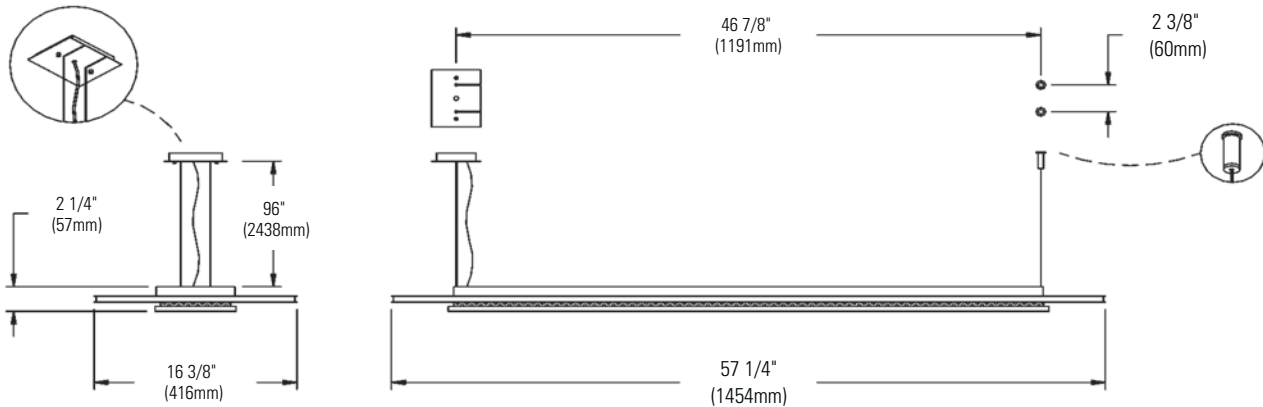
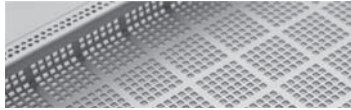


APPENDIX A

**Ordering Guide (complete unit only)**

Cat. No.	Lamp (linear)	Volt	Finish
SL103APIU	2-28W T5	120/277V	Textured Light Grey & Clear Acrylic with White Lacquer
SL103API3	2-28W T5	347V	Textured Light Grey & Clear Acrylic with White Lacquer
SL103BPIU	2-54W T5 High Output	120/277V	Textured Light Grey & Clear Acrylic with White Lacquer
SL103BPI3	2-54W T5 High Output	347V	Textured Light Grey & Clear Acrylic with White Lacquer

Features

- Form:** UltraFlat 1 features low profile 5/8" (16mm) and elegant detailing sought in architectural flat pendants. The perforated area presents a uniquely shaped square-in-square pattern designed to emulate the rectangular straight lines of the luminaire form. Mitred corner aluminum frame.
- Optical System:** Light is projected through the edge of the specially treated acrylic surface to give a uniform soft white glow. Direct light passes through a unique square in square pattern and indirect light is controlled by a wide spacing optic.
- Acrylic Element:** A cast acrylic element with polished edges and a specially treated surface to create a soft even glow.
- Perforated Element:** A square in square pattern creates a small downlight component and a soft balanced glow.
- Slim Profile:** Slim T5 luminaire design profile with matching contoured forms.
- Light Distribution:** Direct / Indirect light distribution.
- Central Ballast Channel:** Balanced design central ballast channel accepts all T5 ballasts and emergency options.
- Suspension:** Two 3/64" (1.2mm) steel cables with glider adjusting hardware for leveling.

Mounting

Dual Mount Canopy: Dual cable Spectral canopy suitable for mounting on standard octagonal box for plaster ceiling, exposed ceiling or T-Bar ceiling mounts.

Twin Adjustable Cable: Twin steel cables adjust for height leveling.

Mounting Height: Luminaire comes standard with 8' (2.4 meters) of mounting steel cables and electrical wires.

Luminaire Weight: 24 lbs.

Electrical

Ballast: Electronic Program Rapid Start slim profile 2-lamp T5 linear ballast. Universal voltage "U" ballasts automatically detect 120 volts or 277 volts operation.

Lampholder: G5 AirPass Rotor base, miniature Bi-pin.

Cord: Lightolier cords 300 volts for 120/277 volts operation or 600 volts for 120/277/347 volts operation. 18AWG AWM leads, 10 Amps maximum. White color.

Wiring: Luminaires come prewired. No need to open luminaire for wiring.

Options and Accessories

Dimming: Full range of analog or digital T5 dimming ballast option. Use Lightolier fluorescent ballast designations.*

Emergency: Bodine emergency battery pack. The emergency ballast senses the power failure and immediately switches to the emergency mode illuminate one lamp at a reduced lumen output for a minimum 90 min. The battery fully recharges within 24 hours. Add code (-EM).

Fuse: 2 Amps internal fusing.*

Add code (-F1) for 120 volts, (-F2) for 277 volts or (-F3) for 347 volts.

DALI Interface: Digital Addressable Lighting Interface available upon request for individual luminaire addressable control.*

Color End Luminous Element: Available in blue and green.

Radio Interference Filter: Inductive capacitor circuit designed interference from line radiation or feedback. Add code (-RFI).

Finish

All painted parts are with powder coat paint process.

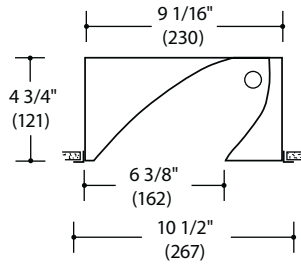
Labels

UL "c/us" Listed. Suitable for damp locations.

* Consult your Lightolier representative for more information.

Job Information	Type:	F1
Job Name: BSC New Science Building		
Cat. No.: SL103BPIU		
Lamp(s): 2 54WT5HO		
Notes:		

Lightolier a Genlyte company www.lightolier.com
 631 Airport Road, Fall River, MA 02720 • (508) 679-8131 • Fax (508) 674-4710
 We reserve the right to change details of design, materials and finish.
 © 2005 Genlyte Group LLC • 80605



U.S. Patent No. D351,481



Recessed Wall/Wash™ G-D-1000 Asymmetric Recessed Direct

Product Description

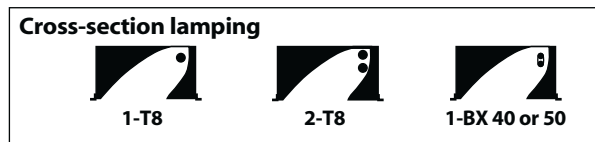
Recessed Direct fixture used for wall/washing applications. UL Listed. This fixture is Cradle to Cradle Silver Certified™ by MBDC.

Ordering Guide

Product, lamping, & length						Options			
G -	D -	10	1	4	T8 -	CWM -	ELB10		277
Mounting	Distribution	Series	Lamp Count	Nominal Length(ft)	Lamp Type	Finish	Ballast	Other Options	Volts
G Recessed (exposed grid ceiling)*	D Direct	10	1, 2 → 1, 2 → 1 → 2 → see notes	2 → 4 → 2 → 4 →	T8 BX40 BX50	CWM (matte white) is standard	ELB10 is standard DA/MK7 DL/ECO DO/HEL see Ballast Options	F CCEA EF T2M T2S see Other Options	120 277

*A conversion kit is available for installation in drywall ceiling.

G-D-1014T8-CWM-ELB10-F-120 is a typical catalog number for a 1-lamp (1 lamp in cross-section), 4-foot long T8 fixture, matte white finish, electronic ballast, fuse, 120 volts.



Ballast Options

Specify in place of **ELB**, contact factory for availability/compatibility with lamping:
DA/MK7 Advance Mark VII dimming ballast
DL/ECO Lutron ECO-10 dimming ballast
DO/HEL Osram Sylvania dimming ballast

Other Options

F Fuse. Slow or fast blow, determined by Litecontrol.
CCEA City of Chicago Environmental Air Modification
EF Emergency Fluorescent Ballast. Battery-powered ballast from a UL Listed manufacturer will operate one T8 lamp for 1 1/2 hours.
T2M, T2S Master/slave ballasting. For energy considerations combine **T2M** (Master) with **T2S** (Slave).
T2M - Fixture contains one two-lamp ballast.
T2S - Fixture does not contain a ballast.

Questions to Ask

1. Ceiling type?
2. Other options? 3. 120 or 277 volt?



DESCRIPTION

A low brightness 7-3/8" aperture adjustable accent fixture for use with a 26W, 32W or 42W Triple Twin Tube lamp. Optics allow the lamp axis to pivot about the center of the aperture at the ceiling line, allowing maximum light output with no flashback. 20° truncated cone allows full range and flexibility of aiming.

Catalog #	CA7042ECP	Type	F3
Project	Buffalo State College New Science Building	Date	02/12/2010
Comments			
Prepared by	Marie Ostrowski		

SPECIFICATION FEATURES

A ... Reflector

Spun 0.040" aluminum. Available in a variety of Alzak® finishes. Upper reflector is specular clear for maximum light output. Torsion springs pull trim tight to ceiling. Reflector is keyed to prevent improper orientation relative to adjustment. Compact fluorescent lamps can be removed through the reflector.

B ... Trim Ring

Self flanged or molded white trim ring. Rimless or metal trim ring accessories available.

C ... Aiming Mechanism

Stable lamp aiming and locking mechanism allows smooth 365° rotation and 30° elevation adjustment.

Lamp aiming scale enables consistent setting across multiple fixtures.

D ... Housing

One piece die cast 1-1/2" deep collar. Housing is painted optical matte black to eliminate stray light.

E ... Universal Mounting

Accepts 1/2" EMT, C Channel, T bar fasteners and hanger bars. Provides 5" total adjustment.

F ... Conduit Fittings

Die-cast screw tight connectors.

G ... Junction Box

Listed for eight #12g (four in, four out) 90°C conductors feed through branch wiring.

Pry-outs for four 1/2" and two 3/4" conduits. Access to junction box through panel in side of housing.

H ... Socket

4-pin GX24q3/4 base with fatigue free stainless steel lamp spring ensures positive lamp retention.

Labels

cULus listed, C.S.A. certified, damp location, IBEW union made.

Options & Accessories

TRM= Metal Trim Rings to replace molded trim ring
 TRR= Rimless Trim Rings for minimal flange appearance in plaster ceilings



CA7042 7471/70

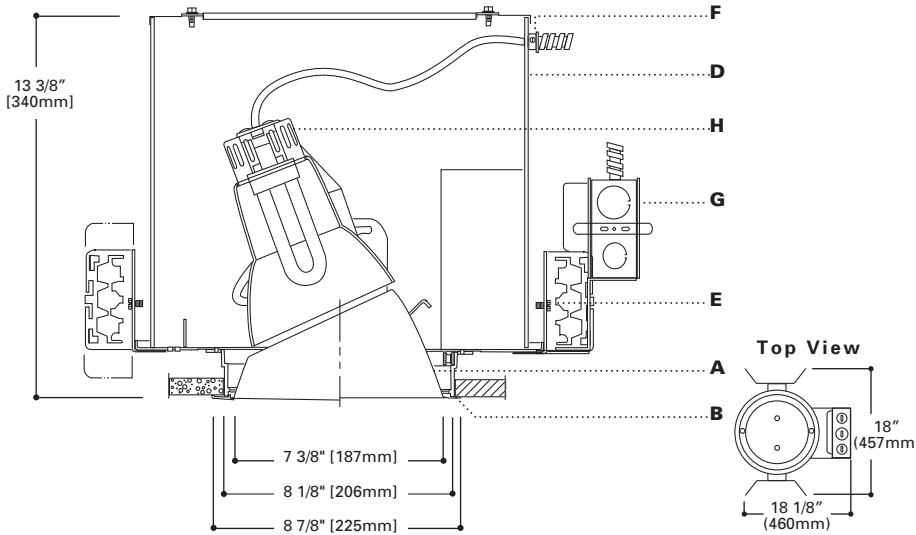
26W, 32W, 42W TTT
Compact Fluorescent
7-3/8" ADJUSTABLE

26W Triple 4-pin
 Ballast: Electronic
 120V Input Watts: 29, Line Amps: 0.25
 277 Input Watts: 26, Line Amps: 0.09
 Power Factor: >.99, THD: <10%
 Min. Starting Temp: -10°C (15°F)
 Sound Rating: A

32W Triple 4-pin
 Ballast: Electronic
 120V Input Watts: 34.5, Line Amps: 0.30
 277 Input Watts: 34.5, Line Amps: 0.13
 Power Factor: >.99, THD: <10%
 Min. Starting Temp: -10°C (15°F)
 Sound Rating: A

32W Triple 4-pin
 Ballast: Dimming
 120V Input Watts: 39, Line Amps: 0.33
 277 Input Watts: 37, Line Amps: 0.13
 Power Factor: >.95, THD: <20%
 Min. Starting Temp: 10°C (50°F)
 Sound Rating: A

NOTES:
 Accessories should be ordered separately. For additional options please consult your Cooper Lighting Representative. Alzak is a registered trademark of Aluminum Company of America. Hi-Lume is a registered trademark of Lutron Co. Inc.



ORDERING INFORMATION

CA7042ECP

CA70	42	E	CP
------	----	---	----

Housing

CA70: 7" Adjustable

Ballast

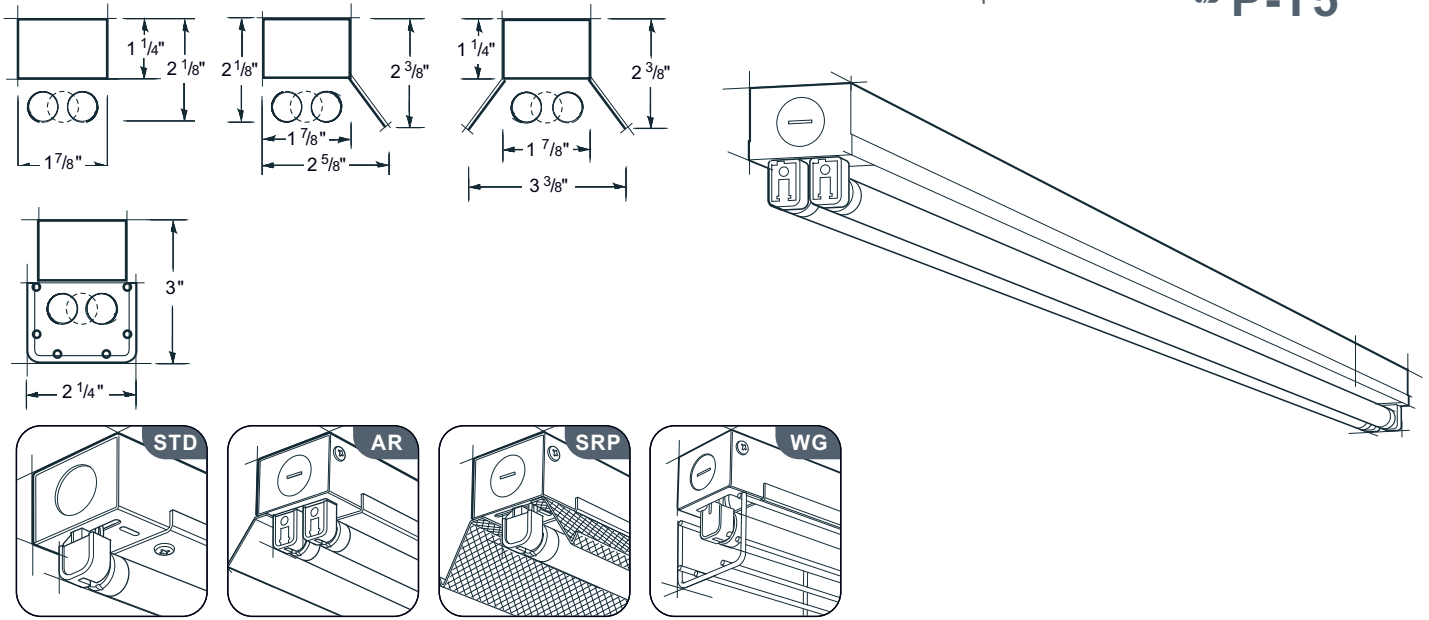
E: 120/277V 50/60 Hz Electronic

Options

CP: Chicago Plenum

Wattage

42: (1) 26W, 32W, or 42W TTT Lamp



ordering

series	body style	lamp rows	nominal length	color/finish	voltage	options
P-T5	STD	1T5	02	BWE	277	
	STD	1T5	02'	BWE* white enamel	120	AL
	AR	2T5	03'	YGW gloss white	277	EML*
	ARP	1T5HO	04'	Y__ premium color	347*	EMH*
	SR	2T5HO	06'	CC custom color	120-277	DM
	SRP		08'	GLV galvanized	*T5HO only	B__
	WG		R__*	*standard		FH

*row length

*consult factory for fixture lengths < 4'

Applications Concealed coves, small offices, retail, healthcare, schools, small profile spaces.

Features A compact T5/HO strip light with integral ballast in 1- or 2-lamp profiles. Options include perforated or solid, symmetric and asymmetric reflectors, and a rugged, zinc-coated wire guard (natural finish). Dimming ballasts and emergency batteries are also available.

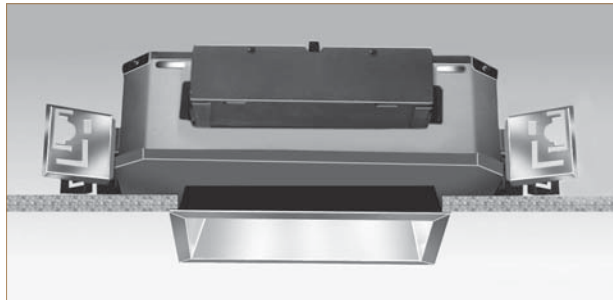
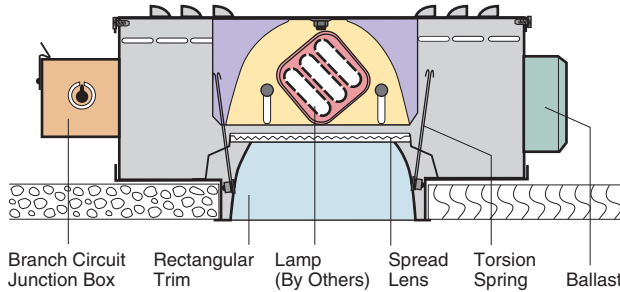
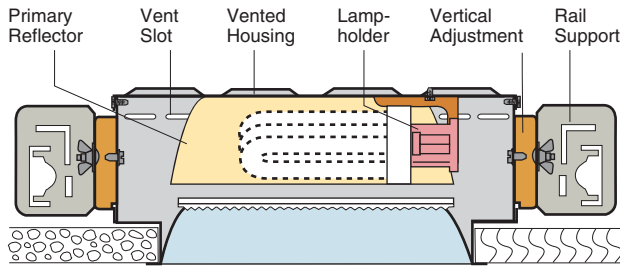
Construction The housing, available in 2-, 3-, 4-, 6- or 8-foot standard lengths, is made of die-formed, 20-gauge steel.

Finish The standard exterior body color is white enamel (BWE). Refer to ordering matrix for optional metal finishes or refer to **Defining Section** for optional paint colors.

Electrical T5/HO fixtures have programmed-start electronic ballasts with less than 10% THD. Fixtures are U.L. Damp labeled (non-emergency) and I.B.E.W. manufactured. Maximum ballast size available: 1 5/8" width x 1 1/4" height.

Mounting Fixture is to be surface-mounted.

Options **AL**: aluminum body; **EML**: emergency battery (T5/HO=600-700 lumens); **EMH**: emergency battery (T5/HO=1100-1400 lumens); **DM**: dimming (consult factory); **B_**: specific ballast, specify manufacturer and catalog number (consult factory); **FH**: fixture fusing (slow blow).



T4142

Rectangular Parabolic Splay Trim
One 26-32-42W Triple Tube Lamp
4 1/2" x 8 1/2" Apertures

Optics and Applications

The hydroformed specular primary reflector creates a slightly asymmetric pattern depending upon measurement parallel or perpendicular to the lamps. A microprism spread lens is supplied as standard for brightness control.

Design Features

A rigid housing protects all fixture parts. Air flow design assures a cool lamp chamber. The parabolic splay trim is held by a constant tension torsion spring assembly. Maximum ceiling thickness 7/8". Top or bottom service.

Finish

Housing and structural parts are painted matte black. The aperture trim is Softglow® clear. Special finishes, textures and colors are available. See Accessories.

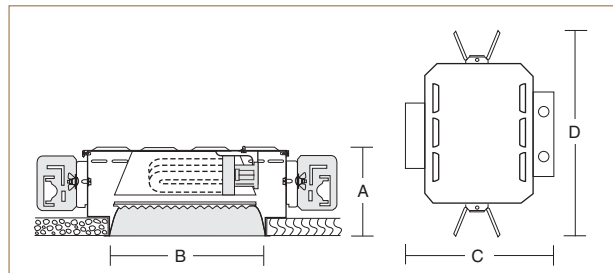
Trim Textures

A selection of textured trims creates an interesting architectural dimension on the ceiling plane. All textures are available in anodic special colors.

Ballast

Fully electronic, microprocessor controlled with variable starting current for inrush protection to assure rated lamp life. Input voltage ranges from 120V through 277V. Operates 26W, 32W or 42W triple tube lamps interchangeably. Power factor .98, starting temperature 0° F (-18° C), THD < 10%. Pre-heat start < 1.0 second. End of lamp life protection. Rated for > 50,000 starts.

Dimensions and Lamps



Number	A Depth	B Aperture	C Width	D Length	Lamp
T4142	5 1/2" / 140mm	4 1/2" x 8 1/2" / 114mm x 216mm	13 1/2" / 343mm	18 3/4" / 476mm	One 26-32-42W Triple Tube

General

Fixtures are pre-wired, UL and C-UL listed for eight wire 75°C branch circuit wiring. All products are union made IBEW. Luminaire Efficiency Rating (LER) data is in the photometric directory located in Section Z.

Accessories

- R2 26" support rails.
- R5 52" support rails.
- SB Softglow black trim.
- SG Softglow gold trim.
- SH Softglow mocha trim.
- SP Softglow graphite trim.
- ST Softglow titanium trim.
- SW Softglow wheat trim.
- SY Softglow pewter trim.
- SZ Softglow bronze trim.
- V347 347 volt ballast.
- TC Single cross blade for two cell trim.*
- FC Two cross blades for four cell trim.*
- DM Dimming ballast. Specify watts and volts.
- EM Emergency power includes integral charger light and test switch visible through aperture. Single lamp operation for 90 minutes. Specify volts.
- WRL Wattage restriction label, specify wattage.
- WT White trim flange.
- WHT White complete trim.
- BP Ball Peen texture.*
- CG Corrugated texture.
- DS Distressed texture.
- WV Woven texture.
- BR Bright trim finish.
- LL Linear lens.
- LP Large prism lens.
- FR Frosting on lens.
- F Ballast fuse.

Matching Rectangular Units

- PAR lamp directional downlight [Page T1](#)
- Tungsten halogen downlight [Page T2](#)
- Low voltage directional downlights [Page T3](#)
- Metal halide downlights [Pages T5, T6](#)
- PAR lamp wall washers [Page T21](#)
- Tungsten halogen wall washers [Page T22](#)
- Compact fluorescent wall washers [Page T23](#)
- Metal halide wall washers [Page T24](#)

** Click for link to pages in blue.

- EM Emergency power includes integral charger light and test switch visible through aperture. Single lamp operation for 90 minutes. Specify volts.
- WRL Wattage restriction label, specify wattage.
- *Baffles TC and FC not available with Ball Peen texture.

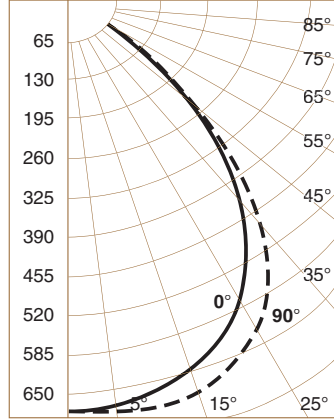
T4 T4142

Performance Datachart

Single Unit Initial Footcandles, 30" Work Plane								Ceiling to Floor				Multiple Units Initial Footcandles, 30" Work Plane			
T4142 One 32W Philips Triple Tube Read Top Data												Ceiling 80% Walls 50% Floor 20%			
T4142 One 42W Philips Triple Tube Read Bottom Data												Spacing is Maximum Over Work Plane			
Nadir		10°		20°		30°						Spacing			
FC	FC	Diam	FC	Diam	FC	Diam					RCR 1	RCR 3	RCR 8		
23	22	2'	18	4'	12	6'	8'				6'	30	25	16	
29	28	2'	23	4'	15	6'					6'	39	32	21	
16	15	2'	13	5'	8	8'	9'				8'	22	18	11	
21	20	2'	17	5'	11	8'					8'	28	23	15	
12	12	3'	10	5'	6	9'	10'				9'	16	13	9	
16	15	3'	13	5'	8	9'					9'	21	17	11	
9	9	3'	7	6'	5	10'	11'				10'	13	10	7	
12	12	3'	10	6'	6	10'					10'	17	14	9	
8	7	3'	6	7'	4	11'	12'				11'	10	8	5	
10	9	3'	8	7'	5	11'					11'	13	11	7	

For 26W use 32W data x .75

Candlepower Distribution

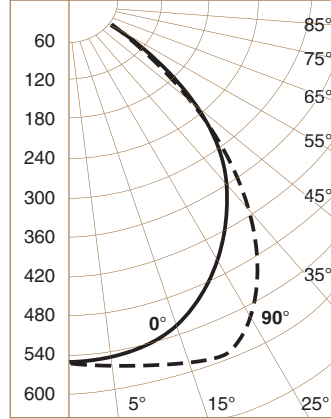


T4142 32W Triple Tube Philips
Eff. 47% S/M 0° 1.13 90° 1.19

Candelas

o	0°	90°
	2400*	2400*
0	686	686
5	686	686
10	673	689
15	656	687
20	621	671
25	574	629
30	515	559
35	435	475
40	345	368
45	243	234
50	156	131
55	93	68
60	54	31
65	30	13
70	16	10
75	11	6
80	0	0
85	0	0
90	0	0

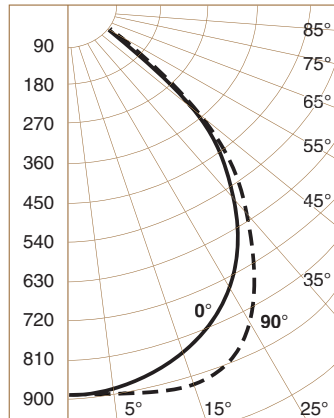
o Vertical Angles
* Initial Lamp Lumens



T4142 32W Triple Tube Osram
Eff. 41% S/M 0° 1.14 90° 1.27

o	0°	90°
	2400*	2400*
0	552	552
5	551	561
10	543	570
15	528	588
20	502	591
25	467	563
30	420	503
35	363	418
40	297	318
45	223	209
50	141	119
55	87	63
60	54	30
65	29	11
70	16	8
75	7	3
80	2	0
85	0	0
90	0	0

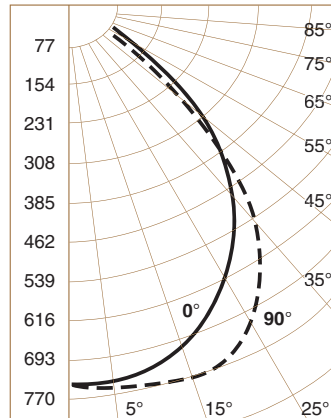
o Vertical Angles
* Initial Lamp Lumens



T4142 42W Triple Tube Philips
Eff. 47% S/M 0° 1.13 90° 1.20

o	0°	90°
	3200*	3200*
0	891	891
5	891	898
10	870	914
15	840	918
20	798	905
25	746	843
30	669	735
35	572	612
40	463	474
45	348	335
50	215	194
55	127	103
60	78	50
65	43	17
70	20	13
75	12	8
80	9	5
85	0	0
90	0	0

o Vertical Angles
* Initial Lamp Lumens



T4142 42W Triple Tube Osram
Eff. 39% S/M 0° 1.12 90° 1.24

o	0°	90°
	3200*	3200*
0	744	744
5	746	754
10	736	763
15	710	776
20	668	773
25	620	725
30	552	649
35	476	545
40	379	401
45	277	253
50	177	147
55	107	74
60	62	32
65	35	13
70	18	9
75	9	6
80	0	0
85	0	0
90	0	0

o Vertical Angles
* Initial Lamp Lumens

Coefficients of Utilization

Ceiling	80%				70%				50%				30%				0
	70	50	30	10	50	10	50	10	50	10	50	10	50	10	50	10	0
Wall %	Zonal Cavity Method - Floor Reflectance 20%																
RCR																	
1	.52	.51	.49	.48	.50	.47	.48	.46	.46	.44	.42	.42	.40	.40	.38	.38	.38
2	.49	.46	.44	.42	.45	.41	.44	.40	.42	.40	.38	.37	.36	.35	.34	.34	.34
3	.46	.42	.39	.37	.41	.37	.40	.36	.39	.35	.34	.33	.32	.31	.30	.30	.30
4	.43	.38	.35	.33	.38	.33	.37	.32	.36	.32	.30	.29	.28	.27	.26	.26	.26
5	.40	.35	.32	.29	.35	.29	.34	.29	.33	.29	.27	.26	.25	.24	.23	.23	.23
6	.37	.32	.29	.26	.32	.26	.31	.26	.30	.26	.24	.23	.22	.21	.20	.20	.20
7	.35	.30	.26	.24	.29	.24	.29	.24	.28	.24	.22	.21	.20	.19	.18	.18	.18
8	.33	.27	.24	.22	.27	.22	.27	.22	.26	.22	.20	.19	.18	.17	.16	.16	.16
9	.31	.25	.22	.20	.25	.20	.25	.20	.24	.20	.18	.17	.16	.15	.14	.14	.14
10	.29	.24	.20	.18	.23	.18	.23	.18	.22	.18	.16	.15	.14	.13	.12	.12	.12

T4142 One 32W Triple Tube Philips
T4142 One 42W Triple Tube Philips

T4142 One 32W Triple Tube Osram x .88
T4142 One 42W Triple Tube Osram x .85

Notes

- All data with standard Softglow® clear trim.
- Single unit Datachart pattern diameters are determined by the number of degrees from each side of nadir. Therefore a 20° diameter represents a total 40° pattern width at the work plane 30" above the floor. Footcandle values are at the edge of that diameter.
- Datachart spacing is rounded off to the nearest foot.
- Data by IES methods. Compact fluorescent data vary due to lamp lumen differences, power input, burning position, ambient temperature and ballast characteristics. A modification factor should be applied.

SCONCE

softlite™ VI



features

ADA compliant wall sconce that compliments entire Softlite™ family.

1', 2' and 4' nominal lengths provide endless design capabilities.

Detachable perforated lamp shield allows for quick cleaning and re-lamping.

Softlite™ Sconce makes an exceptional aesthetic statement in corridors, conference rooms, private or open offices, reception areas or other high-end applications.

companion luminaire



recessed



recessed



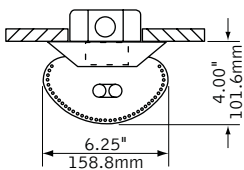
linear



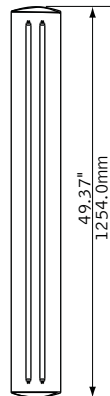
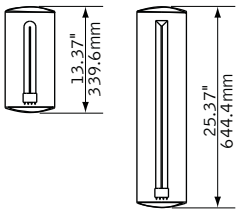
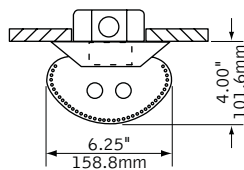
WMR
Designed for
MRI use

dimensional data

1' & 2' fixtures



4' fixture



lamping options

1' fixture



18W BIAx LAMP

2' fixture



40W BIAx LAMP



T5/T5H0 LAMP



T8 LAMP



4' fixture



T5/T5H0 LAMP

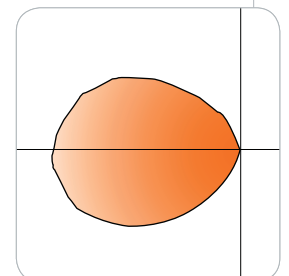


T8 LAMP



performance

1-Lamp 18W Biax
74% Efficiency
180 cd @ 85°

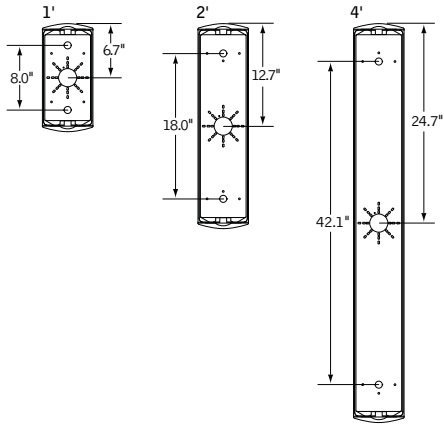


Visit focalpointlights.com for complete photometric data.

fixture:

project:

mounting information



specifications

construction

20 Ga. Steel housing/reflector.

Lamps are shielded by detachable 22 Ga. steel perforated lamp shield with acrylic lens insert.

Die-cast aluminum end caps complete shield assembly.

- 1' unit weight: 4 lbs.
- 2' unit weight: 7 lbs.
- 4' unit weight: 12 lbs.

optic

20 Ga. C.R.S. reflector finished in High Reflectance White powder coat.

electrical

Luminaires are pre-wired for specified circuits, with thermally protected Class "P" electronic ballasts.

Optional dimming ballasts available.

Consult factory for specifications and availability.

UL and cUL listed.

finish

Polyester powder coat applied over a 5-stage pre-treatment.

ordering

luminaire series		<u>FS6</u>
Softlite Sconce	FS6	
profile		<u>1</u>
1' Length (120V. only)	1	
2' Length	2	
4' Length	4	
lamping		<u>1BX18</u>
1' Length Only		
1 Lamp 18 Watt Biax	1BX18	
2' Length Only		
1 Lamp 40 Watt Biax	1BX40	
1 Lamp T5	1T5	
2 Lamp T5	2T5	
1 Lamp T5H0	1T5H0	
2 Lamp T5H0	2T5H0	
1 Lamp T8	1T8	
2 Lamp T8	2T8	
4' Length Only		
1 Lamp T5	1T5	
2 Lamp T5	2T5	
1 Lamp T5H0	1T5H0	
2 Lamp T5H0	2T5H0	
1 Lamp T8	1T8	
2 Lamp T8	2T8	
circuit		<u>1C</u>
Single Circuit	1C	
voltage		
120 Volt	120	
277 Volt	277	
347 Volt	347	
<small>(Consult factory for availability) (277V. & 347V. not available on 1' luminaire)</small>		
ballast		
Electronic Instant Start <20% THD (T8 & 40W Biax only)	E	
Electronic Program Start <10% THD	S	
Electronic Dimming Ballast* (Available on 2' and 4' units only)	D	
mounting		<u>WM</u>
Wall Mount	WM	
factory options		
Emergency Battery Pack* (2' & 4' units only)	EM	
HLR/GLR Fuse	FU	
Include 3000K Lamp	L830	
Include 3500K Lamp	L835	
Include 4100K Lamp	L841	
finish		<u>WH</u>
Matte Satin White	WH	

* for more information see Reference section.



28W/835 Min Bipin T5 HE ALTO UNP

Product family description

High efficiency, environmentally responsible, ultra-slim lamps.

Features/Benefits

- Slim profile lamp and ballast.
- Better for the environment.
- Operates on programmed start ballasts.
- Fail-safe operation at end of life.
- Design flexibility.
- Improved optical control.
- Fixtures can be 40% smaller than T8 systems.
- Better fit in 2 x 2 and 2 x 4 grid ceilings.
- Low mercury (14W, 21W and 28W.)
- Energy efficient.
- Less material for less waste.

Applications

- Ideal for general, decorative and architectural lighting in offices, retail stores, hotels, schools and hospitals.

Notes

- Silhouette™ T5 nominal lamp lengths are shorter than standard sizes. See dimension chart for details.

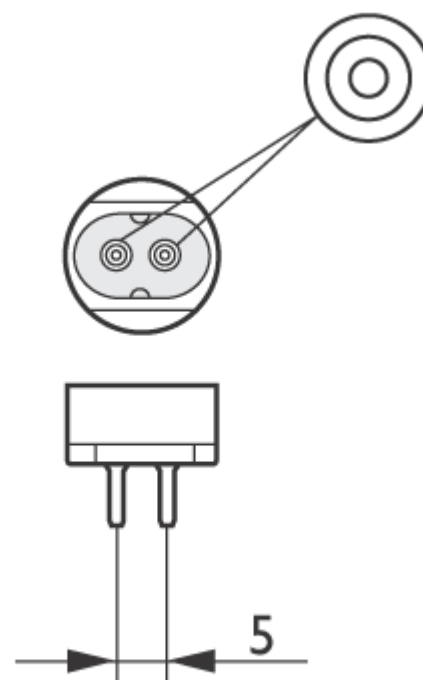
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Product Number	230854
Full product name	28W/835 Min Bipin T5 HE ALTO UNP
Ordering Code	230854
Pack type	Unpacked
Pieces per Sku	1
Skus/Case	40
Pack UPC	046677230852
EAN2US	
Case Bar Code	50046677230857
Successor Product number	
System Description	High Efficiency
Base	Miniature Bipin
Base Information	Green [Green Base]
Bulb	T5 [16 mm]

PHILIPS

Product data	
Packing Type	UNP [Unpacked]
Packing Configuration	40
Rated Avg. Life	24000 hr
Type	na
Feature	na [Not Applicable]
Ordering Code	F28T5/835/ALTO
Pack UPC	046677230852
Case Bar Code	50046677230857
Watts	28W
Dimmable	Yes
Color Code	835 [CCT of 3500K]
Color Rendering Index	85 Ra8
Color Designation	White
Color Description	835 White
Color Temperature	3500 K
Initial Lumens	- Lm
Overall Length C	1163.2 mm
Diameter D	17 mm
Special packing	ALTO
Product Number	230854



TL5 HE



Base Miniature Bipin

PHILIPS

Presented By: Marie Ostrowski
Contact Phone:
Contact E-mail: mso139@psu.edu

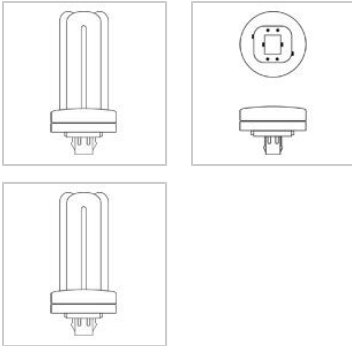
Customer Name: Buffalo State College
Project Name: New Science Building
Fixture Type: D Recessed Downlight



GE
Lighting

97631 - F32TBX/835/A/ECO

GE Ecolux® Biax® T4 - Facilities; Retail Display; Hospitality; Office; Restaurant; Warehouse



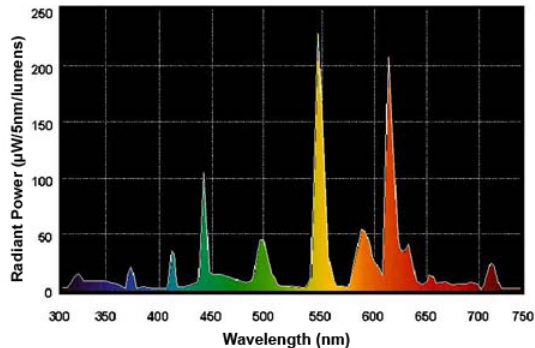
CAUTIONS & WARNINGS

Caution

- Lamp may shatter and cause injury if broken
- Remove and install by grasping only plastic portion of the lamp.

GRAPHS & CHARTS

Spectral Power Distribution



GENERAL CHARACTERISTICS

Lamp Type	Compact Fluorescent - Plug-In
Bulb	T4
Base	GX24q-3
Wattage	32
Voltage	120/100
Rated Life	12000 hrs
Starting Temperature	0 K (32 °F)
Cathode Resistance	2.7 Ohm
LEED-EB MR Credit	123 picograms Hg per mean lumen hour
Rated Life (rapid start) @ Time	12000.0 @ 3.0/20000.0 @ 12.0 h
Additional Info	Dimmable with appropriate dimming ballast./End of Life Protection (EOL)/TCLP compliant
Primary Application	Facilities;Retail Display;Hospitality;Office;Restaurant;W

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	2400
Mean Lumens	2040
Nominal Initial Lumens per Watt	75
Color Temperature	3500 K
Color Rendering Index (CRI)	82

ELECTRICAL CHARACTERISTICS

Current (max)	5.25 A
Open Circuit Voltage (after preheating)	265 V
Open Circuit Voltage	515 V
Lamp Current	0.32 A
Preheat Voltage	4.25 V
Current Crest Factor	1.7
Supply Current Frequency	20000 Hz

DIMENSIONS

Maximum Overall Length (MOL)	5.5 cm
Nominal Length	5.5 cm
Base Face to Top of Lamp	4.9 cm

PRODUCT INFORMATION

Product Code	97631
Description	F32TBX/835/A/ECO
ANSI Code	60901-IEC-7432-2
Standard Package	Case
Standard Package GTIN	10043168976319
Standard Package Quantity	10
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	10
UPC	043168976312

NOTES

- 4-Pin lamp minimum starting temperature is a function of the ballast. Most ballasts are rated with a minimum starting temperature of 50 degrees F (10 C). Ballasts are also available that provide reliable starting to 0 degrees F (-18C) and -20 F (-29C).
- Amalgam product experience stable brightness over a wider temperature range and in various operating positions.
- Based on 60Hz reference circuit.
- Fluorescent lamp lumens decline during life



24W/835 Min Bipin T5 HO ALTO UNP

Product family description

Environmentally responsible, ultra-slim lamps with extraordinary light output.

Features/Benefits

- Increased light output.
- Slim profile lamp and ballast.
- Better for the environment.
- Operates on programmed start ballasts.
- Fail-safe operation at end of life.
- Up to 70% more lumens than standard Silhouette™ T5 lamps.
- Design flexibility.
- Improved optical control.
- Low mercury (24W and 39W.)
- Energy efficient.
- Less material for less waste.

Applications

- Ideal for medium and high-bay retail and industrial applications.

