


















Appendix A | Lighting




LUMINAIRE SCHEDULE

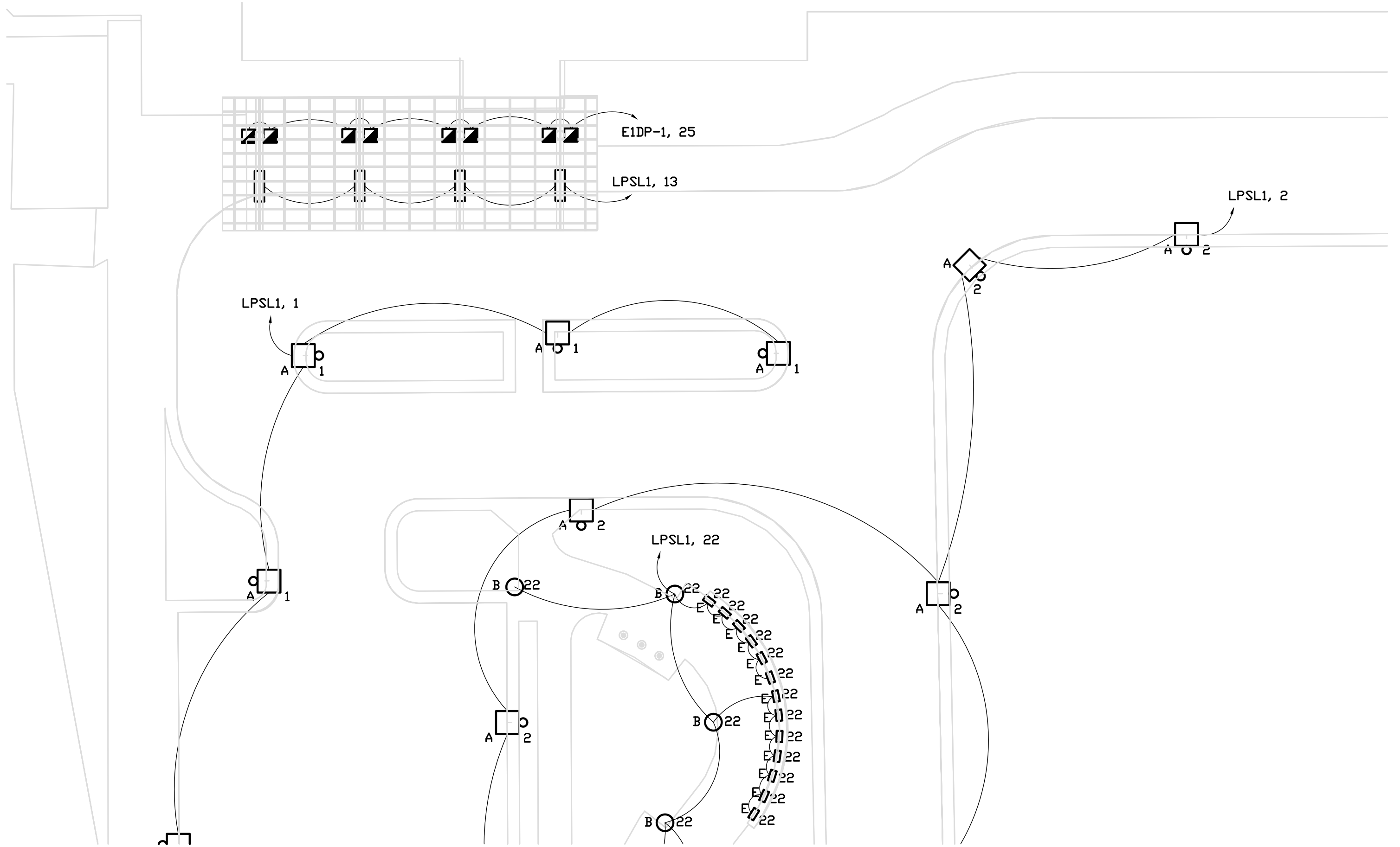
TYPE	IMAGE	MANUFACTURER	PRODUCT NAME	CATALOG NUMBER	DESCRIPTION	LAMP	INPUT WATTS	VOLTAGE	BALLAST
A		Williams	OER1717	OER1717/100PSMH 277/TFT/S/SQ/SLV	17" square area luminaire. Fabricated .08" aluminum housing with an extruded aluminum frame with latches to provide easy access to ballast, lamp and reflector. Clear .187" thick high-impact, heat-resistant tempered glass lens.	MXR100/C/U/M ED/O 12570 - GE quartz metal halide ED17	109	277	IMH/100/ D/277 Philips Advance
B		Cooper Lighting	Acorn	ANE/70/P/H/7/33	8" textured polycarbonate globe with internal type III refractor. Cast aluminum housing finished in standard black polyester powder coat.	CMH70CU830M ED/O 31070 - GE ceramic metal halide ED17	79	277	IMH/70/D/ 277 Philips Advance
C		Philips Color Kinetics	eW Graze Powercore	523/000030/15	4' linear LED surface mounted luminaire with a 30° x 60° beam angle. Extruded anodized aluminum housing and clear polycarbonate lens. Certified IP66 for a wet location environment.	4000K White LED lamps included	60	277	Integrated with luminaire
D		Cooper Lighting	WP Series	683/4/WP/CFL/1/26 /277V/SM	Solid aluminum with open bottom and enclosed top wall mounted luminaire coated with premium polyester powder paint. Dark Sky and ADA compliant. UL approved for wet location.	F26DBX/841/EC O4P 97613 - GE CF plug in T4	31	277	VEZ/1T42/ M2/BS Philips Advance
E		Cooper Lighting	Rio	1235/RD/M/4LEED/ 120/12/NSS	5" round, open fascia with clear diffuse lens. Die-cast aluminum alloy housing that is corrosion-resistant. Certified IP68 for a standard wet environment.	White LED lamps included	4	120	Integrated with luminaire
F		ERCO	Lightcast Downlight	22209.000	Cast aluminum housing designed with a heat sink. White powder coated cast aluminum mounting ring. Bright anodised aluminum darklight reflector. Size 7, 30° cut-off angle.	(2)F18DBX/830/ ECO4P 97599 - GE CF plug in T4	43	277	VEZ/2Q18/ M2/BS/27 7 Philips Advance
G		ERCO	Logotec Spotlight Narrow	72409.000	Cast aluminum powder-coated housing and bracket. Silver spherulit mirror-finished anodised aluminum reflector with safety glass.	CMH20T/U830G U6.5 85086 - GE ceramic metal halide T4	24	277	IMH/G20/ G/277 Philips Advance
H		ERCO	Logotec Spotlight Flood	72410.000	Cast aluminum powder-coated housing and bracket. Silver spherulit mirror-finished anodised aluminum reflector with safety glass.	CMH20T/U830G U6.5 85086 - GE ceramic metal halide T4	24	277	IMH/G20/ G/277 Philips Advance
I		ERCO	Logotec Spotlight Wide Flood	72411.000	Cast aluminum powder-coated housing and bracket. Silver spherulit mirror-finished anodised aluminum reflector with safety glass.	CMH20T/U830G U6.5 85086 - GE ceramic metal halide T4	24	277	IMH/G20/ G/277 Philips Advance
J		ERCO	Logotec Recessed Spherulit Wallwasher	81215.000	Size 5, recessed housing of cast aluminum white powder-coated. White plastic mounting ring. Aluminum silver spherulit reflector mirror-finished anodised with a softec lens.	CMH20T/U830G U6.5 85086 - GE ceramic metal halide T4	24	277	IMH/G20/ G/277 Philips Advance
K		ERCO	Logotec Recessed Spotlight	81210.000	Size 5, recessed housing of cast aluminum white powder-coated. White plastic mounting ring. Aluminum silver spherulit reflector mirror-finished anodised with a softec lens.	CMH20T/U830G U6.5 85086 - GE ceramic metal halide T4	24	277	IMH/G20/ G/277 Philips Advance
L		Winona Lighting	Illustra Satro	4801/30/FQ/277V/ OA/BAL/STD	Intersecting 2-piece standard brushed aluminum finish with an etched opal acrylic 30" lens. Pendant is mounted ___" from ceiling	(4)F26DBX/830/ ECO4P 97611 - GE CF plug in T4	116	277	(2)VEZ/2Q 26/M2/BS Philips Advance
M		ERCO	Lightcast Downlight	22267.000	Cast aluminum housing designed with a heat sink. White powder coated cast aluminum mounting ring. Bright anodised aluminum darklight reflector. Size 5, 30° cut-off angle.	F18TBX/830/A/ ECO 97625 - GE CF plug in T4	22	277	VEZ/1Q18/ M2/BS Philips Advance
N		Elliptipar	Style 204	M204/150G/T/02/2/ 00	Extruded high purity aluminum housing with a semi-gloss white reflector. Semi-recessed adjustable wall washer. Microprismatic tempered glass lens.	CMH150TU/830 /G12 20017 - GE ceramic metal halide T6	161	277	IMH/150/ H/277 Philips Advance

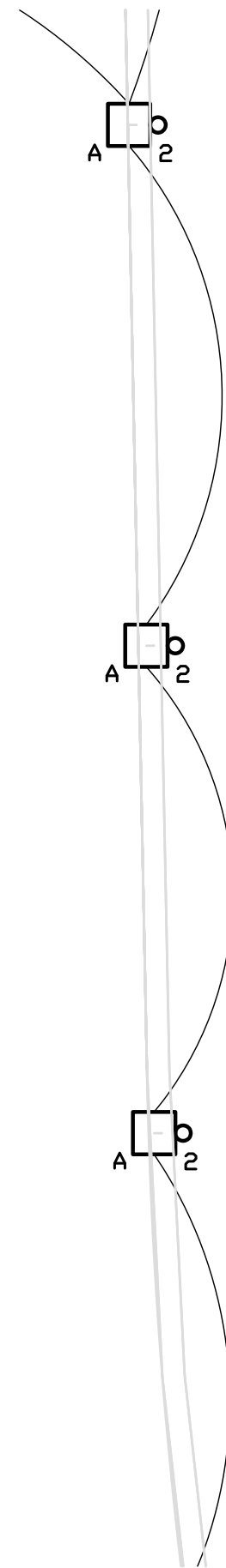
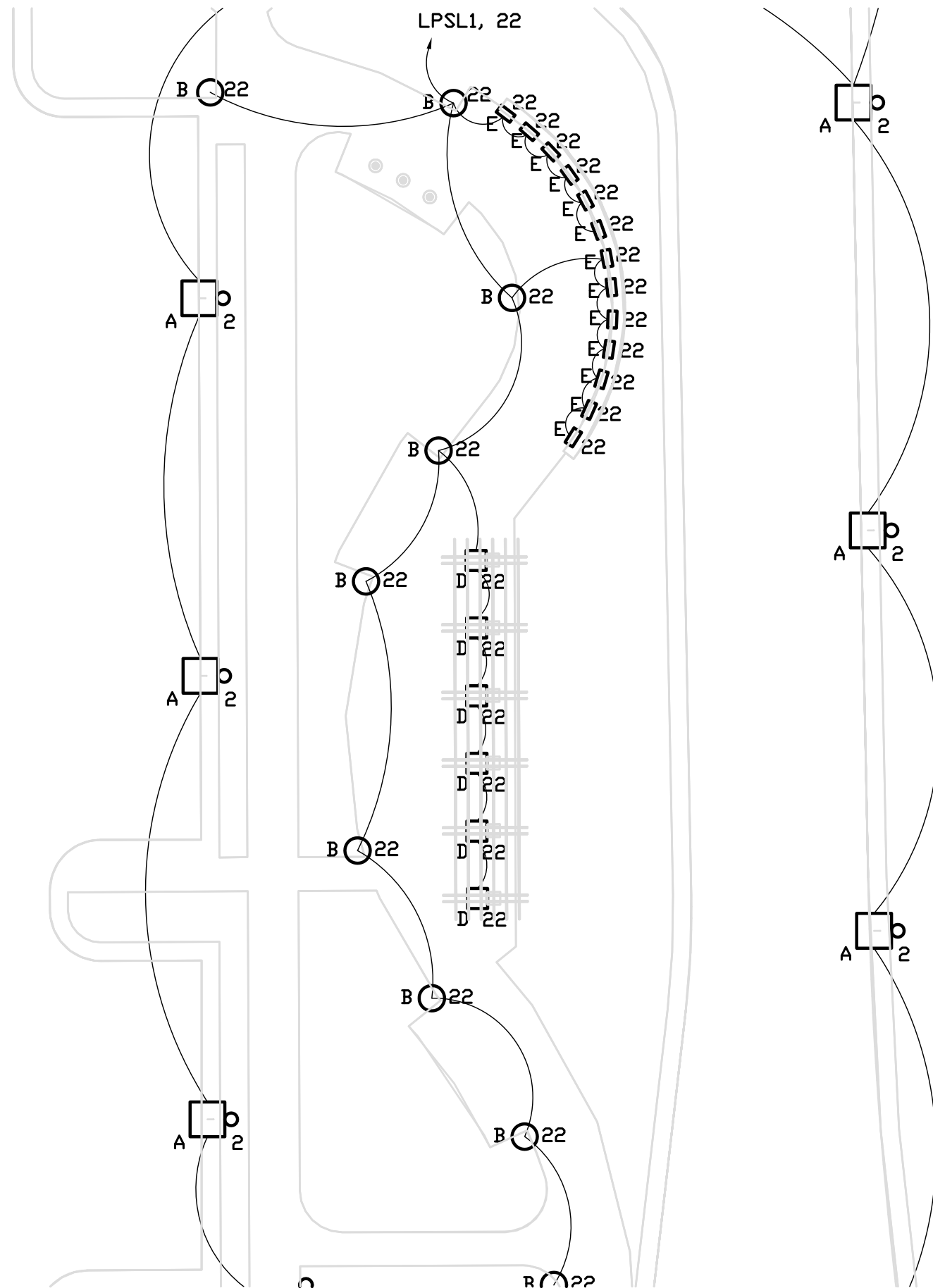
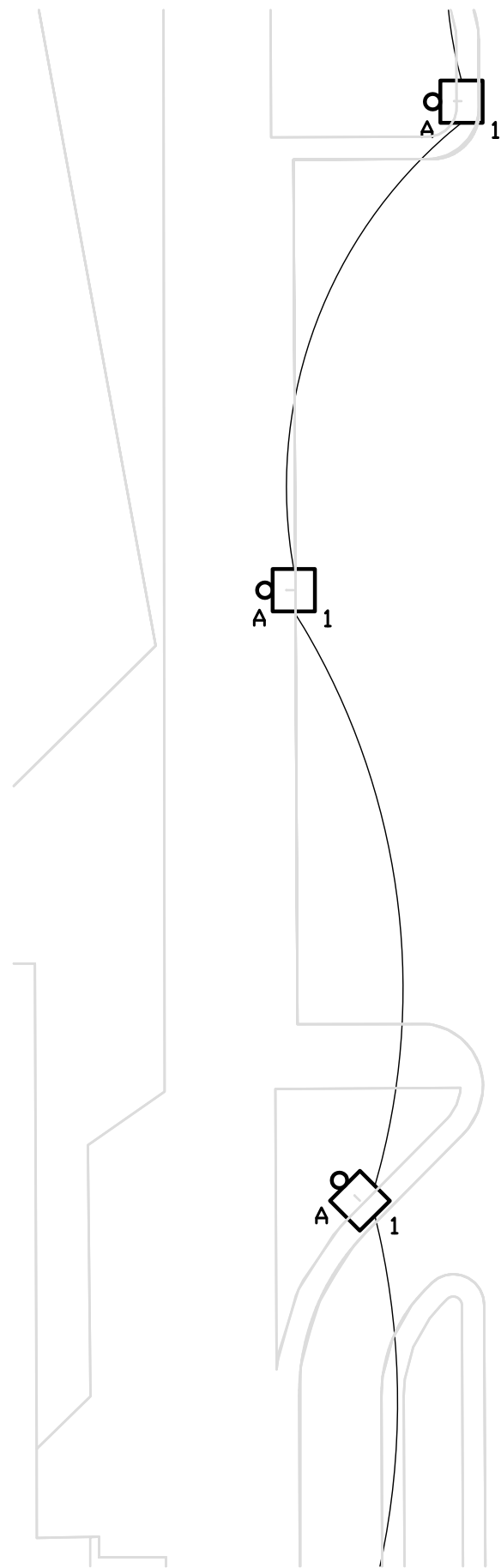
LUMINAIRE SCHEDULE (CONT.)

TYPE	IMAGE	MANUFACTURER	PRODUCT NAME	CATALOG NUMBER	DESCRIPTION	LAMP	INPUT WATTS	VOLTAGE	BALLAST
O		Zumtobel	ML	ML4F/22/2245/OL/U	Cold-rolled steel housing with powder-coated white finish. High-reflectance white interior reflector and shaped extruded white opal acrylic lens.	(2)F24W/T5/841/ECO 46701 - GE linear T5	52	277	ICN/2524 @277V Philips Advance
P		Elliptipar	Style 306	F306/A132/S/00/2/00/0	Extruded high purity aluminum housing with clear anodized specular finish. Adjustable reflector that can be joined to other fixtures to aim together. Indirect cove lighting lay-in installation.	F32T8/SP41/EC O/C 15904 - GE linear T8	35	277	VEZ/132/S C Philips Advance
W		ERCO	ERCO Track	78303.000	Silver finished anodised aluminum 3-circuit track allowing for three separate switchable circuits.	-	-	277	-

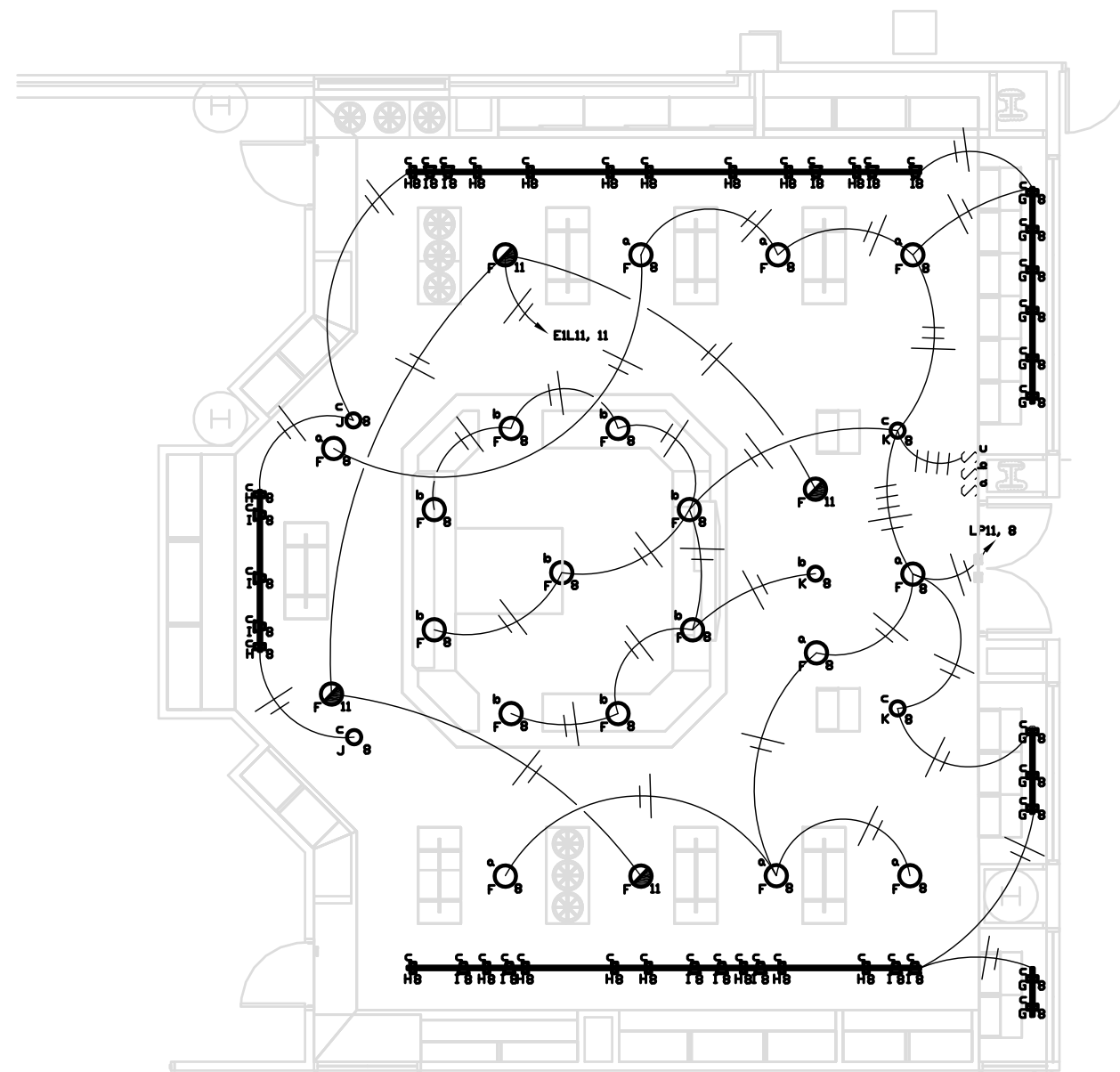
CONTROL SCHEDULE

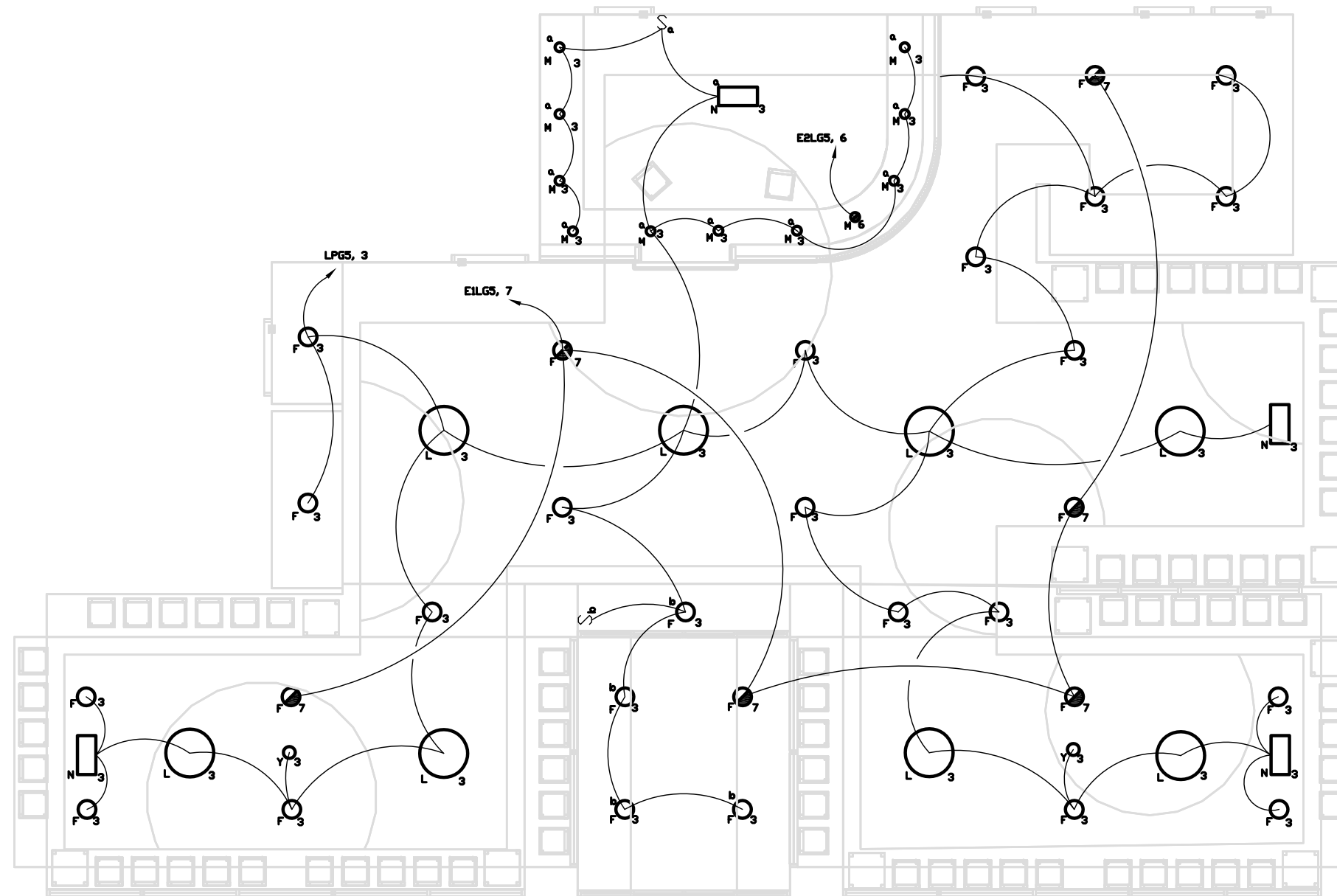
TYPE	IMAGE	MANUFACTURER	PRODUCT NAME	CATALOG NUMBER	DESCRIPTION
X		Watt Stopper	Astronomical Time Clock	MSC-100	5-channel Astronomical Time Clock used for fully automating a Wireless Micro lighting control system. Provides ON/OFF control signals based on time of day, day of week, holiday and calculated sunrise/sunset time.
Y		Watt Stopper	Dual Technology Line Voltage Ceiling Sensor	DT-355	Passive infrared and ultrasonic dual technologies provide 360 of coverage. Ceiling mounted with a flat and unobtrusive appearance. No adjustments are necessary after line voltage installation.
Z		Lutron	GRAFIK Eye 3000 Series	GRX/3104/T/BE	Preset dimming control that allows for the setup of lighting scenes. Easy pushbutton recall of four lighting scenes, plus off. Provides lockout options to prevent any accidental changes.

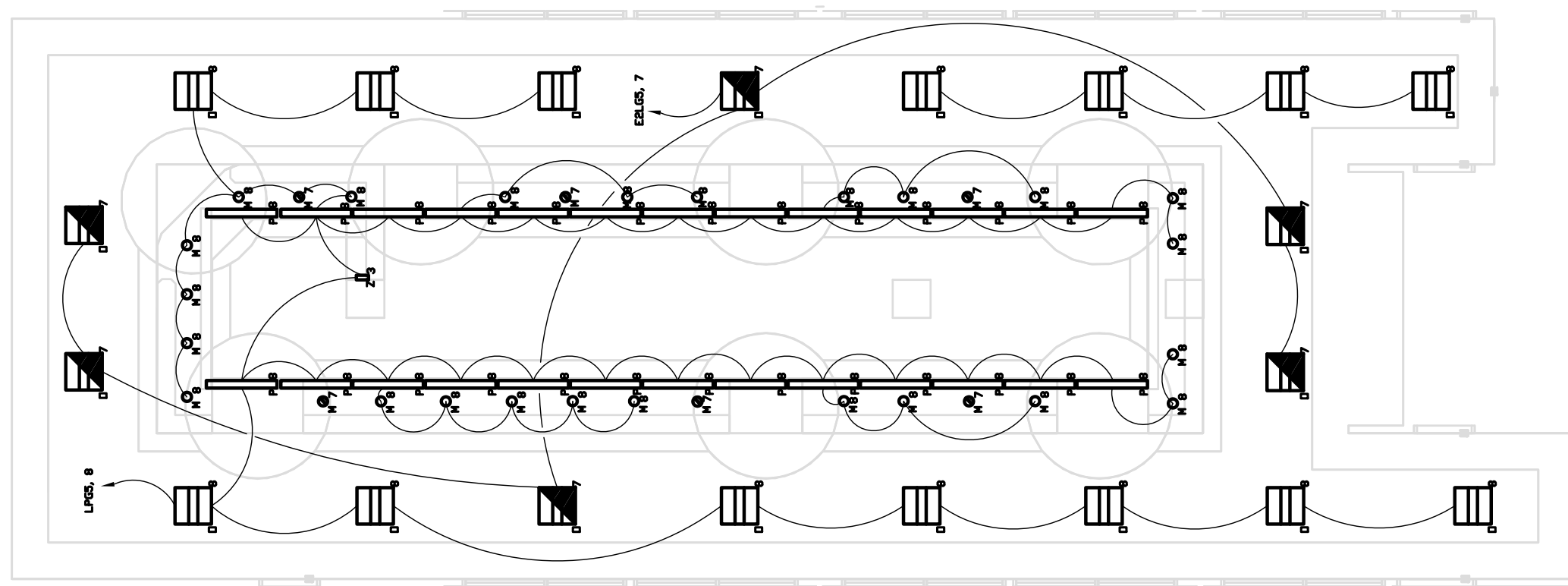






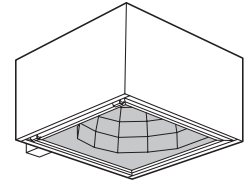






17" SQUARE AREA LIGHT

OER1717



SUBMITTAL:

JOB:

TYPE:

VOLTAGE:

EXAMPLE:

OER1717 - 250PSMH120 - T3 - S - SQ - DBR - OPTIONS

SERIES

ELECTRICAL PACKAGE

PHOTO. DIST.

MOUNTING CONFIG.

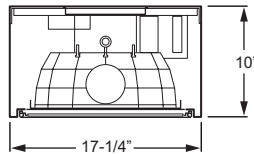
MOUNTING POINT

FINISH OPTIONS

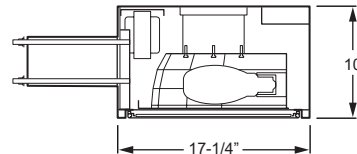
OPTIONS/ACCESSORIES

SERIES

OER1717 — Designed for simplicity, the OER Series' 90° rotatable reflector allows distribution to be easily altered on-site.



FRONT VIEW



SIDE VIEW

Single fixture, standard arm mount:
EPA: 1.32/Weight: 35 Lbs.



This fixture is proudly made in the USA.

OER1717 SERIES

HOUSING — Fabricated .080" aluminum, internally welded for strength and appearance.

DOOR — Extruded aluminum frame with mitered corners, stainless steel hinges and slide-action latches to provide easy access to ballast, lamp and reflector. Clear anodized finish.

LENS — Clear, .187" thick high-impact, heat-resistant tempered glass, secured with spring-tension glass clips, sealed with silicone.

ELECTRICAL PACKAGE (Must specify)

PULSE START METAL HALIDE

Lamp:	E17	E17	BT28
Socket:	E26 Medium	E26 Medium	E39 Mogul
ANSI Ballast Code:	M90	M102	M153
	100PSMH120	150PSMH120	250PSMH120
	100PSMH208	150PSMH208	250PSMH208
	100PSMH240	150PSMH240	250PSMH240
	100PSMH277	150PSMH277	250PSMH277
	100PSMH347	150PSMH347	250PSMH347
	100PSMH480	150PSMH480	250PSMH480

HIGH PRESSURE SODIUM

Lamp:	E17	ET18
Socket:	E26 Medium	E39 Mogul
ANSI Ballast Code:	S55	S50
	150HPS120	250HPS120
	150HPS208	250HPS208
	150HPS240	250HPS240
	150HPS277	250HPS277
	150HPS347	250HPS347
	150HPS480	250HPS480

ELECTRICAL PACKAGE

PSMH — Rated -20°F minimum starting temperature.

HPS — Rated -40°F minimum starting temperature.

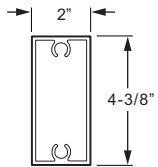
All PSMH and HPS electrical packages include porcelain socket. Prewired at factory for easy field installation. HX-HPF or CWA ballast type standard. Lamp is optional, please specify when ordering.

REFLECTOR

Tool-less access to the precisely formed MIRO® 4 multi-faceted, segmented reflector in a high-reflectance white frame. Secured with thumb screws, the reflector can be rotated in 90° increments allowing distribution to be altered on-site.

MOUNTING

Extruded aluminum rectangular arm mount (standard).



FINISH OPTIONS

Super durable polyester powder coat meets and exceeds AAMA 2604 specifications for outdoor durability.

LABELS

cCSAus certified as luminaire suitable for wet location.

PHOTOMETRIC DISTRIBUTION (Must specify)



T2
Type II



T3
Type III



TFT
Type Forward Throw



T5
Type V

MOUNTING CONFIGURATION (Must specify)

(EPA shown for arm mount noted below)



S Single
EPA: 1.32
8" Arm



D90 Double 90°
EPA: 3.73
11" Arm



D180 Double 180°
EPA: 2.64
8" Arm



T90 Triple 90°
EPA: 3.95
11" Arm



T120 Triple 120°
EPA: 4.60
8" Arm
Round pole only



Q90 Quad 90°
EPA: 3.95
11" Arm

MOUNTING POINT (Must specify)

SQ Square Pole Mount (Standard)

RSD___¹ Round Straight Arm Mount¹

RTD___¹ Round Tapered Arm Mount¹

TM Tenon Mount (Pole Top Tenon Mount must be ordered separately. For all tenon options see Pole Top Assemblies, pages 1-4.)

WM² Wall Mount²

¹ Pole top diameter must be specified at time of order. EXAMPLE: 3" Pole top diameter = RSD300.

² Must anchor to appropriate wall construction.

FINISH OPTIONS (Must specify)

BLK Black (RAL# 9004)

DBR Dark Bronze (Protech #PC21462)

GRAY Standard Gray (Protech #PC18367)

GRN Green (RAL# 6005)

SLV Satin Aluminum (RAL# 9006)

WHT White (RAL# 9003)

RAL#___ Specify Custom Color

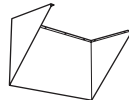
OPTIONS

SF Single Fuse (120V, 277V, or 347V only; must specify voltage)

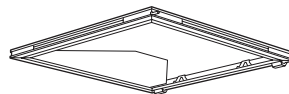
DF Double Fuse (208V, 240V, or 480V only; must specify voltage)

PC Factory-installed Photocell

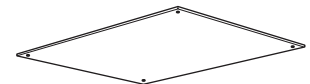
ACCESSORIES



EHS External House Shield
EPA: 1.55/Weight: 1.8 Lbs.



DHS Door-mounted House Shield



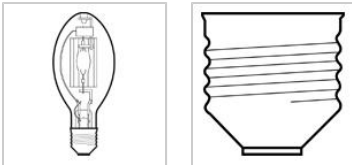
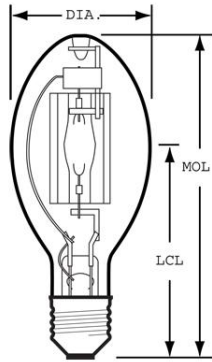
PVS Polycarbonate Vandal Shield
Weight: 1.9 Lbs.



GE
Lighting

12579 - MXR100/C/U/MED/O

GE Protected Multi-Vapor® PulseArc® Quartz Metal Halide ED17



CAUTIONS & WARNINGS

R- WARNING: This lamp can cause serious skin burn and eye inflammation from shortwave ultraviolet radiation if outer envelope of the lamp is broken or punctured, and the arc tube continues to operate. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Certain types of lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. Visit the FDA website for more information: <http://www.fda.gov/cdrh/radhealth/products/urburns.html>

Caution

- Lamp may shatter and cause injury if broken
 - Dispose of lamp in a closed container.
 - Do not use excessive force when installing lamp.
 - Do not use lamp if outer glass is scratched or broken.

