Completing Controls Options Tables for Your Products

What are Controls Categories?

To better support expansion of energy efficiency programs that incentivize luminaires, lamps, and retrofit kits with integral controls as well as those with controls-ready features, SSL V6.0 and LUNA V2.0 add Controls Category assignments to correlate luminaires with specific integral controls options. Controls Categories align with energy savings claims associated with specific lighting control strategies. These strategies are typically detailed in various Technical Resource Manuals (TRMs)[1] and efficiency program policies. As TRMs govern many energy efficiency programs, Controls Categories will simplify incentive program administration and lower barriers to the adoption of advanced lighting by directly connecting model number variations of products with integral controls to lighting control strategies and their associated energy savings factors. Controls Categories are assigned by the DLC based upon manufacturer submitted Controls Options Tables for each brand. **Controls Options Tables are required for all products.**

Purpose of this Guidance Document

The purpose of this document is to provide Manufacturers with the information needed to efficiently and accurately complete and submit Controls Options Tables for SSL V6.0 & LUNA V2.0 listed products. This document contains all the relevant information from the

[1] Technical Resource Manuals are policy documents that establish standardized methodologies, assumptions, and calculations to determine energy savings, ensuring regulatory compliance and cost-effectiveness for Energy Efficiency Programs.

SSL V6.0 & LUNA V2.0 Technical Requirements that a Manufacturer Submitter will need, as well as additional notes and context.

The overall goal of the Controllability portion of SSL V6.0 & LUNA V2.0 is to connect specific portions of Manufacturer model numbers that represent integral controls to the Controls Savings Factors that Energy Efficiency Programs use to calculate savings. This process starts with collecting the controls and driver relevant portions of Manufacturer model numbers, which we call Controls Option Codes. During the product review process, each Controls Option Code is assigned to a Controls Category. Energy Efficiency Programs then connect each Controls Category to the specific energy savings measures that guide their programs.

On the SSL QPL, when a User performs a model number search that contains a Controls Option Code, the corresponding Controls Category will be displayed, thus allowing the User to connect a searched model number directly to a savings measure in an incentive program.

Manufacturer's Controls Option Codes

Based on their submission paths, there are two types of Manufacturer's Controls Option Codes: **Brand-Level**, and **Family-Level**.

Brand-Level Controls Option Codes are text strings used to identify common controls configurations for all products that go to market under a single brand name. This allows a single Manufacturer's Controls Option Code to be referenced by products from multiple families within the same Brand. For this process to work, a Brand-Level Controls Option Code must represent one and only one configuration of controls attributes for each Brand. Brand-Level Controls Option Codes are submitted and reviewed outside of the normal product submission process.

The following table shows some examples of valid and invalid Brand-Level Controls Options Codes:

Brand	Manufacturer's Controls Option Code	Controls Configuration	Valid?
Brand A	ABCD	Configuration 1	Y
	EFGH	Configuration 2	Y
	ABCD	Configuration 3	N
Brand B	ABCD	Configuration 4	Y
	EFGH	Configuration 2	Y
	IJKL	Configuration 1	Y

Brand A, Configuration 3 is not valid because the same Brand-Level Controls Option Code cannot be used for more than one configuration and is already used in Configuration 1.

Family-Level Controls Option Codes are text strings used to identify controls configurations that are the same for all products within a single product family. Family-Level Controls Option Codes may be duplicated in different families within the same Brand.

For scenarios where there is no discrete model number character to represent the controls option and the controls option comes standard on the product, a default Manufacturer's Controls Option Code, '[blank]', to represent the baseline or as shipped controls options capability. '[blank]' cannot be used within brand-level control options tables as different product families may have different default control capabilities.

Family-Level Controls Option Codes are submitted within the normal product submission process and reviewed/published to the QPL after the initial product qualification.

