

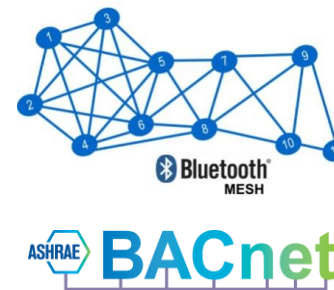


 **toggled iQTM** SMART BUILDING
MANAGEMENT SYSTEM

Toggled iQ

Intelligent Smart Building Platform

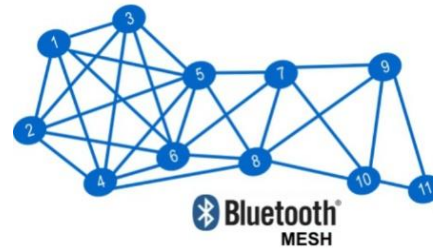
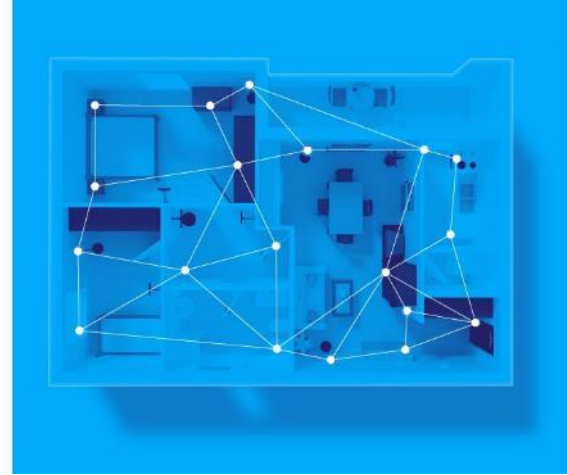
- Unbounded and decentralized data driven building controls that provide a more efficient, comfortable, and **cost-competitive** solution that can be easily implemented for any size building
- **Easily installs** and expands at a rate comfortable for the end user without fear of implementing the wrong hardware or solution.
- Supports **BACnet IP BMS** integrations
- Designed with end-user functionality & overall **product satisfaction** at its core
- Toggled iQ **works with existing 0-10V** wiring found on most LED fixtures
- Great for new build and retrofit applications



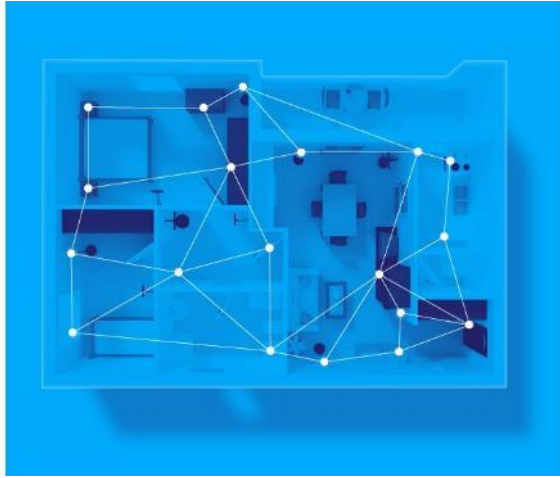
Bluetooth Low Energy Mesh

Inter-connected using advanced Bluetooth® technology

- Low-energy mesh is more efficient
- Better system functionality and security (local control isolated from the internet)
- Self healing capability provides network redundancy
- No bridge/hub required for local control
- Supports up to 32,000 devices on a single network
- Leverage the power of IoT to create high value use cases