Note

- Philips Lighting warrants T5 HO lamps when used with ballasts that are designed to meet the proposed IEC (International Electrotechnical Commission) dimming requirements and all other industry standards (i.e., NEC, UL, IEC and ANSI.) Please work with your Philips representative to get dimming approval before installation.
- Silhouette T5 nominal lamp lengths are shorter than standard sizes. See dimension chart for details.

Product data	
Product Number	290205
Full product name	24W/835 Min Bipin T5 HO ALTO UNP
Ordering Code	290205
Pack type	Unpacked
Pieces per Sku	1

PHILIPS

Product data	
Skus/Case	40
Pack UPC	046677290207
EAN2US	
Case Bar Code	50046677290202
Successor Product number	
System Description	High Output
Base	Miniature Bipin
Base Information	Green [Green Base]
Bulb	T5 [16 mm]
Packing Type	UNP [Unpacked]
Packing Configuration	40
Rated Avg. Life	24000 hr
Type	na
Feature	na [Not Applicable]
Ordering Code	F24T5/835/HO/ALTO
Pack UPC	046677290207
Case Bar Code	50046677290202
Watts	24W
Dimmable	Yes
Mercury (Hg) Content	
Color Code	835 [CCT of 3500K]
Color Rendering Index	85 Ra8
Color Designation	White
Color Description	835 White
Color Temperature	3500 K
Initial Lumens	2000 Lm
Overall Length C	563.2 mm
Diameter D	17 mm
Special packing	ALTO
Product Number	290205



54W/835 Min Bipin T5 HO ALTO UNP

Product family description

Environmentally responsible, ultra-slim lamps with extraordinary light output.

Features/Benefits

- Increased light output.
- Slim profile lamp and ballast.
- Better for the environment.
- Operates on programmed start ballasts.
- Fail-safe operation at end of life.
- Up to 70% more lumens than standard Silhouette™ T5 lamps.
- Design flexibility.
- Improved optical control.
- Low mercury (24W and 39W.)
- Energy efficient.
- Less material for less waste.

Applications

- Ideal for medium and high-bay retail and industrial applications.

Note

- Philips Lighting warrants T5 HO lamps when used with ballasts that are designed to meet the proposed IEC (International Electrotechnical Commission) dimming requirements and all other industry standards (i.e., NEC, UL, IEC and ANSI.) Please work with your Philips representative to get dimming approval before installation.
- Silhouette T5 nominal lamp lengths are shorter than standard sizes. See dimension chart for details.

Product data	
Product Number	290288
Full product name	54W/835 Min Bipin T5 HO ALTO UNP
Ordering Code	290288
Pack type	Unpacked
Pieces per Sku	1

PHILIPS

Product data	
Skus/Case	40
Pack UPC	046677290283
EAN2US	
Case Bar Code	50046677290288
Successor Product number	
System Description	High Output
Base	Miniature Bipin
Base Information	Green [Green Base]
Bulb	T5 [16 mm]
Packing Type	UNP [Unpacked]
Packing Configuration	40
Rated Avg. Life	24000 hr
Type	na
Feature	na [Not Applicable]
Ordering Code	F54T5/835/HO/ALTO
Pack UPC	046677290283
Case Bar Code	50046677290288
Watts	54W
Dimmable	Yes
Mercury (Hg) Content	
Color Code	835 [CCT of 3500K]
Color Rendering Index	85 Ra8
Color Designation	White
Color Description	835 White
Color Temperature	3500 K
Initial Lumens	5000 Lm
Overall Length C	1163.2 mm
Diameter D	17 mm
Special packing	ALTO
Product Number	290288

	A	A	B	B	B	B
Full product name	Max	Max	Min	Min	Max	Max
Bipin T5 HO ALTO UNP						

	C	C	D	D
Full product name	Max	Max	Max	Max
54W/835 Min Bipin T5 HO ALTO UNP	1163.2	1163.2	17	17



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Document order number : 0000 000 00000

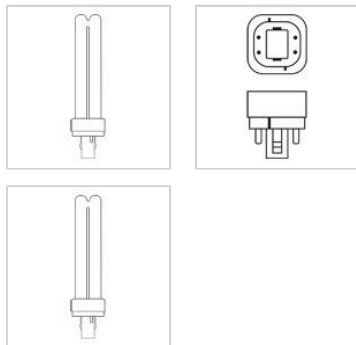
Presented By:
Contact Phone:
Contact E-mail:

Customer Name:
Project Name: BSC New Science Building
Fixture Type: F6 - WALL SCONCE



97600 - F18DBX/835/ECO4P

GE Ecolux® Biax® T4 - Facilities; Retail Display; Hospitality; Office; Restaurant; Warehouse



CAUTIONS & WARNINGS

Caution

- Lamp may shatter and cause injury if broken
 - Remove and install by grasping only plastic portion of the lamp.

GRAPHS & CHARTS

Spectral Power Distribution

GENERAL CHARACTERISTICS

Lamp Type	Compact Fluorescent - Plug-In
Bulb	T4
Base	G24q-2
Wattage	18
Voltage	100
Rated Life	12000 hrs
Starting Temperature	0 °C (32 °F)
Cathode Resistance	6.05 Ohm
LEED-EB MR Credit	344 picograms Hg per mean lumen hour
Additional Info	Dimmable with appropriate dimming ballast./End of Life Protection (EOL)/TCLP compliant
Primary Application	Facilities;Retail Display;Hospitality;Office;Restaurant;W

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	1200
Mean Lumens	970
Nominal Initial Lumens per Watt	66
Color Temperature	3500 K
Color Rendering Index (CRI)	82

ELECTRICAL CHARACTERISTICS

Current (max)	5.25 A
Open Circuit Voltage (after preheating)	220 V
Open Circuit Voltage Across Starter	198 V
Lamp Current	0.22 A
Preheat Voltage	4.25 V
Current Crest Factor	1.7
Supply Current Frequency	60 Hz

DIMENSIONS

Maximum Overall Length (MOL)	5.8000 in(147.3 mm)
Nominal Length	5.800 in(147.3 mm)
Base Face to Top of Lamp	5.200 in(132.1 mm)

PRODUCT INFORMATION

Product Code	97600
Description	F18DBX/835/ECO4P
ANSI Code	60501-IEC-2518-2
Standard Package	BUNDLE
Standard Package GTIN	
Standard Package Quantity	50
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	50
UPC	043168976008



Date: _____ Type: _____

Firm Name: _____

Project: _____

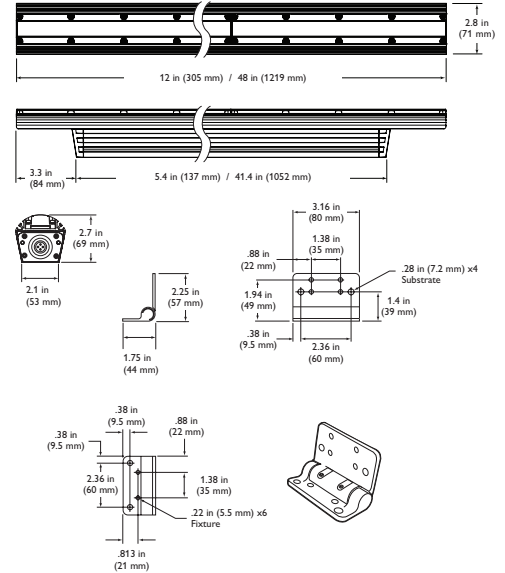
eW Graze Powercore

4000 K, 10° x 60° Lens

Linear LED surface light for wall washing and grazing

eW® Graze Powercore is a linear lighting fixture optimized for surface grazing and wall-washing applications requiring high-quality white or solid color light. Featuring Powercore® technology, eW Graze Powercore processes power directly from line voltage, eliminating the need for low-voltage, external power supplies. Fixtures are available in eight color temperatures, ranging from a warm 2700 K to a cool 6500 K, and five solid colors. eW Graze Powercore offers superior illumination quality and dramatic energy savings for new installations and retrofit upgrades. A space-efficient, low-profile aluminum housing and flexible mounting options allow discrete placement within a wide range of compact architectural details

- Tailor light output to specific applications — eW Graze Powercore is available in standard 1 ft and 4 ft exterior-rated housings, and standard 10° x 60° and 30° x 60° beam angles.
- High-performance illumination and beam quality — eW Graze Powercore offers superior beam quality for striation-free saturation as close as 6 in (152 mm) from fixture placement. eW Graze Powercore accommodates end-to-end or incremental placement without visible light scalloping between fixtures.
- Supports new applications for white light— Long-life LEDs (50,000 hours at 70% lumen maintenance) significantly reduce or eliminate maintenance problems, allowing the use of white or solid color lighting in spaces where bulb maintenance may be limited or unfeasible.
- Universal power input range — eW Graze Powercore accepts line voltage input of 100, 120, 220 – 240, and 277 VAC.
- Versatile installation options — Constant torque locking hinges offer simple position control from various angles without special tools. The low-profile extruded aluminum housing accommodates installation within architectural niches of many different shapes and sizes.



- Wide range of build-to-order configurations — Additional fixture lengths, beam angles, color temperatures up to 6500 K, and solid colors (Royal Blue, Blue, Green, Amber, and Red) are available as build-to-order configurations. See the eW Graze Powercore Ordering Information sheet for complete details.
- “Cool lighting” functionality — eW Graze Powercore fixtures do not heat illuminated surfaces, discharge infrared radiation or emit ultraviolet light.
- Dimming capable — Patented DIMand™ technology offers smooth dimming capability with many ELV-type dimmers.
- Trouble-free, code-compliant installation — IP66, UL wet location ratings. UL / cUL, CE, FCC, RoHS, WEEE certified.

For detailed product information, please refer to the eW Graze Powercore Product Guide at www.colorkinetics.com/ls/essentialwhite/ewgraze/



A Green Flagship Product

Our Green Flagship Products offer significantly improved environmental performance in two or more of the following Green Focal Areas: weight, energy consumption, hazardous substances, packaging, recycling, disposal, and lifetime reliability.



Specifications

Due to continuous improvements and innovations, specifications may change without notice.

Item	Specification	1 ft (305 mm)	4 ft (1.2 m)
Output	Beam Angle	10° x 60°	
	Color Temperature	4000 K (+400 / -500)	
	Lumens†	477	1908
	Efficacy (Lm/W)	31.8	
	Mixing Distance	6 in (152 mm) to uniform beam saturation	
	Lumen Maintenance‡	100,000+ hours L70 @ 25° C 50,000 hours L70 @ 50° C	
Electrical	Input Voltage	100 / 120 / 220 – 240 / 277 VAC, 50 / 60 Hz	
	Power Consumption	15 W maximum at full output, steady state	60 W maximum at full output, steady state
Control		Commercially available ELV control dimmers	
Physical	Dimensions (Height x Width x Depth)	2.7 x 12 x 2.8 in (69 x 305 x 71 mm)	2.7 x 48 x 2.8 in (69 x 1219 x 71 mm)
	Weight	2.7 lb (1.2 kg)	10.8 lb (4.9 kg)
	Housing	Extruded anodized aluminum	
	Lens	Clear polycarbonate	
	Fixture Connectors	Integral male / female waterproof connectors	
	Mounting	Multi-positional, constant torque locking hinges	
	Temperature	-40° – 122° F (-40° – 50° C) Operating -4° – 122° F (-20° – 50° C) Startup	
	Humidity	0 – 95%, non-condensing	
	Fixture Run Lengths*	88 @ 110 VAC 97 @ 120 VAC 180 @ 220 VAC 197 @ 240 VAC	Configuration: 1 ft (305 mm) fixtures installed end-to-end, 20 A circuit, standard 50 ft (15.2 m) Leader Cable
Certification and Safety	Certification	UL / cUL, FCC Class A, CE, RoHS, WEEE	
	LED Class	Class 2 LED product	
	Environment	Dry / Damp / Wet Location, IP66	

† Lumen measurement complies with IES LM-79-08.

‡ L70 = 70% maintenance of lumen output. (When light output drops below 70% of initial output.)

* These figures, provided as a guideline, are accurate for this configuration only. Changing the configuration can affect the fixture run lengths.



OPTIBIN® | POWERCORE® | DIMAND®
CKTECHNOLOGY | CKTECHNOLOGY | CKTECHNOLOGY

Fixtures

Item	Beam Angle	Voltage	Size	Item Number	Philips 12NC	
eVW Graze Powercore 4000 K	10° x 60°	120 VAC	1 ft	523-000030-01	910503700277	
			4 ft	523-000030-03	910503700279	
			1 ft	523-000030-09	910503700285	
			4 ft	523-000030-11	910503700287	
		277 VAC	1 ft	523-000030-17	910503700293	
			4 ft	523-000030-19	910503700295	
			220 – 240 VAC	1 ft	523-000030-25	910503700301
				4 ft	523-000030-27	910503700303
		100 VAC	1 ft	523-000030-25	910503700301	
			4 ft	523-000030-27	910503700303	

Use Item Number when ordering in North America.

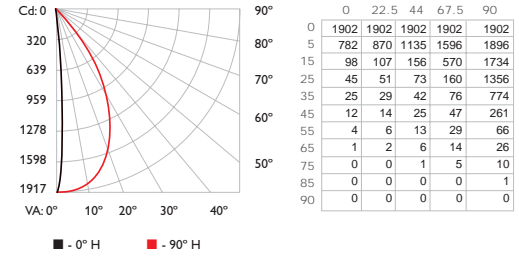


Philips Color Kinetics
3 Burlington Woods Drive
Burlington, Massachusetts 01803 USA
Tel 888.385.5742
Tel 617.423.9999
Fax 617.423.9998
www.colorkinetics.com

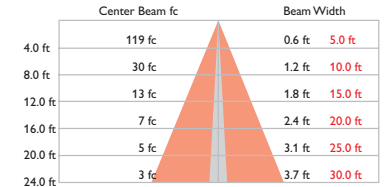
Photometrics

4000 K, 1 ft, 10° x 60° lens

Polar Candela Distribution



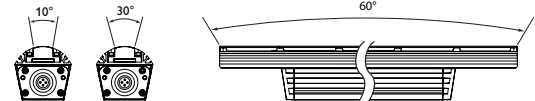
Illuminance at Distance



■ Vert. Spread: 8.8°
■ Horiz. Spread: 64.0°

Power Consumption	15 W
Lumens	477
Efficacy	31.8 Lm/W

For lux multiply fc by 10.7



Accessories

Item	Type	Size	Item Number	Philips 12NC
Leader Cable	UL / cUL	50 ft (15.2 m)	108-000041-00	910503700320
	CE		108-000041-01	910503700320
Jumper Cable	UL / cUL	End-to-End	108-000039-00	910503700314
		1 ft (305 mm)	108-000039-01	910503700315
		5 ft (1.5 m)	108-000039-02	910503700316
	CE	End-to-End	108-000040-00	910503700317
		1 ft (305 mm)	108-000040-01	910503700318
		5 ft (1.5 m)	108-000040-02	910503700319
Glare Shield		1 ft (305 mm)	120-000081-00	910503700745
		2 ft (610 mm)	120-000081-01	910503700746
		3 ft (914 mm)	120-000081-02	910503700747
		4 ft (1.2 m)	120-000081-03	910503700748

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DAS-000009-02 R04 07-09

1300 Industrial Road, Unit #19
San Carlos, CA 94070

Tel: 1-(650)-595-LUMA(5862)

Fax: 1-(650)-595-5820

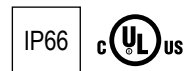
Email: info@lumascap.com

FREE CALL 1-866-695-LUMA(5862) US & Canada

LS482 Balitza

Bollard & Pathway

Refer to Symbol Index on page 2 for explanation



Specifications

Lamp source	13W	CFL / TC-TEL (GX24-q1)
	18W	CFL / TC-TEL (GX24-q2)
	26W	CFL / TC-TEL (GX24-q3)
	50W max	HAL Bi-pin / QT12 (G6.35)
	60W	A19 Type (E26 Medium) 120V only
	23W	CFL / SB (E26 Medium) 120V only
UL classification	Suitable for wet locations	
IP rating	IP66	
Construction	316 marine grade stainless steel	
Installation types	Surface mount plate	
	Discreet mount	
Standard inclusion	Thermal cutout	
Ambient operating temperature	-4°F to 122°F (-20°C to +50°C)	
Warranty	10 year structural, 1 year electrical	
Photometrics	Refer to www.lumascap.com	
Surface temperature	HumanTouch™ compliant ≤149°F (≤65°C)	
	13W - 26W	CFL / TC-TEL
	50W	max HAL Bi-pin / QT12

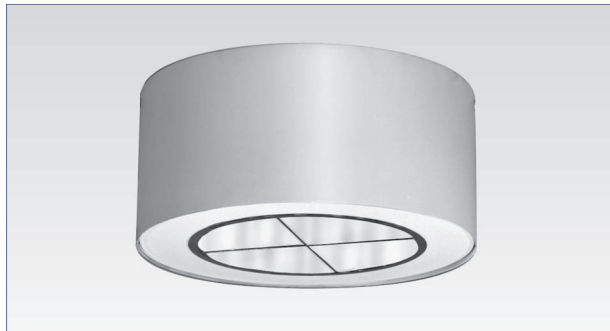
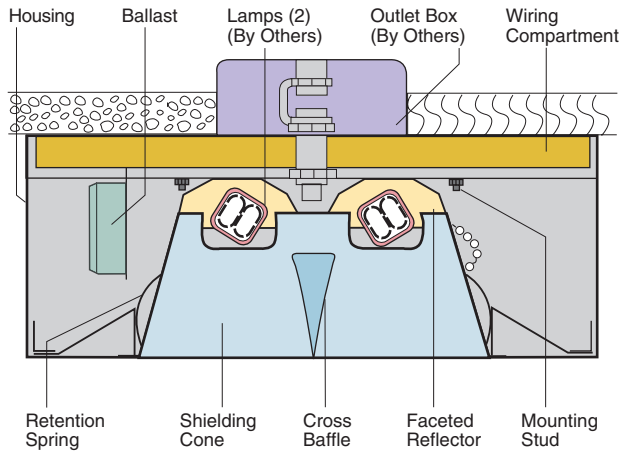


LS482 Balitza

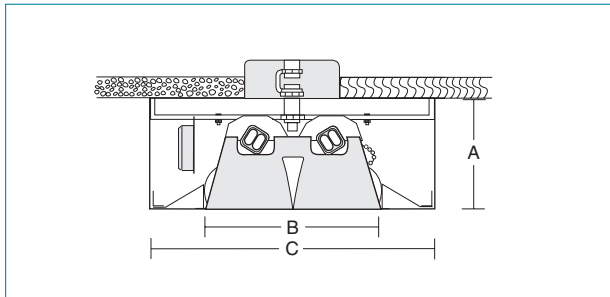
Any luminaire can become hot - take care with appropriate use and placement

LS482													
LAMP	WATTAGE	BASE	Code	HEAD	Code	MOUNTING	HEIGHT	Code	CONTROL GEAR	ENTRY	Code	VOLTAGE	Code
CFL / TC-TEL 4 pin ECG*	13W	GX24-q1	267	Apex	H	Surface mount plate	23.6in (600mm)	A2	Integral	Bottom	Q	120V 60Hz	4
CFL / TC-TEL 4 pin ECG*	18W	GX24-q2	266	Armored apex	B	Surface mount plate	35.4in (900mm)	A3	Remote	Bottom	R	277V 60Hz	9
CFL / TC-TEL 4 pin ECG*	26W	GX24-q3	262	Level	F	Discreet mount	23.6in (600mm)	C1	Not suitable for SB or A19 or Halogen line voltage				
HAL Bi-pin / QT12 12V	50W (max)	G6.35	293	Armored level	I								
A19 Type 120V only	60W	E26 med.	291										
CFL / SB 120V only	23W (max)	E26 med.	291										

* ECG - Electronic Control Gear



Dimensions and Lamps



Number	A Depth	B Aperture	C Diameter	Lamps*
P639CB	6" 153mm	8 3/8" 213mm	13" 330mm	Two 26W Quad Tube

*For 18W lamps, add W18 to catalog number.

P639CB

Surface Mount Cylinder
Two 26W Quad Tube Lamps
8 3/8" Cross Baffled Aperture

Optics and Applications

This cylinder features use a two reflector system. The primary linear reflector is formed and faceted. The cross baffles are parabolic. The pattern is slightly asymmetric depending upon measurement parallel or perpendicular to the lamps. Use in corridors, transit areas, open spaces, foyers, restrooms, etc.

Design Features

Cross baffles are supported at the top for rigidity to insure the pre-set parabolic curve is maintained for predictable brightness control.

Finish

A specular clear Alzak cone is standard. Optional colors and Softglow® finishes are available. Interior finish is matte black, the cylindrical housing exterior is satin brushed, then painted matte white baked enamel.

Ballast

Fully electronic, microprocessor controlled with variable starting current for inrush protection to assure rated lamp life. Input voltage range from 120V through 277V. Power factor .98, starting temperature 0°F (-18°C), THD < 10%. Pre-heat start < 1.0 second. End of lamp life protection. Rated for > 50,000 starts.

General

Fixtures are UL and C-UL listed for thermal and electrical safety. Union made IBEW. Luminaire Efficiency Rating (LER) data is in the photometric directory located in Section Z.

Accessories

- BA Brushed aluminum. WT White trim flange.
- G Gold cone. WHT White complete trim.
- H Mocha cone. CC Custom color.
- P Graphite cone. LS Lamp shield, acrylic.
- T Titanium cone. LP Prism lens, acrylic.
- W Wheat cone. P5 Pendant adaptor, 21" length.
- Y Pewter cone. ES Extra stem length, specify length.
- Z Bronze cone.
- S Softglow® finishes: add S before color letters. e.g. SW for Softglow® wheat cone, SC for Softglow® clear cone.

V347 347 volt ballast.

DM Dimming ballast, contact the factory.

EM Emergency power. Includes battery pack, charger light, test switch and single lamp operation for 90 minutes. Components are remote from fixture. Specify volts.

Matching Units

- Recessed CB downlights [Page P22](#)
- Recessed wall washers [Page P33](#)

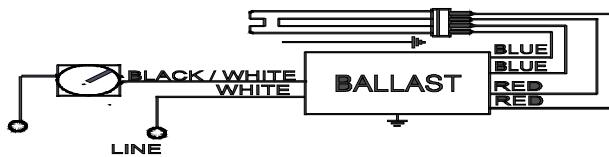
** Click for link to pages in blue.

Electrical Specifications

VEZ-1T42-M2-LD	
Brand Name	MARK 10 POWERLINE
Ballast Type	Electronic Dimming
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	277
Input Frequency	60 HZ
Status	Active

Lamp Type	Num. of Lamps	Rated Lamp Watts	Min. Start Temp (°F/C)	Input Current (Amps)	Input Power (Watts) (min/max)	Ballast Factor (min/max)	MAX THD %	Power Factor	Lamp Current Crest Factor	B.E.F.
CFQ26W/G24Q	1	26	50/10	0.11	08/31	0.05/1.00	10	0.98	1.6	3.23
CFTR26W/GX24Q	1	26	50/10	0.11	08/31	0.05/1.00	10	0.98	1.6	3.23
CFTR32W/GX24Q	1	32	50/10	0.14	09/38	0.05/1.00	10	0.98	1.6	2.63
* CFTR42W/GX24Q	1	42	50/10	0.18	10/49	0.05/1.00	10	0.99	1.6	2.04

Wiring Diagram

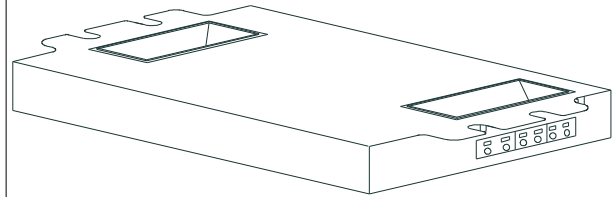


Diag. 134

The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
4.98 "	3.00 "	1.29 "	4.60 "
4 49/50	3	1 29/100	4 3/5
12.6 cm	7.6 cm	3.3 cm	11.7 cm

Revised 08/17/2006



Data is based upon tests performed by Philips Lighting Electronics N.A. in a controlled environment and is representative of relative performance. Actual performance can vary depending on operating conditions. Specifications are subject to change without notice. All specifications are nominal unless otherwise noted.

PHILIPS LIGHTING ELECTRONICS N.A.

10275 WEST HIGGINS ROAD · ROSEMONT, IL 60018

Tel: 800-322-2086 · Fax: 888-423-1882 · www.philips.com/advance

Customer Support/Technical Service: 800-372-3331 · OEM Support: 866-915-5886

VEZ-1T42-M2-LD	
Brand Name	MARK 10 POWERLINE
Ballast Type	Electronic Dimming
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	277
Input Frequency	60 HZ
Status	Active

Electrical Specifications

Notes:

Section I - Physical Characteristics

- 1.1 Ballast shall be physically interchangeable with standard electromagnetic or standard electronic ballasts, where applicable.
- 1.2 Ballast shall be available in a plastic/metal can or all metal can construction to meet all plenum requirements.
- 1.3 Ballast shall be provided with poke-in wire trap connectors or integral leads color coded per ANSI C82.11.

Section II - Performance Requirements

- 2.1 Ballast shall be Programmed Start.
- 2.2 Ballast shall contain auto restart circuitry in order to restart lamps without resetting power.
- 2.3 Ballast shall operate from 60 Hz input source of 120V, 277V or 347V as applicable with sustained variations of +/- 10% (voltage and frequency).
- 2.4 Ballast shall be high frequency electronic type and operate lamps at a frequency above 42 kHz to avoid interference with infrared devices and eliminate visible flicker.
- 2.5 Ballast shall have a Power Factor greater than 0.98 at full light output and greater than 0.90 throughout the dimming range for primary lamp.
- 2.6 Ballast shall have a minimum ballast factor of 1.00 at maximum light output and 0.05 at minimum light output for primary lamp application.
- 2.7 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less.
- 2.8 Ballast input current shall have Total Harmonic Distortion (THD) of less than 10% at maximum light output when operated at nominal line voltage with primary lamp. Total Harmonic Current (THC) at minimum light output shall not exceed THC at maximum light output.
- 2.9 Ballast shall have a Class A sound rating.
- 2.10 Ballast shall have a minimum starting temperature of 10C (50F) for primary lamp.
- 2.11 Ballast shall provide Lamp EOL Protection Circuit for all T5, T5/HO, and CFL lamps.
- 2.12 Ballast shall control lamp light output from 100% - 5% relative light output for T8 and CFL lamps and 100% - 1% relative light output for T5/HO lamps.
- 2.13 Ballast shall ignite the lamps at any light output setting without first going to another output setting.
- 2.14 Ballast shall tolerate sustained open circuit and short circuit output conditions.

Section III - Regulatory Requirements

- 3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).
- 3.2 Ballast shall be Underwriters Laboratories (UL) listed, Class P and Type 1 Outdoor; and Canadian Standards Association (CSA) certified where applicable.
- 3.3 Ballast shall comply with ANSI C62.41 Category A for Transient protection.
- 3.4 Ballast shall comply with ANSI C82.11 where applicable.
- 3.5 Ballast shall comply with the requirements of the Federal Communications Commission (FCC) rules and regulations, Title 47 CFR part 18, Non-Consumer (Class A) for EMI/RFI (conducted and radiated).
- 3.6 Ballast shall comply with NEMA 410 for in-rush current limits.

Section IV - Other

- 4.1 Ballast shall be manufactured in a factory certified to ISO 9001 Quality System Standards.
- 4.2 Ballast shall carry a ____ warranty from date of manufacture against defects in material or workmanship for operation at a maximum case temperature of ____ (Go to our web site for up to date warranty information: www.philips.com/advancewarranty).
- 4.3 Manufacturer shall have a twenty-year history of producing electronic ballasts for the North American market.
- 4.4 Ballast shall be controlled by a compatible Mark 10 Powerline two-wire dimmer.
- 4.5 Ballast shall be Philips Advance part # _____ or approved equal.

Revised 08/17/2006



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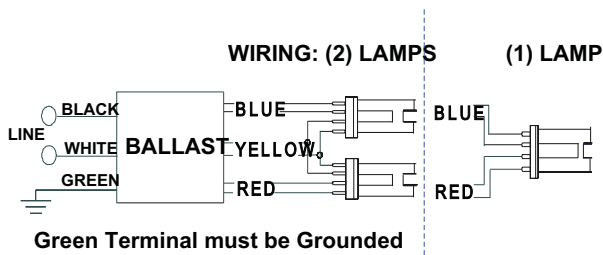
ICF-2S26-H1-LD@277

Brand Name	SMARTMATE
Ballast Type	Electronic
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

Electrical Specifications

Lamp Type	Num. of Lamps	Rated Lamp Watts	Min. Start Temp (°F/C)	Input Current (Amps)	Input Power (ANSI Watts)	Ballast Factor	MAX THD %	Power Factor	MAX Lamp Current Crest Factor	B.E.F .
* CFM26W/GX24Q	1	26	0/-18	0.11	29	1.10	10	0.98	1.5	3.79
CFM26W/GX24q	2	26	0/-18	0.20	54	1.00	10	0.99	1.5	1.85
CFM32W/GX24q	1	32	0/-18	0.13	36	0.98	10	0.98	1.5	2.72
CFM42W/GX24q	1	42	0/-18	0.17	46	0.98	10	0.98	1.5	2.13
CFQ26W/G24q	1	26	0/-18	0.10	27	1.00	10	0.98	1.5	3.70
CFQ26W/G24q	2	26	0/-18	0.19	51	1.00	10	0.99	1.5	1.96
CFS21W/GR10q	2	21	0/-18	0.18	51	1.12	10	0.99	1.5	2.20
FT24W/2G11	2	24	0/-18	0.18	48	0.93	10	0.99	1.5	1.94

Wiring Diagram

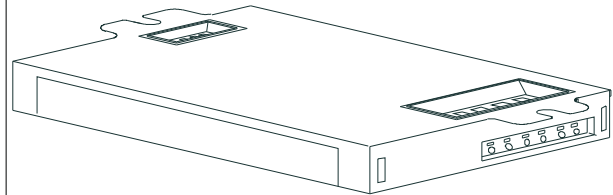


The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

	in.	cm.		in.	cm.
Black	0.0		Yellow/Blue		
White	0.0		Blue/White		
Blue	0.0		Brown		
Red	0.0		Orange		
Yellow	0		Orange/Black		
Gray			Black/White		
Violet			Red/White		

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
4.98 "	2.4 "	1.0 "	4.6 "
4 49/50	2 2/5	1	4 3/5
12.6 cm	6.1 cm	2.5 cm	11.7 cm

Revised 09/02/2004



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ICF-2S26-H1-LD@277	
Brand Name	SMARTMATE
Ballast Type	Electronic
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

Electrical Specifications

Notes:

Section I - Physical Characteristics

- 1.1 Ballast shall be physically interchangeable with standard electromagnetic or standard electronic ballasts, where applicable.
- 1.2 Ballast shall be available in a plastic/metal can or all metal can construction to meet all plenum requirements.
- 1.3 Ballast shall be provided with poke-in wire trap connectors color coded per ANSI C82.11.

Section II - Performance Requirements

- 2.1 Ballast shall be Programmed Start except for ballasts with -QS suffix, which shall be Rapid Start.
- 2.2 Ballast shall contain auto restart circuitry in order to restart lamps without resetting power.
- 2.3 Ballast shall operate from 50/60 Hz input source of 120V through 277V with sustained variations of +/- 10% (voltage and frequency).
- 2.4 Ballast shall be high frequency electronic type and operate lamps at a frequency above 42 kHz to avoid interference with infrared devices and eliminate visible flicker.
- 2.5 Ballast shall have a Power Factor greater than 0.98 for primary lamp.
- 2.6 Ballast shall have a minimum ballast factor of 1.00 for primary lamp application.
- 2.7 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less.
- 2.8 Ballast input current shall have Total Harmonic Distortion (THD) of less than 10% when operated at nominal line voltage with primary lamp.
- 2.9 Ballast shall have a Class A sound rating.
- 2.10 Ballast shall have a minimum starting temperature of -18C (0F) for primary lamp. Ballasts for PL-H lamps shall have a minimum starting temperature of -30C (-20F) for primary lamp.
- 2.11 Ballast shall provide Lamp EOL Protection Circuit.
- 2.12 Ballast shall tolerate sustained open circuit and short circuit output conditions.

Section III - Regulatory Requirements

- 3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).
- 3.2 Ballast shall be Underwriters Laboratories (UL) listed, Class P and Type 1 Outdoor; and Canadian Standards Association (CSA) certified where applicable.
- 3.3 Ballast shall be rated for use in air-handling spaces.
- 3.4 Ballast shall comply with ANSI C62.41 Category A for Transient protection.
- 3.5 Ballast shall comply with ANSI C82.11 where applicable.
- 3.6 Ballast shall comply with the requirements of the Federal Communications Commission (FCC) rules and regulations, Title 47 CFR part 18, Non-Consumer (Class A) for EMI/RFI (conducted and radiated).
- 3.7 Ballast shall comply with NEMA 410 for in-rush current limits.

Section IV - Other

- 4.1 Ballast shall be manufactured in a factory certified to ISO 9001 Quality System Standards.
- 4.2 Ballast shall carry a five-year warranty from date of manufacture against defects in material or workmanship, including replacement, for operation at a maximum case temperature of 75C and three-years for a maximum case temperature of 85C (90C three-year warranty for ICF-1H120-M4-XX, ICF-2S42-90C-M2-XX and ICF-2S70-M4-XX models).
- 4.3 Manufacturer shall have a twenty-year history of producing electronic ballasts for the North American market.

Revised 09/02/2004



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PL-T 42W/835/4P ICT

Product family description

Product data	
Product Number	268755
Full product name	PL-T 42W/835/4P ICT
Ordering Code	268755
Pack type	1 Lamp in a Folding Carton
Pieces per Sku	1
Skus/Case	12
Pack UPC	046677268756
EAN2US	
Case Bar Code	50046677268751
Successor Product number	
Base	GX24q-4
Base Information	4P
Execution	/4P [4 Pins]
Packing Type	ICT [1 Lamp in a Folding Carton]
Packing Configuration	12
Avg. Hrs. Life	16000 hr
Ordering Code	PL-T 42W/835/4P/ALTO
Pack UPC	046677268756
Case Bar Code	50046677268751
Watts	42W
Lamp Wattage EL	43.0 W
Lamp Voltage	- V
Dimmable	Yes
Color Code	835 [CCT of 3500K]
Color Rendering Index	82 Ra8
Color Designation	White
Color Description	835 White
Color Temperature	3500 K
Initial Lumens	- Lm
Initial Lumens	3200 Lm
Overall Length C	158.4 mm
Diameter D	39.85 mm
Diameter DI	39.65 mm
Product Number	268755



PL-C ALTO 26W/835/2P ICT

Product family description

Product data	
ProNumUS	383232
Full product name	PL-C ALTO 26W/835/2P ICT
OrdCodUS	383232
Pack type	1 Lamp in a Folding Carton
Pieces per Sku	1
Skus/Case	10
EAN1US	
EAN2US	
EAN3US	
Successor Product number	
Base	G24d-3
Base Information	2P
Execution	/2P [2 Pins]
Packing Type	ICT [1 Lamp in a Folding Carton]
Packing Configuration	10
Avg. Life	10000 hr
Watts	26W
Lamp Voltage	100 V
Dimmable	No
Mercury (Hg) Content	
Color Code	835 [CCT of 3500K]
Color Rendering Index	82 Ra8
Color Designation	White
Color Description	835 White
Color Temperature	3500 K
Initial Lumens	1760 Lm
Overall Length C	171.4 mm
Diameter D	27.1 mm
Diameter DI	27.1 mm

Presented By:
 Contact Phone:
 Contact E-mail:

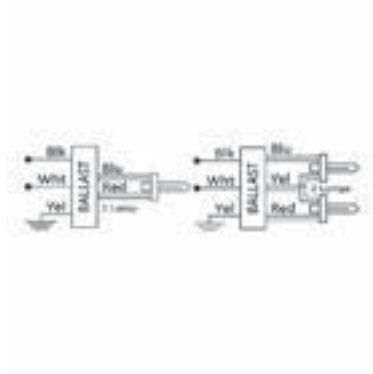
Customer Name:
 Project Name: BSC New Science Building
 Fixture Type: F6



71434 - GEC218-MVPS-3W

GE CFL Multi-Volt ProLine™ Electronic Program / Rapid Start Ballast

- Multi-Voltage technology means a single ballast handles voltage from 108V to 305V
- Programmed starting for extended lamp life
- End-of-Lamp-Life Protection
- Color Coded Poke-In Connectors simplifies wiring
- 3-Way Ballast Kit (-3W) includes mounting plate, lead wires, extraction tool and mounting hardware for side exit, bottom exit or bottom exit with studs mounting



GENERAL CHARACTERISTICS

Application	2 or 1- CFQ18W/G24q 120-277V ProLine PS 3 Way Kit
Category	Compact Fluorescent
Ballast Type	Electronic - Program / Rapid Start
Starting Method	Programmed start
Lamp Wiring	Series
Line Voltage Regulation (+/-)	10 %
Case Temperature	70 °C(158 °F)
Ballast Factor	Normal
Power Factor Correction	Active
Sound Rating	A (20-24 decibels)
Enclosure Type	Metal
Additional Info	Auto-restart/Thermally protected/Universal voltage

PRODUCT INFORMATION

Product Code	71434
Description	GEC218-MVPS-3W
Standard Package	Master
Standard Package GTIN	10043168714348
Standard Package Quantity	10
Sales Unit	Individual Pack
No Of Items Per Sales Unit	1
No Of Items Per Standard	10
Package	
UPC	043168714341

DIMENSIONS

Case dimensions	
Length (L)	5.0 in(127.00 mm)
Width (W)	2.4 in(60.96 mm)
Height (H)	1.0 in(25.40 mm)
Mounting dimensions	
Mount Length (M)	4.6 in(117.60 mm)
Weight	1.1 lb
Exit Type	Poke-in
Remote Mounting Distance to Lamp	20 ft
Remote Mounting Wire Gauge	18 AWG

ELECTRICAL CHARACTERISTICS

Supply Current Frequency	50 Hz/60 Hz
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SAFETY & PERFORMANCE

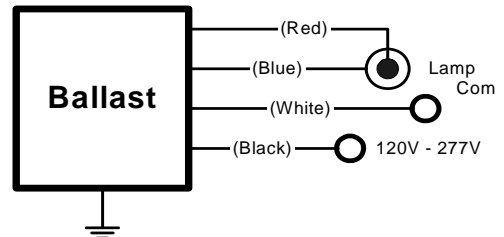
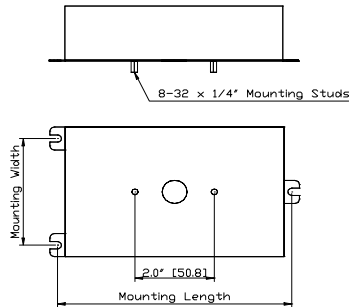
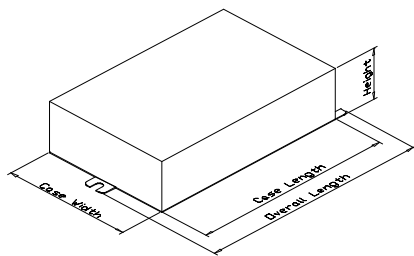
- CSA
- UL Class P
- UL Listed
- UL Type 1 Outdoor
- UL Type CC
- UL Type HL
- FCC Part 18 Class B at 120 volts

SPECIFICATIONS BY LAMP & WATTAGE

Lamp	# of Lamps	Line Volts	System Watts	Nom. Line Current	System Ballast Factor	Ballast Efficacy	Power Factor% (>=)	Crest Factor THD% (<=)	Min. Starting Temp (°F/°C)
CFTR26W/4P	1	120	28	0.24 A	1.00	3.57	99	1.6 12	-20.0 / -29
CFTR26W/4P	1	277	28	0.1 A	1.00	3.57	96	1.6 12	-20.0 / -29
CFTR18W/4P	1	120	20	0.17 A	1.05	NaN	97	1 1/2 10	-20.0 / -29
CFTR18W/4P	1	277	20	0.08 A	1.05	NaN	97	1 1/2 10	-20.0 / -29
CFTR18W/4P	2	120	39	0.33 A	1.05	2.69	97	1 1/2 10	-20.0 / -29
CFTR18W/4P	2	277	39	0.14 A	1.05	2.69	97	1 1/2 10	-20.0 / -29
CFS28W/4P	1	120	31	0.26 A	1.00	3.23	99	1 1/2 10	-20.0 / -29
CFS28W/4P	1	277	31	0.11 A	1.00	3.23	97	1 1/2 10	-20.0 / -29
CFS21W/4P	1	120	20	0.16 A	0.90	NaN	97	1 1/2 15	-20.0 / -29
CFS21W/4P	1	277	20	0.07 A	0.90	NaN	97	1 1/2 15	-20.0 / -29
CFS21W/4P	2	120	40	0.33 A	0.91	2.28	99	1 1/2 10	-20.0 / -29
CFS21W/4P	2	277	40	0.14 A	0.91	2.28	99	1 1/2 10	-20.0 / -29
CFS16W/4P	2	120	37	0.31 A	1.00	2.70	99	1 1/2 10	-20.0 / -29
CFS16W/4P	2	277	37	0.13 A	1.00	2.70	99	1 1/2 10	-20.0 / -29
CFQ26W/4P	1	120	28	0.24 A	1.00	3.57	99	1.6 12	-20.0 / -29

	e-Vision® Electronic Ballast for Metal Halide Lamps	Catalog Number: IMH-150-H For 150W Metal Halide Lamps ANSI M102 or M142 120-277V 50/60Hz Electronic Status: RELEASED
	DIMENSIONS AND DATA	

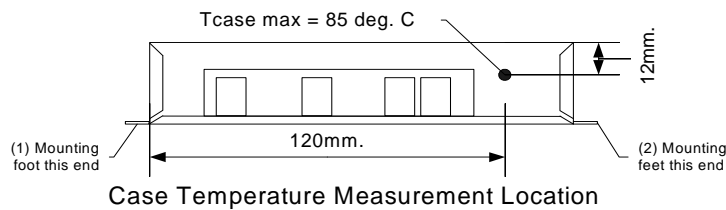
Lamp		Input Volts	Catalog Number*	Line Current (Amps)	Input Power (Watts)	Min Power Factor	Wiring Diag	Fig.	Weight (lb)	Max. Distance to Lamp (ft)
Number	Watts									
150 Watt Lamp, ANSI Code M102 or M142 Minimum Starting Temp -30°C/-20°F										
1	150	120	IMH-150-H-XXX	1.4	165	1	3	H	1.9	5
		277		0.6	161					



Ballast Case must be Grounded

Wiring Diagram 3

Case Figure	Overall Length	Case Length	Case Width	Height	Mounting Length	Mounting Width
H	161mm [6.3"]	144mm [5.7"]	92mm [3.6"]	38mm [1.5"]	152mm [6.0"]	73mm [2.9"]



EISA Compliant

INSTALLATION & APPLICATION NOTES:

- Maximum allowable case temperature is 85°C. See figure above for measurement location
- Ignition pulse is 4 kV max
- All leads are 12 inches long
- Ballast output will shutdown after 20 minutes if lamp fails to ignite
- Power must be cycled off – then on, after replacing lamp
- Connect the red lead to the center terminal of the lamp when using screw base lamps

***Ordering Information**

Order Suffix	Description
-LF	Ballast with side exit leads and mounting feet
-BLS	Ballast with bottom exit leads and mounting studs

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Philips Lighting Electronics N.A.