Warning

- A damaged lamp emits UV radiation which may cause eye/skin injury
 - Turn power off if glass bulb is broken. Remove and dispose of lamp.
- Risk of Burn
 - Allow lamp to cool before handling.
 - Do not turn on lamp until fully installed.
- Risk of Electric Shock
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
 - Turn power off before inspection, installation or removal.
- Unexpected lamp rupture may cause injury, fire, or property damage
 - Do not exceed rated voltage.
 - Do not store flammable materials near/below lamp.
 - Do not turn on lamp until fully installed.
 - Do not use beyond rated life.
 - Do not use lamp if outer glass is scratched or broken.
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
 - Operate lamp only in specified position.
 - Turn lamp off at least once for 15 minutes per week.
 - Use only properly rated ballast.
- Risk of Fire
 - Keep combustible materials away from lamp.
 - Use in fixture rated for this product.

GRAPHS & CHARTS

Spectral Power Distribution

GENERAL CHARACTERISTICS

Lamp Type	High Intensity Discharge - Quartz Metal Halide
Bulb	ED17
Base	Medium Screw (E26)
Bulb Finish	Coated
Wattage	100
Voltage	100
Rated Life	15000 hrs
Bulb Material	Hard glass
Lamp Enclosure Type (LET)	Open or enclosed fixtures
LEED-EB MR Credit	111 picograms Hg per mean lumen hour

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	8500
Mean Lumens	5900
Nominal Initial Lumens per Watt	85
Color Temperature	3200 K
Color Rendering Index (CRI)	70

ELECTRICAL CHARACTERISTICS

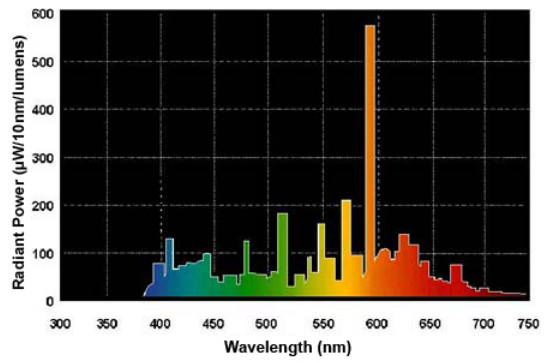
Burn Position	Universal burning position
Open Circuit Voltage (peak lead ballast)	332 V
Open Circuit Voltage (RMS lag ballast)	235 V
Warm Up Time to 90%	5 min
Warm Up Time to 90% (MIN)	2 min
Warm Up Time to 90% (MAX)	5 min
Hot Restart Time to 90% (MIN)	10 min
Hot Restart Time to 90% (MAX)	15 min

DIMENSIONS

Maximum Overall Length (MOL)	5.4300 in(137.9 mm)
Nominal Length	5.430 in(137.9 mm)
Bulb Diameter (DIA)	2.125 in(54.0 mm)
Bulb Diameter (DIA) (MAX)	2.125 in(54.0 mm)
Light Center Length (LCL)	3.430 in(87.1 mm)

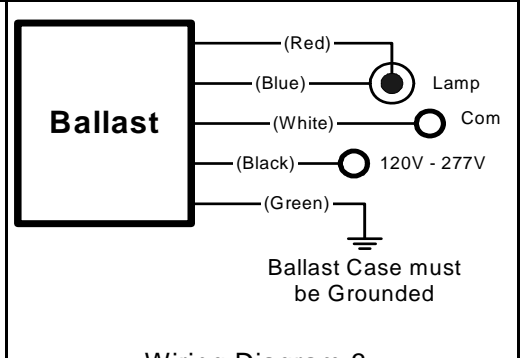
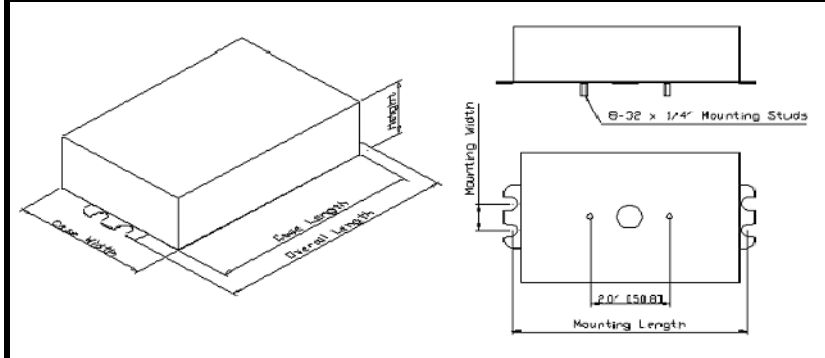
PRODUCT INFORMATION

Product Code	12579
Description	MXR100/C/U/MED/O
ANSI Code	M90
Standard Package	Case
Standard Package GTIN	10043168125793
Standard Package Quantity	6
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	6
UPC	043168125796



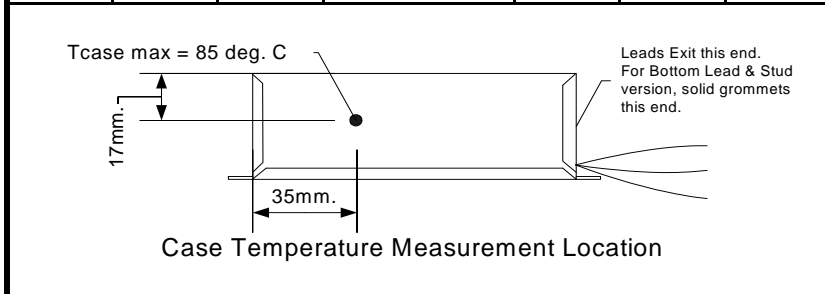
	e-Vision® Electronic Ballast for Metal Halide Lamps	Catalog Number: IMH-100-D For 100W Metal Halide Lamps ANSI M90 or M140 120-277 50/60Hz Electronic Status: RELEASED
	DIMENSIONS AND DATA	

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									
100W Watt Lamp, ANSI Code M90 or M140 Minimum Starting Temp -30°C/-20°F										
1	100	120	IMH-100-D-XXX	0.92	110	0.9	3	D	1.6	5
		277		0.4	109					



Wiring Diagram 3

Case Figure	Overall Length	Case Length	Case Width	Height	Mountin Length	Mounting Width
D	128mm [5.0"]	108mm [4.3"]	77mm [3.0"]	38mm [1.5"]	118mm [4.6"]	19mm [0.7"]



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

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

Data is based on tests performed by Philips Advance 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 • www.philips.com/advance
 Tel: 800-322-2086 • Fax: 800-423-1882 • Customer Support: 800-372-3331 • OEM Support: 866-915-5886

DESCRIPTION

The Acorn tastefully compliments roadways, parks and residential roadways.

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Construction

Cast aluminum housing. Standard with two position terminal block. Standard color is black. Other finish colors available. Consult your Streetworks Representative. 1" ANSI wattage/source label.

Electrical

SOCKET: Mogul-base socket for 50W through 150W High Pressure Sodium and 175W and 250W Metal Halide; 50W through 150W Metal Halide is medium-base socket. All sockets are 4KV pulse rated.
BALLAST: Easily accessible, tilt-back power module. Standard plug-in starter when applicable.
PHOTOCONTROL: Optional NEMA twistlock photocontrol receptacle also available.

Optical

GLOBE: 8" textured polycarbonate globe is standard. Optional globes include a 9" polycarbonate, 8" and 9" milk white, and 8" and 9" acrylic (Optional internal Type III refractor available).

Mounting

Post-top mount fits 3" tenons. Secures with three (3) square headed 1-1/4" polymer coated mounting bolts.

Finish

Standard polyester powder coat finish in black. Standard color is black. Optional bronze, white, grey, hartford green, dark platinum and graphite metallic finishes are available.



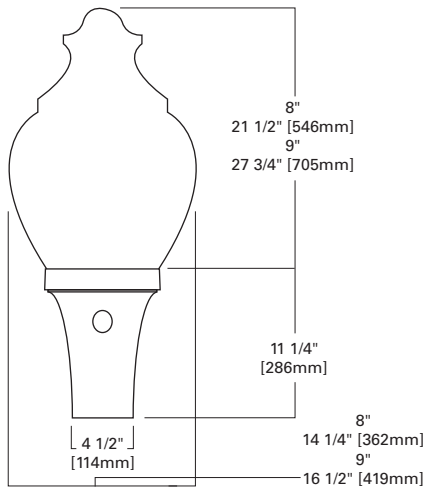
**ANE
ACORN**

50 - 250W

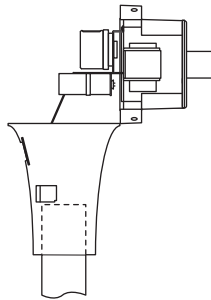
**Pulse Start Metal Halide
High Pressure Sodium
Metal Halide**

DECORATIVE LUMINAIRE

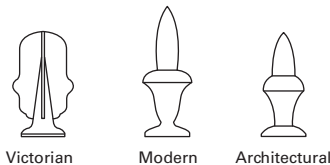
DIMENSIONS



TILT-BACK POWER MODULE



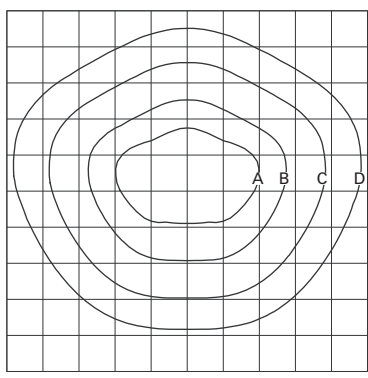
FINIAL OPTIONS (PAINTED TO MATCH HOUSING)



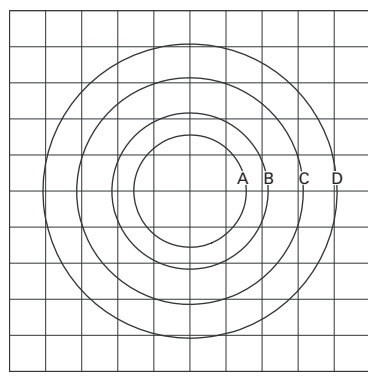
EPA
Effective Projected Area:
 1.7 Square Feet

SHIPPING DATA
Approximate Net Weight:
 30 lbs. (14 kgs.)

PHOTOMETRICS (Complete IES files available at www.cooperlighting.com)



ANE15S33.IES
150-Watt HPS
16,000-Lumen Lamp
Type III



ANE15S55.IES
150-Watt HPS
16,000-Lumen Lamp
Type V

FOOTCANDLE TABLE

4 Select mounting height and read across for footcandle values of each isofootcandle line.
3 Distance in units of mounting height.

Mounting Height	Footcandle Values for Isofootcandle Lines			
	A	B	C	D
ANE15S33.IES				
12'	1.36	0.68	0.34	0.13
14'	1.00	0.50	0.25	0.10
16'	0.76	0.38	0.19	0.07
ANE15S55.IES				
12'	1.36	0.68	0.34	0.13
14'	1.00	0.50	0.25	0.10
16'	0.76	0.38	0.19	0.07

ORDERING INFORMATION

Sample Number: ANE50SR2554

ANE	70	P	H	7	33	A	
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Product Family
ANE=Acorn

Lamp Wattage
Pulse Start Metal Halide

- 70=70W
- 10=100W
- 15=150W
- 17=175W
- 25=250W

High Pressure Sodium

- 50=50W²
- 70=70W
- 10=100W
- 15=150W
- 20=200W
- 25=250W²

M (Probe Start)³

- 17=175W
- 25=250W

Lamp Type¹
P=Pulse Start Metal Halide
S=High Pressure Sodium
M=Metal Halide

Ballast Type¹
H=Reac./HPF
K=10KV CWA⁴
N=Hi.Reac./NPF
P=Hi. Reac./HPF
R=Hi.Reac./NPF⁴
W=CWA

Voltage¹
2=120V
0=208V
4=240V
7=277V
8=480V
F=120/240 wired 120V
W=Multi-Tap wired 120V
G=120/240 wired 240V
V=Multi-Tap wired 240V
N=Multi-Tap wired 277V

Distribution
33=Type III
55=Type V

Options
1=Single Fuse (120, 277 or 347V)
2=Double Fuse, (208, 240, or 480V)
4=NEMA Twistlock Photocontrol Receptacle
5=Internal Button⁵ Photocontrol
WH=White
BZ=Bronze
AP=Grey
H=Hartford Green
DP=Dark Platinum
A=Acrylic Globe
B=Acrylic Globe 9"
9=9" Globe
M=Milk White Globe
S=Screw Secure Power Module
N=NEMA Ballast Bracket⁶
F=Finial
U=U.L./CSA Listed

Accessories
AA1000=House Side Shield (9" Globe)
AA1001=House Side Shield (8" Globe)

- Notes: 1 Refer to the technical section for lamp/ballast voltage compatibility.
2 Available in 120V only.
3 Probe Start Metal Halide available for non-US markets only (175-250W).
4 Available 50-150W. 120/240 or single voltage only.
5 Specify single voltage.
6 Available in Reactor HPF and NPF. For Hi Reactance or CWA availability consult your Streetworks Representative.

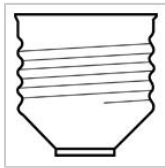


GE
Lighting

31070 - CMH70CU830MED/O

GE Protected ConstantColor® PulseArc® CMH® Ceramic Metal Halide ED17

a product of
ecomagination™



CAUTIONS & WARNINGS

R- WARNING: This lamp can cause serious skin burn and eye inflammation from shortwave ultraviolet radiation if outer envelope of the lamp is broken or punctured, and the arc tube continues to operate. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Certain types of lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. Visit the FDA website for more information: <http://www.fda.gov/cdrh/radhealth/products/urburns.html>

Caution

- Lamp may shatter and cause injury if broken
 - Dispose of lamp in a closed container.
 - Do not use excessive force when installing lamp.
 - Do not use lamp if outer glass is scratched or broken.

Warning

- A damaged lamp emits UV radiation which may cause eye/skin injury
 - Turn power off if glass bulb is broken. Remove and dispose of lamp.
- Risk of Burn
 - Allow lamp to cool before handling.
 - Do not turn on lamp until fully installed.
- Risk of Electric Shock
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
 - Turn power off before inspection, installation or removal.
- Risk of Fire
 - Keep combustible materials away from lamp.
 - Use in fixture rated for this product.
- Unexpected lamp rupture may cause injury, fire, or property damage
 - Do not exceed rated voltage.
 - Do not store flammable materials near/below lamp.
 - Do not turn on lamp until fully installed.
 - Do not use beyond rated life.
 - Do not use lamp if outer glass is scratched or broken.
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
 - Operate lamp only in specified position.
 - Use only properly rated ballast.

GENERAL CHARACTERISTICS

Lamp Type	High Intensity Discharge - Ceramic Metal Halide
Bulb	ED17
Base	Medium Screw (E26)
Bulb Finish	Coated
Wattage	70
Rated Life	15000 hrs
Bulb Material	Hard glass
Lamp Enclosure Type (LET)	Open or enclosed fixtures
LEED-EB MR Credit	94 picograms Hg per mean lumen hour

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	5700
Mean Lumens	4100
Nominal Initial Lumens per Watt	81
Color Temperature	3000 K
Color Rendering Index (CRI)	80
Effective Arc Length	0.28125 cm

ELECTRICAL CHARACTERISTICS

Burn Position	Universal burning position
Warm Up Time to 90% (MIN)	2 min
Warm Up Time to 90% (MAX)	5 min
Hot Restart Time to 90%	15 min
Hot Restart Time to 90% (MAX)	15 min

DIMENSIONS

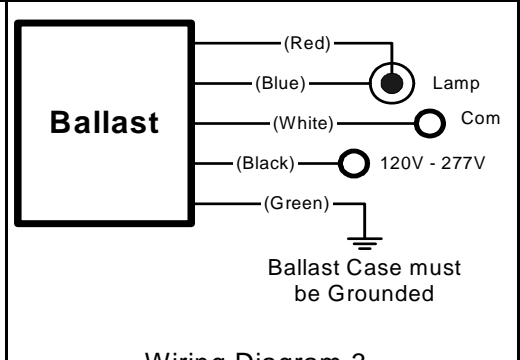
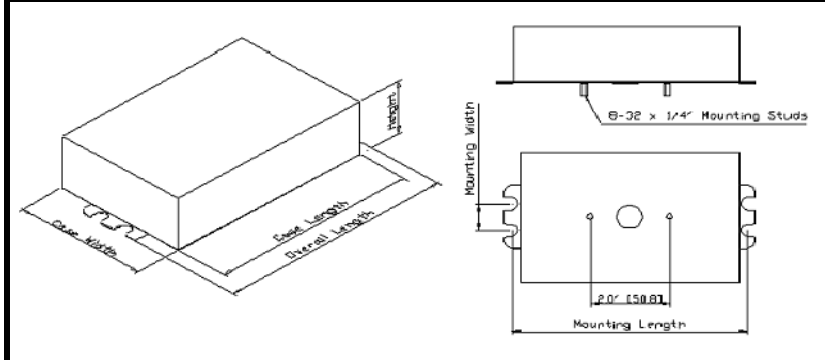
Maximum Overall Length (MOL)	5.4300 in(137.9 mm)
Nominal Length	5.430 in(137.9 mm)
Bulb Diameter (DIA)	2.125 in(54.0 mm)
Bulb Diameter (DIA) (MAX)	2.125 in(54.0 mm)
Light Center Length (LCL)	3.370 in(85.6 mm)

PRODUCT INFORMATION

Product Code	31070
Description	CMH70CU830MED/O
ANSI Code	C98/M143/M98
Standard Package	Case
Standard Package GTIN	10043168310700
Standard Package Quantity	6
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	6
UPC	043168310703

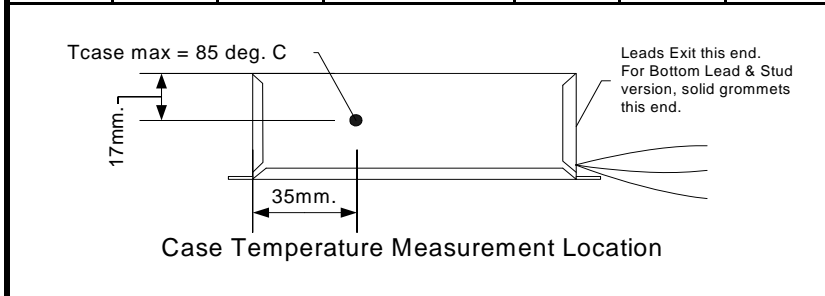
	e-Vision® Electronic Ballast for Metal Halide Lamps	Catalog Number: IMH-70-D For 70W Metal Halide Lamps ANSI M98, M139 or M143 120-277 50/60Hz Electronic Status: RELEASED
	DIMENSIONS AND DATA	

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									
70W Watt Lamp, ANSI Code M98, M139 or M143 Minimum Starting Temp -30°C/-20°F										
1	70	120	IMH-70-D-XXX	0.67	80	0.9	3	D	1.6	5
		277		0.29	79					



Wiring Diagram 3

Case Figure	Overall Length	Case Length	Case Width	Height	Mountin Length	Mounting Width
D	128mm [5.0"]	108mm [4.3"]	77mm [3.0"]	38mm [1.5"]	118mm [4.6"]	19mm [0.7"]



- 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

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

Data is based on tests performed by Philips Advance 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 • www.philips.com/advance
 Tel: 800-322-2086 • Fax: 800-423-1882 • Customer Support: 800-372-3331 • OEM Support: 866-915-5886



Date: _____ Type: _____

Firm Name: _____

Project: _____

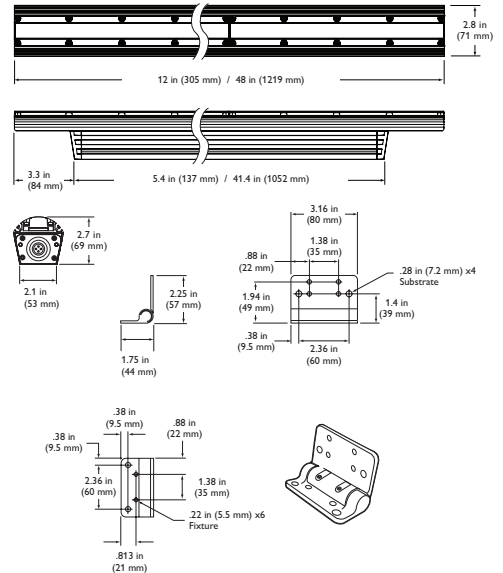
eW Graze Powercore

4000 K, 30° 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.

PHILIPS

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	30° x 60°	
	Color Temperature	4000 K (+400 / -500)	
	Lumens†	437	1748
	Efficacy (Lm/W)	29.1	
	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
eW Graze Powercore 4000 K	30° x 60°	120 VAC	1 ft	523-000030-05	910503700281
			4 ft	523-000030-07	910503700283
		277 VAC	1 ft	523-000030-13	910503700289
			4 ft	523-000030-15	910503700291
		220 – 240 VAC	1 ft	523-000030-21	910503700297
			4 ft	523-000030-23	910503700299
		100 VAC	1 ft	523-000030-29	910503700305
			4 ft	523-000030-31	910503700307

Use Item Number when ordering in North America.

See the eW Graze Powercore Ordering Information sheet at www.colorkinetics.com/ls/essentialwhite/ewgraze/ for a complete list of standard and build-to-order configurations.

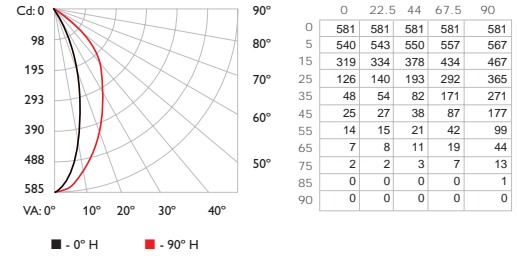


Philips Color Kinetics
3 Burlington Woods Drive
Burlington, Massachusetts 01803 USA
Tel 888.385.5742
Tel 617.423.9999
Fax 617.423.9998
www.colorkinetics.com

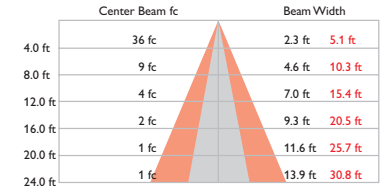
Photometrics

4000 K, 1 ft, 30° x 60° lens

Polar Candela Distribution



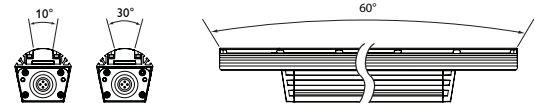
Illuminance at Distance



■ Vert. Spread: 32.4°
■ Horiz. Spread: 65.3°

Power Consumption	15 W
Lumens	437
Efficacy	29.1 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-000009-04 R04 07-09

DESCRIPTION

683-WP Cylinder Wall Sconce features an aluminum cylinder. The 683/4-WP is ADA compliant.

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Material

Solid aluminum with open bottom and enclosed top. [Dark Sky Compliant]

Finish

Premium TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Standard: Black (BK) or White (WH). Premium: Grey (GY), Dark Platinum (DP), Graphite Metallic (GRM), Silver Metallic (SM), Gold Metallic (GM), Bronze Metallic (BM), Custom Color (CC).

Optics

Refer to www.shaperlighting.com for complete photometrics.

Ballast

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

Lamp/Socket

One (1) 13W (2GX7) 4-pin quad CFL lamp, one (1) 26W (GX24q-3) triple tube CFL lamp or one (1) 60W A-19 lamp. CFL socket injection molded plastic. INC socket fired ceramic rated for 660W-250V. Lamps furnished by others.

Installation

Supplied with a universal circular strap for a standard 4" J-box or plaster ring.

Options

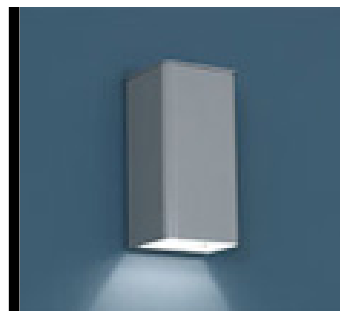
Custom logo - Contact factory. Energy Star Rating - Consult factory.

Labels

U.L. and C.U.L. approved for wet location. ADA compliant (683/4-WP).

Modifications

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



**683-WP SERIES
683/4-WP SERIES**

Exterior Wall Luminaire
Starter Collection Cylinder



ADA AMERICAN DISABILITIES ACT (ADA)

Shaper offers a large selection of ADA interior and exterior wall luminaires. ADA requires all fixtures below 68" to have a maximum projection of 4".

DARK SKY

Shaper offers a selection of exterior luminaires that are "Dark Sky Compliant". The IESNA (Illuminating Engineering Society of North America) defines Full Cut-Off as fixtures with light distributions of 0% candela at 90° and 10% at 80°. Full Cut-Off luminaires carry the endorsement of the International Dark-Sky Association (IDA) for their effectiveness in limiting the detrimental effects of sky glow, also referred to as "Light Pollution". Many exterior luminaires offer a clear, tempered glass option that meets the IES criteria for Full Cut-Off.

ENERGY STAR

Shaper now offers a wide variety of fixtures that can be provided with an Energy Star Rating.

STARTER COLLECTION

Shaper's exclusive Starter Collection fixtures are featured throughout the Shaper product line. The concept of offering highly styled, affordable fixtures was introduced over fourteen years ago and has become one of our fastest growing lines. The design premise, basic construction, clean lines and unadorned shapes are highly desirable in modern architectural environments.

Refer to the Icon Legend
Link on shaperlighting.com.

ORDERING INFORMATION

682/4-WP	26	277V	SM
----------	----	------	----

Series

683-WP: Cylinder Wall Sconce
683/4-WP: ADA Compliant Cylinder Wall Sconce

Lamp

CFL/1/13
CFL/1/26
INC/1/60

Voltage

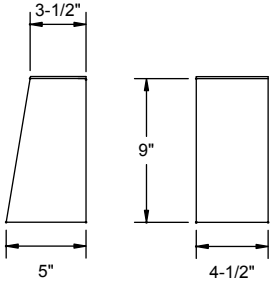
120V
277V¹
347V¹

Finish ²

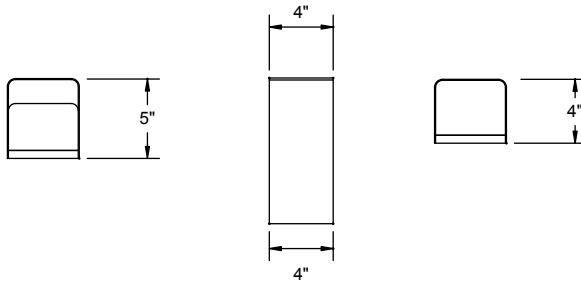
Standard
BK: Black
WH: White
Premium
BM: Bronze Metallic
CC: Custom Color
DP: Dark Platinum
GM: Gold Metallic
GRM: Graphite Metallic
GY: Grey
SM: Silver Metallic

Notes: 1 Available with CFL only.
2 Premium TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear.

DIMENSIONS



683-WP



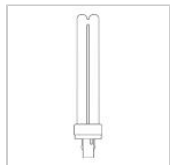
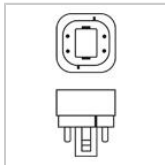
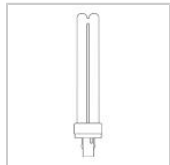
683/4-WP



GE
Lighting

97613 - F26DBX/841/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.

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).
- Based on 60Hz reference circuit.
- Fluorescent lamp lumens decline during life

GENERAL CHARACTERISTICS

Lamp Type	Compact Fluorescent - Plug-In
Bulb	T4
Base	G24q-3
Wattage	26
Voltage	120/105
Rated Life	12000 hrs
Starting Temperature	0 °C (32 °F)
Cathode Resistance	2.7 Ohm
LEED-EB MR Credit	232 picograms Hg per mean lumen hour
Rated Life (rapid start) @ Time	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;Warehouse

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	1710
Mean Lumens	1440
Nominal Initial Lumens per Watt	65
Color Temperature	4100 K
Color Rendering Index (CRI)	82

ELECTRICAL CHARACTERISTICS

Current (max)	5.25 A
Open Circuit Voltage (after preheating)	240 V
Open Circuit Voltage Across Starter	198 V
Lamp Current	0.325 A
Preheat Voltage	4.25 V
Current Crest Factor	1.7
Supply Current Frequency	60 Hz

DIMENSIONS

Maximum Overall Length (MOL)	6.4000 in(162.6 mm)
Nominal Length	6.400 in(162.6 mm)
Base Face to Top of Lamp	5.800 in(147.3 mm)

PRODUCT INFORMATION

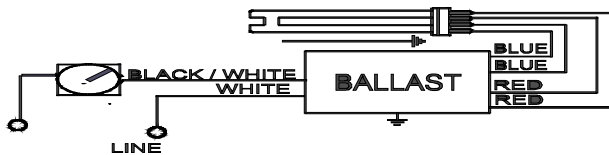
Product Code	97613
Description	F26DBX/841/ECO4P
ANSI Code	60901-IEC-2562-2
Standard Package	BUNDLE
Standard Package GTIN	
Standard Package Quantity	50
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	50
UPC	043168976138

Electrical Specifications

VEZ-1T42-M2-BS	
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	0.05/1.05	10	0.98	1.6	3.39
CFTR26W/GX24Q	1	26	50/10	0.11	08/31	0.05/1.05	10	0.98	1.6	3.39
CFTR32W/GX24Q	1	32	50/10	0.14	09/38	0.05/1.05	10	0.98	1.6	2.76
CFTR42W/GX24Q	1	42	50/10	0.18	10/49	0.05/1.05	10	0.99	1.6	2.14

Wiring Diagram

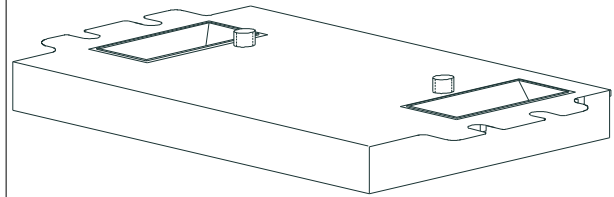


Diag. 134

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 "	2.00 "
4 49/50	3	1 29/100	2
12.6 cm	7.6 cm	3.3 cm	5.1 cm

Revised 09/10/2002



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-BS	
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 09/10/2002



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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

DESCRIPTION

Rio architectural step lights provide beauty, performance and durability. Transitional styling, low profile design and no visible fasteners provide seamless integration with architectural styles of all kinds. Logical, modular design elements facilitate fast and foolproof installation in all types of wall surfaces including drywall, concrete pour or brick/masonry. All models include IP68 rated outdoor protection, but are also suitable for indoor wall-mounted applications. All models are ADA compliant.

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

A ... Construction

Back box and painted fascia are die-cast from corrosion-resistant Type 383 aluminum alloy. Back box is painted white. Natural metal fascia is precision-machined from solid brass or stainless steel.

B ... Finish

Back box and fascia are double protected by a chromate conversion undercoating and polyester powdercoat paint finish. Machined, natural finish brass or stainless steel fascia is unpainted to reveal the natural beauty of the material. Brass will patina naturally over time in outdoor environments.

C ... Electrical

Fixture includes integral, electronic ballast, transformer or LED driver mounted to Lumiere's factory-assembled POWER-TRAY(TM) optical/electrical module. The POWER-TRAY(TM) module plugs directly into the back box providing fast, easy installation.

D ... Mounting

Back box is available to ship in advance for rough-in purposes. Back box includes four (4) 3/4" conduit entry ports, concrete pour cover, UP arrow and two level vials to facilitate proper alignment. Fixture also includes the patent pending FASCIAlign(TM) fascia alignment system which provides rotation of the fascia +/- 10 degrees (total of 20 degrees), insuring proper alignment.

E ... Classification / Code Compliance

UL and cUL listed, standard wet label. IP68 rated. Also suitable for indoor recessed wall-mount applications, 4W LED source is IC-rated for direct insulation contact. Manufactured to ISO 9001-2000 Quality Systems Standard. IBEW union made.

F ... Lamp

Lamp for LED source included as standard. Lamps for other sources not included (available from Lumiere as an accessory - order separately).

G ... Warranty

Lumiere warrants its fixtures against defects in materials and workmanship for three (3) years. Auxiliary equipment such as transformers, ballasts and lamps carry the original manufacturer's warranty.

