

E-Series Direct Wire LED Tubes

T8/T12 Replacement for 120-277 VAC

- Universal voltage (120-277 VAC)
- Single-ended direct wire power
- Ballast bypass
- 50,000 hour lifetime
- Shatterproof polycarbonate construction
- 2, 3, and 4 foot models
- 3000K, 4000K, 5000K and 6500K

toggled direct wire LED tubes connect to building line power, eliminating fluorescent ballast systems and external drivers. Standard T8 and T12 fluorescent tube fixtures can be easily rewired to accommodate toggled tubes, providing mercury-free, energy efficient, and zero-maintenance lighting.

Outstanding Product Performance

- Up to 60% energy savings over traditional fluorescent systems
- Eliminates ballasts and maintenance costs
- Designed for direct connection to building AC power, voltage 120-277 VAC
- Rapid payback for high-demand applications
- Eligible for available state and energy credit programs and utility incentives
- Tube operating temperature = -20 to 45° C



Superior Quality of Light

- Patented triangular tube shape is engineered for broader and more uniform light distribution
- Provides sufficient back lighting to eliminate the "cave effect" in troffers
- Consistent color rendering, 80 CRI minimum
- IES LM-79, IES LM-80, IES TM-21 tested
- UL 1598C
- Limited* lifetime warranty (Residential)
Limited* 6-year warranty (Commercial)
- 3-step MacAdam ellipse

Commercial-grade

- Designed and engineered in U.S.A.
- Extreme temperature tolerant in cold and hot weather
- Shatterproof polycarbonate construction
- Suitable for damp locations - UL rated
- No mercury
- Built-in surge protection. ANSI/IEEE C62.41.1991

*Details at toggled.com/warranty

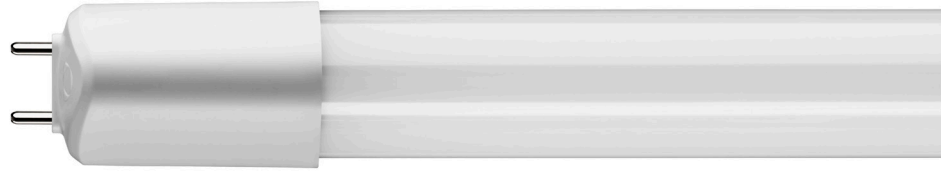
Ordering Information

Series	Length	Power	CCT	Lens	Output	Options
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
E = Universal Voltage	2 = 2 feet 3 = 3 feet 4 = 4 feet	08 = 8 Watts 12 = 12 Watts 16 = 16 Watts	30 = 3000K 40 = 4000K 50 = 5000K 65 = 6500K	3 = Wide Angle	1 = Standard	0 = None



