



# Appendix A

## Luminaires

D1

**DESCRIPTION**  
 The H20IGCAT is designed for insulated ceilings and can be in direct contact with ceiling insulation. This AIR-TITE™ housing design prevents air flow between attic and living areas and allows for both heating and air conditioning units. The 19W electronic compact fluorescent ballast meets stringent Energy Star requirements including FCC Title 47 CFR part 15 for Consumer equipment. The H20IGCAT offers a wide choice of trim types to housing reflector, lensed and wide beam trim. The H20IGCAT is warranted for 2 years.

Revision #	Description
1	Initial Release

**REVISIONS**

**Notes:**

- 1 - The H20IGCAT is designed for insulated ceilings and can be in direct contact with ceiling insulation.
- 2 - This AIR-TITE™ housing design prevents air flow between attic and living areas and allows for both heating and air conditioning units.
- 3 - The 19W electronic compact fluorescent ballast meets stringent Energy Star requirements including FCC Title 47 CFR part 15 for Consumer equipment.
- 4 - The H20IGCAT offers a wide choice of trim types to housing reflector, lensed and wide beam trim.
- 5 - The H20IGCAT is warranted for 2 years.

**INSTALLATION NOTES:**

- A - Mounting:** Single unit aluminum housing. Ceiling to be prepared for AIR-TITE installation. 3/8" x 3/8" (4) mounting screws are used to secure housing to ceiling. The AIR-TITE housing is designed to be installed on a ceiling with a minimum thickness of 1/2" gypsum board or 1/4" OSB. The housing must be installed on a ceiling with a minimum thickness of 1/2" gypsum board or 1/4" OSB. The housing must be installed on a ceiling with a minimum thickness of 1/2" gypsum board or 1/4" OSB.
- B - Fastener Free:** The housing is designed to be installed on a ceiling with a minimum thickness of 1/2" gypsum board or 1/4" OSB. The housing must be installed on a ceiling with a minimum thickness of 1/2" gypsum board or 1/4" OSB.
- C - Just a Hole:** The housing is designed to be installed on a ceiling with a minimum thickness of 1/2" gypsum board or 1/4" OSB. The housing must be installed on a ceiling with a minimum thickness of 1/2" gypsum board or 1/4" OSB.
- D - Quick to Install:** The housing is designed to be installed on a ceiling with a minimum thickness of 1/2" gypsum board or 1/4" OSB. The housing must be installed on a ceiling with a minimum thickness of 1/2" gypsum board or 1/4" OSB.

**TRIM TYPES:**

Trim	Description
1	Aluminum, White Cold Frame Trim Ring
2	Aluminum, White Cold Frame Trim Ring
3	Aluminum, White Cold Frame Trim Ring
4	Aluminum, White Cold Frame Trim Ring
5	Aluminum, White Cold Frame Trim Ring
6	Aluminum, White Cold Frame Trim Ring
7	Aluminum, White Cold Frame Trim Ring
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25	Aluminum, White Cold Frame Trim Ring
26	Aluminum, White Cold Frame Trim Ring
27	Aluminum, White Cold Frame Trim Ring
28	Aluminum, White Cold Frame Trim Ring
29	Aluminum, White Cold Frame Trim Ring
30	Aluminum, White Cold Frame Trim Ring