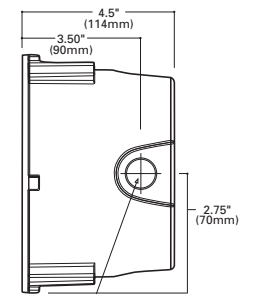
Recessed Housing

Recessed housing is available to ship in advance of complete fixture for rough-in purposes. Specify option -LBB and order separately accompanying recessed housing from below:

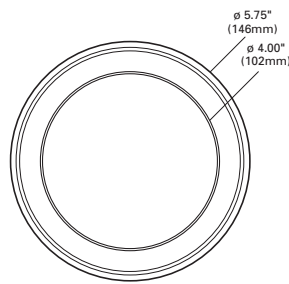
1235-BB-C
5" back box and pour cover for concrete pour wall

1235-BB-D
5" back box and pour cover for drywall/frame construction wall

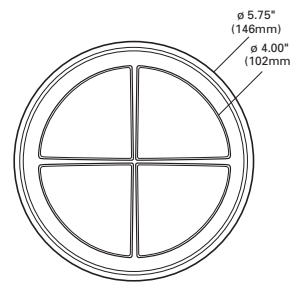
1235-BB-M
5" back box and pour cover for masonry wall



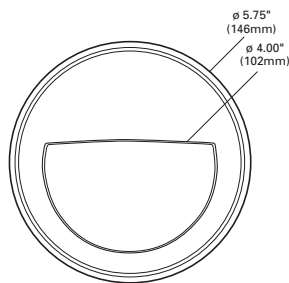
4 x 3/16 NPT THREADED HOLE
Plug should be flush to 1.33mm max
Apply thread sealant on plug before inserting



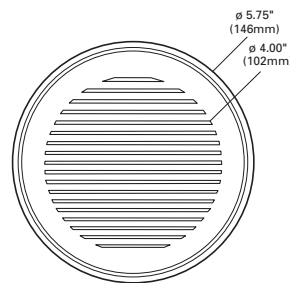
1235-RD



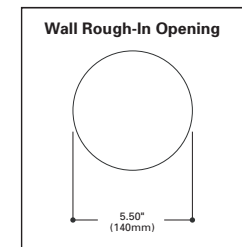
1235C-RD



1235E-RD



1235L-RD



Wall Rough-In Opening

RIO
1235-RD
1235C-RD
1235E-RD
1235L-RD

4W (max.) LED
20W (max.) T3 Halogen
Low Voltage

STEP LIGHT

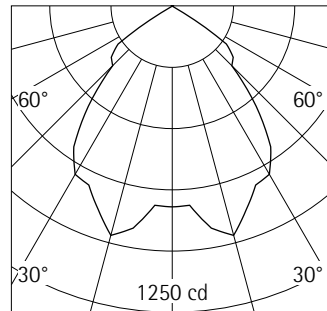
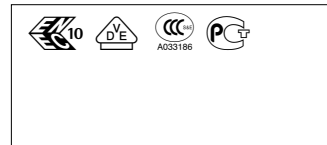
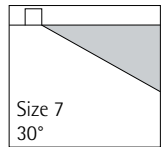
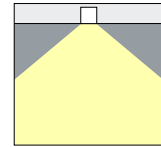
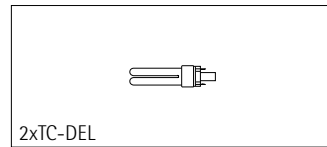
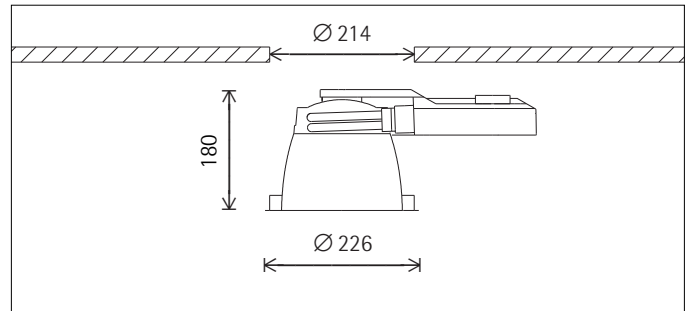
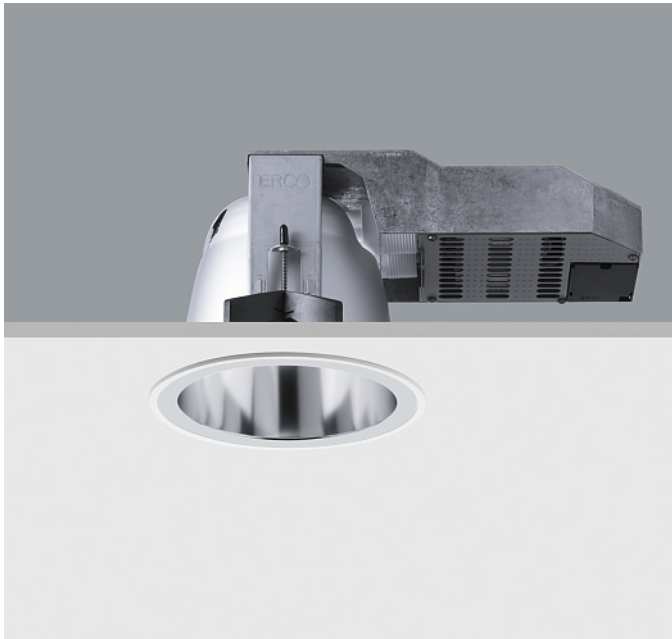
ADA IP68

ORDERING INFORMATION

1235-RD	M	4LED	120/12	NSS			
Model 1235-RD =5" round, open fascia w/ clear, diffused lens 1235C-RD =5" round, cross/guard fascia w/ clear, diffused lens 1235E-RD =5" round, eyelid fascia w/ clear, diffused lens 1235L-RD =5" round, louvered fascia w/ clear lens		Wall Type C =Concrete Pour D =Drywall M =Masonry		Source ¹ 12V Halogen or LED 20T3 =20W / T3 / G4 4LED =4W / LED (LED lamps included) ²		Finish Painted BK =black BZ =bronze CS = city silver VE = verde WT = white Metal NBR = brass NSS = stainless steel	Options LBB =Housing and Pour Cover Shipped in Advance (select LBB option and order recessed housing separately)
		Volts 12V Halogen 120/12 : 120/12V electronic transformer 277/12 : 277/12V electronic transformer LED 120/12 : 120V electronic LED driver		Recessed Housing (order separately) Select housing from Recessed Housing section on previous page			

Notes: 1 Unless noted otherwise, lamps not included.
 2 4W LED source is IC-rated for direct insulation contact.

for TC-D lamps



2xTC-DEL 18W G24q-2 1200lm

LOR 0.68
UGR 20.7
65° < 200 cd/m²

22209.000 Reflector silver
2xTC-DEL 18W G24q-2 1200lm
ECG

Product description

Housing: cast aluminium, designed as heat sink.

Mounting ring: cast aluminium, white (RAL9002) powder-coated. Fitting without tools with 4-point support and screw fixing, for ceiling thicknesses of 1-30mm.

Junction box for through-wiring, 5-pole terminal block, integrated cable clamp. Electronic control gear, plug and play connectivity with DALI version.

Darklight reflector: aluminium, bright anodised. Cut-off angle 30°.

Weight 2.10kg

Planning data

22209.000 TC-DEL 18W G24q-2 1200lm
 Connected load P: 36 W
 Connected load per 100lx P*: 2.2 W/m²
 Number of luminaires per 100lx n*: 6.0 1/100m²

22209.000 TC-DEL 18W G24q-2 1200lm
 Number of luminaires per 100m² for 100lx 200lx 300lx 500lx
 6 13 19 31

22209.000 TC-DEL 18W G24q-2 1200lm
 Module (m) 1.2x1.8 1.8x1.8 1.8x2.4 2.4x2.4
 Illuminance E_n (lx) 767 511 384 288

Correction table

Ceiling	0.70	0.70	0.70	0.50	0
Wall	0.70	0.50	0.20	0.20	0
Floor	0.50	0.20	0.20	0.10	0

k	0.6	77	58	49	49	45
k	1.0	100	77	68	67	63
k	1.5	116	90	83	80	76
k	2.5	129	100	95	90	86
k	3.0	134	103	99	93	89

Cleaning (a)	1				2				3			
	P	C	N	D	P	C	N	D	P	C	N	D
Ambient conditions	0.94	0.89	0.81	0.75	0.91	0.80	0.69	0.59	0.87	0.74	0.61	0.52
LMF	0.96	0.92	0.87	0.81	0.96	0.92	0.87	0.81	0.96	0.92	0.87	0.81
RSMF												

Hours of operation (h)	2000	6000	10000	1000	4000	8000
LLMF	0.94	0.89	0.85	0.97	0.91	0.87
LSF	1	1	1	1	1	1

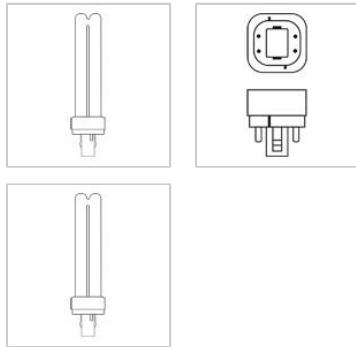
MF LMFxRSMFxLLMFxLSF
 MF Maintenance Factor
 LMF Luminaire Maintenance Factor
 RSMF Room Surface Maintenance Factor
 LLMF Lamp Lumens Maintenance Factor
 LSF Lamp Survival Factor
 P Room pure
 C Room clean
 N Room normal
 D Room dirty



GE
Lighting

97599 - F18DBX/830/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.

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).
- Based on 60Hz reference circuit.
- Cold cathode resistance is approximately 6.0 Ohms.
- Fluorescent lamp lumens decline during life

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;Warehouse

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	1200
Mean Lumens	970
Nominal Initial Lumens per Watt	66
Color Temperature	3000 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

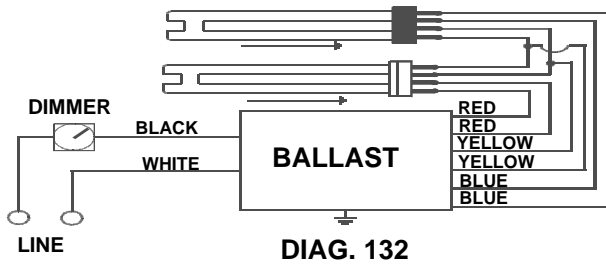
Product Code	97599
Description	F18DBX/830/ECO4P
ANSI Code	60501-IEC-2518-2
Standard Package	BUNDLE
Standard Package GTIN	
Standard Package Quantity	50
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	50
UPC	043168975995

Electrical Specifications

VEZ-2Q18-M2-BS	
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.
* CFQ18W/G24Q	2	18	50/10	0.16	14/43	0.05/1.00	10	0.99	1.6	2.33
CFTR18W/GX24Q	2	18	50/10	0.16	14/43	0.05/1.00	10	0.99	1.6	2.33

Wiring Diagram

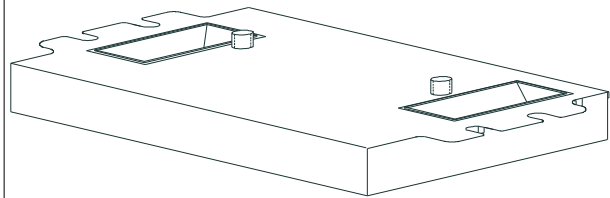


The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

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

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
4.98 "	3.00 "	1.29 "	2.00 "
4 49/50	3	1 29/100	2
12.6 cm	7.6 cm	3.3 cm	5.1 cm

Revised 08/17/2006



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VEZ-2Q18-M2-BS	
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.
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- 3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).
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- 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.

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- 4.1 Ballast shall be manufactured in a factory certified to ISO 9001 Quality System Standards.
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- 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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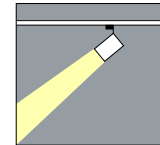
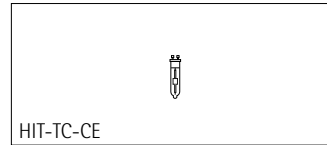
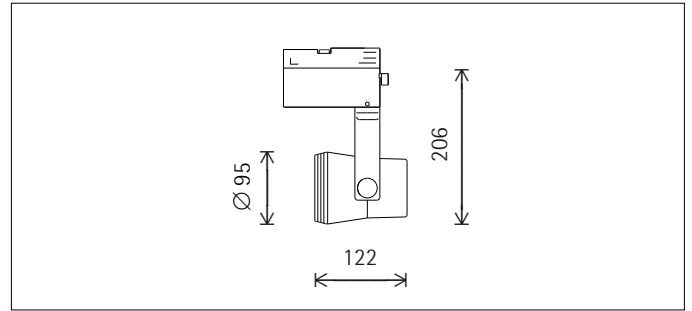
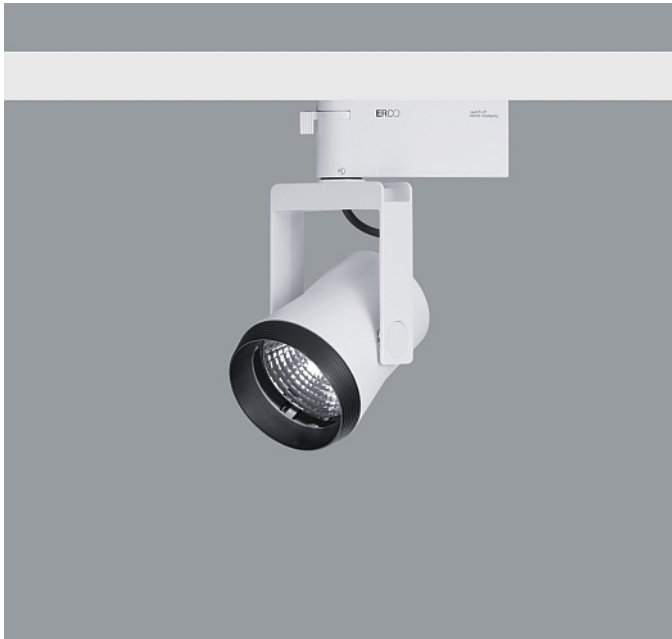
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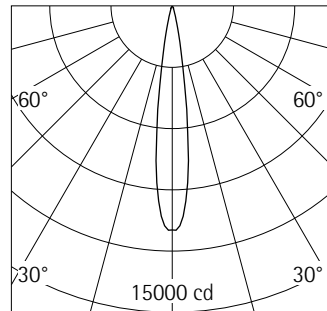
with transadapter for metal halide lamps



72409.000 White (RAL9002)
 HIT-TC-CE 20W GU6.5 1615lm
 ECG
 Spherolit reflector, spot

Product description

Housing and bracket: cast aluminium, powder-coated. 0°-90° tilt. Bracket on transadapter rotatable through 360°. ERCO Transadapter for 3-circuit track: plastic. Electronic control gear. Circuit pre-selection.
 Reflector: aluminium, silver, mirror-finish anodised. Safety glass.
 Anti-dazzle ring: plastic, black.
 Weight 0.85kg



HIT-TC-CE 20W GU6.5 1615lm

h(m)	E(lx)	D(m)
		15°
1	10971	0.26
2	2743	0.53
3	1219	0.79
4	686	1.05
5	439	1.32



Mounting
 ERCO 3-circuit track
 Hi-trac 3-circuit track
 Monopoll 3-circuit track

Planning data

Cleaning (a)	1				2				3			
	P	C	N	D	P	C	N	D	P	C	N	D
LMF	0.94	0.89	0.81	0.75	0.91	0.80	0.69	0.59	0.87	0.74	0.61	0.52
RSMF	0.96	0.92	0.87	0.81	0.96	0.92	0.87	0.81	0.96	0.92	0.87	0.81

Hours of operation (h)	1000	2000	4000	6000	8000	9000
LLMF	0.94	0.86	0.82	0.75	0.69	0.66
LSF	1	1	1	1	1	1

- MF LMFxRSMFxLLMFxLSF
- MF Maintainance Factor
- LMF Lumiaire Maintenance Factor
- RSMF Room Surface Maintenance Factor
- LLMF Lamp Lumens Maintenance Factor
- LSF Lamp Survival Factor
- P Room pure
- C Room clean
- N Room normal
- D Room dirty

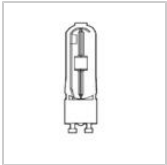
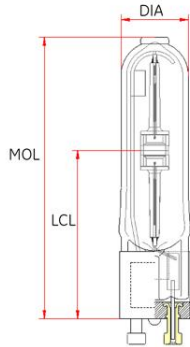


GE
Lighting

85086 - CMH20T/U830GU6.5

GE ConstantColor® PulseArc® CMH® Ceramic Metal Halide T4 - Retail Display

RoHs Compliant



CAUTIONS & WARNINGS

Caution

- Lamp may shatter and cause injury if broken
 - Do not use lamp if outer glass is scratched or broken.
 - Do not use excessive force when installing lamp.
- Risk of Burn
 - Allow lamp to cool before handling.
 - Do not turn on lamp until fully installed.

Warning

- A damaged lamp emits UV radiation which may cause eye/skin injury
 - Turn power off if glass bulb is broken. Remove and dispose of lamp.
- Risk of Electric Shock
 - Turn power off before inspection, installation or removal.
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
- Unexpected lamp rupture may cause injury, fire, or property damage
 - Do not exceed rated voltage.
 - Do not turn on lamp until fully installed.
 - Do not use beyond rated life.
 - Do not use lamp if outer glass is scratched or broken.
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
 - Use in enclosed fixture rated for this product.
 - Use only properly rated ballast.
 - Normal handling with bare hands is acceptable. Excessive handling of the quartz outer bulb should be avoided.
- Risk of Fire
 - Keep combustible materials away from lamp.
 - Use in fixture approved for this product.
 - Use fused or thermally protected ballast - see instructions.

GRAPHS & CHARTS

Lamp Mortality

GENERAL CHARACTERISTICS

Lamp Type	High Intensity Discharge - Ceramic Metal Halide
Bulb	T4
Base	GU6.5
Bulb Finish	Clear
Wattage	20
Rated Life	12000 hrs
Lamp Enclosure Type (LET)	Enclosed fixtures only
Base Temperature	250 K
Bulb Temperature (MAX)	400 K
LEED-EB MR Credit	198 picograms Hg per mean lumen hour
Additional Info	UV control
Primary Application	Retail Display

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	1615
Mean Lumens	1066
Nominal Initial Lumens per Watt	80
Color Temperature	3000 K
Color Rendering Index (CRI)	81

ELECTRICAL CHARACTERISTICS

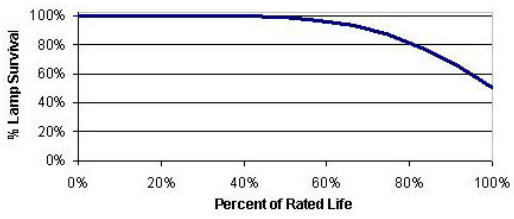
Burn Position	Universal burning position
Warm Up Time to 90%	3 min
Warm Up Time to 90% (MAX)	3 min
Hot Restart Time to 90%	5 min
Hot Restart Time to 90% (MAX)	5 min

DIMENSIONS

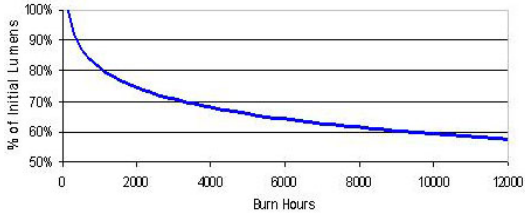
Maximum Overall Length (MOL)	2.05 cm
Bulb Diameter (DIA) (MAX)	0.47 cm
Light Center Length (LCL)	1.18 cm

PRODUCT INFORMATION

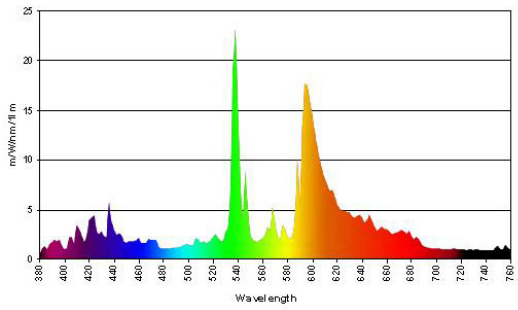
Product Code	85086
Description	CMH20T/U830GU6.5
ANSI Code	C156/M156
Standard Package	Case
Standard Package GTIN	10043168850862
Standard Package Quantity	12
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	12
UPC	043168850865



Lumen Maintenance



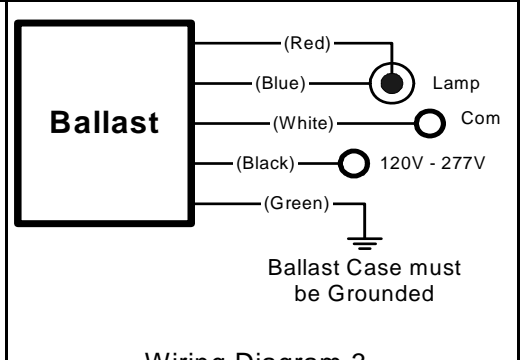
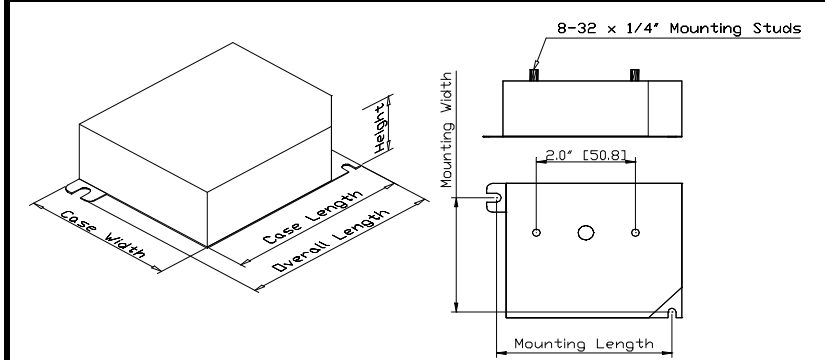
Spectral Power Distribution



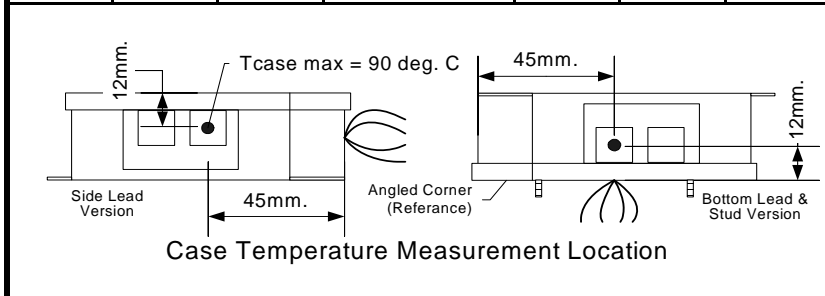
	e-Vision® Electronic Ballast for Metal Halide Lamps	Catalog Number: IMH-G20-G For 20W Metal Halide Lamps ANSI M156 120-277 50/60Hz Electronic Status: RELEASED
---	--	--

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									
20W Watt Lamp, ANSI Code M156 Minimum Starting Temp -20°C/-4°F										
1	20	120	IMH-G20-G-XXX	0.2	24	0.95	3	G	0.9	5
		277		0.09	24					



Case Figure	Overall Length	Case Length	Case Width	Height	Mounting Length	Mounting Width
G	97mm [3.8"]	90mm [3.5"]	77mm [3.0"]	30mm [1.2"]	87mm [3.4"]	67mm [2.6"]



- INSTALLATION & APPLICATION NOTES:**
1. Maximum allowable case temperature is 90°C. See figure above for measurement location
 2. Ignition pulse is 4 kV max
 3. All leads are 9 inches long
 4. Ballast output will shutdown after 20 minutes if lamp fails to ignite
 5. Power must be cycled off – then on, after replacing lamp
 6. Connect the red lead to the center terminals of the lamp when using screw base lamps

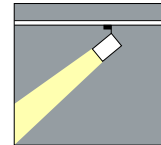
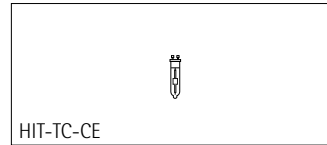
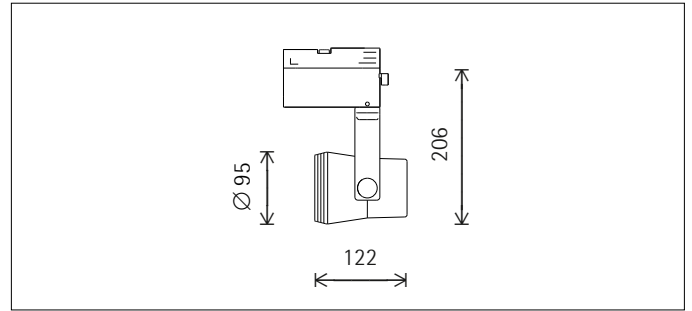
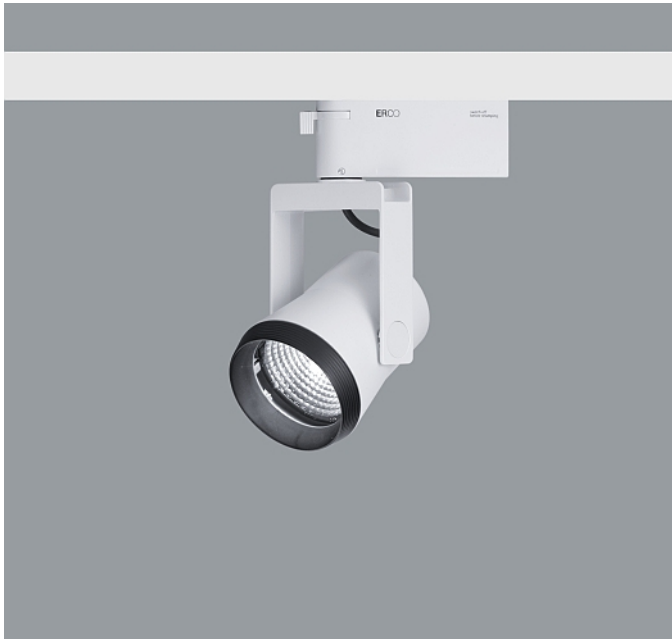
*Ordering Information	
Order Suffix	Description
-LF	Ballast with side exit leads and mounting feet
-BLS	Ballast with bottom exit leads and mounting studs

Data is based on tests performed by Philips Advance 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.

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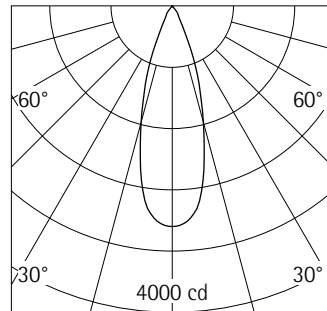
with transadapter for metal halide lamps



72410.000 White (RAL9002)
 HIT-TC-CE 20W GU6.5 1615lm
 ECG
 Spherolit reflector, flood

Product description

Housing and bracket: cast aluminium, powder-coated. 0°-90° tilt. Bracket on transadapter rotatable through 360°. ERCO Transadapter for 3-circuit track: plastic. Electronic control gear. Circuit pre-selection.
 Reflector: aluminium, silver, mirror-finish anodised. Safety glass.
 Anti-dazzle ring: plastic, black.
 Weight 0.85kg



HIT-TC-CE 20W GU6.5 1615lm

h(m)	E(lx)	D(m)
		32°
1	2879	0.57
2	720	1.15
3	320	1.72
4	180	2.29
5	115	2.87



Mounting

ERCO 3-circuit track
 Hi-trac 3-circuit track
 Monopoll 3-circuit track

Planning data

Cleaning (a)	1				2				3			
	P	C	N	D	P	C	N	D	P	C	N	D
LMF	0.94	0.89	0.81	0.75	0.91	0.80	0.69	0.59	0.87	0.74	0.61	0.52
RSMF	0.96	0.92	0.87	0.81	0.96	0.92	0.87	0.81	0.96	0.92	0.87	0.81

Hours of operation (h)	1000	2000	4000	6000	8000	9000
LLMF	0.94	0.86	0.82	0.75	0.69	0.66
LSF	1	1	1	1	1	1

- MF LMFxRSMFxLLMFxLSF
- MF Maintainance Factor
- LMF Lumiaire Maintenance Factor
- RSMF Room Surface Maintenance Factor
- LLMF Lamp Lumens Maintenance Factor
- LSF Lamp Survival Factor
- P Room pure
- C Room clean
- N Room normal
- D Room dirty

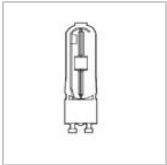
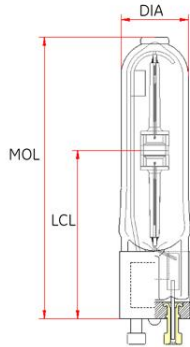


GE
Lighting

85086 - CMH20T/U830GU6.5

GE ConstantColor® PulseArc® CMH® Ceramic Metal Halide T4 - Retail Display

RoHs Compliant



CAUTIONS & WARNINGS

Caution

- Lamp may shatter and cause injury if broken
 - Do not use lamp if outer glass is scratched or broken.
 - Do not use excessive force when installing lamp.
- Risk of Burn
 - Allow lamp to cool before handling.
 - Do not turn on lamp until fully installed.

Warning

- A damaged lamp emits UV radiation which may cause eye/skin injury
 - Turn power off if glass bulb is broken. Remove and dispose of lamp.
- Risk of Electric Shock
 - Turn power off before inspection, installation or removal.
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
- Unexpected lamp rupture may cause injury, fire, or property damage
 - Do not exceed rated voltage.
 - Do not turn on lamp until fully installed.
 - Do not use beyond rated life.
 - Do not use lamp if outer glass is scratched or broken.
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
 - Use in enclosed fixture rated for this product.
 - Use only properly rated ballast.
 - Normal handling with bare hands is acceptable. Excessive handling of the quartz outer bulb should be avoided.
- Risk of Fire
 - Keep combustible materials away from lamp.
 - Use in fixture approved for this product.
 - Use fused or thermally protected ballast - see instructions.

GRAPHS & CHARTS

Lamp Mortality

GENERAL CHARACTERISTICS

Lamp Type	High Intensity Discharge - Ceramic Metal Halide
Bulb	T4
Base	GU6.5
Bulb Finish	Clear
Wattage	20
Rated Life	12000 hrs
Lamp Enclosure Type (LET)	Enclosed fixtures only
Base Temperature	250 K
Bulb Temperature (MAX)	400 K
LEED-EB MR Credit	198 picograms Hg per mean lumen hour
Additional Info	UV control
Primary Application	Retail Display

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	1615
Mean Lumens	1066
Nominal Initial Lumens per Watt	80
Color Temperature	3000 K
Color Rendering Index (CRI)	81

ELECTRICAL CHARACTERISTICS

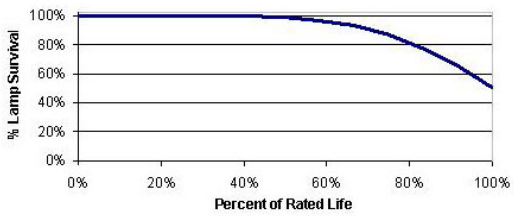
Burn Position	Universal burning position
Warm Up Time to 90%	3 min
Warm Up Time to 90% (MAX)	3 min
Hot Restart Time to 90%	5 min
Hot Restart Time to 90% (MAX)	5 min

DIMENSIONS

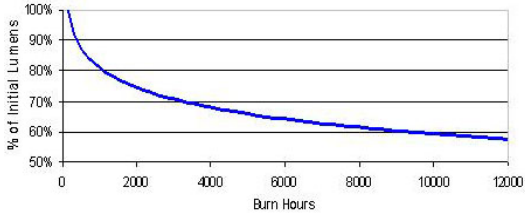
Maximum Overall Length (MOL)	2.05 cm
Bulb Diameter (DIA) (MAX)	0.47 cm
Light Center Length (LCL)	1.18 cm

PRODUCT INFORMATION

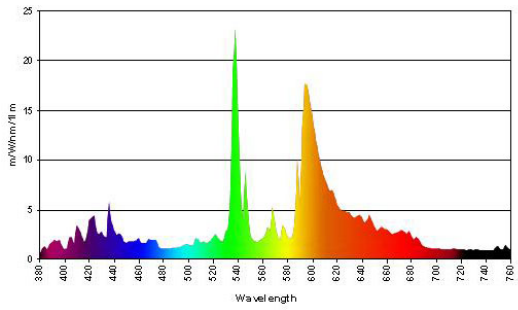
Product Code	85086
Description	CMH20T/U830GU6.5
ANSI Code	C156/M156
Standard Package	Case
Standard Package GTIN	10043168850862
Standard Package Quantity	12
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	12
UPC	043168850865



Lumen Maintenance



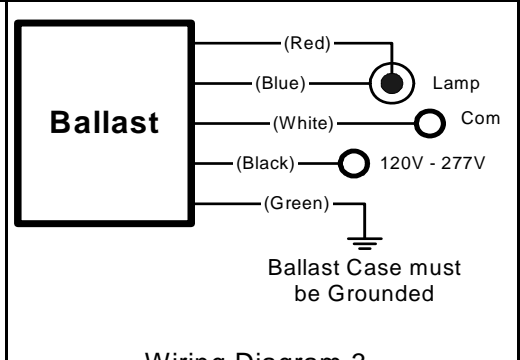
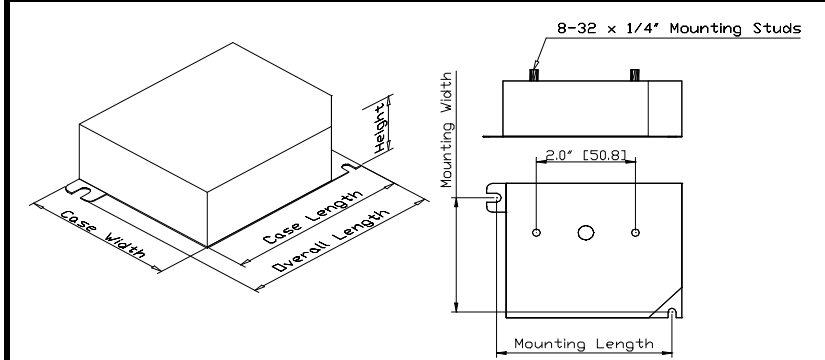
Spectral Power Distribution



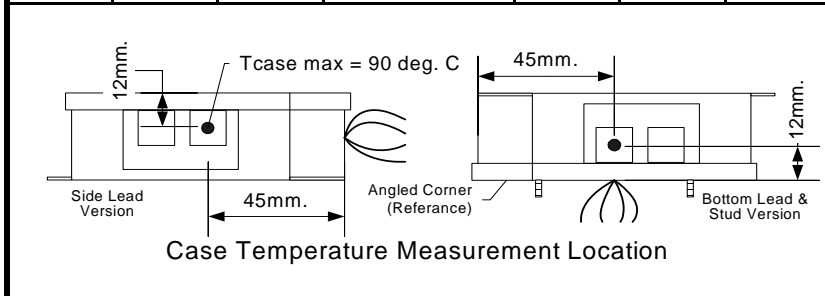
	e-Vision® Electronic Ballast for Metal Halide Lamps	Catalog Number: IMH-G20-G For 20W Metal Halide Lamps ANSI M156 120-277 50/60Hz Electronic Status: RELEASED
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DIMENSIONS AND DATA

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									
20W Watt Lamp, ANSI Code M156 Minimum Starting Temp -20°C/-4°F										
1	20	120	IMH-G20-G-XXX	0.2	24	0.95	3	G	0.9	5
		277		0.09	24					



Case Figure	Overall Length	Case Length	Case Width	Height	Mounting Length	Mounting Width
G	97mm [3.8"]	90mm [3.5"]	77mm [3.0"]	30mm [1.2"]	87mm [3.4"]	67mm [2.6"]



- INSTALLATION & APPLICATION NOTES:**
1. Maximum allowable case temperature is 90°C. See figure above for measurement location
 2. Ignition pulse is 4 kV max
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 4. Ballast output will shutdown after 20 minutes if lamp fails to ignite
 5. Power must be cycled off – then on, after replacing lamp
 6. Connect the red lead to the center terminals of the lamp when using screw base lamps

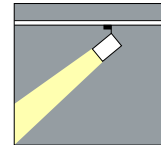
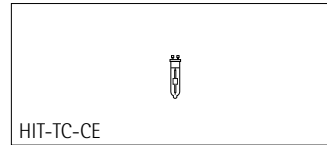
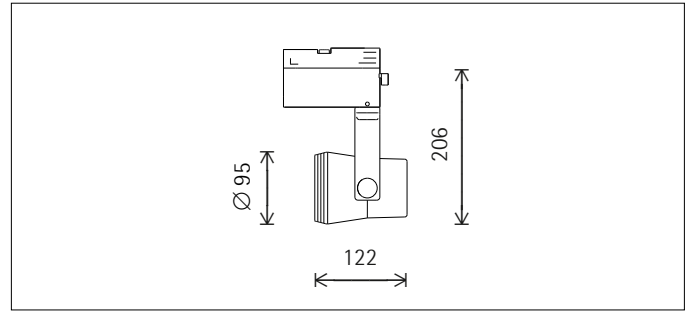
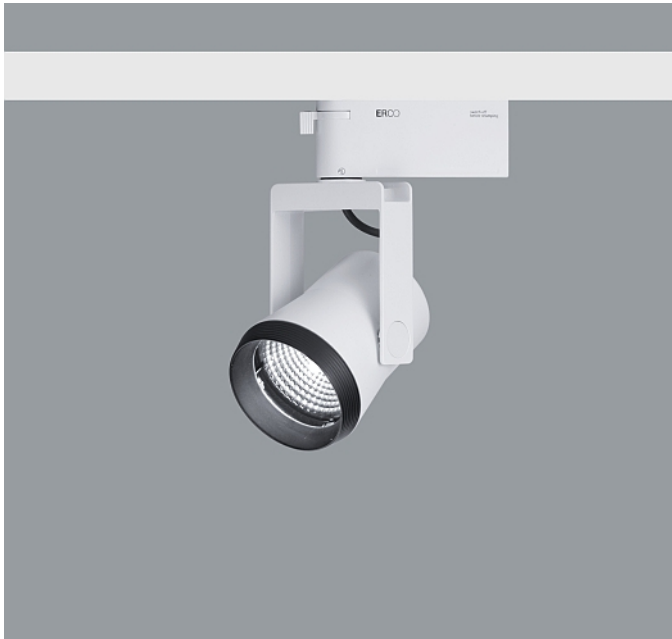
*Ordering Information	
Order Suffix	Description
-LF	Ballast with side exit leads and mounting feet
-BLS	Ballast with bottom exit leads and mounting studs

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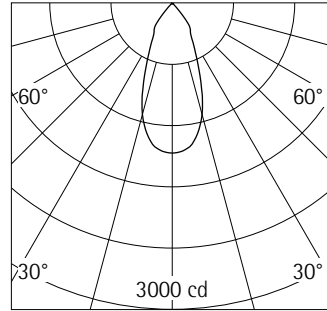
with transadapter for metal halide lamps



72411.000 White (RAL9002)
 HIT-TC-CE 20W GU6.5 1615lm
 ECG
 Spherolit reflector, wide flood

Product description

Housing and bracket: cast aluminium, powder-coated. 0°-90° tilt. Bracket on transadapter rotatable through 360°. ERCO Transadapter for 3-circuit track: plastic. Electronic control gear. Circuit pre-selection.
 Reflector: aluminium, silver, mirror-finish anodised. Safety glass.
 Anti-dazzle ring: plastic, black.
 Weight 0.85kg



HIT-TC-CE 20W GU6.5 1615lm

h(m)	E(lx)	D(m)
		43°
1	1470	0.79
2	368	1.58
3	163	2.36
4	92	3.15
5	59	3.94



Mounting

ERCO 3-circuit track
 Hi-trac 3-circuit track
 Monopoll 3-circuit track

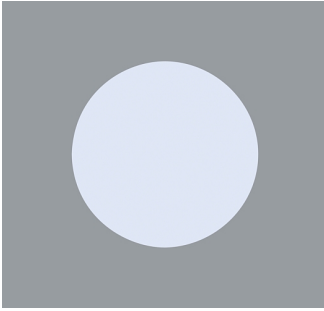
Planning data

Cleaning (a)	1				2				3			
	P	C	N	D	P	C	N	D	P	C	N	D
LMF	0.94	0.89	0.81	0.75	0.91	0.80	0.69	0.59	0.87	0.74	0.61	0.52
RSMF	0.96	0.92	0.87	0.81	0.96	0.92	0.87	0.81	0.96	0.92	0.87	0.81

Hours of operation (h)	1000	2000	4000	6000	8000	9000
LLMF	0.94	0.86	0.82	0.75	0.69	0.66
LSF	1	1	1	1	1	1

- MF LMFxRSMFxLLMFxLSF
- MF Maintainance Factor
- LMF Lumiaire Maintenance Factor
- RSMF Room Surface Maintenance Factor
- LLMF Lamp Lumens Maintenance Factor
- LSF Lamp Survival Factor
- P Room pure
- C Room clean
- N Room normal
- D Room dirty

Accessories



77198.000
UV filter
Only in conjunction with:
70620.000



70620.000
Filter holder
Plastic.

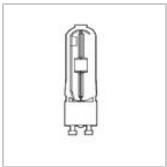
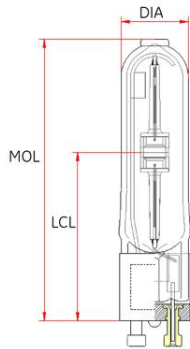


GE
Lighting

85086 - CMH20T/U830GU6.5

GE ConstantColor® PulseArc® CMH® Ceramic Metal Halide T4 - Retail Display

RoHs Compliant



CAUTIONS & WARNINGS

Caution

- Lamp may shatter and cause injury if broken
 - Do not use lamp if outer glass is scratched or broken.
 - Do not use excessive force when installing lamp.
- Risk of Burn
 - Allow lamp to cool before handling.
 - Do not turn on lamp until fully installed.