E-Series Direct Wire LED Tubes

T8/T12 Replacement for 120-277 VAC

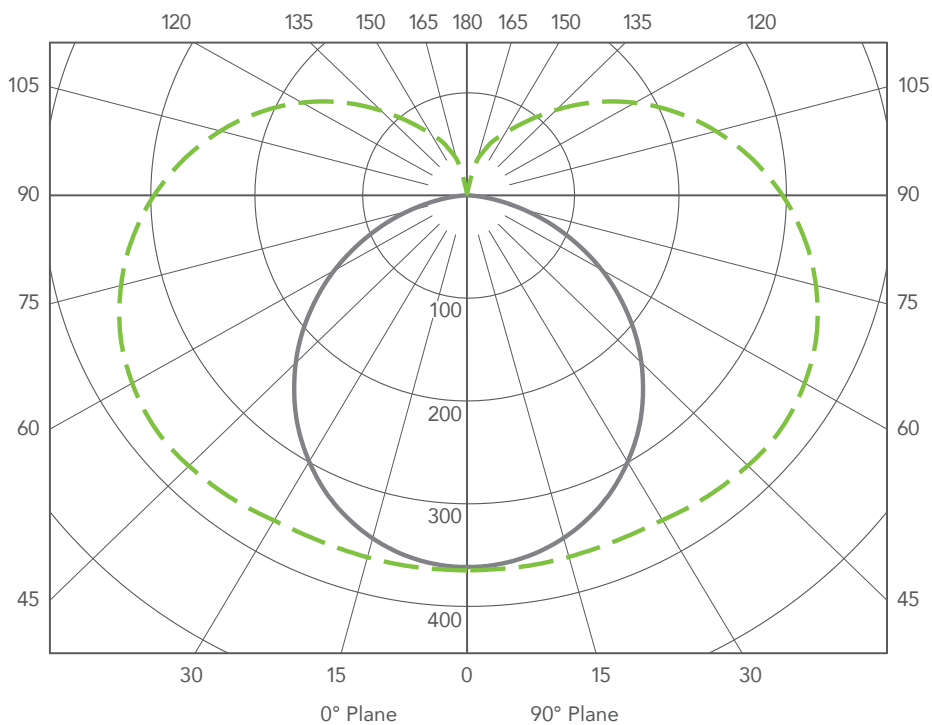


	Model No.	Length	Input Voltage	Power (Watts)	Total Lumens	Efficacy	CRI	CCT	PF	DLC Listed
4 feet	E416-30310	4 feet	120-277 VAC	16	2000	125	≥80	3000K	≥0.9	-
	E416-40310	4 feet	120-277 VAC	16	2100	131	≥80	4000K	≥0.9	✓
	E416-50310	4 feet	120-277 VAC	16	2100	131	≥80	5000K	≥0.9	✓
	E416-65310	4 feet	120-277 VAC	16	2100	131	≥80	6500K	≥0.9	N/A
3 feet	E312-30310	3 feet	120-277 VAC	12	1620	135	≥80	3000K	≥0.9	✓
	E312-40310	3 feet	120-277 VAC	12	1680	140	≥80	4000K	≥0.9	✓
	E312-50310	3 feet	120-277 VAC	12	1680	140	≥80	5000K	≥0.9	✓
	E312-65310	3 feet	120-277 VAC	12	1680	140	≥80	6500K	≥0.9	N/A
2 feet	E208-30310	2 feet	120-277 VAC	8	1080	135	≥80	3000K	≥0.9	-
	E208-40310	2 feet	120-277 VAC	8	1120	140	≥80	4000K	≥0.9	✓
	E208-50310	2 feet	120-277 VAC	8	1120	140	≥80	5000K	≥0.9	✓
	E208-65310	2 feet	120-277 VAC	8	1120	140	≥80	6500K	≥0.9	N/A

All DLC listed products meet version 4.4. Please consult designlights.org for current product listings.

Photometrics

IES files available upon request



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D-Series Dimmable Direct Wire LED Tubes

T8/T12 Replacement for 120 VAC

- 120 VAC only
- Dimmable**
- Single-ended direct wire power
- Ballast bypass
- 50,000 hour lifetime
- Shatterproof polycarbonate construction
- 2, 3, and 4 foot models
- 3000K, 4000K, 5000K and 6500K

toggled direct wire LED tubes connect to building line power, eliminating fluorescent ballast systems and external drivers. Standard T8 and T12 fluorescent tube fixtures can be easily rewired to accommodate toggled tubes, providing mercury-free, energy efficient, and zero-maintenance lighting.

Outstanding Product Performance

- Up to 60% energy savings over traditional fluorescent systems
- Eliminates ballasts and maintenance costs
- Designed for direct connection to building AC power, voltage 120 VAC
- Rapid payback for high-demand applications
- Eligible for available state and energy credit programs and utility incentives
- Tube operating temperature = -20 to 45° C



Superior Quality of Light

- Patented triangular tube shape is engineered for broader and more uniform light distribution
- Provides sufficient back lighting to eliminate the "cave effect" in troffers
- Consistent color rendering, 80 CRI minimum
- IES LM-79, IES LM-80, IES TM-21 tested
- UL 1598C
- Limited* lifetime warranty (Residential)
- Limited* 6-year warranty (Commercial)
- 3-step MacAdam ellipse