Determining Manufacturer's Controls Options Codes

Controls Options Codes are comprised of the ordering codes for both driver options and integral controls options displayed on a specification sheet. Products with a single driver configuration shall only include ordering codes for integral controls. **Ordering codes for products with multiple driver options shall wildcard any attributes that fall in between driver options and integral controls options.**

For example, the option codes shown in this table:

Driver	Mounting	Integral Controls
Driver 1	Mounting 1	Integral Controls 1
Driver 2	Mounting 2	Integral Controls 2
Driver 3	Mounting 3	Integral Controls 3
	Mounting 4	

Can be represented like this:

Controls Options Code
Driver 1–[Mounting]-Integral Controls 1
Driver 1–[Mounting]-Integral Controls 2
Driver 1–[Mounting]-Integral Controls 3
Driver 2–[Mounting]-Integral Controls 1
Driver 2–[Mounting]-Integral Controls 2
Driver 2–[Mounting]-Integral Controls 3
Driver 3–[Mounting]-Integral Controls 1
Driver 3–[Mounting]-Integral Controls 2
Driver 3–[Mounting]-Integral Controls 3

Not every permutation of driver and integral controls options are valid and orderable. For instance, an integral controls option may only function correctly with a specific driver option. Manufacturers are expected to submit only valid, orderable controls option code permutations. The exact logic indicating why each permutation is valid or invalid does not need to be represented on the specification sheet.

Default Controls Options Codes

In many cases, a product's model number does not include any characters to indicate controls-specific options, or any options at all. In that case, the default controls attributes should be submitted under a Controls Options Code of "[Blank]".

SSL - NLC Manufacturer Agreements

To ensure the integrity of Networked Lighting Control system compatibility claims, any Third-Party Manufacturer listing on the SSL QPL that submits a controls option code that claims to be a part of an NLC QPL listed control system must submit a completed SSL-NLC Manufacturer Agreement. The purpose of this agreement is to confirm that the NLC Manufacturer has a business relationship with the listing SSL Manufacturer. The listing SSL Manufacturer is responsible for ensuring compatibility between the integral NLC device and the listed product.

These agreements can be completed at any time through the "SSL/NLC Agreements" module within the application portal. These agreements are between the SSL manufacturer and NLC manufacturer and is considers as approval for any NLC system qualified by that NLC manufacturer for reference on any SSL product qualified by that SSL manufacturer when claiming the use of the NLC manufacturer's system within the controls options table.

Controls options that reference an NLC product ID, will not be approved until the agreement is completed.

These agreements are not required when the SSL Manufacturer and the NLC Manufacturer are the same company.

3-Pin Twistlock Receptacles

As noted in the Technical Requirements, products containing 3-Pin Twistlock receptacles are not eligible for listing. The DLC recognizes that there are many different scenarios in which 3-Pin Twistlock Receptacles may appear on a product. To ensure the integrity of the policy and QPL, all Twistlock receptacles that appear in Controls Options Tables and on specification sheets will be assumed to be of the 3-pin variety *unless otherwise explicitly indicated on the product specification sheet*.

A product with a 3-pin Twistlock receptacle will be eligible for listing only if the product also contains an integral sensor. In that case, the product is eligible will be assigned a controls category according to the capabilities of the sensor, and not the 3-pin receptacle.

Submission Pathways

There are two pathways for submitting Controls Options Tables:

Brand-Level Pathway: Outside of the Product Application Process

For Pathway A, please email the following list to controls@designlights.org

- Using the template provided with this document, a completed controls options table with **Brand-Level Controls Option Codes** as described in Table 11 of the Technical Requirements. This table should include all unique control option codes available for all products within this brand.
- Product specification sheets (attached PDFs or links) covering each controls option code submitted.
- SSL - NLC Manufacturer Agreement if necessary.
    - DLC Staff will review submitted information within 90 business days to provide an update if any clarifications or changes are needed. Products that are otherwise approved but await Controls Option Code approval will be listed on the QPL on a provision basis, without controls information.

Approved controls options codes will then be available to reference in submittal applications for V6.0 qualified products.

Family-Level Pathway: Within Product Application Process

For Pathway B, the Controls Options Table of **Family-Level Controls Option Codes** is submitted in the Controls Options tab of the application Excel form. In addition to the Controls Options tab, the application package must include:

- Product specification sheets (attached PDFs or links) covering each controls option code submitted.
- SSL - NLC Manufacturer Agreement if necessary.
    - DLC staff will evaluate the product for qualification and publishing of all attributes outside of the Controls Option Table details according to the

published review timeframes. Products may be qualified prior to the complete review of Controls Option Codes, without Controls Categories.

