-93fd-4d37-a2bf-6b4a157f1d05
Note	-



4.4 Electrical Loads

4.4.1 Parameter Name	Apparent Load
Purpose/Use	See note and parameter "Apparent Power Load."
Data Type	ELECTRICAL_APPARENT_POWER
Typical Units	VA, kVA, MVA
Group	Electrical - Loads
GUID	Built-In Type Parameter (Lighting Fixtures)
Note	This built-in parameter is available only for lighting fixtures. Since it is not available in other family categories and it cannot be adjusted between instance and type, this parameter should not be used; it should be locked out to 0 VA via formula. Instead, use the parameter "Apparent Power Load."

4.4.2 Parameter Name	Apparent Power Load
Purpose/Use	Apparent load of device or equipment.
Data Type	ELECTRICAL_APPARENT_POWER
Typical Units	VA, kVA, MVA
Group	Electrical - Loads
GUID	f76afa9e-cd79-4cc4-a39e-b5fa6688d943
Note	This is the load reported to the model's electrical system. The electrical connector load within the family should be linked to this parameter.

4.4.3 Parameter Name	Apparent Power Per Length
Purpose/Use	Apparent power load per length, typically used for linear lighting fixtures and multioutlet assemblies.
Data Type	ELECTRICAL_APPARENT_POWER
Typical Units	VA
Group	Electrical - Loads
GUID	a58a4a05-8c48-42fc-b556-31ecc28b0a3e
Note	Revit 2020 does not have an apparent power per length data type. Therefore, the apparent power data type is used. Apparent Power Load should be a calculated value based upon this parameter and length.

4.4.4 Parameter Name	Current Load
Purpose/Use	Current draw (load) of device, based on Apparent Power and System Voltage.
Data Type	ELECTRICAL_CURRENT
Typical Units	A, kA
Group	Electrical - Loads
GUID	2ae60ae0-baaf-4157-b40c-cdfbc1f6081e
Note	When FLA is used within a family, "Current Load" should typically be set equal to FLA.

4.4.5 Parameter Name	FLA
Purpose/Use	Full load amps (FLA) load of equipment.
Data Type	ELECTRICAL_CURRENT
Typical Units	A, kA
Group	Electrical - Loads
GUID	8bd4dbf3-cc27-479a-ba3d-6c65a83e51f8
Note	FLA is typically used only for motor-driven equipment. When it is used, the parameter "Current Load" should typically be set equal to FLA via formula.

4.4.6 Parameter Name	Load Classification
Purpose/Use	Identifies the demand factor used for the load.
Data Type	LOAD_CLASSIFICATION
Typical Units	-
Group	Electrical - Loads
GUID	bdf3eef-d70e-49fb-b831-290a1eaa3d9a
Note	Load classification usage and naming varies widely among users. In order to avoid clutter within a project's Load Classification lists, manufacturer-provided content should set load classifications to the Revit default "Other."

4.4.7	
Parameter Name	Motor Power
Purpose/Use	Power of motor in motor-driven equipment.
Data Type	ELECTRICAL_POWER
Typical Units	HP
Group	Electrical - Loads
GUID	b38a9c58-5652-4b3a-9da7-c2503061400e
Note	Revit does not have a dedicated data type for motor power, and Mechanical Power cannot be assigned a unit of horsepower. Therefore, the ELECTRICAL_POWER data type is used.

4.4.8	
Parameter Name	Power Factor
Purpose/Use	Power factor of load. (Power factor state defined by family power connector.)
Data Type	NUMBER
Typical Units	-
Group	Electrical - Loads
GUID	0b538507-88db-4d93-9a9c-6903adcc42a6
Note	The power factor state (leading vs. lagging) can only be defined by the power connector, editable only from within the family editor. This cannot be specified from within the project.

4.4.9	
Parameter Name	Power Factor State
Purpose/Use	Power factor state of load (leading vs. lagging).
Data Type	TEXT
Typical Units	-
Group	Electrical - Loads
GUID	5c5d715b-76aa-490c-8605-48838468ec44
Note	The power factor state (leading vs. lagging) can only be defined by the power connector, editable only from within the family editor. This cannot be specified or reported from within the project. This parameter is intended only to report the state in schedules when necessary.

4.4.10 Parameter Name	Real Power Load
Purpose/Use	Real power draw (load).
Data Type	ELECTRICAL_WATTAGE
Typical Units	W, kW
Group	Electrical - Loads
GUID	aeb543c7-2ba8-4150-a50a-8eb071687331
Note	The data type ELECTRICAL_WATTAGE cannot be assigned units of kW within the project, which is limiting, but users may display kW within schedules by use of a calculated value with an ELECTRICAL_POWER data type set equal to this parameter.