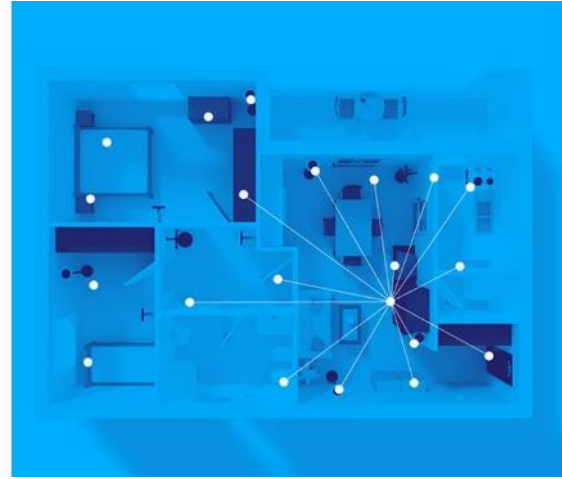


Toggled iQ Scalability Benefits



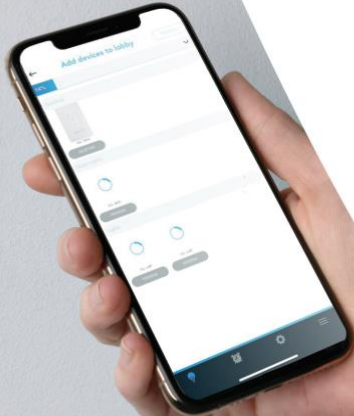
- Embedded into each device to safeguard against overfall failure due to a single device outage
- Significantly amplifies coverage based on product locations

VS.



- Limited to proximity of main signal coverage
- Single point of failure could shut down the entire network

Toggled iQ **Positive Business Outcomes**



- More **favorable project ROI** (Short and long-term)
- Deeper dive into building performance **optimizes space management and HVAC usage**
- Implementation of **advanced control opportunities** without required internet connection or infrastructure overhead
- **Lower installation costs** (wireless) with added ability to reduce operating costs

Incremental Energy Savings - Lighting Control

Control	Savings Opportunity
Manual Dimming - Save energy and meet code with manual/ personal dimming switches	10-20%
Occupancy Sensor - Manual and automatic ON/OFF capabilities	20-60%
Daylight Harvesting - Automatically adjusts light level based on ambient light in a given space	20-45%
High-End Trim - Set the maximum light level based on customer requirements in specified spaces	10-30%
Scheduling - Create pre-set schedules for changes in light levels based on time of day	10-20%

Truly intelligent lighting controls

• Toggled iQ Switch

- Provides manual lighting control and scheduling capabilities
- Simple & intuitive to control



• Toggled iQ Mobile App

- Commissions devices
- Programs scenes
- Schedules automated control



• Toggled iQ Direct Wire Smart Linear LED Tube & Downlight

- Energy efficient and dimmable
- Color changing (Downlights only)



• Toggled iQ Sensor

- Battery-powered, wireless (10 year battery life)
- Provides motion, light, temperature, and humidity sensing capabilities



• Toggled iQ Fixture Controller

- Provides 0-10V dimming interface between suitably equipped* luminaires and the Toggled iQ networked lighting controls platform