**TRIM TYPE**

**ORDERING INFORMATION**  
 SAMPLE NUMBER: H20IGCAT-T19  
 Order housing, trim and accessories separately.

Trim	Trim	Trim
1	Aluminum, White Cold Frame Trim Ring	1
2	Aluminum, White Cold Frame Trim Ring	2
3	Aluminum, White Cold Frame Trim Ring	3
4	Aluminum, White Cold Frame Trim Ring	4
5	Aluminum, White Cold Frame Trim Ring	5
6	Aluminum, White Cold Frame Trim Ring	6
7	Aluminum, White Cold Frame Trim Ring	7
8	Aluminum, White Cold Frame Trim Ring	8
9	Aluminum, White Cold Frame Trim Ring	9
10	Aluminum, White Cold Frame Trim Ring	10
11	Aluminum, White Cold Frame Trim Ring	11
12	Aluminum, White Cold Frame Trim Ring	12
13	Aluminum, White Cold Frame Trim Ring	13
14	Aluminum, White Cold Frame Trim Ring	14
15	Aluminum, White Cold Frame Trim Ring	15
16	Aluminum, White Cold Frame Trim Ring	16
17	Aluminum, White Cold Frame Trim Ring	17
18	Aluminum, White Cold Frame Trim Ring	18
19	Aluminum, White Cold Frame Trim Ring	19
20	Aluminum, White Cold Frame Trim Ring	20
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22	Aluminum, White Cold Frame Trim Ring	22
23	Aluminum, White Cold Frame Trim Ring	23
24	Aluminum, White Cold Frame Trim Ring	24
25	Aluminum, White Cold Frame Trim Ring	25
26	Aluminum, White Cold Frame Trim Ring	26
27	Aluminum, White Cold Frame Trim Ring	27
28	Aluminum, White Cold Frame Trim Ring	28
29	Aluminum, White Cold Frame Trim Ring	29
30	Aluminum, White Cold Frame Trim Ring	30

**2 YEAR LIMITED WARRANTY**  
 Energy Star Labeled Fluorescent Lighting... (text continues with warranty details)

**HALO®**

**H20IGCAT**  
 6" Insulated Ceiling  
 Compact Fluorescent  
 AIR-TITE™ Enclosed  
 Housing  
 13 Watt Compact  
 Fluorescent

**6" TRIMS FOR USE IN INSULATED CEILINGS FOR DIRECT CONTACT WITH INSULATION**

**TRIM TYPES:**

- 1 - Aluminum, White Cold Frame Trim Ring
- 2 - Aluminum, White Cold Frame Trim Ring
- 3 - Aluminum, White Cold Frame Trim Ring
- 4 - Aluminum, White Cold Frame Trim Ring
- 5 - Aluminum, White Cold Frame Trim Ring
- 6 - Aluminum, White Cold Frame Trim Ring
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- 26 - Aluminum, White Cold Frame Trim Ring
- 27 - Aluminum, White Cold Frame Trim Ring
- 28 - Aluminum, White Cold Frame Trim Ring
- 29 - Aluminum, White Cold Frame Trim Ring
- 30 - Aluminum, White Cold Frame Trim Ring

**ACCESSORIES:**

- 1 - Aluminum, White Cold Frame Trim Ring
- 2 - Aluminum, White Cold Frame Trim Ring
- 3 - Aluminum, White Cold Frame Trim Ring
- 4 - Aluminum, White Cold Frame Trim Ring
- 5 - Aluminum, White Cold Frame Trim Ring
- 6 - Aluminum, White Cold Frame Trim Ring
- 7 - Aluminum, White Cold Frame Trim Ring
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- 30 - Aluminum, White Cold Frame Trim Ring

**ENERGY STAR**


**TIA 2005**

Customer Care Center: 1121 Highway 76, South Plainfield, NJ, 07080-5000  
 Fax: 908-282-2828  
 Cooper Lighting: 5022 MacLure Rd., Meriden, CT, 06450-1500  
 Fax: 203-238-8800  
 Web: www.cooperlighting.com

# Lindsay Rekuc Virginia Commonwealth University Life Sciences Building Richmond, VA



F1



**luna' 1x4**

**FEATURES**  
2' x 4' recessed fixture with perforated center baffle.  
Reflector and end caps form seamless one-piece housing.  
High reflectance, low gloss Matte White finish conceals glare and provides high efficiency.  
Perforated shield hinges open for quick and easy reamping.

**Optional metal blade lever offers a distinct look and highlights interior architecture.**

All luminaires combinations may be continuously re-mounted.

Luna' provides high output uniform distribution ideal for general illumination.

**existing options & details**

- perforated
- metal blade lever

**PERFORMANCE**

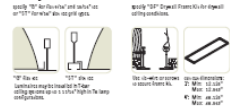
3-Lamp T8  
90% efficiency  
3 in x 4 ft  
See Photometric section for additional performance data.

**Issue type:**  
project name:

**DETAILS**

**mounting**  
equally "T8" for surface and ceiling use or "T5" for bare air-circulation applications.

**drywall frame kit**  
equally "T8" Crystal Frame Kit for repeat applications.



"T8" fits in  
"T5" fits in  
Luminaires require standard T8/T5 ceiling brackets with a 1/8" gap between the lamp and the bracket.

Use all with drywall kit or custom frame kit.