4.4.11 Parameter Name	Real Power Per Length
Purpose/Use	Real power load per length, typically used for linear lighting fixtures and multioutlet assemblies.
Data Type	ELECTRICAL_WATTAGE
Typical Units	W, kW
Group	Electrical - Loads
GUID	efc15cba-ca9b-473a-90d4-bc6db4d53ecf
Note	Revit 2020 does not have a real power per length data type. Therefore, a wattage data type is used. Real Power Load should be a calculated value based upon this parameter and length. Also see note on parameter "Real Power Load."

4.4.12 Parameter Name	Secondary Distribution System
Purpose/Use	See note.
Data Type	-
Typical Units	-
Group	Electrical - Loads
GUID	Built-In Instance Parameter (Electrical Equipment Families)
Note	Although this parameter is available within the family editor, it should be left blank by the content provider. It is used to define the secondary distribution system of a transformer within the project.

4.5 Electrical Design

4.5.1 Parameter Name	Voltage
Purpose/Use	See note.
Data Type	TEXT
Typical Units	-
Group	Electrical
GUID	Built-In Type Parameter (Some Electrical Families)
Note	Revit's built-in "Voltage" parameter is a TEXT data type, not suitable for use in calculations or for associating with connectors. Therefore, this Standard recommends defining this parameter via the formula "Do Not Use; Use System or Rated Voltage" and using other voltage parameters defined by the Standard.

4.5.2 Parameter Name	Wattage
Purpose/Use	See note.
Data Type	TEXT
Typical Units	-
Group	Electrical
GUID	Built-In Type Parameter (Some Electrical Families)
Note	Revit's built-in "Wattage" parameter is a TEXT data type, not suitable for use in calculations or for associating with connectors. Therefore, this Standard recommends defining this parameter via the formula "Do Not Use" and using other power parameters defined by the Standard.

4.5.3 Parameter Name	Rated Voltage
Purpose/Use	Rated or nameplate voltage of equipment or device. (Not to be confused with System Voltage.)
Data Type	ELECTRICAL_POTENTIAL
Typical Units	V, kV
Group	Electrical Engineering
GUID	4f5e6cd1-be00-4c9c-aab2-53509c99b456
Note	

4.5.4 Parameter Name	System Voltage
Purpose/Use	Voltage of the electrical system to which the equipment/device is connected. (Not to be confused with Rated Voltage.)
Data Type	ELECTRICAL_POTENTIAL
Typical Units	V, kV
Group	Electrical Engineering
GUID	87f94314-ba1f-4aee-b234-508eb693941d
Note	The electrical connector voltage within the family should be associated with this parameter.

4.5.5 Parameter Name	MCA
Purpose/Use	Minimum circuit ampacity (MCA) of equipment.
Data Type	ELECTRICAL_CURRENT
Typical Units	A, kA
Group	Electrical - Loads
GUID	365a69eb-e30b-4c11-b704-0d71e065e941
Note	

4.5.6 Parameter Name	Real Power Rating
Purpose/Use	Maximum real power rating of device or equipment or load's rated real power.
Data Type	ELECTRICAL_WATTAGE
Typical Units	W, kW
Group	Electrical Engineering
GUID	16185ff5-b938-47f5-b1e6-93424ac63124
Note	The ELECTRICAL_WATTAGE data type cannot be assigned units of kW within the project, which is limiting, but users may display kW within schedules by use of a calculated value with an ELECTRICAL_POWER data type set equal to this parameter.

4.5.7 Parameter Name	Apparent Power Rating
Purpose/Use	Maximum apparent power rating of device or equipment or rated apparent power of load (not to be confused with Apparent Power Load).
Data Type	ELECTRICAL_APPARENT_POWER
Typical Units	VA, kVA, MVA
Group	Electrical Engineering
GUID	1fc4f4a3-5b5f-49bc-91e9-d7d4d6ce7119
Note	-

4.5.8 Parameter Name	Current Rating
Purpose/Use	Maximum current rating or ampacity of device or equipment or load's rated current (not to be confused with Apparent Power Load).
Data Type	ELECTRICAL_CURRENT
Typical Units	A, kA
Group	Electrical Engineering
GUID	d699dc0c-baff-43fc-b14f-df50a919377a
Note	Current rating may be used in place of the built-in parameter "Bussing," or can be used to indicate current ratings of other equipment, devices, or loads. For use within panel schedules, see note on "Bussing." When this parameter is used for equipment bussing, the "Mains" parameter should be used for main device current rating. See note for "Mains."

4.5.9 Parameter Name	Frequency Rating
Purpose/Use	Frequency rating for equipment powered by alternating current.
Data Type	ELECTRICAL_FREQUENCY
Typical Units	Hz
Group	Electrical Engineering
GUID	6d442210-1d33-4c73-b919-1988eb5ed4cd
Note	

4.5.10 Parameter Name	Secondary Current Rating
Purpose/Use	Maximum current rating or ampacity of a transformer secondary.
Data Type	ELECTRICAL_CURRENT
Typical Units	A, kA
Group	Electrical Engineering
GUID	2596c165-d18d-4a10-a737-7dc12074af15
Note	The parameter "Current Rating" should be used for transformer primary current rating.