Commercial-grade

- Designed and engineered in U.S.A.
- Extreme temperature tolerant in cold and hot weather
- Shatterproof polycarbonate construction
- Suitable for damp locations - UL rated
- No mercury
- Built-in surge protection. ANSI/IEEE C62.41.1991

*Details at toggled.com/warranty

** Details at toggled.com/dim

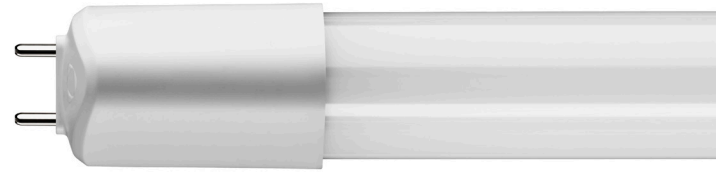
Ordering Information

Series	Length	Power	CCT	Lens	Output	Options
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D = Dimmable	4 = 4 feet 3 = 3 feet 2 = 2 feet	16 = 16 Watts	30 = 3000K 40 = 4000K 50 = 5000K 65 = 6500K	3 = Wide Angle	1 = Standard 2 = Premium	1 = Dimming



D-Series Dimmable Direct Wire LED Tubes

T8/T12 Replacement for 120 VAC

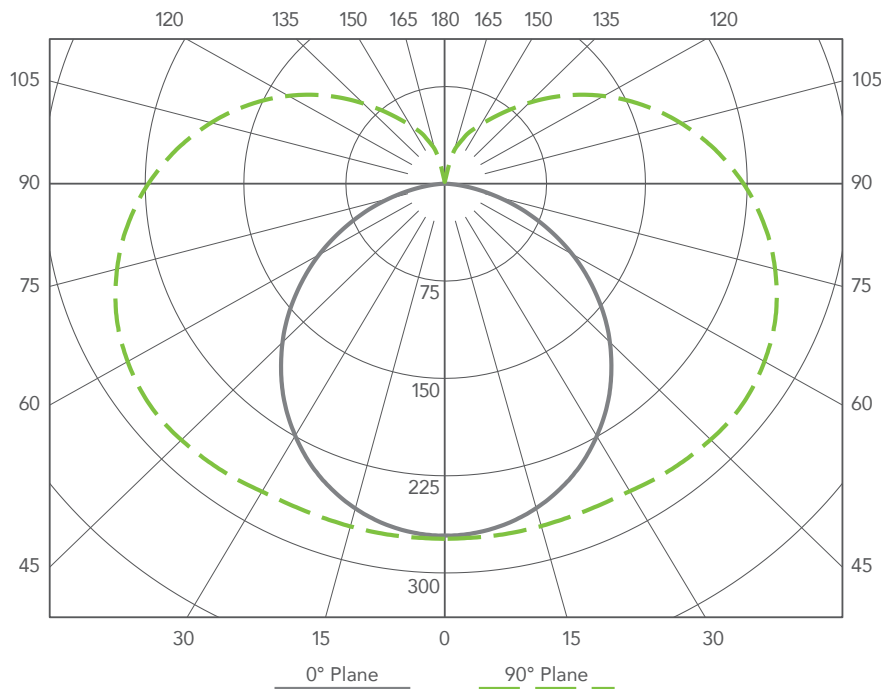


	Model No.	Length	Input Voltage	Power (Watts)	Total Lumens	Efficacy	CRI	CCT	PF	DLC listed
4 feet	D416-30321	4 feet	120 VAC	16	1900	119	≥80	3000K	≥0.9	-
	D416-40321	4 feet	120 VAC	16	2000	125	≥80	4000K	≥0.9	✓
	D416-50321	4 feet	120 VAC	16	2000	125	≥80	5000K	≥0.9	✓
	D416-65321	4 feet	120 VAC	16	2000	125	≥80	6500K	≥0.9	N/A
3 feet	D312-30321	3 feet	120 VAC	12	1400	117	≥80	3000K	≥0.9	✓
	D312-40321	3 feet	120 VAC	12	1500	125	≥80	4000K	≥0.9	✓
	D312-50321	3 feet	120 VAC	12	1500	125	≥80	5000K	≥0.9	✓
	D312-65321	3 feet	120 VAC	12	1500	125	≥80	6500K	≥0.9	N/A
2 feet	D208-30321	2 feet	120 VAC	8	1000	125	≥80	3000K	≥0.9	-
	D208-40321	2 feet	120 VAC	8	1040	130	≥80	4000K	≥0.9	✓
	D208-50321	2 feet	120 VAC	8	1040	130	≥80	5000K	≥0.9	✓
	D208-65321	2 feet	120 VAC	8	1040	130	≥80	6500K	≥0.9	N/A

All DLC listed products meet version 4.4. Please consult designlighting.org for current product listings.

Photometrics