30" dia. recessed  
2" Min. recess  
Min. 12" depth  
4" Min. recess  
Min. 24" depth

**SPECIFICATIONS**

**construction**  
One-piece 2x4 with reflector and housing.  
2x4s and end caps have bonded housing.  
Lenses are attached to aluminum 2x4s with perforated lens and attach with screw-in lens.  
Lenses are secured by four spring pins allowing lenses to hinge down for reamping.  
Optional metal blade lever - 4" x 4" (4" height) frame kit of 2x4s with with acrylic lens frame.  
Top access 2x4s with metal components.

height: 3x6 in

**optic**  
Crystal 2x4s with reflective interior & Matte Satin White powder coat.

**optical**  
Electronic ballasts are internally protected and have a Class "F" rating.  
Optional DALI dimmer dimming ballast and dimmer.  
Contact factory for dimming specifications and availability.  
UL and cUL listed.

**emergency**  
Emergency battery packs provide no-recess of illumination.  
Initial lamp output for lamp types with an EOL timer.

3x6 Lamp: 100 to 100 lumens  
3x6 Lamp: 100 to 100 lumens  
T8 3x6 Lamp: 100 to 100 lumens

Battery pack requires unswitched hot from panel branch circuit at A/C ballast.

**ballast**  
Ballast powder coat applied over a single pin-retention.  
Standard ballast housing finished in Matte Satin White.

**ORDERING**

**terminator series**  
Luna FLU

**nominal size**  
L x W 24

**distribution**  
0-Dimensional 0

**lamp quantity**  
No Lamps 2  
Three Lamps 3

**lamp type**  
T8  
T5  
T5d  
T8d

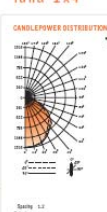
**ballast**  
Electronic Ballast Start-up Type T8D 0  
Type T5D 0  
Electronic Program Start-up Type T8D 0  
Type T5D 0  
Emergency On/Off Ballast 0  
Contact factory for dimming specifications

**finish**  
Matte White 100  
Matte White 200  
Matte White 300  
Matte White 400  
Matte White 500  
Matte White 600  
Matte White 700  
Matte White 800  
Matte White 900  
Matte White 1000  
Matte White 1100  
Matte White 1200  
Matte White 1300  
Matte White 1400  
Matte White 1500  
Matte White 1600  
Matte White 1700  
Matte White 1800  
Matte White 1900  
Matte White 2000

**factory options**  
DALI Dimmer AB  
DALI Dimmer CB  
DALI Dimmer CC  
DALI Dimmer CD  
DALI Dimmer CE  
DALI Dimmer CF  
DALI Dimmer CG  
DALI Dimmer CH  
DALI Dimmer CI  
DALI Dimmer CJ  
DALI Dimmer CK  
DALI Dimmer CL  
DALI Dimmer CM  
DALI Dimmer CN  
DALI Dimmer CO  
DALI Dimmer CP  
DALI Dimmer CQ  
DALI Dimmer CR  
DALI Dimmer CS  
DALI Dimmer CT  
DALI Dimmer CU  
DALI Dimmer CV  
DALI Dimmer CW  
DALI Dimmer CX  
DALI Dimmer CY  
DALI Dimmer CZ