• Toggled iQ Gateway & Bridge

- Remote Device Management
- BAS integration
- IoT expansion

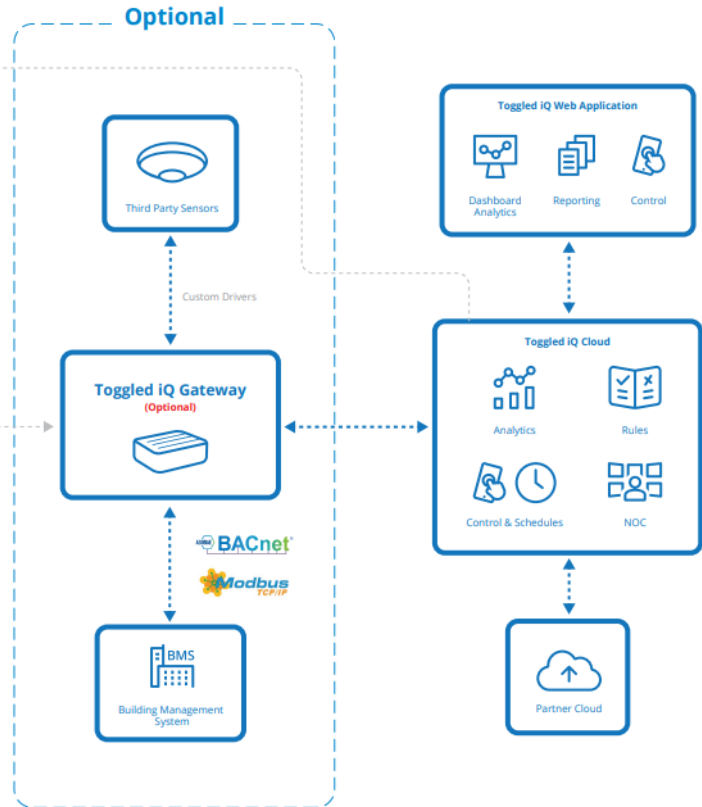
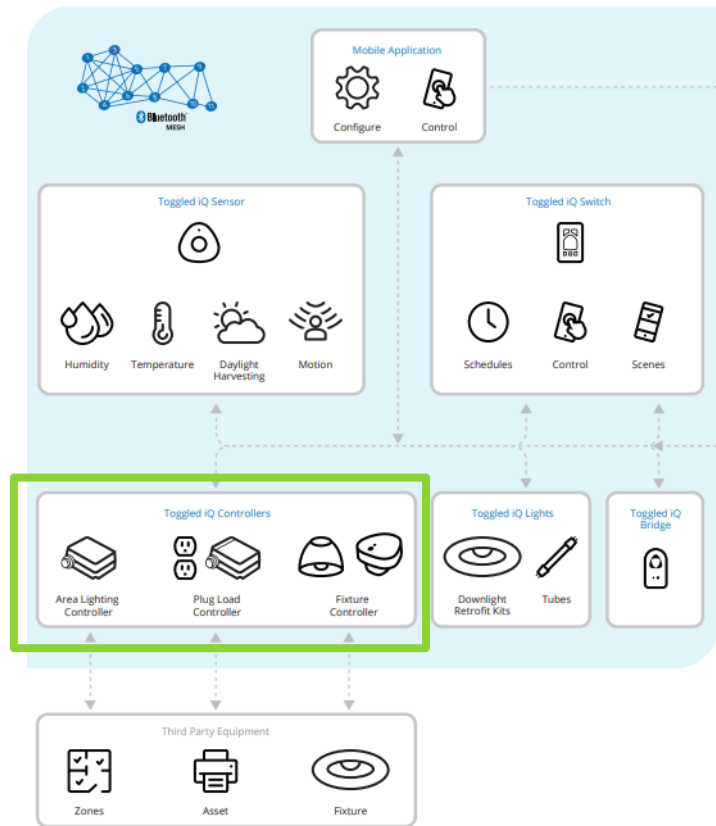
• Toggled iQ Plug Load Controller

- Provides a power switching interface between plugs/outlets, other non-lighting loads, or entire non-lighting circuits (up to 20A)

• Toggled iQ Area Lighting Controller

- Provides power switching and dimming interface between existing luminaires and Toggled iQ

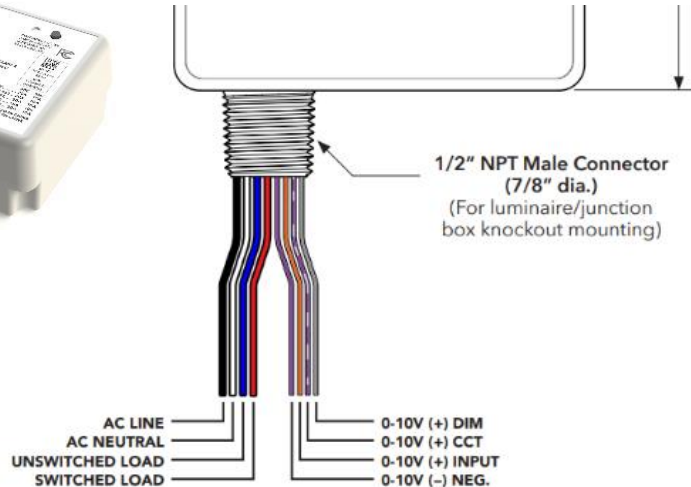




toggled iQ
ARCHITECTURE

Toggled iQ Area Controller

Provides power switching and dimming interface between existing luminaires, rooms, or entire circuits (up to 20A) and the Toggled iQ smart lighting network.



