APPENDIX

F

DOMINION STANDARD LUMINAIRES

GE
Lighting Solutions

Evolve™ LED Roadway Lighting

Scalable Cobrahead (ERS1, ERS2, ERS3 & ERS4)

imagination at work

Product Features

From local to major roadways, the GE Evolve™ LED Roadway Scalable Cobrahead fixtures are changing the way you light your lanes. Preserving the aesthetic look of traditional roadway Cobrahead fixtures, GE balances the technical needs of a sophisticated LED system with the functional demands of an outdoor fixture facing extreme weather hazards. GE's advanced LED optical design offers hundreds of photometric options to meet your precise lighting requirements, while delivering reduced glare and improved light control. The refined thermal management system incorporates a sleek and robust heat sink directly into the fixture to ensure maximum heat transfer and long LED life.

The GE Evolve LED Roadway Scalable Cobrahead offers more than 11 years of reliable service life to significantly reduce maintenance frequency and expense, based on a 50,000 hour life and 12 hours of operation per day. This efficient fixture can yield up to a 50-percent reduction in system energy compared with standard HID systems, depending on roadway applications, and can also be paired with programmable dimming options for even greater savings and control.

Applications

- Designed to meet recommended luminance and illuminance requirements for local to major roadway / street classifications.

Housing

- Die cast aluminum housing.
- A modern design preserving the aesthetic look of traditional roadway Cobrahead fixtures incorporates the heat sink directly into the unit ensuring maximum heat transfer and long LED life.
- Meets 2G vibration per C136.31-2010
  For 3G rating contact manufacturer.
- Power door assembly with removable retention latch.

LED & Optical Assembly

- Structured LED array for optimized roadway photometric distribution.
- Evolve light engine consisting of scalable reflective technology designed to optimize application efficiency and minimize glare.
- Reverse facing light engine options available.
- Utilizes high brightness LEDs, 70 CRI at 4000K & 5700K typical.
- LM-79 tests and reports are performed in accordance with IESNA standards.

Lumen Maintenance

- System rating is L85 at 50,000 hours. Contact manufacturer for Lxx rating (Lumen Depreciation) beyond 50,000 hours.

Ratings

- UL/cUL listed, suitable for wet locations per UL 1598.
- IP65 rated optical enclosure per ANSI C136.25-2009.
- Temperature rated at –40° to 50°C (–40° to 45°C for ERS4 347-480V fixtures).
- Upward Light Output Ratio (ULOR) = 0.

Mounting

- Slipfitter with +/- 5 degree of adjustment for leveling.
- Integral die cast mounting pipe stop feature.
- Wildlife intrusion protection at mounting pipe entry.
- Adjustable for 1.25 in. or 2 in. mounting pipe.

Finish

- Corrosion resistant polyester powder painted, minimum 2.0 mil. thickness.
- Standard colors: Black and Gray.
- RAL & custom colors available.

Electrical

- 120-277 volt and 347-480 volt available.
- System power factor is >90% and THD <20%.*
- Class "A" audible sound rating.
- Integral surge protection:
  - For 120-277VAC per IEEE/ANSI C62.41.-1991, 6kV/3kA Location Category B3 (120 Events).
- Optional high capability surge protection per IEEE/ANSI C62.41.2-2002.
  - Rating 1 - 10kV/5kA Location Category (120 events).
  - Rating 2 - 6kV/3kA Location Category C-Low (5000 events).
- EMI: Title 47 CFR Part 15 Class A.
- Photo electric sensors (PE) available for all voltages.

** System power factor and THD is tested and specified at 120V input and maximum load conditions.*

Warranty

- 5-year limited system warranty standard.