4.5.11 Parameter Name	Secondary Voltage Rating
Purpose/Use	Transformer secondary voltage.
Data Type	ELECTRICAL_POTENTIAL
Typical Units	V, kV
Group	Electrical Engineering
GUID	691955dc-c34a-40d8-bdb3-7312f99a916c
Note	Transformer primary voltage should be defined by Rated Voltage and/or System Voltage. This parameter is used for reporting only and is not typically associated with any system or model information in Revit. A transformer's secondary distribution system is defined by a separate, built-in parameter within the project.

4.5.12 Parameter Name	SCCR/AIC
Purpose/Use	Short circuit current rating (SCCR) or available interrupting capacity (AIC) or withstand rating of equipment.
Data Type	ELECTRICAL_CURRENT
Typical Units	kA
Group	Electrical Engineering
GUID	c3ec6273-9cd1-4f51-8a53-bbd7b8c2977e
Note	Revit's built-in "Short Circuit Rating" parameter is an instance parameter with a TEXT data type. Since SCCR typically affects model/catalog number, it may be more appropriate as a type parameter. Although a TEXT data type may allow more information to be presented (e.g., Symmetrical), the value is typically expressed in kiloamps. An ELECTRICAL_CURRENT data type allows checking and manipulation of this data, especially with third-party system analysis add-ins, that is not possible with a TEXT data type. Therefore, this Standard recommends using the parameter "SCCR/AIC" and locking out "Short Circuit Rating" via the formula "Do Not Use; Use SCCR/AIC."

4.5.13 Parameter Name	Number of Poles
Purpose/Use	Number of poles of rated and system voltage.
Data Type	NOOFPOLES
Typical Units	-
Group	Electrical Engineering
GUID	97cb6676-0239-49c3-9a6a-7854ab0c8a4b
Note	

4.5.14 Parameter Name	Phase
Purpose/Use	Phase of rated and system voltage.
Data Type	INTEGER
Typical Units	-
Group	Electrical Engineering
GUID	378385af-d983-4970-a6d2-f3cafde53e9b
Note	Not to be confused with construction phasing (e.g., Existing, Demolition, New).

4.5.15 Parameter Name	Percent Impedance
Purpose/Use	Impedance, typically reported for transformers, typically reported as a percentage (%Z or %IZ).
Data Type	ELECTRICAL_DEMAND_FACTOR
Typical Units	-
Group	Electrical Engineering
GUID	549dad07-ee9e-4a1b-807f-ae5e025c23a0
Note	

4.5.16 Parameter Name	Breaker Positions
Purpose/Use	Number of breaker positions (poles) of distribution equipment. See note and parameter "Max #1 Pole Breakers."
Data Type	INTEGER
Typical Units	-
Group	Electrical - Circuiting
GUID	ebeb432c-bb38-442e-b43d-af4bef237e68
Note	Revit's built-in "Max #1 Pole Breakers" parameter controls how many circuits may be connected to equipment within the project. It is an instance parameter, meaning separate instances of a particular type may have different values. Since the number of breaker positions determines equipment geometry and model/catalog number, it may more appropriately be a type parameter. Therefore, for manufacturer-provided content, if it is desired for this function to be per type rather than per instance, this Standard recommends adding a separate "Breaker Positions" shared parameter as a type parameter. This type parameter may drive the built-in instance parameter via a formula.

4.5.17 Parameter Name	Mains Position
Purpose/Use	Identifies the position of the main device (e.g., top or bottom), independent of feed direction.
Data Type	TEXT
Typical Units	-
Group	Electrical - Circuiting
GUID	5db991b4-9530-4b76-8035-9bbb134953a5
Note	Not to be confused with "Feed."

4.5.18 Parameter Name	K-Factor
Purpose/Use	K-factor of transformer.
Data Type	TEXT
Typical Units	-
Group	Electrical Engineering
GUID	ddfc2048-1210-46e5-bdd7-4ebb969042a8
Note	Recommend including the "K" in the value (e.g., "K-13" rather than "13").

4.5.19 Parameter Name	Conductor Material
Purpose/Use	Conductor or bus material (e.g., copper or aluminum).
Data Type	TEXT
Typical Units	-
Group	Electrical Engineering
GUID	b4bc36b6-e7fb-41f7-b941-f11c26390ef1
Note	Typically reported in schedules as either "Cu" or "Al."