**ballast**  
Matte Satin White WH

**luna' 1x4**



**CANDLEPOWER DISTRIBUTION**

**LUMEN SUMMARY**

Beam Angle	Beam Diameter (ft)	Beam Area (sq ft)	Beam Volume (cu ft)	Beam Length (ft)	Beam Volume (cu ft)	Beam Volume (cu ft)	Beam Volume (cu ft)	Beam Volume (cu ft)	Beam Volume (cu ft)
0	0	0	0	0	0	0	0	0	0
5	1.75	3.06	1.75	1.75	3.06	1.75	1.75	1.75	1.75
10	3.5	12.25	7.0	3.5	12.25	7.0	7.0	7.0	7.0
15	5.25	27.56	15.75	5.25	27.56	15.75	15.75	15.75	15.75
20	7.0	49.0	21.0	7.0	49.0	21.0	21.0	21.0	21.0
25	8.75	76.56	26.25	8.75	76.56	26.25	26.25	26.25	26.25
30	10.5	110.25	31.5	10.5	110.25	31.5	31.5	31.5	31.5
35	12.25	151.56	36.75	12.25	151.56	36.75	36.75	36.75	36.75
40	14.0	196.0	42.0	14.0	196.0	42.0	42.0	42.0	42.0
45	15.75	245.56	47.25	15.75	245.56	47.25	47.25	47.25	47.25
50	17.5	300.0	52.5	17.5	300.0	52.5	52.5	52.5	52.5
55	19.25	360.56	57.75	19.25	360.56	57.75	57.75	57.75	57.75
60	21.0	420.0	63.0	21.0	420.0	63.0	63.0	63.0	63.0
65	22.75	480.56	68.25	22.75	480.56	68.25	68.25	68.25	68.25
70	24.5	540.0	73.5	24.5	540.0	73.5	73.5	73.5	73.5
75	26.25	600.56	78.75	26.25	600.56	78.75	78.75	78.75	78.75
80	28.0	660.0	84.0	28.0	660.0	84.0	84.0	84.0	84.0
85	29.75	720.56	89.25	29.75	720.56	89.25	89.25	89.25	89.25
90	31.5	780.0	94.5	31.5	780.0	94.5	94.5	94.5	94.5
95	33.25	840.56	99.75	33.25	840.56	99.75	99.75	99.75	99.75
100	35.0	900.0	105.0	35.0	900.0	105.0	105.0	105.0	105.0

**COEFFICIENTS OF UTILIZATION**

Room Index	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
0.5	0.92	0.90	0.87	0.84	0.81	0.78	0.75	0.72	0.69	0.66
1.0	0.89	0.87	0.84	0.81	0.78	0.75	0.72	0.69	0.66	0.63
1.5	0.86	0.84	0.81	0.78	0.75	0.72	0.69	0.66	0.63	0.60
2.0	0.83	0.81	0.78	0.75	0.72	0.69	0.66	0.63	0.60	0.57
2.5	0.80	0.78	0.75	0.72	0.69	0.66	0.63	0.60	0.57	0.54
3.0	0.77	0.75	0.72	0.69	0.66	0.63	0.60	0.57	0.54	0.51
3.5	0.74	0.72	0.69	0.66	0.63	0.60	0.57	0.54	0.51	0.48
4.0	0.71	0.69	0.66	0.63	0.60	0.57	0.54	0.51	0.48	0.45
4.5	0.68	0.66	0.63	0.60	0.57	0.54	0.51	0.48	0.45	0.42
5.0	0.65	0.63	0.60	0.57	0.54	0.51	0.48	0.45	0.42	0.39

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# Lindsay Rekuc Virginia Commonwealth University Life Sciences Building Richmond, VA



S1



## Recessed Step Light 37CFQ13EB

One 13W Quad Tube Compact  
Fluorescent Lamp  
Non-IC Rated  
120V, 208V, 240V, or 277V

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_  
DRAWING NO.: \_\_\_\_\_  
PROJECT: \_\_\_\_\_



## PHOTOMETRIC DATA

## LiteStep Step Light - 37CFQ13EB

BALLAST DATA	13W		LAMP DATA
	120V	277V	
Total System Watts	16W	17W	Rated Watts
Input Current (Amps)	0.14	0.09	860
Input Frequency in Hz	50/60	50/60	64 (Rated Life Hours)
Power Factor	>97%	>97%	10,000
Ballast Factor	>98%	>98%	82
Total Harmonic Distortion	<10%	<10%	Min. Starting Temp.
Minimum Starting Temp.	-18°C (0°F)	-18°C (0°F)	0°F
			Base (4 Pin)
			Q24q-1

### APPLICATIONS:

The 37CFQ13EB recessed fluorescent step light is a heavy-duty, energy efficient step light for a wide variety of interior and exterior applications. Fully gasketed, the 37CFQ13EB lensless is approved for use on concrete pour applications.

### HOUSING:

Diecast aluminum housing with white baked enamel finish.

### FACEPLATE:

Diecast aluminum faceplates are available with a choice of lowered with a prismatic glass lens (CF) or open with a prismatic glass lens (OF). Available in black (BL), bronze (BZ), or brushed or exclusive Zr (Z, metallic silver) finish.

### BALLAST:

One (1) 16kVd (120V/277V) compact fluorescent class 9<sup>th</sup> electronic ballast suitable for operating 13W quad tube lamps. Ballast is accessible through the housing for servicing. See reverse side for additional ballast information.