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Presented By:
 Contact Phone:
 Contact E-mail:

Customer Name:
 Project Name: BSC New Science Building
 Fixture Type: F10

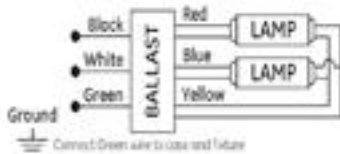


GE
 Lighting

99655 - GE228MVPS-A

GE LFL UltraStart® Electronic Program / Rapid Start Ballast

- High Efficiency T5 ballast with Continuous Cathode Cutout Technology
- Lower Maintenance Costs with Parallel Lamp Operation
- Fast Starting Time <700ms
- Multi-Voltage technology means a single ballast handles voltage from 108V to 305V
- Auto-Restart withstands temporary losses in power without the need to cycle power
- UltraCool™ Operation 90C case rating
- Anti-Striation Control for better light quality, with no striations.



GENERAL CHARACTERISTICS

Application 2 or 1 - F14-F35HE 120 to 277
 UltraStart PRS Normal Light .95
 BF A Can
 Category Linear Fluorescent
 Ballast Type Electronic - Program / Rapid
 Start
 Starting Method Programmed start
 Lamp Wiring Parallel
 Line Voltage Regulation (+/-) 10 %
 Case Temperature 90 °C(194 °F)
 Ballast Factor Normal
 Power Factor Correction Active
 Sound Rating A (20-24 decibels)
 Enclosure Type Metal
 Additional Info Auto-restart/End of Life
 Protection (EOL)/Thermally
 protected/Universal voltage

PRODUCT INFORMATION

Product Code 99655
 Description GE228MVPS-A
 Standard Package Case
 Standard Package GTIN 10043168996553
 Standard Package Quantity 10
 Sales Unit Standard Pack
 No Of Items Per Sales Unit 1
 No Of Items Per Standard
 Package 10
 UPC 043168996556

DIMENSIONS

Case dimensions
 Length (L) 9.5 in(241.30 mm)
 Width (W) 1.7 in(43.18 mm)
 Height (H) 1.2 in(30.48 mm)
 Mounting dimensions
 Mount Length (M) 8.9 in(226.06 mm)
 Mount Slots (MS) 0.2 in(6.35 mm)
 Weight 1.49 lb
 Exit Type Side
 Remote Mounting Distance to
 Lamp 8 ft
 Remote Mounting Wire Gauge 18 AWG
 Lead lengths Qty Exit Length (± 1 in.)
 Black 1 Left/Right 25.0 (635mm)
 Blue 2 Left/Right 34.0 (864mm)
 Green 1 Left/Right 3.5 (89mm)
 Red 2 Left/Right 34.0 (864mm)
 White 1 Left/Right 25.0 (635mm)
 Yellow 2 Left/Right 45 (1143mm)

ELECTRICAL CHARACTERISTICS

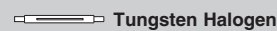
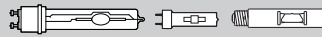
Supply Current Frequency 50 Hz/60 Hz

SAFETY & PERFORMANCE

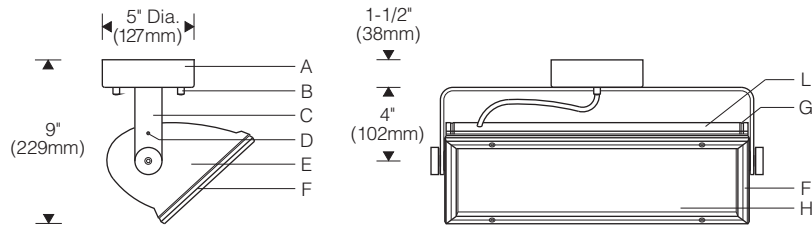
- CSA
- FCC - CLASS A Non-Consumer
- UL Class P
- UL Listed
- UL Type 1 Outdoor
- UL Type CC
- UL Type HL
- RoHS Compliant
- Meets ANSI Standard C82.11-Cons 2002
- Meets ANSI Standard C62.41-1991
- High Temperature Rated: Suitable for high temperature applications
- 70C max case temp 5 yr warranty or 90C max case temp 3 yr warranty

SPECIFICATIONS BY LAMP & WATTAGE

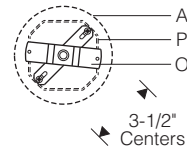
Lamp	# of Lamps	Line Volts	System Watts	Nom. Line Current	System Ballast Factor	Ballast Efficacy Factor	Power Factor% (>=)(<=)	Crest Factor THD% (<=)	Min. Starting Temp (°F/°C)
F35T5/WM	1	120	44	0.36 A	1.08	2.45	99	1 1/2 9	5.0 / -15



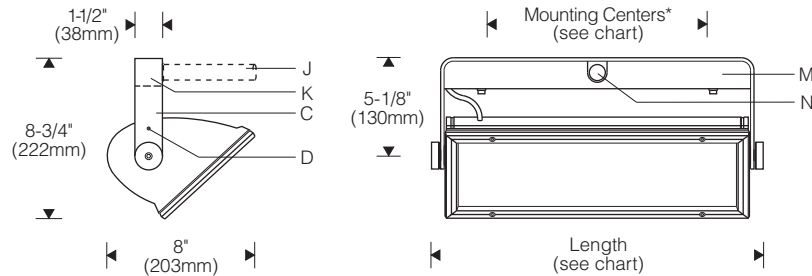
E Mount 1:10 Scale



Canopy (E mount)



Y Mount 1:10 Scale



Wattage	Source	Length	Mounting*
300-500	Halogen	12-1/16"	8-7/8"
150	MH	(306mm)	(225mm)
210-400	MH	17-13/16"	14-5/8"
		(452mm)	(370mm)
900-1000	Halogen	24-7/8"	21-11/16"
		(632mm)	(550mm)

* Dimension for Y mount only.



Specifications

- A** Aluminum canopy (E mount)
- B** Chrome cap nuts
- C** Aluminum yoke
- D** Locking set screw
- E** Die-cast end plates
- F** Mitred extruded aluminum door frame with silicone gasket
- G** Aluminum reveal plates (black)
- H** Micro-prismatic tempered glass lens
- J** Conduit (by others)
- K** Integral splice compartment
- L** Specular extruded aluminum reflector
- M** Aluminum splice cover
- N** Conduit entry
- O** Pivoting hanger bar
- P** Outlet box (by others)

Finish:

Style 103 fluted – bright clear anodized aluminum housing and door frame. Painted end plates, yoke and canopy in choice of silver or semi-gloss black.

Style 104 smooth – semi-gloss white exterior, door frame, end plates, yoke and canopy.

Painted surfaces – 6 stage pretreatment and electrostatically applied thermoset powder coat for stable, long lasting and corrosion resistant finish.

Reflector and internal end plates – extruded high purity aluminum with clear anodized specular finish. All luminaire hardware – stainless steel. All mounting hardware – zinc or cadmium plated.

Mounting:

E mount – canopy mounts over recessed outlet box.

Y mount – surface mounted yoke attaches with 1/4 inch fasteners (by others) concealed under splice cover.

Pendant or cantilever mounting assembly ordered separately; specify **X** mount.

Track mounting available for tungsten halogen up to 500W; specify **K** mount. **Consult factory.**

REV. 8/08

Electrical:

Use 90°C wire for supply connections.

Y mount – integral splice compartment with one 7/8" diameter entry for exposed raceway/conduit (by others). Entry can be reversed in field to opposite side of yoke.

Tungsten halogen – recessed single contact (RSC) lampholders in patented clamping supports for maximum heat dissipation.

Metal halide – remote encapsulated constant wattage autotransformer (CWA) or electronic ballast. Mogul lampholder is pulse rated for use with either horizontal or universal position reduced envelope pulse start lamps. End-of-lamp aligner ensures consistent optical performance.

For complete ballast specifications, see Accessories Section.

Standard:

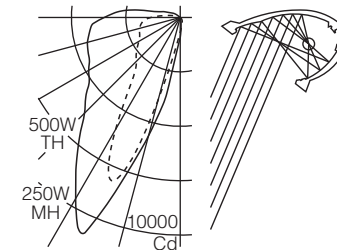
UL listed or CSA certified for damp locations (Style 104 painted model recommended for damp locations). Where pendant or cantilever may be exposed to wind, consult factory.

Features

- Die-cast end plates join at articulated black reveals; machined aluminum knobs – no exposed fasteners
- Precured silicone gaskets – keep dirt and moisture out
- Lamp support on mogul base lamps ensures arc tube is in optical center
- Yoke set screw – securely locks aiming

Performance

Two parabolic reflector sections drive light to the bottom of the wall. An elliptical section shields the lamp from normal viewing angles and redirects its light to a parabola. Glare is minimized and asymmetry of the beam is maximized resulting in high beam efficiency and superior surface uniformity.



For complete photometrics, see www.elliptipar.com.



To form a Catalog Number

1 104 - 150G - X - 01 - 2 - 00 0
 1 2 3 4 5 6 7 8





1 Source

M = Metal halide
 T = Tungsten halogen

2 Style

103 = Large fluted surface, remote ballast
 104 = Large smooth surface, remote ballast
 Note: for damp locations, Style 104 is recommended.

3 Lamp

Lamp Code	Watt-age	Lamp Number	Volt-ages	Remote Distance
Ceramic Arc Tube Pulse Start Metal Halide (90+ CRI) 				
210C	210	CDM210/T9/930/U/E	2, U	30' (9m)
315C	315	CDM315/T9/930/U/E	2, U	30' (9m)
Ceramic Arc Tube Pulse Start Metal Halide (80+ CRI)* 				
150G	150	CDM150/T6/830	1, 2 T, U	15' (4.5m) 5' (1.5m)
250C	250	CMH250/U/830/R	A, B	50' (15m)
400C	400	CMH400/U/830/R	A, B	50' (15m)
Quartz Arc Tube Pulse Start Metal Halide (68 CRI)* 				
250P	250	MS 250W/H75/T15/PS/740	A, B 2, U	50' (15m) 16' (4.8m)
320P	320	MS 320W/H75/T15/S/PS/740	A, B 2, U	50' (15m) 16' (4.8m)
350P	350	MS 350W/H75/T15/PS/740	A, B 2, U	50' (15m) 16' (4.8m)
Tungsten Halogen 				
0300	300	Q300T3	A	
0350	350	Q350T3/CL/HIR	A	
0500	500	Q500T3	A	
0900	900	Q900T3/CL/HIR	B, G	
1000	1000	Q1000T3	A, F, G	

For complete lamp and ballast information, see Accessories Section.
 * Use only clear metal halide horizontal or universal position lamp with compact envelope. Standard lamp colors are 3000K for Ceramic Arc Tube Pulse Start lamps and 4000K for Quartz Arc Tube Pulse Metal Halide lamps.

Project: **BSC New Science Building**

Type: **M1**

4 Mounting

E = External yoke on ceiling canopy
 Y = Yoke with integral splice compartment
 X = External yoke for use with accessory cantilever or pendant mounting assembly (order separately)
 For use in natatorium (pool), consult factory.
 K = Track mounted (300 - 500W halogen only)
Note: Consult factory for available track manufacturers and types.

5 Finish

Style 103 Fluted
 01 = Bright aluminum housing and door frame with silver end plates, yoke and canopy
 81 = Bright aluminum housing and door frame with semi-gloss black end plates, yoke and canopy
 Style 104 Smooth
 02 = Semi-gloss white housing, end plates, door frame, yoke and canopy
 99 = Custom RAL or computer matched color to be specified, consult sales representative

6 Voltage

Electronic (Metal Halide only):
 1 = 120V
 2 = 277V
 T = 120V dim*
 U = 208-277V dim*
 Magnetic and Tungsten Halogen:
 A = 120V
 B = 277V
 F = 220V
 G = 240V

*100-50% dimming, 0-10V compatible controls by others. Consult factory for dimming the 210W lamp.

7 Option (See Accessories Section for specifications)

00 = No options
 0M = MRI medical facility use (halogen E or Y mount only)
 0P = Natatorium (pool) use, tungsten halogen or metal halide unit with remote ballast located outside the pool environment (Style 104 smooth painted model only)
 0Q = Natatorium (pool) use, metal halide with remote ballast suitable for use in the pool environment (Style 104 smooth painted model only)
 0R = Halogen standby lamp with relay field connected at remote ballast. 100W maximum (lamp included).
 XX = For modification not listed, include detailed description. Consult factory prior to specification.

8 Standard

0 = UL, Underwriters Laboratories
 J = CSA, Canadian Standards Association

Accessories

Order separately. See Accessories Section for specifications.

VC 36 = Cantilever, 36" (915mm) setback

0 = UL
 J = CSA
 02 = semi-gloss white
 07 = silver
 08 = semi-gloss black
 Consult factory for use in natatorium (pool).

L = 300-500W TH, 150-400W MH
 X = 900-1000W TH

VP = Wallwash pendant

0 = UL
 J = CSA
 Length in inches (48" (1.2m) max. for TH, 60" (1.5m) max. for MH)
 02 = semi-gloss white
 07 = silver
 08 = semi-gloss black

L = straight, 300-500W TH, 150-400W MH
 E = swivel (up to 45°), 300-500W TH, 150-400W MH
 X = straight, 900-1000W TH (2 stems)

AE V 000 = External vertical blade baffle, black (not for use with 500W halogen units)

2 = 25° shielding
 4 = 45°

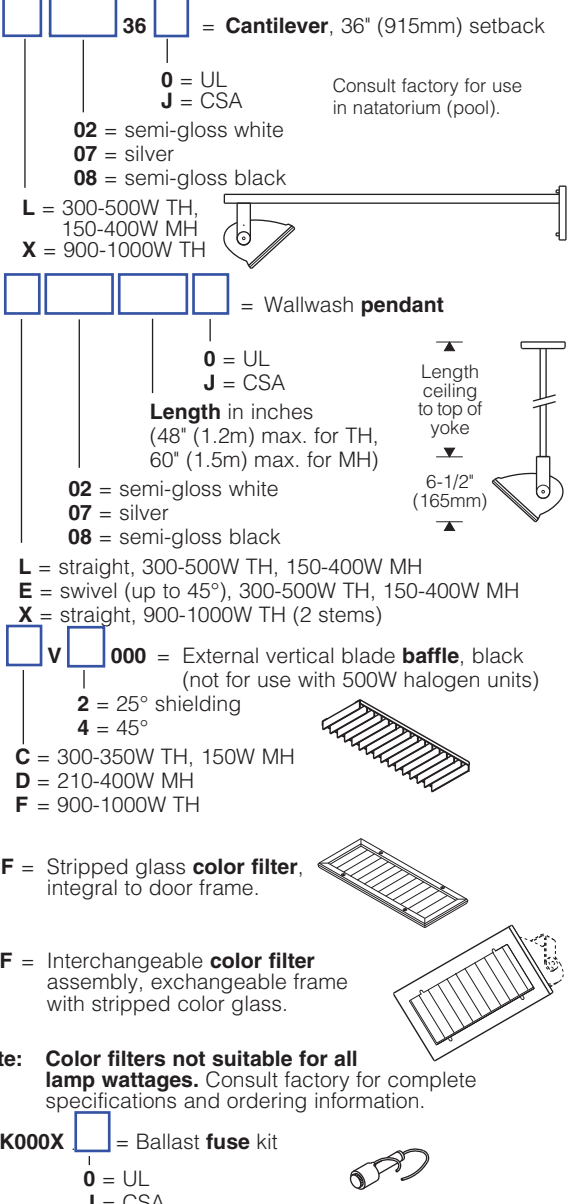
C = 300-350W TH, 150W MH
 D = 210-400W MH
 F = 900-1000W TH

ACF = Stripped glass color filter, integral to door frame.

AXF = Interchangeable color filter assembly, exchangeable frame with stripped color glass.

Note: Color filters not suitable for all lamp wattages. Consult factory for complete specifications and ordering information.

AFK000X = Ballast fuse kit
 0 = UL
 J = CSA




DESCRIPTION

The 101-P Fabrique Rectilinear Pendants feature eleven standard fabrics, multiple mounting options and a Shade-in-a-Shade option.

Catalog #	101-P-38-T52-21-SWH	Type
Project	BSC Science	F8
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Material/Mounting

Cold-rolled steel frame and aluminum wirebody, painted matte white. Matte white acrylic bottom diffuser with two finials, standard. Optional matte white acrylic top cover. Double Stem (2S) (Standard): 13" x 5" rectilinear canopy plate. Two 1/2" stems with a standard hang height of 24" (OA), minimum 18" (OA). Maximum overall hang height for one piece stem assembly is 8' (OA). 9' to 25' (OA) is supplied with a Collector Body (CB). Contact Factory for lengths greater than 25'. Specify SCA for sloped ceilings up to 45 degrees, for horizontal mounting only to ceiling plane. Contact factory for SCA, vertical applications.

Fabric Shades

Solid cold-rolled steel construction. Fabric on heavy translucent white styrene. Shantung White (SWH), delicate linear weave with random "slubs"; Shantung Eggshell (SEG), delicate linear weave with random "slubs"; Chintz Chocolate (CCT), small weave without "slubs"; Chintz Onyx (CXH), small weave without "slubs"; Linen Brussels White (LBW), textured open weave; Shantung Beige (SBG), delicate linear weave with random "slubs"; Cinnamon Stick (CNK), cinnamon & olive tight weave, slight sheen with raised decorative bars; Apex (APX), formal tight weave, slight sheen with raised stitched "X" pattern; Criss Cross (CCS), milk chocolate slightly textured tight weave with chocolate and wine colored raised diagonal decorative bars; Glasgow Flax (GFX), off-white, tight weave background with a random beige horizontal/vertical pattern. Many additional stock fabrics are available as a MOD, contact the factory for details. Optional Shade-in-a-Shade (SIS): Solid cold-rolled steel construction with exposed metal painted white, silver or gold to match specified fabric. Fabric on heavy clear vinyl backing. Earth Dust (EDT), slight metallic weave, bronze shear organza; White Mist (WMT), slight metallic weave, white shear organza; or Silver Moon (SMO), slight metallic weave, silver shear organza. SIS is available in pendant version only.

Suspension Options

Aircraft Cable with White SJ Cord (SJWAC): 3/32" cables with a standard height of 24" (OA), minimum 20" (OA). Maximum overall hang height is 25' (OA). Contact factory for lengths greater than 25'. Optional Clear SJ Cord (SJCAC). Note: 5-wire SJ supplied for non-DM and 7-wire supplied for DM.

Finish (Stem, canopy and finials)

Standard: Natural Aluminum (NA) [Sustainable Design]. Premium: Matte White (MW), Lacquered Satin Aluminum (SAL), Satin Brass (SB), Polished Brass (PB), Oxidized Brass (OBR), Satin Chrome (SC), Polished Chrome (PC), Satin Copper (SCP), Polished Copper (PCP), Oxidized Copper (OCP), Satin Nickel (SN), Polished Nickel (PN), Gun Metal (GNM) or Custom Color (CC). Contact Factory for multi-finishes (i.e. MW finial with SC stems/canopy).

Fabric

Standard: Shantung White (SWH) Premium: Shantung Eggshell (SEG), Chintz Chocolate (CCT), Chintz Onyx (CXH), Linen Brussels White (LBW), Shantung Beige (SBG), Glasgow Flax (GFX), Cinnamon Stick (CNK), Apex (APX), Criss Cross (CCS) or Customer Supplied Fabric (CSCC)*. Many additional stock fabrics are available as a MOD, contact the factory for details. *Shaper can accommodate "Customer Supplied Fabric" (CSCC) orders. Please contact your representative for details and minimum quantities. Natural materials and textiles are subject to inconsistency on color/pattern, texture, shape and may vary from dye lots. They may also change in appearance over time. Optional Shade-in-a-Shade (SIS): Earth Dust (EDT), White Mist (WMT) or Silver Moon (SMO); [SIS available in 101-P only].

Optics

Refer to www.shaperlighting.com for complete photometrics.

Ballast

Integral electronic HPF, 120/277V (347V Canada), thermally protected with end-of-life circuitry to accommodate the specified lamp

wattage 120/277V IEM & DM only. Contact factory for 347V DM.

Lamp/Socket

38": Two (2) 21WT5 linear fluorescent lamps or three (3) 60W T-10 frosted lamps.
48": Two (2) 28WT5 linear fluorescent lamps or four (4) 60WT-10 frosted lamps.

Note: When specifying the Advance dimming option, only Advance Mark 10 is available and the (2) 54WT5HO (101-P-48") lamping must be specified.

Fluorescent socket injection molded plastic. Lamps furnished by others.

Installation

Supplied with a universal integral mounting strap for a standard 4" J-box or plaster ring. Contractor to provide appropriate structural support for fixture weight. Shaper luminaires are designed for interior installations only.

Cleaning recommendation: Use a soft clothes brush or a vacuum brush to dust the outside of the lamp shade and a clean soft white flannel cloth for the inside of the lamp shade.

Options

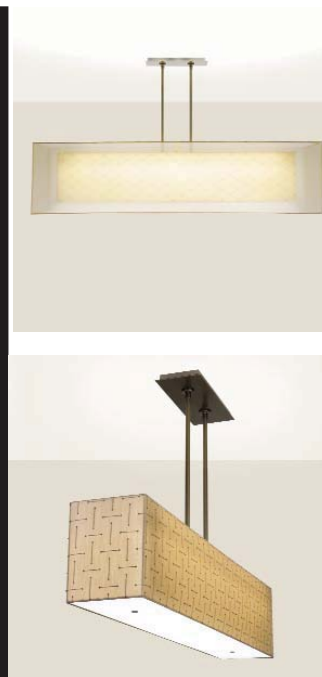
FLT5 Dimming Ballast: Advance Mark 10 (DMA10) - Available in (2) 54WT5HO (101-P-48") only or Lutron (DML). White SJ Cord (SJWAC), Clear SJ Cord (SJCAC), Sloped Ceiling Adaptor - Horizontal Mount only (SCA), Slotted Matte White Acrylic Top Cover (TC), Integral Emergency Battery (IEM), Shade-in-a-Shade (SIS) with EDT, WMT or SMO outer fabric options. Contact factory for NFP701 Fire Resistant or Stain Guard fabric coatings.

Labels

U.L. and C.U.L. approved.

Modifications

Shaper's skilled craftspeople with their depth of experience offer the designer the flexibility to modify standard mini-fabric pendant luminaires for project specific solutions. Contact the factory regarding scale options, unique finishes, mounting, additional materials/colors, or decorative detailing.



101-P SERIES

Pendant Luminaire
Fabrique
Fabric Rectilinear



Fabrique

Shaper now offers a wide variety of architectural fabric luminaires. All of the shades have been designed to have minimal or no visible hardware or structural trim, and are available with the latest in lamp and ballast technology (T5/CFL with dimming ballasts).

SUSTAINABLE DESIGN

Shaper has a long-standing history of offering environmentally-friendly fixtures. The copper and bronze alloys used in our exterior luminaires feature up to 98% recycled content, contribute less undesirable air emissions compared to painted aluminum and are easy to recycle.

Refer to the Icon Legend Link on shaperlighting.com.

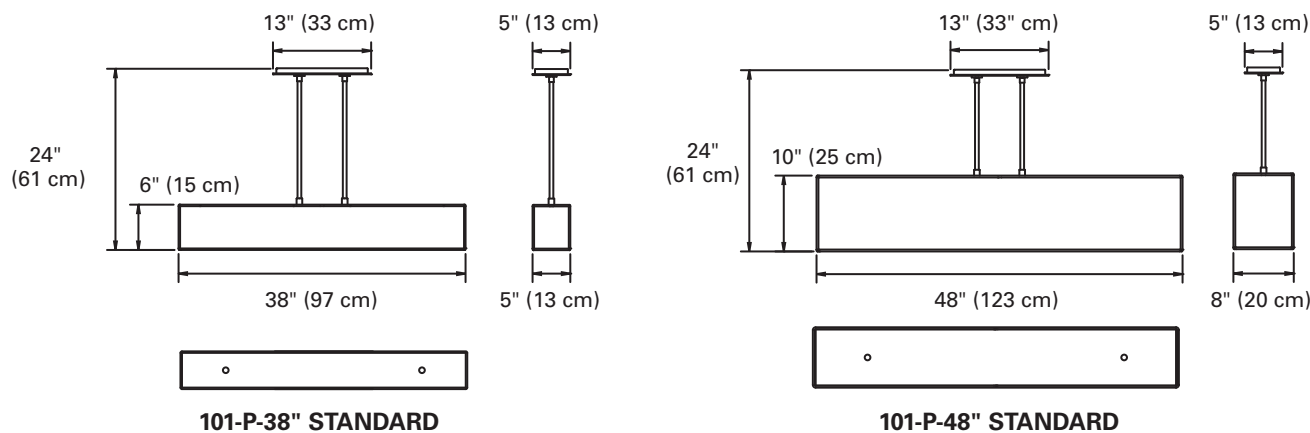
ORDERING INFORMATION

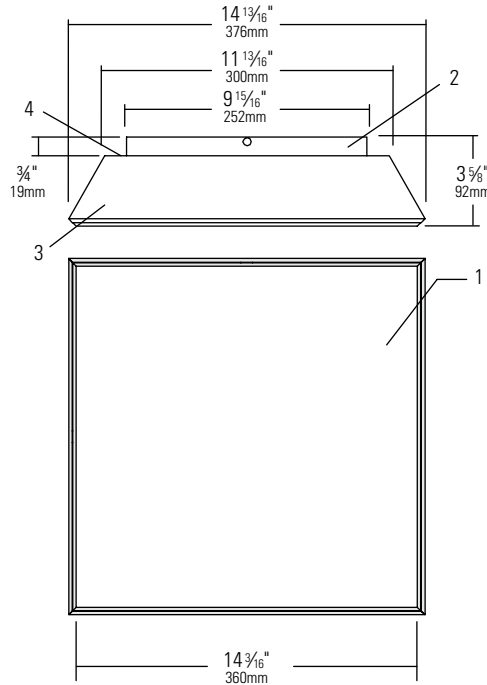
Sample Number: 101-P-38-T5/2/21-120V-NA-SBG-24

101-P	38	T5/2/21	277	NA	SWH	SJCAC	300
Series 101-P = Fabric Rectilinear Pendant	Lamp T5/2/21 ¹ T5/2/39HO ¹ T5/2/28 ² T5/2/54HO ² INC/3/60 ¹ INC/4/60 ²	Finish Standard NA = Natural Aluminum Premium CC = Custom Color GNM = Gun Metal MW = Matte White OBRS = Oxidized Brass OCP = Oxidized Copper PB = Polished Brass SC = Satin Chrome PC = Polished Chrome PCP = Polished Copper PN = Polished Nickel SAL = Lacquered Satin Aluminum SB = Satin Brass SCP = Satin Copper SN = Satin Nickel	Fabric Standard SWH = Shantung White Premium SEG = Shantung Eggshell CCT = Chintz Chocolate CXH = Chintz Onyx LBW = Linen Brussels White SBG = Shantung Beige GFX = Glasgow Flax CNK = Cinnamon Stick APX = Apex CCS = Criss Cross CSCC = Customer Supplied Custom Color ⁴	Options SJWAC = Aircraft Cable with White SJ Cord SJCAC = Aircraft Cable with Clear SJ Cord DML = Dimming Ballast (Lutron) DMA10 = Dimming Ballast (Advance 10) ⁵ IEM = Integral Emergency Ballast ³ SCA = Sloped Ceiling Adapter ⁶ TC = Matte White Acrylic Top Cover SIS-EDIT = Shade-in-Shade, Earth Dust SIS-WMT = Shade-in-Shade, White Mist SIS-SMO = Shade-in-Shade, Silver Moon	Suspension Height 24" or specify		
Size 38" 48"	Voltage 120V 277V ³ 347V ³						

- Notes:**
- ¹ Available in 38".
 - ² Available in 48".
 - ³ Available with T5 only.
 - ⁴ Shaper can accommodate Customer Supplied Fabric" orders. Please contact your representative for details and minimum quantities.
 - ⁵ Available in T5/2/54HO (101-P-48) lamping only.
 - ⁶ Specify up to 45° (Horizontal Mount only).

DIMENSIONS





Fixture Ordering Information

Diffuser Catalog No.	Backplate	Wattage	Volts	Lamp
ST12AL	S122U	22W	120V/277V	(1) T5 Circular
	S213U	13W	120V/277V	(2) Twin Tube

Features

- 1. Diffuser:** Injection molded, Impact and UV resistant Polycarbonate
- 2. Backplate:** Stamped 20ga.(0.036") C.R.S., Gloss White Powder Coat Finish
- 3. Housing:** Extruded Aluminum
- 4. Back Light:** Opal Acrylic, 2mm Thick

Electrical

Ballast-Electronic 120-277v

S122U		
Voltage	120V	277V
Total Input Watts	25W	25W
Max. Line Current (Amps)	0.21A	0.09A
Ballast Factor	1	1
THD	15%	15%
Min. Starting Temp	0°F (-18°C)	0°F (-18°C)

Lamping

56949	22W	3000K	Circline
56951	22W	3500K	Circline

Lamping (by others)

Lamp	Philips	General Electric	Osram/Sylvania
22W T5 CIRCULAR	TL5C 22W/*	--	FPC22/*

*Manufactures Color Temperature Designation

Mechanical

Diffuser assembly fastens securely to backplate using springcup and countersunk screw

Finish

Brushed and Clear Lacquered Aluminium

Accessories

Color Insert Kit SACC12. Citrine, Garnet and Sapphire

Labels

cULus listed, suitable for damp locations. ULus listed.

Job Information	Type:
Job Name:	
Cat. No.:	
Lamp(s):	
Notes:	

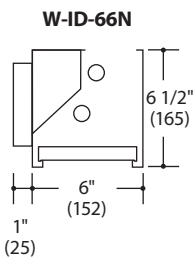
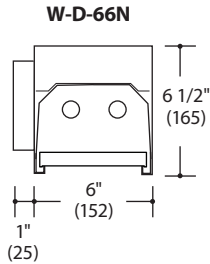


Type:
Project:

Mod-66™

W-D-66N, W-ID-66N,
W-ADW-66N (chalkboard)
Wall-Mounted

Specifications



HOUSING. Die-formed and welded steel, with 3/8" regression at housing bottom for rigidity and appearance, furnished with 6" long, 20-gauge steel splines for precise alignment at each joint. End headers have clearance holes for easy row installation and are notched under lamps for more even diffuser luminance and continuous baffle appearance. W-ID-66N. Three-inch wide opening in housing top provides 36-50% uplight ceiling and wall illumination.

END CAPS. Steel, 14-gauge, with no holes or knockouts, finished to match housing. Four fasteners on each end cap allow tight attachment to ends of individual fixtures and ends of rows.

REFLECTOR. W-D-66N. Standard: Die-formed steel with high-reflectance white finish. Parabolic Reflector/Baffle (**PARSS**): Die-formed semi-specular anodized aluminum reflector and baffle assembly. W-ID-66N. Die-formed steel with high-reflectance white finish. W-ADW-66N. Die-formed semi-specular aluminum (on lamp side) and die-formed steel with high-reflectance white finish.

LAMPING. Available in one- and two-lamp T8.

BALLAST. Electronic Ballast (**ELB**), high power factor, thermally protected Class P, Sound Rated A, less than 10% THD, manufactured by a UL Listed manufacturer, as available, determined by Litecontrol. Ballasts with a voltage range of 120 to 277 will be used when fixture configuration and ballast availability allow. The minimum number of ballasts will be used.

TANDEM WIRING. When selected from Ordering guide below, fixtures wired to switch in-line lamps separately, providing two levels of light (two-lamp cross-section fixtures only).

SYSTEM CONNECTORS. Corners and straight extensions available. Die-formed steel. Bottom and exposed sides to be smooth with no exposed fasteners or knockouts. See Field Measurement Procedure for instructions.

MOUNTING. Provided with two wall-mounting brackets measuring 4 1/2" square x 1" deep. Finish is CBC (Camera Black). W-ADW-66N. Provided with two wall-mounting brackets (**WCB**) measuring 4 1/2" x 6" deep, finished to match housing.

CERTIFICATION. Fixture and electrical components shall be UL and/or CUL Listed and shall bear the I.B.E.W., A.F. of L. label.

Note: Litecontrol reserves the right to change specifications without notice for product development and improvement.

Ordering guide

Product, lamping, & length						Options						
W -	D -	66N	2	4	T8 -	BW -	CWM -	--	ELB -	-	EF -	120
Mounting	Distribution	Series	Lamp Count	Nominal Length(ft)	Lamp Type	Diffuser	Finish	Tandem Wiring	Ballast	Bracket	Other options	Volts
W Wall-Mounted	D Direct ID Indirect/Direct ADW * Asymmetric Direct	66N	1, 2 → 1, 2 → 1, 2 → 2, 4 → 2, 4 →	2 3 4 6 8	T8	BW PBSS PWA PAT.12 (XA) PAT.19 FP PARSS (1-lamp D only) 6044 (ADW only) see Diffusers	CWM (Matte White) is standard see <i>LiteColors™</i> in Product Guide for other finishes	-- TW see notes	ELB is standard DA/ELB HEL/ELB ECO/ELB see Ballast options	WCB (ADW only)	EF F see Other options	120 277
<p>Cross-section lamping</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>W-D-66N</p> <p>1-T8 1-T8 2-T8</p> <p>PARSS</p> </div> <div style="text-align: center;"> <p>W-ID-66N</p> <p>1-T8 2-T8</p> </div> <div style="text-align: center;"> <p>W-ADW-66N</p> <p>1-T8</p> </div> </div>												

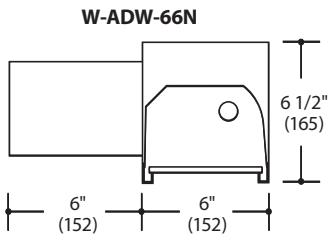
W-D-66N24T8-BW-CWM-ELB-EF-120 is a typical catalog number for a 2-lamp (2 lamps in cross-section), 4-foot long T8 fixture with white blade baffle, Matte White finish, electronic ballast, emergency fluorescent ballast, 120 volts.

W-ADW-66N14T8-6044-CWM-ELB-WCB-EF-120 is a typical catalog number for a 1-lamp (1-lamp in cross-section), 4-foot long T8 fixture with a 6044 lens, Matte White finish, electronic ballast, chalkboard mounting brackets, emergency fluorescent ballast, 120 volts.

Questions to Ask

1. 120 or 277 volt?
2. Row information, including desired fixture lengths?
3. Diffuser type?
4. White, *LiteColor*, or special color?
5. Tandem wiring?
6. Other options?

Chalkboard fixture

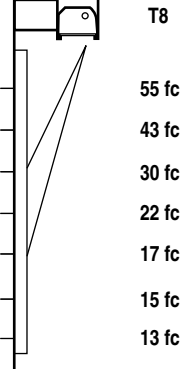


Vertical illuminance chart
Values calculated at center of 12-foot row mounted 7' above the floor.

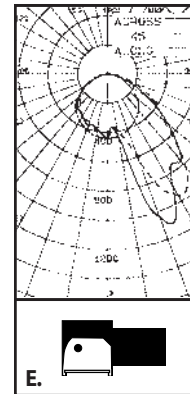
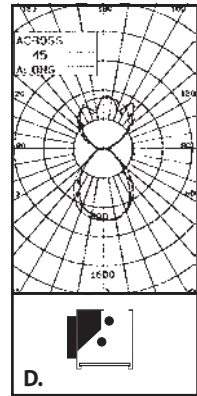
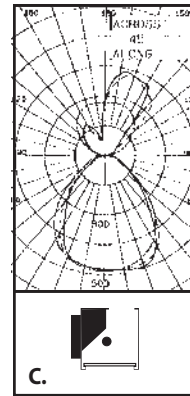
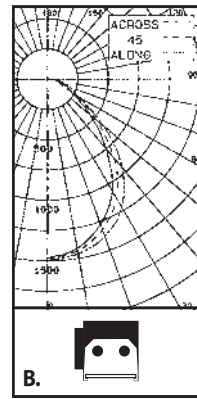
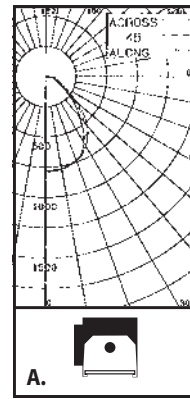
Room size: 8' x 12' x 9' high
Reflectances: 80/70/20;
30% chalkboard
Total Light Loss Factor: .72

Distance from Bottom of Luminaire

Room Surface Illuminance on Wall



Photometric data



A. W-D-66N14T8-XA 58.2% Efficiency
Litecontrol Certified Test Report #12111010

B. W-D-66N24T8-XA 51.1% Efficiency
Litecontrol Certified Test Report #12121010

C. W-ID-66N14T8-XA 69.4% Efficiency
Litecontrol Certified Test Report #10411010

D. W-ID-66N24T8-XA 67.2% Efficiency
Litecontrol Certified Test Report #10421010

E. W-ADW-66N14T8-6044 55.7% Efficiency
Litecontrol Certified Test Report #17811070

For complete photometric information, see website.

Click on Quick Find **66wd 66wid 66adw**
litecontrol.com

Diffusers (W-D-66N & W-ID-66N only)

- BW** Blade Baffle, White. 3/4" high x 3/4" OC, 20-gauge steel, regressed.
- PBSS** Parabolic Baffle. Semi-specular anodized aluminum, 1.4" high x 2" OC. (Used with standard reflector.)
- PWA** Louver. Parabolic specular aluminum, acrylic 1/2" cube, regressed.
- PAT.12(XA)** Lens. Diagonal 3/16" conical prisms, .100" thick extruded acrylic, regressed.
- PAT.19** Lens. 3/16" square prisms, .156" thick extruded acrylic, regressed.
- FP** Lens. White acrylic, .100" thick, regressed.
- PARSS** Parabolic Reflector/Baffle. Semi-specular anodized aluminum, parabolic reflector with 1.4" high x 2" OC parabolic baffles. **One-lamp cross-section W-D-66N only**
- 6044** Asymmetric Lens. 210" thick acrylic asymmetric lens (6044) to direct light towards wall. **W-ADW-66N only**

Ballast options

Specify in place of **ELB**, contact factory for availability/compatibility with lampping:

- DA/ELB** Advance Mark VII Dimming Ballast.
- HEL/ELB** Osram Sylvania Dimming Ballast.
- ECO/ELB** Lutron ECO-10 Dimming Ballast.

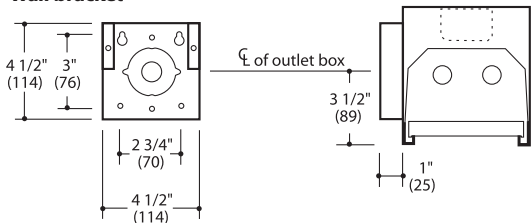
Other options

- EF** Emergency Fluorescent Ballast. Battery-powered ballast from a UL Listed manufacturer will operate one T8 lamp for 1 1/2 hours.
- F** Fuse. Slow or fast low, determined by Litecontrol.

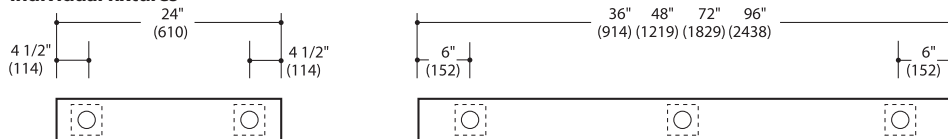
Planning for installation

For special system connectors needed to exactly fill a wall or follow a perimeter, field-measured dimensions may be required from the job site. Minimum SE length is 3.25". Please refer to Field Measurement Procedure for instructions.