Warning

- A damaged lamp emits UV radiation which may cause eye/skin injury
 - Turn power off if glass bulb is broken. Remove and dispose of lamp.
- Risk of Electric Shock
 - Turn power off before inspection, installation or removal.
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
- Unexpected lamp rupture may cause injury, fire, or property damage
 - Do not exceed rated voltage.
 - Do not turn on lamp until fully installed.
 - Do not use beyond rated life.
 - Do not use lamp if outer glass is scratched or broken.
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
 - Use in enclosed fixture rated for this product.
 - Use only properly rated ballast.
 - Normal handling with bare hands is acceptable. Excessive handling of the quartz outer bulb should be avoided.
- Risk of Fire
 - Keep combustible materials away from lamp.
 - Use in fixture approved for this product.
 - Use fused or thermally protected ballast - see instructions.

GRAPHS & CHARTS

Lamp Mortality

GENERAL CHARACTERISTICS

Lamp Type	High Intensity Discharge - Ceramic Metal Halide
Bulb	T4
Base	GU6.5
Bulb Finish	Clear
Wattage	20
Rated Life	12000 hrs
Lamp Enclosure Type (LET)	Enclosed fixtures only
Base Temperature	250 K
Bulb Temperature (MAX)	400 K
LEED-EB MR Credit	198 picograms Hg per mean lumen hour
Additional Info	UV control
Primary Application	Retail Display

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	1615
Mean Lumens	1066
Nominal Initial Lumens per Watt	80
Color Temperature	3000 K
Color Rendering Index (CRI)	81

ELECTRICAL CHARACTERISTICS

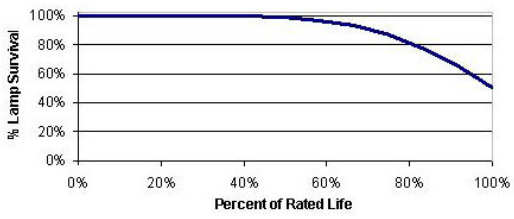
Burn Position	Universal burning position
Warm Up Time to 90%	3 min
Warm Up Time to 90% (MAX)	3 min
Hot Restart Time to 90%	5 min
Hot Restart Time to 90% (MAX)	5 min

DIMENSIONS

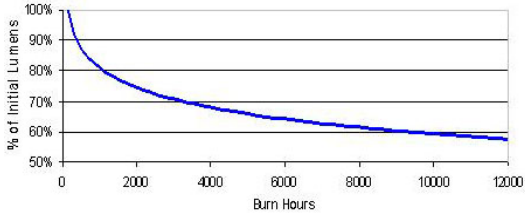
Maximum Overall Length (MOL)	2.05 cm
Bulb Diameter (DIA) (MAX)	0.47 cm
Light Center Length (LCL)	1.18 cm

PRODUCT INFORMATION

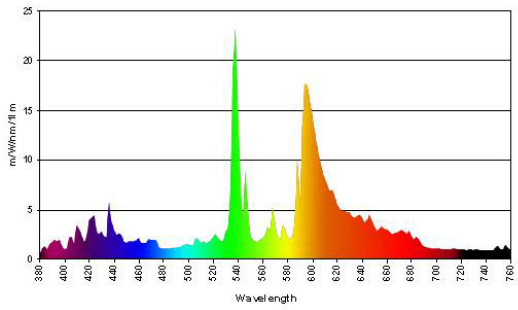
Product Code	85086
Description	CMH20T/U830GU6.5
ANSI Code	C156/M156
Standard Package	Case
Standard Package GTIN	10043168850862
Standard Package Quantity	12
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	12
UPC	043168850865



Lumen Maintenance



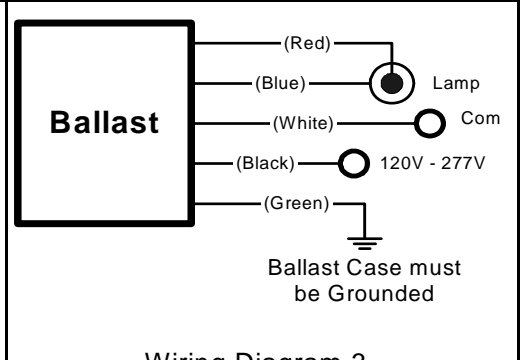
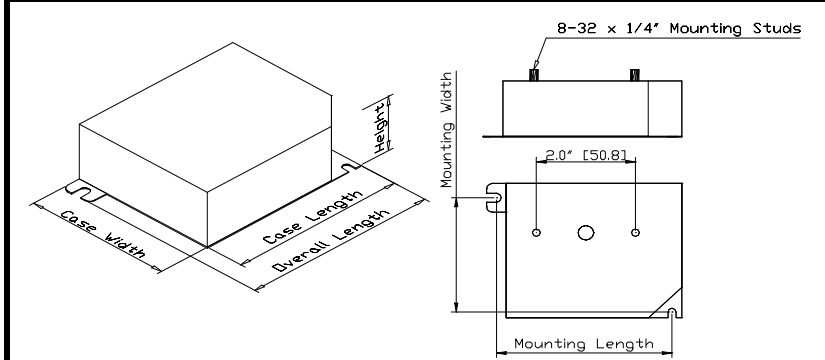
Spectral Power Distribution



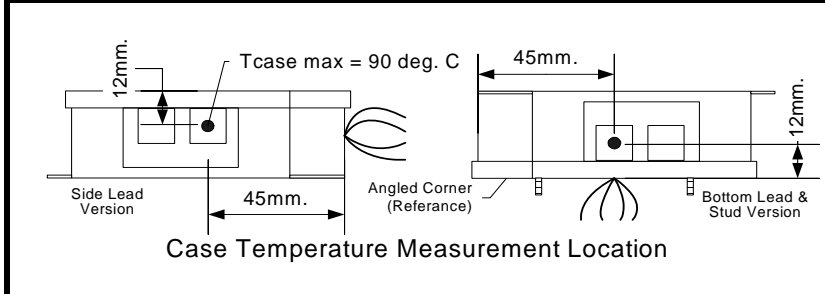
	e-Vision® Electronic Ballast for Metal Halide Lamps	Catalog Number: IMH-G20-G For 20W Metal Halide Lamps ANSI M156 120-277 50/60Hz Electronic Status: RELEASED
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DIMENSIONS AND DATA

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									
20W Watt Lamp, ANSI Code M156 Minimum Starting Temp -20°C/-4°F										
1	20	120 277	IMH-G20-G-XXX	0.2 0.09	24 24	0.95	3	G	0.9	5



Case Figure	Overall Length	Case Length	Case Width	Height	Mounting Length	Mounting Width
G	97mm [3.8"]	90mm [3.5"]	77mm [3.0"]	30mm [1.2"]	87mm [3.4"]	67mm [2.6"]



- INSTALLATION & APPLICATION NOTES:**
1. Maximum allowable case temperature is 90°C. See figure above for measurement location
 2. Ignition pulse is 4 kV max
 3. All leads are 9 inches long
 4. Ballast output will shutdown after 20 minutes if lamp fails to ignite
 5. Power must be cycled off – then on, after replacing lamp
 6. Connect the red lead to the center terminals of the lamp when using screw base lamps

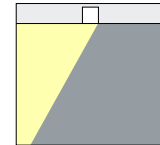
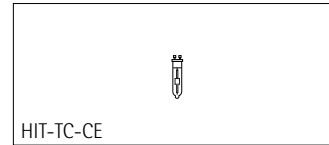
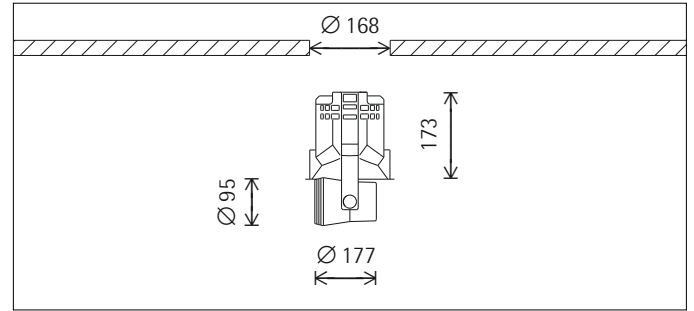
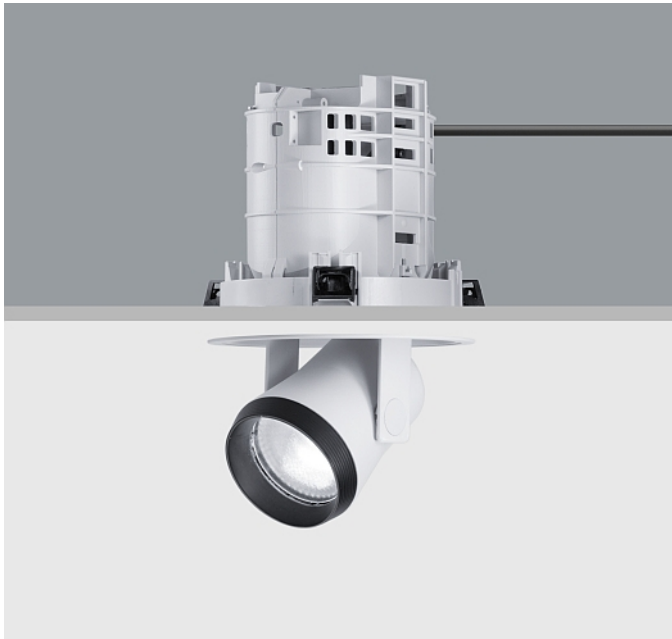
*Ordering Information	
Order Suffix	Description
-LF	Ballast with side exit leads and mounting feet
-BLS	Ballast with bottom exit leads and mounting studs

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for metal halide lamps



81215.000 Reflector silver
 HIT-TC-CE 20W GU6.5 1615lm
 Spherolit reflector, wallwash

Product description

Size 5
 Recessed housing and spotlight with bracket: cast aluminium, white (RAL9002) powder-coated. Remove spotlight from the ceiling in three stages. 0°-90° tilt, 360° rotation.
 Mounting ring: plastic, white (RAL9002). Mounting without tools for ceiling thicknesses up to 30mm.
 Connection cable with plug, L 500mm.
 Reflector: aluminium, silver, mirror-finish anodised. Softec lens.
 Anti-dazzle ring: plastic, black.
 Control gear to be ordered separately.
 Weight 0.88kg

Planning data

Illuminance E_n (lx)

Specifications:

Number of luminaires $n > 5$

Wall height (m) 3

Angle of tilt 25°

HIT-TC-CE 20W GU6.5 1615lm

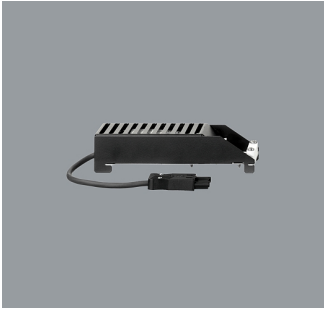
Offset from wall (m)	1.00		1.25	
	below the luminaire		between the luminaires	
Luminaire spacing (m)	1.00	1.25	1.25	1.25
	9	7	6	5
0.250	93	65	45	32
0.500	233	186	109	84
0.750	323	291	181	155
1.000	327	318	212	195
1.250	285	285	210	204
1.500	237	239	189	188
1.750	195	197	164	165
2.000	160	161	140	142
2.250	131	132	120	121
2.500	108	108	102	103
2.750				

Cleaning (a)	1				2				3			
	P	C	N	D	P	C	N	D	P	C	N	D
Ambient conditions												
LMF	0.94	0.88	0.82	0.77	0.91	0.83	0.77	0.71	0.89	0.79	0.73	0.65
RSMF	0.96	0.92	0.87	0.81	0.96	0.92	0.87	0.81	0.96	0.92	0.87	0.81

Hours of operation (h)	1000	2000	4000	6000	8000	9000
LLMF	0.94	0.86	0.82	0.75	0.69	0.66
LSF	1	1	1	1	1	1

- MF LMFxRSMFxLLMFxLSF
- MF Maintainance Factor
- LMF Luminaire Maintenance Factor
- RSMF Room Surface Maintenance Factor
- LLMF Lamp Lumens Maintenance Factor
- LSF Lamp Survival Factor
- P Room pure
- C Room clean
- N Room normal
- D Room dirty

Accessories

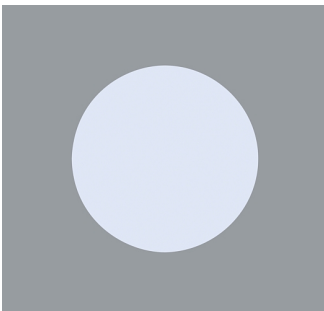
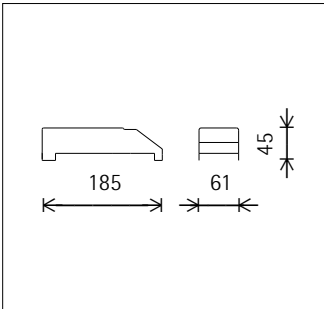
**83669.000**

Control gear
for HIT-TC-CE 20W, G8.5 and GU6.5 and
HIT-CE 20W, G12 and HIPAR51-CE-P
20W, GX10.

Metal, black powder-coated.

Electronic control gear 220-240V, 50-
60Hz. Strain relief. Through-wiring possi-
ble. 5-pole terminal block. Luminaire
connection cable with plug connection,
L 200mm.

Weight 0.36kg

**77198.000**

UV filter

Only in conjunction with:
70620.000

**70620.000**

Filter holder

Plastic.

**83819.000**

Overvoltage protection device
for max. 10 electronic transformers.

L 45mm, B 25mm, H 22mm.

2x1,5mm², L 80mm.

Weight 0.05kg

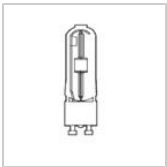
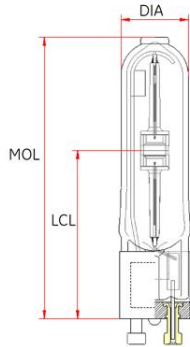


GE
Lighting

85086 - CMH20T/U830GU6.5

GE ConstantColor® PulseArc® CMH® Ceramic Metal Halide T4 - Retail Display

RoHs Compliant



CAUTIONS & WARNINGS

Caution

- Lamp may shatter and cause injury if broken
 - Do not use lamp if outer glass is scratched or broken.
 - Do not use excessive force when installing lamp.
- Risk of Burn
 - Allow lamp to cool before handling.
 - Do not turn on lamp until fully installed.

Warning

- A damaged lamp emits UV radiation which may cause eye/skin injury
 - Turn power off if glass bulb is broken. Remove and dispose of lamp.
- Risk of Electric Shock
 - Turn power off before inspection, installation or removal.
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
- Unexpected lamp rupture may cause injury, fire, or property damage
 - Do not exceed rated voltage.
 - Do not turn on lamp until fully installed.
 - Do not use beyond rated life.
 - Do not use lamp if outer glass is scratched or broken.
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
 - Use in enclosed fixture rated for this product.
 - Use only properly rated ballast.
 - Normal handling with bare hands is acceptable. Excessive handling of the quartz outer bulb should be avoided.
- Risk of Fire
 - Keep combustible materials away from lamp.
 - Use in fixture approved for this product.
 - Use fused or thermally protected ballast - see instructions.

GRAPHS & CHARTS

Lamp Mortality

GENERAL CHARACTERISTICS

Lamp Type	High Intensity Discharge - Ceramic Metal Halide
Bulb	T4
Base	GU6.5
Bulb Finish	Clear
Wattage	20
Rated Life	12000 hrs
Lamp Enclosure Type (LET)	Enclosed fixtures only
Base Temperature	250 K
Bulb Temperature (MAX)	400 K
LEED-EB MR Credit	198 picograms Hg per mean lumen hour
Additional Info	UV control
Primary Application	Retail Display

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	1615
Mean Lumens	1066
Nominal Initial Lumens per Watt	80
Color Temperature	3000 K
Color Rendering Index (CRI)	81

ELECTRICAL CHARACTERISTICS

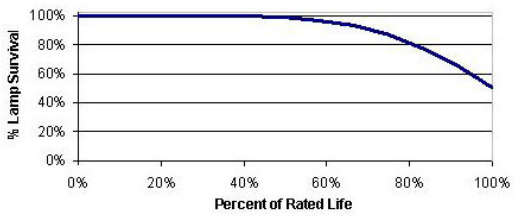
Burn Position	Universal burning position
Warm Up Time to 90%	3 min
Warm Up Time to 90% (MAX)	3 min
Hot Restart Time to 90%	5 min
Hot Restart Time to 90% (MAX)	5 min

DIMENSIONS

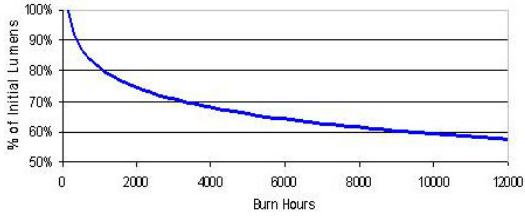
Maximum Overall Length (MOL)	2.05 cm
Bulb Diameter (DIA) (MAX)	0.47 cm
Light Center Length (LCL)	1.18 cm

PRODUCT INFORMATION

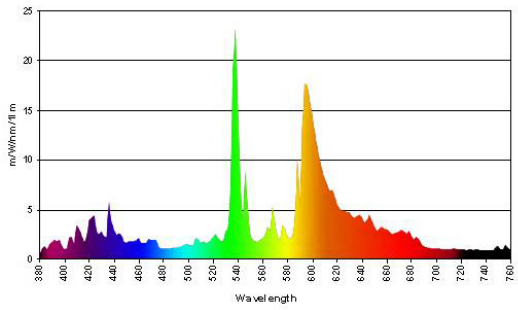
Product Code	85086
Description	CMH20T/U830GU6.5
ANSI Code	C156/M156
Standard Package	Case
Standard Package GTIN	10043168850862
Standard Package Quantity	12
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	12
UPC	043168850865



Lumen Maintenance



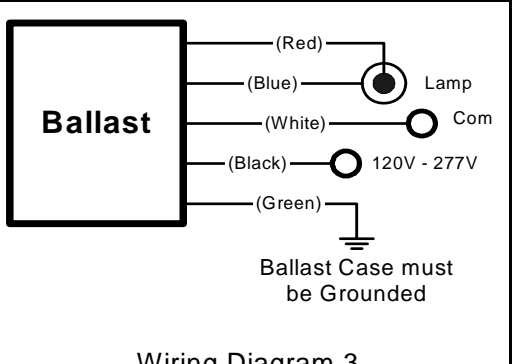
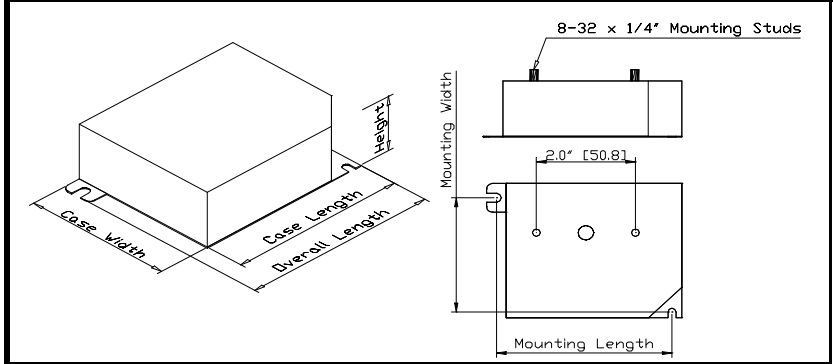
Spectral Power Distribution



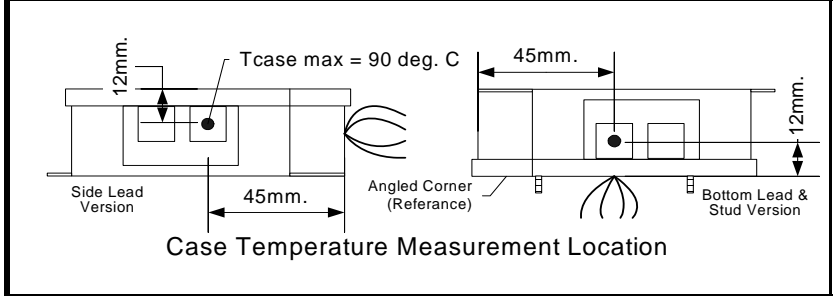
	e-Vision® Electronic Ballast for Metal Halide Lamps	Catalog Number: IMH-G20-G For 20W Metal Halide Lamps ANSI M156 120-277 50/60Hz Electronic Status: RELEASED
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DIMENSIONS AND DATA

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									
20W Watt Lamp, ANSI Code M156 Minimum Starting Temp -20°C/-4°F										
1	20	120 277	IMH-G20-G-XXX	0.2 0.09	24 24	0.95	3	G	0.9	5



Case Figure	Overall Length	Case Length	Case Width	Height	Mounting Length	Mounting Width
G	97mm [3.8"]	90mm [3.5"]	77mm [3.0"]	30mm [1.2"]	87mm [3.4"]	67mm [2.6"]



- INSTALLATION & APPLICATION NOTES:**
- Maximum allowable case temperature is 90°C. See figure above for measurement location
 - Ignition pulse is 4 kV max
 - All leads are 9 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 terminals of the lamp when using screw base lamps

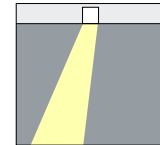
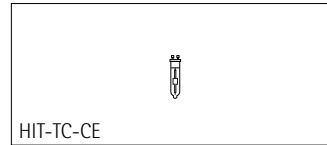
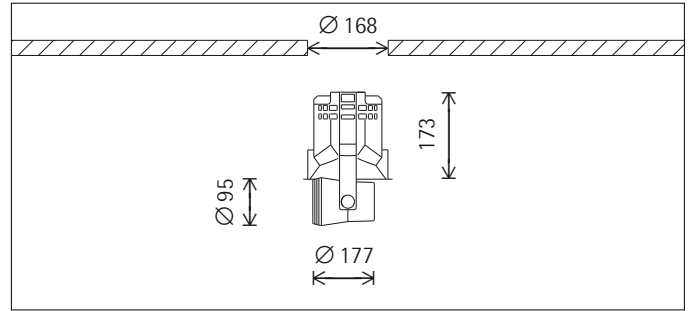
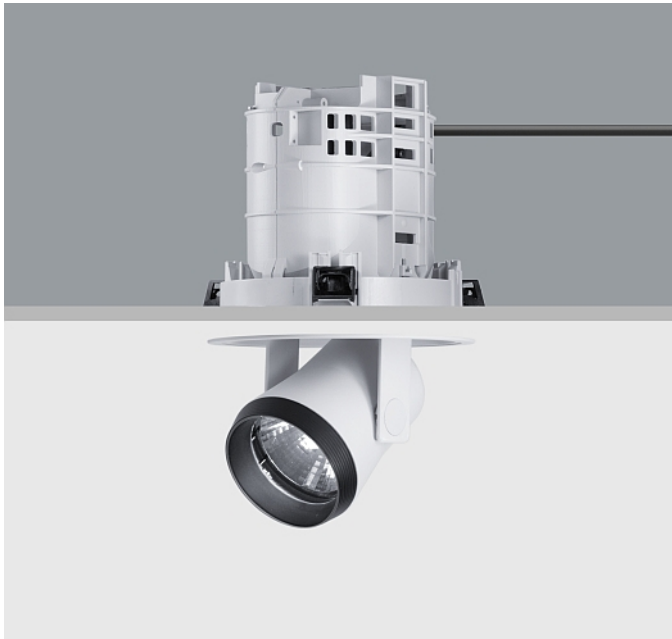
*Ordering Information	
Order Suffix	Description
-LF	Ballast with side exit leads and mounting feet
-BLS	Ballast with bottom exit leads and mounting studs

Data is based on tests performed by Philips Advance 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 • www.philips.com/advance
 Tel: 800-322-2086 • Fax: 800-423-1882 • Customer Support: 800-372-3331 • OEM Support: 866-915-5886

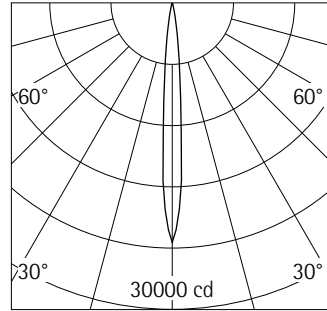
for metal halide lamps



81210.000 Reflector silver
 HIT-TC-CE 20W GU6.5 1615lm
 Spherolit reflector, narrow spot

Product description

Size 5
 Recessed housing and spotlight with bracket: cast aluminium, white (RAL9002) powder-coated. Remove spotlight from the ceiling in three stages. 0°-90° tilt, 360° rotation.
 Mounting ring: plastic, white (RAL9002). Mounting without tools for ceiling thicknesses up to 30mm.
 Connection cable with plug, L 500mm.
 Reflector: aluminium, silver, mirror-finish anodised. Safety glass.
 Anti-dazzle ring: plastic, black.
 Control gear to be ordered separately.
 Weight 0.88kg



HIT-TC-CE 20W GU6.5 1615lm

h(m)	E(lx)	D(m)
		8°
1	23450	0.14
2	5862	0.28
3	2606	0.42
4	1466	0.56
5	938	0.70

Planning data


Cleaning (a)	1				2				3			
	P	C	N	D	P	C	N	D	P	C	N	D
LMF	0.94	0.88	0.82	0.77	0.91	0.83	0.77	0.71	0.89	0.79	0.73	0.65
RSMF	0.96	0.92	0.87	0.81	0.96	0.92	0.87	0.81	0.96	0.92	0.87	0.81

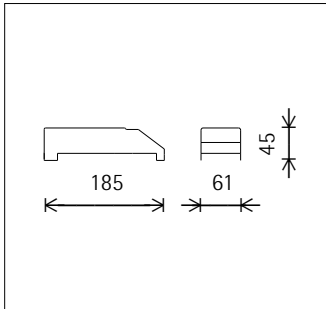
Hours of operation (h)	1000	2000	4000	6000	8000	9000
LLMF	0.94	0.86	0.82	0.75	0.69	0.66
LSF	1	1	1	1	1	1

- MF LMFxRSMFxLLMFxLSF
- MF Maintainance Factor
- LMF Luminaire Maintenance Factor
- RSMF Room Surface Maintenance Factor
- LLMF Lamp Lumens Maintenance Factor
- LSF Lamp Survival Factor
- P Room pure
- C Room clean
- N Room normal
- D Room dirty

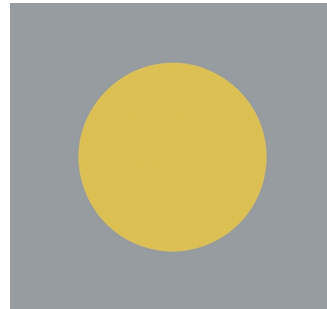
Accessories



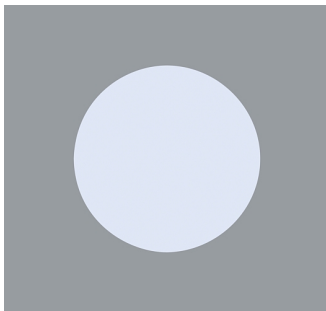
83669.000
Control gear
for HIT-TC-CE 20W, G8.5 and GU6.5 and
HIT-CE 20W, G12 and HIPAR51-CE-P
20W, GX10.
Metal, black powder-coated.
Electronic control gear 220-240V, 50-
60Hz. Strain relief. Through-wiring poss-
ible. 5-pole terminal block. Luminaire
connection cable with plug connection,
L 200mm.
Weight 0.36kg




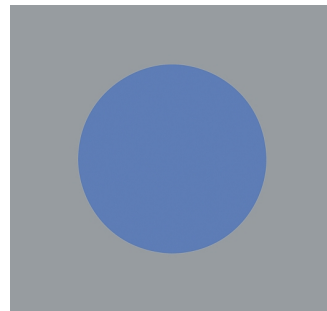
74431.000
Interference colour filter
Magenta
Only in conjunction with:
70620.000



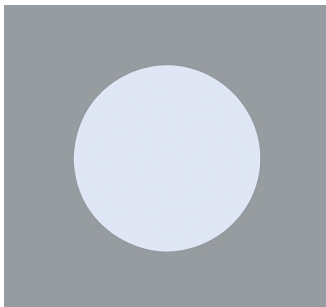
74432.000
Interference colour filter
Amber
Only in conjunction with:
70620.000



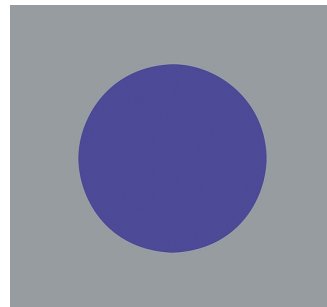
77198.000
UV filter
Only in conjunction with:
70620.000



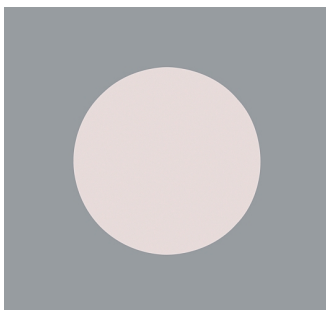
74433.000
Interference colour filter
Sky blue
Only in conjunction with:
70620.000



77196.000
IR filter
Only in conjunction with:
70620.000



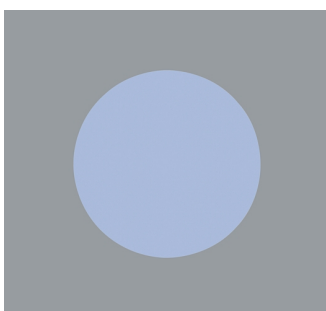
74434.000
Interference colour filter
Night blue
Only in conjunction with:
70620.000



74482.000
Skintone filter
Only in conjunction with:
70620.000



70620.000
Filter holder
Plastic.



74483.000
Daylight conversion filter
Only in conjunction with:
70620.000

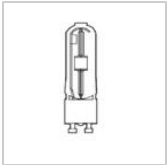
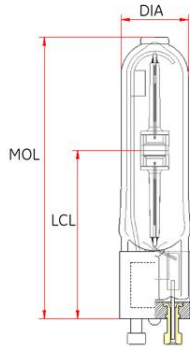


GE
Lighting

85086 - CMH20T/U830GU6.5

GE ConstantColor® PulseArc® CMH® Ceramic Metal Halide T4 - Retail Display

RoHs Compliant



CAUTIONS & WARNINGS

Caution

- Lamp may shatter and cause injury if broken
 - Do not use lamp if outer glass is scratched or broken.
 - Do not use excessive force when installing lamp.
- Risk of Burn
 - Allow lamp to cool before handling.
 - Do not turn on lamp until fully installed.