### LAMP:

One (1) 13W (Q24q-1) base quad tube compact fluorescent lamp. Lamp limited by others.

### SOCKET:

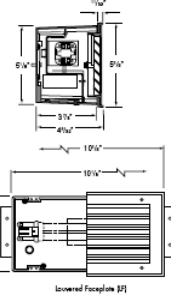
One (1) injection molded socket (Q24q-1) base suitable for 13W quad tube lamps.

### INSTALLATION:

Custom and universal mounting brackets are included.

### LABELS/WEIGHT:

UL, CSA approved for wet locations and concrete pour. Consult factory for salt spray applications. Approved for exterior/interior installation. Non-IC rated. Consult factory for N.Y. City approval.



Open Faceplate (CF)

Lowered Faceplate (CF)

### CATALOG NUMBER EXAMPLE: 37CFQ13EB-02-TM

HOUSING	HOUSING OPTION	FACEPLATE	FINISH	ACCESSORIES
<input type="checkbox"/> 37CFQ13EB 13W quad tube CFL Non-IC recessed step light	<input type="checkbox"/> TW Through wiring capability	<input type="checkbox"/> CF Diecast aluminum lowered faceplate with prismatic lens	<input type="checkbox"/> BL Black	<input type="checkbox"/> TPS Temper proof screws
		<input type="checkbox"/> OF Diecast aluminum open faceplate with prismatic lens	<input type="checkbox"/> BZ Bronze	
			<input type="checkbox"/> Z Zr, metallic silver	

NOTES  
Refer to www.prescolite.com for additional photometric and  
IES files.



In a continuing effort to offer the best product possible we reserve the right to change, without notice, specifications or equipment that in our opinion will not affect the function of the product.  
Web: www.prescolite.com • Tech Support: (888) 777-4832

LS-002



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131 Corporate Drive • Spartanburg, SC 29303 U.S.A. • Phone: 864.594.6500

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# Lindsay Rekuc Virginia Commonwealth University Life Sciences Building Richmond, VA



## WW2

### focus 4



**DETAILS**

Restore type:  
project name:

typical rna layout

**sliding sleeves**

functional dimensions up to 4' are listed up to 30' out of range please contact us.

12" and 12" angle brackets must be cut to length to fit.

Luminaires are available in 10' or 20' lengths.

Dark surface color with anodized aluminum. Color can be custom match with anodized aluminum.

**ORDERING**

**luminaire series**  
Focus 4

**shielding**  
No shielding, Conspicuous

**lanping**  
12" Lamp T4  
12" Lamp T4  
12" Lamp T4  
12" Lamp T4  
12" Lamp T4

**dract**  
Single Circuit  
Dual Circuit  
Two lamps (typ)

**voltage**  
120 vdc  
277 vdc  
347 vdc  
480 vdc

**ballast**  
Electronic Ballast Start-Stop-T4LED  
Electronic Program Start-Stop-T4LED  
Electronic Dimming Ballast  
Consult factory for dimming ballast(s)

**mounting**  
Recessed  
Surface  
Air Return  
Emergency Circuit  
Emergency Battery Pack  
UL924/UL924F  
Incorporate Mount  
Incorporate Mount  
Incorporate Mount  
Sliding Mount

**finch**  
High Performance White

**luminaire length**  
6' 10' 12' 15' 20'  
Rounded ends  
Flat ends  
Flat ends with No. 10 end cap  
Flat ends with No. 10 end cap (with 2' extension)

**control options**  
4-digist Dial Dimmer  
4-digist Dial Dimmer  
4-digist Dial Dimmer  
4-digist Dial Dimmer

Details: 4" 6" 12" 15" 20"

**FEATURES**

- High performance perimeter open wall washing system.
- Includes an extruded aluminum splay which conceals view to lamps.
- Luminaire alignment is maintained with continuous angle and splice brackets.
- Reflector design eliminates direct and reflected lamp images.
- Especially effective when mounted against reflective wall surfaces such as polished stone or mirrors.

**DIMENSIONAL DATA**

lanping options:  
T4 LAMPS  
T4\*200 LAMPS

**PERFORMANCE**

1-Lamp T4  
4-in. Recessing  
to used @ 90°

See Photometric section for additional performance data.