4.5.20 Parameter Name	Conduit Size
Purpose/Use	Nominal size (typically diameter) of conduit.
Data Type	CONDUIT_SIZE
Typical Units	in., mm
Group	Electrical Engineering
GUID	710af2ed-8c23-4861-9a77-24c7dc7a17f9
Note	-

4.5.21 Parameter Name	Feed-Thru Lugs
Purpose/Use	Indicates presence or absence of feed-thru lugs. This parameter may drive the instance parameter "Feed Through Lugs." See note.
Data Type	YESNO
Typical Units	-
Group	Electrical Engineering
GUID	ade1bf01-f266-4837-93eb-90e0d5c54683
Note	Revit's built-in "Feed Through Lugs" parameter is an instance parameter, meaning separate instances of a particular type may have different values. Since the presence of feed-through lugs determines equipment geometry and model/catalog number, it may more appropriately be a type parameter. Therefore, this Standard recommends adding a separate "Feed-Thru Lugs" shared parameter as a type parameter, if desired. This type parameter may drive the built-in instance parameter via a formula.

4.5.22 Parameter Name	Temperature Rise
Purpose/Use	Temperature rise, typically reported for transformers.
Data Type	ELECTRICAL_TEMPERATURE
Typical Units	°C
Group	Electrical Engineering
GUID	ecae99b2-5d2e-4ec2-87d1-fd23f5b52286
Note	-

4.5.23 Parameter Name	X/R Ratio
Purpose/Use	X/R ratio of equipment (typically a transformer).
Data Type	NUMBER
Typical Units	-
Group	Electrical Engineering
GUID	9900ae7a-6819-4489-bd48-9f8a492f839c
Note	-

4.5.24 Parameter Name	Insulation Class
Purpose/Use	Insulation class of equipment, typically used for transformers.
Data Type	TEXT
Typical Units	-
Group	Electrical Engineering
GUID	01d8c0ff-b2c0-4102-ba0d-85c6605e7335
Note	Although insulation classes are typically numerical, a TEXT data type is used for flexibility.

4.6 Energy Analysis

4.6.1 Parameter Name	Average Annual Energy Use
Purpose/Use	Average annual energy use of equipment.
Data Type	HVAC_ENERGY
Typical Units	kWh
Group	Energy Analysis
GUID	7226bdbb-c84f-483f-a80b-029dc770ab37
Note	-

4.6.2 Parameter Name	Average Annual Operating Cost
Purpose/Use	Average annual operating cost of equipment.
Data Type	CURRENCY
Typical Units	\$
Group	Energy Analysis
GUID	fe52931c-d64d-4cb0-801f-d323a6742d02
Note	-

4.6.3 Parameter Name	Efficiency Rating
Purpose/Use	Efficiency of equipment.
Data Type	NUMBER
Typical Units	-
Group	Energy Analysis
GUID	879fcb73-6326-4a82-826e-0dce2a6dcefe
Note	There is no appropriate Revit data type for efficiency that can be directly expressed as a percentage. A NUMBER data type (representing efficiency in decimal form) may be converted to a percentage by the project modeler via a calculated value in a schedule.

4.6.4	
Parameter Name	Max Ambient Temperature
Purpose/Use	Maximum ambient temperature of operating equipment.
Data Type	HVAC_TEMPERATURE
Typical Units	°C, °F
Group	Energy Analysis
GUID	9a890429-e1ae-45f8-85e7-8c31bfd60f4e
Note	

4.6.5	
Parameter Name	Min Ambient Temperature
Purpose/Use	Minimum ambient temperature of operating equipment.
Data Type	HVAC_TEMPERATURE
Typical Units	°C, °F
Group	Energy Analysis
GUID	026ff3f9-477f-42d4-8fe3-ea8a992e1274
Note	



4.7 General

4.7.1 Parameter Name	Panel Name
Purpose/Use	See note.
Data Type	TEXT
Typical Units	-
Group	General
GUID	Built-In Instance Parameter (Electrical Equipment Families)
Note	Although this parameter is available within the family editor, it should be left blank by the content provider. Panel name is typically defined per instance per project.

4.7.2 Parameter Name	Product Type
Purpose/Use	General-use parameter to define type of product.
Data Type	TEXT
Typical Units	-
Group	Identity Data
GUID	3d8b2540-c18e-40d9-8040-5794128214c1
Note	This parameter is intended to be displayed in a schedule and its value should be formatted appropriately for a schedule field.

4.7.3 Parameter Name	Product Material
Purpose/Use	Material of main body of product.
Data Type	MATERIAL
Typical Units	-
Group	Materials and Finishes
GUID	07d7eff8-4273-4ac6-8940-a2d496898ac9
Note	Revit material type to define product. Content provider may need to create additional material parameters for different family components. This parameter should not be used for conductor material. See "Conductor Material" parameter.

4.7.4 Parameter Name	Material Description
Purpose/Use	Description of product material.
Data Type	TEXT
Typical Units	-
Group	Materials and Finishes
GUID	bbf8ad05-f15d-48a9-b72d-03c7a7241389
Note	This parameter is intended to be displayed in a schedule and its value should be formatted appropriately for a schedule field. This parameter should not be used for conductor material. See "Conductor Material" parameter.