Features

- **Extended Universal Voltage**
Supports 120-347VAC as the input supply and connected load(s).
- **Dimming Control**
Two 0-10V isolated outputs provide dimming and CCT control for compatible luminaires or drivers using a Class 1 or Class 2 installation.
- **Power Monitoring**
Capable of providing integrated voltage and current measurements for monitoring and reporting connected load power consumption and quality.
- **0-10V Input**
AC line isolated 0-10V input allows for the use of existing or third-party 0-10V sensors and wall-controls.
- **Mounting**
Threaded adapter allows for installation in standard 1/2" knockouts on luminaires and junction boxes.
- **Durable Construction**
Designed and engineered in the USA with a shatterproof plenum-rated polycarbonate enclosure and high-quality electronic components.

Toggled iQ **Area Controller**

Applications:

- Where individual light control is not required.
- Toggled iQ is Universal - will work for any facility situation
- Overlay controls overtop of existing LED infrastructure
- Spec for new construction - can work with fixture manufacturer to embed toggled iQ

Fixture Pre-requisites

- 120-347V
- If dimming, 0-10V required
- Lighting circuit load Under 20A

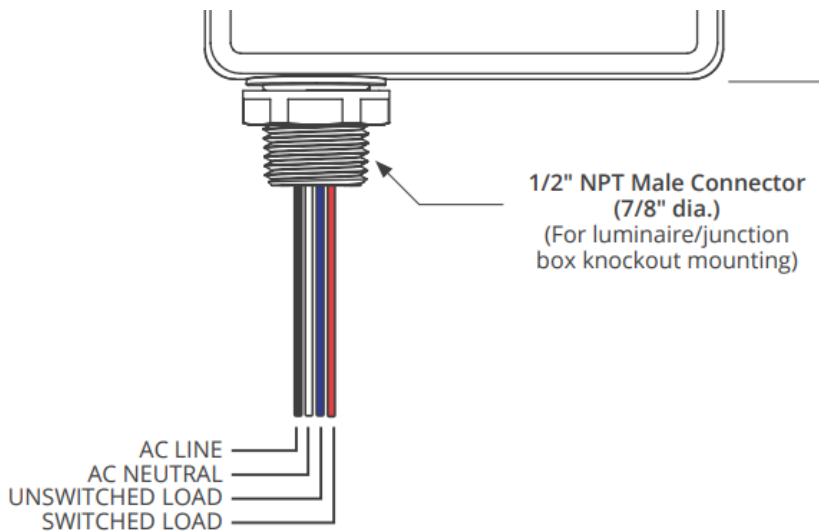
Toggled iQ Plug Load Controller

Provides a power switching interface between plugs/outlets, other non-lighting loads, or even non-lighting circuits (up to 20A) and the Toggled iQ smart building system



Features

- **Extended Universal Voltage**
Supports 120-347VAC as the input supply and connected load(s)
- **Switched and Unswitched Channels**
Supports code requirements for switched plug control while maintaining visibility of unswitched plug/load power consumption.
- **Power Monitoring**
Capable of providing integrated voltage and current measurements for monitoring and reporting connected load power consumption and quality.
- **Mounting**
Threaded adapter allows for installation in standard 1/2" knockouts on luminaires and junction boxes.
- **Durable Construction**
Designed and engineered in the USA with a shatterproof plenum-rated polycarbonate enclosure and high-quality electronic components.