**SPECIFICATIONS**

**construction**

- 20 lbs. steel housing.
- 20 lbs. steel reflector.
- 20 lbs. 1/4" x 1/8" extruded aluminum splay made with casting.
- 20 lbs. stainless steel fastener.
- 20 lbs. galvanized steel splice brackets are provided to ensure horizontal alignment of all.
- 20 lbs. steel continuous wall angle are provided to ensure horizontal alignment of all.
- Luminaires are available in 10' or 20' lengths.

**weight**

- 4" unit weight: 24 lbs.
- 6" unit weight: 40 lbs.

**optic**

0.5C cylindrical beam, anodized, 427° aluminum beam reflector with specular 104° aluminum beam reflector.

**electrical**

Electronic ballasts are thermally protected and have a Class 'F' rating. Constant Ballast and other dimming ballasts available. Consult factory for dimming specifications and availability. UL and cUL listed.

**emergency**

Emergency battery packs provide 90 minutes of one lamp illumination. Initial lamp output for lamp packs are as follows:

- T4 Lamp: 10 to 175 lumens
- T4 Lamp: 10 to 175 lumens
- T4\*200 Lamp: 10 to 175 lumens

Battery pack requires unobstructed beam lanes branch circuit as AC ballast.

**finch**

Polycarbonate panel coated with a 3-4 layer poly-ethylene. Exceptional weathering resistance in high-temperature white.

**focus 4**

TRICAL PIONEER  
Model #: FM-174-T4-01  
Country: FM-174-T4-01-00-00-00  
Shipping: 10 lbs  
Net #: 10 lbs

**CANDLEPOWER DISTRIBUTION**

Beam Diameter	Beam Angle	Beam Diameter	Beam Angle	Lumens
10'	30°	10'	30°	100
12'	30°	12'	30°	144
15'	30°	15'	30°	225
20'	30°	20'	30°	400
25'	30°	25'	30°	625
30'	30°	30'	30°	900
35'	30°	35'	30°	1225
40'	30°	40'	30°	1600
45'	30°	45'	30°	2025
50'	30°	50'	30°	2500
60'	30°	60'	30°	3600
70'	30°	70'	30°	4900
80'	30°	80'	30°	6400
90'	30°	90'	30°	8100
100'	30°	100'	30°	10000

**LUMEN SUMMARY**

Beam Diameter	Beam Angle	Lumens	Beam Diameter	Beam Angle	Lumens
10'	30°	100	10'	30°	100
12'	30°	144	12'	30°	144
15'	30°	225	15'	30°	225
20'	30°	400	20'	30°	400
25'	30°	625	25'	30°	625
30'	30°	900	30'	30°	900
35'	30°	1225	35'	30°	1225
40'	30°	1600	40'	30°	1600
45'	30°	2025	45'	30°	2025
50'	30°	2500	50'	30°	2500
60'	30°	3600	60'	30°	3600
70'	30°	4900	70'	30°	4900
80'	30°	6400	80'	30°	6400
90'	30°	8100	90'	30°	8100
100'	30°	10000	100'	30°	10000

For more information please contact TRICAL PIONEER.

300

301

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## Lamps

D1



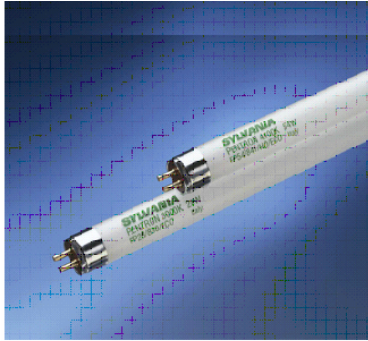
**Product Number:** 20688  
**Order Abbreviation:** CF18DD/E/827/ECO  
**General Description:** DUAL 18W double compact fluorescent lamp with 4-pin base, integral EOL, 2700K color temperature, 82 CRI, for use with electronic and dimming ballasts, ECOLOGIC

Product Information	
Abbrev. With Packaging Info.	CF18DDE827ECO 50/CS 1/SKU
Average Rated Life (hr)	12000
Base	G24Q-2
Bulb	D (T4)
Color Rendering Index (CRI)	82
Color Temperature/OCT (K)	2700
Family Brand Name	DuLux® D/E
Industry Standards	IEC 60901- 2518
Initial Lumens at 25C	1150
Mean Lumens at 25C	989
Maximum Overall Length - MCL (in)	5.8
Maximum Overall Length - MCL (mm)	147
NEMA Generic Designation (current)	CFQ18W/G24Q/827
Nominal Wattage (W)	18.00