Ordering Number Logic

Scalable Cobrahead (ERS1)

E R S 1 - 0 - BX - EX - 5 - 40 - 2 - GRAY - E

PROD. ID	VOLTAGE	OPTICAL CODE	PHOTOMETRIC TYPE	DRIVE CURRENT	LED COLOR TEMP	PE FUNCTION	COLOR	OPTIONS
E = Evolve **R** = Roadway **S** = Scalable **1** = Optical Assembly	**0** = 120 - 277 **H** = 347 - 480 **1** = 120* **2** = 208* **3** = 240* **4** = 277* **5** = 480* **D** = 347* *Specify single voltage only if fuse option is selected.		**AX** = Extra Narrow Asymmetric (Medium) **BX** = Narrow Asymmetric (Medium) **CX** = Asymmetric (Short) **DX** = Asymmetric Forward (Very Short) **EX** = Asymmetric (Medium)	**5** = 525mA* *Standard drive current is 525mA. 350mA and 700mA drive currents designated with a "3" or "7" respectively are available and set at the factory.	**40** = 4000K **57** = 5700K	**1** = None **2** = PE Rec. **4** = PE Rec. with Shorting Cap **5** = PE Rec. with Control **7** = Dimming PE Receptacle *† **9** = Dimming PE Receptacle with Shorting Cap † PE control not available for multi-volt 346-480V. Must be a discrete voltage (347V or 480V). * Order dimming control PE as a separate item † When ordering PE function socket 7 or 9, a programmable dimming option "P" must also be ordered under the "OPTIONS" column	**BLCK** = Black **GRAY** = Gray Contact manufacturer for other colors.	**C** = IEC Construction **E** = GE Level **F** = Fusing **L** = Tool-Less Entry **P** = Programmable Dimming (includes DALI) **T** = Extra Surge Protection* **XXX** = Special Options * Contact manufacturer for details and availability.

OPTICAL CODE	PHOTOMETRIC TYPE	TYPICAL INITIAL LUMENS		TYPICAL SYSTEM WATTAGE		IES FILE NUMBERS	
		4000K	5700K	120-277V	347-480V	4000K	5700K
AX	AX	3100	3300	43	47	454886	454889
BX		4100	4400	54	59	454887	454890
CX		5100	5500	67	74	454888	454891
AX	BX	3300	3400	43	47	454669	454668
BX		4300	4600	54	59	454670	454667
CX		5300	5700	67	74	454659	454666
AX	CX	3200	3400	43	47	454662	454663
BX		4200	4500	54	59	454661	454665
CX		5200	5600	67	74	454660	454665
AX	DX	3300	3500	43	47	454892	454895
BX		4300	4600	54	59	454893	454896
CX		5300	5700	67	74	454894	454897
AX	EX	3000	3200	43	47	454653	454644
BX		4000	4300	54	59	454652	454645
CX		5000	5400	67	74	454651	454646

Photometrics

Scalable Cobrahead (ERS1)

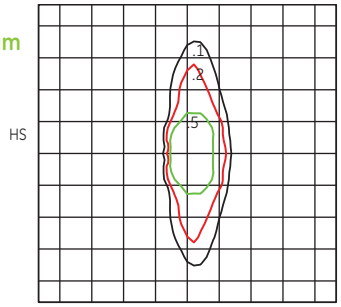
ISO Plot
Grid Distance in Units of Mounting Height at 30' Initial Footcandle Values at Grade

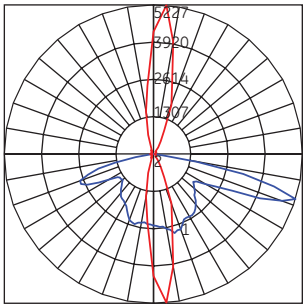
Polar Curve
Polar Trace Vertical and Horizontal Plane through Horizontal Angle of Maximum Candlepower

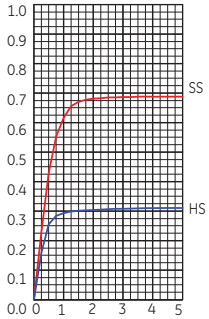
CU Graph
Coefficients of Utilization Street Width / Mounting Height

ERS1 Extra Narrow Asymmetric Medium (CXAX)