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A-Series High Output Direct Wire LED Tubes

T8/T12 Replacement for 120-277 VAC

- Superior light output – 3,100 lumens
- Universal voltage (120-277 VAC)
- Single-ended power, ballast bypass
- 50,000 hour lifetime
- Commercial grade construction
- 4000K and 5000K



toggled direct wire LED tubes connect to building line power, eliminating fluorescent ballast systems and external drivers. Standard T8 and T12 fluorescent tube fixtures can be easily rewired to accommodate toggled tubes, providing mercury-free, energy efficient, and zero-maintenance lighting.

Outstanding Product Performance

- Up to 60% energy savings over traditional fluorescent systems
- Eliminates ballasts and maintenance costs
- Designed for direct connection to building AC power, voltage 120-277 VAC
- Rapid payback for high-demand applications
- Ideal for highbay applications like gymnasiums and warehouses
- Can be used for de-lamping, even in high efficiency T8 fixtures
- Tube operating temperature = -20 to 45° C

Superior Quality of Light

- Consistent color rendering, 80 CRI standard
- IES LM-79, IES LM-80, IES TM-21 tested
- UL 1598C
- Limited* 6-year commercial warranty
- 3-step MacAdam ellipse

Commercial-grade

- Designed and engineered in U.S.A.
- Extreme temperature tolerant in cold and hot weather
- Shatterproof construction
- Suitable for damp locations - UL rated
- No mercury

*Details at toggled.com/warranty

Ordering Information

Series	Length	Power	CCT	Lens	Output	Options
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
A = Universal Voltage	4 = 4 feet	23 = 23 Watts	40 = 4000K 50 = 5000K	2 = Diffused	3 = Ultra High	0 = None