Warning

- A damaged lamp emits UV radiation which may cause eye/skin injury
 - Turn power off if glass bulb is broken. Remove and dispose of lamp.
- Risk of Electric Shock
 - Turn power off before inspection, installation or removal.
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
- Unexpected lamp rupture may cause injury, fire, or property damage
 - Do not exceed rated voltage.
 - Do not turn on lamp until fully installed.
 - Do not use beyond rated life.
 - Do not use lamp if outer glass is scratched or broken.
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
 - Use in enclosed fixture rated for this product.
 - Use only properly rated ballast.
 - Normal handling with bare hands is acceptable. Excessive handling of the quartz outer bulb should be avoided.
- Risk of Fire
 - Keep combustible materials away from lamp.
 - Use in fixture approved for this product.
 - Use fused or thermally protected ballast - see instructions.

GRAPHS & CHARTS

Lamp Mortality

GENERAL CHARACTERISTICS

Lamp Type	High Intensity Discharge - Ceramic Metal Halide
Bulb	T4
Base	GU6.5
Bulb Finish	Clear
Wattage	20
Rated Life	12000 hrs
Lamp Enclosure Type (LET)	Enclosed fixtures only
Base Temperature	250 K
Bulb Temperature (MAX)	400 K
LEED-EB MR Credit	198 picograms Hg per mean lumen hour
Additional Info	UV control
Primary Application	Retail Display

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	1615
Mean Lumens	1066
Nominal Initial Lumens per Watt	80
Color Temperature	3000 K
Color Rendering Index (CRI)	81

ELECTRICAL CHARACTERISTICS

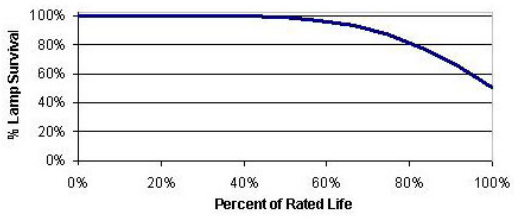
Burn Position	Universal burning position
Warm Up Time to 90%	3 min
Warm Up Time to 90% (MAX)	3 min
Hot Restart Time to 90%	5 min
Hot Restart Time to 90% (MAX)	5 min

DIMENSIONS

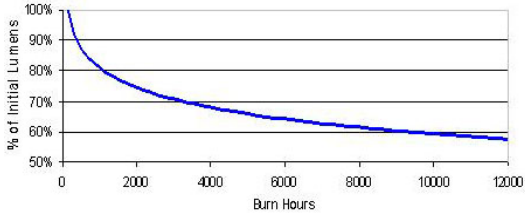
Maximum Overall Length (MOL)	2.05 cm
Bulb Diameter (DIA) (MAX)	0.47 cm
Light Center Length (LCL)	1.18 cm

PRODUCT INFORMATION

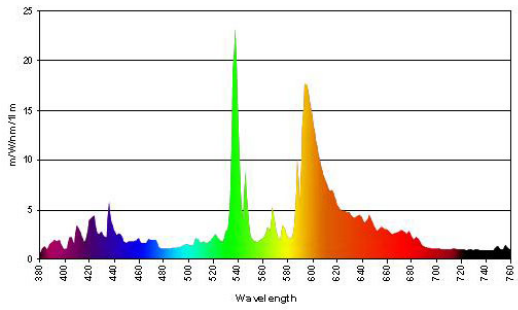
Product Code	85086
Description	CMH20T/U830GU6.5
ANSI Code	C156/M156
Standard Package	Case
Standard Package GTIN	10043168850862
Standard Package Quantity	12
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	12
UPC	043168850865



Lumen Maintenance



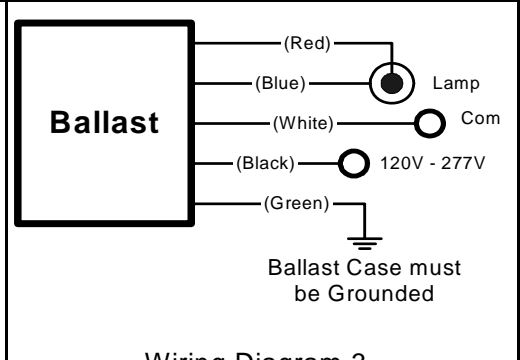
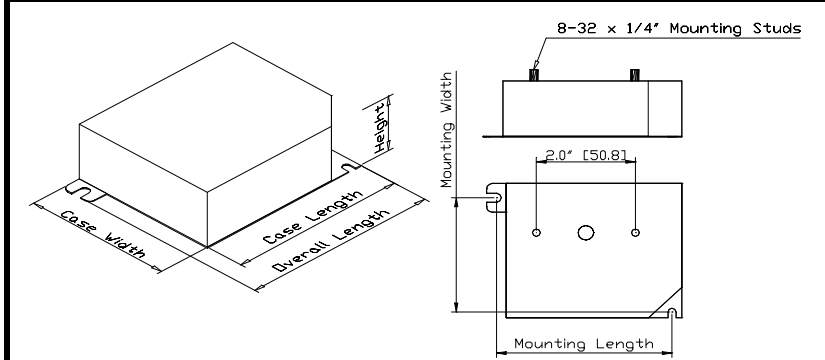
Spectral Power Distribution



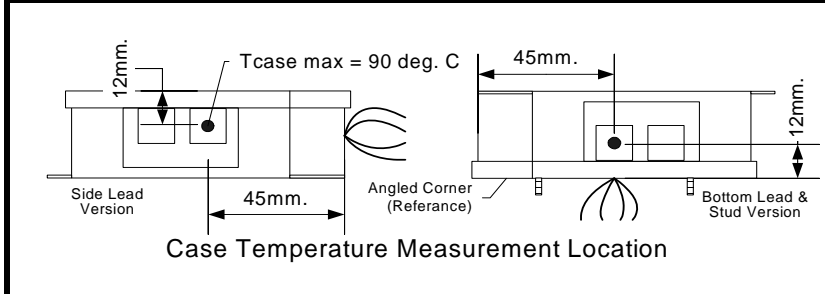
	e-Vision® Electronic Ballast for Metal Halide Lamps	Catalog Number: IMH-G20-G For 20W Metal Halide Lamps ANSI M156 120-277 50/60Hz Electronic Status: RELEASED
		DIMENSIONS AND DATA

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									

20W Watt Lamp, ANSI Code M156 Minimum Starting Temp -20°C/-4°F										
1	20	120 277	IMH-G20-G-XXX	0.2 0.09	24 24	0.95	3	G	0.9	5



Case Figure	Overall Length	Case Length	Case Width	Height	Mounting Length	Mounting Width
G	97mm [3.8"]	90mm [3.5"]	77mm [3.0"]	30mm [1.2"]	87mm [3.4"]	67mm [2.6"]



- INSTALLATION & APPLICATION NOTES:**
- Maximum allowable case temperature is 90°C. See figure above for measurement location
 - Ignition pulse is 4 kV max
 - All leads are 9 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 terminals 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

Data is based on tests performed by Philips Advance 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.

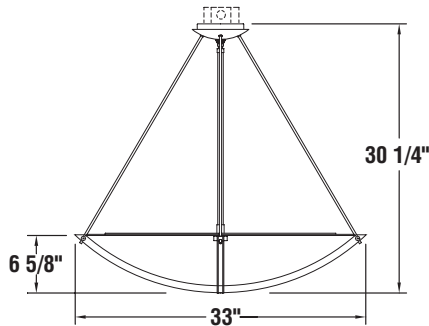
Philips Lighting Electronics N.A.

10275 West Higgins Road • Rosemont, IL 60018 • www.philips.com/advance
 Tel: 800-322-2086 • Fax: 800-423-1882 • Customer Support: 800-372-3331 • OEM Support: 866-915-5886

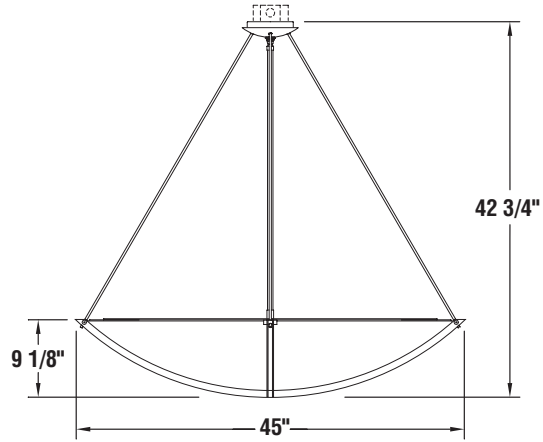
"More and more, so it seems to me, light is the beautifier of the building." (Frank Lloyd Wright)

Technical Data:

4801-30



4801-42

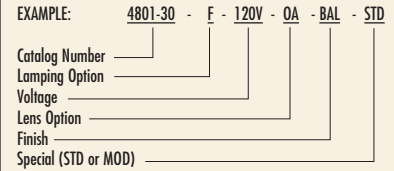


Product Specifications:

How to Specify:

Catalog #: 4801
Lamping: 4801-30 I - (4) 60W A-19/Med.
 F - (4) CFT13W/GX23
 FQ - (4) CFQ26W/G24q
 4801-42 I - (8) 60W A-19/Med.
 F - (4) CFQ26W/G24d
 FM - (4) CFM42W/GX24q
 FX - (8) CFM42W/GX24q
Voltage: 120V or 277V,
 Incandescent 120 Volt Only
Lens Options: OA: Opal Acrylic (Etched)
 FAH: Hand Painted Faux Alabaster
 FAH4: White Vein
 FAH5: Antique Alabaster (Beige)
 FAH6: Gray Vein
 FAH7: Beige Vein
 FGH: Faux Glass

Finishes: Standard **BAL:** Brushed Aluminum with
 Brushed Brass Cylinders
BB: Brushed Brass with
 Brushed Aluminum Cylinders
 Custom **CPF:** Custom Paint Finish
 (Consult Factory)
CMF: Custom Metal Finish
 (Consult Factory)
Special: **STD:** Standard
MOD: Modified Standard
Weight: 4801-30 I: 15 lbs.
 F: 21 lbs.
 FQ: 21 lbs.
 4801-42 I: 25 lbs.
 F: 34 lbs.
 FM: 34 lbs.
 FX: 35 lbs.



NOTES:

- UL LISTED AND CUL APPROVED. (UL) c (UL)
- ALL WINONA LIGHTING PRODUCTS ARE UNION MADE.
- CUSTOM SIZES AND FINISHES AVAILABLE UPON REQUEST.
- ALL FLUORESCENT FIXTURES AVAILABLE IN 120 VOLT OR 277 VOLT. INCANDESCENT IN 120 VOLT ONLY.
- WINONA LIGHTING RESERVES THE RIGHT TO MAKE DESIGN CHANGES WITHOUT PRIOR NOTICE.
- LAMPS NOT INCLUDED.
- COMPACT FLUORESCENT LAMP BASE INFORMATION: CFT13W (GX23), CFQ26W (G24d-3), CFQ26W (G24q-3), CFM42W (GX24q-4). SEE PAGE 337 OF TECHNICAL SECTION FOR MORE INFORMATION.
- BALLAST INFORMATION: MAGNETIC (F)
- BALLAST INFORMATION: ELECTRONIC (FQ, FM, FX)

TO USE AS YOUR SUBMITTAL FORM, SIMPLY PHOTOCOPY THIS PAGE, FILL IN YOUR SPECIFICATIONS, AND FAX SUBMITTAL TO (507) 452-8528. A WINONA LIGHTING SALES REP WILL RESPOND TO YOUR REQUEST.

PRODUCT SPECIFICATIONS: 4801 - _____ - _____ - _____ - _____ - _____ - _____

TYPE: _____

TO VIEW OUR LATEST FIXTURES, CURRENT SPECIFICATIONS, FEATURE PROJECTS, AND MORE, VISIT US ONLINE AT WWW.WINONALIGHTING.COM

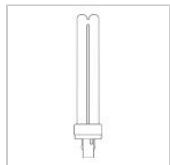
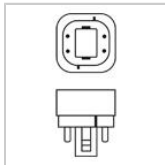
(FOR MORE INFORMATION ABOUT OUR WEBSITE SEE PAGES 346-349 FOR ALL THE DETAILS.)



GE
Lighting

97611 - F26DBX/830/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.

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).
- Based on 60Hz reference circuit.
- Fluorescent lamp lumens decline during life

GENERAL CHARACTERISTICS

Lamp Type	Compact Fluorescent - Plug-In
Bulb	T4
Base	G24q-3
Wattage	26
Voltage	120/105
Rated Life	12000 hrs
Starting Temperature	0 °C (32 °F)
Cathode Resistance	2.7 Ohm
LEED-EB MR Credit	232 picograms Hg per mean lumen hour
Rated Life (rapid start) @ Time	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;Warehouse

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	1710
Mean Lumens	1440
Nominal Initial Lumens per Watt	65
Color Temperature	3000 K
Color Rendering Index (CRI)	82

ELECTRICAL CHARACTERISTICS

Current (max)	5.25 A
Open Circuit Voltage (after preheating)	240 V
Open Circuit Voltage Across Starter	198 V
Lamp Current	0.325 A
Preheat Voltage	4.25 V
Current Crest Factor	1.7
Supply Current Frequency	60 Hz

DIMENSIONS

Maximum Overall Length (MOL)	6.4000 in(162.6 mm)
Nominal Length	6.400 in(162.6 mm)
Base Face to Top of Lamp	5.800 in(147.3 mm)

PRODUCT INFORMATION

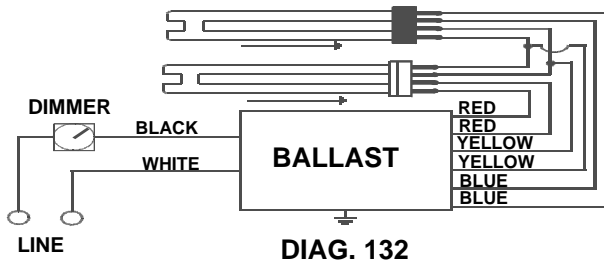
Product Code	97611
Description	F26DBX/830/ECO4P
ANSI Code	60901-IEC-2562-2
Standard Package	BUNDLE
Standard Package GTIN	
Standard Package Quantity	50
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	50
UPC	043168976114

Electrical Specifications

VEZ-2Q26-M2-BS	
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	2	26	50/10	0.21	16/58	0.05/1.05	10	0.98	1.6	1.81
CFTR26W/GX24Q	2	26	50/10	0.21	16/58	0.05/1.05	10	0.98	1.6	1.81

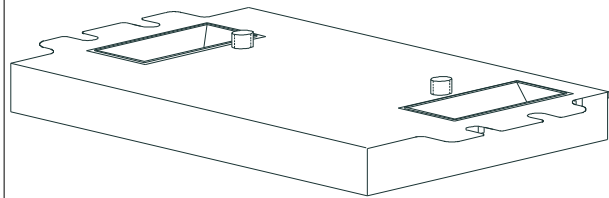
Wiring Diagram



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 "	2.00 "
4 49/50	3	1 29/100	2
12.6 cm	7.6 cm	3.3 cm	5.1 cm

Revised 09/10/2002



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

VEZ-2Q26-M2-BS	
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 09/10/2002



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.

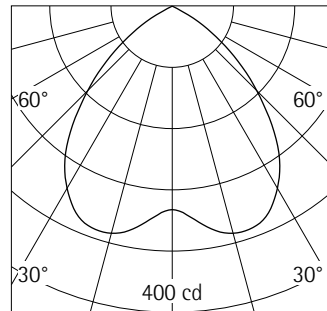
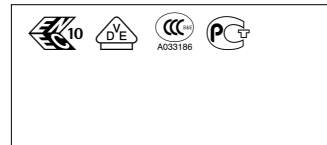
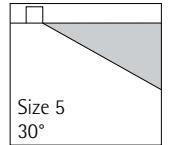
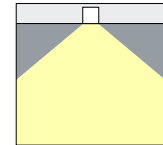
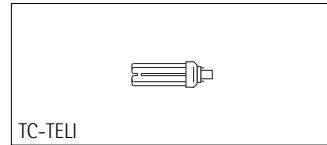
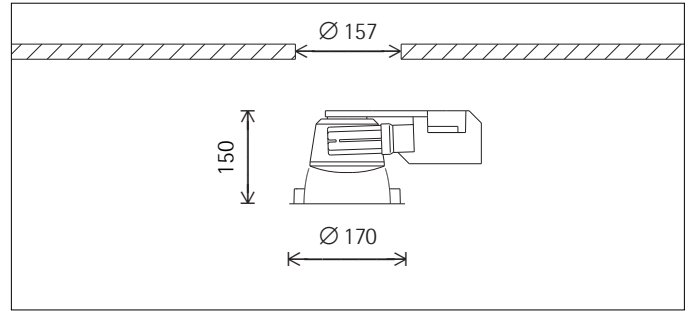
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for TC-T lamps



TC-TELI 18W GX24q-2 1200lm

LOR 0.49
UGR 19.4
65° < 1000 cd/m²

22267.000 Reflector silver
TC-TELI 18W GX24q-2 1200lm
ECG

Product description

Housing: cast aluminium, designed as heat sink.

Mounting ring: cast aluminium, white (RAL9002) powder-coated. Fitting without tools with 4-point support and screw fixing, for ceiling thicknesses of 1-30mm.

Junction box for through-wiring, 5-pole terminal block, integrated cable clamp. Electronic control gear, plug and play connectivity with DALI version.

Darklight reflector: aluminium, bright anodised. Cut-off angle 30°.

Diffuser: plastic, translucent, can be removed for lamp replacement without tools.

Weight 1.40kg

Planning data

22267.000 TC-TELI 18W GX24q-2 1200lm
 Connected load P: 18 W
 Connected load per 100lx P*: 3.0 W/m²
 Number of luminaires per 100lx n*: 16.8 1/100m²

22267.000 TC-TELI 18W GX24q-2 1200lm
 Number of luminaires per 100m² for
 100lx 200lx 300lx 500lx
 17 34 51 85

22267.000 TC-TELI 18W GX24q-2 1200lm
 Module (m) 1.2x1.8 1.8x1.8 1.8x2.4 2.4x2.4
 Illuminance E_n (lx) 275 184 138 103

Correction table

Ceiling	0.70	0.70	0.70	0.50	0
Wall	0.70	0.50	0.20	0.20	0
Floor	0.50	0.20	0.20	0.10	0

k	0.6	76	57	48	47	44
k	1.0	100	76	68	66	62
k	1.5	116	90	83	80	76
k	2.5	130	100	95	90	85
k	3.0	134	103	99	93	89

Cleaning (a)	1				2				3			
	P	C	N	D	P	C	N	D	P	C	N	D
Ambient conditions	0.94	0.89	0.81	0.75	0.91	0.80	0.69	0.59	0.87	0.74	0.61	0.52
LMF	0.96	0.92	0.87	0.81	0.96	0.92	0.87	0.81	0.96	0.92	0.87	0.81
RSMF												

Hours of operation (h)	2000	6000	10000	1000	4000	8000
LLMF	0.94	0.89	0.85	0.97	0.91	0.87
LSF	1	1	1	1	1	1

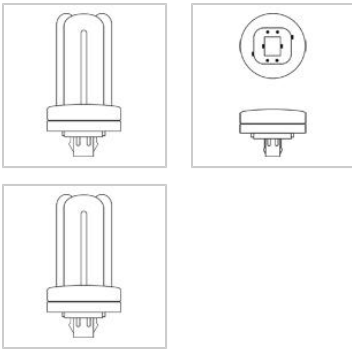
MF LMFxRSMFxLLMFxLSF
 MF Maintainance Factor
 LMF Luminaire Maintenance Factor
 RSMF Room Surface Maintenance Factor
 LLMF Lamp Lumens Maintenance Factor
 LSF Lamp Survival Factor
 P Room pure
 C Room clean
 N Room normal
 D Room dirty



GE
Lighting

97625 - F18TBX/830/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.

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

GENERAL CHARACTERISTICS

Lamp Type	Compact Fluorescent - Plug-In
Bulb	T4
Base	GX24q-2
Wattage	18
Voltage	120/100
Rated Life	12000 hrs
Cathode Resistance	6.05 Ohm
LEED-EB MR Credit	330 picograms Hg per mean lumen hour
Rated Life (rapid start) @ Time	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	1200
Mean Lumens	1010
Nominal Initial Lumens per Watt	66
Color Temperature	3000 K
Color Rendering Index (CRI)	82

ELECTRICAL CHARACTERISTICS

Current (max)	5.25 A
Open Circuit Voltage (after preheating)	250 V
Open Circuit Voltage Across Starter	198 V
Lamp Current	0.225 A
Preheat Voltage	4.25 V
Current Crest Factor	1.7
Supply Current Frequency	60 Hz

DIMENSIONS

Maximum Overall Length (MOL)	4.8000 in(121.9 mm)
Nominal Length	4.800 in(121.9 mm)
Base Face to Top of Lamp	4.250 in(107.9 mm)

PRODUCT INFORMATION

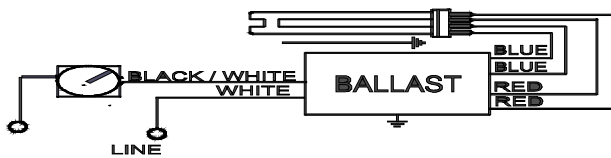
Product Code	97625
Description	F18TBX/830/A/ECO
Standard Package	Case
Standard Package GTIN	10043168976258
Standard Package Quantity	10
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	10
UPC	043168976251

Electrical Specifications

VEZ-1Q18-M2-BS	
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.
CFQ18W/G24Q	1	18	50/10	0.07	07/22	0.05/1.00	10	0.99	1.6	4.55
* CFTR18W/GX24Q	1	18	50/10	0.08	07/22	0.05/1.00	10	0.99	1.6	4.55

Wiring Diagram



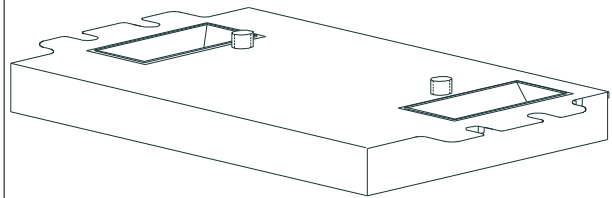
Diag. 134

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		0
White	0	0	Blue/White		0
Blue	0	0	Brown		0
Red	0	0	Orange		0
Yellow		0	Orange/Black		0
Gray		0	Black/White		0
Violet		0	Red/White		0

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
4.98 "	3.00 "	1.29 "	2.00 "
4 49/50	3	1 29/100	2
12.6 cm	7.6 cm	3.3 cm	5.1 cm

Revised 08/17/2006



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VEZ-1Q18-M2-BS	
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.
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- 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

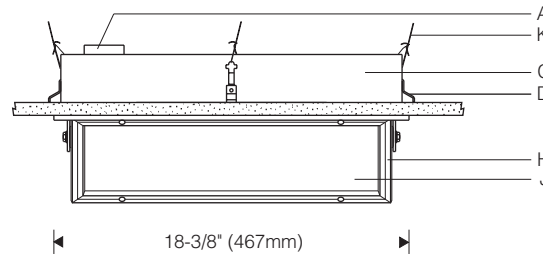
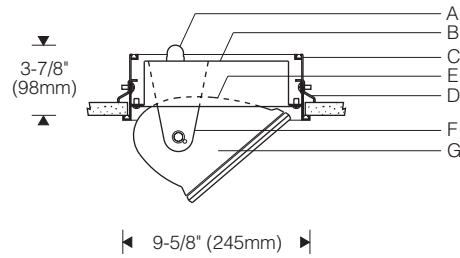


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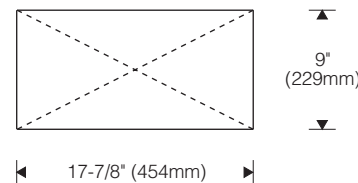
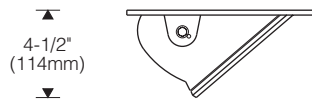
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Style 204 1:10 Scale



Ceiling Cutout



Specifications

- | | | | |
|--|---|---|---|
| A Conduit connector | D Spring clips (4 provided) | G Die-cast aluminum end plates | J Micro-prismatic tempered glass lens |
| B Aluminum back box | E Specular extruded aluminum reflector | H Mitred extruded aluminum door frame with silicone gasket | K Supplemental support wires (by others) |
| C Extruded aluminum mounting/trim frame | F Aluminum yoke arms | | |

Finish:

Semi-gloss white reflector, door frame, end plates, yoke arms and trim frame. Black back box.

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:

Mounting/trim frame installs from below finished ceiling. Retrofits into existing non-accessible ceilings.

Spring clips provided for rigid ceilings (drywall, plaster) up to 1-3/4" (44mm) thick.

Supplemental support wires, bar hangers, etc. (by others) required for accessible ceilings. Where wire suspension is prohibited, order accessory universal mounting brackets for use with 1/2" EMT, 1-1/2" lathing or C channel (by others).

Electrical:

Use 90°C wire for supply connections.

5' (1.5m) wire leads exit back box for connection to accessible junction box (by others) or remote ballast (installation prior to finished ceiling recommended).

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:

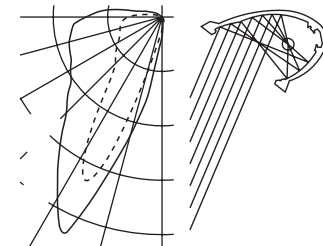
UL listed or CSA certified for damp locations.

Features

- Adjustable – tailor performance to wall height and setback
- Precured silicone gaskets – keep dirt and moisture out, maintain performance, prevent light leaks
- Lamp support on mogul base lamps ensures arc tube is in optical center
- Shallow recessed depth – fits under ducts at core walls

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

2 0 4 - T - 0 2 - - - -
 1 2 3 4 5 6 7 8

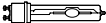




1 Source

M = Metal halide
 T = Tungsten halogen

2 Style

204 = Large semi-recessed adjustable, remote ballast

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	

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: _____

4 Mounting

T = Overlapping trim

5 Finish

02 = Semi-gloss white

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

*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
 0C = Modified to comply with Chicago plenum code. **Note:** remote ballast must be located outside ceiling plenum. For ballast within plenum, consult factory.
 0Y = Modified to comply with New York City code
 XX = For modification not listed, include detailed description. Consult factory prior to specification.

8 Standard

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

Example

M204 - 250C - T - 02 - B - 0C0

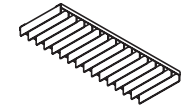
Large semi-recessed model for use with 250 watt ceramic arc tube pulse start metal halide lamp. Overlapping ceiling trim. Semi-gloss white reflector, door frame, end plates, yoke arms and trim frame, with black back box. Remote 277V ballast. Modified to comply with Chicago plenum code. UL.

Type: _____

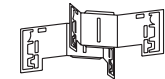
Accessories

Order separately. See Accessories Section for specifications.

AEDV 000 = External vertical blade baffle, black (Not for use with 500W TH units.)
 2 = 25° shielding
 4 = 45° shielding



ASRBKT00 = Universal mounting brackets (set of two), accepts 1/2" EMT, 1-1/2" lathing, C channel or bar hangers (by others)



AFK000X = Ballast fuse kit
 0 = UL
 J = CSA

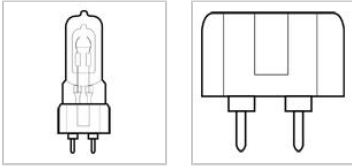




GE
Lighting

20017 - CMH150TU/830/G12

GE ConstantColor® PulseArc® CMH® Ceramic Metal Halide T6



CAUTIONS & WARNINGS

R- WARNING: This lamp can cause serious skin burn and eye inflammation from shortwave ultraviolet radiation if outer envelope of the lamp is broken or punctured, and the arc tube continues to operate. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Certain types of lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. Visit the FDA website for more information: <http://www.fda.gov/cdrh/radhealth/products/urburns.html>

Caution

- Lamp may shatter and cause injury if broken
 - Do not use excessive force when installing lamp.
 - Do not use lamp if outer glass is scratched or broken.

Warning

- A damaged lamp emits UV radiation which may cause eye/skin injury
 - Turn power off if glass bulb is broken. Remove and dispose of lamp.
- Risk of Electric Shock
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
 - Turn power off before inspection, installation or removal.
- Unexpected lamp rupture may cause injury, fire, or property damage
 - Do not exceed rated voltage.
 - Do not turn on lamp until fully installed.
 - Do not use beyond rated life.
 - Do not use lamp if outer glass is scratched or broken.
 - Do not use where directly exposed to water or outdoors without an enclosed fixture.
 - Operate lamp only in specified position.
 - Use in enclosed fixture rated for this product.
 - Use only properly rated ballast.
- Risk of Burn
 - Allow lamp to cool before handling.
 - Do not turn on lamp until fully installed.
- Risk of Fire
 - Keep combustible materials away from lamp.
 - Use fused or thermally protected ballast - see instructions.
 - Use in fixture rated for this product.

GENERAL CHARACTERISTICS

Lamp Type	High Intensity Discharge - Ceramic Metal Halide
Bulb	T6
Base	Bi-Pin (G12)
Wattage	150
Rated Life	12000 hrs
Bulb Material	Quartz
Lamp Enclosure Type (LET)	Enclosed fixtures only
LEED-EB MR Credit	83 picograms Hg per mean lumen hour
Additional Info	UV control

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	14000
Mean Lumens	11000
Nominal Initial Lumens per Watt	93
Color Temperature	3000 K
Color Rendering Index (CRI)	82

ELECTRICAL CHARACTERISTICS

Burn Position	Universal burning position
Warm Up Time to 90% (MAX)	2 min
Hot Restart Time to 90% (MIN)	10 min
Hot Restart Time to 90% (MAX)	15 min

DIMENSIONS

Maximum Overall Length (MOL)	3.9300 in(99.8 mm)
Light Center Length (LCL)	2.180 in(55.4 mm)

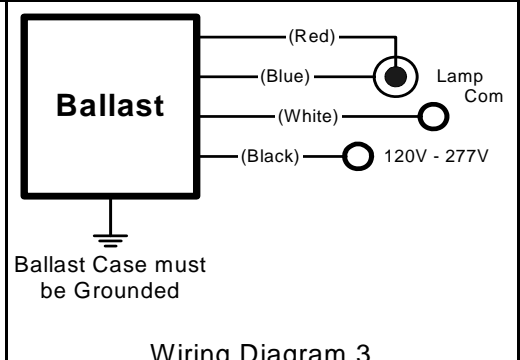
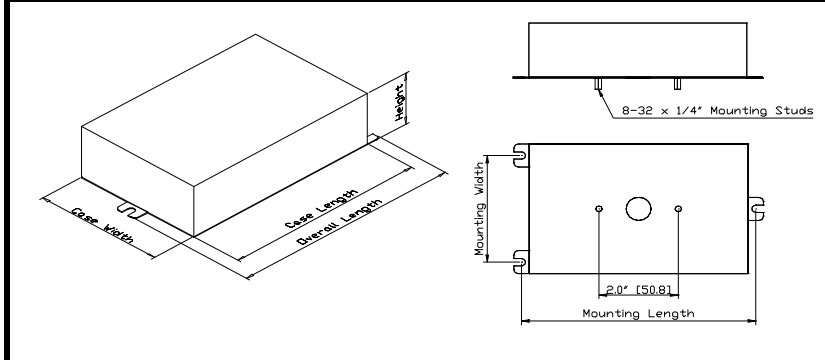
PRODUCT INFORMATION

Product Code	20017
Description	CMH150TU/830/G12
ANSI Code	M102/M142
Standard Package	Case
Standard Package GTIN	10043168200179
Standard Package Quantity	12
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	12
UPC	043168200172

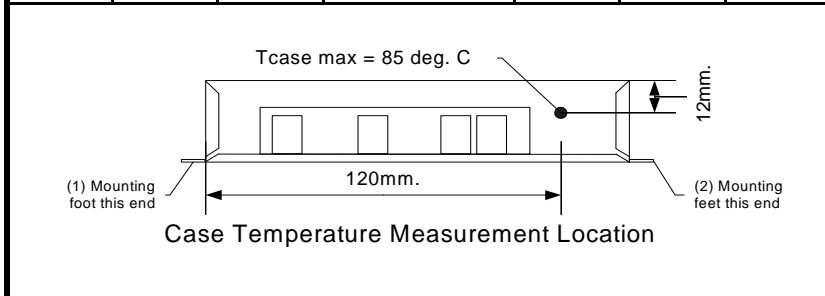
	e-Vision® Electronic Ballast for Metal Halide Lamps	Catalog Number: IMH-150-H For 150W Metal Halide Lamps ANSI M102 or M142 120-277V 50/60Hz Electronic Status: RELEASED
---	--	--

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	120 277	IMH-150-H-XXX	1.4 0.6	165 161	1	3	H	1.9	5



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:**
1. Maximum allowable case temperature is 85°C. See figure above for measurement location
 2. Ignition pulse is 4 kV max
 3. All leads are 12 inches long
 4. Ballast output will shutdown after 20 minutes if lamp fails to ignite
 5. Power must be cycled off – then on, after replacing lamp
 6. 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

Data is based on tests performed by Philips Advance 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 • www.philips.com/advance
 Tel: 800-322-2086 • Fax: 800-423-1882 • Customer Support: 800-372-3331 • OEM Support: 866-915-5886

ML™

Includes SYNTO optics



Fluorescent
Two Lamp 14W T5
Two Lamp 24W T5HO
One Lamp 40W/50W/55W T5TT
Two Lamp 40W T5TT

Applications: An innovative lighting chamber concept with **five center diffuser options** including **SYNTO optics** shielding the lamp(s) from view, while directing light where needed in a glare-free and efficient way. Ideal for offices, retail, health care and educational facilities. Fixtures with optional blue, green and yellow acrylic color inserts give the diffusers a uniform, softly tinted glow.