4.7.5 Parameter Name	Certifications
Purpose/Use	Nationally recognized testing laboratory certifications, approvals, or listings.
Data Type	TEXT
Typical Units	-
Group	Data
GUID	77309beb-3437-4a65-998f-1ab2f0287a13
Note	

4.7.6 Parameter Name	Service Life
Purpose/Use	Estimated service life of equipment.
Data Type	TIMEINTERVAL
Typical Units	Hours
Group	General
GUID	60f934b2-40bb-4f75-bf72-3258f543a464
Note	Service life is typically reported in years. A "years" unit is not currently available within Revit. The content provider should enter a value in hours and users can convert the value to years within schedules.

4.7.7 Parameter Name	Enclosure
Purpose/Use	Type of equipment enclosure (e.g., NEMA 1, NEMA 3R). See note and parameter "Enclosure Type."
Data Type	TEXT
Typical Units	-
Group	General
GUID	Built-In Instance Parameter (Electrical Equipment Families)
Note	Revit's built-in parameter "Enclosure" is typically used to define the type of equipment enclosure, such as NEMA 1 or NEMA 3R. As such, it may be more appropriate for it to be a type parameter. Therefore, this Standard recommends using the parameter "Enclosure Type" for this function and locking out "Enclosure" via the formula "Do Not Use; Use Enclosure Type."

4.7.8 Parameter Name	Enclosure Type
Purpose/Use	Type of equipment enclosure (e.g., NEMA 1, NEMA 3R).
Data Type	TEXT
Typical Units	-
Group	General
GUID	e2be32e5-bb0d-463d-816b-e833d2cf0fd9
Note	Revit's built-in parameter "Enclosure" is typically used to define the type of equipment enclosure, such as NEMA 1 or NEMA 3R. As such, it may be more appropriate for it to be a type parameter. Therefore, this Standard recommends using the parameter "Enclosure Type" for this function and locking out "Enclosure" via the formula "Do Not Use; Use Enclosure Type."

4.7.9 Parameter Name	Installation Type
Purpose/Use	Installation or mounting type or method (e.g., surface, flush, suspended).
Data Type	TEXT
Typical Units	-
Group	General
GUID	d2295584-f96c-462b-bffb-f384f3e0ce49
Note	This parameter is intended to be displayed in a schedule and its value should be formatted appropriately for a schedule field.

4.7.10 Parameter Name	Mounting
Purpose/Use	See note.
Data Type	TEXT
Typical Units	-
Group	General
GUID	Built-In Instance Parameter (Electrical Equipment Families)
Note	Revit's built-in "Mounting" parameter, typically used to define installation type such as surface or flush, is available only for electrical equipment families. It is also an instance parameter, but may be more appropriate as a type parameter. Therefore, this Standard recommends using the parameter "Installation Type" and locking out "Mounting" via the formula "Do Not Use; Use Installation Type."

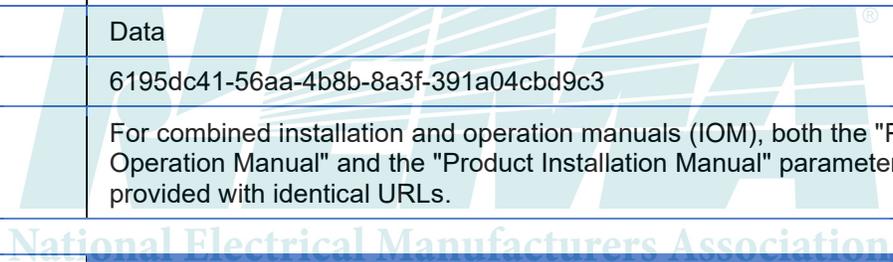
4.7.11 Parameter Name	Finish Description
Purpose/Use	Description of product finish.
Data Type	TEXT
Typical Units	-
Group	Materials and Finishes
GUID	58137798-d6ae-4665-a352-b397de55feb5
Note	This parameter is intended to be displayed in a schedule and its value should be formatted appropriately for a schedule field.

4.7.12 Parameter Name	Installation Clearance Material
Purpose/Use	Material of built-in installation clearances.
Data Type	MATERIAL
Typical Units	-
Group	Materials and Finishes
GUID	b6e6c45a-ee18-4e12-a9e2-1883b740ce16
Note	Revit material of clearance object(s), if the content provider chooses to include clearance object(s) within the family.

4.7.13 Parameter Name	Product Installation Manual URL
Purpose/Use	URL for installation manual (PDF).
Data Type	URL
Typical Units	-
Group	Data
GUID	22609487-15f3-4515-8083-d818c1c6a96b
Note	For combined installation and operation manuals (IOM), both the "Product Operation Manual" and the "Product Installation Manual" parameter may be provided with identical URLs.