Staff will review submitted information within 90 business days and provide an update if any clarifications or changes are needed. Approved products will be assigned controls categories and Standard/Premium classifications. Products that are otherwise approved but await Controls Option Code approval will be listed on the QPL on a provision basis, without controls information.

Controls Option Codes on Submittal Applications

When submitting products for listing under the SSL V6.0 & LUNA V2.0 Technical Requirements, each product must reference all applicable Controls Option Codes in the Reported Performance Table. Referenced Controls Option Codes must be submitted through the Brand-Level pathway or at the Family-Level within each application.

Impact on Approval Timelines

Products approved for listing with all attributes except for Controls Options Tables will be published on the QPL without controls information according to established timelines. Once a product is published without controls information, DLC Staff will have 90 days to complete Controls Options Table and SSL-NLC Manufacturer Agreement review. During the review period, the normal expectations of Manufacturer responsiveness apply. See Application Review Timelines for details.

If the Controls Options Table does not meet the Technical Requirements at the end of the 90-day period, associated products will be delisted.

If the NLC Manufacturer does not sign the SSL-NLC Manufacturer Agreement within in 90 days, associated products will be published with Controls Categories associated with unverified NLC systems. (Categories 2-4 as applicable, not Categories 5 or 6.)

General Notes

When assigning Controls Categories, integral sensors and controllers will outweigh Controls Ready receptacles. For instance, if a product has an integral occupancy sensor

AND a 7-pin twist lock receptacle, the controls category will be assigned according to the capabilities of the sensor.

Some Controls Options Table permutations are invalid. Invalid or incomplete rows will be returned to the submitter for revision.

Products that were previously qualified as Premium may be required to break into separate Standard and Premium submissions/listings due to threshold controllability requirement for Premium listings. Those that do not meet the threshold may only be qualified as Standard. Products with a controls category of 0, “A luminaire, lamp, or retrofit with no integral control capabilities”, are ineligible for Premium qualification**.**

If you have any questions, please email controls@designlights.org.

The remainder of this document contains information about Controls Options Tables and Controls Categories from *DLC Technical Requirements for LED Lighting: SSL V6.0 & LUNA V2.0*, provided for reference.

Table 11 from *Technical Requirements for LED Lighting: SSL V6.0 & LUNA V2.0* shows the details of the controls information collected from the Controls Options Tables for all products. A 'guidance' column has been added here to provide additional commentary.

Table 11: Controls Options Table Details

Controls Information	Description	Available Options	Guidance
Controls Option Code	A text string that represents the controls options available for each driver and integral control variation within a model number. Each Controls Options Code must be orderable and shown on the specification sheet. Non-controls portions of model numbers that fall in between controls portions of model number codes may utilize wildcards in controls options codes.	As displayed on the specification sheet. For products without controls options, use "None."	See discussion above for guidance on determining Controls Options Codes.
Driver Type	The type of driver, designated by communication method, that is installed in the product, or ordered with the product in the case of remote-mounted drivers.	• 10V (wired) • BACnet (wired) • D4i (wired) • DALI-2 (wired) • DALI (wired) • Dimmable Ballast (Type A lamps)	Every product and Controls Options Code must provide an answer in this field.

Controls Information	Description	Available Options	Guidance
	Available options must be indicated on the specification sheet, but an exact match is not required.	• DMX512 (wired) • Integrated Driver and Controller • KNX (wired) • Modbus (wired) • Other analog (wired, proprietary) • Other digital (wired, proprietary) • Phase Cut (wired) • Phase Cut/10V (wired) • FALO (lamps only)	
Dimming Capability	The type of dimming the driver associated with this option code is capable of performing.	• Continuous • Stepped • Not dimmable	Continuous Dimming required for: • Indoor luminaires and retrofit kits (excluding Case Lighting, Specialty and Hazardous Primary Use Designations) • Outdoor luminaires, retrofit kits, (excluding Sports Lighting, Specialty and Hazardous Primary Use Designations) • All Lamps Reporting of Dimming Capability required for (continuous, stepped, not dimmable):