Type: _____ **Quantity:** _____ **Project:** _____

Recessed 2' x 2'

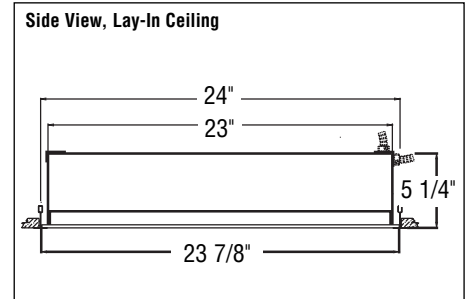
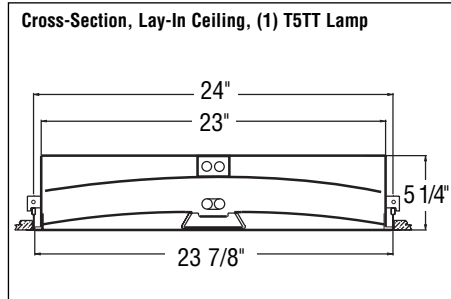
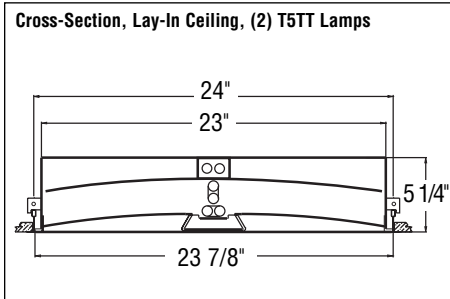
online
Find it Fast

312

ZOOM! 2-week delivery on items shown in gray

Meets RP-1-04 guidelines for normal (1405 MP/MD/C/W, 2405 C, 1505 C, 2245 C/W) VDT-use environments.

ML4	22				
FIXTURE/CEILING TYPE	LENGTH	LAMPING	OPTIC	BALLAST/VOLTAGE	OPTIONS
ML4U ML Recessed 15/16" Lay-In, Flush 9/16" Slot-Grid, Flush 9/16" Lay-In, Tegular	22 2' x 2'	1405 (1) 40W T5TT	MP Micro-Pyramidal Optic OL Opal Acrylic Lens MD MicroGrid Diffuser, Titan C Matte SYNTO Louver W White SYNTO Louver CO Matte SYNTO Louver with Frosted Inlay WO White SYNTO Louver with Frosted Inlay	U Universal 120/277V 347 347V DA * Dimming, Analog (0-10V) DD * Dimming, DALI DE * Dimming, Lutron ECO-10™ DH * Dimming, Lutron HiLume® DSC * Dimming, Lutron EcoSystem™, Control Fixture DSN * Dimming, Lutron EcoSystem™, Non-control Fixture STDM * Dimming, Step	WF Whip Flex 3/8" X 6' 14 AWG WN * Whip Flex 3/8" X 6' 14 AWG (NYC) EM1 * Standby Battery Pack/1 lamp SS Separate Switching AR Air Return CP Chicago Plenum F Fusing CB2 ** Color inlay, blue CG2 ** Color inlay, green CY2 ** Color inlay, yellow
		1505 (1) 50W T5TT			
		1555 (1) 55W T5TT			
		2405 (2) 40W T5TT			
ML4F ML Recessed 9/16" Lay-In, Flush		2145 (2) 14W T5			
		2245 (2) 24W T5 HO			
ML4E ML Recessed Concealed					
<i>For flange details, see next page</i>					
<p>* Specify "1" for 120V or "2" for 277V. Some lamp types may not be available. ** Can be ordered with complete fixtures only. To order separately consult factory. STDM only available with 14W T5 lamps. STDM not available for 347V.</p>					



IBEW Union Made
 US patent pending PCT/EP01/01269
 US patent pending PCT/EP01/01270
 US Patent D 477,891

Lead Time? Double-click on
<http://www.zumtobel.us/PDB?lang=EN&id=11079&iso2=US>
A = ZOOM! Quick Ship - ships in 2 weeks
B = ships in 4 weeks **C =** ships in 8 weeks

- Housing** - 20 gauge cold-rolled steel. Finish is powder-coated white. Post painted. Right-angle access plate (two per fixture) allows feed from top or side of unit.
- Light Chamber** - Powder-coated high-reflectance white interior reflector and shaped extruded acrylic diffusers. Fixtures available with optional color inlays in blue, green, or yellow.
- Optics** - **MP**: Clear, extruded micro-pyramidal optic diffuser and clear acrylic inlay. **OL**: Extruded, opal acrylic lens. **MD**: Metal grid in Titan finish, backed with a translucent opal acrylic extruded lens. **C/W**: Matte or white finish 16-cell SYNTO

- louver has blades 7/8" high by 17/16" o.c. Optional opal inlay is white acrylic. Optic assembly pulls down for lamp access.
- Lamps/sockets** - One or two 40W or one 50W/55W compact fluorescent lamps, with 2G11 four-pin lamp sockets. Two 14W T5 or 24W T5 HO fluorescent lamps with miniature bi-pin sockets. Lamps supplied by others.
 - Ballast** - Universal voltage electronic 120/277V ballast. Consult factory for 347V. Ballasts are mounted in luminaire. Accessible from below.
 - Dimming** - In control fixtures with

- Lutron EcoSystem dimming, control wires are brought to an interface. Consult factory for location of control wire feed. Consult factory for specific dimming requirements other than those listed above.
- Mounting** - Integral bend out tabs are provided in the universal (**ML4U** and **ML4F**) ceiling fixture types. Adjustable mounting brackets provided for selected concealed T-bar or gypsum board (**ML4E**) ceiling installations.
 - Standby Battery Pack** - Integral standby battery pack with integral test switch.
 - Weight** - 22.0 lbs.

OTHER ML4 FAMILY LUMINAIRES	FIF #
ML4 1X2 T5 / T5 HO / T5TT LAMPING	311
ML4 1X4 T5 / T5 HO LAMPING	313
ML4 2X4 T5 / T5 HO LAMPING	314
ML4A SURFACE MOUNT	315

OTHER ML4 FAMILY LUMINAIRES	FIF #
ML4 1X2 T8 LAMPING	608
ML4 2X2 T8 LAMPING	609
ML4 1X4 T8 LAMPING	610
ML4 2X4 T8 LAMPING	611

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 3300 Route 9W
 Highland, NY 12528-2630

TEL (845) 691-6262
 (800) 932-0633
 FAX (845) 691-6289

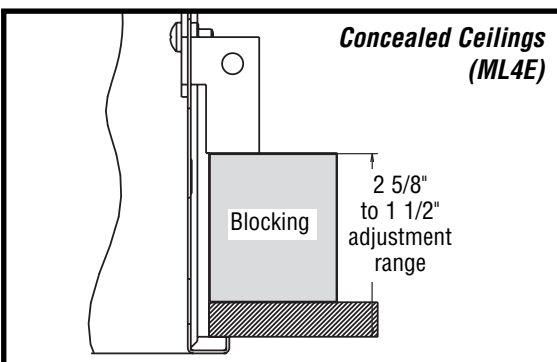
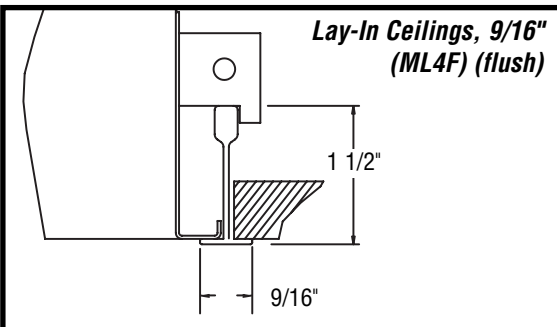
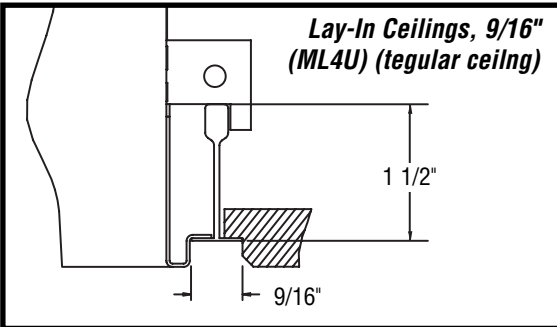
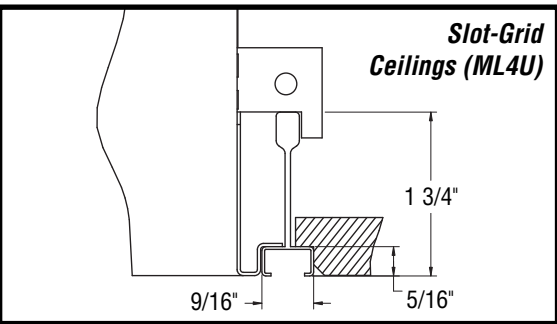
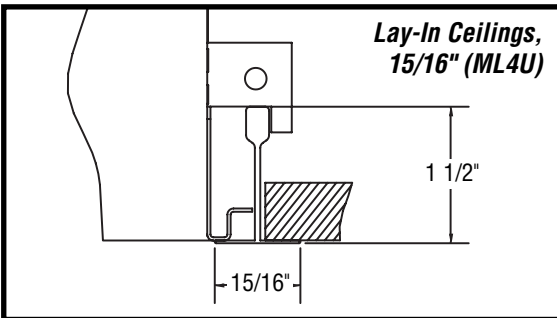
www.zumtobel.us

ML4-9

In a continuing effort to offer the best product possible we reserve the right to change, without notice, specifications or materials. Technical specification sheets that appear on www.zumtobel.us are the most recent version and supersede all other versions that exist in any other printed or electronic form.



Mounting with common ceiling types



ML4 22 2405 MP (2) 40W T5TT

2x2 RECESSED, MICRO-PYRAMIDAL OPTIC DIFFUSER

LTL 11464

Total Luminaire Efficiency 74%

0% Uplight 100% Downlight

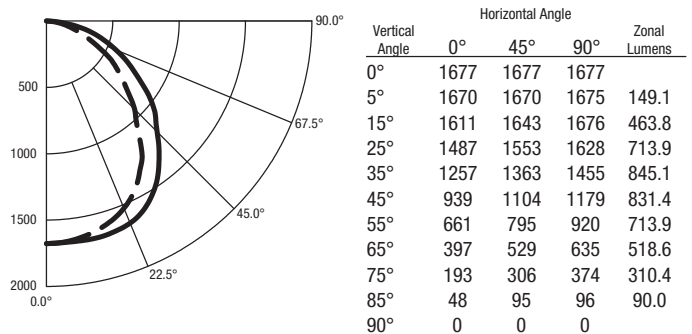
Spacing Criteria

Lateral Plane 0° 90°
1.2 1.3

TOTAL LAMP LUMENS = 6300

INPUT WATTS = 76

Candela Distribution



Luminance Data in Candela / Sq. Meter

Angle in Vertical°	Average 0°	Average 45°	Average 90°
45°	4112	4834	5163
55°	3568	4292	4967
65°	2909	3876	4653
75°	2309	3661	4474
85°	1705	3375	3411

Coefficients of Utilization

Effective Floor Cavity Reflectance = 20%

pcc	0.8				0.7				0.5			0.3		
	0.7	0.5	0.3	0.1	0.7	0.5	0.3	0.1	0.5	0.3	0.1	0.5	0.3	0.1
0	88	88	88	88	86	86	86	86	82	82	82	79	79	79
1	81	77	74	71	79	76	73	70	72	70	68	70	68	66
2	74	68	63	58	72	66	62	58	63	60	56	61	58	55
3	67	59	53	49	65	58	53	48	56	51	47	54	50	47
4	62	53	46	41	60	52	46	41	50	45	41	48	44	40
5	57	47	41	36	55	46	40	36	45	39	35	43	39	35
6	52	43	36	31	51	42	36	31	41	35	31	39	34	31
7	49	39	32	28	47	38	32	28	37	31	27	36	31	27
8	45	35	29	25	44	35	29	25	34	28	25	33	28	24
9	42	32	26	22	41	32	26	22	31	26	22	30	26	22

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ML4 22 2405 OL (2) 40W T5TT

2x2 RECESSED, OPAL ACRYLIC DIFFUSER

LTL 11465

Total Luminaire Efficiency 77%

0% Uplight 100% Downlight

Spacing Criteria

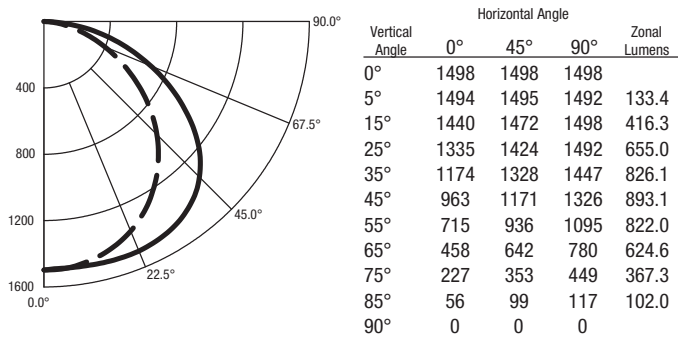
Lateral Plane 0° 90°

1.2 1.5

TOTAL LAMP LUMENS = 6300

INPUT WATTS = 76

Candela Distribution



Luminance Data in Candela / Sq. Meter

Angle in Vertical°	Average 0°	Average 45°	Average 90°
45°	4217	5128	5807
55°	3860	5053	5911
65°	3356	4704	5715
75°	2716	4223	5372
85°	1990	3517	4157

Coefficients of Utilization

Effective Floor Cavity Reflectance = 20%

pcc	0.8				0.7				0.5				0.3			
	pw	0.7	0.5	0.3	0.1	0.7	0.5	0.3	0.1	0.5	0.3	0.1	0.5	0.3	0.1	
0	92	92	92	92	90	90	90	90	86	86	86	82	82	82		
1	84	80	77	73	82	78	75	72	75	72	70	72	70	68		
2	76	69	64	59	74	68	63	59	65	61	57	62	59	56		
3	69	61	54	49	67	59	53	48	57	52	48	55	50	47		
4	63	53	46	41	61	52	46	41	50	45	40	49	44	40		
5	58	48	40	35	56	47	40	35	45	39	35	43	38	34		
6	53	43	36	31	52	42	35	30	41	35	30	39	34	30		
7	49	39	32	27	48	38	31	27	37	31	26	36	30	26		
8	46	35	28	24	45	35	28	24	34	28	24	33	27	23		
9	43	32	26	21	42	32	25	21	31	25	21	30	25	21		

ML4 22 2405 MD (2) 40W T5TT

2x2 RECESSED, MICROGRID DIFFUSER

LTL 11463

Total Luminaire Efficiency 65%

0% Uplight 100% Downlight

Spacing Criteria

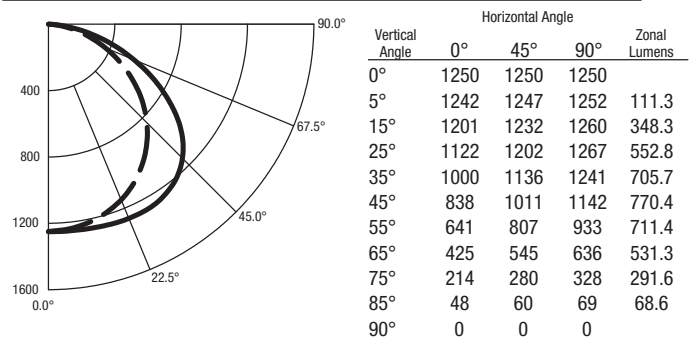
Lateral Plane 0° 90°

1.3 1.5

TOTAL LAMP LUMENS = 6300

INPUT WATTS = 76

Candela Distribution



Luminance Data in Candela / Sq. Meter

Angle in Vertical°	Average 0°	Average 45°	Average 90°
45°	3670	4427	5001
55°	3460	4357	5037
65°	3114	3993	4660
75°	2560	3350	3924
85°	1705	2132	2451

Coefficients of Utilization

Effective Floor Cavity Reflectance = 20%

pcc	0.8				0.7				0.5				0.3			
	pw	0.7	0.5	0.3	0.1	0.7	0.5	0.3	0.1	0.5	0.3	0.1	0.5	0.3	0.1	
0	78	78	78	78	76	76	76	76	73	73	73	69	69	69		
1	71	68	65	62	69	66	64	61	63	61	59	61	59	58		
2	64	59	54	50	63	58	53	50	55	52	49	53	50	48		
3	58	51	46	42	57	50	45	41	48	44	40	47	43	40		
4	53	45	39	35	52	44	39	35	43	38	34	41	37	34		
5	49	40	34	30	48	40	34	30	38	33	29	37	32	29		
6	45	36	30	26	44	36	30	26	34	29	26	33	29	25		
7	42	33	27	23	41	32	27	23	31	26	22	30	26	22		
8	39	30	24	20	38	29	24	20	28	23	20	28	23	20		
9	36	27	22	18	35	27	22	18	26	21	18	25	21	18		

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ML4 22 1505 W (1) 50W T5TT

2x2 RECESSED, WHITE LOUVER

PRORATED FROM LTL 09164

Total Luminaire Efficiency 73%

0% Uplight 100% Downlight

Spacing Criteria

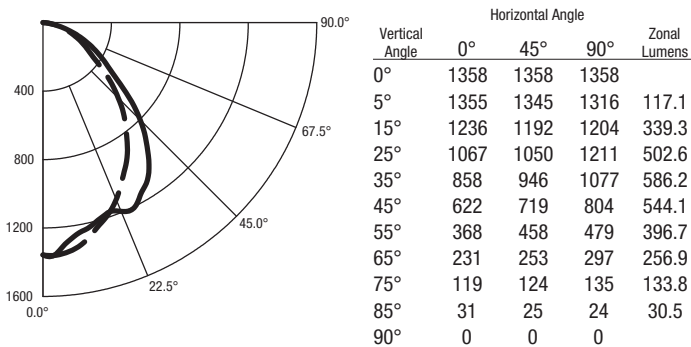
Lateral Plane 0° 90°

1.1 1.3

TOTAL LAMP LUMENS = 4000

INPUT WATTS = 60

Candela Distribution



Lumiance Data in Candela / Sq. Meter

Angle in Vertical°	Average 0°	Average 45°	Average 90°
45°	2596	2999	3354
55°	1895	2358	2462
65°	1613	1764	2074
75°	1361	1418	1534
85°	1033	860	816

Coefficients of Utilization

Effective Floor Cavity Reflectance = 20%

pcc	0.8				0.7				0.5			0.3		
	0.7	0.5	0.3	0.1	0.7	0.5	0.3	0.1	0.5	0.3	0.1	0.5	0.3	0.1
0	87	87	87	87	85	85	85	85	81	81	81	78	78	78
1	81	77	75	72	79	76	73	71	73	71	69	70	68	67
2	74	69	64	60	72	67	63	60	65	61	58	62	59	57
3	68	61	56	51	66	60	55	51	58	53	50	56	52	49
4	63	55	49	44	61	54	48	44	52	47	43	50	46	43
5	58	49	43	39	56	48	43	38	47	42	38	45	41	38
6	54	45	38	34	52	44	38	34	43	37	34	41	37	33
7	50	41	35	30	49	40	34	30	39	34	30	38	33	30
8	47	37	31	27	46	37	31	27	36	31	27	35	30	27
9	44	34	29	25	43	34	28	25	33	28	25	32	28	24

ECO-10, HiLume and EcoSystem are trademarks of Lutron Electronics Co., Inc.

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3300 Route 9W
Highland, NY 12528-2630

TEL (845) 691-6262
(800) 932-0633
FAX (845) 691-6289

www.zumtobel.us

ML4-9C

11/6/08

Air Return

ML4 Return Air Volume, CFM:

Negative Static Pressure, in. H2O

0.04 0.05 0.07 0.08 0.1

Fixture Size

2 x 2 80 90 100 110 120

1 x 4 150 170 210 225 250

2 x 4 150 170 210 225 250

Test performed in accordance with ASHRAE-70-1991
by Intertek ETL SEMKO. Consult factory for full report.

In a continuing effort to offer the best product possible we reserve the right to change, without notice, specifications or materials. Technical specification sheets that appear on www.zumtobel.us are the most recent version and supersede all other versions that exist in any other printed or electronic form.





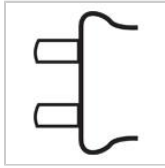
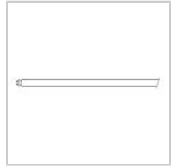
GE
Lighting

46701 - F24W/T5/841/ECO

GE Ecolux® Starcoat® T5

- Passes TCLP, which can lower disposal costs.

a product of
ecomagination



CAUTIONS & WARNINGS

Caution

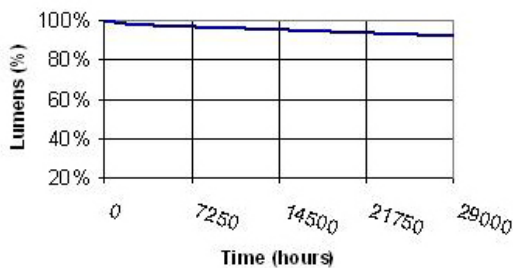
- Lamp may shatter and cause injury if broken
 - Wear safety glasses and gloves when handling lamp.
 - Do not use excessive force when installing lamp.

Warning

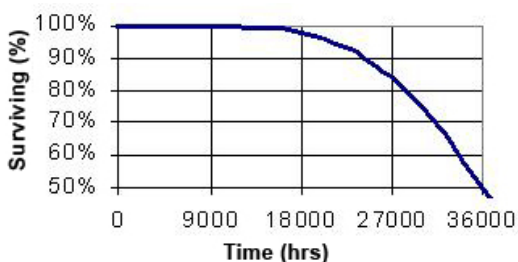
- Risk of Electric Shock
 - Turn power off before inspection, installation or removal.

GRAPHS & CHARTS

Lumen Maintenance



Lamp Mortality



GENERAL CHARACTERISTICS

Lamp Type	Linear Fluorescent - Straight
	Linear
Bulb	T5
Base	Miniature Bi-Pin (G5)
Wattage	24
Voltage	75
Rated Life	30000 hrs
Rated Life (rapid start) @ Time	30000.0 @ 3.0/36000.0 @ 12.0 h
Bulb Material	Soda lime
Starting Temperature	-20 °C (-4 °F)
LEED-EB MR Credit	82 picograms Hg per mean lumen hour
Additional Info	TCLP compliant

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	2000
Mean Lumens	1840
Nominal Initial Lumens per Watt	83
Color Temperature	4100 K
Color Rendering Index (CRI)	85
S/P Ratio (Scotopic/Photopic Ratio)	1.7

ELECTRICAL CHARACTERISTICS

Open Circuit Voltage (rapid start) Min @ Temperature	280 V @ 10 °C
Cathode Resistance Ratio - Rh/Rc (MIN)	4.25
Cathode Resistance Ratio - Rh/Rc (MAX)	6.5
Current Crest Factor	1.7

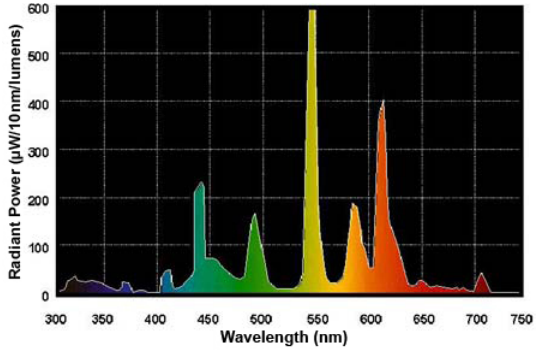
DIMENSIONS

Maximum Overall Length (MOL)	22.1700 in(563.1 mm)
Nominal Length	21.600 in(548.6 mm)
Bulb Diameter (DIA)	0.625 in(15.9 mm)
Bulb Diameter (DIA) (MAX)	0.625 in(15.9 mm)
Max Base Face to Base Face (A)	21.610 in(548.9 mm)
Face to End of Opposing Pin (B) (MIN)	21.790 in(553.5 mm)
Face to End of Opposing Pin (B) (MAX)	21.890 in(556.0 mm)

PRODUCT INFORMATION

Product Code	46701
Description	F24W/T5/841/ECO
Standard Package	Case
Standard Package GTIN	10043168467015
Standard Package Quantity	40
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard	40
Package	
UPC	043168467018

Spectral Power Distribution

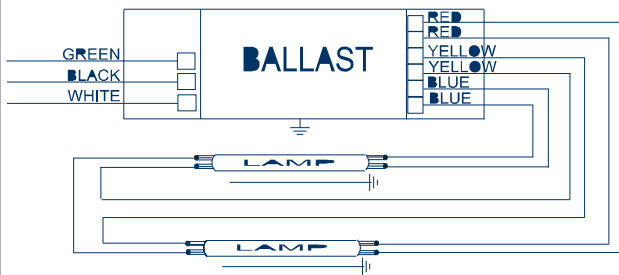


Electrical Specifications

ICN-2S24@277V	
Brand Name	CENTIUM T5
Ballast Type	Electronic
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	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.
F24T5/HO	1	24	0/-18	0.10	27	1.02	10	0.98	1.7	3.78
* F24T5/HO	2	24	0/-18	0.19	52	1.00	10	0.98	1.7	1.92
F39T5/HO	1	39	0/-18	0.15	40	0.90	10	0.98	1.7	2.25
FC12T5	1	40	0/-18	0.15	40	0.84	10	0.98	1.7	2.10
FC9T5	1	22	0/-18	0.10	27	1.02	10	0.98	1.7	3.78
FC9T5	2	22	0/-18	0.19	52	1.00	10	0.98	1.7	1.92
FT24W/2G11	1	24	0/-18	0.10	27	1.02	10	0.98	1.7	3.78
FT24W/2G11	2	24	0/-18	0.19	52	1.00	10	0.98	1.7	1.92
FT36W/2G11	1	36	0/-18	0.13	34	0.90	10	0.98	1.7	2.65
FT40W/2G11/RS	1	40	0/-18	0.17	47	1.00	10	0.98	1.7	2.13

Wiring Diagram

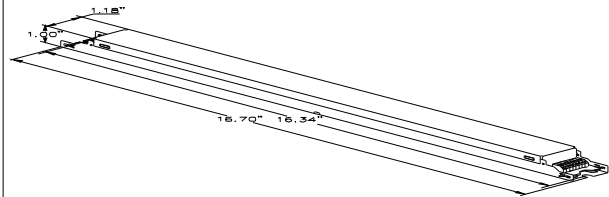


The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

	in.	cm.		in.	cm.
Black	0	0	Yellow/Blue	0	0
White	0	0	Blue/White	0	0
Blue	0	0	Brown	0	0
Red	0	0	Orange	0	0
Yellow	0	0	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 09/01/2004



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PHILIPS LIGHTING ELECTRONICS N.A.

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

ICN-2S24@277V	
Brand Name	CENTIUM T5
Ballast Type	Electronic
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	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 09/01/2004



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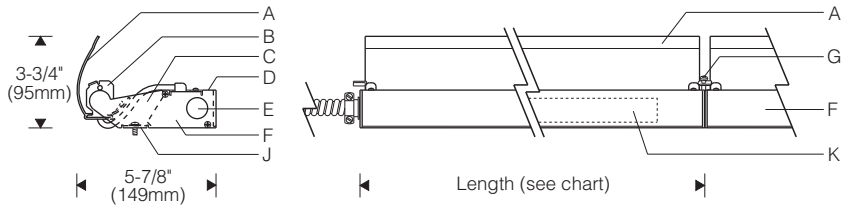
PHILIPS LIGHTING ELECTRONICS N.A.

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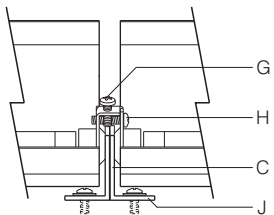
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Style 306 1:8 Scale

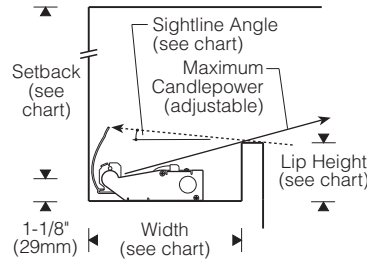


Joint 1:4 Scale
(Ballast compartment not shown for clarity.)



Nominal Lamp Length	Luminaire Length	
	T5	T8
1 x 2'	23-1/16" (586mm)	24-3/4" (628mm)
1 x 3'	34-7/8" (886mm)	36-3/4" (932mm)
1 x 4'	46-11/16" (1186mm)	48-3/4" (1237mm)
1 x 5'	58-1/2" (1486mm)	60-1/2" (1537mm)
2 x 3'	69-1/2" (1765mm)	73-3/16" (1859mm)
2 x 4'	93-1/8" (2365mm)	97-3/16" (2468mm)
2 x 5'	116-5/8" (2963mm)	120-7/8" (3069mm)

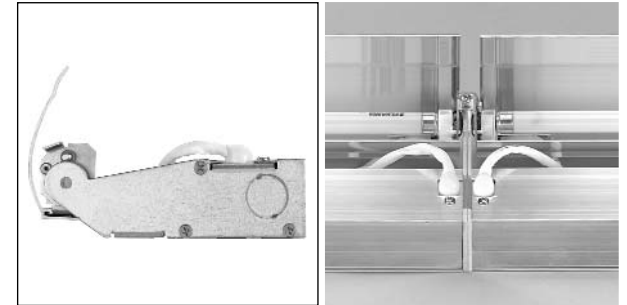
Cove 1:10 Scale



Cove Dimensions
(Max. candlepower aimed 15° above horiz.)

Sight-line	0°(horiz. cutoff)	5°	10°
Width (inside)	10-5/8" (270mm)	8-1/4" (210mm)	6-3/4" (171mm)
Lip (inside)	3-3/4" (95mm)	3" (76mm)	2-5/8" (67mm)
Setback (varies)	Recommended minimum: 12" T5 & T8, 18" T5HO		

Note: Finish interior of cove matte white for best results.



Specifications

- | | | | |
|---|--|--|--|
| A Specular extruded aluminum reflector | D Extruded aluminum ballast/wireway channel cover | F Extruded aluminum ballast/wireway compartment | J Mounting tab (fastener by others) |
| B Stainless steel lamp-holder/support brackets | E Conduit entry (one each end, conduit and connector by others) | G Rotation locking screw | K Integral electronic ballast |
| C Aluminum sidearm with mounting tab | | H Joiner/alignment screw | |

Finish:

Reflector - extruded high purity aluminum with clear anodized specular finish. Sidearms and ballast/wireway compartment - mill finish aluminum. All luminaire hardware - stainless steel.

Mounting:

Lay-in installation requires only one fastener per joint (by others). Sidearms with mounting tabs can be base or wall mounted. Luminaires can be mounted individually or joined together to form a continuous row.

Reflector aiming is adjustable and is fixed in position by rotation locking screws at each sidearm. When mounted in a continuous row, joiner screws lock reflectors together allowing all in the row to be aimed together.

Standard:

UL listed or CSA certified for damp locations. (Style 124 painted model with lens recommended for damp locations.)

Electrical:

Use 90°C wire for supply connections.

Integral electronic HPF thermally protected class P ballast (with end-of-life protection for T5 lamps). Ballast/wireway compartment includes one conduit entry at each end. Channel cover removes for access to ballast and wiring. Luminaires may be butted end-to-end (connectors by others) for through wiring. Optional #12 AWG prewired modular through wiring with quick connectors.

Master/satellite combination is available (Configuration 3, see ordering information). Master supplied with 2-lamp ballast. (Wiring, conduit and connectors between master and satellite units by others.)

Optional electronic dimming ballast; compatible dimmer switch required (by others). Consult sales representative for compatibility and specifications.

Optional integral emergency battery operates one lamp. Separate unswitched supply is required.

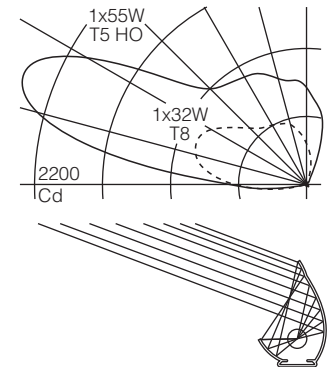
For complete ballast specifications, see Accessories Section.

Features

- Choose T5 for precise optical control or widely utilized T8
- Compact and flexible - effective indirect cove lighting for malls, offices, lobbies, conference rooms and corridors
- Adjustable - all reflectors in a row join and aim together; rotation locking screws secure position*
- Integral electronic ballast thru wiring for easy installation

Performance

Two parabolic reflector sections drive light across the ceiling from one edge. 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, visit www.elliptipar.com



To form a Catalog Number

F | 3 | 0 | 6 | - | | | | - | S | - | 0 | 0 | - | | | |
 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8

1 Source

F = Linear fluorescent

2 Style

306 = Small concealed, integral ballast

3 Lamp

Note: To order by overall row length, enter ROW CODE in place of Lamp Code below (see Row Charts on page C-20.2 for T8 or C-20.4 for T5). Row Code specifies a row complete with all necessary reflectors and ballasts.

| | | | = Lamp Code

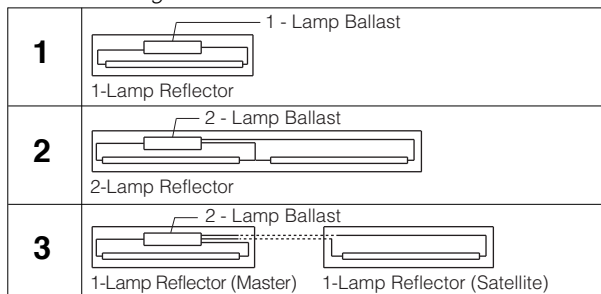
Lamp Wattage (see chart below)

Reflector Configuration, specify 1, 2 or 3 (see chart below)

A = T8 Fluorescent
 T = T5 Fluorescent

Example: **A325** = two nominal 3' reflectors, each for use with one 25W T8 lamp; one 2-lamp ballast

Reflector Configuration



Lamp Wattage

Lamp Length (nominal)	Lamp Wattage (Lamp Number)		
	T8	T5	T5 HO
2'	17 (F17T8)	14 (F14T5)	24 (F24T5/HO)
3'	25 (F25T8)	21 (F21T5)	39 (F39T5/HO)
4'	32 (F32T8)	28 (F28T5)	55 (F54T5/HO)
5'	40 (F40T8)	35 (F35T5)	80 (F80T5/HO)

For complete lamp and ballast information, see Accessories Section. Standard T5 lamp color is 3000K / 80+ CRI. T8 lamps by others.

Project: _____

Type: _____

4 Mounting

S = Sidearms with mounting tabs

5 Finish

00 = Bright anodized reflector with mill finish ballast compartment

6 Voltage/Ballast

<i>Electronic</i>	<i>Dimming*</i>
1 = 120V	T = 120V
2 = 277V	V = 277V
3 = 347V (Canada)	

* Consult sales representative for dimming 5' lamps (lamp codes **Ax40, Tx35, Tx80**) and for Reflector Configuration **3**. Availability for wattages and voltages varies with ballast manufacturer and control type - see www.elliptipar.com for additional dimming specifications and limitations.

7 Option (See Accessories Section for specifications)

00 = No options
 0E = Integral emergency battery pack with indicator lamp and test button. Operates one lamp. Available in nominal 4', 6' and 8' units only (lamp codes **A132, A225, A232, A332, T128, T221, T228, T328, T155, T239, T255** and **T355**).
 0K = Prewired modular #12 AWG through wiring with quick connectors
 EK = Combination of emergency battery pack and prewired modular through wiring as described above
 XX = For modification not listed, include detailed description. Consult factory prior to specification.

8 Standard

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

Example

F306 - A240 - S - 00 - 1 - 0E0

Small concealed fluorescent consisting of one nominal 10' luminaire, for use with two 40W T8 lamps. Integral 120V electronic 2-lamp ballast. Sidearm with mounting tabs. Supplied with integral emergency battery pack. UL.