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F1



**Product Number:** 20933  
**Product Number:** 20928  
**Order Abbreviation:** FP24/830/HQ/ECCO  
**General Description:** 24W, T5 PENTRON high output (HO) fluorescent lamp, 3000K color temperature, rare earth phosphor, 82 CRI, ECOLOGIC

Product Information	
Abbrev. With Packaging Info.	FP24830HCECO 40/CS 1/SKU
Actual Length (in)	22.2
Actual Length (mm)	563.2
Average Rated Life (hr)	20000
Base	Miniature Bipin
Bulb	T5
Color Rendering Index (CRI)	82
Color Temperature/CCT (K)	3000
Diameter (in)	0.67
Diameter (mm)	17.0
Family Brand Name	PENTRON® ECO®
Initial Lumens at 25C	1750
Initial Lumens at 35C	2000
Mean Lumens at 25C	1627
Mean Lumens at 35C	1860
Nominal Length (in)	24

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S1



**Product Number:** 20667  
**Order Abbreviation:** CF13DD/E/841/ECC  
**General Description:** DULLX 13W double compact fluorescent lamp with 4-pin base, integral EOL, 4100K color temperature, 82 CRI for use with electronic and dimming ballasts, ECOLOGIC

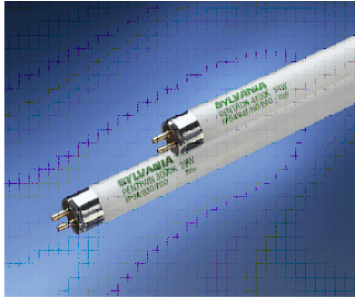
Product Information	
Abbrev. With Packaging Info.	CF13DDE841ECC 5Q/CS 1/SKU
Average Rated Life (hr)	12000
Base	G24Q-1
Bulb	D (T4)
Color Rendering Index (CRI)	82
Color Temperature/OCT(K)	4100
Family Brand Name	Dulux® D/E
Industry Standards	IEC 60901- 2513
Initial Lumens at 25C	900
Mean Lumens at 25C	774
Maximum Overall Length - MOL (in)	5.2
Maximum Overall Length - MOL (mm)	131
NEMA Generic Designation (current)	CFQ13W/G24Q/841
Nominal Wattage (W)	13.00



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WW1



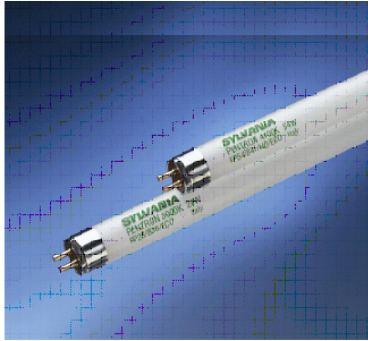
**Product Number:** 20933  
**Order Abbreviation:** FP39/835/HQ/ECO  
**General Description:** 39W, T5 PENTRON high output (HO) fluorescent lamp, 3500K color temperature, rare earth phosphor, 82 CRI, ECOLOGIC

Product Information	
Abbrev. With Packaging Info.	FP39835H0ECO 40/CS 1/SKU
Actual Length (in)	34
Actual Length (mm)	863.2
Average Rated Life (hr)	20000
Base	Miniature Bipin
Bulb	T5
Color Rendering Index (CRI)	82
Color Temperature/CCT (K)	3500
Diameter (in)	0.67
Diameter (mm)	17.0
Family Brand Name	PENTRON® ECO®
Initial Lumens at 25C	3100
Initial Lumens at 35C	3500
Mean Lumens at 25C	2883
Mean Lumens at 35C	3255
Nominal Length (in)	36
Nominal Wattage (W)	39.00

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WW2



**Product Number:** 20933  
**Product Number:** 20928  
**Order Abbreviation:** FP24/830/HQ/ECCO  
**General Description:** 24W, T5 PENTRON high output (HO) fluorescent lamp, 3000K color temperature, rare earth phosphor, 82 CRI, ECOLOGIC