Controls Information	Description	Available Options	Guidance
			• Indoor Case Lighting, Specialty and Hazardous Primary Use Designations • Outdoor Sports Lighting, Specialty and Hazardous Primary Use Designations • All other products
Minimum Dimming Level	The lowest level a driver is capable of dimming to, expressed as a percentage of total output.	• Minimum dimming level (e.g., 10%)	Standard Listed Products: • If continuous dimming is required, minimum output level of 20% or lower and report actual minimum output level • If step dimming, actual minimum output level is not required to report Premium Listed Products: • Continuous dimming to a minimum output level of 10% or lower and report actual minimum output level

Controls Information	Description	Available Options	Guidance
Integral Controller or Sensor Type	The type of integral controller or sensor, designated by communication method, that is installed in the product. Available options must be indicated on the specification sheet, but an exact match is not required.	• None • Bluetooth (wireless, proprietary) • Bluetooth NLC (wireless) • DALI-2 (wired) • DALI (wired) • DALI+ (wireless) • Wi-Fi (wireless) • Zigbee (wireless, proprietary) • DMX512 (wired) • EnOcean (wireless) • 4G Cellular (wireless) • 5G Cellular (wireless) • BACnet (wired) • Modbus (wired) • KNX (wired) • Other (wireless, proprietary) • Other analog (wired, proprietary) • Other digital (wired, proprietary) • PoE (wired) • TALQ (wireless) • Infrared (wireless, proprietary)	Select ONLY one for each controls option.

Controls Information	Description	Available Options	Guidance
Top or Side Controls Receptacle Type	The type of controls ready receptacle, installed at the factory, that is present on the top or side of the product when mounted in operating orientation. Available options must be indicated on the specification sheet or supplemental materials, but an exact match is not required. Product variations with 3-pin twist lock receptacles are not eligible for V6.0 qualification. Option is shown here for data integrity.	• None • 7-Pin twist lock • 5-Pin twist lock • 3-Pin twist lock (not eligible) • Zhaga Book 18 • Zhaga Book 20 • USB C Port • 3.5 mm Phono Jack • Other	Select ONLY one for each controls option.
Bottom or Side Controls Receptacle Type	The type of controls ready receptacle, installed at the factory, which is present on the bottom or side of the product when mounted in operating orientation.	• None • 7-Pin twist lock • 5-Pin twist lock • 3-Pin twist lock (not eligible) • Zhaga Book 18 • Zhaga Book 20 • USB C Port	Select ONLY one for each controls option.

Controls Information	Description	Available Options	Guidance
	Available options must be indicated on the specification sheet or supplemental materials, but an exact match is not required. Product variations with 3-pin twist lock receptacles are not eligible for V6.0 qualification. Option is shown here for data integrity.	• 3.5 mm Phono Jack • Other	
Integral Sensor Function	The lighting control strategy or strategies that are performed by the integral sensor installed at the factory. Available options must be indicated on the specification sheet or supplemental materials, but an exact match is not required.	• None • Occupancy only • Daylight only • Photocell only • Traffic only • Occupancy + Daylight • Occupancy + Photocell • Photocell + Part-Night Dim • Occupancy + Photocell + Part-Night Dim • Traffic + Photocell • Traffic + Photocell + Part-Night Dim	Select ONLY one for each controls option.

Controls Information	Description	Available Options	Guidance
Integral Sensor Technology	The type of sensing technology that the integral sensor installed at the factory uses. Available options must be indicated on the specification sheet or supplemental materials, but an exact match is not required.	• None • Passive Infrared (PIR) • Ultrasonic • Dual-Tech • Microphonic • Microwave • Millimeter Wave • Camera • Bluetooth Beacon • Light-dependent Resistor • Other	Select ONLY one for each controls option.
Integral Sensor Maximum Mounting Height (ft)	The manufacturer provided maximum mounting height for effective operation of the sensor.	One- or two-digit integer. Value to be submitted in feet. Both feet and meters will be displayed on the QPL.	If 'Integral Sensor Function' from above = None, then enter 'N/A'
NLC QPL Product ID	The NLC QPL Product ID of the networked lighting control system that the integral control product communicates with.	As displayed on the NLC QPL.	Submit the NLC Product ID for the corresponding NLC system here. The NLC System Name and a link to the NLC QPL will be displayed in the corresponding row of the Controls Options Table on the SSL QPL.