Toggled iQ **Area Controller**

Applications:

- Where individual plug load control is desired
 - Meet ANSI/ASHRAE/IES Standard 90.1- 2019
 - Customer need

Site Pre-requisites

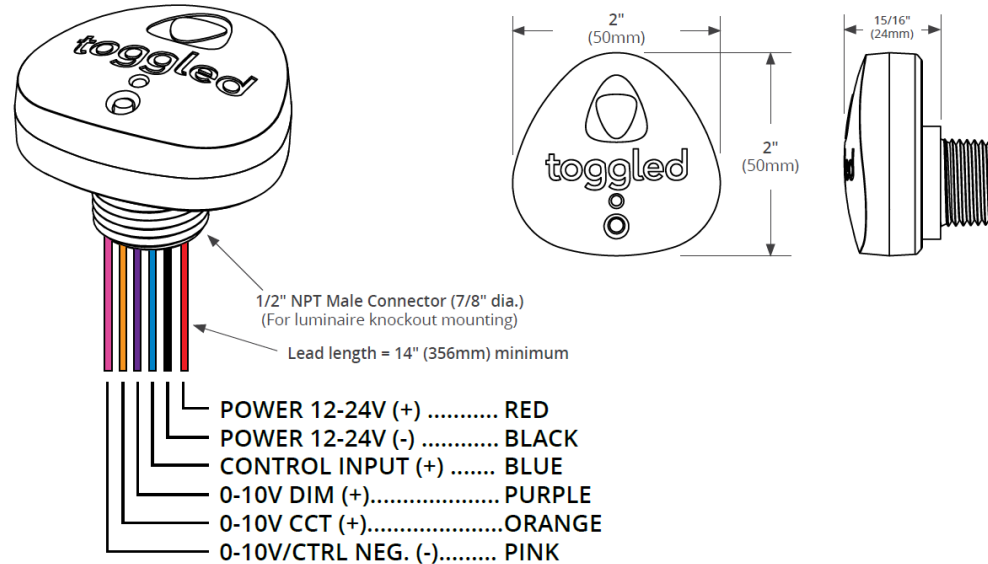
- 120-347V
- Circuit load Under 20A

Toggled iQ Fixture Controller

Provides 0-10V dimming interface between suitably equipped* luminaires and the Toggled iQ smart building system.

Features

- **Dimming / Color Control**
Two 0-10V outputs provide dimming and CCT control for compatible luminaires.
- **Flexible Supply Requirements**
Compatible with auxillary power sources of 12-24VDC.
- **Control Input**
Interface with inexpensive low-voltage luminaire mounted sensors to expand capabilities.
- **Mounting**
Threaded adapter allows for installation in standard 1/2" knockouts on luminaires.
- **Durable Construction**
Designed and engineered in the USA with a shatterproof plenum-rated polycarbonate enclosure and high-quality electronic components.



Toggled iQ Fixture Controller

Applications:

- Where individual fixture control is required

Site Pre-requisites

- 12-24V Aux Out for power
- Fixture supports 0-10V Dim to Off
- ½" standard knock out



Toggle*d* iQ **Features**



User-friendly Setup



Simple Connection



Room scene creation



Dimming



Motion Control



Daylight Harvesting



Color tuning

- ✓ MANUAL CONTROL
- ✓ CONTINUOUS DIMMING (MULTI LEVEL CONTROL)
- ✓ INDIVIDUAL DEVICE ADDRESSABILITY
- ✓ SCHEDULING
- ✓ ZONE CONTROL / GROUPING
- ✓ MINIMUM LIGHT LEVEL
- ✓ HIGH END TRIM
- ✓ OCCUPANCY / VACANCY – PARTIAL ON
- ✓ AUTO TIME SHUTOFF
- ✓ AUTOMATIC DAYLIGHTING CONTROLS
- ✓ DEMAND RESPONSE*
- ✓ ASSET TRACKING*

CITY OF VANCOUVER

LED retrofit with toggled iQ controls

- 9 buildings, outdoor lighting, hockey arena, admin offices, warehouses
- Mixture of iQ tubes, area controllers, sensors and switches all connected back to the network for cloud-based monitoring and control
- Advanced analytics including energy monitoring/reporting, motion density analysis
- Adding additional IoT applications - remote sensor monitoring - piggybacking off Toggled iQ Bluetooth network



MID-ATLANTIC ENERGY SOLUTIONS



Businesses and building operators have to master the delicate balance between building controls that generate energy and cost savings, with the satisfaction of their customers and employees. Toggled's new advancement means our business customers no longer have to walk this line – they can enable individual control of lighting devices while simultaneously driving down energy consumption and costs through the connected building system.