Wall bracket



Individual fixtures



- Indicates wall mounting bracket location
- 2 1/2" diameter knockout (in fixture)

Center bracket for W-ID-66N 6' and 8' only

LITECONTROL ... an employee owned company

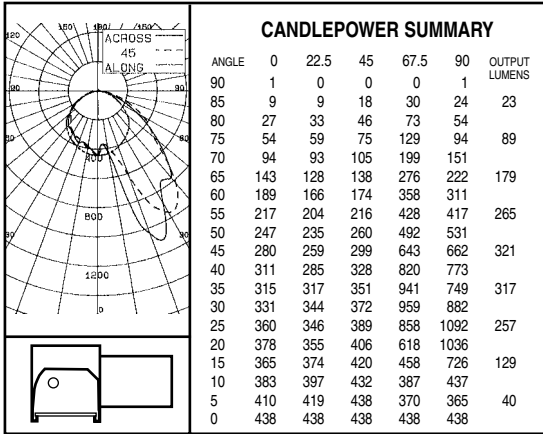
100 Hawks Avenue Hanson MA 02341 781 294 0100 FAX 781 293 2849 info@litecontrol.com litecontrol.com

PHOTOMETRIC DATA

		80				70				50				30				10				0								
RCC	RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10			
<p align="center">W-ADW-66N14T8-6044 55.7% Efficiency Litecontrol Certified Test Report #17811070</p>																														
RCC	RW																													
RCR																														
0		.66	.66	.66	.66	.65	.65	.65	.65	.62	.62	.62	.59	.59	.59	.57	.57	.57	.56	.56	.56	.56	.56	.56	.56	.56	.56	.56	.56	.56
1		.61	.59	.57	.55	.60	.58	.56	.54	.55	.54	.52	.53	.52	.51	.51	.50	.49	.48	.48	.48	.48	.48	.48	.48	.48	.48	.48	.48	.48
2		.56	.52	.49	.46	.55	.51	.48	.45	.49	.46	.44	.47	.45	.43	.46	.44	.42	.41	.41	.41	.41	.41	.41	.41	.41	.41	.41	.41	.41
3		.52	.46	.42	.39	.50	.45	.41	.38	.44	.40	.38	.42	.39	.37	.41	.38	.36	.35	.35	.35	.35	.35	.35	.35	.35	.35	.35	.35	.35
4		.47	.41	.36	.33	.46	.40	.36	.33	.39	.35	.32	.38	.34	.32	.36	.34	.31	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30
5		.43	.36	.31	.28	.42	.36	.31	.28	.34	.30	.27	.33	.30	.27	.32	.29	.27	.26	.26	.26	.26	.26	.26	.26	.26	.26	.26	.26	.26
6		.40	.32	.28	.24	.39	.32	.27	.24	.31	.27	.24	.30	.26	.23	.29	.26	.23	.22	.22	.22	.22	.22	.22	.22	.22	.22	.22	.22	.22
7		.36	.29	.24	.21	.36	.29	.24	.21	.28	.23	.21	.27	.23	.20	.26	.23	.20	.19	.19	.19	.19	.19	.19	.19	.19	.19	.19	.19	.19
8		.33	.26	.21	.18	.33	.25	.21	.18	.25	.21	.18	.24	.20	.17	.23	.20	.17	.16	.16	.16	.16	.16	.16	.16	.16	.16	.16	.16	.16
9		.31	.23	.18	.15	.30	.23	.18	.15	.22	.18	.15	.21	.18	.15	.21	.17	.15	.14	.14	.14	.14	.14	.14	.14	.14	.14	.14	.14	.14
10		.28	.21	.16	.13	.28	.21	.16	.13	.20	.16	.13	.19	.16	.13	.19	.15	.13	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12
<p align="center">Floor Cavity Reflectance .20</p>																														

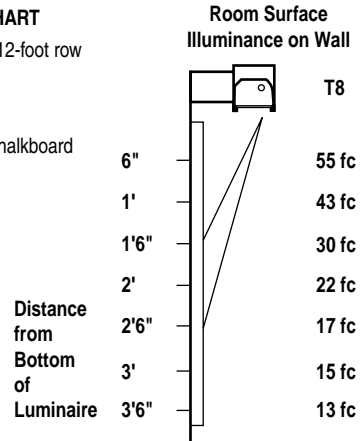
ZONAL LUMEN SUMMARY			
ZONE	LUMENS	% LAMP	% LUMINAIRE
180-90°	0	0	0
90-0°	1615	55.72	100
180-0°	1615	55.72	100

LUMINANCE SUMMARY (fL)					
ANGLE	0°	45°	90°	135°	180°
45°	623	578	664	1434	1477
55°	595	561	590	1178	1147
65°	532	478	513	1028	829
75°	330	356	457	784	571
85°	163	163	327	551	439



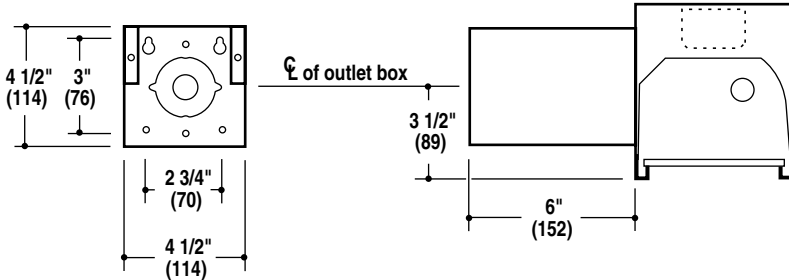
VERTICAL ILLUMINANCE CHART

Values calculated at center of 12-foot row mounted 7" above the floor.
 Room Size: 8' x 12' x 9' high.
 Reflectances: 80/70/20; 30% chalkboard
 Total Light Loss Factor: .72



PLANNING FOR INSTALLATION

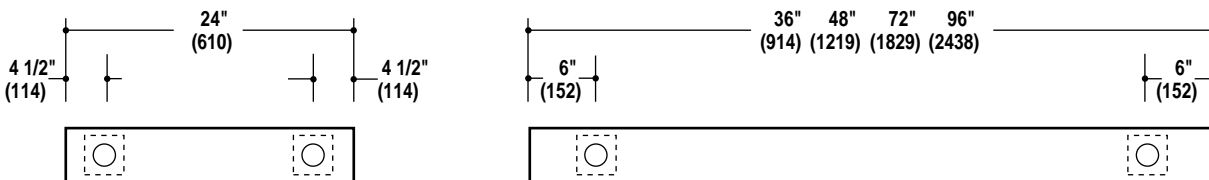
WALL BRACKET



QUESTIONS TO ASK:

1. 120 or 277 volt?
2. Row information, including desired fixture lengths?
3. White, LiteColor, or special color?
4. Verify 6044 Diffuser.
5. Other options?

INDIVIDUAL FIXTURES

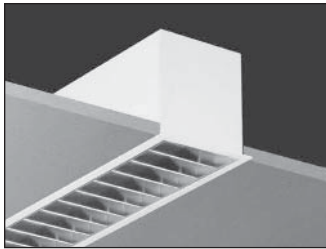


Indicates wall mounting bracket location

○ 2 1/2" diameter knockout (in fixture)



M100 Recessed Linear Fluorescent Flanged Extrusion



Project: BSC New Science Building **Type:** F16 **Qty:** _____

	-	1T5	-	MA	-	004	-	WH	-	277	-
Fixture Series		Lamp Type		Shielding		Mounting		Nominal Length		Finish	Voltage

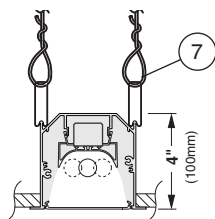
Options (refer to separate data sheets for ordering codes and details)

Fixture Series	Lamp Type	Shielding	Mounting	Nominal Length	Finish	Voltage	Options
M1R1 M100 Recessed Continuous Flange (Flanged Extrusion/ Flanged Endcaps)	1T5 F28T5	SA Specular Parabolic	SH Suspension Clips	004 4 foot	WH White	120	TB Lengths to Fit 2' Grid, T-Bar Ceiling System ¹ (qty.)EM Stand-by Battery Pack ² (prefix quantity, i.e. - 5EM) FS Single Fusing DM Dimming ¹ (specify system) DMA Digital Addressable Dimming ¹ SI Satine Acrylic Inlay ³ FW Flex Whip (standard) FW1 Flex Whip (dimming) Track Eutrac Standard ⁴ DL Suitable for Damp Locations CCEA Chicago Plenum Downlights (See MR16 spec sheets, pp.98-99)
	2T5 (2x)F28/T5	MA Matte Parabolic	TS 1" Studs (factory installed)	008 8 foot	BK Black	277	
	1T5HO F54T5HO	MP Silky Specular Parabolic	RC Rotating Crossbars	012 12 foot	SV Silver	347	
M1R2 M100 Recessed Flush End (Flanged Extrusion/ Flangeless Endcaps)	1T8 F032/T8	PL Matte Perforated Parabolic	PM Perimeter Mount	For actual lengths see following page. For other lengths, configurations indicate nominal length rounded to the next highest foot. Factory will supply layout drawings. Individual fixtures cannot be field joined.			
		SD Satine Lens			SP Specify RAL#		
		OD Extra Diffuse Lens					
		X None					

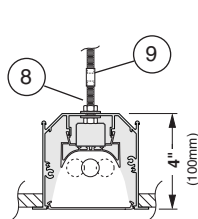
¹T5 & T5HO lamps only, consult factory for other lamps. ²Must be low profile ballasts (1 1/2" W x 1 3/16" H); consult factory for details. ³SA, MA, MP & PL shieldings only. ⁴Consult factory for details.

Mounting Diagrams

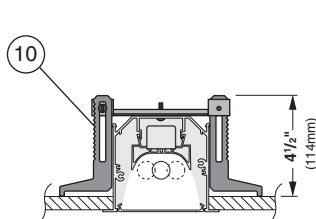
Suspension Clips (SH)



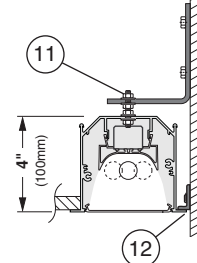
Pre-installed Rod (TS)



Rotating Crossbars (RC)



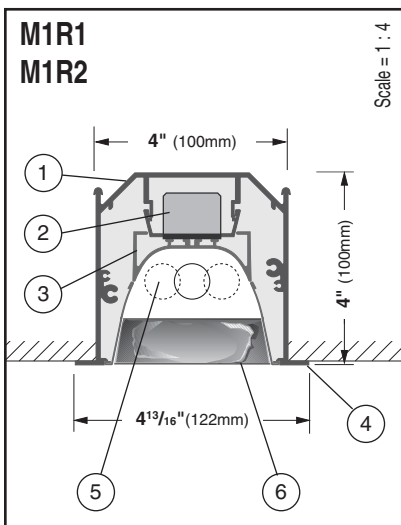
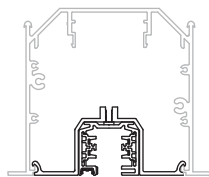
Perimeter Mount (PM)



Scale = 1 : 8

Track

Track insert including track available for all configurations, consult factory for details.



1. Housing - Continuous, 6063-T5 extruded aluminum profile up to 16 feet long. Joined with Connector Plus Joining System for ease of installation and to assure a uniform appearance.

2. Ballast - Electronic, high power factor, class "P", type "A" sound rating. Specify 120v, 277v, or 347v. Ballast is factory pre-wired with leads to one end of fixture. Consult factory for ballast options.

3. Gear Tray - Extruded aluminum, with white painted finish. Gear tray installed as a complete electrical unit and is held in place with knurled dress nuts. It is fully accessible from below ceiling.

4. Flange - 1/2" (12mm) wide flange runs full lengths of both sides and is part of the main extruded body. Specify continuous flange (M1R1) or flush end (M1R2).

5. Lamps - As noted (by others). Other lamp lengths or wattages available, consult factory.

6. Shielding - Louvers offer excellent glare control in longitudinal, lateral, and all diagonal planes. High quality aluminum louvers and acrylic shielding allow true freedom of layout for today's modern spaces.

7. Spring Steel Suspension Clips - Supplied two places, located nominally every 4 ft. Support wires supplied and installed by others.

8. Pre-installed 1" 1/4-20 Studs - Attached to fixture 6" (152mm) from each end of fixture housing.

9. Coupling and Threaded Rod to Structure - Supplied and installed by others.

10. Rotating Crossbar - For inaccessible ceilings, adjustable for

ceiling thicknesses from 1/4" to 2". Supplied, (2) per fixture, locate 6" (152mm) from each end of fixture.

11. Steel Wall Bracket and 1/4-20 Rod - Supplied, (2) per fixture, rods are attached to fixture 6" (152mm) from each end of fixture housing. (Fasteners to wall and wall anchors by others.)

12. Aluminum Wallbracket - Secured to wall (fasteners and wall anchors by others) and runs entire length of fixture. Also supplied for width of fixtures when supplied with continuous flange. Allows for 1/8" gap between flange and wall to create shadow line allowing for unevenness of wall.

Interior Luminaire Finish - Standard interior colors are White (WH), Black (BK) and Silver (SV). RAL colors (SP) are available, please specify RAL#.

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TEL: (845) 691-7723
FAX: (845) 691-6749
www.selux.com/USA
M1R1-01 (v5.1)



In a continuing effort to offer the best product possible, we reserve the right to change, without notice, specifications or materials that in our opinion will not alter the function of the product. Specification sheets found at www.selux.com/usa are the most recent versions and supercede all other printed or electronic versions.

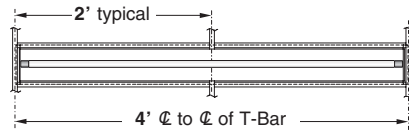
M1R1 and M1R2 Layout Dimensions

Specify T5 lamps when using in grid ceiling systems where 24" or 48" light openings are required.

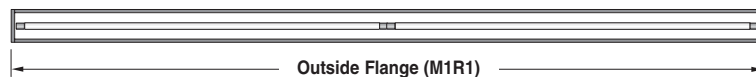
M1R1 Recessed - nominal 4 foot individual



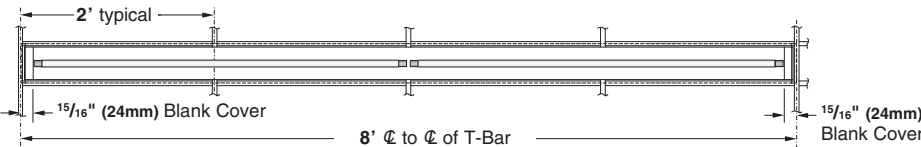
M1R1 Recessed - T-Bar Length - nominal 4 foot individual



M1R1 Recessed - nominal 8 foot individual



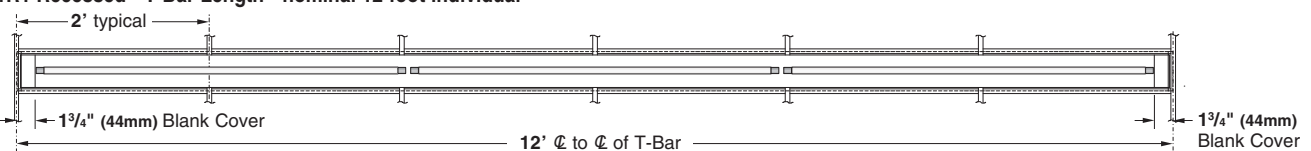
M1R1 Recessed - T-Bar Length - nominal 8 foot individual



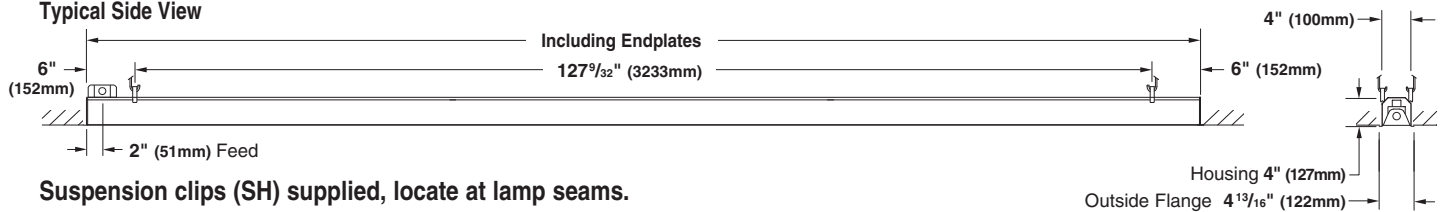
M1R1 Recessed - nominal 12 foot individual



M1R1 Recessed - T-Bar Length - nominal 12 foot individual



Typical Side View



Suspension clips (SH) supplied, locate at lamp seams.
Fixture supplied with 7/8 drilled hole located 2" from end in top of fixture.

	T5 (1 or 2 lamp)				T8 (1 lamp)	
	M1R1/M1R2 Including Endplates	M1R1 Outside Flange	M1R1/M1R2 - TB Including Endplates	M1R1 - TB Outside Flange	M1R1/M1R2 Including Endplates	M1R1 Outside Flange
4 foot individual	46.78" (1188mm)	47.58" (1209mm)	47.03" (1195mm)	47.91" (1217mm)	48.33" (1228mm)	49.20" (1250mm)
8 foot individual	93.19" (2367mm)	94.00" (2388mm)	95.03" (2414mm)	95.91" (2436mm)	96.37" (2448mm)	97.24" (2470mm)
12 foot individual	139.59" (3546mm)	140.41" (3568mm)	143.03" (3633mm)	143.91" (3655mm)	144.41" (3668mm)	145.28" (3690mm)

For other lengths, lamping, continuous runs or configurations please specify overall length (in feet), accessories desired and sketch/drawing of configuration. SELUX will detail project drawings upon order and supply submittal drawings for approval. Individual fixtures cannot be field joined. If you have any questions please contact SELUX customer service or applications engineering for assistance (1-800-SELUX-CS).

LINCS®

1" Modular Task Light
T5/T5HO Fluorescent

LINCS100F Series



PROJECT BSC New Science Building	TYPE
PROJECT LOCATION Buffalo, NY	
CATALOG #	

Description

The Little Inch Connecting System (LINCS®) sets the standard for flexible, inconspicuous task lighting. LINCS® unique labor-saving plug-together design affords premium quality at a low installed cost. The attractive extruded aluminum design dissipates heat, is durable, lightweight and corrosion resistant. Lamp choices include T5, T5HO and preheat T5 fluorescent lamps to best suit your application requirements. The wide variety of finishes and wiring options make LINCS® a great choice for both residential and commercial applications.

Additional features:

- Miniature 1" profile
- LINCS® can be installed 4 times faster than conventional undercabinet task luminaires.
- Optional integral occupancy sensor automatically switches LINCS® on when the task area is occupied and off when vacant helping to maximize energy savings.
- Optional wiring module with master On/Off switch or duplex convenience outlet.
- Backed by a Lifetime Warranty.



Specifications

Construction .060" extruded aluminum housing with injection molded polycarbonate endcaps and covers.

Reflector & Lens All LINCS® lenses are extruded from Alkacrylic™ DR acrylic and are warranted against breakage or discoloration. The linear prism lens is standard. A white opal lens (WL) or an opaque front task lens (OF) are optional.

Finish LINCS® is available in a white or black polyester powder coat paint finish or a satin aluminum finish. White models have white endcaps. Black and satin aluminum models have black endcaps.

Lamps LINCS® is available with T5, T5HO or preheat T5 lamps. The T5/T5HO lamps have an average lamp life of 20,000 hours and are supplied with 3000K

color temperature. 3500K and 4100K lamps can be requested. The preheat T5 lamps have an average lamp life of 7,500 hours and are supplied with a warm white lamp. Cool white or 3000K lamps available.

Listings UL & CUL Listed for direct-wired and portable installations. The luminaire is IBEW labeled.

Electrical The T5/T5HO models utilize an electronic ballast for 120 or 277 volt applications. The preheat T5 models have an electronic instant start ballast for 120 volt applications only. Ballasts are thermally protected, have a Class "A" sound rating and end-of-life protection. 347 volt not available. Optional passive infrared occupancy sensor control (OSC) available.

Installation Male and female grounded Molex™

connectors are built into each end for modular, plug-together electrical connection. LINCS® can also be connected with interconnect cords. A UL recognized 3/8" flexible metal conduit/non-metallic sheathed wiring connector is supplied for direct-wiring the power into back of housing or through adapter plate at the ends. All models (except for LINCS100F12) have a wiring access panel with a knockout to allow quick wiring without opening the wireway cover. The power cords plug directly into the end of the fixtures and provide an alternative method for wiring.

Warranty All luminaire components, except for lamps and transformers, are warranted against defects during the life of the original installation.

Ordering Information

Sample Catalog No: **LINCS100F35 - 120 - WHG - OSC** (Note: Separate multiple options with a comma.)

LINCS100FS46	277	WHG	
NOM. LENGTH	Voltage	Finish	Options
T5 Lamps	120	WHG White Glossy	CSJT-3
23-7/8" LINCS100FS23 (1) F14 T5 (Med. Bipin)	277¹	MB Matte Black	DIM^{2,3,5}
35-11/16" LINCS100FS35 (1) F21 T5 (Med. Bipin)		SA Satin Aluminum	OF
47-1/2" LINCS100FS46 (1) F28 T5 (Med. Bipin)			WL
59-5/16" LINCS100FS58 (1) F35 T5 (Med. Bipin)			OSC⁴
T5HO Lamps			RSW⁵
23-7/8" LINCS100HO23 (1) F24 T5HO (Med. Bipin)			HLRSW⁵
35-11/16" LINCS100HO35 (1) F39 T5HO (Med. Bipin)			MSBRK
47-1/2" LINCS100HO46 (1) F54 T5HO (Med. Bipin)			SBF
Preheat T5 Lamps			Wiring Module with Rocker Switch
13-5/8" LINCS100F12 (1) F12 T5 (Med. Bipin)			Wiring Module with Duplex Outlet
22-5/8" LINCS100F21 (1) F13 T5 (Med. Bipin)			3' Straight power cord
25-13/16" LINCS100F24 (2) F8 T5 (Med. Bipin)			6' Straight power cord
34-13/16" LINCS100F33 (1) F8 T5 (Med. Bipin)			10' Straight power cord
			2'-4' Flexible coiled power cord
			6" Straight interconnect cord
43-13/16" LINCS100F42 (2) F13 T5 (Med. Bipin)			12"-36" Flexible coiled interconnect cord

- 1 277 volt not available with T5 preheat lamps.
- 2 Dimming control supplied by others
- 3 Dimming available for models: LINCS100FS35, FS46, FS58 and LINCS100HO46
- 4 OSC is not available with LINCS100F12
- 5 Not available when the OSC option is selected.
- 6 Specify a finish for these options.
- 7 To designate the cord color add a "W" for white or a "B" for black to the model number. (Example: LINCS100ICSW)

Specify Qty. of Connectors Needed

QTY:	LINCS100-1/RSW ⁶	Wiring Module with Rocker Switch
QTY:	LINCS100-2/CO ⁶	Wiring Module with Duplex Outlet
QTY:	LINCS100PC3 ⁷	3' Straight power cord
QTY:	LINCS100PC6 ⁷	6' Straight power cord
QTY:	LINCS100PC10 ⁷	10' Straight power cord
QTY:	LINCS100PCF4 ⁷	2'-4' Flexible coiled power cord
QTY:	LINCS100ICS ⁷	6" Straight interconnect cord
QTY:	LINCS100ICF ⁷	12"-36" Flexible coiled interconnect cord

LINCS®

1" Modular Task Light
T5/T5HO Fluorescent

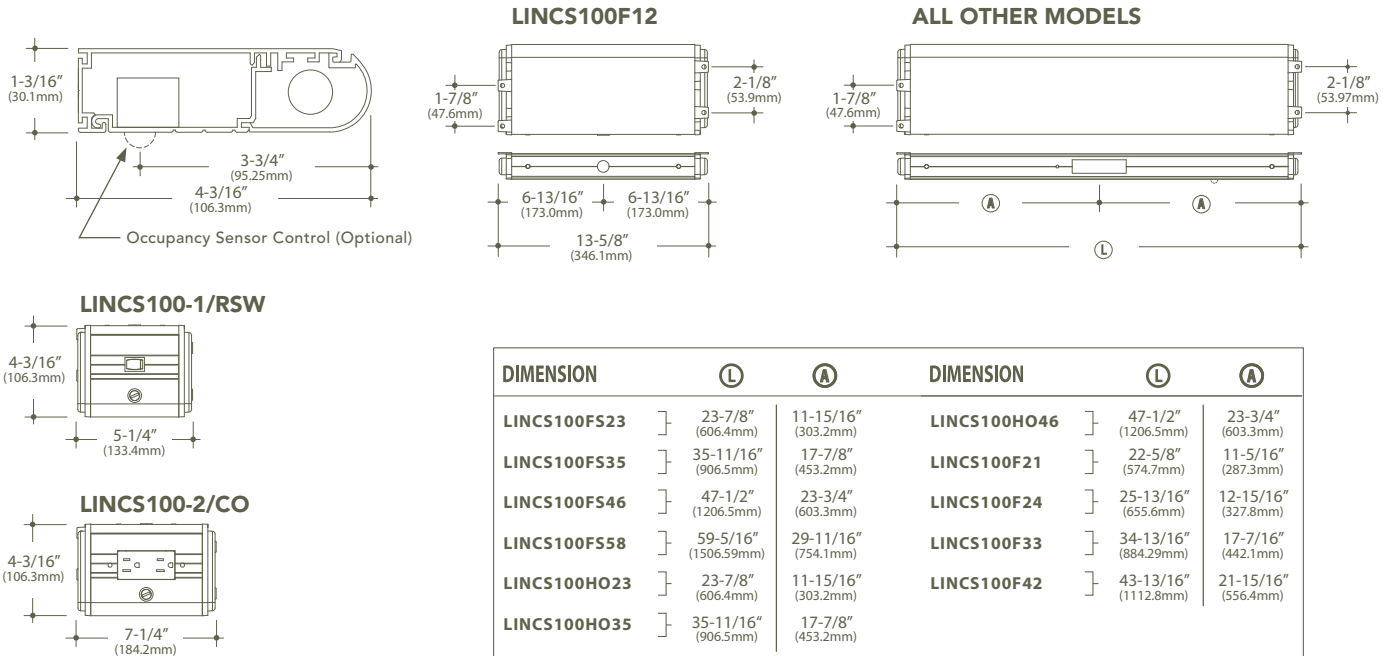
LINCS100F Series



PROJECT
BSC New Science Building

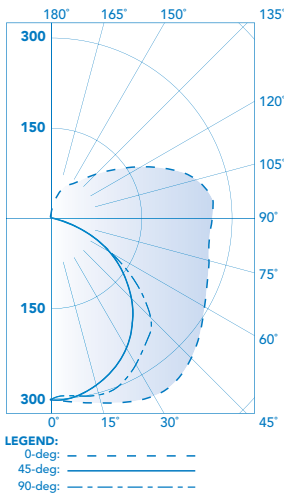
TYPE

Dimensional Data



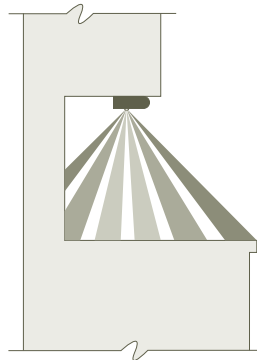
LINCSFS35

(1) 21W T5 Fluorescent - miniature bi-pin base
 4450 lumens per lamp
 Report No.: ITL52771
 Efficiency: 67.3%



Integral occupancy sensor control (OSC)

The OSC also has a built-in photocell to prevent the luminaire from turning on when room has adequate illumination. Only the first luminaire in the interconnected row requires the OSC option.



ELECTRICAL DATA - T5HO

Lamp Wattage	24	39	54
Lamp Lumens*	1900	3325	4750
Input Watts	41	40	62
Max. Amps	.34	.34	.52
Power Factor	.98	.98	.96

ELECTRICAL DATA - T5

Lamp Wattage	14	21	28	35
Lamp Lumens*	1275	2000	2750	3450
Input Watts	18	25	33	40
Max. Amps	.15	.21	.28	.34
Power Factor	.98	.98	.98	.98

ELECTRICAL DATA - Preheat T5

Lamp Wattage	8	13	8/13	(2)8	(2)13
Lamp Lumens*	300	655	955	600	1310
Input Watts	10	14	23	19	28
Max. Amps	.08	.12	.20	.16	.24
Power Factor	.97	.97	.97	.98	.97

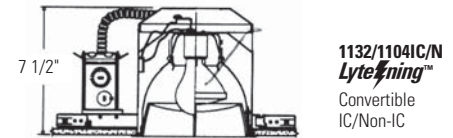
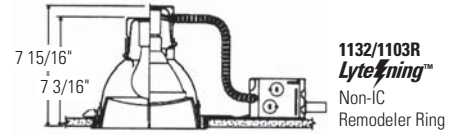
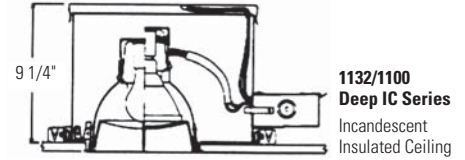
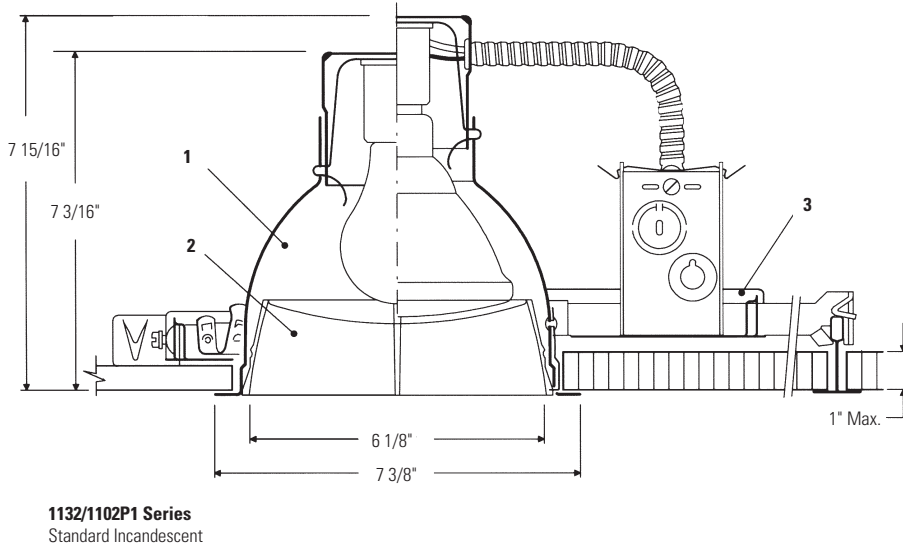
* Based on design lumens.

► Go to www.alkco.com for additional Photometric Data

11500 Melrose Avenue Franklin Park, Illinois 60131
 Phone: 847-451-0700 Toll-Free: 1-866-50ALKCO
 Fax: 847-451-7512 www.alkco.com 12/09

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(Hg) Some luminaires use fluorescent or high intensity discharge (HID) lamps that contain small amounts of mercury. Such lamps are labeled "Contains Mercury" and/or with the symbol "Hg". Lamps that contain mercury must be disposed of in accordance with local requirements. Information regarding lamp recycling and disposal can be found at www.lamprecycle.org



Complete Fixture consists of Reflector Trim & Frame-In Kit. Select each separately.

Reflector Trim	Frame-In Kit — See Individual Frame-In Kit Specification Sheets								
	Incandescent				Fluorescent				
	Frame-In Kit	Ceiling Type	Lamping	Height	Frame-In Kit	Ceiling Type	Lamping	Height	
1132 Matte White	1102P1	Non-IC	100W A19	7 3/16"; 7 15/16"	1101F18U Series	UniFrame™	(1) Triple 18W	7 1/16" max.	
	1103R	Non-IC Remodeler	150W PAR38	7 3/16"; 7 15/16"		Non-IC	(GX24q-2)		
	1100IC	IC	60W A19	7 5/16"	1100FTU Series	Non-IC	(1) Triple 26/32W	6 3/4"	
	1100AICM	AirSeal® IC	75W PAR30	7 5/16"					GX24q-3
	1100DICM	Deep IC	60W A19	9 1/4"					
	1100DAICM	Deep AirSeal® IC	90W PAR38	9 1/4"	1101F18ICU/N	Performance IC	(1) Triple 18W	7 1/4"	
	1104ICX/N	AirSeal® IC	52W A19	7 1/4"					GX24q-2
	1104IC/N	AirSeal® IC	40W A19	7 1/2"	1104F13ES Series	Airseal® IC	(1) Triple 13W	7 1/2"	
	1104ICR	IC Remodeler	50W PAR30	7 1/2"					GX24q-1
	1104IC/N	Non-IC	60W A19	7 1/2"	1104F18ES Series	Airseal® IC	(1) Triple 18W	7 1/2"	
1104ICR	Non-IC Remodeler	75W PAR30	7 1/2"	GX24q-2					
						1910XFH1	Conversion Kit	(1) Quad 13W	7 3/16"
					GX23-2				
						1910XDH1	Conversion Kit	(2) Quad 13W	6 3/4"
					GX23-2				

Features

- Reflector:** Hydroformed aluminum, 0.040" minimum thickness; Anobrite® (anodic-processed) semi-specular finish for permanent reflectivity; matte white trim flange.
- Cross Blade:** Die cast aluminum painted matte white or satin aluminum.
- Frame-In Kit:** (1102P1 standard frame shown.) Other frames listed above and shown around. See Frame-In Kit specification sheets for more details.

Options & Accessories

- Retaining Clips:** 1955 - For installing in existing ceiling
Extra Wide Flange Trim Ring: 1957 - 8 5/8" O.D.

Labels

UL (Suitable for Damp Locations), I.B.E.W.

US Patent Numbers: 4,313,154; 4,327,403; 4,751,624; 5,045,985
Other US & Foreign Patents Pending.

Job Information

Type: F15

Job Name: BSC New Science Building

Cat. No.: 1132-1100FTU

Lamp(s): PL-T-26

Notes:

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LUNERA 6400^{LED}



6400 SERIES 4FT X 6.7IN SUSPENDED LED FIXTURE

Project	Catalog #	Type
Firm	Specifier	Qty

INTENDED USE

The 6400 Series is an LED luminaire for suspended applications. Designed as direct replacement for linear fluorescent fixtures, the Lunera 6400 Series is available in a variety of color temperatures, dimmable options and driven by a 30 watt power supply.

Lunera LED fixtures provide uniform soft light with an extended lifetime that delivers significant savings over typical linear fluorescent fixtures. The Lunera 6400 provides 25%-50% energy savings while meeting IESNA recommended illumination levels. Ideal for use in office, hospital, retail, educational and other commercial applications.

FEATURES

THE 6400 IS DESIGNED AS A DIRECT REPLACEMENT FOR 4' FLUORESCENTS IN COMMERCIAL SPACES.

- 1,700 lumens
- 30 watts
- .55 watts/sq. ft (typical)
- Smooth continuous dimming (0-10 volt)
- Multiple color temperatures up to 5000K
- 5 Year Warranty
- Easily remotable power supply up to 100'

CONSTRUCTION

Solid design, precision tooling and exacting quality control create a commercial LED fixture that meets the industry's needs and requirements.

Anodized aluminum extrusion with acrylic layers, tested and proven LEDs and a solid state power supply.

ELECTRICAL SYSTEM

Standard driver is high efficiency, solid-state with smooth dimming available, 120V 50/60Hz or 277V 50/60Hz available.



ORDERING

PLATFORM 6400	DIRECTIONAL DR	FRAME	CCT	POWER	WATTAGE 032	CONTROL	PSU
------------------	-------------------	-------	-----	-------	----------------	---------	-----

6400

DR: DIRECT

S: SILVER
C: CUSTOM

4000: 4000K
5000: 5000K

120V: 120 VOLTS
277V: 277 VOLTS
999M: MULTI VOLT

032: 32 WATTS

SS: STANDARD SWITCH
DM: 0-10V DIM

IN: INTEGRATED
RE: REMOTE



1,700 lumens



30 watts

ACCESSORIES

HANGING HARDWARE	BATTERY BACKUP
------------------	----------------

HS1: HANGING HARDWARE (8 FT)
NA: NONE

1BB: BATTERY BACKUP
NA: NONE

INSTALLATION INSTRUCTIONS, LM-79 TESTING, AND IES FILES AVAILABLE ONLINE AT WWW.LUNERA.COM

LUNERA 6400 SUSPENDED LED FIXTURE

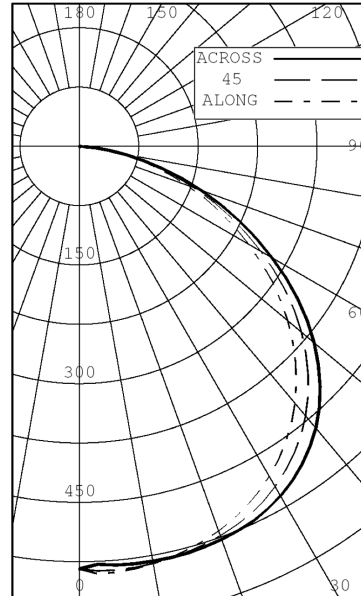
SPECIFICATIONS

Item	Specification	
Output	Lumen Maint (L70)	50,000 Hours
	Color Temperature	4000K, 5000K
	Lumens	1,700
	Efficacy (lm/w)	54
	Color Consistency	Proprietary Algorithm
	Power Factor	> 90%
Electrical	Input Voltage	120V 50/60 Hz or 277V 50/60 Hz
	Power Consumption	30W
Control		Dimming, 0-10 V
Physical	Dimensions (HxWxD)	48" x 6.7" x 1"
	Weight	11lbs
	Housing	Anodized Aluminum
	Optics	Acrylic
	Mounting	Fits standard size drop ceiling grid (15/16, 9/16, Chicago Plenum)
	Operating Temperature	-15°F to 115°F+ dF (-26°C to 46°C)
	Humidity	20%-85% RH, non- condensing
	Fixture Run Lengths	15' nominal, 100' available
Certification & Safety	Certification	UL, CUL, ETL, FCC
	Material usage	No mercury or lead used, ROHS compliant
	Environment	Dry and Damp
	LED Class	L70 Rated to 50,000+ hrs @ T ≤ 130°C (266°F)

PHOTOMETRICS

ZONAL LUMEN SUMMARY

Zone	Lumens	% LAMP	% FIXT
0-30°	437	26.2	26.2
0-40°	732	43.8	43.8
0-60°	1327	79.5	79.5
0-90°	1668	100.0	100.0

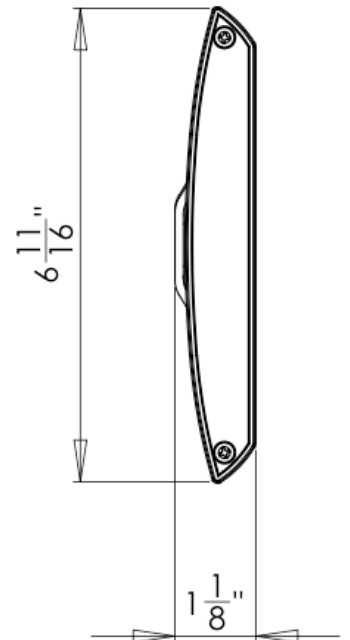
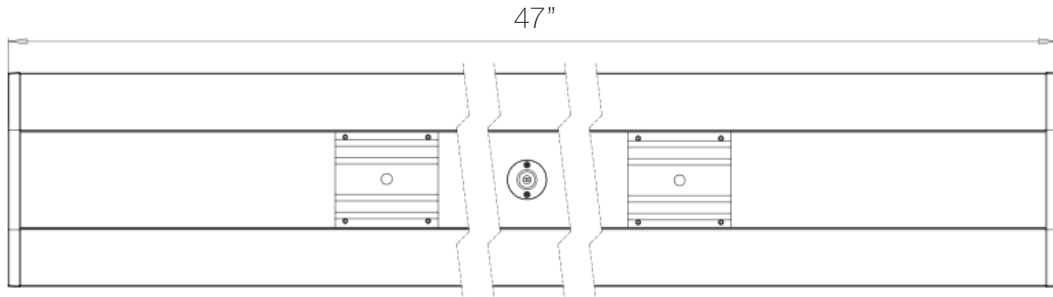


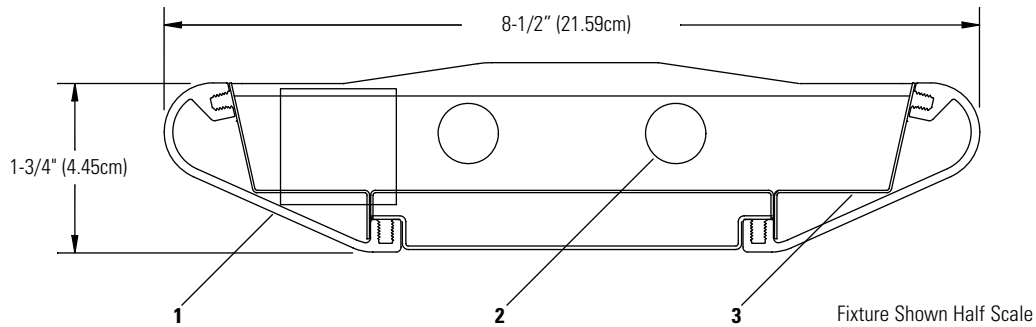
INTENSITY (CANDLEPOWER) SUMMARY

Angle	0°	45°
0°	534	534
5°	540	537
15°	528	531
25°	501	512
35°	454	473
45°	386	408
55°	296	317
65°	196	209
75°	97	103
85°	19	20
90°	0	0



DIMENSIONS & MOUNTING





Ordering Information

Family	Lamps	Length	Shielding	Ballast	Voltage	Finish
LSB	2 2 = 2-Lamp T5	4 4 = 4-Foot 8 = 8-Foot	A A = Solid	28 28 = 28W T5 54 = 54W T5 5E = 54W T5 Emergency Pack 2E = 28W T5 Emergency Pack 5D = 54W T5 Dimming	277 1 = 120 volt 2 = 277 volt	WH AL = Aluminum WH = White

Complete ordering instructions below.

Features

- Housing:** Extruded aluminum. Die-cast end cap mechanically attached with no exposed fasteners or hardware.
- Lamping:** Two T5, 28 or 54 watt (as specified) fluorescent lamps per 4-Foot nominal section. Provided by others.
- Reflector:** Precision die-formed semi-specular aluminum.

Electrical

Ballast is <10% THD, .98 ballast factor, pre-heat start. 18 gauge wire. Color-coded quick connectors allow ease of connection for joiner modules. Power feed is 18 gauge white SJT. For special circuiting consult factory. Factory installed ballast disconnect allows the ballast to be disconnected from and reconnected to incoming power under load without turning the entire circuit off.

Dimming: 120/277 VAC 1% dimming level, 4 wire feed required.

Emergency Battery Pack: 28 watt: 520 lumens @ 90 minutes, 54 watt: 700 lumens @ 90 minutes.

Mountings

Cable suspension (not shown) - 4-1/2" (11.43cm) diameter canopy finished white enamel, 1/16" (0.16cm) diameter stainless steel aircraft cable adjustable up to 36" (91.44cm). Dual-screw draw-tight connector to create hairline seam between joiner modules.

Finish

Powder coated baked white or aluminum finish. Custom colors available, consult factory.

Options and Accessories

Emergency circuiting; special circuiting; X, T & L joiner blocks - consult factory.

Labels

UL, cUL and I.B.E.W.

Ordering Instructions

Individual Fixtures:

- Order number of MODULES required.
- Order one POWER FEED END SET per MODULE.