Controls Information	Description	Available Options	Guidance
Controls Ready Accessory Model Numbers	Model numbers for the controls-ready accessories provided by the manufacturer that are compatible with the listed product. This field is optional for manufacturers to report.	As displayed on the specification sheet.	If desired, Manufacturers may submit model numbers for Controls Ready Accessories* that work with controls Ready products for display on the SSL QPL.

*Controls Ready Accessories are products that install in receptacles to add additional controls functionality to SSL QPL listed products. Examples include dimming twist lock photocells and 3.5mm phono jack-based occupancy sensors.

Controls Categories

As noted, the Controls Options Table is used by the DLC to assign the Controls Categories. Each Controls Category aligns with controls savings factors as published in the Technical Resource Manuals (TRMs) that govern efficiency programs in North America. For example, the version 13 Illinois TRM lists a savings factor of 38% for 'Interior Dual Occupancy & Daylight Sensor (Integral or Fixture Mounted)'. The corresponding Controls Category for a product that implements this savings measure is 4A.

Table 9 from *Technical Requirements for LED Lighting: SSL V6.0 & LUNA V2.0* details the controls categories for all products.

Table 9: Controls Categories

ALL PRODUCTS		
Category	**Name**	**Description**
0	No Integral Controls	A luminaire, lamp, or retrofit kit with no integral control capabilities.
1	Controls Ready Product	A luminaire, lamp, or retrofit kit with controls-ready capability as defined in ***Controls Ready (Controls Category 1)***.
2	Product With Non-DLC Listed NLC Controller	A luminaire, lamp, or retrofit kit with an integral networked controller installed at the factory that operates as part of NLC system that is not listed on the DLC NLC QPL.
3A	Product With Integral Occupancy or Traffic* Sensor Function Only	A non-networked luminaire, lamp, or retrofit kit (or a networked controller that operates as part of a NLC system that is not listed on the DLC NLC QPL) with only an integral occupancy or traffic sensor function, installed at the factory.

ALL PRODUCTS		
Category	**Name**	**Description**
3B	Product With Integral Daylight/Photocell Sensor Function Only	A non-networked luminaire, lamp, or retrofit kit (or a networked controller that operates as part of a NLC system that is not listed on the DLC NLC QPL) with only an integral daylight/photocell sensor function, installed at the factory.
4A	Product With Occupancy or Traffic* and Daylight or Photocell Integral Sensor Functions	A non-networked luminaire, lamp, or retrofit kit (or a networked controller that operates as part of a NLC system that is not listed on the DLC NLC QPL) with occupancy and daylight/photocell integral sensor functions, installed at the factory. The sensor functions may be accomplished with a single device or multiple devices.
4B	Product With Traffic* or Photocell and/or Part-Night Dim Integral Sensor Functions	A non-networked luminaire, lamp, or retrofit kit (or a networked controller that operates as part of a NLC system that is not listed on the DLC NLC QPL) with photocell and part-night dim integral sensor functions, installed at the factory. The sensor functions may be accomplished with a single device or multiple devices.
5	Product With DLC NLC QPL Listed Networked Controller	A luminaire, lamp, or retrofit kit with an integral networked controller installed at the factory. The networked controller must operate as part of a DLC NLC QPL-listed control system.

ALL PRODUCTS		
Category	**Name**	**Description**
6	Product With DLC NLC QPL Listed Networked Controller and Two or More Integral Sensor Functions (LLLC)	A luminaire, lamp, or retrofit kit with an integral networked controller and two or more sensor functions installed at the factory. The sensor functions may be accomplished with a single device or multiple devices. The networked controller must operate as part of a DLC NLC QPL-listed control system.

* *Table note:* Traffic sensing capability is restricted to outdoor listed products.