Sawyer A.
(Mid-Atlantic Energy Solutions)



THE NOBLE HOUSE



INCREASE SAFETY

of The Noble House tenants by adding vacancy/occupancy and higher quality light source.

ENERGY SAVINGS

with LED upgrades and control lighting features.

BYRON CENTER PUBLIC SCHOOLS



We love it! All the light scenes we needed in the training room are programmed. It's very simple to use.

Doug Gallup,
District Services Coordinator
for Byron Center Schools



Questions?

Bryan Anderson
banderson@toggled.com

APPENDIX

Extend **Beyond Lighting Control**



OUTCOMES



Asset Optimization



Energy Efficiency



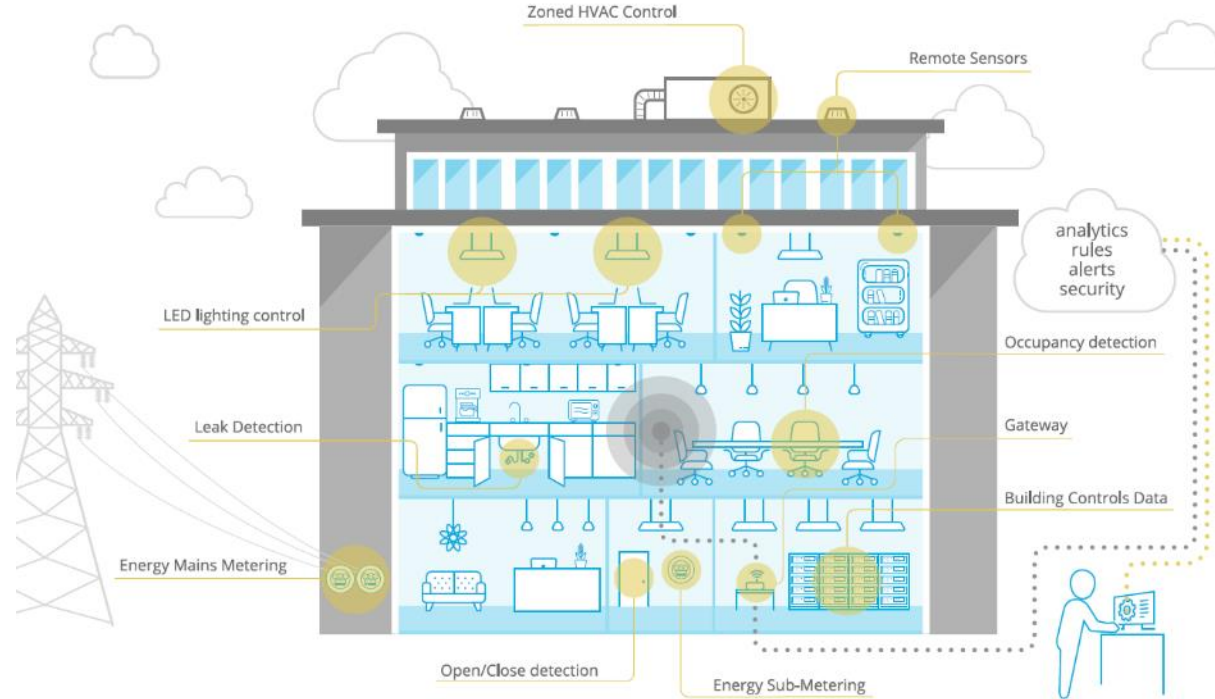
Proactive Maintenance



Real Time Insights



Tenant Satisfaction



Toggle*d* iQ **Extended IoT Functionality Benefits**



HVAC



**Remote Sensor
Monitoring**



Energy Management



BAS Data Pump

Toggled iQ Sensor

Features

- **Easy Installation**

Battery power, wireless connectivity, and multiple mounting options allow for flexible installation without the need to run wires.