4.7.14 Parameter Name	Product Operation Manual URL
Purpose/Use	URL for user/operation manual (PDF).
Data Type	URL
Typical Units	-
Group	Data
GUID	6195dc41-56aa-4b8b-8a3f-391a04cbd9c3
Note	For combined installation and operation manuals (IOM), both the "Product Operation Manual" and the "Product Installation Manual" parameter may be provided with identical URLs.

4.7.15 Parameter Name	Product Page URL
Purpose/Use	URL for product page.
Data Type	URL
Typical Units	-
Group	Data
GUID	c5f25d97-91ad-48c8-96e2-99eac6fbb3f1
Note	



4.8 Identity

4.8.1 Parameter Name	Identity Mark
Purpose/Use	Value or designator to identify the individual piece of equipment. Typically used within tags.
Data Type	TEXT
Typical Units	-
Group	Identity Data
GUID	17d24486-5e8a-4789-90f1-2e440670f099
Note	Replacement for Revit's built-in "Mark" parameter, since this built-in parameter is not available for use within the family editor. Recommended as an instance parameter.

4.8.2 Parameter Name	Identity Type Mark
Purpose/Use	Value or designator to identify the type of equipment. Typically used within tags.
Data Type	TEXT
Typical Units	-
Group	Identity Data
GUID	35874055-1110-4ec7-86b6-c291d69a2346
Note	Replacement for Revit's built-in "Type Mark" parameter, since this built-in parameter is not available for use within the family editor. Should always be a type parameter.

4.8.3 Parameter Name	Manufacturer
Purpose/Use	Manufacturer and/or brand name of device or equipment.
Data Type	TEXT
Typical Units	-
Group	Identity Data
GUID	Built-In Type Parameter (All Family Categories)
Note	-

4.8.4 Parameter Name	Model
Purpose/Use	See note and parameter "Model Number."
Data Type	TEXT
Typical Units	-
Group	Identity Data
GUID	Built-In Type Parameter (All Family Categories)
Note	Revit's built-in "Model" is a type parameter and cannot be changed to an instance parameter. Since model number may occasionally be needed as an instance parameter, this Standard recommends locking out the "Model" parameter via the formula "Do Not Use" and instead using the "Model Number" parameter.

4.8.5 Parameter Name	Model Number
Purpose/Use	Model or catalog number of device or equipment. See note and parameter "Model."
Data Type	TEXT
Typical Units	-
Group	Identity Data
GUID	a4b0bf77-7d8d-4473-83d2-9928bcf3b99c
Note	Revit's built-in "Model" is a type parameter and cannot be changed to an instance parameter. Since model number may occasionally be needed as an instance parameter, this Standard recommends locking out the "Model" parameter via the formula "Do Not Use" and instead using the "Model Number" parameter.

4.8.6 Parameter Name	Serial Number
Purpose/Use	Serial number of installed equipment for asset tracking.
Data Type	TEXT
Typical Units	-
Group	Identity Data
GUID	cdafdf06-7a58-4c1f-820f-264a9d5af216
Note	This parameter should always be set as an instance parameter and its value typically left blank by content providers unless the BIM model is provided for one particular installation.

4.8.7 Parameter Name	Description
Purpose/Use	Description of product or family.
Data Type	TEXT
Typical Units	-
Group	Identity Data
GUID	Built-In Type Parameter (All Family Categories)
Note	This parameter is intended to be displayed in a schedule and its value should be formatted appropriately for a schedule field.

4.8.8 Parameter Name	Additional Features
Purpose/Use	Specification of additional features, functions, or equipment, such as panelboard sub-feed lugs or panelboard built-in SPD.
Data Type	TEXT
Typical Units	-
Group	Identity Data
GUID	ba9d2d56-d16f-4ae0-8d98-27457a2f3eb6
Note	This parameter is intended to be displayed in a schedule and its value should be formatted appropriately for a schedule field.

4.8.9 Parameter Name	Schedule Filter
Purpose/Use	Specifies what schedule(s) the family appears on.
Data Type	TEXT
Typical Units	-
Group	Identity Data
GUID	b0c82058-e69c-49c4-ae5d-0b30a964a18f
Note	Should be present within the family, typically as an instance parameter, but typically left blank by the content provider.

4.8.10 Parameter Name	Schedule Notes
Purpose/Use	Design or specification notes.
Data Type	TEXT
Typical Units	-
Group	Identity Data
GUID	2e8bbba2-1bd4-4897-bf06-901613c46a19
Note	Typically, the last column within schedules and used for designer notes. Value typically left blank by the content provider.

4.8.11 Parameter Name	Type Comments
Purpose/Use	Comments on family or product.
Data Type	TEXT
Typical Units	-
Group	Identity Data
GUID	Built-In Type Parameter (All Family Categories)
Note	This parameter is not intended to be scheduled; may contain any information the content provider wishes.