Continuous Rows:

- Determine run length.
- Order the appropriate number of MODULES for the complete run.
- Order one POWER FEED END SET per run.
- Order one CABLE ASSEMBLY per MODULE minus one per run.
- For runs that exceed amperage limits, order the appropriate number of CABLE/CORD ASSEMBLIES.

Job Information

Type: F13

Job Name: BSC New Science Building

Cat. No.: LSB-24A-28-277-WH

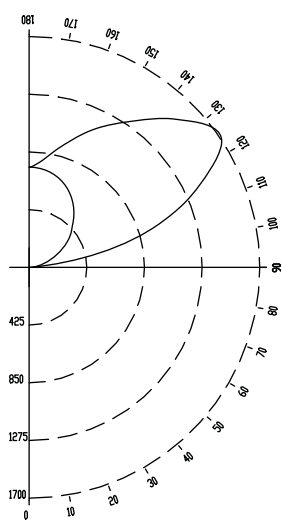
Lamp(s): 28WT5

Notes:

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Performance

CANDLEPOWER CURVE



ZONE DEG.	CANDLEPOWER				
	0	22	45	67	90
180	738	738	738	738	738
175	736	743	753	772	771
165	707	768	833	914	923
155	652	779	914	1081	1120
145	567	772	991	1246	1313
135	454	728	1038	1433	1541
125	354	690	1165	1685	1715
115	227	649	1211	1357	1361
105	119	590	746	792	793
95	34	162	117	118	93
90	14	24	15	15	15
85	0	0	0	0	0
75	0	0	0	0	0
65	0	0	0	0	0
55	0	0	0	0	0
45	0	0	0	0	0
35	0	0	0	0	0
25	0	0	0	0	0
15	0	0	0	0	0
5	0	0	0	0	0
0	0	0	0	0	0

COEFFICIENTS OF UTILIZATION % EFFECTIVE CEILING CAVITY REFLECTANCE

	WALL REFLECTANCE								
	80			70			50		
	70	50	30	70	50	30	50	30	10
0	82	82	82	70	70	70	48	48	48
1	75	71	68	64	61	58	42	40	39
2	68	62	57	58	53	49	36	34	32
3	62	54	49	53	47	42	32	29	27
4	56	48	42	48	41	36	28	25	23
5	51	42	36	44	36	31	25	22	19
6	47	38	31	40	32	27	22	19	16
7	43	34	27	37	29	27	20	17	14
8	40	30	24	34	26	21	18	15	12
9	37	27	21	31	24	19	16	13	11
10	34	25	19	29	21	17	15	12	10

20% FLOOR CAVITY REFLECTANCE

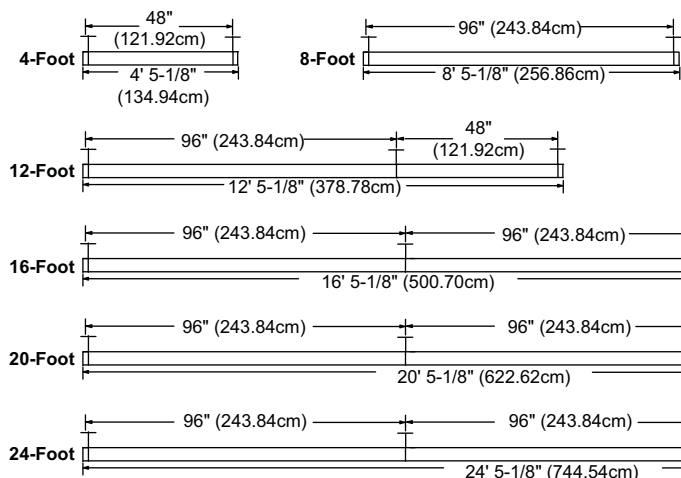
DISTRIBUTION

Zone	Lumens	% Lamp	% Luminaire
0-90	0	0.0	0.0
90-180	4995	86.1	100.0
0-180	4995	86.1	100.0

REPORT NO: LRL 300-1E
 CAT NO: LSB24A28
 LAMPS: 2 F28T5
 LUMENS: 2900
 EFFICIENCY: 86.1%

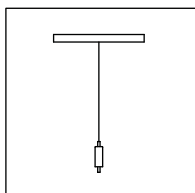
Calculations are for 28 watt T5 lamps, for 54 watt T5 lamps multiply by 1.7

Fixture Lengths & Mounting Locations

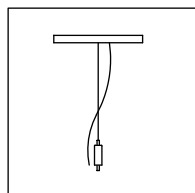


	4-Foot Module	8-Foot Module	Cable/ Assembly	Power Feed End Set
4-Foot Run	1			1
8-Foot Run		1		1
12-Foot Run	1	1	1	1
16-Foot Run		2	1	1
20-Foot Run	1	2	2	1
24-Foot Run		3	2	1

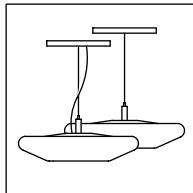
Mounting Accessories



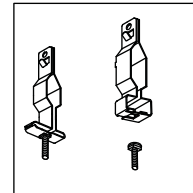
Cable Assembly
 Single Cable: **LSBC36**



Cable/Cord Assembly
 Single Cable & Cord: **LSBCC36**
 Single Cable & 4 Wire Cord*: **LSBCC36X4**



Power Feed End Set
 Straight Cord: **LSBEC36WH** (white)
LSBEC36AL (aluminum)
 4 Wire Cord*: **LSBEC36WHX4** (white)
LSBEC36ALX4 (aluminum)



Ceiling Grid Kit
CGK
 Includes both Standard 1" (254cm)
 Tee Bar Clip & Slot Tee Clip

*Use for dimming, switching, and emergency battery packs.

Job Information

Type: F13

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PL-T 26W/835/4P ALTO ICT

Product family description

PL-T Triple 4pin Fluorescent Lamp with Amalgam.

Features/Benefits

- ALTO® Lamp Technology - Passes EPA's TCLP test for non-hazardous waste.
- Utilizes amalgam technology to provide > 90% of rated lumens in ambient temperatures from 23F to 130F.
- Triple tube design available in 18, 26, 32, and 42W.
- Excellent Color Rendering - 82 Color Rendering Index (CRI).
- Broad Range of Color Temperature - Available in 2700, 3000, 3500 and 4100K.
- Dimmable - PL-T 4-pin lamps may be used with electronic dimming ballasts.
- Long Life - 12,000 hours.
- Energy Saving - Designed for use with electronic ballasts for lower operating costs and flicker-free starting.

Applications

- Ideal for downlights and medium bay multi-lamp fixtures for general lighting.

Notes

- Rated average life under specified test conditions with lamps turned off and restarted no more frequently than once every 3 operating hours. Lamp life is appreciably longer if lamps are started less frequently. (202)
- Approximate Initial Lumens. The lamp lumen output is based upon lamp performance after 100 hours of operating life, when the output is measured during operation on a reference ballast under standard laboratory conditions. (203)
- Design Lumens are the approximate lamp lumen output at 40% of the lamp's Rated Average Life. This output is based upon measurements obtained during lamp operation on a reference ballast under standard laboratory conditions. (208)

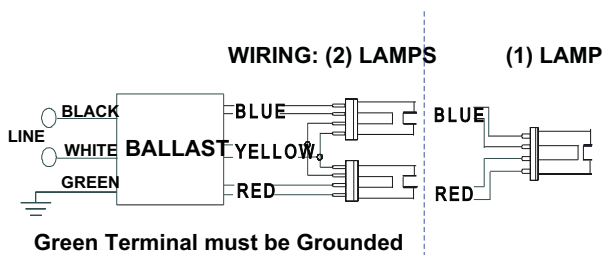
Product data	
Product Number	268243
Full product name	PL-T 26W/835/4P ALTO ICT
Ordering Code	268243
Pack type	1 Lamp in a Folding Carton
Pieces per Sku	1
Skus/Case	12
Pack UPC	046677268244
EAN2US	
Case Bar Code	50046677268249
Successor Product number	
Base	GX24q-3
Base Information	4P
Execution	/4P [4 Pins]
Packing Type	ICT [1 Lamp in a Folding Carton]
Packing Configuration	12
Avg. Hrs. Life	16000 hr
Ordering Code	PL-T 26W/835/4P/ALTO
Pack UPC	046677268244
Case Bar Code	50046677268249
Watts	26W
Lamp Wattage EL	24.0 W
Lamp Voltage	80 V
Dimmable	Yes
Color Code	835 [CCT of 3500K]
Color Rendering Index	82 Ra8
Color Designation	White
Color Description	835 White
Color Temperature	3500 K
Initial Lumens	1800 Lm
Initial Lumens	1800 Lm
Overall Length C	126.4 mm
Diameter D	39.85 mm
Diameter DI	39.65 mm
Special Note	/ALTO
Product Number	268243

ICF-2S26-H1-LD@277	
Brand Name	SMARTMATE
Ballast Type	Electronic
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

Electrical Specifications

Lamp Type	Num. of Lamps	Rated Lamp Watts	Min. Start Temp (°F/C)	Input Current (Amps)	Input Power (ANSI Watts)	Ballast Factor	MAX THD %	Power Factor	MAX Lamp Current Crest Factor	B.E.F .
* CFM26W/GX24Q	1	26	0/-18	0.11	29	1.10	10	0.98	1.5	3.79
CFM26W/GX24q	2	26	0/-18	0.20	54	1.00	10	0.99	1.5	1.85
CFM32W/GX24q	1	32	0/-18	0.13	36	0.98	10	0.98	1.5	2.72
CFM42W/GX24q	1	42	0/-18	0.17	46	0.98	10	0.98	1.5	2.13
CFQ26W/G24q	1	26	0/-18	0.10	27	1.00	10	0.98	1.5	3.70
CFQ26W/G24q	2	26	0/-18	0.19	51	1.00	10	0.99	1.5	1.96
CFS21W/GR10q	2	21	0/-18	0.18	51	1.12	10	0.99	1.5	2.20
FT24W/2G11	2	24	0/-18	0.18	48	0.93	10	0.99	1.5	1.94

Wiring Diagram

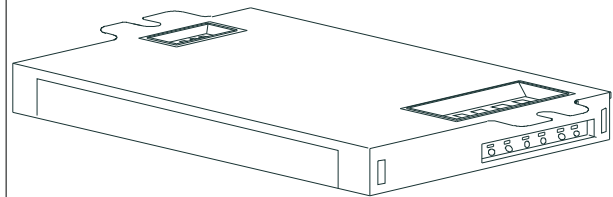


The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

	in.	cm.		in.	cm.
Black	0.0		Yellow/Blue		
White	0.0		Blue/White		
Blue	0.0		Brown		
Red	0.0		Orange		
Yellow	0		Orange/Black		
Gray			Black/White		
Violet			Red/White		

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
4.98 "	2.4 "	1.0 "	4.6 "
4 49/50	2 2/5	1	4 3/5
12.6 cm	6.1 cm	2.5 cm	11.7 cm

Revised 09/02/2004



Data is based upon tests performed by Philips Lighting Electronics N.A. in a controlled environment and is representative of relative performance. Actual performance can vary depending on operating conditions. Specifications are subject to change without notice. All specifications are nominal unless otherwise noted.

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Customer Support/Technical Service: 800-372-3331 · OEM Support: 866-915-5886

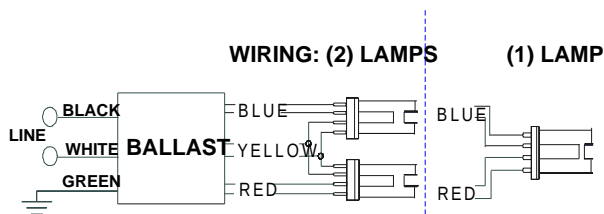
ICF-2S26-M1-BS@277

Brand Name	SMARTMATE
Ballast Type	Electronic
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

Electrical Specifications

Lamp Type	Num. of Lamps	Rated Lamp Watts	Min. Start Temp (°F/C)	Input Current (Amps)	Input Power (ANSI Watts)	Ballast Factor	MAX THD %	Power Factor	MAX Lamp Current Crest Factor	B.E.F .
CFM26W/GX24Q	1	26	0/-18	0.11	29	1.10	10	0.98	1.5	3.79
CFM26W/GX24q	2	26	0/-18	0.20	54	1.00	10	0.99	1.5	1.85
* CFM32W/GX24q	1	32	0/-18	0.13	36	0.98	10	0.98	1.5	2.72
CFM42W/GX24q	1	42	0/-18	0.17	46	0.98	10	0.98	1.5	2.13
CFQ26W/G24q	1	26	0/-18	0.10	27	1.00	10	0.98	1.5	3.70
CFQ26W/G24q	2	26	0/-18	0.19	51	1.00	10	0.99	1.5	1.96
CFS21W/GR10q	2	21	0/-18	0.18	51	1.12	10	0.99	1.5	2.20
FT24W/2G11	2	24	0/-18	0.18	48	0.93	15	0.99	1.5	1.94

Wiring Diagram



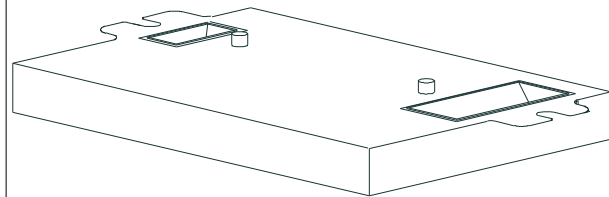
Green Terminal must be Grounded

The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

	in.	cm.		in.	cm.
Black	0.0		Yellow/Blue		
White	0.0		Blue/White		
Blue	0.0		Brown		
Red	0.0		Orange		
Yellow	0		Orange/Black		
Gray			Black/White		
Violet			Red/White		

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
4.98 "	2.40 "	0.98 "	2.00 "
4 49/50	2 2/5	0 49/50	2
12.6 cm	6.1 cm	2.5 cm	5.1 cm

Revised 08/17/2006



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ICF-2S26-M1-BS@277	
Brand Name	SMARTMATE
Ballast Type	Electronic
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

Electrical Specifications

Notes:

Section I - Physical Characteristics

- 1.1 Ballast shall be physically interchangeable with standard electromagnetic or standard electronic ballasts, where applicable.
- 1.2 Ballast shall be available in a plastic/metal can or all metal can construction to meet all plenum requirements.
- 1.3 Ballast shall be provided with poke-in wire trap connectors color coded per ANSI C82.11.

Section II - Performance Requirements

- 2.1 Ballast shall be Programmed Start except for ballasts with -QS suffix, which shall be Rapid Start.
- 2.2 Ballast shall contain auto restart circuitry in order to restart lamps without resetting power.
- 2.3 Ballast shall operate from 50/60 Hz input source of 120V through 277V with sustained variations of +/- 10% (voltage and frequency) with no damage to the IntelliVolt ballast. RCF models shall operate from 60 Hz input source of 120V with sustained variations of +/- 10% (voltage and frequency) with no damage to the ballast.
- 2.4 Ballast shall be high frequency electronic type and operate lamps at a frequency above 42 kHz to avoid interference with infrared devices and eliminate visible flicker.
- 2.5 Ballast shall have a Power Factor greater than 0.98 for primary lamp.
- 2.6 Ballast shall have a minimum ballast factor of 1.00 for primary lamp application.
- 2.7 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less in accordance with lamp manufacturer recommendations.
- 2.8 Ballast input current shall have Total Harmonic Distortion (THD) of less than 10% when operated at nominal line voltage with primary lamp.
- 2.9 Ballast shall have a Class A sound rating.
- 2.10 Ballast shall have a minimum starting temperature of -18C (0F) for primary lamp. Ballasts for PL-H lamps shall have a minimum starting temperature of -30C (-20F) for primary lamp.
- 2.11 Ballast shall provide Lamp EOL Protection Circuit.
- 2.12 Ballast shall tolerate sustained open circuit and short circuit output conditions without damage.

Section III - Regulatory Requirements

- 3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).
- 3.2 Ballast shall be Underwriters Laboratories (UL) listed, Class P and Type 1 Outdoor; and Canadian Standards Association (CSA) certified where applicable.
- 3.3 Ballast shall be rated for use in air-handling spaces.
- 3.4 Ballast shall comply with ANSI C62.41 Category A for Transient protection.
- 3.5 Ballast shall comply with ANSI C82.11 where applicable.
- 3.6 Ballast shall comply with the requirements of the Federal Communications Commission (FCC) rules and regulations, Title 47 CFR part 18, Non-Consumer (Class A) for EMI/RFI (conducted and radiated).

Section IV - Other

- 4.1 Ballast shall be manufactured in a factory certified to ISO 9002 Quality System Standards.
- 4.2 Ballast shall carry a five-year warranty from date of manufacture against defects in material or workmanship, including replacement, for operation at a maximum case temperature of 75C and three-years for a maximum case temperature of 85C (90C 3year warranty for ICF1H120-M4-XX, ICF2S42-90C-M2-XX and ICF2S70-M4-XX models).
- 4.3 Manufacturer shall have a fifteen-year history of producing electronic ballasts for the North American market.

Revised 08/17/2006



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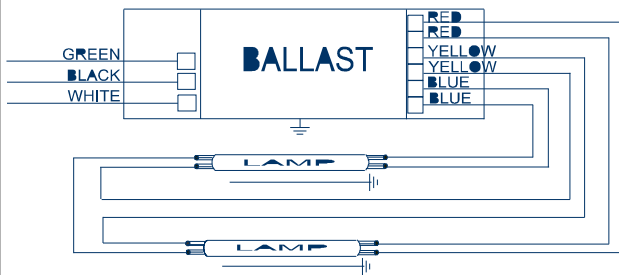
Customer Support/Technical Service: 800-372-3331 · OEM Support: 866-915-5886

Electrical Specifications

ICN-2S54-90C@277	
Brand Name	CENTIUM T5
Ballast Type	Electronic
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

Lamp Type	Num. of Lamps	Rated Lamp Watts	Min. Start Temp (°F/C)	Input Current (Amps)	Input Power (ANSI Watts)	Ballast Factor	MAX THD %	Power Factor	MAX Lamp Current Crest Factor	B.E.F .
F54T5/HO	1	54	-20/-29	0.23	62	1.02	10	0.96	1.7	1.65
* F54T5/HO	2	54	-20/-29	0.43	117	1.00	10	0.98	1.7	0.85

Wiring Diagram

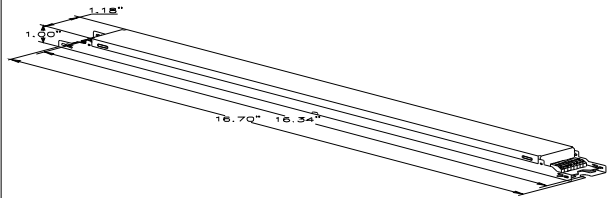


The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

	in.	cm.		in.	cm.
Black	31	78.7	Yellow/Blue	0	0
White	31	78.7	Blue/White	0	0
Blue	28	71.1	Brown	0	0
Red	28	71.1	Orange	0	0
Yellow	48	121.9	Orange/Black	0	0
Gray	0	0	Black/White	0	0
Violet	0	0	Red/White	0	0

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
16.70 "	1.18 "	1.00 "	16.34 "
16 7/10	1 9/50	1	16 17/50
42.4 cm	3 cm	2.5 cm	41.5 cm

Revised 03/11/2009



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ICN-2S54-90C@277	
Brand Name	CENTIUM T5
Ballast Type	Electronic
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

Electrical Specifications

Notes:

Section I - Physical Characteristics

- 1.1 Ballast shall be physically interchangeable with standard electromagnetic or standard electronic ballasts, where applicable.
- 1.2 Ballast shall be provided with integral leads or poke-in wire trap connectors color-coded per ANSI C82.11.

Section II - Performance Requirements

- 2.1 Ballast shall be Programmed Start.
- 2.2 Ballast shall contain auto restart circuitry in order to restart lamps without resetting power.
- 2.3 Ballast shall operate from 50/60 Hz input source of _____ (120V through 277V or 347V through 480V) with sustained variations of +/- 10% (voltage and frequency).
- 2.4 Ballast shall be high frequency electronic type and operate lamps at a frequency above 42 kHz to avoid interference with infrared devices and eliminate visible flicker.
- 2.5 Ballast shall have a Power Factor greater than 0.98 for primary lamp.
- 2.6 Ballast shall have a minimum ballast factor of 1.00 for primary lamp application.
- 2.7 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less.
- 2.8 Ballast input current shall have Total Harmonic Distortion (THD) of less than 20% for Standard models and THD of less than 10% for Centium models when operated at nominal line voltage with primary lamp.
- 2.9 Ballast shall have a Class A sound rating.
- 2.10 Ballast shall have a minimum starting temperature of _____ {-18C (0F) or -28C (-20F)} for primary lamp. Consult lamp manufacturer for temperature versus light output characteristics.
- 2.11 Ballast shall provide Lamp EOL Protection Circuit.
- 2.12 Ballast shall tolerate sustained open circuit and short circuit output conditions.
- 2.13 Four-lamp ballast shall have (semi-independent or independent) lamp operation.

Section III - Regulatory Requirements

- 3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).
- 3.2 Ballast shall be Underwriters Laboratories (UL) listed, Class P and Type 1 Outdoor; and Canadian Standards Association (CSA) certified where applicable.
- 3.3 Ballast shall comply with ANSI C62.41 Category A for Transient protection.
- 3.4 Ballast shall comply with ANSI C82.11 where applicable.
- 3.5 Ballast shall comply with the requirements of the Federal Communications Commission (FCC) rules and regulations, Title 47 CFR part 18, Non-Consumer (Class A) for EMI/RFI (conducted and radiated).
- 3.6 Ballast shall comply with UL Type CC rating.
- 3.7 Ballast shall comply with NEMA 410 for in-rush current limits.

Section IV - Other

- 4.1 Ballast shall be manufactured in a factory certified to ISO 9001 Quality System Standards.
- 4.2 Ballast shall carry a five-year warranty from date of manufacture against defects in material or workmanship, including replacement, for operation at a maximum case temperature of 70C. Ballasts with a "90C" designation in their catalog number shall also carry a three-year warranty at a maximum case temperature of 90C.
- 4.3 Manufacturer shall have a twenty-year history of producing electronic ballasts for the North American market.

Revised 03/11/2009



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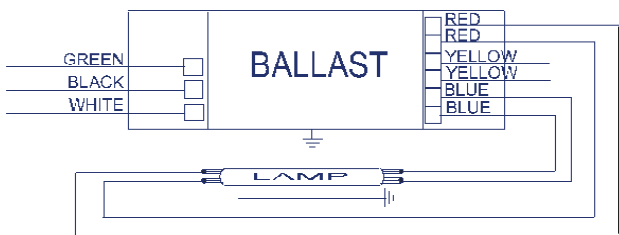
ICN4S5490C2LSG@277

Brand Name	CENTIUM T5
Ballast Type	Electronic
Starting Method	Programmed Start
Lamp Connection	Series/Parallel
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

Electrical Specifications

Lamp Type	Num. of Lamps	Rated Lamp Watts	Min. Start Temp (°F/C)	Input Current (Amps)	Input Power (ANSI Watts)	Ballast Factor	MAX THD %	Power Factor	MAX Lamp Current Crest Factor	B.E.F .
* F54T5/HO	1	54	-20/-29	0.24	62	0.99	10	0.90	1.7	1.60
F54T5/HO	2	54	-20/-29	0.43	117	0.99	10	0.98	1.7	0.85
F54T5/HO	3	54	-20/-29	0.66	179	1.00	10	0.98	1.7	0.56
F54T5/HO	4	54	-20/-29	0.86	234	1.00	10	0.98	1.7	0.43

Wiring Diagram

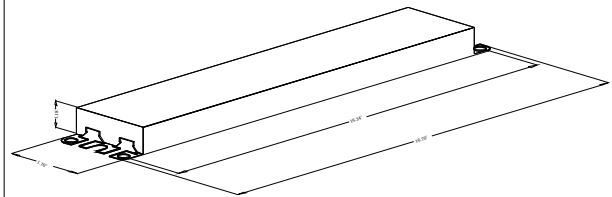


For 1 lamp operation, do not use yellow leads

The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
16.7 "	1.7 "	1.18 "	16.34 "
16 7/10	1 7/10	1 9/50	16 17/50
42.4 cm	4.3 cm	3 cm	41.5 cm

Revised 07/31/2009



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ICN4S5490C2LSG@277	
Brand Name	CENTIUM T5
Ballast Type	Electronic
Starting Method	Programmed Start
Lamp Connection	Series/Parallel
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

Electrical Specifications

Notes:

Section I - Physical Characteristics

- 1.1 Ballast shall be physically interchangeable with standard electromagnetic or standard electronic ballasts, where applicable.
- 1.2 Ballast shall be provided with integral leads or poke-in wire trap connectors color-coded per ANSI C82.11.

Section II - Performance Requirements

- 2.1 Ballast shall be Programmed Start.
- 2.2 Ballast shall contain auto restart circuitry in order to restart lamps without resetting power.
- 2.3 Ballast shall operate from 50/60 Hz input source of _____ (120V through 277V or 347V through 480V) with sustained variations of +/- 10% (voltage and frequency) with no damage to the ballast.
- 2.4 Ballast shall be high frequency electronic type and operate lamps at a frequency above 42 kHz to avoid interference with infrared devices and eliminate visible flicker.
- 2.5 Ballast shall have a Power Factor greater than 0.98 for primary lamp.
- 2.6 Ballast shall have a minimum ballast factor of 1.00 for primary lamp application.
- 2.7 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less in accordance with lamp manufacturer recommendations.
- 2.8 Ballast input current shall have Total Harmonic Distortion (THD) of less than 20% for Standard models and THD of less than 10% for Centium models when operated at nominal line voltage with primary lamp.
- 2.9 Ballast shall have a Class A sound rating.
- 2.10 Ballast shall have a minimum starting temperature of _____ {-18C (0F) or -29C (-20F)} for primary lamp. Consult lamp manufacturer for temperature versus light output characteristics.
- 2.11 Ballast shall provide Lamp EOL Protection Circuit.
- 2.12 Ballast shall tolerate sustained open circuit and short circuit output conditions without damage.
- 2.13 Ballast shall have a hi-low switching option when operating (4) F54T5/HO lamps to allow switching from 4-2 lamps, 3-2 lamps or 3-1 lamp.
- 2.14 Four-lamp ballast shall have semi-independent lamp operation.

Section III - Regulatory Requirements

- 3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).
- 3.2 Ballast shall be Underwriters Laboratories (UL) listed, Class P and Type 1 Outdoor; and Canadian Standards Association (CSA) certified where applicable.
- 3.3 Ballast shall comply with ANSI C62.41 Category A for Transient protection.
- 3.4 Ballast shall comply with ANSI C82.11 where applicable.
- 3.5 Ballast shall comply with the requirements of the Federal Communications Commission (FCC) rules and regulations, Title 47 CFR part 18, Non-Consumer (Class A) for EMI/RFI (conducted and radiated).
- 3.6 Ballast shall comply with UL Type CC rating.

Section IV - Other

- 4.1 Ballast shall be manufactured in a factory certified to ISO 9002 Quality System Standards.
- 4.2 Ballast shall carry a five-year warranty from date of manufacture against defects in material or workmanship, including replacement, for operation at a maximum case temperature of 70C. Ballasts with a "90C" designation in their catalog number shall also carry a three-year warranty at a maximum case temperature of 90C.
- 4.3 Manufacturer shall have a fifteen-year history of producing electronic ballasts for the North American market.

Revised 07/31/2009



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Presented By:
 Contact Phone:
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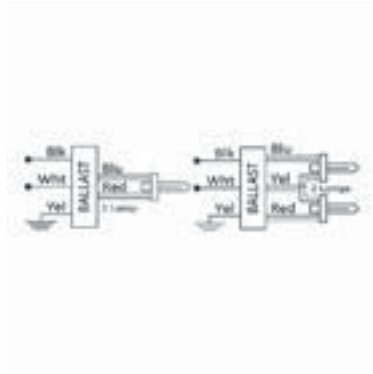
Customer Name:
 Project Name: BSC New Science Building
 Fixture Type: F6



71434 - GEC218-MVPS-3W

GE CFL Multi-Volt ProLine™ Electronic Program / Rapid Start Ballast

- Multi-Voltage technology means a single ballast handles voltage from 108V to 305V
- Programmed starting for extended lamp life
- End-of-Lamp-Life Protection
- Color Coded Poke-In Connectors simplifies wiring
- 3-Way Ballast Kit (-3W) includes mounting plate, lead wires, extraction tool and mounting hardware for side exit, bottom exit or bottom exit with studs mounting



GENERAL CHARACTERISTICS

Application	2 or 1- CFQ18W/G24q 120-277V ProLine PS 3 Way Kit
Category	Compact Fluorescent
Ballast Type	Electronic - Program / Rapid Start
Starting Method	Programmed start
Lamp Wiring	Series
Line Voltage Regulation (+/-)	10 %
Case Temperature	70 °C(158 °F)
Ballast Factor	Normal
Power Factor Correction	Active
Sound Rating	A (20-24 decibels)
Enclosure Type	Metal
Additional Info	Auto-restart/Thermally protected/Universal voltage

PRODUCT INFORMATION

Product Code	71434
Description	GEC218-MVPS-3W
Standard Package	Master
Standard Package GTIN	10043168714348
Standard Package Quantity	10
Sales Unit	Individual Pack
No Of Items Per Sales Unit	1
No Of Items Per Standard	10
Package	
UPC	043168714341

DIMENSIONS

Case dimensions	
Length (L)	5.0 in(127.00 mm)
Width (W)	2.4 in(60.96 mm)
Height (H)	1.0 in(25.40 mm)
Mounting dimensions	
Mount Length (M)	4.6 in(117.60 mm)
Weight	1.1 lb
Exit Type	Poke-in
Remote Mounting Distance to Lamp	20 ft
Remote Mounting Wire Gauge	18 AWG

ELECTRICAL CHARACTERISTICS

Supply Current Frequency	50 Hz/60 Hz
--------------------------	-------------

SAFETY & PERFORMANCE

- CSA
- UL Class P
- UL Listed
- UL Type 1 Outdoor
- UL Type CC
- UL Type HL
- FCC Part 18 Class B at 120 volts

SPECIFICATIONS BY LAMP & WATTAGE

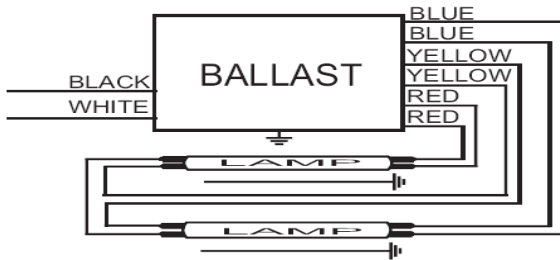
Lamp	# of Lamps	Line Volts	System Watts	Nom. Line Current	System Ballast Factor	Ballast Efficacy	Power Factor% (>=)	Crest Factor THD% (<=)	Min. Starting Temp (°F/°C)
CFTR26W/4P	1	120	28	0.24 A	1.00	3.57	99	1.6 12	-20.0 / -29
CFTR26W/4P	1	277	28	0.1 A	1.00	3.57	96	1.6 12	-20.0 / -29
CFTR18W/4P	1	120	20	0.17 A	1.05	NaN	97	1 1/2 10	-20.0 / -29
CFTR18W/4P	1	277	20	0.08 A	1.05	NaN	97	1 1/2 10	-20.0 / -29
CFTR18W/4P	2	120	39	0.33 A	1.05	2.69	97	1 1/2 10	-20.0 / -29
CFTR18W/4P	2	277	39	0.14 A	1.05	2.69	97	1 1/2 10	-20.0 / -29
CFS28W/4P	1	120	31	0.26 A	1.00	3.23	99	1 1/2 10	-20.0 / -29
CFS28W/4P	1	277	31	0.11 A	1.00	3.23	97	1 1/2 10	-20.0 / -29
CFS21W/4P	1	120	20	0.16 A	0.90	NaN	97	1 1/2 15	-20.0 / -29
CFS21W/4P	1	277	20	0.07 A	0.90	NaN	97	1 1/2 15	-20.0 / -29
CFS21W/4P	2	120	40	0.33 A	0.91	2.28	99	1 1/2 10	-20.0 / -29
CFS21W/4P	2	277	40	0.14 A	0.91	2.28	99	1 1/2 10	-20.0 / -29
CFS16W/4P	2	120	37	0.31 A	1.00	2.70	99	1 1/2 10	-20.0 / -29
CFS16W/4P	2	277	37	0.13 A	1.00	2.70	99	1 1/2 10	-20.0 / -29
CFQ26W/4P	1	120	28	0.24 A	1.00	3.57	99	1.6 12	-20.0 / -29

Electrical Specifications

ICN-2S28-N@120	
Brand Name	CENTIUM T5
Ballast Type	Electronic
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

Lamp Type	Num. of Lamps	Rated Lamp Watts	Min. Start Temp (°F/C)	Input Current (Amps)	Input Power (ANSI Watts)	Ballast Factor	MAX THD %	Power Factor	MAX Lamp Current Crest Factor	B.E.F .
F14T5	1	14	0/-18	0.14	17	1.07	10	0.98	1.7	6.29
F14T5	2	14	0/-18	0.28	33	1.04	10	0.98	1.7	3.15
F21T5	1	21	0/-18	0.22	25	1.06	10	0.98	1.7	4.24
F21T5	2	21	0/-18	0.39	49	1.02	10	0.98	1.7	2.08
F28T5	1	28	0/-18	0.29	31	1.05	10	0.98	1.7	3.39
* F28T5	2	28	0/-18	0.53	62	1.00	10	0.98	1.7	1.61

Wiring Diagram

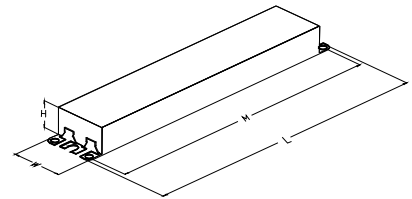


The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

	in.	cm.		in.	cm.
Black	23	58.4	Yellow/Blue		0
White	23	58.4	Blue/White		0
Blue	27	68.6	Brown		0
Red	27	68.6	Orange		0
Yellow	42	106.7	Orange/Black		0
Gray		0	Black/White		0
Violet		0	Red/White		0

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
9.5 "	1.3 "	1.0 "	8.9 "
9 1/2	1 3/10	1	8 9/10
24.1 cm	3.3 cm	2.5 cm	22.6 cm

Revised 09/14/2009



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ICN-2S28-N@120	
Brand Name	CENTIUM T5
Ballast Type	Electronic
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	120-277
Input Frequency	50/60 HZ
Status	Active

Electrical Specifications

Notes:

Section I - Physical Characteristics

- 1.1 Ballast shall be physically interchangeable with standard electromagnetic or standard electronic ballasts, where applicable.
- 1.2 Ballast shall be provided with integral leads or poke-in wire trap connectors color-coded per ANSI C82.11.

Section II - Performance Requirements

- 2.1 Ballast shall be Programmed Start.
- 2.2 Ballast shall contain auto restart circuitry in order to restart lamps without resetting power.
- 2.3 Ballast shall operate from 50/60 Hz input source of _____ (120V through 277V or 347V through 480V) with sustained variations of +/- 10% (voltage and frequency).
- 2.4 Ballast shall be high frequency electronic type and operate lamps at a frequency above 42 kHz to avoid interference with infrared devices and eliminate visible flicker.
- 2.5 Ballast shall have a Power Factor greater than 0.98 for primary lamp.
- 2.6 Ballast shall have a minimum ballast factor of 1.00 for primary lamp application.
- 2.7 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less.
- 2.8 Ballast input current shall have Total Harmonic Distortion (THD) of less than 20% for Standard models and THD of less than 10% for Centium models when operated at nominal line voltage with primary lamp.
- 2.9 Ballast shall have a Class A sound rating.
- 2.10 Ballast shall have a minimum starting temperature of _____ {-18C (0F) or -28C (-20F)} for primary lamp. Consult lamp manufacturer for temperature versus light output characteristics.
- 2.11 Ballast shall provide Lamp EOL Protection Circuit.
- 2.12 Ballast shall tolerate sustained open circuit and short circuit output conditions.
- 2.13 Four-lamp ballast shall have (semi-independent or independent) lamp operation.

Section III - Regulatory Requirements

- 3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).
- 3.2 Ballast shall be Underwriters Laboratories (UL) listed, Class P and Type 1 Outdoor; and Canadian Standards Association (CSA) certified where applicable.
- 3.3 Ballast shall comply with ANSI C62.41 Category A for Transient protection.
- 3.4 Ballast shall comply with ANSI C82.11 where applicable.
- 3.5 Ballast shall comply with the requirements of the Federal Communications Commission (FCC) rules and regulations, Title 47 CFR part 18, Non-Consumer (Class A) for EMI/RFI (conducted and radiated).
- 3.6 Ballast shall comply with UL Type CC rating.
- 3.7 Ballast shall comply with NEMA 410 for in-rush current limits.

Section IV - Other

- 4.1 Ballast shall be manufactured in a factory certified to ISO 9001 Quality System Standards.
- 4.2 Ballast shall carry a five-year warranty from date of manufacture against defects in material or workmanship, including replacement, for operation at a maximum case temperature of 70C. Ballasts with a "90C" designation in their catalog number shall also carry a three-year warranty at a maximum case temperature of 90C.
- 4.3 Manufacturer shall have a twenty-year history of producing electronic ballasts for the North American market.

Revised 09/14/2009



Data is based upon tests performed by Philips Lighting Electronics N.A. in a controlled environment and is representative of relative performance. Actual performance can vary depending on operating conditions. Specifications are subject to change without notice. All specifications are nominal unless otherwise noted.

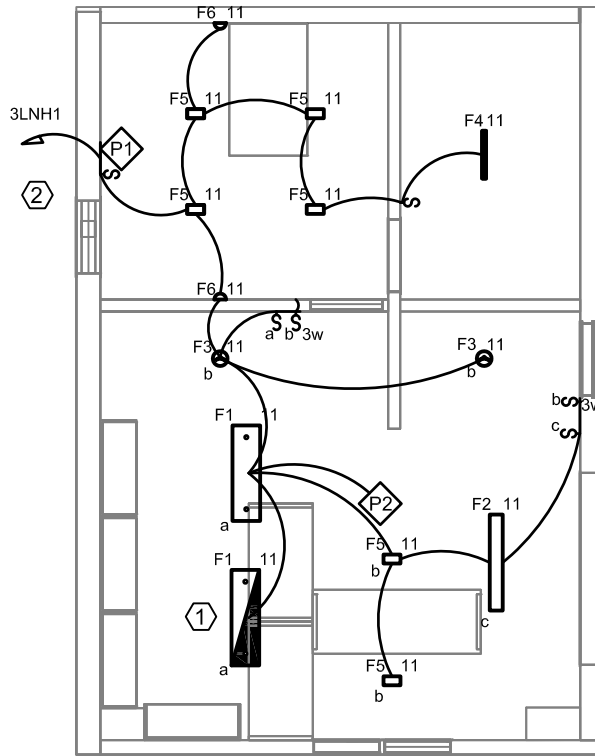
PHILIPS LIGHTING ELECTRONICS N.A.