A-Series High Output Direct Wire LED Tubes

T8/T12 Replacement for 120-277 VAC

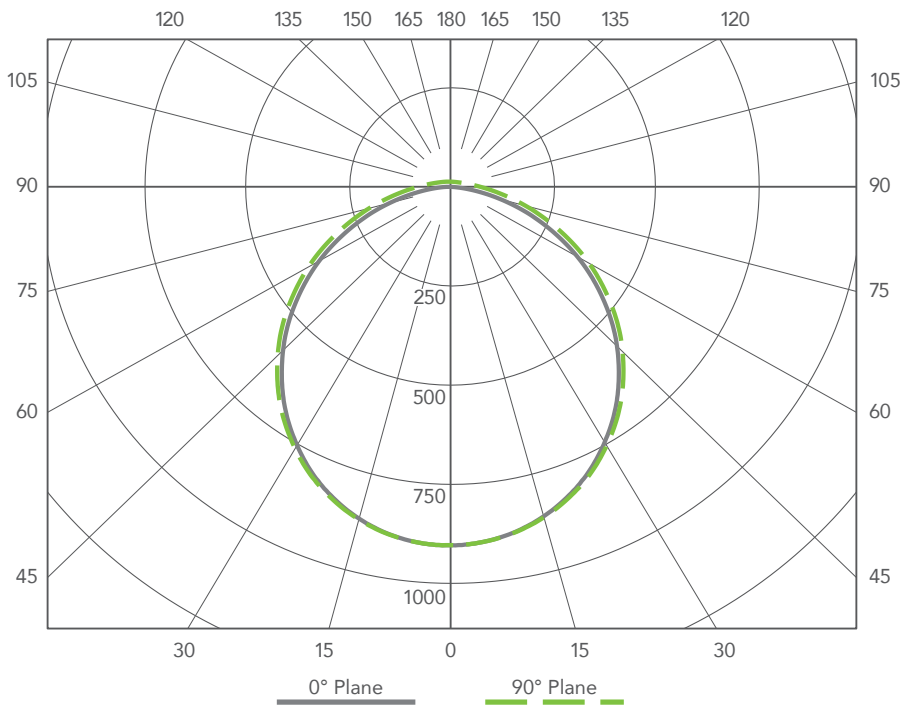


Model No.	Length	Input Voltage	Power (Watts)	Total Lumens	Efficacy	CRI	CCT	PF	DLC Listed
A423-40230	4 feet	120-277 VAC	23	3100	135	≥80	4000K	≥0.9	✓
A423-50230	4 feet	120-277 VAC	23	3100	135	≥80	5000K	≥0.9	✓

All DLC listed products meet version 4.3. Please consult designlights.org for current product listings.

Photometrics

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toggled gro™ Direct Wire LED Tubes T8/T12 Replacement

- Universal voltage (120-277 VAC)
- Low operating temperature helps plants retain moisture
- Single-ended power, direct wire ballast bypass
- 50,000 hour lifetime
- Full and focused spectrum available



toggled gro™ LED tubes are engineered to provide improved growing performance using selected LED output wavelengths.

toggled direct wire LED tubes connect to building line power, eliminating fluorescent ballast systems and external drivers. Standard T8 and T12 fluorescent tube fixtures can be easily rewired to accommodate toggled tubes, providing mercury-free, energy efficient, and zero-maintenance lighting.

Outstanding Product Performance

- Up to 60% energy savings over traditional fluorescent systems
- Eliminates ballasts and maintenance costs
- Designed for direct connection to building AC power, voltage 120-277 VAC
- Tube operating temperature = -20 to 45° C

Superior Quality of Light

- Patented triangular tube shape is engineered for broader and more uniform light distribution
- Limited* 6-year commercial warranty
- UL 1598C
- IES LM79 tested

Commercial-grade

- Designed and engineered in U.S.A.
- Shatterproof polycarbonate construction
- Suitable for damp locations - UL rated
- No mercury
- Built-in surge protection. ANSI/IEEE C62.41.1991

*Details at toggled.com/warranty

Ordering Information

Series	Length	Power	CCT	Lens	Output	Options
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
E = Universal Voltage	4 = 4 feet	16 = 16 Watts	G1 = Focused Spectrum G2 = Full Spectrum	3 = Wide Angle	1 = Standard	0 = None