- **Low Maintenance**

10-year battery life provides 10 years of maintenance-free operation.*

- **Cost-saving Combination**

Daylight, motion, temperature and humidity in a single device minimizes equipment cost and system complexity.

- **Eliminate Deadzones**

Motion coverage of 324 ft² (30.2 m²) at 8ft ceiling height. Supports multiple sensors per area. Test placement and verify coverage using stand-alone test mode and integral magnet.

- **Ladder-free Adjustments**

Conveniently configure and adjust sensor parameters without a ladder using the Toggled iQ app.

Easy to install, ceiling-mounted wireless sensor with 10-year maintenance-free battery life. Motion, light, temperature, and humidity sensing enable occupancy/vacancy and daylight harvesting lighting controls.



Toggled iQ Switch

Features

- **Unlimited Load Capacity**

Reliable mesh-network control of your lighting devices eliminates capacity limitations associated with 0-10V and phase-dimming control systems.

- **No Control Wires**

Switch requires only a connection to AC power (120-277VAC) to enable wireless control of any Toggled iQ lighting device or group of devices.

- **Durable Construction**

Shatterproof polycarbonate enclosure and capacitive-touch control results in a reliable and easy to clean design with no moving parts and no ground-wire required.

- **Configurable Buttons**

Three preset buttons preconfigured for 25%, 50%, and 75% brightness can be reassigned using the Toggled iQ app to recall any saved scene.

- **7-Day Scheduling**

Enables scheduling of on/off/scene events. Configuration is made easy using the Toggled iQ app to select day of the week, time, and event. Integral real-time-clock is synced during setup and maintains time through power-outages without the need for an internet connection.

- **Environmental Rating**

Rated for -25C to 45C (-13F to 113F).

The toggled iQ Switch is programmable through a mobile app and has the ability to store up to three individual room lighting scenes.



Model No.	Description	Color
TSB-001-WT	toggled iQ Switch (120-277 VAC)	White

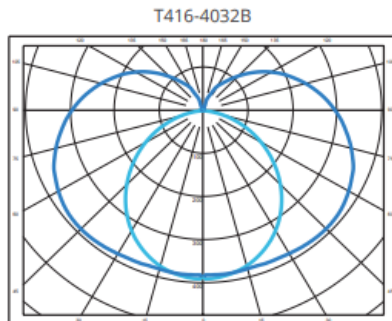
Toggled iQ Linear Lamps



Specifications

Model	Length	Input	Power	PF	THD	Lumens	Efficacy	Color	CRI	Life (L70)	Standby
T416-4032B	48"	120-277VAC	16W	≥0.9	≤20%	2400	150lm/W	4000K	≥80	50,000hr	0.5W at 120VAC
T416-5032B	48"	120-277VAC	16W	≥0.9	≤20%	2400	150lm/W	5000K	≥80	50,000hr	0.5W at 120VAC
T312-4032B	36"	120-277VAC	12W	≥0.9	≤20%	1800	150lm/W	4000K	≥80	50,000hr	0.5W at 120VAC
T312-5032B	36"	120-277VAC	12W	≥0.9	≤20%	1800	150lm/W	5000K	≥80	50,000hr	0.5W at 120VAC
T208-4032B	24"	120-277VAC	8W	≥0.9	≤20%	1200	150lm/W	4000K	≥80	50,000hr	0.5W at 120VAC
T208-5032B	24"	120-277VAC	8W	≥0.9	≤20%	1200	150lm/W	5000K	≥80	50,000hr	0.5W at 120VAC

Light Distribution (Polar Plot)



Light distribution typical for all products listed in this specification.