10275 WEST HIGGINS ROAD · ROSEMONT, IL 60018

Tel: 800-322-2086 · Fax: 888-423-1882 · www.philips.com/advance

Customer Support/Technical Service: 800-372-3331 · OEM Support: 866-915-5886

APPENDIX B



NOTES:

1. Emergency Battery Pack in marked F1 luminaire to provide reduced lumen output @ 90 min. Provided by luminaire manufacturer.
2. P1 and P2 wall-mounted and ceiling-mounted (respectively) dual tech. occupancy sensors

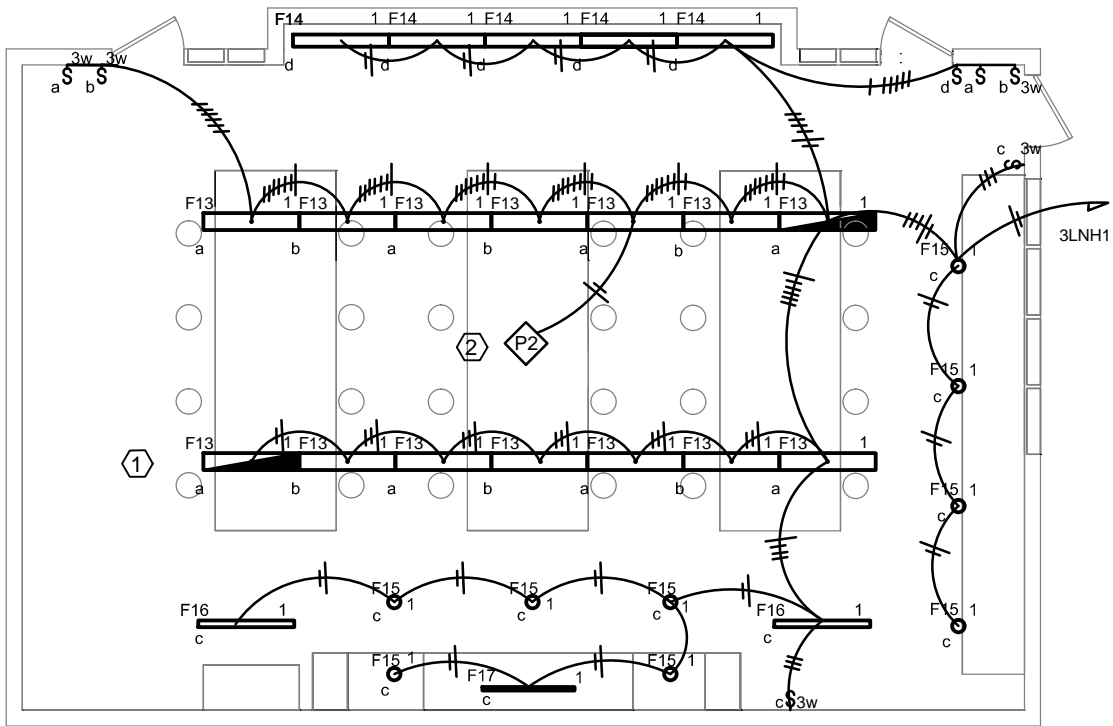


BSC SCIENCE BUILDING -PHASE 1

1300 Elmwood Ave
Buffalo, NY 14222

ISSUED: APRIL 7, 2010
DRAWN BY: MARIE OSTROWSKI

AE SENIOR THESIS
OFFICE LIGHTING PLAN



NOTES:

1. 28 W Emergency Battery Pack in marked F13 luminaires to provide 520 lumens @ 90 min. Provided by luminaire manufacturer.
2. Ceiling mounted occupancy sensor with 360 degree view

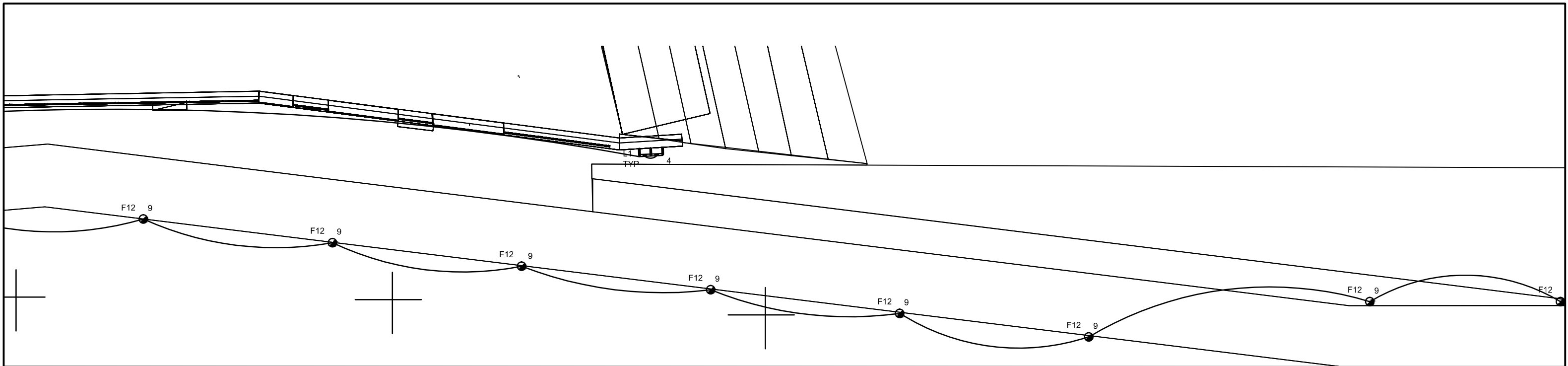


BSC SCIENCE BUILDING -PHASE 1

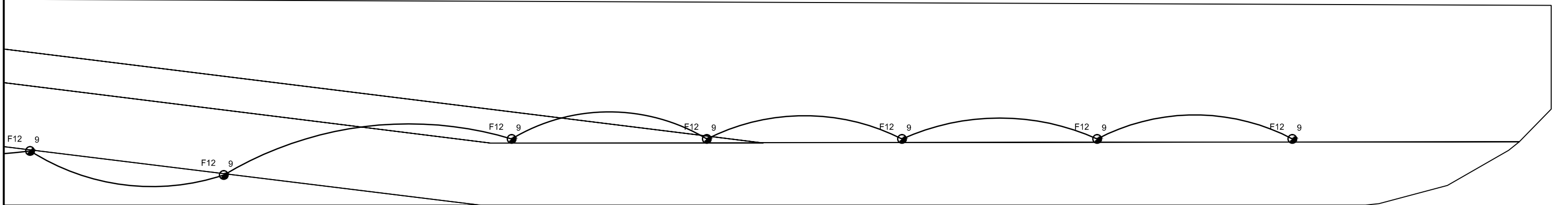
1300 Elmwood Ave
Buffalo, NY 14222

ISSUED: APRIL 7, 2010
DRAWN BY: MARIE OSTROWSKI

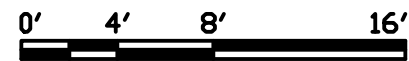
AE SENIOR THESIS LAB LIGHTING PLAN



West Facade - Walkway



West Facade - Walkway Southern Limit

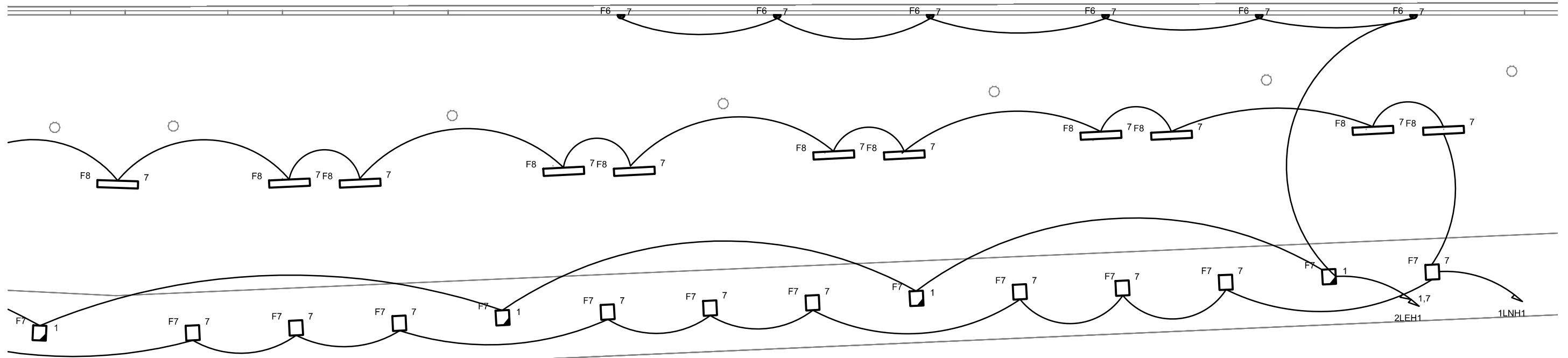


BSC SCIENCE BUILDING -PHASE 1

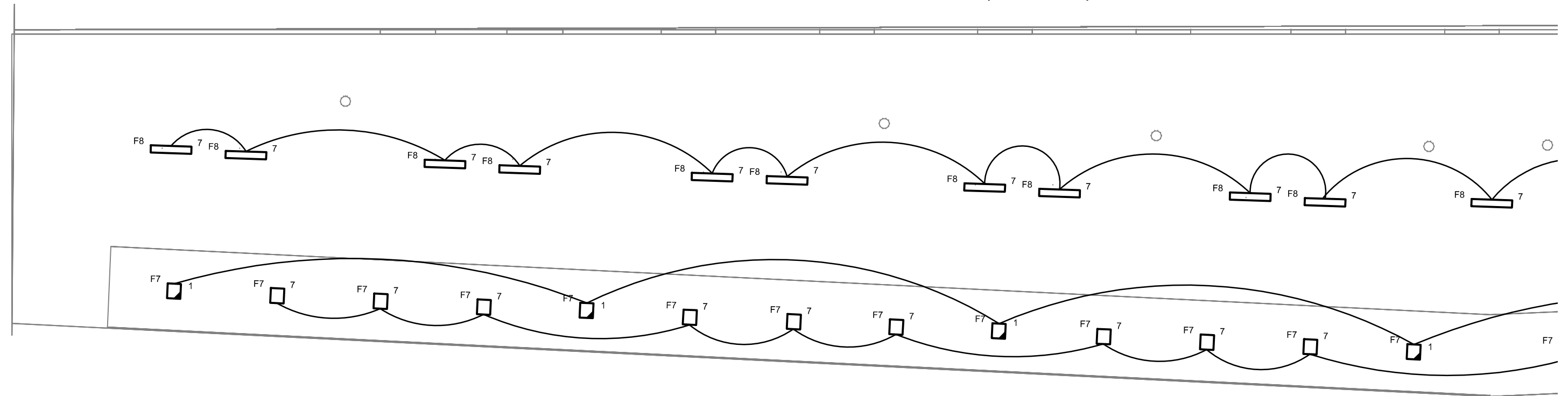
1300 Elmwood Ave
Buffalo, NY 14222

ISSUED: APRIL 7, 2010
DRAWN BY: MARIE OSTROWSKI

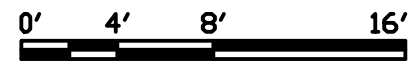
**AE SENIOR THESIS
EXTERIOR B LIGHTING PLAN**



ATRIUM - FIRST LEVEL (SOUTH)



ATRIUM - FIRST LEVEL (NORTH)

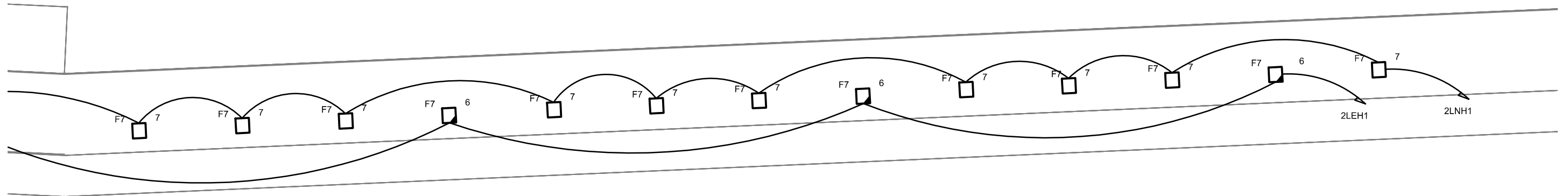


BSC SCIENCE BUILDING -PHASE 1

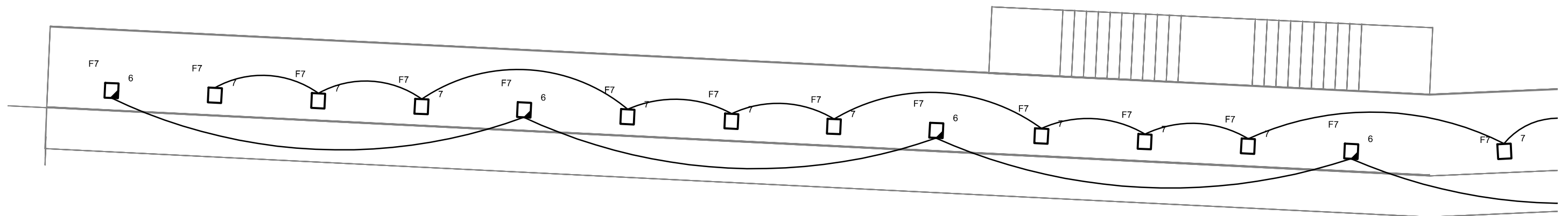
1300 Elmwood Ave
Buffalo, NY 14222

ISSUED: APRIL 7, 2010
DRAWN BY: MARIE OSTROWSKI

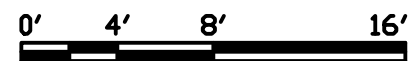
AE SENIOR THESIS
ATRIUM LEVEL ONE LIGHTING PLAN



ATRIUM - SECOND LEVEL (SOUTH)



ATRIUM - SECOND LEVEL (NORTH)

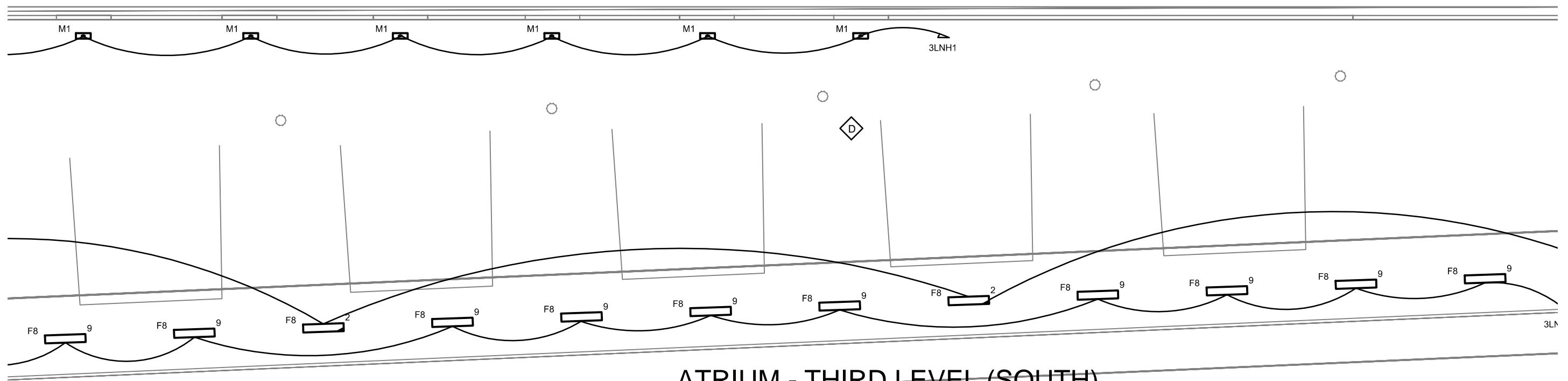


BSC SCIENCE BUILDING -PHASE 1

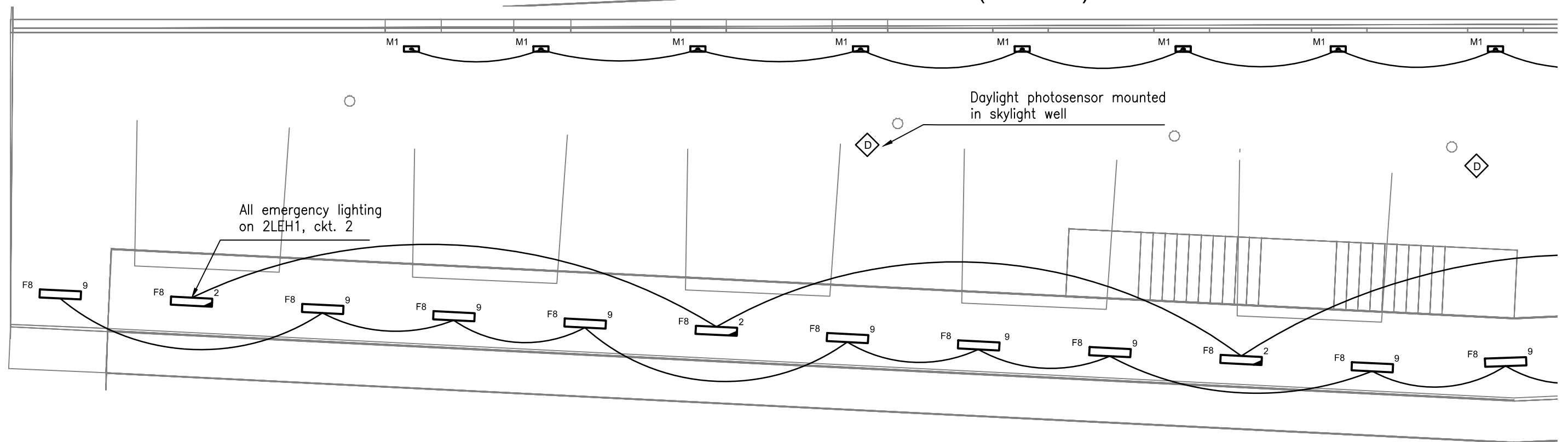
1300 Elmwood Ave
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ISSUED: APRIL 7, 2010
DRAWN BY: MARIE OSTROWSKI

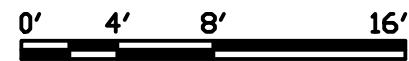
AE SENIOR THESIS
ATRIUM LEVEL TWO LIGHTING PLAN



ATRIUM - THIRD LEVEL (SOUTH)



ATRIUM - THIRD LEVEL (NORTH)

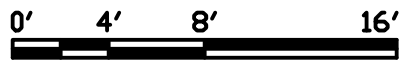
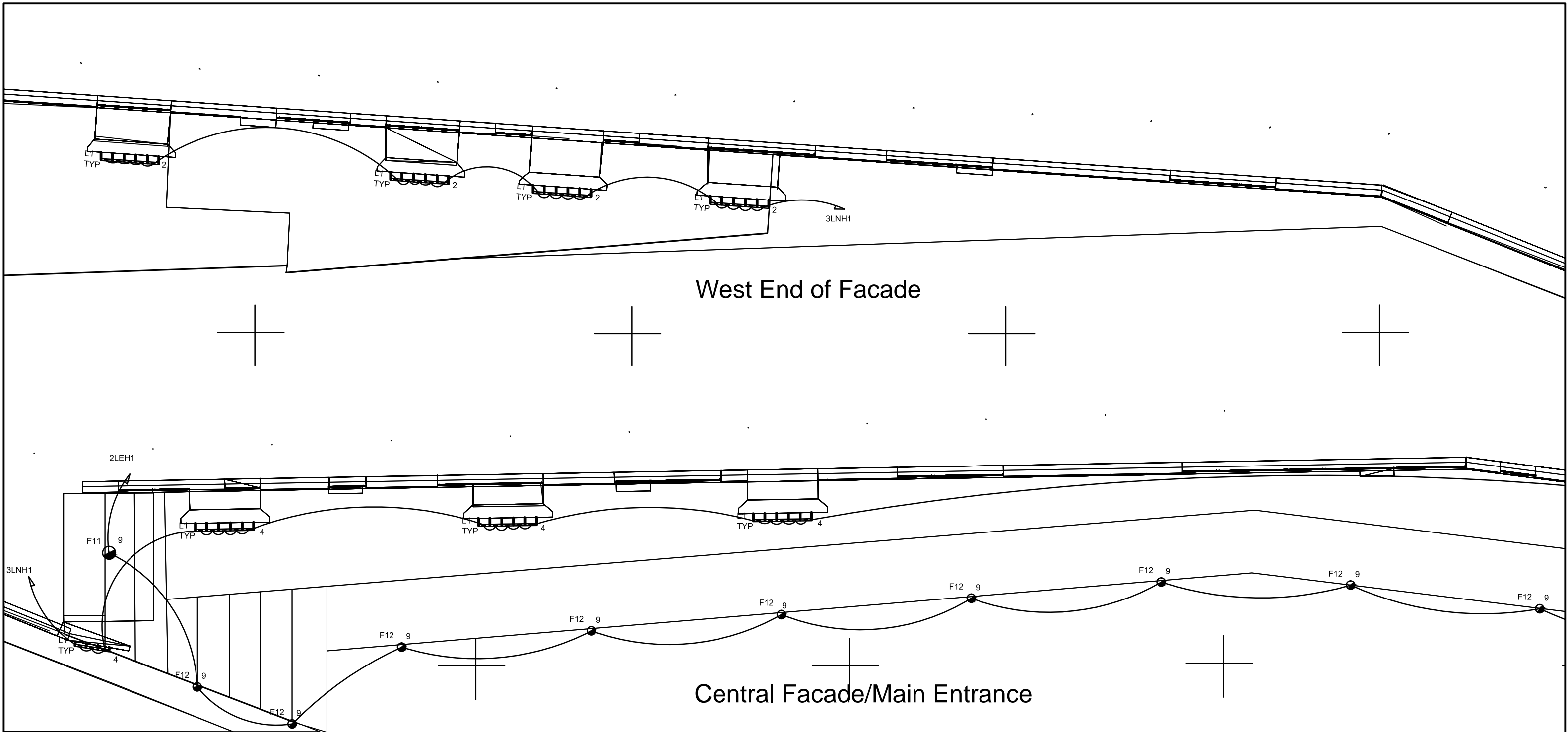


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AE SENIOR THESIS
ATRIUM LEVEL THREE LIGHTING PLAN



BSC SCIENCE BUILDING -PHASE 1

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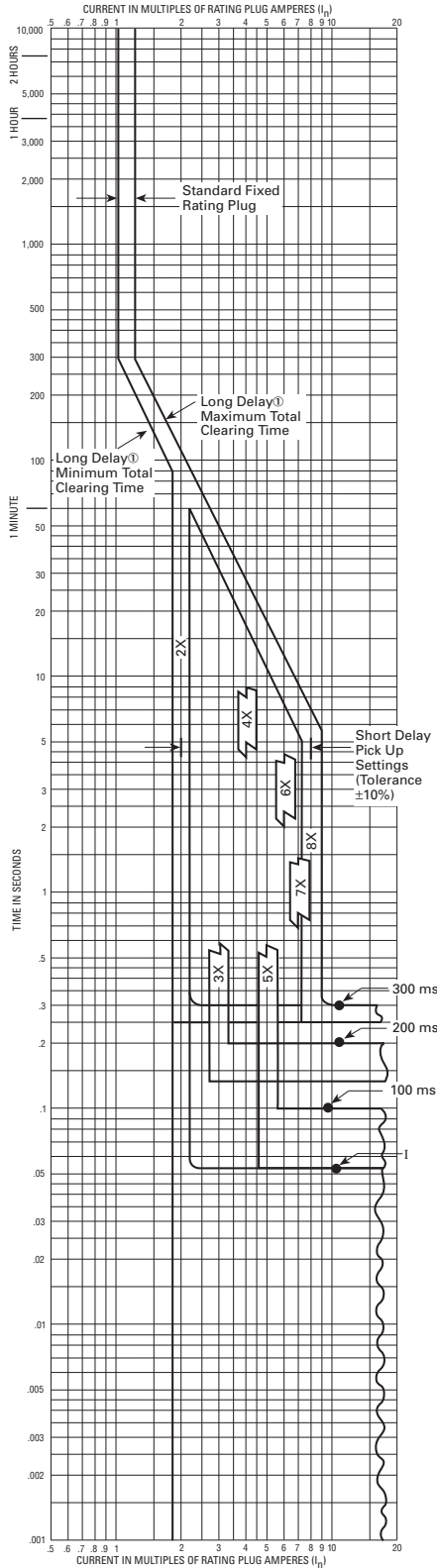
**AE SENIOR THESIS
EXTERIOR A LIGHTING PLAN**

APPENDIX C



AB DE-ION Circuit Breakers

Types LDC and CLDC Equipped With Type LES Digitrip RMS 310 Trip Units, Types LES3600LSI, LES3600LSIG, LES4600LSI, LES4600LSIP



Circuit Breaker Time/Current Curves (Phase Current) ④

Series C® L-Frame Circuit Breakers Equipped With Type LES Digitrip RMS 310 Trip Units

Catalog Types LES3600LSI, LES3600LSIG, LES4600LSI, and LES4600LSIP
 Digitrip RMS 310 Trip Units for use with Circuit Breaker Types LDC and CLDC
 3 and 4 Poles

Adjustable Short Delay Time

Typical Trip Unit Nameplate

Amperes Rating (I_n)	Type	Rating Plug Catalog Number	Short Delay Pickup Range Amperes
600	Fixed	6LES600T	1200-4800
500	Fixed	6LES500T	1000-4000
400	Fixed	6LES400T	800-3200
350	Fixed	6LES350T	700-2800
300	Fixed	6LES300T	600-2400
300, 400, 500, 600	Adjustable	A6LES600T1	600-4800

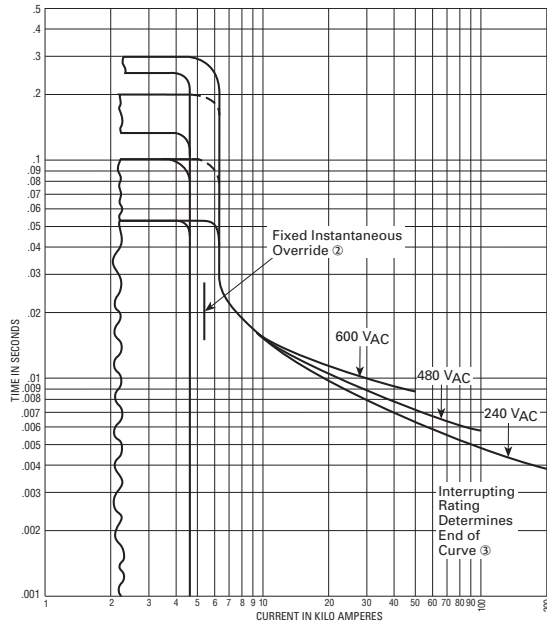
Breaker Type	UL/CSA Volts	240 kA	480 kA	600 kA
LDC, CLDC		200	100	50

Volts (U_n)	240	380	415
Rating	I_{cu}	I_{cs}	I_{cu}
kA	200	100	50

Utilization Category A
 $U_{imp} = 8kV$

Notes

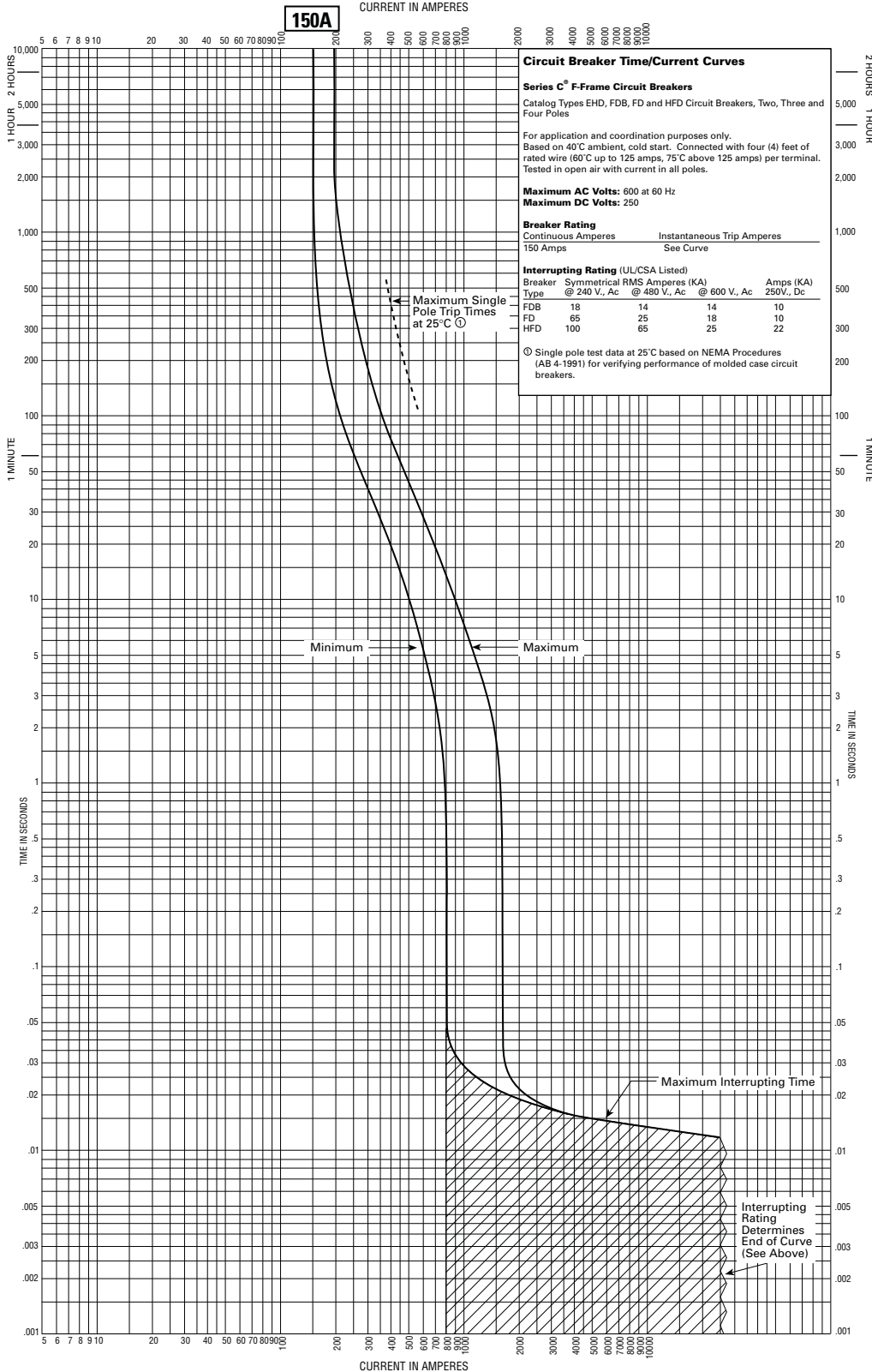
- Digitrip RMS 310 trip units are suitable for functional field testing with test kit Cat. No. STK2. For field testing using primary injection methods, follow NEMA AB4-1991 publications.
- Calibration response in short delay pick-up range is same for 1, 2 or 3 poles in series.
- There is a memory effect that can act to shorten the long delay. The memory effect comes into play if a current above the long delay pick-up value exists for a time and then is cleared by the tripping of a downstream device or the circuit breaker itself. A subsequent overload will cause the circuit breaker to trip in shorter time than normal. The amount of time delay reduction is inverse to the amount of time that has elapsed since the previous overload. Approximately five minutes is required between overloads to completely reset the memory.
- Curve accuracy applies from $-20^\circ C$ to $+55^\circ C$ ambient. For possible continuous ampere derating for ambient above $40^\circ C$, refer to Cutler-Hammer.
- For high fault current levels a fixed instantaneous override is provided at 5500A. (Tolerance $\pm 15\%$).
- The end of the curve is determined by the interrupting rating of the circuit breaker. See above tabulation.
- For ground fault time/current curves see SC-5661-93.





AB DE-ION Circuit Breakers

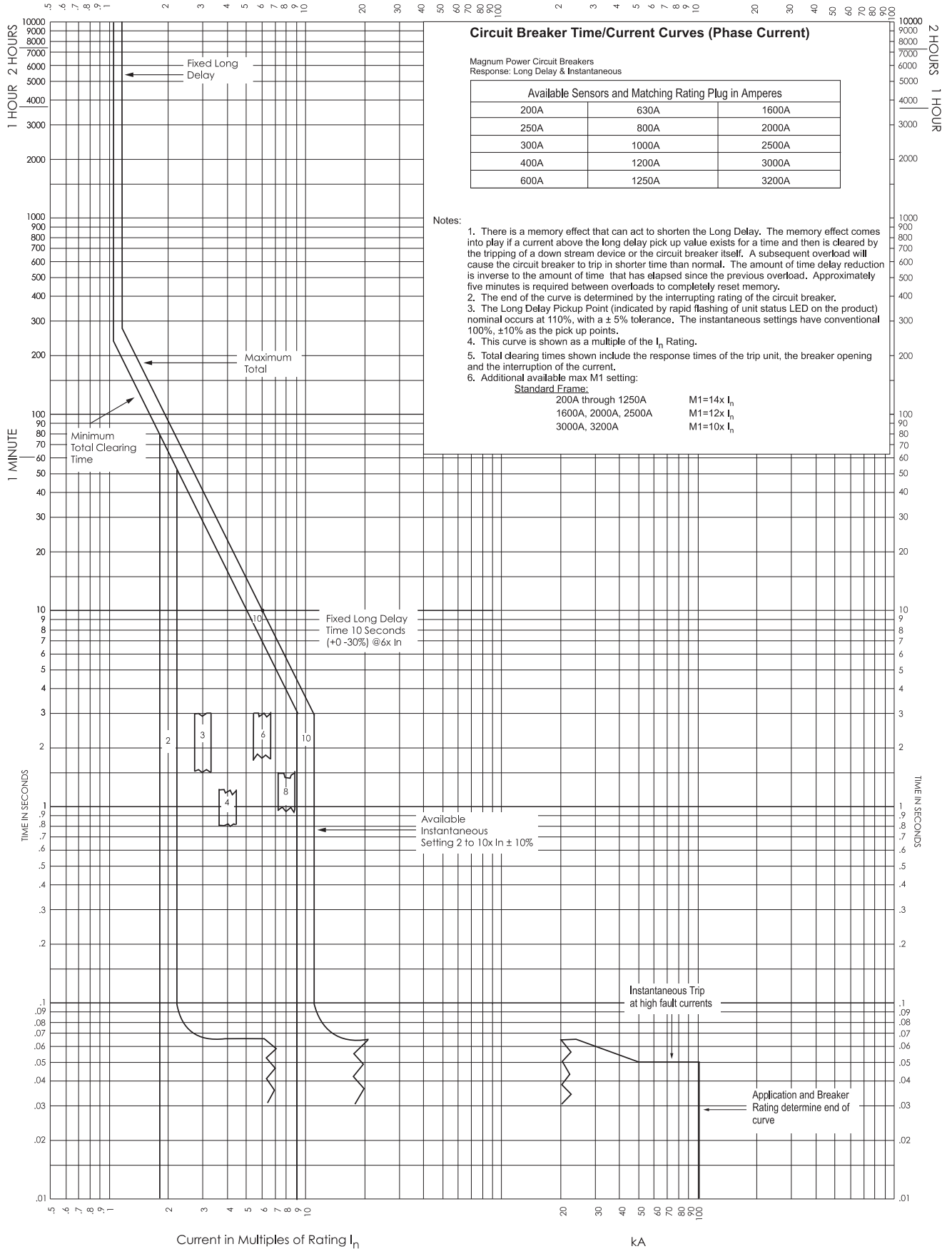
Types FDB, FD and HFD 150 Amperes



Application Data
Characteristic Curves for
Type Magnum
Circuit Breakers

Cutler-Hammer

Digitrip 220 - Long Delay & Instantaneous Curves





DT-200 Series Dual Technology Ceiling/Wall Sensors

Combines passive infrared (PIR) and ultrasonic technologies

Auto set automatically selects optimal settings for each space

Walk-through mode increases savings potential



Built-in light level sensor

Accepts low-voltage switch input for manual-on operation

Automatic or manual-on operation when used with a BZ-150 Power Pack

PROJECT	BSC New Science Building
LOCATION/TYPE	OFFICE/P1

Product Overview

Description

WattStopper's DT-200 Series Dual Technology Ceiling Sensors combine PIR and ultrasonic technologies into one unit to achieve precise coverage in detecting occupancy.

Operation

Low voltage DT-200 Series Sensors utilize a WattStopper power pack to turn lights on when both PIR and ultrasonic technologies detect occupancy. They can also work with a low voltage switch for manual-on operation. PIR technology senses motion via a change in infrared energy within the controlled area, whereas ultrasonic uses 40 kHz high frequency ultrasound. Once on, detection by either technology holds lights on. When no occupancy is detected for the length of the time delay, lights turns off. DT-200 Series Sensors can also be set to trigger lights on when either technology or both detect occupancy, or to require both technologies to hold lighting on.

Auto set

The DT-200 requires no adjustment at installation. Auto set continuously monitors the controlled space to identify usage patterns. Based on these patterns, units automatically adjust time delay and sensitivity settings for optimal performance and energy efficiency. Sensors assign short delays (as low as five minutes) for times when the space is usually vacant, and longer delays (up to 30 minutes) for busier times.

Application

DT-200 Series Sensors have the flexibility to work in a variety of applications. Mounted at ten feet, the sensors can cover up to 2000 square feet of walking motion and 1000 square feet of desktop motion. The sensors are designed to control lighting in difficult applications where one technology alone could encounter false triggers. The DT-200 works well in classrooms, warehouses, large offices, open office spaces and computer rooms.

Features

- Advanced control logic based on RISC microcontroller provides:
 - Detection Signature Processing to eliminate false triggers and provides immunity to RFI and EMI
 - Walk-through Mode turns lights off three minutes after the area is initially occupied – ideal for brief visits, such as mail delivery
 - Available with built-in light level sensor featuring simple, one-step setup
- Sensors work with low-voltage momentary switches to provide manual control
- LEDs indicate occupancy detection
- Eight occupancy logic options provide the ability to customize control to meet application needs
- Available with isolated relay for integration with BAS or HVAC
- Swivel mounting bracket for convenient corner mounting to wall or ceiling
- Qualifies for ARRA-funded public works projects

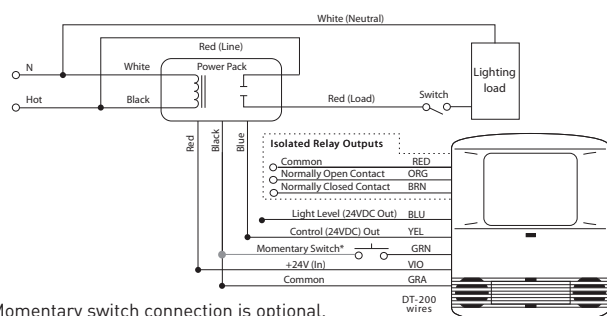


Specifications

- 24 VDC/VAC and halfwave rectified AC
- 40 kHz frequency ultrasonic transmission
- Time delays: Auto set, fixed (5, 10, 15, 20 or 30 minutes), Walk-through/Test Modes
- Sensitivity adjustment: Auto set; reduced sensitivity (PIR); variable with trim pot (ultrasonic)
- Built-in light level sensor: 2 to 200 footcandles (21 to 2,152 lux)
- Low voltage, momentary switch input for manual operation
- DT-200 contains an isolated relay with N/O and N/C outputs; rated for 1 Amp at 24 VDC/VAC
- 2000 ft² of walking motion mounted at 10 ft; 1000 ft² of desktop motion
- Max. DT-200s per power pack: B=2, BZ=3
Max. DT-205s per power pack: B=3, BZ=4
- Dimensions: 4.4" x 3.4" x 2" (110.3mm x 85.9mm x 49.6mm) L x W x D
- UL and cUL listed
- Five year warranty

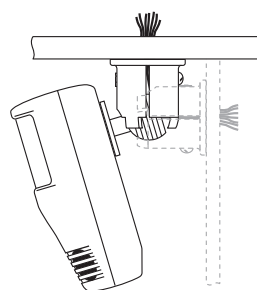
Wiring & Mounting

Wiring Diagram



*Momentary switch connection is optional.
Connect only when momentary switch is installed.

Mounting



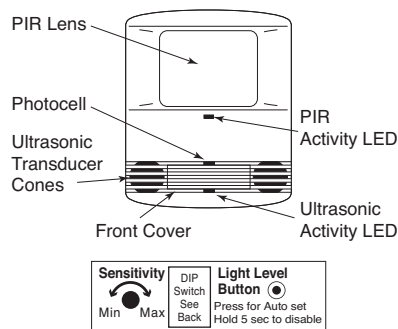
A swivel mounting bracket attached to the sensor allows the sensor to be angled for wall or ceiling mounting.

Grooves on the bracket help to achieve desired angle for coverage.

Mount to mud ring.

Controls & Settings

Product Controls



DIP Switch Settings

◀ = Factory Setting
● = ON
- = OFF

Logic	Switch#		
	1	2	3
Occupancy	Standard	-	-
	Option 1	●	-
	Option 2	-	●
	Option 3	●	●
	Option 4	-	-
	Option 5	●	●
	Option 6	●	●
	Option 7	●	●

Occupancy Logic	Trigger	Initial Occupancy	Maintain Occupancy	Re-trigger (seconds duration)
Standard	Both	Either	Either(5)	Either(5)
Option 1	Either	Either	Either(5)	Either(5)
Option 2	PIR	Either	Either(5)	Either(5)
Option 3	Both	Both	Both(5)	Both(5)
Option 4	PIR	PIR	PIR(5)	PIR(5)
Option 5	Ultra	Ultra	Ultra(5)	Ultra(5)
Option 6	Man.	Either	Either(30)	Either(30)
Option 7	Man.	Both	Both(30)	Both(30)

LEDs	7
Disabled	-
Enabled	●

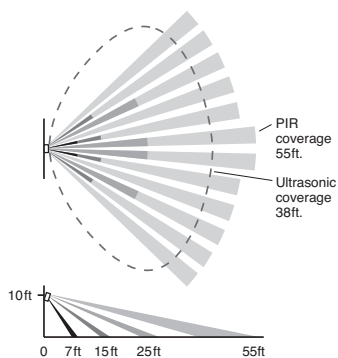
PIR Sensitivity	8
Minimum	-
Max./SmartSet	●

Time Delay	4	5	6
5 sec/SmartSet	●	-	-
5 minutes	-	●	-
10 min.	-	-	●
10 minutes	-	●	●
15 min.	●	-	-
15 minutes	●	●	-
20 minutes	●	-	-
30 min.	●	●	●

⏏ = walk-through mode

Coverage

Coverage Pattern



Coverages shown are maximum and represent half-step walking motion. Under ideal conditions with no barriers or obstacles, coverage for half-step walking motion can reach up to 2000 ft², while coverage for typical desktop activity can reach up to 1000 ft².

Ordering Information

Catalog No.	Voltage	Current	Coverage	Features
<input type="checkbox"/> DT-200	24 VDC	43 mA	2000 ft ² [185.8 m ²]	light level, isolated relay
<input type="checkbox"/> DT-205	24 VDC	35 mA	2000 ft ² [185.8 m ²]	

Sensors are white and use WattStopper power packs. Current consumption can be slightly higher when only one sensor per power pack is used.

DT-355 Dual Technology Line Voltage Ceiling Sensor

Architecturally appealing,
low profile appearance

Auto set automatically
selects optimal settings
for each space

Ultrasonic diffusers give
more comprehensive
coverage



Operates at 120, 230,
277 or 347 VAC, 50/60 Hz

Terminal wiring
for quick and easy
installation

Walk-through mode
increases savings potential

PROJECT	BSC New Science Building
LOCATION/TYPE	P2

Product Overview

Description

WattStopper's low profile DT-355 dual technology occupancy sensor combines the benefits of passive infrared (PIR) and ultrasonic technologies. The sensor mounts on the ceiling with a flat, unobtrusive appearance and provides 360 degrees of coverage.

Operation

The DT-355 is line voltage and operates at 120, 230, 277 or 347 VAC. The sensor turns lighting on when both PIR and ultrasonic technologies detect occupancy. PIR technology senses the difference between infrared energy from a human body in motion and the background space. Ultrasonic technology uses high frequency (40KHz) ultrasound to sense motion within the space. Once lighting is on, detection by either technology holds lighting on. When no occupancy is detected for the length of the time delay, lighting turns off. The DT-355 can also be set so that only one technology is needed to trigger or both technologies are needed to hold lighting on.

Auto Set

The DT-355 requires no adjustment at installation. Auto set continuously monitors the controlled space to identify usage patterns. Using this information, it automatically adjusts the time delay and sensitivity settings for optimal performance and energy efficiency. The sensor assigns short delays (as low as 5 minutes) for times when the space is usually vacant, and longer delays (up to 30 minutes) for busier times.

Application

WattStopper's patented dual technology has the flexibility to work in a variety of applications, where one technology alone could encounter false triggers. Ideal applications include classrooms, open office spaces, large offices, and computer rooms. In addition, because the DT-355 can be mounted onto a variety of junction boxes, the sensor has the flexibility to be used in a wide range of spaces. The sensors eliminate the need for a power pack by using line voltage wiring.