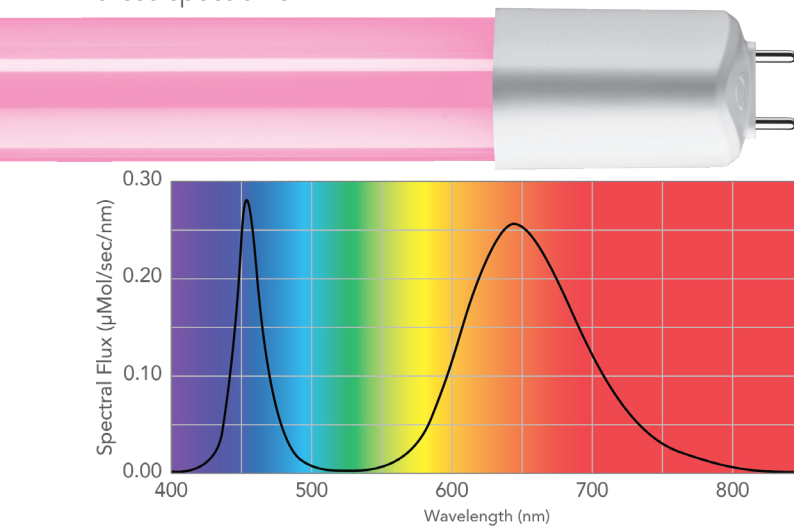
toggled gro™ Direct Wire LED Tubes

T8/T12 Replacement for 120-277 VAC

Model No.	Input Voltage	Power (Watts)	PPF (400-700nm)	PBAR (350-800nm)	PPF Efficacy (400-700nm)	PBAR Efficacy (350-800nm)
E416-G1310 - Focused Spectrum	120-277VAC	16	29.84 $\mu\text{mol}/\text{Sec.}$	34.12 $\mu\text{mol}/\text{Sec.}$	1.8 $\mu\text{mol}/\text{Sec.}/\text{W}$	2.1 $\mu\text{mol}/\text{Sec.}/\text{W}$
E416-G2310 - Full Spectrum	120-277VAC	16	31.33 $\mu\text{mol}/\text{Sec.}$	33.39 $\mu\text{mol}/\text{Sec.}$	1.9 $\mu\text{mol}/\text{Sec.}/\text{W}$	2.1 $\mu\text{mol}/\text{Sec.}/\text{W}$

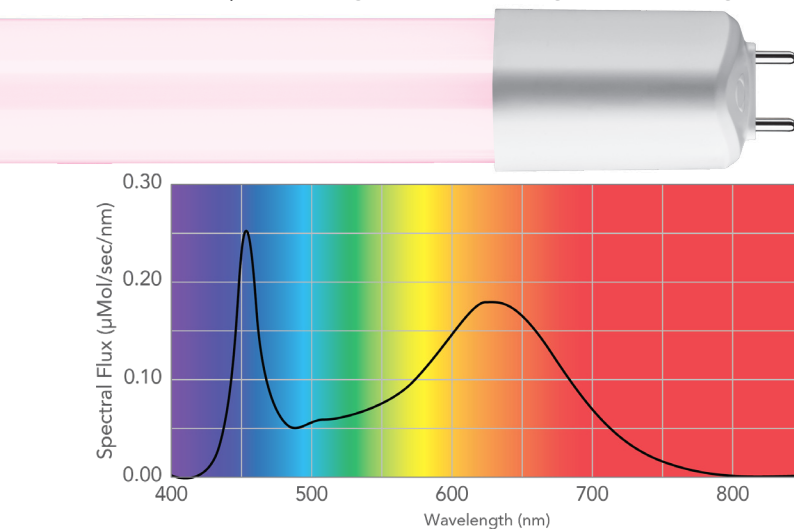
Focused Spectrum Tube

Provides focused red and blue light to help maximize these spectrums.



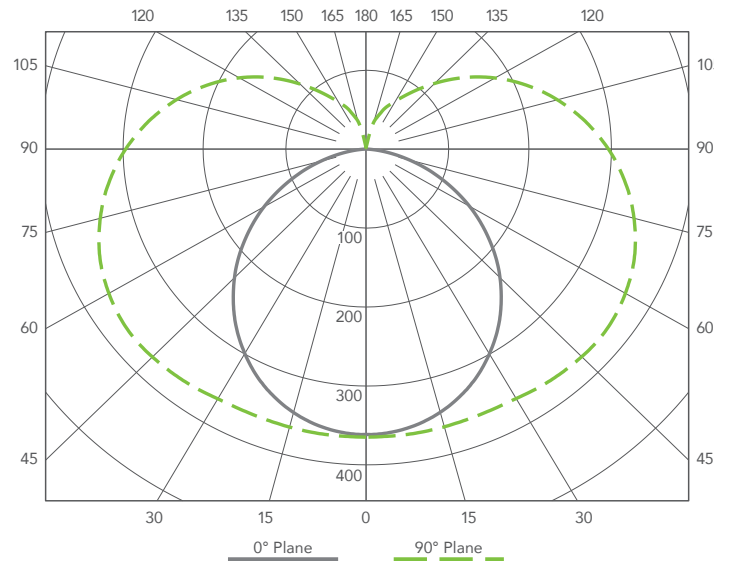
Full Spectrum Tube

Provides full spectrum light distribution enhanced with far red to optimize vegetation, budding and flowering.