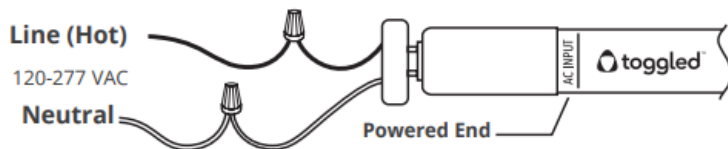
90-270 Degree Plane (Looking at end of lamp)

Beam Angle: 240 Degrees
Field Angle: 355 Degrees

0-180 Degree Plane (Looking at side of lamp)

Beam Angle: 105 Degrees
Field Angle: 156 Degrees

Wiring Diagram



Toggled iQ Downlight Retrofit Kit

Features

- **Appearance**
Clear anodized aluminum finish matches the look-and-feel of existing fixtures. This, combined with glare-reducing, deeply recessed LEDs allows for a seamless no-compromise retrofit.
- **Dimming**
Control the brightness of each downlight individually from the Toggled iQ App or groups of downlights with the Toggled iQ Switch.
- **White Color Tuning**
Adjust the color temperature continuously from 2700K to 5000K from the Toggled iQ App.
- **Retrofit Compatibility**
Compatible retrofit for most 6"/8" commercial CFL downlight fixtures. Rated for Non-IC and IC as well as damp and dry applications.
- **Life Rating**
Engineered for a rated life of 50,000 hours in IC fixtures.
- **Compliance**
 - UL Classified UL1598C LED Retrofit Kit
 - Contains FCC IC: 2ARCM-6201852
 - Contains IC: 24359-6201852
 - Tested and compliant to FCC 47CFR Part 15

Downlight retrofit kit, available in two sizes (6" and 8"), are designed to upgrade existing CFL downlights to a more energy-efficient smart lighting solution.



Toggled iQ Downlight Retrofit Kit

Specifications

Model	Size	Input	Power	PF	THD	Lumens	Efficacy	Color	CRI	Life	Standby
TD06-W121CCB	6"	120-277VAC	23.5W	≥0.9	≤20%	2000	85lm/W	2700-5000K	≥80	50,000hr	0.5W at 120VAC
TD08-W121CCB	8"	120-277VAC	23.5W	≥0.9	≤20%	2000	85lm/W	2700-5000K	≥80	50,000hr	0.5W at 120VAC

Downlight Temperature Rating: -25°C to 45°C Ambient

Driver Temperature Rating: -25°C to 45°C Ambient; Maximum Driver Case (TMP_c): 85°C





Product Line



Toggled Commercial
120-277 VAC



Toggled Dimmable
120 VAC



Toggled Ultra High Output



Toggled White Color Changing



Toggled Gro Standard



Toggled Gro Ultra High Output



Toggled iQ LED Tube



Toggled iQ Downlight



Toggled iQ Fixture Controller



Toggled iQ Switch



Toggled iQ Area Lighting Controller



Toggled iQ Plug Load Controller



Toggled iQ Sensor



Toggled **Direct Wire Fixtures** (Ballast-free)

- Serviceable
- Upgradeable
- Configurable



4' High Bays

- 4, 6, 8 tube options
- 8K – 24.8K lumens
- Efficiency: Up to 135 lm/w
- Direct whip connection
- Accessories: cable hanging kits



Troffers

- 2, 3 and 4 tube options
- 2K – 12.4K lumens
- Efficiency: Up to 135 lm/w
- Direct whip connection
- Accessories: wire guard



Strip Lights

- 2 ft., 3 ft., and 4 ft.
- 1 and 2 tube options
- 2K – 6.2K lumens
- Efficiency: Up to 135 lm/w
- Direct whip connection
- Accessories: wire guard, prismatic wrap covers



Shop Lights

- 1 and 2 tube options
- 2K – 6.2K lumens
- Efficiency: Up to 135 lm/w
- Includes plug



4 ft. Vapor Tight

- 2 tubes
- 4K – 6.2K lumens
- 100% UV stabilized polycarbonate, silicon perimeter gasket
- Clear polycarbonate lens
- IP65 waterproof, dustproof, weatherproof