5,500 Lumens
5700K
GE454891.ies

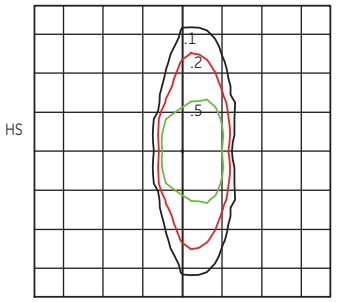


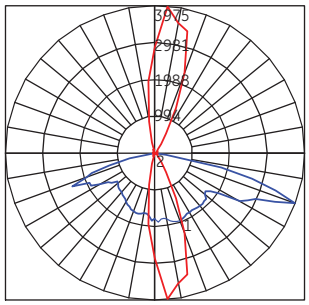


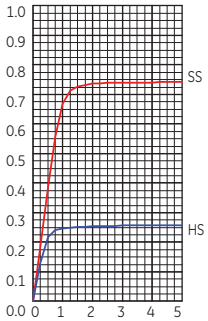


ERS1 Narrow Asymmetric Medium (CXBX)

5,700 Lumens
5700K
GE454666.ies

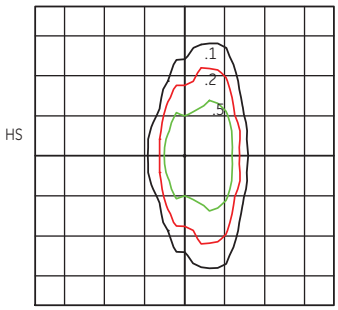


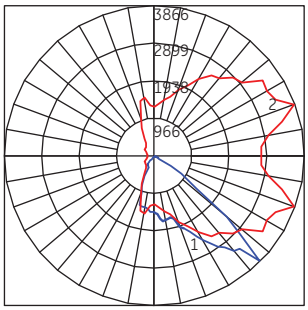


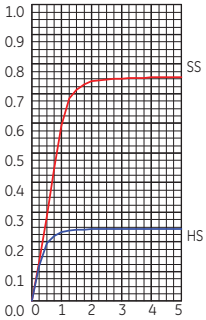


ERS1 Asymmetric Short (CXCX)

5,600 Lumens
5700K
GE454665.ies

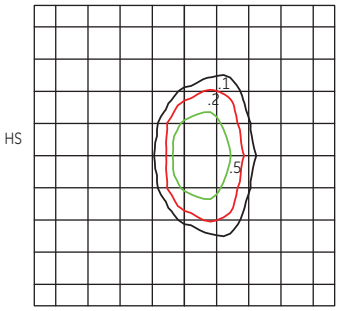


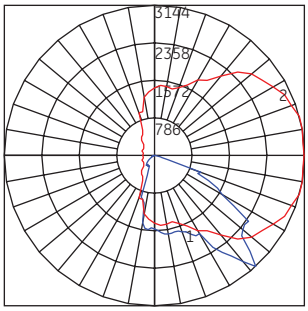


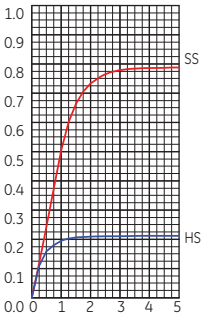


ERS1 Asymmetric Forward Very Short (CXDX)

5,700 Lumens
5700K
GE454897.ies

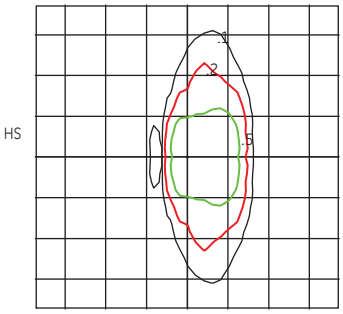


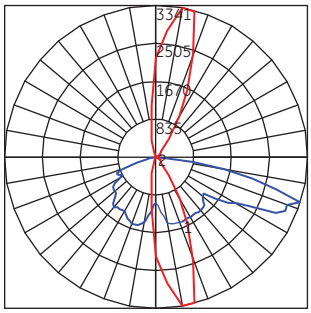


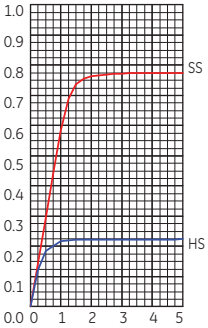


ERS1 Asymmetric Medium (CXEX)

5,400 Lumens
5700K
GE454646.ies







Ordering Number Logic

Scalable Cobrahead (ERS2)