Product Information	
Abbrev. With Packaging Info.	FP24830HCECO 40/CS 1/SKU
Actual Length (in)	22.2
Actual Length (mm)	563.2
Average Rated Life (hr)	20000
Base	Miniature Bipin
Bulb	T5
Color Rendering Index (CRI)	82
Color Temperature/CCT (K)	3000
Diameter (in)	0.67
Diameter (mm)	17.0
Family Brand Name	PENTRON® ECO®
Initial Lumens at 25C	1750
Initial Lumens at 35C	2000
Mean Lumens at 25C	1627
Mean Lumens at 35C	1860
Nominal Length (in)	24

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## Ballasts

F1



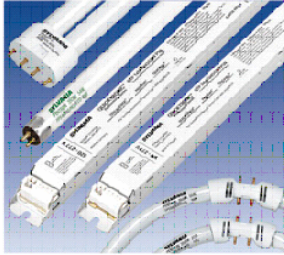
**Product Number:** 49100  
**Order Abbreviation:** QTP1X3924T5HOUNMPSN  
**General Description:** 1- Lamp universal voltage electronic ballast for 39W or 24W T5 HO lamp. Packaged 10 pieces per case with wires

Product Information	
Abbrev. With Packaging Info.	QTP1X3924T5HOUNMPSN
Ballast Factor	1.00
Ballast Height H (in)	0.8700
Ballast Length L (in)	14.1700
Ballast Width W (in)	1.1800
Input Wattage (W)	42.00
Input Current (Amps)	0.36 / 0.15
Nominal Voltage (V)	UNIVERSAL 120-277
Number of Lamps	1
Power Factor	> 0.98
Primary Lamp Type	FP39T5HO
Sound Rating	A
Starting Method	PROSTART
Starting Temperature - Fahrenheit	0
Starting Temperature - Celsius	-18
Total Harmonic Distortion (THD)	< 10%
Wiring Method	WIRETRAP CONNECTORS

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## WW1



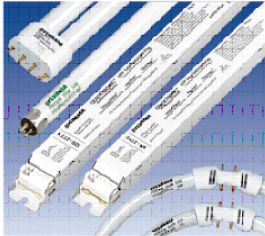
**Product Number:** 49101  
**Order Abbreviation:** QTPIX3924T5HOUNVNL  
**General Description:** 1-lamp Universal Voltage electronic ballast for 39 or 24W T5HO lamp, packaged 20 pieces per case, without leads

Product Information	
Abbrev. With Packaging Info.	QTPIX3924T5HOUNVPSNHL
Ballast Factor	1.00
Ballast Height H (in)	0.8700
Ballast Length L (in)	14.1700
Ballast Width W (in)	1.1800
Family Brand Name	QUICKTRONIC Professional
Input Wattage (W)	42.00
Input Current (Amps)	0.36 / 0.15
Nominal Voltage (V)	UNIVERSAL 120-277
Number of Lamps	1
Open Circuit Voltage (V)	< 600
Power Factor	> 0.98
Primary Lamp Type	FP39T5HO
Sound Rating	A
Starting Method	PROSTART
Starting Temperature - Fahrenheit	0
Starting Temperature - Celsius	-18
Total Harmonic Distortion (THD)	< 10%
Wiring Method	WIRETRAP CONNECTORS

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## WW2



**Product Number:** 49100  
**Order Abbreviation:** QTP1X3924T5HOUN/PSN  
**General Description:** 1- Lamp universal voltage electronic ballast for 39W or 24W T5 HO lamp. Packaged 10 pieces per case with wires

Product Information	
Abbrev. With Packaging Info.	QTP1X3924T5HOUN/PSN
Ballast Factor	1.00
Ballast Height H (in)	0.8700
Ballast Length L (in)	14.1700
Ballast Width W (in)	1.1800
Input Wattage (W)	42.00
Input Current (Amps)	0.36 / 0.15
Nominal Voltage (V)	UNIVERSAL 120-277
Number of Lamps	1
Power Factor	>0.98
Primary Lamp Type	FP39T5HO
Sound Rating	A
Starting Method	PR-OSTART
Starting Temperature - Fahrenheit	0
Starting Temperature - Celsius	-18
Total Harmonic Distortion (THD)	<10%
Wiring Method	WIRETRAP CONNECTORS