GE
Lighting

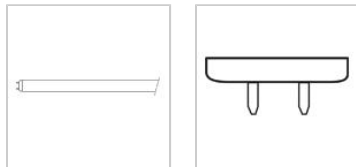
15904 - F32T8/SP41/ECO/C

GE Ecolux® Starcoat® T8

- Passes TCLP, which can lower disposal costs.



High Color Rendering
Meets Federal Minimum Efficiency Standards



CAUTIONS & WARNINGS

Caution

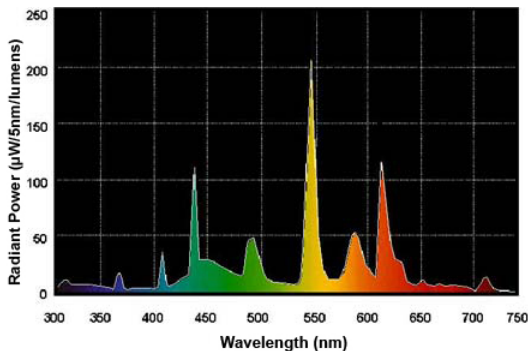
- Lamp may shatter and cause injury if broken
 - Wear safety glasses and gloves when handling lamp.
 - Do not use excessive force when installing lamp.

Warning

- Risk of Electric Shock
 - Turn power off before inspection, installation or removal.

GRAPHS & CHARTS

Spectral Power Distribution



GENERAL CHARACTERISTICS

Lamp Type	Linear Fluorescent - Straight Linear
Bulb	T8
Base	Medium Bi-Pin (G13)
Wattage	32
Voltage	137
Rated Life	20000 hrs
Rated Life (instant start) @ Time	24000 h @ 12 h
Rated Life (rapid start) @ Time	24000.0 @ 12.0 h
Bulb Material	Soda lime
Starting Temperature	10 °C (50 °F)
LEED-EB MR Credit	74 picograms Hg per mean lumen hour
Additional Info	TCLP compliant
Primary Application	Standard

PHOTOMETRIC CHARACTERISTICS

Initial Lumens	2800
Mean Lumens	2660
Nominal Initial Lumens per Watt	87
Color Temperature	4100 K
Color Rendering Index (CRI)	78

ELECTRICAL CHARACTERISTICS

Open Circuit Voltage (rapid start) Min @ Temperature	315 V @ 10 °C
Cathode Resistance Ratio - Rh/Rc (MIN)	4.25
Cathode Resistance Ratio - Rh/Rc (MAX)	6.5
Current Crest Factor	1.7

DIMENSIONS

Maximum Overall Length (MOL)	47.7800 in(1213.6 mm)
Minimum Overall Length	47.6700 in(1210.8 mm)
Nominal Length	48.000 in(1219.2 mm)
Bulb Diameter (DIA)	1.000 in(25.4 mm)
Bulb Diameter (DIA) (MIN)	0.940 in(23.9 mm)
Bulb Diameter (DIA) (MAX)	1.000 in(25.4 mm)
Max Base Face to Base Face (A)	47.220 in(1199.4 mm)
Face to End of Opposing Pin (B) (MIN)	47.400 in(1204.0 mm)
Face to End of Opposing Pin (B) (MAX)	47.500 in(1206.5 mm)
End of Base Pin to End of Opposite Pin End (C)	47.670 in(1210.8 mm)

PRODUCT INFORMATION

Product Code	15904
Description	F32T8/SP41/ECO/C
ANSI Code	1005-2
Standard Package	Case
Standard Package GTIN	10043168159040
Standard Package Quantity	12
Sales Unit	Unit
No Of Items Per Sales Unit	1
No Of Items Per Standard Package	12
UPC	043168159043

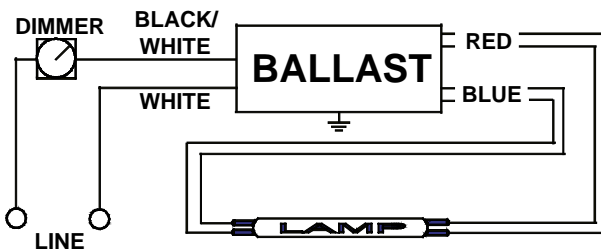
VEZ-132-SC

Brand Name	MARK 10 POWERLINE
Ballast Type	Electronic Dimming
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	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 (Watts) (min/max)	Ballast Factor (min/max)	MAX THD %	Power Factor	Lamp Current Crest Factor	B.E.F.
F17T8	1	17	50/10	0.09	07/24	0.05/1.05	10	0.99	1.6	4.38
F25T8	1	25	50/10	0.11	07/30	0.05/1.05	10	0.99	1.6	3.50
* F32T8	1	32	50/10	0.13	09/35	0.05/1.00	10	0.99	1.6	2.86

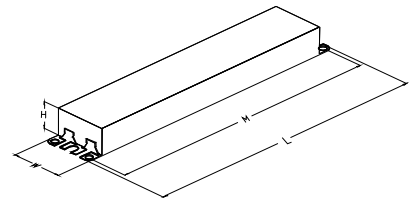
Wiring Diagram



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)
9.50 "	1.7 "	1.18 "	8.90 "
9 1/2	1 7/10	1 9/50	8 9/10
24.1 cm	4.3 cm	3 cm	22.6 cm

Revised 10/28/2005



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VEZ-132-SC	
Brand Name	MARK 10 POWERLINE
Ballast Type	Electronic Dimming
Starting Method	Programmed Start
Lamp Connection	Series
Input Voltage	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 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.

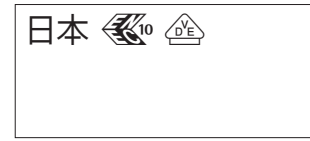
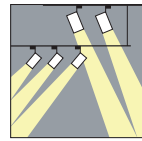
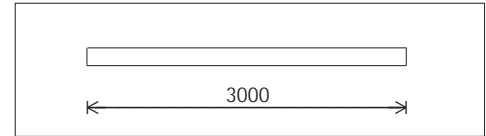
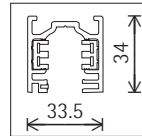
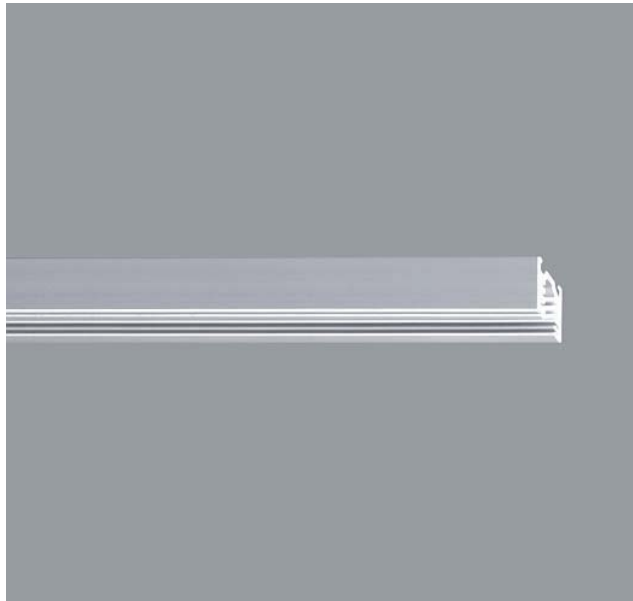
Revised 10/28/2005



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



78303.000 Silver
Length 3000mm

Product description

Aluminium profile, anodised.

4 isolated copper conductors and

pressed-in earth conductor.

When used as DALI track: one 16A circuit and two conductors for connecting to the DALI data line.

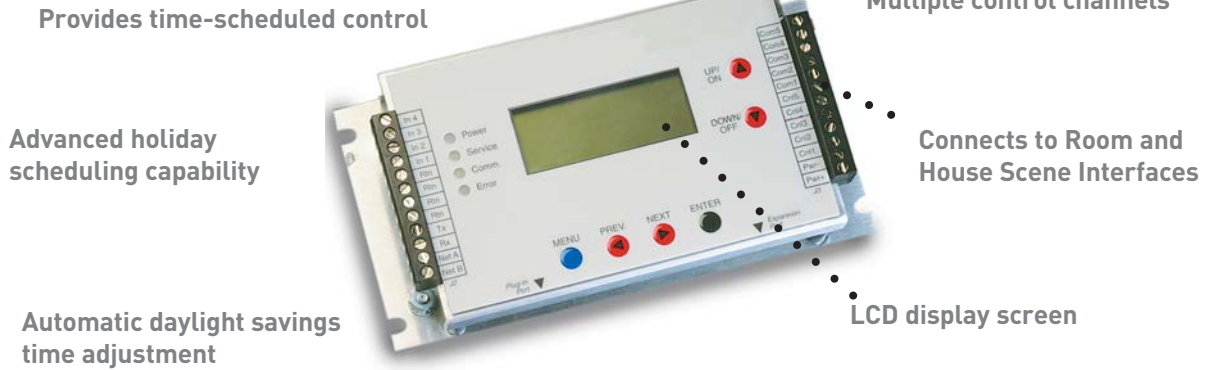
When used as a 3-circuit track: three separately switchable circuits 16A each.

The ERCO track system is approved to IEC 60570 (EN 60570/VDE 0711 part 300).

Mounting surface with easy to remove knockouts at 0.4m intervals.

Weight 3.30kg

MSC-100 Astronomic Time Clock



PROJECT
LOCATION/TYPE

Product Overview

Description

WattStopper's MSC-100 Astronomic Time Clock is a five-channel clock used for fully automating a Wireless Miro lighting control system. It offers simple programming, yet advanced control features. The Time Clock is used with at least one Wireless Miro Scene Interfaces.

Operation

The MSC-100 provides ON/OFF control signals based on time of day, day of week, holiday, and calculated sunrise/sunset (astronomic) time. Control signals are transmitted via hardwire connection to relay channels, giving the clock the ability to work in a range of applications from simple to complex. Clock schedules are programmed events that command channels on or off. Each schedule is assigned a number, type, time of day, channel, day, and may include other information for specific clock event operation. Schedules can be assigned to operate any combination of days or holiday types.

Programming

Programming the MSC-100 is easy. Users simply complete fill-in-the-blank prompts on the device keypad and can follow along on the LCD screen. Each clock channel can be programmed independently. All programming is securely stored in non-volatile memory.

Applications

When used in conjunction with Wireless Miro lighting controls, one MSC-100 will support connection to up to two Scene Interfaces, depending on the number of scenes required. Unused channels can be used to control third-party devices such as fountains or sprinklers.

Features

- Single date, perpetual date, perpetual day of week and perpetual Easter holidays
- 32 holidays, each up to 120 days with three holiday schedule types
- Temporary schedules that execute once then self-delete
- Repeating schedule 5 minutes to 10 hours
- 120 schedules assignable to one or more weekday or holiday
- Duration time scheduling from 1 second to 18 hours
- Continually self-adjusting astronomic control based on sunrise and sunset times
- Astronomic offset +/- 120 minutes
- Manual ON/OFF override from keypad
- Selectable 12- or 24-hour format
- Adjustable channel stagger from 1-60 seconds

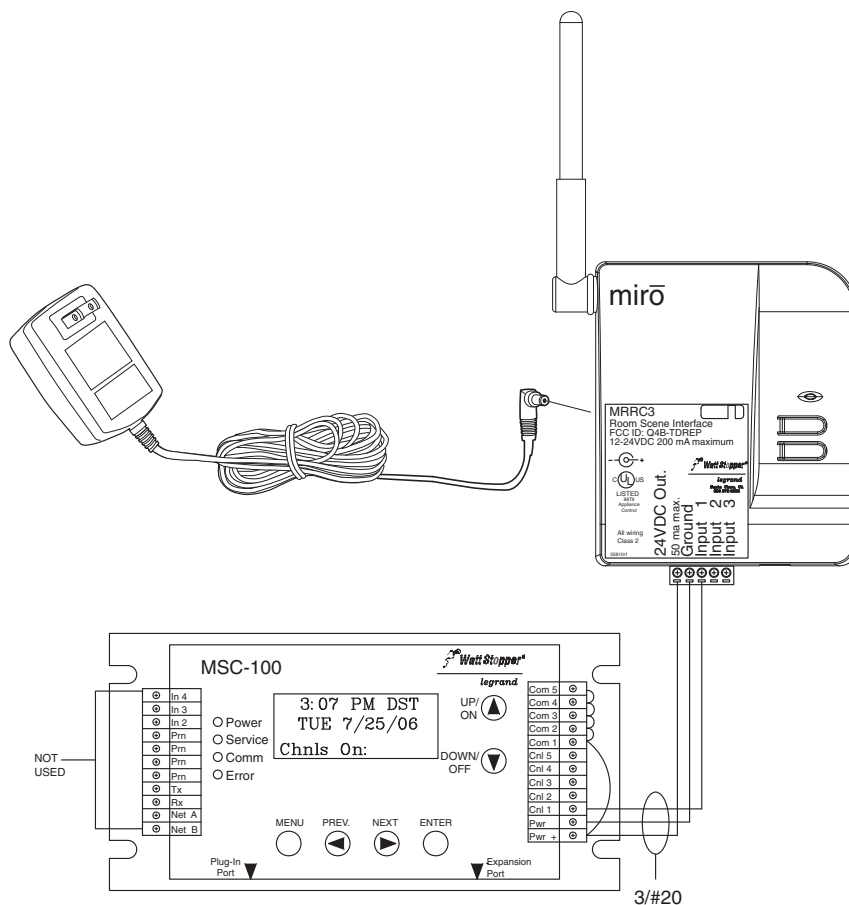


Specifications

- Input voltage: 24 VAC or 24 VDC
- Five normally open isolated relays rated 1 amp 24 VAC/VDC, assigned to channels 1-5
- Battery backed clock operation for up to 8 years
- Non-volatile program memory storage
- Power-up sequence, executes missed schedules following power outage
- Dimensions: 3.6" x 6.7" x 1.3" (91.4mm x 177.8mm x 33mm) L x W x D
- FCC compliant; CE certified
- One year warranty

System Layout & Wiring

MSC-100 Controls & Wiring



The MSC-100 Time Clock interfaces to the Wireless Miro RF network through a Miro Room or House Scene Interface. The Scene Interface supplies 24 VDC to power the Time Clock. Wiring shown is typical for one channel.

Ordering Information

Catalog No.	Product Description
<input type="checkbox"/> MSC-100	5-channel astronomic time clock
Works in conjunction with:	
Catalog No.	Description
<input type="checkbox"/> MRHC3	House Scene Interface
<input type="checkbox"/> MRRC3	Room Scene Interface

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

LOCATION/TYPE

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

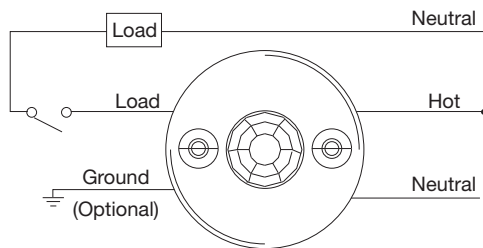


Specifications

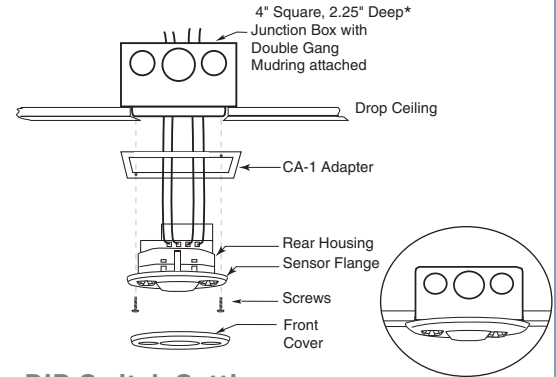
- 120/230/277/347 VAC, 50/60 Hz
- Ultrasonic frequency of 40kHz
- Time delays: Auto set, fixed (5, 10, 15, 20, or 30 minutes), walk-through, test-mode
- Sensitivity adjustment: Auto set or reduced sensitivity (for PIR sensitivity); ultrasonic sensitivity is variable with trimpot
- Built-in light level 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

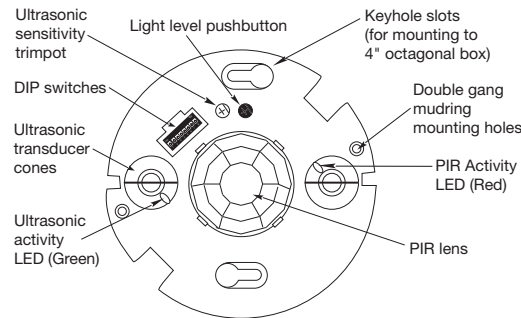


Ceiling Mounting



Controls & Settings

Product Controls



DIP Switch Settings

◀ = Factory Setting
● = ON
- = OFF

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

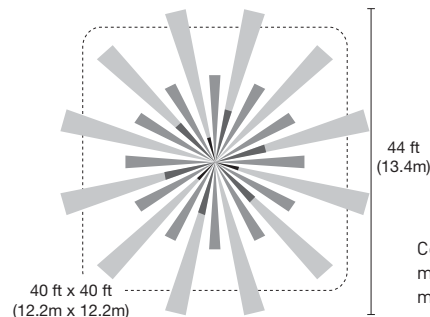
Trigger	Initial Occupancy	Maintain Occupancy	Re-trigger (seconds duration)
Standard	Both	Either	Either(5)
Option 1	Either	Either	Either(5)
Option 2	PIR	Either	Either(5)
Option 3	Both	Both	Both(5)
Option 4	PIR	PIR	PIR(5)
Option 5	Ultra	Ultra	Ultra(5)
Option 6	Man.	Either	Either(30)
Option 7	Man.	Both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

LEDs	7
Disabled	-
Enabled	●

PIR Sensitivity	8
Minimum	-
Max./SmartSet	●

Coverage

Coverage Pattern



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).

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.

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.

GRAFIK Eye 3000 Series Control Unit

Cover (shown open)



Description

- Provides pushbutton recall of four preset lighting scenes, plus Off.
- Allows setup of lighting scenes using buttons on the Control Unit.
- Controls many light source types directly, and others using power interfaces.
- Provides lockout options to prevent accidental changes.
- Includes built-in infrared receiver for operation with an optional remote control.

Models available to:

- Accept 120V, 220-240V (non-CE), 230V (CE) and 100V input power.
- Control two to six zones of lighting.

GRX-3100 Control Units

Provide setup using buttons on the Control Unit.

GRX-3500 Control Units

Provide optional setup using a PC, including setting lighting levels in 1% increments.

Job Name:	Model Numbers:
Job Number:	

Specifications

Input Power

- 120V, 220-240V (non-CE), 230V (CE) or 100V, 50/60Hz.
- Lightning Strike Protection: Meets ANSI/IEEE standard 62.41-1980. Can withstand voltage surges of up to 6000V and current surges of up to 3000A.

Lighting Sources/Load Types

Controls the following lighting sources with a smooth, continuous Square Law dimming curve or on a full conduction non-dim basis:

- Incandescent, Tungsten, Magnetic Low Voltage Transformer
- Lutron Tu-Wire® Electronic Fluorescent Dimming Ballast
- Neon and Cold Cathode

Controls the following lighting sources with a smooth continuous Square Law dimming curve through separate power interfaces:

- Electronic Low Voltage Transformer
- Lutron Electronic Fluorescent Dimming Ballast

Preset Control

- 4 preset lighting scenes and off are accessible from the Control Unit front panel.
- 12 additional scenes are stored in the Control Unit. These scenes are accessible via Wallstations and/or Control Interfaces.
- Light levels fade smoothly between scenes. Fade time can be set differently for each scene, between 0-59 sec. or 1-60 min. Fade time from Off is capped at 5 sec.

Key Design Features

- Meets IEC 801-2. Tested to withstand 15kV electrostatic discharge without damage or memory loss.
- Compensates in real time for incoming line voltage variations: No visible flicker with +/-2% change in RMS voltage/cycle and +/-2% Hz change in frequency/second.
- 10-year power failure memory automatically restores lighting to levels prior to power interruption.
- Faceplate snaps on with no visible means of attachment.

System Communications and Capacities

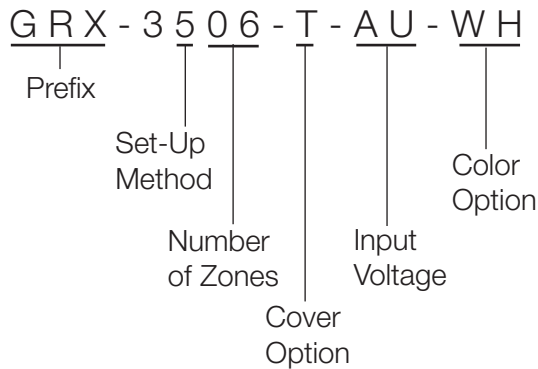
- Low-voltage type Class 2 (PELV) wiring connects Control Units, Wallstations, and Control Interfaces:
- Up to 8 Control Units may be linked to control up to 48 zones.
- Up to 16 total Wallstations and Control Interfaces may be added for a total of 24 control points.

Environment

- 32-104°F (0-40°C). Relative humidity less than 90% non-condensing.

Job Name:	Model Numbers:
Job Number:	

How to Build a Model Number



Prefix:

GRX for Grafik Eye 3000 Series Control Units

Set-Up Method:

1 for standard via front panel
5 for PC setup

Number of Zones:

2, 3, 4, or 6

Cover Option:

A for Opaque
T for Translucent Black

Input Voltage

__ (no code) for 120V Single Feed
AU for 220-240V (non-CE)
CE for 230V (CE)
JA for 100V

Color Option:

See Color Options list

Cover Options

Opaque A
 Cover and Base will match.
 Translucent Black T
 Black Cover and choice of base color.

Also available:

- Custom controls
- Color matching
- Engraving

These options ship in 4 to 6 weeks

Color Options

Architectural Matte Finishes

Standard – Ship in 48 hours

Cover Option: A or T

White WH
 Ivory IV
 Beige BE
 Gray GR
 Brown BR
 Black BL

Designer Gloss Finishes

Ship in 4 to 6 weeks

Cover Option: A only

White GWH
 Light Almond GLA
 Almond GAL
 Ivory GIV

Satin Color Matte Finishes

Cover Option: A or T

Hot HT
 Ochre OC
 Terracotta TC
 Desert Stone DS
 Stone ST
 Limestone LS
 Blue Mist BT
 Midnight MN
 Taupe TP
 Biscuit BI
 Eggshell ES
 Snow SW

Architectural Metal Finishes

Cover Option: T only

Bright Brass BB
 Bright Chrome BC
 Satin Brass SB
 Satin Chrome SC
 Satin Nickel SN
 Antique Brass QB
 Antique Bronze QZ
 Bright Nickel BN

Anodized Aluminum Finishes

Cover Option: T only

Clear CLA
 Black BLA
 Brass BRA
 Bronze BZA

Job Name:	Model Numbers:
Job Number:	

Model Numbers

120V Input Power

Number of Zones	Standard Setup	PC Setup	Unit Capacity (Watts/VA)	Zone Capacity (Watts/VA)
2	GRX-3102-_-_-	GRX-3502-_-_-	1200	800
3	GRX-3103-_-_-	GRX-3503-_-_-	1500	800
4	GRX-3104-_-_-	GRX-3504-_-_-	2000	800
6	GRX-3106-_-_-	GRX-3506-_-_-	2000	800

220–240V (non-CE) Input Power

Number of Zones	Standard Setup	PC Setup	Unit Capacity (Watts/VA)	Zone Capacity (Watts/VA)
2	GRX-3102-_-AU-__	GRX-3502-_-AU-__	1600	1200
3	GRX-3103-_-AU-__	GRX-3503-_-AU-__	2400	1200
4	GRX-3104-_-AU-__	GRX-3504-_-AU-__	3000	1200
6	GRX-3106-_-AU-__	GRX-3506-_-AU-__	3000	1200

230V (CE) Input Power

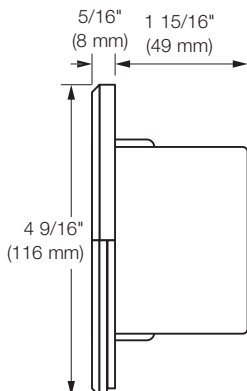
Number of Zones	Standard Setup	PC Setup	Unit Capacity (Watts/VA)	Zone Capacity (Watts/VA)
2	GRX-3102-_-CE-__	GRX-3502-_-CE-__	1600	800
3	GRX-3103-_-CE-__	GRX-3503-_-CE-__	2300	800
4	GRX-3104-_-CE-__	GRX-3504-_-CE-__	2300	800
6	GRX-3106-_-CE-__	GRX-3506-_-CE-__	2300	800

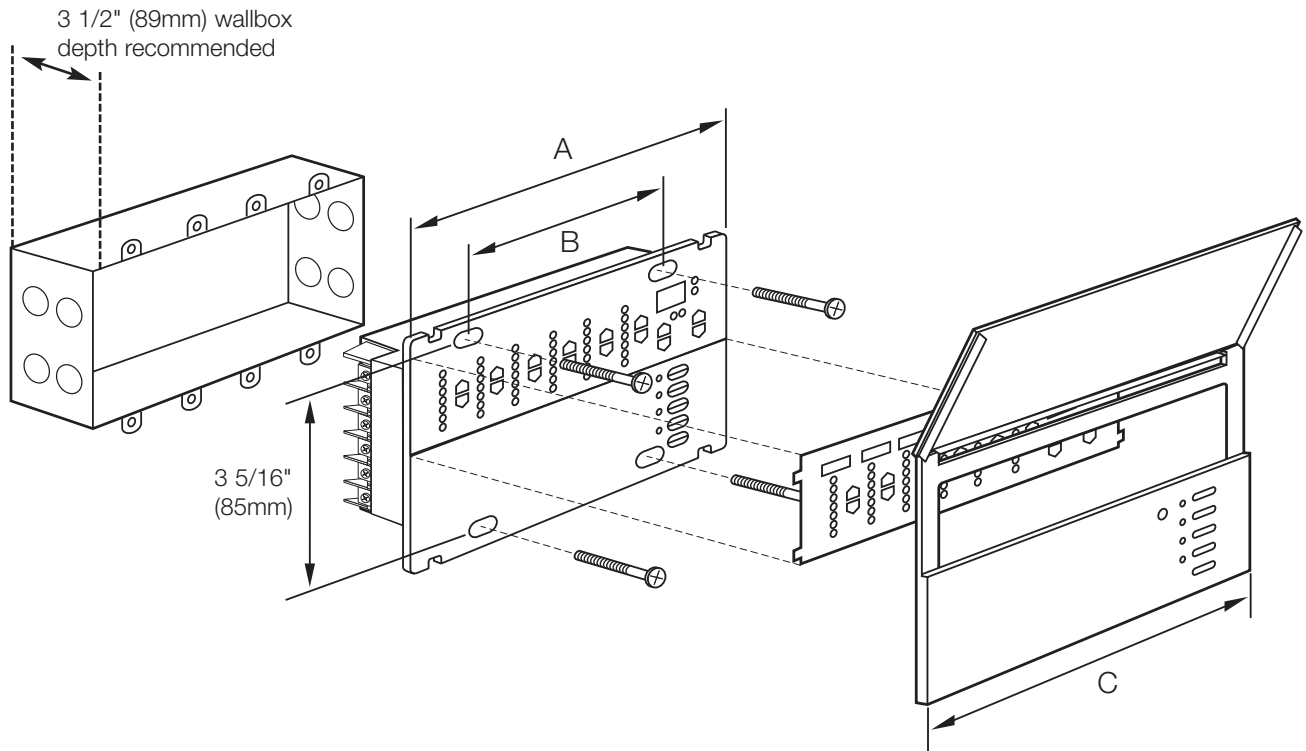
100V Input Power

Number of Zones	Standard Setup	PC Setup	Unit Capacity (Watts/VA)	Zone Capacity (Watts/VA)
2	GRX-3102-_-JA-__	GRX-3502-_-JA-__	1000	600
3	GRX-3103-_-JA-__	GRX-3503-_-JA-__	1250	600
4	GRX-3104-_-JA-__	GRX-3504-_-JA-__	1600	600
6	GRX-3106-_-JA-__	GRX-3506-_-JA-__	1600	600

Job Name:	Model Numbers:
Job Number:	

Dimensions and Mounting - All Voltages Except 230V (CE)

Model	Side View	A	B	C	Wallbox ¹ U.S. Size	Depth
2-Zone: GRX-3102 GRX-3502		4 5/16" (123mm)	1 13/16" (46mm)	5.56" (141mm)	2 Gang	3.5" (89mm)
3-Zone: GRX-3103 GRX-3503		6 11/16" (168mm)	3 5/8" (92mm)	7.25" (184mm)	3 Gang	3.5" (89mm)
4-Zone: GRX-3104 GRX-3504		8 5/16" (208mm)	5 7/16" (138mm)	8.94" (227mm)	4 Gang	3.5" (89mm)
6-Zone: GRX-3106 GRX-3506		8 5/16" (208mm)	5 7/16" (138mm)	8.94" (227)	4 Gang	3.5" (89mm)

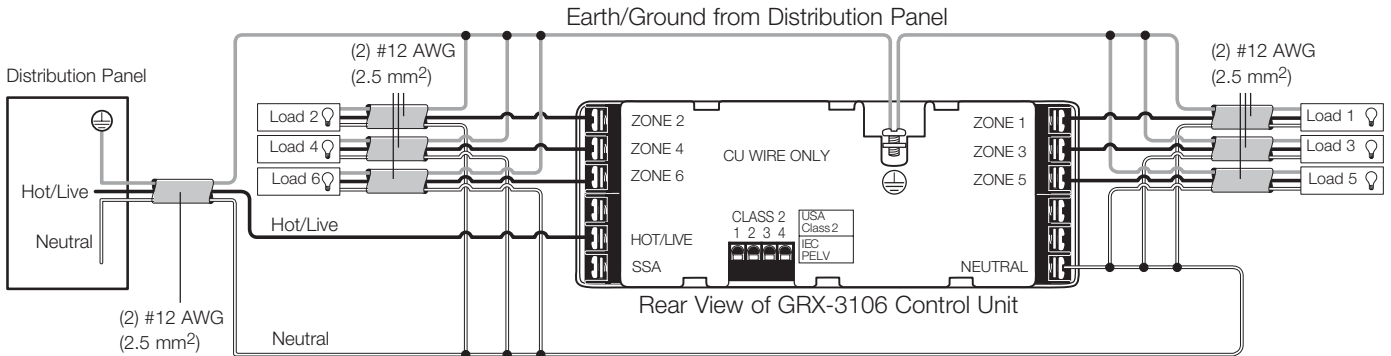


¹ Can be ordered from Lutron.

Job Name:	Model Numbers:
Job Number:	

Line Voltage Wiring - 120V, 100V, 220-240V Models

- Pull power wiring from distribution panel and to light fixtures.
- Each line voltage terminal can accept up to two #12 AWG (2.5mm²) wires.



Consult Lutron for:

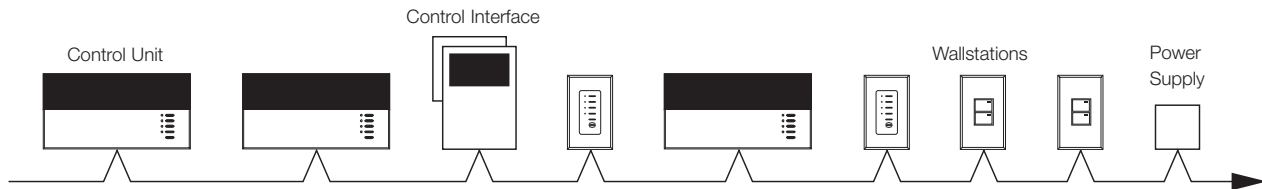
- Non-dim relay wiring.
- Load side emergency transfer wiring.

Low-Voltage Class 2 (PELV) Wiring

- System communications use low-voltage Class 2 (PELV) wiring.
- Wiring must be daisy-chained.
- Wiring must run separately from line (mains) voltage.

Class 2 (PELV) wiring link requires:
 Two #12 AWG (2.5mm²) conductors for control power.
 One twisted, shielded pair of #18 AWG (0.625mm²) for data link.

Total length of Control Link may be up to 2,000 ft. (610m).
 Approved low-voltage cable is available from Lutron¹, Belden, and Liberty.
 These are approved with #22 AWG data link wires.



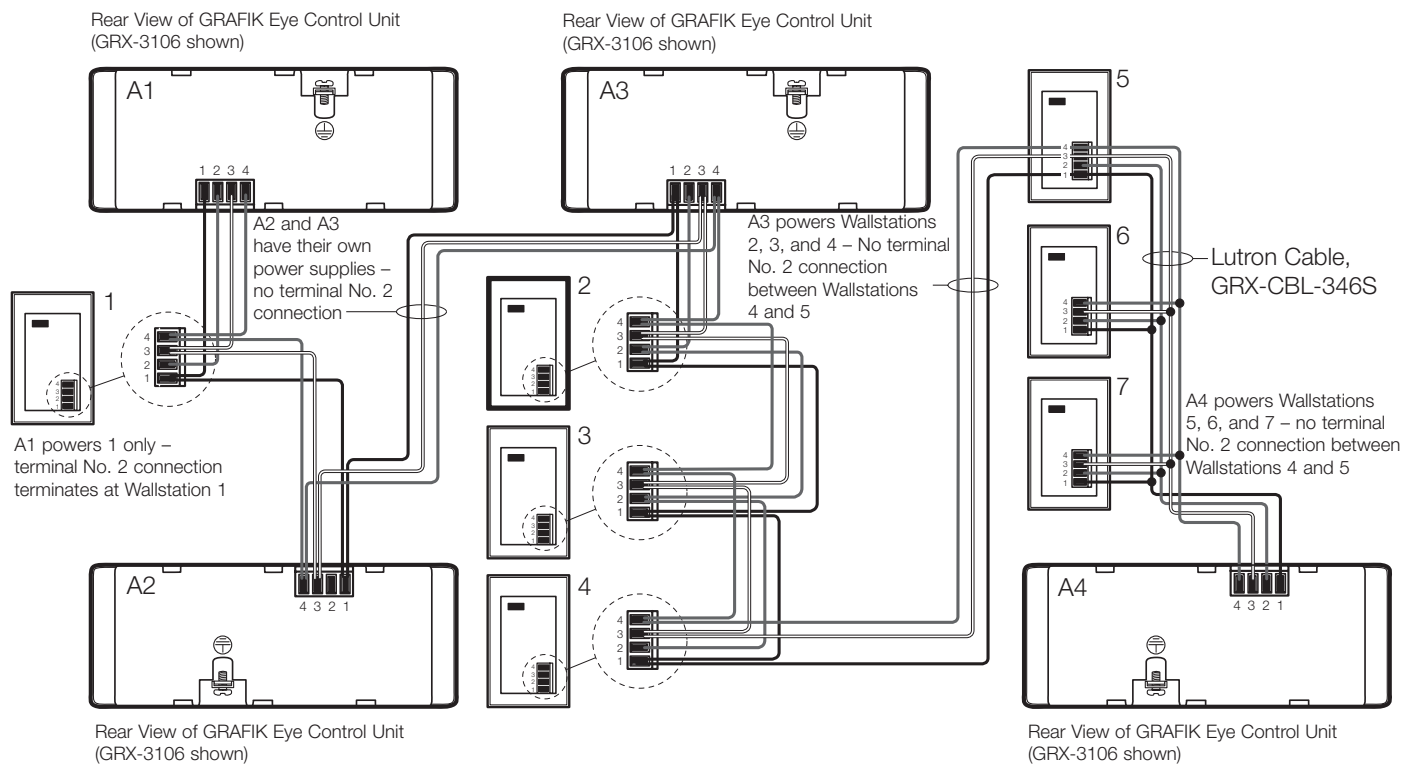
External 12VDC Power Supply is required to power more than three Wallstations and/or Control Interfaces from a single Control Unit.