E R S 2 - 0 - FX - EX - 5 - 40 - 2 - GRAY - E

PROD. ID	VOLTAGE	OPTICAL CODE	PHOTOMETRIC TYPE	DRIVE CURRENT	LED COLOR TEMP	PE FUNCTION	COLOR	OPTIONS
E = Evolve **R** = Roadway **S** = Scalable **2** = Optical Assembly	**0** = 120 - 277 **H** = 347 - 480 **1** = 120* **2** = 208* **3** = 240* **4** = 277* **5** = 480* **D** = 347* *Specify single voltage only if fuse option is selected.		**AX** = Extra Narrow Asymmetric (Medium) **BX** = Narrow Asymmetric (Medium) **CX** = Asymmetric (Short) **DX** = Asymmetric Forward (Very Short) **EX** = Asymmetric (Medium)	**5** = 525mA* *Standard drive current is 525mA. 350mA and 700mA drive currents designated with a "3" or "7" respectively are available and set at the factory.	**40** = 4000K **57** = 5700K	**1** = None **2** = PE Rec. **4** = PE Rec. with Shorting Cap **5** = PE Rec. with Control **7** = Dimming PE Receptacle *† **9** = Dimming PE Receptacle with Shorting Cap † PE control not available for multi-volt 347-480V. Must be a discrete voltage (347V or 480V). * Order dimming control PE as a separate item † When ordering PE function socket 7 or 9, a dimming option "D" or programmable dimming option "P" must also be ordered under the "OPTIONS" column	**BLCK** = Black **GRAY** = Gray Contact manufacturer for other colors.	**C** = IEC Construction **D** = Dimming (525mA) **E** = GE Level **F** = Fusing **L** = Tool-Less Entry **P** = Programmable Dimming (includes DALI) **T** = Extra Surge Protection* **XXX** = Special Options * Contact manufacturer for details and availability.

OPTICAL CODE	PHOTOMETRIC TYPE	TYPICAL INITIAL LUMENS		TYPICAL SYSTEM WATTAGE		IES FILE NUMBERS	
		4000K	5700K	120-277V	347-480V	4000K	5700K
DX	AX	6000	6500	82	89	454898	454903
EX		7000	7500	94	102	454899	454904
FX		8000	8600	106	114	454900	454905
GX		9000	9700	118	127	454901	454906
HX		10000	10800	130	140	454902	454907
DX	BX	6300	6800	82	89	454684	454683
EX		7300	7900	94	102	454685	454682
FX		8400	9000	106	114	454686	454681
GX		9400	10100	118	127	454687	454680
HX		10500	11300	130	140	454688	454643
DX	CX	6200	6700	82	89	454675	454674
EX		7300	7800	94	102	454676	454673
FX		8300	8900	106	114	454677	454672
GX		9300	10000	118	127	454678	454671
HX		10300	11100	130	140	454679	454641
DX	DX	6300	6800	82	89	454908	454913
EX		7300	7900	94	102	454909	454914
FX		8400	9000	106	114	454910	454915
GX		9400	10100	118	127	454911	454916
HX		10400	11200	130	140	454912	454917
DX	EX	6000	6400	82	89	454658	454650
EX		6900	7400	94	102	454657	454649
FX		7900	8500	106	114	454656	454647
GX		8800	9500	118	127	454655	454648
HX		9900	10600	130	140	454654	454642

House side photometry options available (using reverse facing light engines). Contact manufacturer for more information.

Photometrics

Scalable Cobrahead (ERS2)

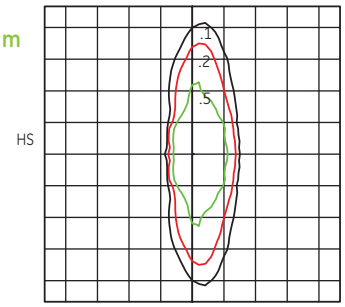
ISO Plot
Grid Distance in Units of Mounting Height at 30' Initial Footcandle Values at Grade

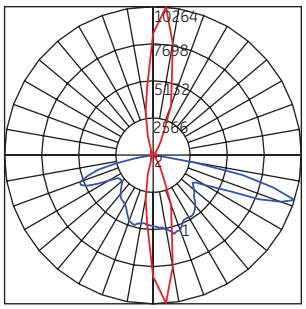
Polar Curve
Polar Trace Vertical and Horizontal Plane through Horizontal Angle of Maximum Candlepower