4.8.12 Parameter Name	Type Image
Purpose/Use	Image of product, which may be displayed within schedules.
Data Type	IMAGE
Typical Units	-
Group	Identity Data
GUID	Built-In Type Parameter (All Family Categories)
Note	Images can only be loaded/specified from within the family editor. They can be viewed within the project, but not edited.

4.8.13	
Parameter Name	URL
Purpose/Use	URL for product manufacturer or brand's main website.
Data Type	URL
Typical Units	-
Group	Identity Data
GUID	Built-In Type Parameter (All Family Categories)
Note	-

4.8.14	
Parameter Name	Product Datasheet URL
Purpose/Use	Value or designator to identify the equipment. Typically used within tags.
Data Type	URL
Typical Units	-
Group	Identity Data
GUID	d947aee0-f37b-4dc7-bea8-5c40f132b182
Note	-

4.8.15	
Parameter Name	Family Creator
Purpose/Use	Creator, author, or developer of family.
Data Type	TEXT
Typical Units	-
Group	Identity Data
GUID	0325b2fd-8877-4530-9a2d-0d8d9c862696
Note	-

4.8.16	
Parameter Name	Family Version
Purpose/Use	Family version/update tracking.
Data Type	TEXT
Typical Units	-
Group	Identity Data
GUID	ca2eb4e6-49c5-494f-bff5-83b8ab60e8cb
Note	-

5 Application

Product manufacturers can use the electronic shared parameter file included with this Standard to provide interoperable BIM data by complying with one of the certification levels recommended in Section 6. It is important that all data elements identified in Section 4 for each parameter be included without any modification to the Parameter Name, Data Type, and GUID.

6 Certification Levels

This Standard provides recommendations for three levels of certification for electrical product data. All BIM libraries of electrical products meeting the requirements for each level can exchange data across the products and projects to prepare equipment schedules, BIM documentation, and design information in a consistent manner with no additional effort to coordinate the data. The shared parameter file includes and will always have all properties for these parameter groups.

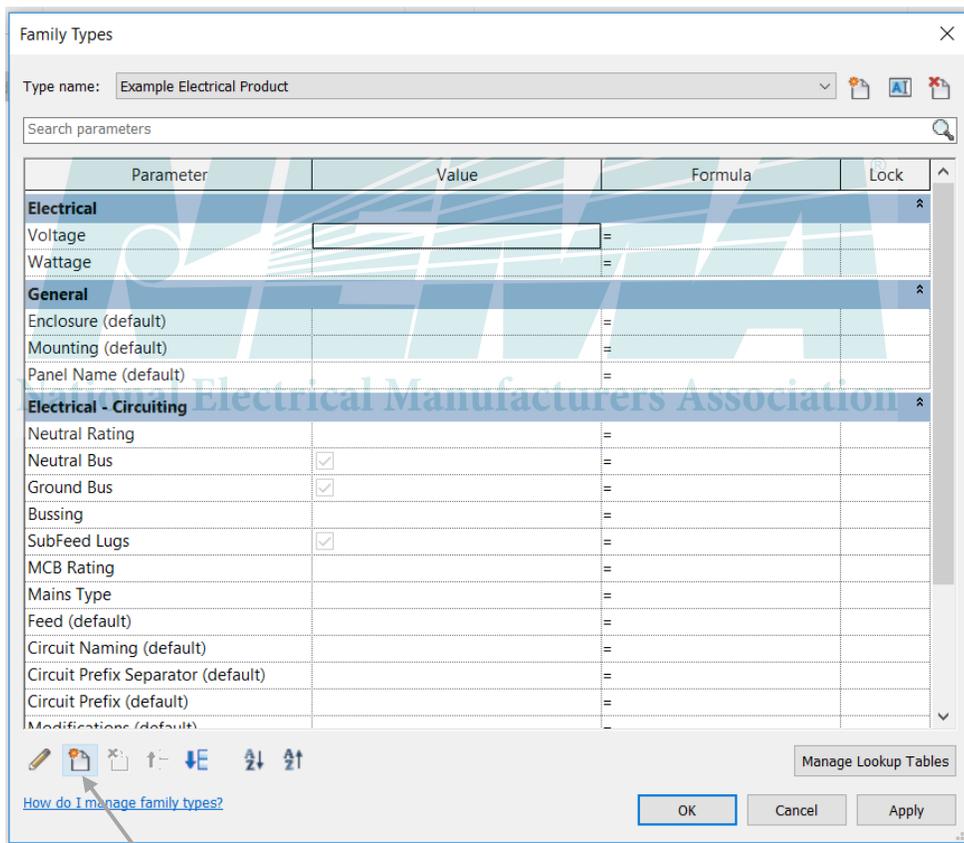
No.	Parameter Group Name	Level 1	Level 2	Level 3
4.1	DIMENSION	<input checked="" type="checkbox"/>		
4.2	ELECTRICAL CIRCUIT		<input checked="" type="checkbox"/>	
4.3	ELECTRICAL LIGHTING		<input checked="" type="checkbox"/>	
4.4	ELECTRICAL LOADS		<input checked="" type="checkbox"/>	
4.5	ELECTRICAL DESIGN			<input checked="" type="checkbox"/>
4.6	ENERGY ANALYSIS			<input checked="" type="checkbox"/>
4.7	GENERAL			<input checked="" type="checkbox"/>
4.8	IDENTITY	<input checked="" type="checkbox"/>		