¹ GRX-CBL-346S Class 2 (PELV) wiring cable is available from Lutron and contains:
 Two #12 AWG (2.5mm²) conductors for control power.
 One twisted, shielded pair of #22 AWG (0.625mm²) for data link.

Job Name:	Model Numbers:
Job Number:	

Class 2 (PELV) Terminal Connections

- Each Class 2 (PELV) terminal accepts up to two #18 AWG (1.0mm²) wires.
- Daisy chain the terminal 1, 3, and 4 connections to all Control Units, Wallstations, and Control Interfaces.
- Each Control Unit has its own power supply. Terminate the terminal 2 connection (12VDC power) so that each Control Unit supplies power to a maximum of three Wallstations. Each Wallstation should receive power from only one Control Unit.
- Total length of Class 2 (PELV) wiring may be up to 2,000 ft. (600m).
- Make all connections in the Control Unit's wallbox. Remote connections (T-taps) must be in a switchbox or junction box with a maximum wire length of 8 ft. (2.5m) from the link to the connected unit.
- Do not allow Class 2 (PELV) wires to contact line/main wires.



Note:

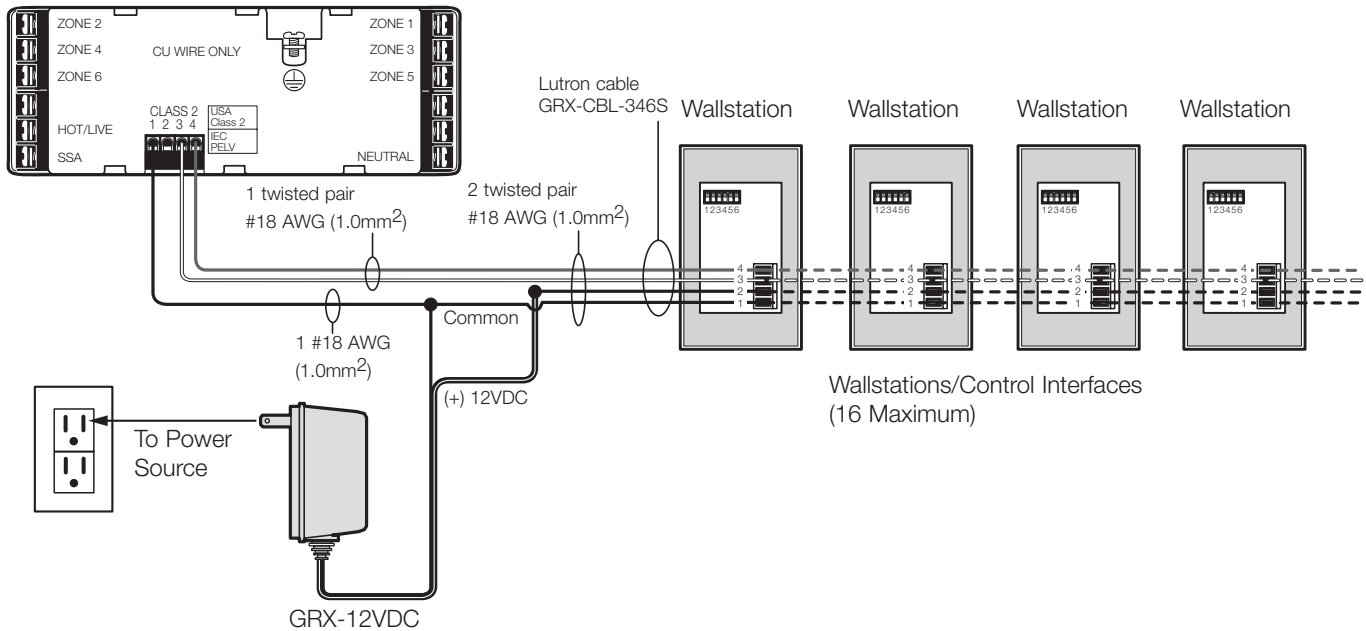
- Up to 8 GRAFIK Eye 3000 Series Control Units and 16 Wallstations/Control Interfaces may be daisy-chained together in one system.
- Class 2/PELV cable is available from Lutron - order GRX-CBL-346S.

Job Name:	Model Numbers:
Job Number:	

GRX-12VDC Power Supply Wiring

External 12VDC Power Supply is required to power more than three Wallstations and/or Control Interfaces from a single Control Unit.

Rear View of GRAFIK Eye Control Unit (GRX-3106 shown)

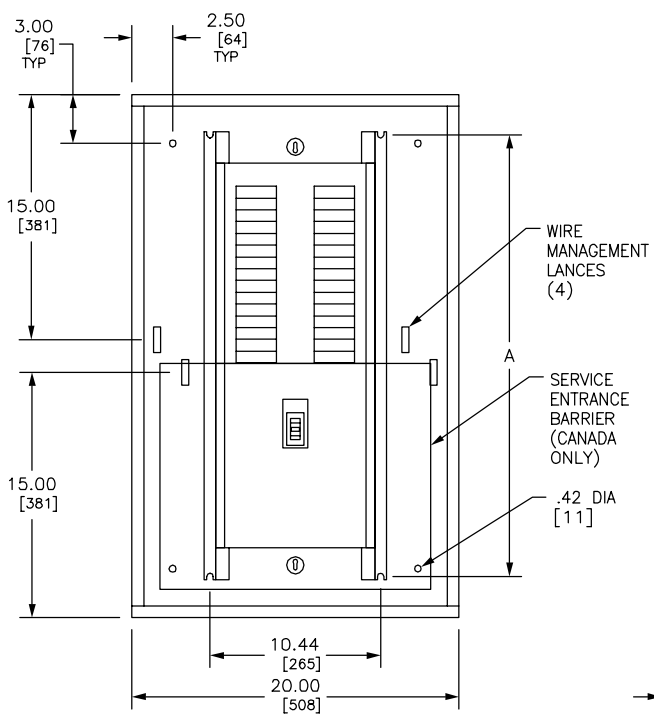


Note:
Do not connect terminal No. 2 between GRAFIK Eye 3000 Series Control Unit and GRX-12VDC Power Supply

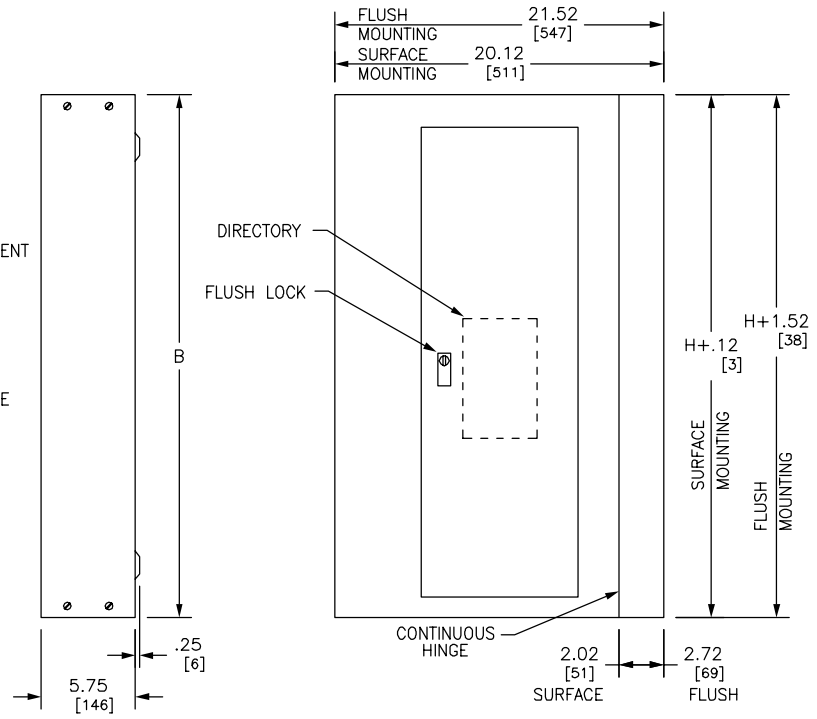
Job Name:	Model Numbers:
Job Number:	

Appendix B | Electrical

REV	DESCRIPTION	BY	DATE				
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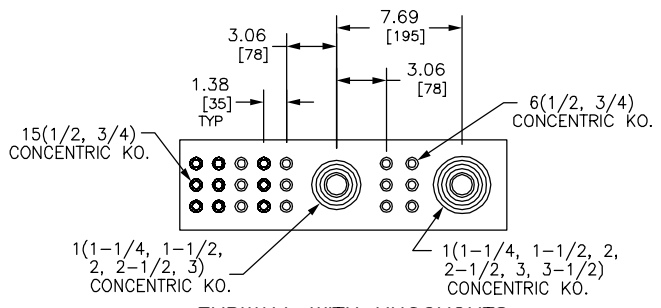


TYPICAL BOX WITH INTERIOR

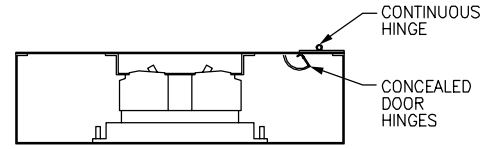


TYPICAL BOX SIDE VIEW

TYPICAL FRONT



ENDWALL WITH KNOCKOUTS
(OTHER ENDWALL IS BLANK)



TYPICAL MOUNTING OF QO, QOB BREAKERS

DUAL DIMENSIONS: INCHES MILLIMETERS

REFER TO DP CATALOG CLASS 1630 FOR ADDITIONAL INFORMATION

NQOD PANELBOARDS MEET THE APPLICABLE REQUIREMENTS OF UL AND CSA.

BOX: CODE GAUGE GALVANIZED STEEL. ONE ENDWALL IS BLANK THE OTHER HAS KNOCKOUTS.

FRONT: MONO-FLAT CONSTRUCTION WITH CONCEALED TRIM SCREWS AND DOOR HINGES. CONTINUOUS HINGE ON RIGHT SIDE OF TRIM. ANSI 49 GRAY BAKED ENAMEL FINISH ELECTRODEPOSITED OVER CLEANED PHOSPHATIZED STEEL.

LOCK: FLUSH LOCK WITH BRUSHED, STAINLESS STEEL ESCUTCHEON. NSR-251 KEY CHANGE.

MAXIMUM MAIN BREAKER AMPERE RATING	MAXIMUM NUMBER OF CIRCUITS	H		A	
		IN	MM	IN	MM
250	30	44.00	1118	39.00	991
	42	50.00	1270	45.00	1143
	54	56.00	1422	51.00	1295
	*72	62.00	1575	57.00	1448
	*84	65.00	1651	60.00	1524
250 WITH FEED-THRU LUGS	30 42	56.00	1422	51.00	1295
	48	62.00	1575	57.00	1448
	*72 *78	71.00	1803	66.00	1676
250 WITH SUB-FEED BREAKER	30	71.00	1803	66.00	1676
	48	77.00	1956	72.00	1829

* CANADA ONLY

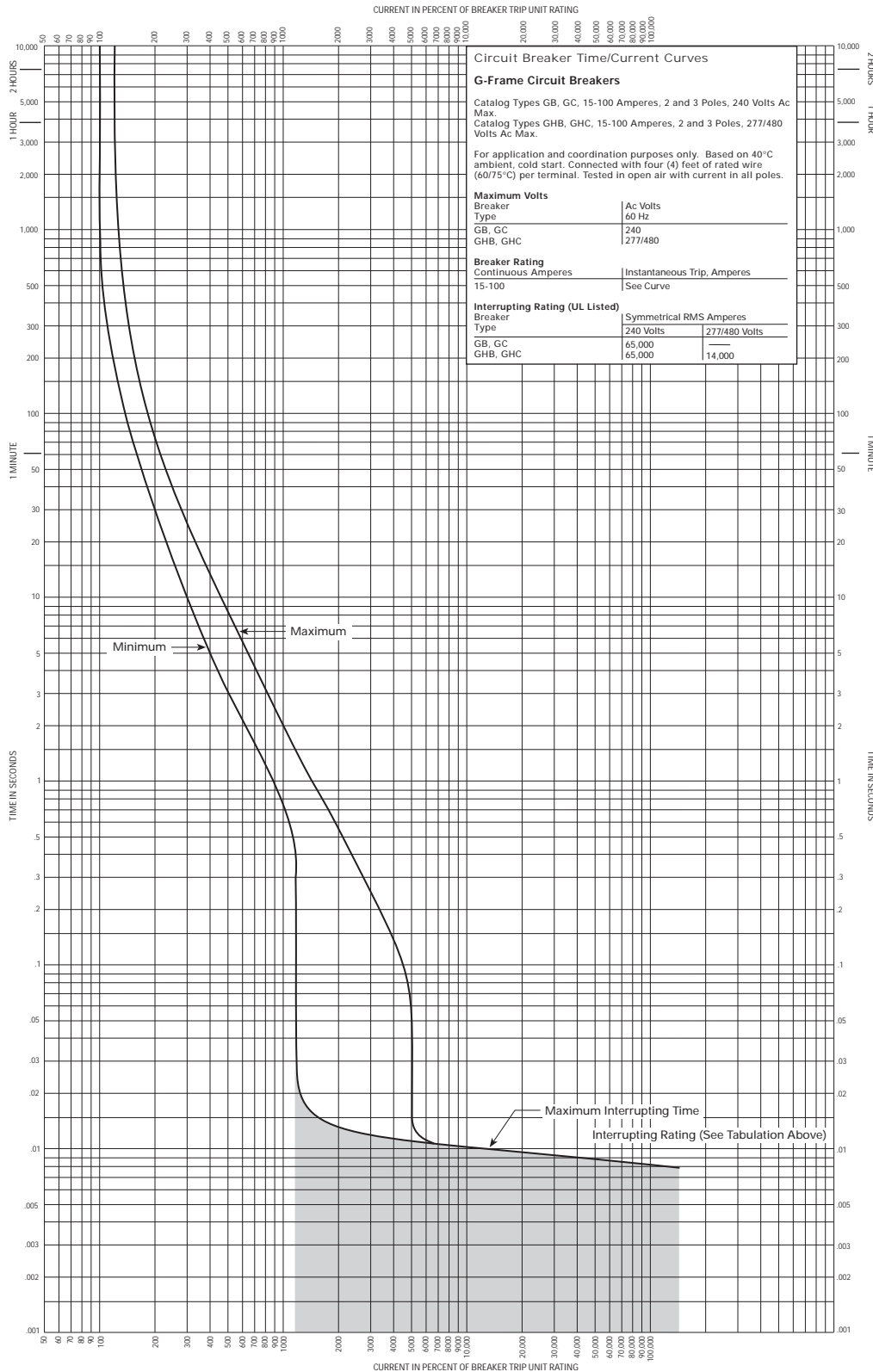
JOB NAME: ----	EQUIPMENT DESIGNATION: ----		
JOB LOCATION: ----	EQUIPMENT TYPE: ----		
DRAWN BY: ----	DRAWING TYPE: ----		
ENGR: ----			
DATE: MAY 2007			
DRAWING STATUS: ----	DWG# PBA507HR	PG -- OF --	REV --





AB DE-ION Circuit Breakers

Types GB, GHB, GC, GHC 15-100 Amperes, 2 and 3 Poles





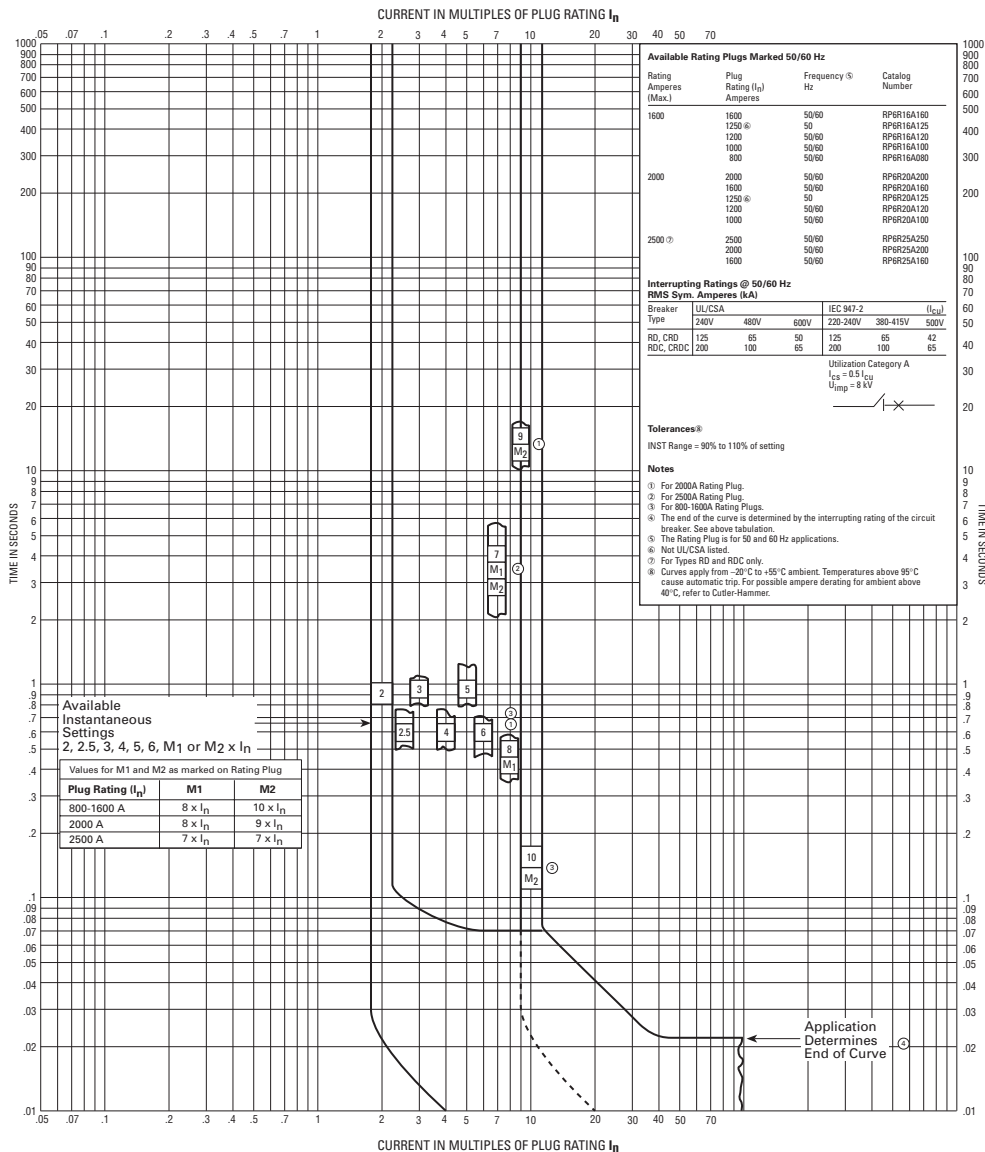
AB DE-ION Circuit Breakers

Types RD, CRD, RDC, CRDC Equipped With Digitrip RMS 510/610/810 Trip Units. Typical Instantaneous Time-Phase Current Characteristic Curve Based on I_n

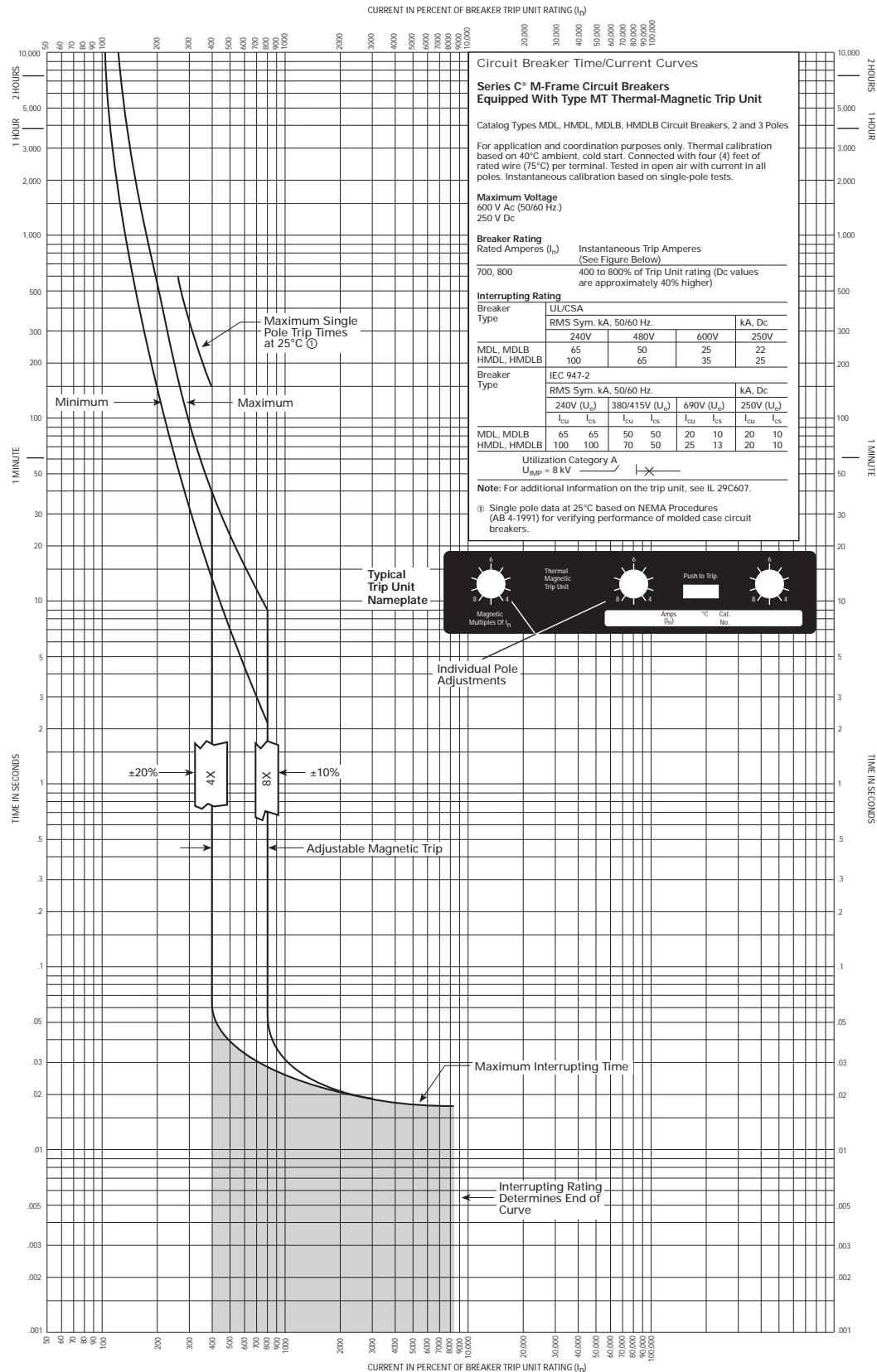
IMPORTANT

TRIP UNITS ARE NOT AVAILABLE WITH ONLY INSTANTANEOUS PROTECTION. THIS CURVE MUST BE USED in conjunction WITH Curve No. SC-5627-93 for LONG DELAY (and if applicable SHORT DELAY) PROTECTION to obtain the complete time-current characteristic.

Series C[®] R-Frame Circuit Breakers with DIGITRIP RMS 510/610/810 Trip Units Typical Instantaneous Time-Phase Current Characteristic Curve (I)



Types MDL, HMDL, MDLB, and HMDLB Equipped with Type MT Thermal-Magnetic Trip Unit, 700 and 800 Amperes



Curve No. SC-6912-98

Appendix C | Mechanical

System Checksums

By PENN STATE UNIVERSITY

System - 001

Variable Volume Reheat (30% Min Flow Default)

COOLING COIL PEAK					CLG SPACE PEAK			HEATING COIL PEAK			TEMPERATURES					
Peaked at Time:		Mo/Hr: 9 / 16			Mo/Hr: 9 / 16			Mo/Hr: Heating Design			Cooling			Heating		
Outside Air:		OADB/WB/HR: 83 / 68 / 76			OADB: 83			OADB: 13			SADB			Ra Plenum		
	Space Sens. + Lat.	Plenum Sens. + Lat.	Net Total	Percent Of Total (%)	Space Sensible	Percent Of Total (%)	Space Peak	Coil Peak	Percent Of Total	Return			Ret/OA			
	Btu/h	Btu/h	Btu/h		Btu/h		Space Sens	Tot Sens		Fn MtrTD			Fn BldTD			
							Btu/h	Btu/h		Fn Frict						
Envelope Loads					Envelope Loads											
	0	0	0	0	0	0	0	0	0.00							
	0	0	0	0	0	0	0	0	0.00							
	0	1,361	1,361	2	0	0	0	-3,706	6.65							
	35,684	0	35,684	57	35,684	78	0	0	0.00							
	816	0	816	1	816	2	-5,548	-5,548	9.96							
	0	643	643	1	0	0	0	-313	0.56							
	0	0	0	0	0	0	0	0	0.00							
	0	0	0	0	0	0	0	0	0.00							
	0	0	0	0	0	0	0	0	0							
	539	0	539	1	295	1	0	0	0.00							
	37,040	2,004	39,044	62	36,795	80	-5,548	-9,567	17.18							
Internal Loads					Internal Loads											
	1,169	1,169	2,338	4	1,169	3	0	0	0.00							
	12,623	0	12,623	20	7,731	17	0	0	0.00							
	0	0	0	0	0	0	0	0	0.00							
	13,792	1,169	14,961	24	8,901	19	0	0	0.00							
	164	-164	0	0	164	0	-4,019	0	0.00							
	0	0	3,231	5	0	0	0	0	0.00							
	0	0	0	0	0	0	0	0	0							
	0	0	0	0	0	0	0	0	0.00							
	0	0	0	0	0	0	0	0	0.00							
	0	-436	-436	-1	0	0	0	-9,629	17.29							
	0	0	3,247	5	0	0	0	-36,495	65.53							
	0	2,463	2,463	4	0	0	0	0	0.00							
	0	0	0	0	0	0	0	0	0.00							
	0	0	0	0	0	0	0	0	0.00							
	0	0	0	0	0	0	0	0	0.00							
	0	0	0	0	0	0	0	0	0.00							
	50,996	5,036	62,510	100.00	45,860	100.00	-9,567	-55,690	100.00							

AIRFLOWS		
	Cooling	Heating
Diffuser	2,739	0
Terminal	2,739	0
Main Fan	2,739	0
Sec Fan	0	0
Nom Vent	189	0
AHU Vent	189	0
Infil	32	0
MinStop/Rh	822	0
Return	2,771	0
Exhaust	221	0
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS		
	Cooling	Heating
% OA	6.9	0.0
cfm/ft²	5.20	0.00
cfm/ton	525.90	
ft²/ton	101.17	
Btu/hr-ft²	118.61	-105.67
No. People	32	

COOLING COIL SELECTION										
	Total Capacity		Sens Cap. MBh	Coil Airflow cfm	Enter DB/WB/HR			Leave DB/WB/HR		
	ton	MBh			°F	°F	gr/lb	°F	°F	gr/lb
Main Clg	5.2	62.5	55.9	2,739	77.2	63.4	65.9	58.8	55.9	62.4
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	5.2	62.5								

AREAS			
	Gross Total	Glass	
		ft²	(%)
Floor	527		
Part	0		
Int Door	0		
ExFlr	0		
Roof	527	0	0
Wall	434	412	95
Ext Door	0	0	0

HEATING COIL SELECTION				
	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Aux Htg	0.0	0	0.0	0.0
Preheat	-46.1	2,739	43.7	58.8
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-55.7			

MONTHLY ENERGY CONSUMPTION

By PENN STATE UNIVERSITY

----- Monthly Energy Consumption -----

Utility	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Alternative: 1													
Electric													
On-Pk Cons. (kWh)	1,139	991	1,558	1,693	1,912	1,960	2,093	2,059	1,923	1,793	1,662	1,283	20,067
On-Pk Demand (kW)	4	4	4	4	4	4	5	5	5	4	4	4	5
Gas													
On-Pk Cons. (therms)	28	25	16	9	2	0	0	0	2	10	13	21	125
On-Pk Demand (therms/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0
Water													
Cons. (1000gal)	1	1	1	2	3	4	5	4	3	2	2	1	28

Energy Consumption

Building 153,752 Btu/(ft2-year)
 Source 414,965 Btu/(ft2-year)

Floor Area 527 ft2

Environmental Impact Analysis

CO2 30,698 lbm/year
 SO2 262 gm/year
 NOX 59 gm/year

System Checksums

By PENN STATE UNIVERSITY

System - 001

Variable Volume Reheat (30% Min Flow Default)

COOLING COIL PEAK				CLG SPACE PEAK				HEATING COIL PEAK			TEMPERATURES			
Peaked at Time:		Mo/Hr: 9 / 16		Mo/Hr: 10 / 16		Mo/Hr: Heating Design			Cooling			Heating		
Outside Air:		OADB/WB/HR: 83 / 68 / 76		OADB: 69		OADB: 13			SADB			Ra Plenum		
	Space Sens. + Lat.	Plenum Sens. + Lat.	Net Total	Percent Of Total (%)	Space Sensible	Percent Of Total (%)	Space Peak	Coil Peak	Percent Of Total	Return	Ret/OA	Fn MtrTD	Fn BldTD	Fn Frict
	Btu/h	Btu/h	Btu/h		Btu/h		Btu/h	Btu/h		Btu/h	Btu/h	Btu/h	Btu/h	Btu/h
Envelope Loads				Envelope Loads							AIRFLOWS			
Skylite Solar	0	0	0	0	0	0	Skylite Solar	0	0.00					
Skylite Cond	0	0	0	0	0	0	Skylite Cond	0	0.00					
Roof Cond	0	1,407	1,407	2	0	0	Roof Cond	0	-3,706	3.61				
Glass Solar	58,430	0	58,430	65	61,053	88	Glass Solar	0	0	0.00				
Glass/Door Cond	1,033	0	1,033	1	-747	-1	Glass/Door Cond	-7,049	-7,049	6.86				
Wall Cond	0	647	647	1	0	0	Wall Cond	0	-313	0.30				
Partition/Door	0	0	0	0	0	0	Partition/Door	0	0	0.00				
Floor	0	0	0	0	0	0	Floor	0	0	0.00				
Adjacent Floor	0	0	0	0	0	0	Adjacent Floor	0	0	0				
Infiltration	539	0	539	1	-221	0	Infiltration	0	0	0.00				
<i>Sub Total ==></i>	60,002	2,054	62,055	69	60,084	87	<i>Sub Total ==></i>	-7,049	-11,068	10.77				
Internal Loads				Internal Loads										
Lights	1,169	1,169	2,338	3	1,169	2	Lights	0	0	0.00				
People	12,623	0	12,623	14	7,731	11	People	0	0	0.00				
Misc	0	0	0	0	0	0	Misc	0	0	0.00				
<i>Sub Total ==></i>	13,792	1,169	14,961	17	8,901	13	<i>Sub Total ==></i>	0	0	0.00				
Ceiling Load	95	-95	0	0	38	0	Ceiling Load	-4,019	0	0.00				
Ventilation Load	0	0	3,229	4	0	0	Ventilation Load	0	0	0.00				
Adj Air Trans Heat	0	0	0	0	0	0	Adj Air Trans Heat	0	0	0				
Dehumid. Ov Sizing	0	0	0	0	0	0	Ov/Undr Sizing	0	0	0.00				
Ov/Undr Sizing	0	0	0	0	0	0	Exhaust Heat	0	0	0.00				
Exhaust Heat	0	-336	-336	0	0	0	OA Preheat Diff.	-10,159	9.89					
Sup. Fan Heat	0	0	5,846	6	0	0	RA Preheat Diff.	-81,504	79.34					
Ret. Fan Heat	0	4,413	4,413	5	0	0	Additional Reheat	0	0.00					
Duct Heat Pkup	0	0	0	0	0	0	Underflr Sup Ht Pkup	0	0.00					
Underflr Sup Ht Pkup	0	0	0	0	0	0	Supply Air Leakage	0	0.00					
Supply Air Leakage	0	0	0	0	0	0	Grand Total ==>	-11,068	-102,731	100.00				
Grand Total ==>	73,888	7,205	90,169	100.00	69,023	100.00	Grand Total ==>	-11,068	-102,731	100.00				

COOLING COIL SELECTION										AREAS			HEATING COIL SELECTION						
	Total Capacity		Sens Cap.	Coil Airflow	Enter DB/WB/HR			Leave DB/WB/HR			Gross Total	Glass		Capacity	Coil Airflow	Ent	Lvg		
	ton	MBh	MBh	cfm	°F	°F	gr/lb	°F	°F	gr/lb		ft² (%)	MBh	cfm	°F	°F			
Main Clg	7.5	90.2	83.6	4,933	76.6	63.2	65.6	61.4	57.2	63.6	Floor	527		Main Htg	-11.1	0	61.4	9,663.0	
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	Part	0		Aux Htg	0.0	0	0.0	0.0	
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	Int Door	0		Preheat	-91.7	4,952	44.7	61.4	
											ExFlr	0							
Total	7.5	90.2									Roof	527	0	Humidif	0.0	0	0.0	0.0	
											Wall	434	412	95	Opt Vent	0.0	0	0.0	0.0
											Ext Door	0	0	0	Total	-102.7			

MONTHLY ENERGY CONSUMPTION

By PENN STATE UNIVERSITY

----- Monthly Energy Consumption -----

Utility	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Alternative: 1													
Electric													
On-Pk Cons. (kWh)	1,716	1,551	1,993	2,012	2,316	2,380	2,511	2,527	2,358	2,144	1,977	1,878	25,365
On-Pk Demand (kW)	5	5	5	5	5	5	6	6	6	5	5	5	6
Gas													
On-Pk Cons. (therms)	39	35	28	19	9	5	2	5	9	22	26	35	235
On-Pk Demand (therms/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0
Water													
Cons. (1000gal)	2	1	3	3	4	5	6	6	5	3	3	2	41

Energy Consumption

Building 208,772 Btu/(ft2-year)
 Source 539,710 Btu/(ft2-year)

Floor Area 527 ft2

Environmental Impact Analysis

CO2 41,684 lbm/year
 SO2 356 gm/year
 NOX 80 gm/year