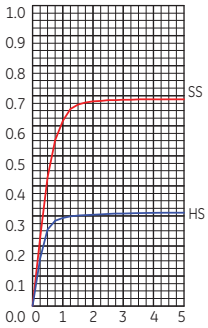
CU Graph
Coefficients of Utilization Street Width / Mounting Height

ERS2 Extra Narrow Asymmetric Medium (HXAX)

10,800 Lumens
5700K
GE454907.ies

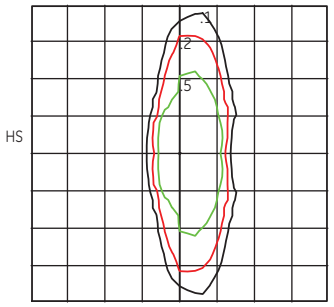


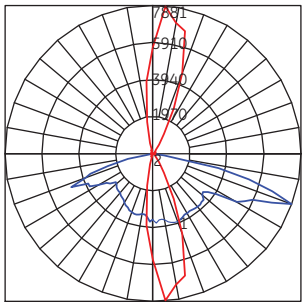


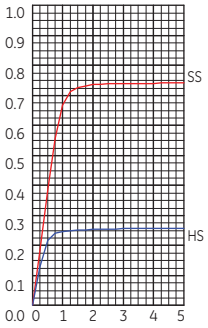


ERS2 Narrow Asymmetric Medium (HXBX)

11,300 Lumens
5700K
GE454643.ies

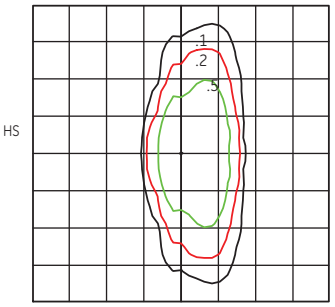


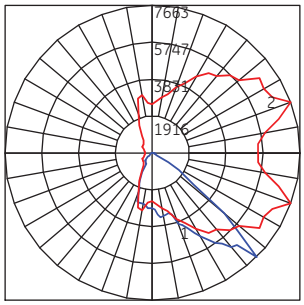


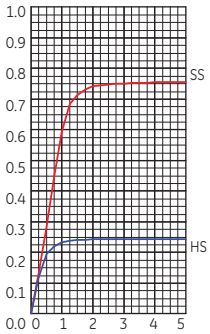


ERS2 Asymmetric Short (HXCX)

11,100 Lumens
5700K
GE454641.ies

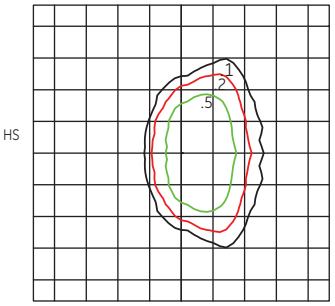


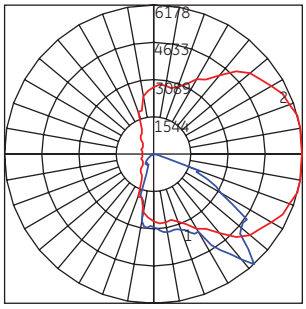


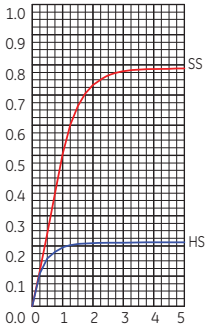


ERS2 Asymmetric Forward Very Short (HXDX)

11,200 Lumens
5700K
GE454917.ies

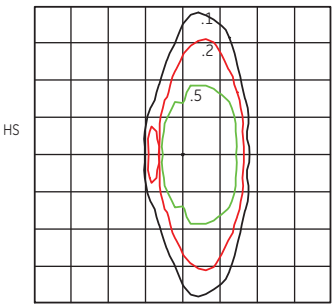


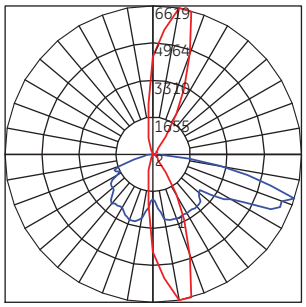


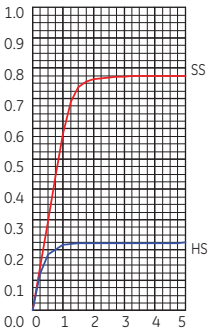


ERS2 Asymmetric Medium (HXEX)