Features

- Advanced control logic based on RISC micro-controller provides:
 - Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
 - Walk-through mode turns lights off 3 minutes after the area is initially occupied – ideal for brief visits such as mail delivery
 - Built-in light level sensor featuring simple, one-step setup
- Ultrasonic diffusion technology spreads coverage to a wider area (patent pending)
- DIP switch simplifies sensor adjustments
- LEDs indicate occupancy detection
- Uses existing line voltage wiring and doesn't require a power pack
- Six occupancy logic options give users the ability to customize control to meet application needs
- Qualifies for ARRA-funded public works projects

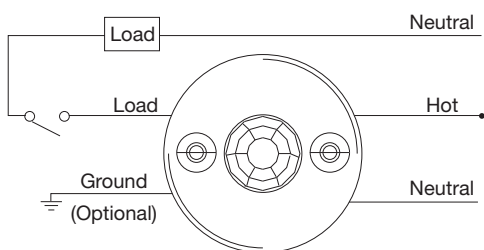


Specifications

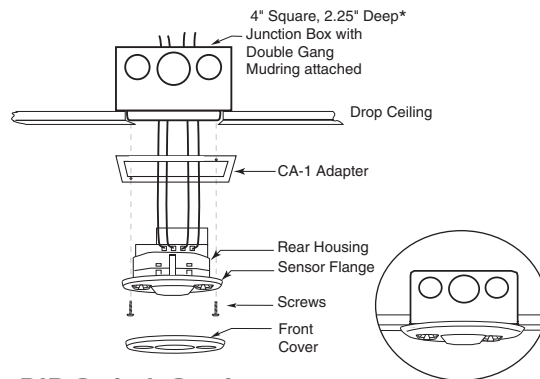
- 120/230/277/347 VAC, 50/60 Hz
- Ultrasonic frequency of 40kHz
- Time delays: Auto set, fixed (5, 10, 15, 20, or 30 minutes), walk-through, test-mode
- Sensitivity adjustment: Auto set or reduced sensitivity (for PIR sensitivity); ultrasonic sensitivity is variable with trimpot
- Built-in light level sensor – works from 10 to 300 footcandles (107.6 to 3,229.2 lux)
- Multi-level, 360° Fresnel lens for superior occupancy detection
- Mounting options: 4 square junction box with double gang mudring; 4 inch octagonal junction box
- Dimensions: 4.50" diameter x 1.45" deep (114.3mm x 25.9mm)
- UL and cUL listed
- Five year warranty

Wiring & Mounting

DT-355 Wiring Diagram

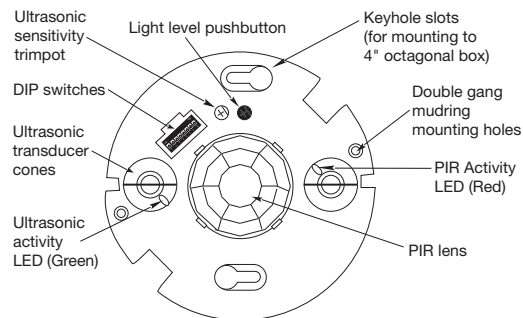


Ceiling Mounting



Controls & Settings

Product Controls



DIP Switch Settings

◀ = Factory Setting
● = ON
- = OFF

Logic	Switch#	1	2	3
Standard		-	-	-
Option 1		●	-	-
Option 2		-	●	-
Option 3		-	-	●
Option 4		-	●	●
Option 5		●	●	-
Option 6		●	-	●
Option 7		●	●	●

Occupancy Logic	Trigger	Initial Occupancy	Maintain Occupancy	Re-trigger (seconds duration)
Standard		Both	Either	Either(5)
Option 1		Either	Either	Either(5)
Option 2		PIR	Either	Either(5)
Option 3		Both	Both	Both(5)
Option 4		PIR	PIR	PIR(5)
Option 5		Ultra	Ultra	Ultra(5)
Option 6		Man.	Either	Either(30)
Option 7		Man.	Both	Both(30)

Time Delay	4	5	6
5 sec/SmartSet	-	-	-
5 minutes	-	-	●
10 min.	-	●	-
10 minutes	-	-	●
15 min.	●	-	-
15 minutes	●	●	-
20 minutes	●	-	●
30 min.	●	●	●

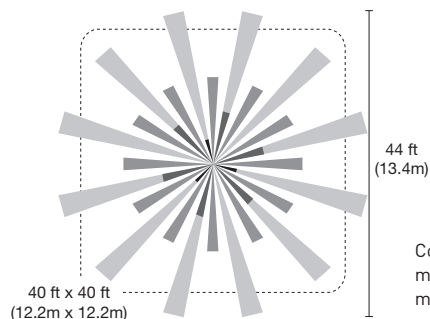
LEDs	7
Disabled	-
Enabled	●

PIR Sensitivity	8
Minimum	-
Max./SmartSet	●

⚡ = walk-through mode

Coverage

Coverage Pattern



The technology control (occupancy logic) options are adjustable by user. The standard setting (recommended for most applications) is both technologies to trigger on, either to hold on.

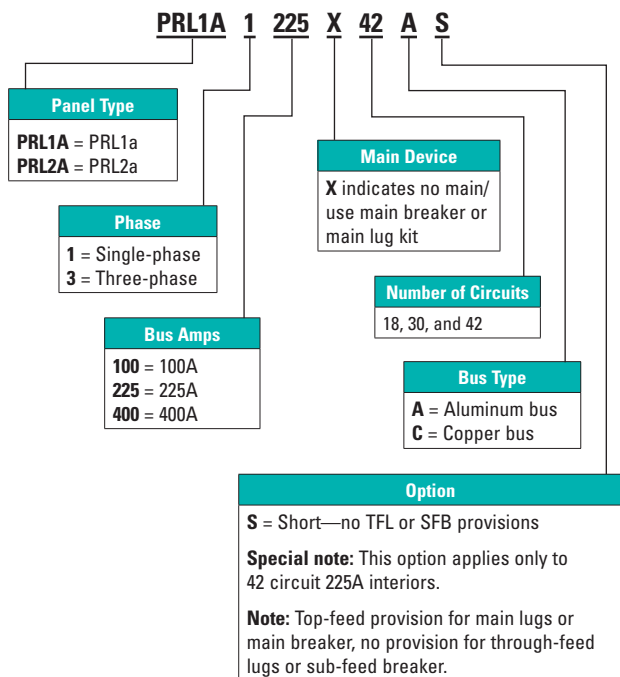
Coverage shown is maximum and represents half-step walking motion. Under ideal conditions, coverage for half-step walking motion can reach up to 1000 ft² (92.9 m²).

Ordering Information

Catalog No.	Voltage	Load Rating	Coverage
<input type="checkbox"/> DT-355	120 VAC, 50/60 Hz	0-800W Ballast/Tungsten	up to 1000 ft ² , (92.9 m ²)
<input type="checkbox"/> DT-355-U	230/277 VAC, 50/60 Hz 347 VAC, 50/60 Hz	0-1200W Ballast 0-1500W Ballast	
<input type="checkbox"/> CA-1	Cosmetic adapter for ceiling installations with 4" square j-box or Wiremold #V5748-2 box		

Sensors are white.

Catalog numbering system—Pow-R-Stock panelboard interiors



NEMA 1 Pow-R-Stock Panelboard Boxes

EZB 20 36 R BS

EZB are available boxes used for all Type 1 PRL1a, PRL2a, and PRL3a panels
Width in inches = 20 Height in inches = 36, 48, 60, or 72

R = Right-hand flange

NEMA 1 Pow-R-Stock Panelboard Trims

EZT 20 36 S

EZT are available laser cut trims used on all PRL1a, PRL2a, and PRL3a panels
Width in inches = 20 Height in inches = 36, 48, 60, or 72

Mounting

S = Surface
F = Flush

Main Breaker Kits

BK ED 100 T

Breaker kit
 Breaker frame
 ED or FD or KD
 Trip rating 100, 125 150, 175, 200, 225, 250, 300, 350, 400

Mounting

T = Top
B = Bottom

Pow-R-Stock panelboards—EZ™ Boxes and EZ Trims

Single-Phase, 3-Wire 120/240 Vac

		Catalog Number	
		Interiors (Less Main Device)	
Ampere Rating	Max. No. of Poles	Aluminum Bus	Copper Bus
100	18	PRL1A1100X18A	PRL1A1100X18C
100	30	PRL1A1100X30A	PRL1A1100X30C
225	30	PRL1A1225X30A	PRL1A1225X30C
225	42	PRL1A1225X42AS ❶	PRL1A1225X42CS ❶
225	42	PRL1A1225X42A	PRL1A1225X42C
400	42	PRL1A1400X42A	PRL1A1400X42C

Three-Phase, 4-Wire 208Y/120 Vac or Three-Phase, 3-Wire 240 Vac

		Catalog Number	
		Interiors (Less Main Device)	
Ampere Rating	Max. No. of Poles	Aluminum Bus	Copper Bus
100	18	PRL1A3100X18A	PRL1A3100X18C
100	30	PRL1A3100X30A	PRL1A3100X30C
225	30	PRL1A3225X30A	PRL1A3225X30C
225	42	PRL1A3225X42AS ❶	PRL1A3225X42CS ❶
225	42	PRL1A3225X42A	PRL1A3225X42C
400	42	PRL1A3400X42A	PRL1A3400X42C

Three-Phase, 4-Wire 480Y/277 Vac

		Catalog Number	
		Interiors (Less Main Device)	
Ampere Rating	Max. No. of Poles	Aluminum Bus	Copper Bus
100	18	PRL2A3100X18A	PRL2A3100X18C
100	30	PRL2A3100X30A	PRL2A3100X30C
225	30	PRL2A3225X30A	PRL2A3225X30C
225	42	PRL2A3225X42AS ❶	PRL2A3225X42CS ❶
225	42	PRL2A3225X42A	PRL2A3225X42C
400	42	PRL2A3400X42A	PRL2A3400X42C

Single-Phase, 3-Wire 120/240 Vac; Three-Phase, 4-Wire 208Y/120 Vac or Three-Phase, 3-Wire 240 Vac; Three-Phase, 4-Wire 480Y/277 Vac Boxes and Trims

Boxes	Trims (NEMA 1)		
NEMA 1	Surface	Flush	NEMA 3R Enclosures
EZB2036R	EZT2036S	EZT2036F	GWPBQ2036PR
EZB2048R	EZT2048S	EZT2048F	GWPBQ2048PR
EZB2048R	EZT2048S	EZT2048F	GWPBQ2048PR
EZB2048R	EZT2048S	EZT2048F	GWPBQ2048PR
EZB2060R	EZT2060S	EZT2060F	GWPBQ2060PR
EZB2072R	EZT2072S	EZT2072F	GWPBQ2072PR

❶ S = Short—no TFL or SFB provisions.

Note 1: The colors shown in the tables correspond to the color coding on the trim, interior, and box product packaging labels. Be sure all three parts match when delivering to your customer.

Note 2: Distributors can purchase boxes in quantities via the Distributor toolbox.



LightSaver® LS-290C Photosensor

Photosensor for
LightSaver LCD-203 and
LCO-203 Controllers

Footcandle range
from 3 - 6000



Mounts vertically or
horizontally

Architecturally attractive
design

PROJECT	BSC New Science Building
LOCATION/TYPE	Atrium-skylight well

Product Overview

Description

WattStopper's LightSaver LS-290C open loop Photosensor provides the daylight data necessary for operation of the LCD-203 and LCO-203 day-lighting control systems.

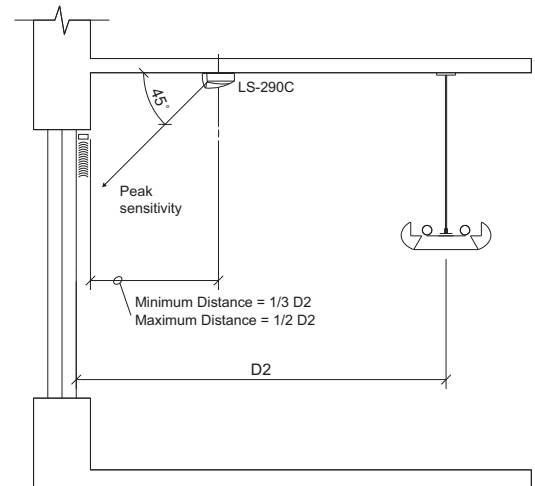
Operation

Utilizing a photodiode element, the LS-290C continuously measures ambient light levels. The Photosensor is positioned to 'see' incoming daylight from either a window or skylight without seeing electrical light. Users select the applicable footcandle range by a jumper beneath the front cover.

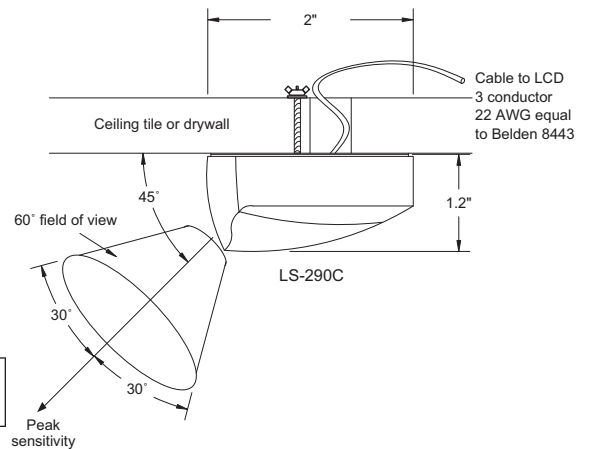
Specifications

- Three jumper-selectable footcandle ranges: 3-300 fc, 30-3000 fc, 60-6000 fc
- Low voltage, Class 2 device
- Protective hard plastic cover
- 3 conductor 22 AWG twisted cable equal to Belden 8443
- Maximum wire length is 250 feet (76.2m)
- Dimensions: 2" diameter x 1.2" deep (50.8mm diameter x 30.5mm deep)
- UL and CUL listed
- Five year warranty

Photosensor Placement



Installation and Wiring



Ordering Information

Catalog No.	Description	Footcandle range
<input checked="" type="checkbox"/> LS-290C	Open Loop Photosensor	3 - 6000 (32 - 64,000 lux)

Qualifies for use on ARRA-funded public works projects.

PRODUCT PROFILE

CENTERLINE® 2100 MOTOR CONTROL CENTERS

PRODUCT DESCRIPTION

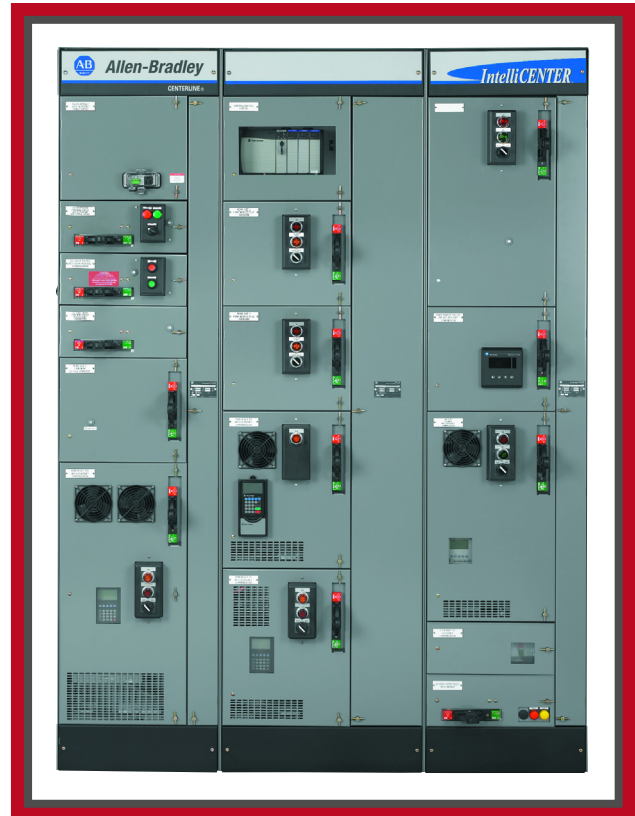
The CENTERLINE 2100 Motor Control Center (MCC) combines rugged-durability and premium quality, meeting UL and NEMA standards. CENTERLINE 2100 MCCs integrate control and power in one centralized package with a wide variety of motor control options.

The industry leading Motor Control Center that has delivered the safety, performance and reliability you need for over 35 years.

CENTERLINE 2100 MCC PRODUCT FEATURES

- Designs are certified to UL 845 and meet NEMA standards
- Built-in DeviceNet with IntelliCENTER® technology
- ArcShield™ helps you reduce arc flash hazards
- Consistent design allowing for backward compatibility
- Proven CENTERLINE bus design
- Solid grounding system to help reduce shock hazards
- Fully isolated enclosures for maximum fault containment
- Space saving designs maximize section utilization reducing MCC footprint
- Variety of intelligent motor control options
 - Across-the-line starters
 - Soft starters
 - Variable speed drives

INDUSTRY LEADING MOTOR CONTROL CENTERS DELIVERING SAFETY, PERFORMANCE AND RELIABILITY



STRONG PERFORMANCE & RELIABILITY

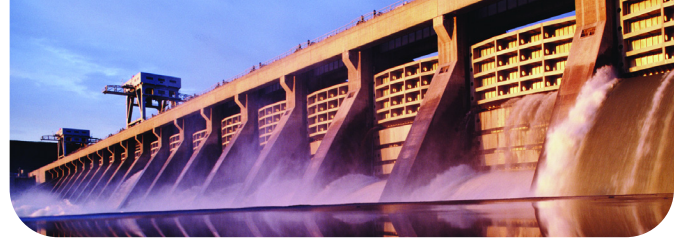
The CENTERLINE 2100 MCC uses proven CENTERLINE technology for high quality and years of dependable service.

- High short circuit withstand ratings in type-tested enclosures
- Continuous bus bracing provides uniform support
- Durable NEMA components
- Factory tested for faster and more dependable start-up
- CENTERLINE 2100 MCCs with IntelliCENTER Technology use built-in networking and pre-configured software to:
 - Enhance performance through system-wide communications
 - Share diagnostic information for predictive maintenance
 - Initiate warnings before potential faults occur

ARC SHIELD

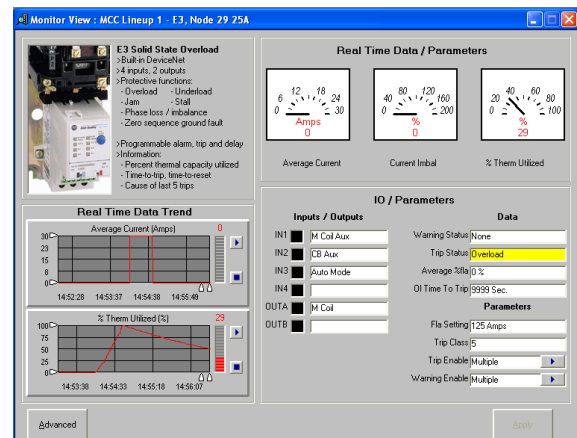
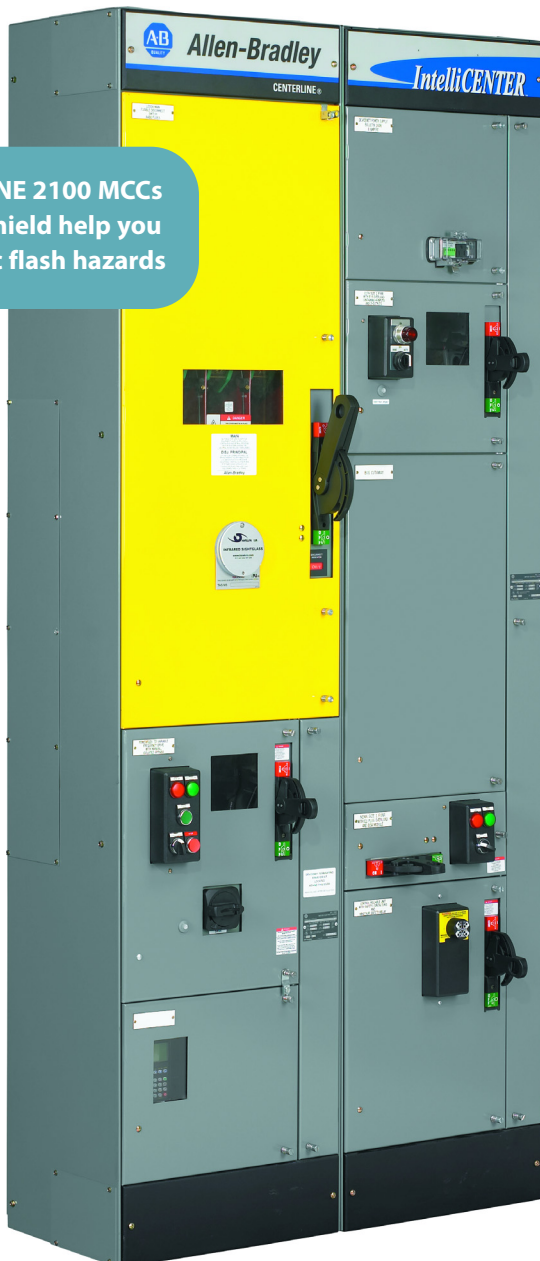
The CENTERLINE 2100 MCC with ArcShield provides you with enhanced safety features

- Advanced diagnostics of IntelliCENTER software provide remote access to data and troubleshooting, minimizing the need for entry in the arc flash boundary zone
- IntelliCENTER software allows you to troubleshoot your MCC remotely, without Personal Protective Equipment (PPE)
- High degree of fault containment helps prevent a single fault from cascading throughout the enclosure, limiting equipment damage
- Arc-containment latches provide an extra level of protection against internal arcing faults
- Type 2 accessibility protects personnel at front, sides and rear of enclosure



- Isolation, grounding and remote monitoring help prevent accidental exposure to energized parts
- Automatic shutters isolate vertical bus when unit is removed
- Continuous bus bracing provides more uniform support than point bracing
- Infrared windows allow completion of thermal inspection without opening doors, to minimize personnel entry in to the enclosure
- Plug-in replacement units allow maintenance to be performed away from energized controls
- Intelligent motor control devices warn of an impending failure before it occurs
- NEMA components help deliver dependable operation
- Locking and Interlocking features allow for easier implementation of your company's lockout/tagout safety procedures
- Through the door DeviceNet port for access to network without opening unit door
- Through the door viewing window for visible disconnect inspection without opening unit door

CENTERLINE 2100 MCCs with ArcShield help you reduce arc flash hazards



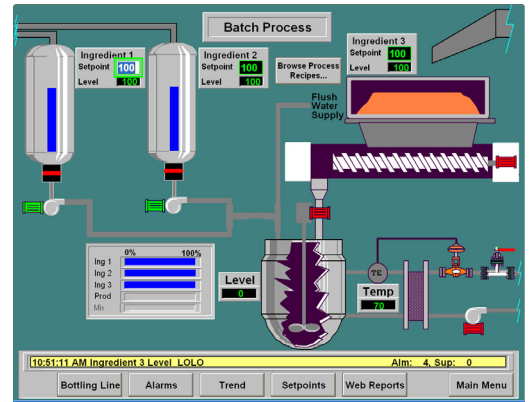
Unit monitor view of IntelliCENTER software shows advanced diagnostics and trip status eliminating the need to enter the unit for maintenance

- Arc-containment latches on all doors
- Non-vented enclosure
- Maximum 1200 A bus
- Copper vertical ground bus for plug-in structures
- Heavy duty ground stab on plug-in units
- Manual or automatic shutters on plug-in structures
- Insulating covers on horizontal bus closing plates

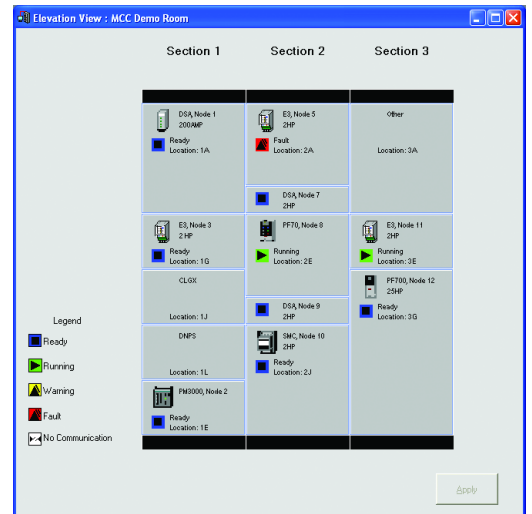
INTELLICENTER TECHNOLOGY

IntelliCENTER technology enhances the intelligence of your MCC using built-in DeviceNet to capture information used for predictive maintenance, process monitoring and advanced diagnostics.

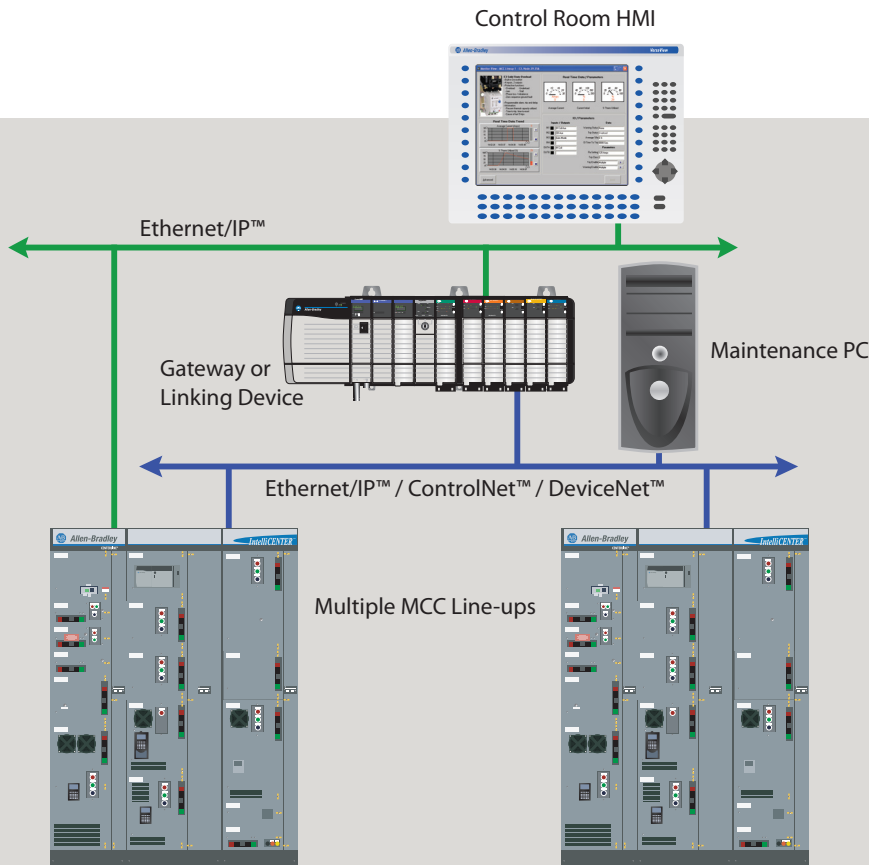
- IntelliCENTER software, using NetLinx open network architecture, features pre-configured screens and allows for monitoring anywhere in the enterprise
- ActiveX controls allow seamless integration into RSVIEW and interfaces with third party visualization packages
- Faster start-up
 - Networking reduces complex interwiring to a single cable
 - Factory network pre-configuration validates connections, sets baud rates and assigns node addresses
 - Pre-configured screens shorten programming time
- Efficient troubleshooting
 - Trending and event logging capabilities allow you to diagnose your electrical problems
 - AutoCAD® documentation allows you to trace out wiring and understand control circuits using wiring diagrams
 - Ability to supplement “as built” drawings with “as installed” drawings
 - Unit specific manuals and spare parts lists are provided electronically
- Optimized polling to ensure system performance
- Option to operate in stand-alone mode
- IntelliCENTER software allows you to troubleshoot your MCC remotely, without Personal Protective Equipment (PPE)



IntelliCENTER software, with ActiveX controls, allows users to easily view powerful information and change parameter values in devices



Elevation View quickly diagnoses the condition of the motor controls in the MCC



STRUCTURE FEATURES

CENTERLINE bus design means more current carrying capacity per section.

- Standard vertical bus is rated twice the industry norm – 300 A above and 300 A below the horizontal bus for an effective 600 A capacity per section
- Allows more flexibility for field changes without exceeding vertical bus rating
- Sections available in back-to-back design with separate front and rear vertical bus for maximum loading capacity

Vertical wireway contains NO control or power terminations making **cable installation safer**. For added safety, a permanent barrier separates the vertical wireway from units.

Computerized fastening system used in the assembly of horizontal to vertical bus connection:

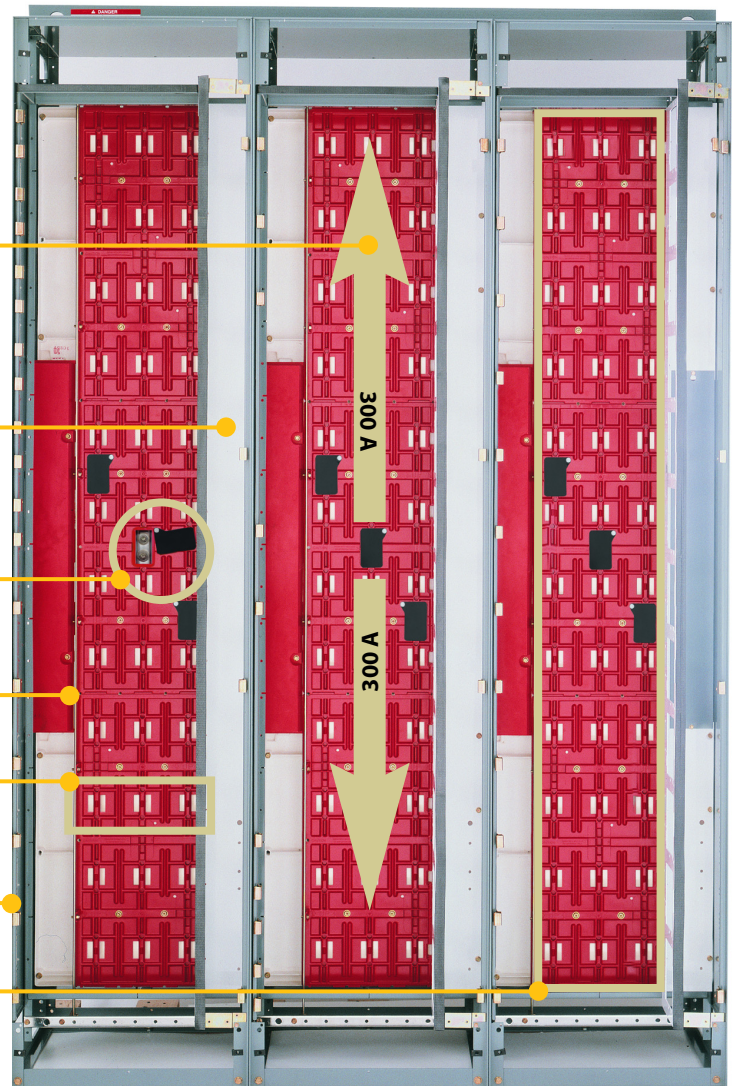
- **reduces periodic maintenance**
- **minimizes exposure to hazardous voltage**

Dedicated plug-in ground bus is part of a **solid grounding system**.

Automatic shutters available to **immediately isolate vertical bus when unit is removed**.

Fault containment is enhanced with two side sheets on every section.

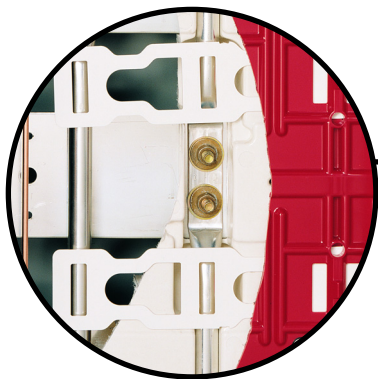
Continuous bus bracing provides **more uniform support** than commonly used standoffs.



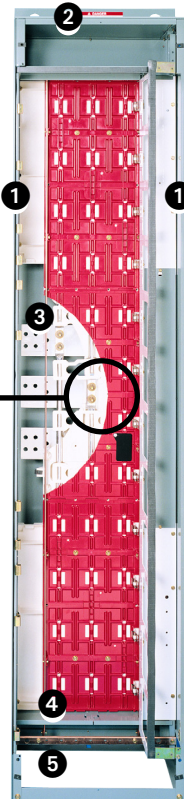
DURABILITY THROUGHOUT

An MCC is a long term investment.

CENTERLINE MCC rigid design ensures longer life. Doors close securely and plug-in units can still be installed and removed after years of dependable service.



Two-bolt bus connections minimize the likelihood of “hot spots.”



Rugged construction provides rigidity during shipping, installation and operation for longer service life.

- 1 Two side sheets on every section

The following elements are continuous across the shipping block:

- 2 Solid lifting angle
- 3 Horizontal power bus
- 4 Horizontal ground bus
- 5 Internal mounting angle

Over 30 years of backward compatibility!

A new MCC unit will plug into a CENTERLINE 2100 MCC purchased decades ago or just last week. Our dedication to backward compatibility means:

- No costly special orders
- No long lead times for replacement units
- Less spare parts inventory
- Simplified upgrades

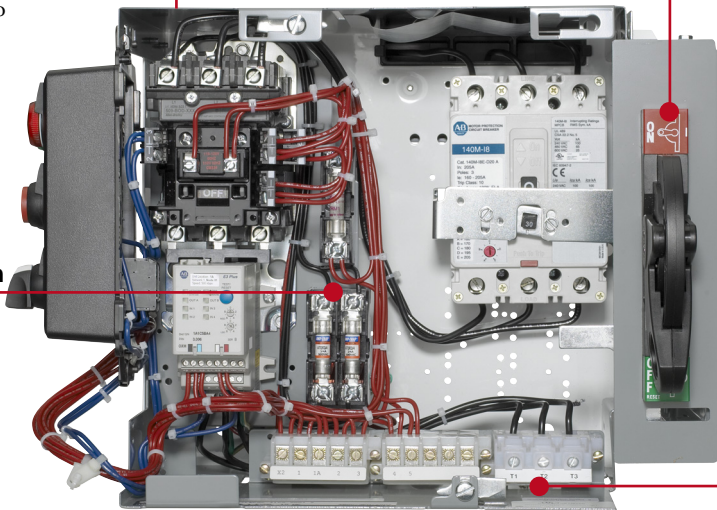
UNIT FEATURES

Superior fault containment helps minimize downtime

- Units have top and bottom plates
- Stab housing is designed to extinguish arcing fault by segregating three phases

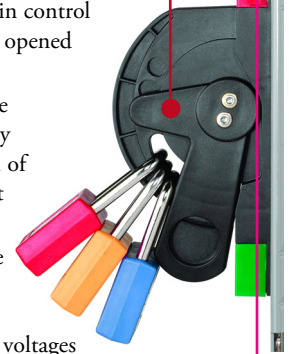
Durable NEMA components provide dependable operation

- Push buttons, Pilot lights and Selector Switches
- Contactors and starters – documented life of up to 10 million operations for NEMA Size 1



Rugged, flange-mounted handle

- Keeps operator in control whether door is opened or closed
- Accepts multiple padlocks for easy implementation of lockout/tag-out procedures
- Non-conductive material helps isolate operator from hazardous voltages



Unit withdrawal made safer and quicker

- Standard pull-apart terminal blocks allow quick disconnection of field wiring
- No need to stuff wiring into vertical wireway where hazardous voltages exist – wiring tunnel allows unit to pass safely over field wiring

Dedicated ground stab is part of a solid grounding system



Hot spots reduced

- Stabs use a high pressure, four point contact construction
- Stabs directly crimped to power wires – no screws or connectors to loosen
- Free-floating stabs self-align to bus

Versatile interlock mechanism designed to make servicing safer

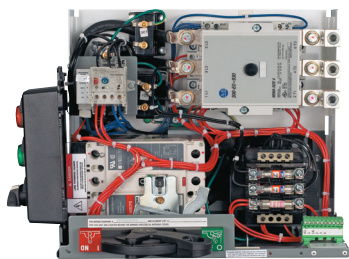
- Unit cannot be inserted or withdrawn when the disconnect handle is ON
- If unit is removed for maintenance, padlock can be attached to prevent installation
- Unit can be secured in a service position (partially withdrawn, power stabs disengaged)



Space Saving Unit Designs

Space Saving NEMA Units, Size 1-5 Starter Units

- Up to 50% less space than comparable Traditional NEMA starter units

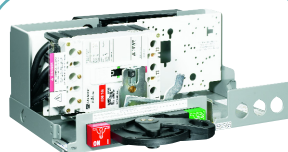


Size 4 FVNR Space Saving NEMA Starter Unit in 1.0 space factor



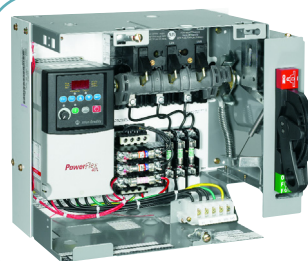
Size 1 FVNR Space Saving NEMA Starter Unit in 0.5 space factor

Space Saving Feeder Disconnects



At least 50% less space than typical feeder disconnect

Space Saving Drive Units



Compact unit sizes with PowerFlex Drives

Space Saving Soft Starter Units



Compact unit sizes with SMC-3 and SMC-Flex

MORE OPTIONS WITH FASTER DELIVERY

For quick delivery, choose from the largest selection of standard units and options.