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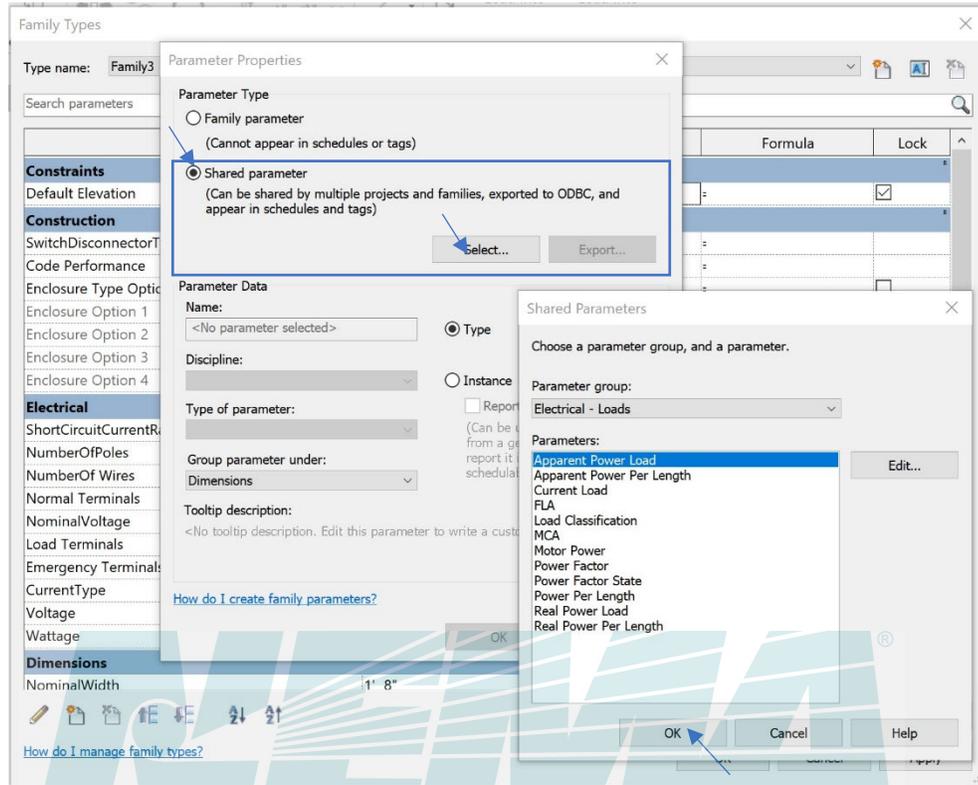
Appendix – A (Informative) Developing Revit Product Families with Shared Parameters

All existing and new BIM libraries of electrical product families are required to use the shared parameter file provided as part of this Standard. The shared parameter file name is "**NEMA Standard Shared Parameters.txt**."

- Step 1. Create a new family using an electrical product family template file (.rte) or open an existing electrical product family file (.rfa).
- Step 2. From the "Manage" tab, select the "Shared Parameter" command. This will bring up an "Edit Shared Parameters" dialog. Browse and select the shared parameter file provided with this Standard.
- Step 3. From the "Modify" tab, select the "Family Type" command. This will bring up the "Type Properties" dialog listing all the default built-in type parameters.



- Step 4. Select the "New Parameter" command in the "Type Properties" dialog. This will bring up a dialog to edit "Parameter Properties."



- Step 5. In the "Parameter Type" dialog, select "Shared parameter." This will bring up the "Shared Parameters" dialog.
- Step 6. In the "Shared Parameters" dialog, select a "Parameter group" for the property to be added and select a parameter from the "Parameters" list. Depending on the level of BIM certification level from Section 6, locate the parameters from Section 4 for each category of parameters to be added to the family.
- Step 7. Once the parameter is added to the Type Properties, then the product data values can be edited.
- Step 8. Repeat steps 4-7 for all relevant parameters for the product family. Save this as an .rfa file for distribution.

The above workflow assumes that product manufacturers will create the appropriate 3-D geometry and instance properties for designers to use the product family in their models. All shared parameters created using this Standard's shared parameter file have a GUID that will enable creation of schedules and interoperability of product performance data for all products complying with this Standard.

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