10,600 Lumens
5700K
GE454642.ies







Ordering Number Logic

Scalable Cobrahead (ERS4)

E R S 4 - 0 - SX - EX - 5 - 40 - 2 - GRAY - E

PROD. ID	VOLTAGE	OPTICAL CODE	PHOTOMETRIC TYPE	DRIVE CURRENT	LED COLOR TEMP	PE FUNCTION	COLOR	OPTIONS
E = Evolve **R** = Roadway **S** = Scalable **4** = Optical Assembly	**0** = 120 - 277 **H** = 347 - 480 **1** = 120* **2** = 208* **3** = 240* **4** = 277* **5** = 480* **D** = 347* *Specify single voltage only if fuse option is selected.		**AX** = Extra Narrow Asymmetric (Medium) **BX** = Narrow Asymmetric (Medium) **CX** = Asymmetric (Short) **DX** = Asymmetric Forward (Medium) **EX** = Asymmetric (Medium)	**5** = 525mA* *Standard drive current is 525mA. 350mA and 700mA drive currents designated with a "3" or "7" respectively are available and set at the factory.	**40** = 4000K **57** = 5700K	**1** = None **2** = PE Rec. **4** = PE Rec. with Shorting Cap **5** = PE Rec. with Control **7** = Dimming PE Receptacle *† **9** = Dimming PE Receptacle with Shorting Cap † PE control not available for multi-volt 347-480V. Must be a discrete voltage (347V or 480V). * Order dimming control PE as a separate item † When ordering PE function socket 7 or 9, a dimming option "D" or programmable dimming option "P" must also be ordered under the "OPTIONS" column	**BLCK** = Black **GRAY** = Gray Contact manufacturer for other colors.	**C** = IEC Construction **D** = Dimming (525mA) **E** = GELevel **F** = Fusing **L** = Tool-Less Entry **P** = Programmable Dimming (includes DALI) **T** = Extra Surge Protection* **XXX** = Special Options * Contact manufacturer for details and availability.

OPTICAL CODE	PHOTOMETRIC TYPE	TYPICAL INITIAL LUMENS 4000K	TYPICAL INITIAL LUMENS 5700K	TYPICAL SYSTEM WATTAGE 120-277V	TYPICAL SYSTEM WATTAGE 347-480V	IES FILE NUMBERS 4000K	IES FILE NUMBERS 5700K
PX	AX	15900	17100	209	232	454968	454973
QX		16700	18000	222	246	454969	454974
RX		17600	18900	235	261	454970	454975
SX		18500	19900	244	271	454971	454976
TX		19400	20900	258	287	454972	454977
PX	BX	16600	17900	209	232	454978	454983
QX		17500	18800	222	246	454979	454984
RX		18400	19800	235	261	454980	454985
SX		19400	20900	244	271	454981	454986
TX		20400	21900	258	287	454982	454987
PX	CX	16400	17600	209	232	454988	454993
QX		17200	18500	222	246	454989	454994
RX		18100	19500	235	261	454990	454995
SX		19100	20500	244	271	454991	454996
TX		20000	21500	258	287	454992	454997
PX	DX	16600	17800	209	232	455008	455013
QX		17400	18700	222	246	455009	455014
RX		18300	19700	235	261	455010	455015
SX		19300	20800	244	271	455011	455016
TX		20300	21800	258	287	455012	455017
PX	EX	15600	16800	209	232	454998	455003
QX		16400	17600	222	246	454999	455004
RX		17300	18600	235	261	455000	455005
SX		18100	19500	244	271	455001	455006
TX		19100	20500	258	287	455002	455007

House side photometry options available (using reverse facing light engines).
Contact manufacturer for more information.