- Over 60 standard units in a variety of sizes combined with more than 100 options yield millions of possibilities for standard units
- Components for standard units are stocked for immediate assembly
- Individual units and unpopulated sections can ship in 3 days
- Complete CENTERLINE 2100 MCCs, even with IntelliCENTER technology, can ship in 7-10 days

TECHNICAL DATA

STANDARDS	Certifications & Listings	NEMA ICS-18, UL845, CSA C22.2 No. 14 and EN 60439-1
SECTION DESIGN	Height	90" (2286 mm) standard; 71" (1790 mm) available
	Width	20" (508 mm) standard; wider sections available for larger equipment in 5" (127 mm) increments
	Depth	15" (381 mm) or 20" (508 mm) available 30" (762 mm) or 40" (1016 mm) back-to-back
	Vertical Wireway	4.37" (111 mm) wide standard; 9" (229 mm) wide available
	NEMA Type	1 (IP20, IP30, IP40) 1 with gasketing around perimeter of unit doors (IP20, IP30, IP40) 12 (IP54) 3R non walk-in (IP44) 4 non walk-in (IP65)
BUS MATERIAL AND PLATING	Horizontal Bus Rating	600 A; 800 A; 1200 A; 1600 A; 2000 A; 2500A or 3000A
	Horizontal Bus Withstand Rating	42 kA; 65 kA or 100 kA
	Horizontal Bus Material	Aluminum Tin-plated; Copper Tin-plated or Copper Silver-plated
	Vertical Bus Rating	300 A (600 A effective) or 600 A (1200 A effective)
	Vertical Bus Material	Copper Tin-plated or Copper Silver-plated (matches horizontal bus material)
UNIT DESIGN	Unit Size	6.5" (165 mm) x 14" (356 mm) wide = half space factor 13" (330 mm) x 14" (356 mm) wide = one space factor Unit designs are in 0.5 space factor increments
	Maximum Space Factor per Section	6
STRUCTURAL SURFACE TREATMENTS	Exterior (NEMA Type 1, 1G, 12)	ANSI 49 - Medium Light Gray
	Exterior (NEMA Type 3R)	UV Resistant High Gloss White - Recognized by UL for outdoor use
	Exterior (NEMA Type 4)	Unpainted Stainless Steel
	Interior	ANSI 49 - Medium Light Gray; High Visibility White Gloss (vertical wireways and unit back plates)
ENVIRONMENT	Storage Temperature	0 - 40° C with up to 95% non-condensing humidity
	Operating (Ambient) Temperature	32 - 104° F (0 - 40° C) with up to 95% non-condensing humidity
	Altitude	6600 feet (2km)

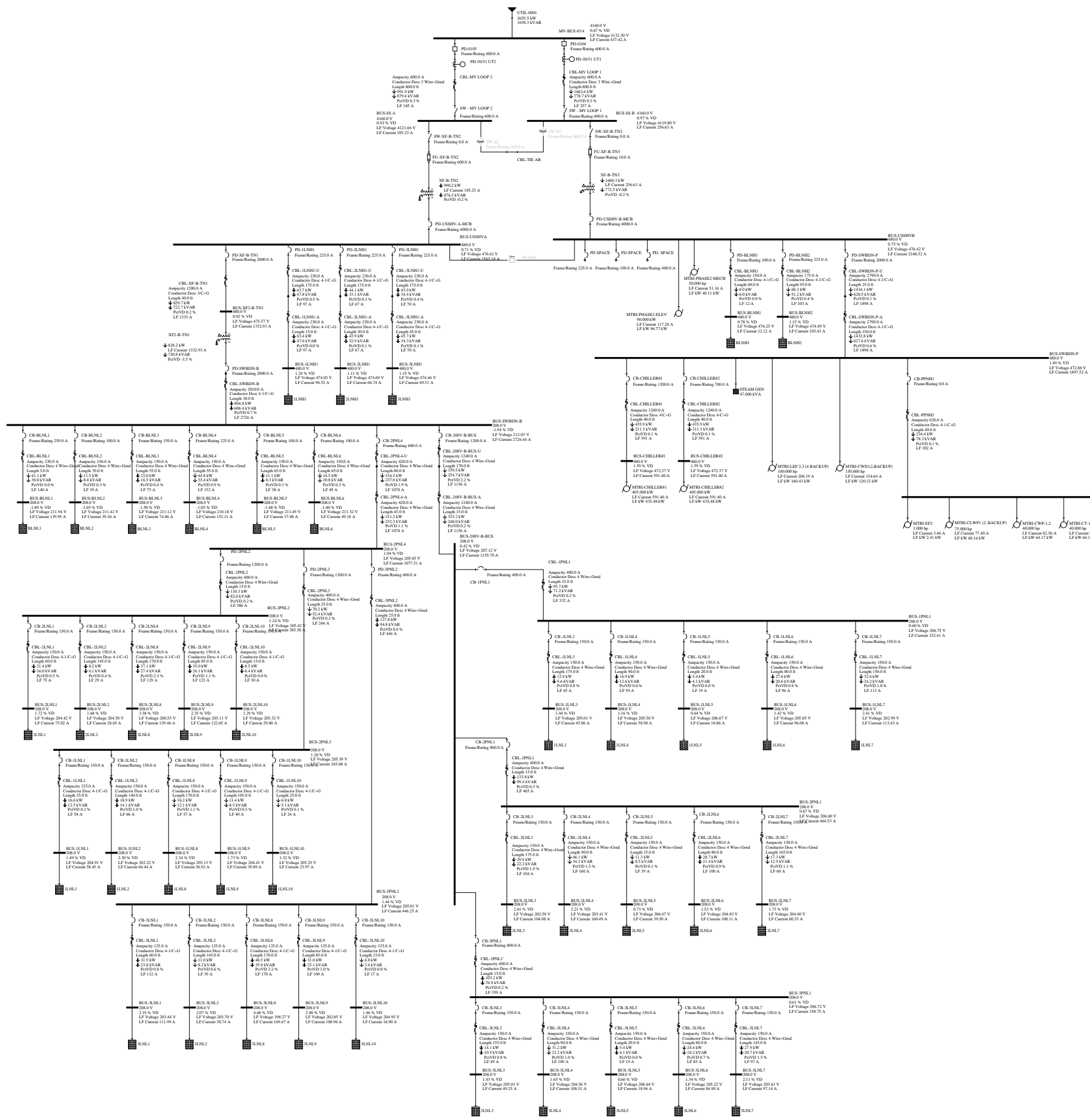
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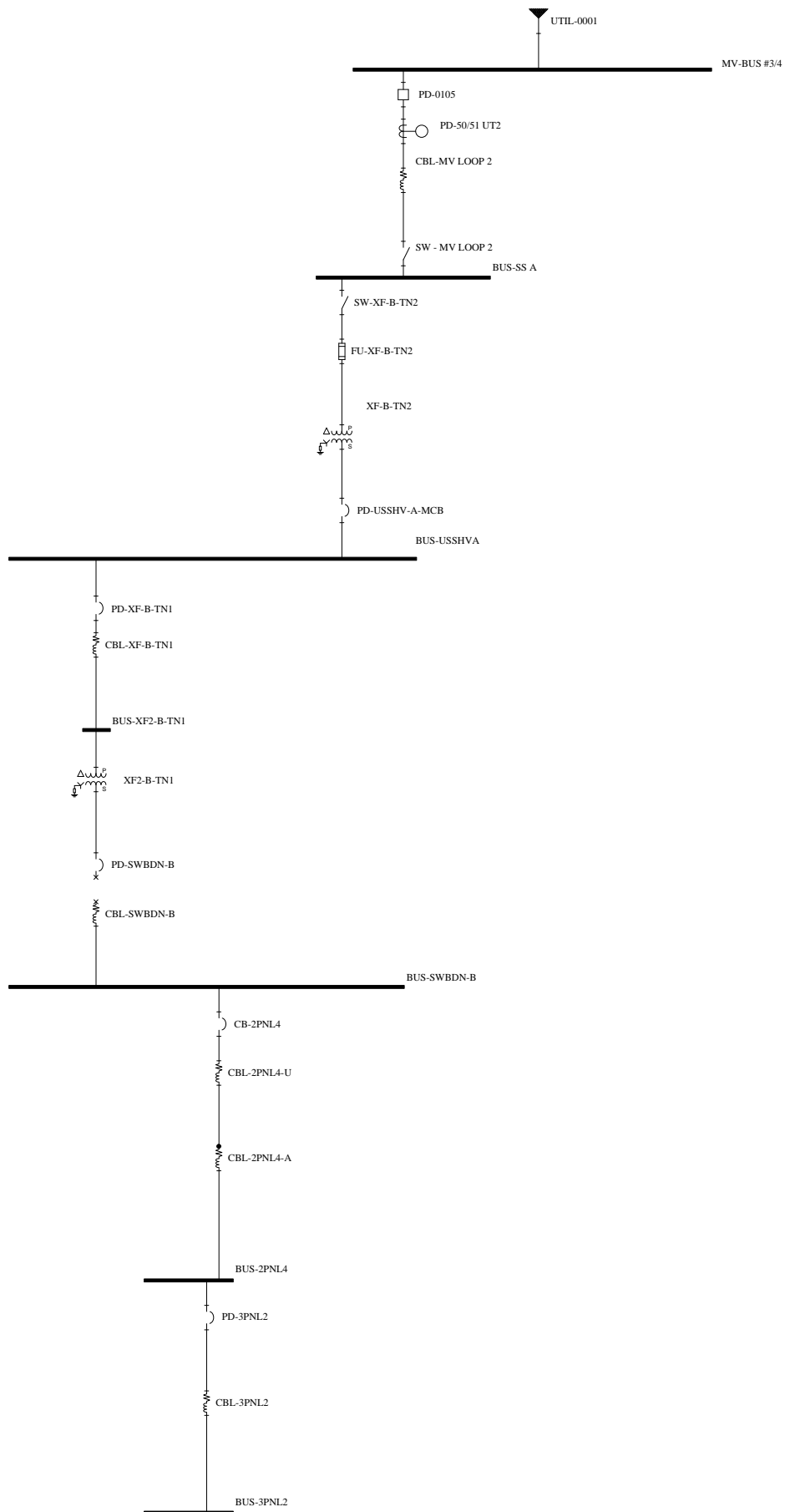
www.rockwellautomation.com

Power, Control and Information Solutions Headquarters

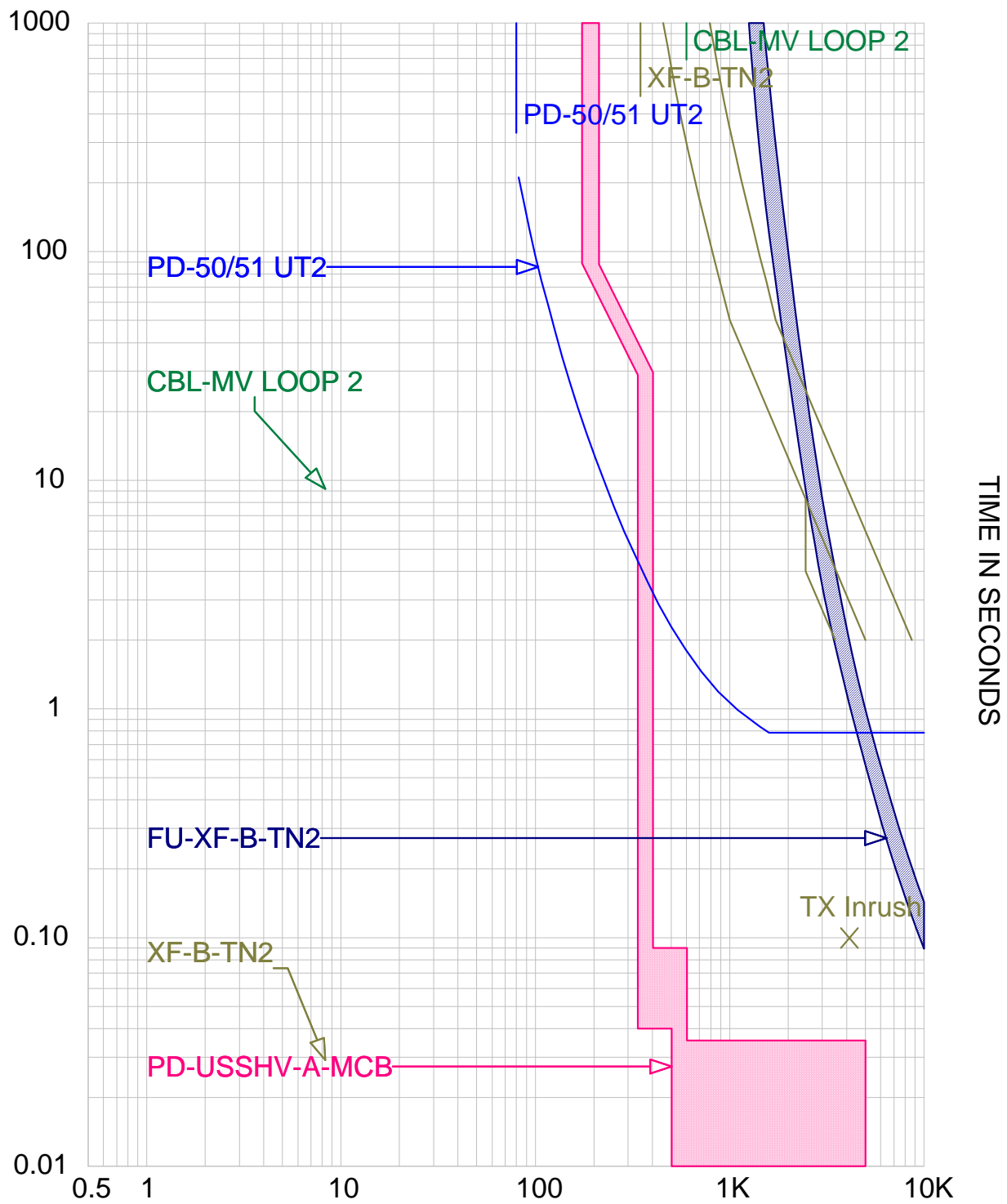
Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444
 Europe/Middle East/Africa: Rockwell Automation, Vorstlaan/Boulevard du Souverain 36, 1170 Brussels, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
 Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

APPENDIX D



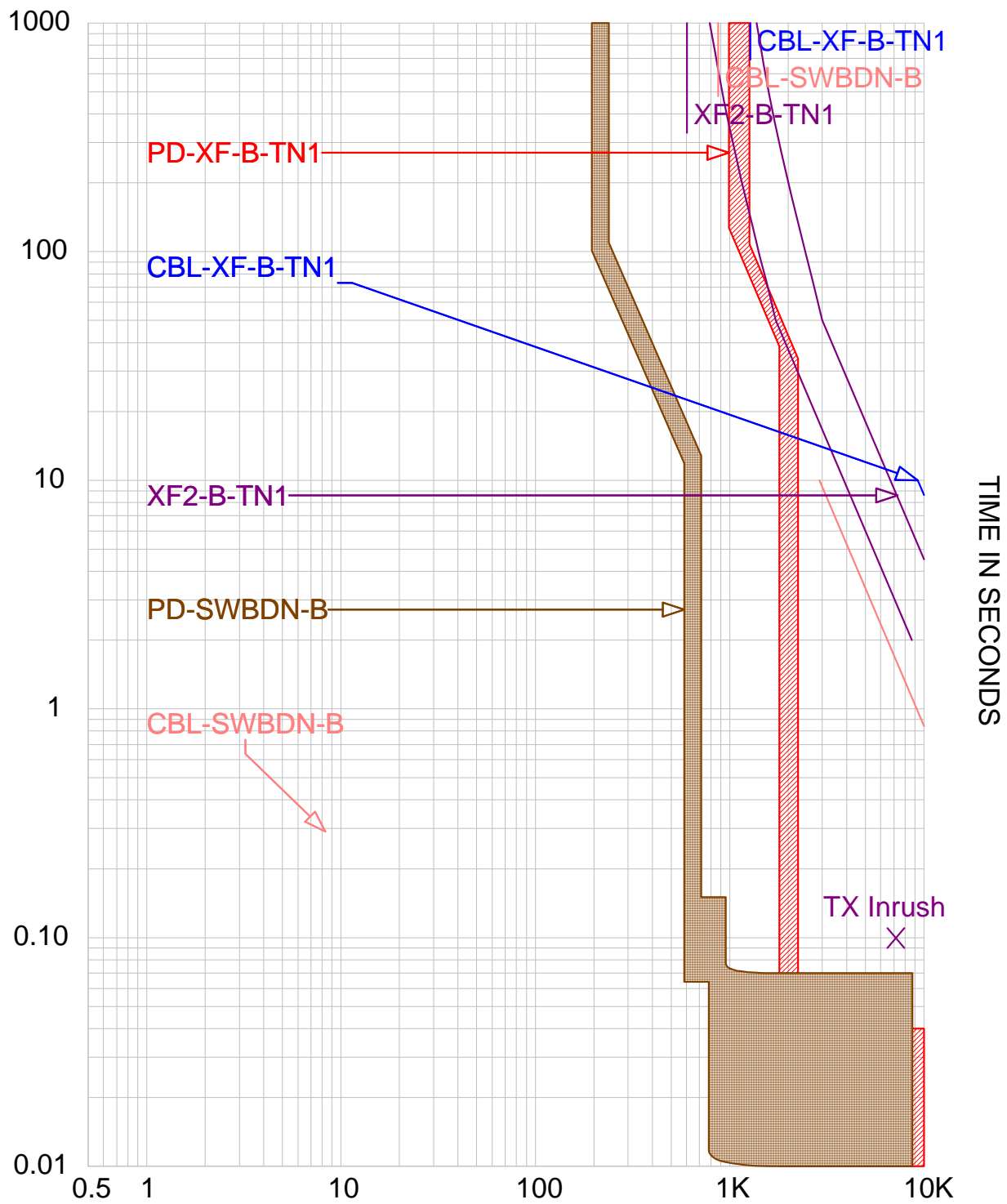


CURRENT IN AMPERES



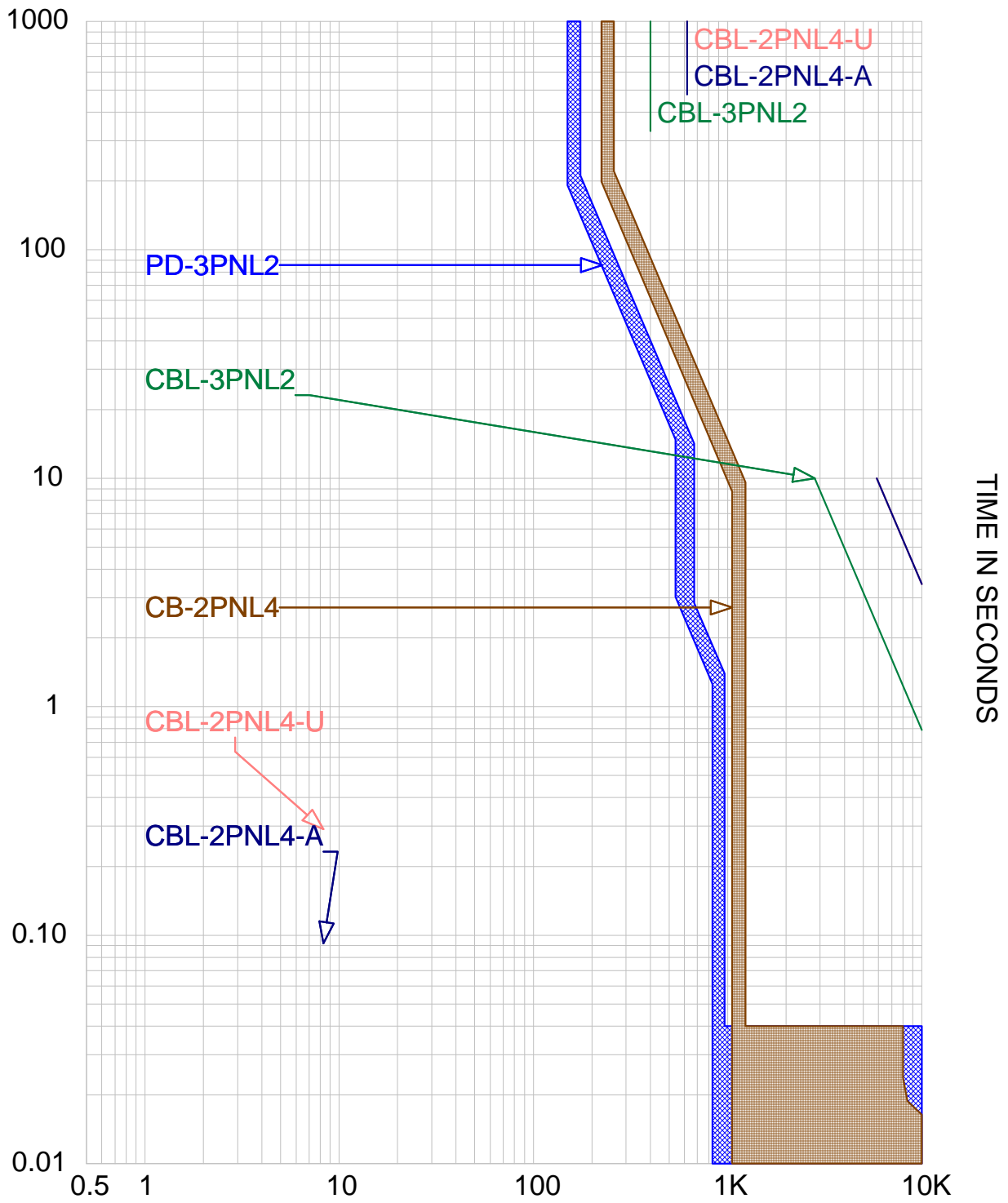
tcc5.tcc Ref. Voltage: 4160V Current in Amps x 1

CURRENT IN AMPERES



tcc4.tcc Ref. Voltage: 480V Current in Amps x 1

CURRENT IN AMPERES



	Bus Name	Protective Device Name	Bus kV	Bus Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Bolted Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/Delay Time (sec.)	Breaker Opening Time (sec.)	Ground	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	Required Protective FR Clothing Category
1	BUS-1LNH1	PD-1LNH1	0.480	13.67	8.57	13.67	8.57	0.017	0.000	Yes	PNL	25	10	18	0.47	Category 0
2																
3	BUS-1LNL1	CB-1LNL1	0.208	9.21	4.10	9.21	4.10	0.019	0.000	Yes	PNL	25	7	18	0.24	Category 0
4																
5	BUS-1LNL10	CB-1LNL10	0.208	10.00	4.35	10.00	4.35	0.018	0.000	Yes	PNL	25	7	18	0.24	Category 0
6																
7	BUS-1LNL2	PD-2PNL3 (CB-1LNL2)	0.208	4.84	2.61	4.84	2.61	0.08	0.000	Yes	PNL	25	12	18	0.62	Category 0 (*N5)
8																
9	BUS-1LNL3	CB-1LNL3	0.208	4.49	2.48	4.49	2.48	2	0.000	Yes	PNL	25	83	18	15	Category 3 (*N9)
10																
11	BUS-1LNL4	CB-1LNL4	0.208	6.92	2.85	6.92	2.85	0.032	0.000	Yes	PNL	25	7	18	0.28	Category 0 (*N3)
12																
13	BUS-1LNL5	CB-1LNL5	0.208	11.71	4.86	11.71	4.86	0.017	0.000	Yes	PNL	25	7	18	0.26	Category 0
14																
15	BUS-1LNL6	CB-1LNL6	0.208	7.37	2.99	7.37	2.99	0.029	0.000	Yes	PNL	25	7	18	0.26	Category 0 (*N3)
16																
17	BUS-1LNL7	CB-1LNL7	0.208	5.01	2.68	5.01	2.68	2	0.000	Yes	PNL	25	87	18	16	Category 3 (*N9)
18																
19	BUS-1LNL8	PD-2PNL3 (CB-1LNL8)	0.208	4.24	2.38	4.24	2.38	0.08	0.000	Yes	PNL	25	11	18	0.56	Category 0 (*N5)
20																
21	BUS-1LNL9	PD-2PNL3 (CB-1LNL9)	0.208	5.77	2.51	5.77	2.51	0.08	0.000	Yes	PNL	25	12	18	0.60	Category 0 (*N3) (*N5)
22																
23	BUS-1PNL1	CB-1PNL1	0.208	14.02	4.69	14.02	4.69	0.028	0.000	Yes	PNL	25	9	18	0.40	Category 0 (*N3)
24																
25	BUS-208V-B-BUS	CB-208V-B-BUS	0.208	14.77	5.72	14.77	5.72	0.05	0.000	Yes	PNL	25	15	18	0.91	Category 0
26																
27	BUS-2LNH1	PD-2LNH1	0.480	12.93	8.17	12.93	8.17	0.017	0.000	Yes	PNL	25	10	18	0.45	Category 0

	Bus Name	Protective Device Name	Bus kV	Bus Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Bolted Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/Delay Time (sec.)	Breaker Opening Time (sec.)	Ground	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	Required Protective FR Clothing Category
28																
29	BUS-2LNL1	CB-2LNL1	0.208	8.04	3.17	8.04	3.17	0.025	0.000	Yes	PNL	25	7	18	0.24	Category 0 (*N3)
30																
31	BUS-2LNL10	CB-2LNL10	0.208	11.38	4.76	11.38	4.76	0.017	0.000	Yes	PNL	25	7	18	0.26	Category 0
32																
33	BUS-2LNL2	PD-2PNL2 (CB-2LNL2)	0.208	4.97	2.66	4.97	2.66	0.08	0.000	Yes	PNL	25	12	18	0.64	Category 0 (*N5)
34																
35	BUS-2LNL3	CB-2PNL1 (CB-2LNL3)	0.208	4.49	2.48	4.49	2.48	0.08	0.000	Yes	PNL	25	12	18	0.59	Category 0 (*N5)
36																
37	BUS-2LNL4	CB-2LNL4	0.208	6.92	2.85	6.92	2.85	0.032	0.000	Yes	PNL	25	7	18	0.28	Category 0 (*N3)
38																
39	BUS-2LNL5	CB-2LNL5	0.208	12.24	5.01	12.24	5.01	0.017	0.000	Yes	PNL	25	7	18	0.27	Category 0
40																
41	BUS-2LNL6	CB-2LNL6	0.208	7.37	2.99	7.37	2.99	0.029	0.000	Yes	PNL	25	7	18	0.26	Category 0 (*N3)
42																
43	BUS-2LNL7	CB-2PNL1 (CB-2LNL7)	0.208	4.68	2.55	4.68	2.55	0.08	0.000	Yes	PNL	25	12	18	0.61	Category 0 (*N5)
44																
45	BUS-2LNL8	PD-2PNL2 (CB-2LNL8)	0.208	4.46	2.47	4.46	2.47	0.08	0.000	Yes	PNL	25	12	18	0.58	Category 0 (*N5)
46																
47	BUS-2LNL9	CB-2LNL9	0.208	6.83	2.83	6.83	2.83	0.033	0.000	Yes	PNL	25	7	18	0.28	Category 0 (*N3)
48																
49	BUS-2PNL1	CB-208V-B-BUS (CB-2PNL1)	0.208	14.02	5.51	14.02	5.51	0.05	0.000	Yes	PNL	25	15	18	0.87	Category 0 (*N5)
50																
51	BUS-2PNL2	CB-2PNL4 (PD-2PNL2)	0.208	12.94	5.21	12.94	5.21	0.04	0.000	Yes	PNL	25	12	18	0.66	Category 0 (*N5)
52																

	Bus Name	Protective Device Name	Bus kV	Bus Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Bolted Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/Delay Time (sec.)	Breaker Opening Time (sec.)	Ground	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	Required Protective FR Clothing Category
53	BUS-2PNL3	CB-2PNL4 (PD-2PNL3)	0.208	12.53	5.10	12.53	5.10	0.04	0.000	Yes	PNL	25	12	18	0.64	Category 0 (*N5)
54																
55	BUS-2PNL4	CB-2PNL4	0.208	13.59	5.40	13.59	5.40	0.04	0.000	Yes	PNL	25	13	18	0.68	Category 0
56																
57	BUS-3LNH1	PD-3LNH1	0.480	12.27	7.81	12.27	7.81	0.017	0.000	Yes	PNL	25	10	18	0.42	Category 0
58																
59	BUS-3LNL1	CB-3LNL1	0.208	7.63	3.06	7.63	3.06	0.027	0.000	Yes	PNL	25	7	18	0.25	Category 0 (*N3)
60																
61	BUS-3LNL10	CB-3LNL10	0.208	10.91	4.63	10.91	4.63	0.017	0.000	Yes	PNL	25	7	18	0.25	Category 0
62																
63	BUS-3LNL2	PD-3PNL2 (CB-3LNL2)	0.208	4.72	2.57	4.72	2.57	0.04	0.000	Yes	PNL	25	8	18	0.31	Category 0 (*N5)
64																
65	BUS-3LNL3	CB-3PNL1 (CB-3LNL3)	0.208	4.90	2.63	4.90	2.63	0.08	0.000	Yes	PNL	25	12	18	0.63	Category 0 (*N5)
66																
67	BUS-3LNL4	CB-3LNL4	0.208	6.92	2.85	6.92	2.85	0.032	0.000	Yes	PNL	25	7	18	0.28	Category 0 (*N3)
68																
69	BUS-3LNL5	CB-3LNL5	0.208	11.71	4.86	11.71	4.86	0.017	0.000	Yes	PNL	25	7	18	0.26	Category 0
70																
71	BUS-3LNL6	CB-3LNL6	0.208	7.37	2.99	7.37	2.99	0.029	0.000	Yes	PNL	25	7	18	0.26	Category 0 (*N3)
72																
73	BUS-3LNL7	CB-3PNL1 (CB-3LNL7)	0.208	5.13	2.72	5.13	2.72	0.08	0.000	Yes	PNL	25	12	18	0.65	Category 0 (*N5)
74																
75	BUS-3LNL8	PD-3PNL2 (CB-3LNL8)	0.208	4.24	2.38	4.24	2.38	0.04	0.000	Yes	PNL	25	7	18	0.28	Category 0 (*N5)
76																
77	BUS-3LNL9	PD-3PNL2 (CB-3LNL9)	0.208	6.48	2.73	6.48	2.73	0.04	0.000	Yes	PNL	25	8	18	0.33	Category 0 (*N3) (*N5)

	Bus Name	Protective Device Name	Bus kV	Bus Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Bolted Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/Delay Time (sec.)	Breaker Opening Time (sec.)	Ground	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	Required Protective FR Clothing Category
78																
79	BUS-3PNL1	CB-208V-B-BUS (CB-3PNL1)	0.208	14.02	5.51	14.02	5.51	0.05	0.000	Yes	PNL	25	15	18	0.87	Category 0 (*N5)
80																
81	BUS-3PNL2	PD-3PNL2	0.208	12.53	5.10	12.53	5.10	0.04	0.000	Yes	PNL	25	12	18	0.64	Category 0
82																
83	BUS-BLNH1	FU-XF-B-TN3 (PD-BLNH1)	0.480	23.72	13.71	19.18	11.09	0.008	0.000	Yes	PNL	25	9	18	0.39	Category 0 (*N5)
84																
85	BUS-BLNH2	FU-XF-B-TN3 (PD-BLNH2)	0.480	19.34	11.52	15.64	9.31	0.008	0.000	Yes	PNL	25	8	18	0.32	Category 0 (*N5)
86																
87	BUS-BLNL1	CB-BLNL1	0.208	18.66	6.74	18.66	6.74	0.017	0.000	Yes	PNL	25	9	18	0.36	Category 0
88																
89	BUS-BLNL2	CB-BLNL2	0.208	9.58	4.22	9.58	4.22	0.017	0.000	Yes	PNL	25	6	18	0.22	Category 0
90																
91	BUS-BLNL3	CB-BLNL3	0.208	10.94	4.63	10.94	4.63	0.017	0.000	Yes	PNL	25	7	18	0.24	Category 0
92																
93	BUS-BLNL4	CB-BLNL4	0.208	10.94	4.63	10.94	4.63	0.019	0.000	Yes	PNL	25	7	18	0.28	Category 0
94																
95	BUS-BLNL5	CB-BLNL5	0.208	10.00	4.35	10.00	4.35	0.017	0.000	Yes	PNL	25	7	18	0.23	Category 0
96																
97	BUS-BLNL6	CB-BLNL6	0.208	10.00	4.35	10.00	4.35	0.017	0.000	Yes	PNL	25	7	18	0.23	Category 0
98																
99	BUS-CHILLER#1	CB-CHILLER #1	0.480	46.76	24.49	43.31	22.68	0.025	0.000	Yes	PNL	25	26	18	2.2	Category 1
100																
101	BUS-CHILLER#2	CB-CHILLER #2	0.480	46.76	24.49	43.31	22.68	0.025	0.000	Yes	PNL	25	26	18	2.2	Category 1
102																

	Bus Name	Protective Device Name	Bus kV	Bus Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Bolted Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/Delay Time (sec.)	Breaker Opening Time (sec.)	Ground	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	Required Protective FR Clothing Category
103	BUS-PPNH1	FU-XF-B-TN3 (PD-SWBDN-P)	0.480	42.98	22.79	33.49	17.76	0.004	0.000	Yes	PNL	25	8	18	0.34	Category 0 (*N5)
104	BUS-PPNH1	CB-CHILLER #1	0.480	42.98	22.79	3.01	1.59	0.083	0.000	Yes	PNL	25	24	18	1.9	Category 1
105	BUS-PPNH1	CB-CHILLER #2	0.480	42.98	22.79	3.01	1.59	0.083	0.000	Yes	PNL	25	24	18	1.9	Category 1
106																
107	BUS-SS A	PD-50/51 UT2	4.16	26.55	25.34	26.55	25.34	0.787	0.083	Yes	SWG	104	872	36	27	Category 4
108																
109	BUS-SS B	FU-XF-B-TN3	4.16	27.24	25.99	1.13	1.08	0.008	0.000	Yes	SWG	104	8	36	0.27	Category 0
110	BUS-SS B	PD-50/51 UT1	4.16	27.24	25.99	26.12	24.92	0.016	0.083	Yes	SWG	104	94	36	3.0	Category 1
111																
112	BUS-SWBDN-B	PD-XF-B-TN1 (PD-SWBDN-B)	0.208	19.36	6.92	21.85	7.81	0.04	0.000	Yes	PNL	25	15	18	0.89	Category 0 (*N5)
113																
114	BUS-SWBDN-P	FU-XF-B-TN3 (PD-SWBDN-P)	0.480	49.71	25.80	38.95	20.22	0.004	0.000	Yes	PNL	25	9	18	0.39	Category 0 (*N5)
115	BUS-SWBDN-P	CB-CHILLER #1	0.480	49.71	25.80	3.49	1.81	0.083	0.000	Yes	PNL	25	26	18	2.2	Category 1
116	BUS-SWBDN-P	CB-CHILLER #2	0.480	49.71	25.80	3.49	1.81	0.083	0.000	Yes	PNL	25	26	18	2.2	Category 1
117																
118	BUS-USSHVA	PD-USSHV-A-MCB	0.480	43.31	22.94	43.31	22.94	0.036	0.000	Yes	PNL	25	31	18	2.9	Category 1
119																
120	BUS-USSHVB	FU-XF-B-TN3	0.480	54.77	28.03	43.17	22.10	0.004	0.000	Yes	PNL	25	10	18	0.42	Category 0
121	BUS-USSHVB	PD-SWBDN-P	0.480	54.77	28.03	10.60	5.43	0.07	0.000	Yes	PNL	25	25	18	2.0	Category 1
122																

	Bus Name	Protective Device Name	Bus kV	Bus Bolted Fault (kA)	Bus Arcing Fault (kA)	Prot Dev Bolted Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/Delay Time (sec.)	Breaker Opening Time (sec.)	Ground	Equip Type	Gap (mm)	Arc Flash Boundary (in)	Working Distance (in)	Incident Energy (cal/cm2)	Required Protective FR Clothing Category
123	BUS-XF2-B-TN1	PD-USSHV-A-MCB (PD-XF-B-TN1)	0.480	40.81	21.80	40.81	21.80	0.036	0.000	Yes	PNL	25	30	18	2.7	Category 1 (*N5)
124																
125	MV-BUS #3/4	PD-50/51 UT1	4.16	42.74	40.47	1.11	1.05	0.083	0.000	Yes	SWG	104	134	36	4.3	Category 2 (*N2)
126	MV-BUS #3/4	MaxTripTime @2.0s	4.16	42.74	40.47	41.63	39.44	2	0.000	Yes	SWG	104	3415	36	100	Dangerous! (*N2) (*N9)
127																
128	Category 0: Nonmelting, Flammable Materials with Weight >= 4.5 oz/sq yd														#Cat 0 = 48	(*N2) < 80% Cleared Fault Threshold
129	Category 1: Arc-rated FR Shirt & Pants														#Cat 1 = 8	(*N3) - Arcing Current Low Tolerances Used
130	Category 2: Arc-rated FR Shirt & Pants														#Cat 2 = 0	(*N5) - Miscoordinated, Upstream Device Tripped
131	Category 3: Arc-rated FR Shirt & Pants & Arc Flash Suit														#Cat 3 = 2	(*N9) - Max Arcing Duration Reached
132	Category 4: Arc-rated FR Shirt & Pants & Arc Flash Suit														#Cat 4 = 1	
133	Category Dangerous!: No FR Category Found	Device with 80% Cleared Fault Threshold													#Danger = 1	IEEE 1584 - 2002/2004a Edition Bus Report (80% Cleared Fault Threshold, include Ind. Motors for 5.0 Cycles), mis-coordination checked

	Bus Name	Label #	Cable Length From Trip Device (ft)	Incident Energy at Low Marginal	Incident Energy at High Marginal
1	BUS-1LNH1	# 0014	190.00		
2					
3	BUS-1LNL1	# 0002	35.00		
4					
5	BUS-1LNL10	# 0002	25.00		
6					
7	BUS-1LNL2	# 0002	165.00		
8					
9	BUS-1LNL3	# 0005	175.00		
10					
11	BUS-1LNL4	# 0005	90.00		
12					
13	BUS-1LNL5	# 0005	20.00		
14					
15	BUS-1LNL6	# 0005	80.00		
16					
17	BUS-1LNL7	# 0005	150.00		
18					
19	BUS-1LNL8	# 0002	195.00		
20					
21	BUS-1LNL9	# 0002	130.00		
22					
23	BUS-1PNL1	# 0012	15.00		
24					
25	BUS-208V-B-BUS	# 0013	185.00		
26					
27	BUS-2LNH1	# 0014	205.00		

	Bus Name	Label #	Cable Length From Trip Device (ft)	Incident Energy at Low Marginal	Incident Energy at High Marginal
28					
29	BUS-2LNL1	# 0015	60.00		
30					
31	BUS-2LNL10	# 0015	15.00		
32					
33	BUS-2LNL2	# 0015	160.00		
34					
35	BUS-2LNL3	# 0018	190.00		
36					
37	BUS-2LNL4	# 0019	90.00		
38					
39	BUS-2LNL5	# 0020	15.00		
40					
41	BUS-2LNL6	# 0020	80.00		
42					
43	BUS-2LNL7	# 0020	180.00		
44					
45	BUS-2LNL8	# 0015	185.00		
46					
47	BUS-2LNL9	# 0015	85.00		
48					
49	BUS-2PNL1	# 0025	200.00		
50					
51	BUS-2PNL2	# 0026	140.00		
52					

	Bus Name	Label #	Cable Length From Trip Device (ft)	Incident Energy at Low Marginal	Incident Energy at High Marginal
53	BUS-2PNL3	# 0027	150.00		
54					
55	BUS-2PNL4	# 0028	125.00		
56					
57	BUS-3LNL1	# 0014	220.00		
58					
59	BUS-3LNL1	# 0030	60.00		
60					
61	BUS-3LNL10	# 0030	15.00		
62					
63	BUS-3LNL2	# 0030	170.00		
64					
65	BUS-3LNL3	# 0033	170.00		
66					
67	BUS-3LNL4	# 0033	90.00		
68					
69	BUS-3LNL5	# 0033	20.00		
70					
71	BUS-3LNL6	# 0033	80.00		
72					
73	BUS-3LNL7	# 0033	160.00		
74					
75	BUS-3LNL8	# 0030	195.00		
76					
77	BUS-3LNL9	# 0030	110.00		

	Bus Name	Label #	Cable Length From Trip Device (ft)	Incident Energy at Low Marginal	Incident Energy at High Marginal
78					
79	BUS-3PNL1	# 0040	200.00		
80					
81	BUS-3PNL2	# 0041	25.00		
82					
83	BUS-BLNH1	# 0042	60.00		
84					
85	BUS-BLNH2	# 0042	95.00		
86					
87	BUS-BLNL1	# 0044	5.00		
88					
89	BUS-BLNL2	# 0044	70.00		
90					
91	BUS-BLNL3	# 0044	55.00		
92					
93	BUS-BLNL4	# 0044	55.00		
94					
95	BUS-BLNL5	# 0044	65.00		
96					
97	BUS-BLNL6	# 0044	65.00		
98					
99	BUS-CHILLER#1	# 0050	40.00		
100					
101	BUS-CHILLER#2	# 0051	40.00		
102					

	Bus Name	Label #	Cable Length From Trip Device (ft)	Incident Energy at Low Marginal	Incident Energy at High Marginal
103	BUS-PPNH1		215.00		
104	BUS-PPNH1	# 0052	40.00		
105	BUS-PPNH1		40.00		
106					
107	BUS-SS A	# 0052	800.00		
108					
109	BUS-SS B				
110	BUS-SS B	# 0052	800.00		
111					
112	BUS-SWBDN-B	# 0054	70.00		
113					
114	BUS-SWBDN-P		175.00		
115	BUS-SWBDN-P	# 0055			
116	BUS-SWBDN-P				
117					
118	BUS-USSHVA	# 0058			
119					
120	BUS-USSHVB				
121	BUS-USSHVB	# 0060			
122					

	Bus Name	Label #	Cable Length From Trip Device (ft)	Incident Energy at Low Marginal	Incident Energy at High Marginal
123	BUS-XF2-B-TN1	# 0058	40.00		
124					
125	MV-BUS #3/4				
126	MV-BUS #3/4	# 0059			
127					
128	Category 0: Nonmelting, Flammable Materials with Weight >= 4.5 oz/sq yd				
129	Category 1: Arc-rated FR Shirt & Pants				
130	Category 2: Arc-rated FR Shirt & Pants				
131	Category 3: Arc-rated FR Shirt & Pants & Arc Flash Suit				
132	Category 4: Arc-rated FR Shirt & Pants & Arc Flash Suit				
133	Category Dangerous!: No FR Category Found				

***** FAULT ANALYSIS SUMMARY *****

BUS NAME	VOLTAGE L-L	AVAILABLE FAULT CURRENT			
		3 PHASE	X/R	LINE/GRND	X/R
BUS-1LNH1	480.	13673.5	1.2	2451.73	0.2
BUS-1LNL1	208.	9207.2	1.3	1170.62	0.1
BUS-1LNL10	208.	10002.1	1.4	1193.50	0.1
BUS-1LNL2	208.	4835.3	0.8	973.61	0.2
BUS-1LNL3	208.	4486.3	0.6	1012.29	0.2
BUS-1LNL4	208.	6918.1	0.9	1123.36	0.1
BUS-1LNL5	208.	11706.9	1.6	1233.96	0.1
BUS-1LNL6	208.	7373.6	0.9	1137.98	0.1
BUS-1LNL7	208.	5011.4	0.7	1042.69	0.1
BUS-1LNL8	208.	4238.3	0.7	928.74	0.2
BUS-1LNL9	208.	5773.7	0.9	1031.64	0.1
BUS-1PNL1	208.	14018.0	2.4	1269.46	0.1
BUS-208V-B-BUS	208.	14765.8	2.7	1277.94	0.1
BUS-2LNH1	480.	12932.9	1.2	2413.87	0.2
BUS-2LNL1	208.	8038.8	1.0	1160.30	0.1
BUS-2LNL10	208.	11382.4	1.6	1233.74	0.1
BUS-2LNL2	208.	4973.8	0.7	1042.28	0.2
BUS-2LNL3	208.	4486.3	0.6	1012.29	0.2
BUS-2LNL4	208.	6918.1	0.9	1123.36	0.1
BUS-2LNL5	208.	12240.1	1.7	1242.66	0.1
BUS-2LNL6	208.	7373.6	0.9	1137.98	0.1
BUS-2LNL7	208.	4683.0	0.7	1024.24	0.2
BUS-2LNL8	208.	4457.7	0.7	1011.87	0.2
BUS-2LNL9	208.	6833.5	0.9	1123.01	0.1
BUS-2PNL1	208.	14018.0	2.4	1269.46	0.1
BUS-2PNL2	208.	12940.3	2.2	1260.22	0.1
BUS-2PNL3	208.	12530.5	2.1	1254.68	0.1
BUS-2PNL4	208.	13591.4	2.4	1268.61	0.1
BUS-3LNH1	480.	12267.1	1.1	2377.05	0.2
BUS-3LNL3	208.	4897.1	0.7	1036.47	0.2
BUS-3LNL4	208.	6918.1	0.9	1123.36	0.1
BUS-3LNL5	208.	11706.9	1.6	1233.96	0.1
BUS-3LNL6	208.	7373.6	0.9	1137.98	0.1
BUS-3LNL7	208.	5130.9	0.7	1048.98	0.1
BUS-3PNL1	208.	14018.0	2.4	1269.46	0.1
BUS-3PNL2	208.	12530.5	2.1	1254.68	0.1

***** FAULT ANALYSIS SUMMARY *****

BUS NAME	VOLTAGE	AVAILABLE FAULT CURRENT			X/R
	L-L	3 PHASE	X/R	LINE/GRND	
BUS-BLNH1	480.	23716.2	1.0	16457.11	0.7
BUS-BLNH2	480.	19339.0	1.0	13125.66	0.7
BUS-BLNL1	208.	18663.4	3.8	1299.90	0.1
BUS-BLNL2	208.	9581.6	1.0	1182.95	0.1
BUS-BLNL3	208.	10936.3	1.1	1207.20	0.1
BUS-BLNL4	208.	10936.3	1.1	1207.20	0.1
BUS-BLNL5	208.	9999.0	1.0	1190.93	0.1
BUS-BLNL6	208.	9999.0	1.0	1190.93	0.1
BUS-CHILLER#1	480.	46756.3	3.4	41006.59	2.6
BUS-CHILLER#2	480.	46756.3	3.4	41006.59	2.6
BUS-PPNH1	480.	42976.9	3.0	36768.02	2.4
BUS-SS A	4160.	26548.5	3.8	27144.67	3.5
BUS-SS B	4160.	27242.2	3.9	27626.52	3.6
BUS-SWBDN-B	208.	19362.9	4.4	1304.74	0.1
BUS-SWBDN-P	480.	49710.4	3.9	44760.47	2.8
BUS-USSHVA	480.	43312.1	5.2	3040.15	0.1
BUS-USSHVB	480.	54767.5	5.6	54385.75	5.6
BUS-XF2-B-TN1	480.	40811.8	4.4	3022.74	0.1
MV-BUS #3/4	4160.	42743.3	8.0	64113.86	8.0

***** FAULT ANALYSIS REPORT COMPLETED *****