Photometrics

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toggled iQ™

Smart LED lighting control system

- Wireless Bluetooth® Low Energy Mesh
- User-friendly set-up and maintenance
- Allows for back-end reporting and monitoring
- Commercial and retail applications
- Limited* 6-year warranty (Commercial)
- Designed and engineered in U.S.A.

The **toggled iQ™ smart system** is a network of lights, sensors and controls which are connected using Bluetooth® low energy technology. No new control wiring is required. Designed with end-user functionality and overall satisfaction at its core means it's a system that can be easily modified based on personal needs and preferences both immediate and in the future.

toggled iQ adapts and adjust to users in real-time, allowing for:

- Daylight harvesting
- Room occupancy/vacancy detection

User-friendly setup allows for:

- Quick and easy connection to devices
- Individual light controls (dimming, color tuning)
- Room scene creation
- Streamlined system upgrades and optimization

Powerful web-based data analytics dashboards provide the system with the ability to generate real-time overviews and cost savings reports on-demand.

Quick and simple smart lighting installation

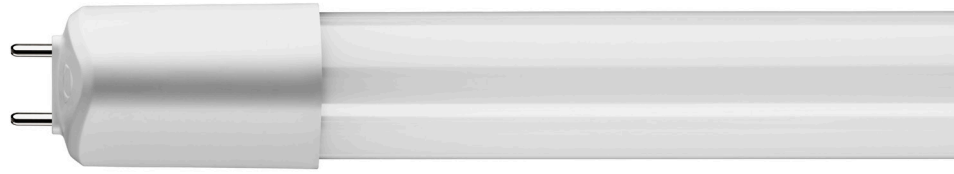


toggled iQ direct wire LED tubes connect to building line power, eliminating fluorescent ballast systems and external drivers. Standard T8 and T12 fluorescent tube fixtures can be easily rewired to accommodate toggled tubes, providing mercury-free, energy efficient, and zero-maintenance lighting. Created with the same high-quality attributes as toggled LED tubes with the additional capability to integrate into the toggled iQ smart lighting control system.

*Details at toggled.com/warranty

toggled iQ™ LED Tubes

T8/T12 Replacement for 120-277 VAC



Model No.	Length	Input Voltage	Power (Watts)	Total Lumens	Efficacy	CRI	CCT	PF	DLC Listed
T416-4031B	4 feet	120-277 VAC	16	2100	131	≥80	4000K	≥0.9	✓
T416-5031B	4 feet	120-277 VAC	16	2100	131	≥80	5000K	≥0.9	✓

All DLC listed products meet version 4.3. Please consult designlights.org for current product listings.

toggled iQ™ Sensor

The toggled iQ Sensor is programmable through a mobile or tablet app. Provides multi-purpose functionality: motion sensing for room occupancy detection, daylight harvesting as well as temperature and humidity capabilities. Comes with a 10-year battery life and runs off of (2) AA batteries.



Model No.	Description	Color
TNB-001W	toggled iQ Sensor	White

toggled iQ™ Switch

TSB-001

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



toggled iQ™ Downlight

The toggled iQ Downlight is programmable through a mobile app. It provides 2600 lumens of light output and is capable of white color tuning from 2700K to 5000K.



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

Model No.	Description	Color
TD06-W121CCB	toggled iQ 6" Downlight	Aluminum Finish
TD08-W121CCB	toggled iQ 8" Downlight	Aluminum Finish

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