Photometrics

Scalable Cobrahead (ERS4)

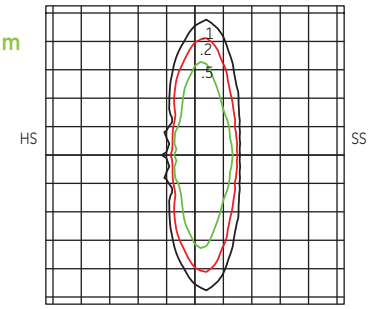
ISO Plot
Grid Distance in Units of Mounting Height at 30' Initial Footcandle Values at Grade

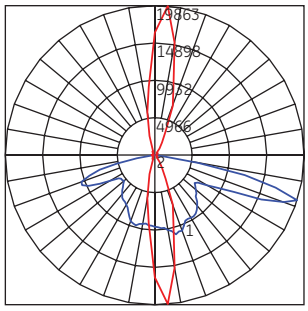
Polar Curve
Polar Trace Vertical and Horizontal Plane through Horizontal Angle of Maximum Candlepower

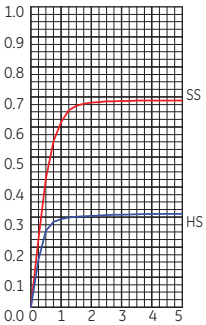
CU Graph
Coefficients of Utilization Street Width / Mounting Height

ERS4 Extra Narrow Asymmetric Medium (TXAX)

20,900 Lumens
5700K
GE454977.ies)

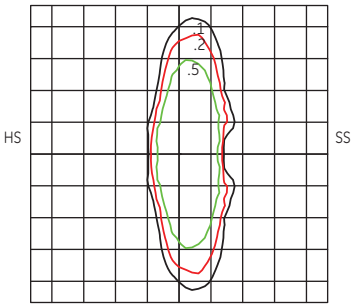


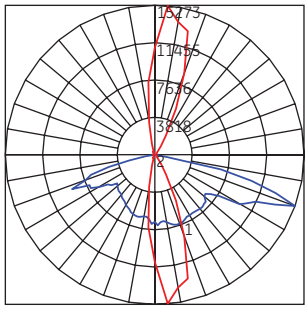


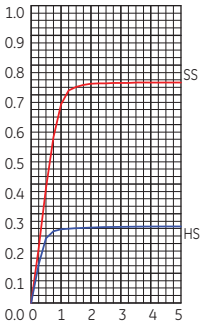


ERS4 Narrow Asymmetric Medium (TXBX)

21,900 Lumens
5700K
GE454987.ies

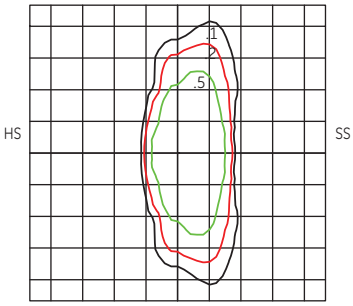


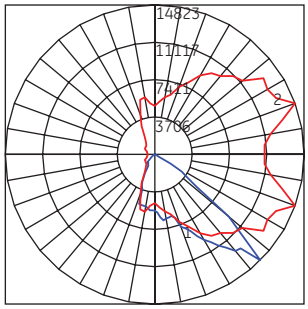


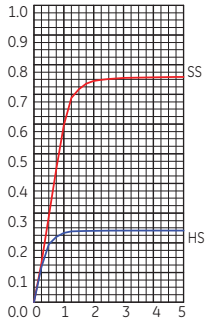


ERS4 Asymmetric Short (TXCX)

21,500 Lumens
5700K
GE454997.ies

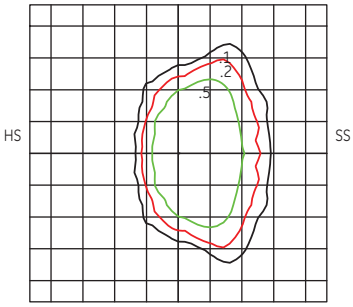


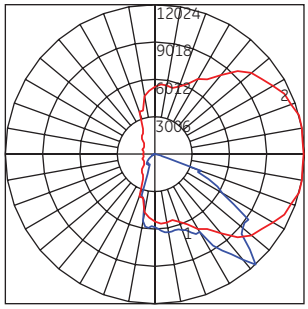


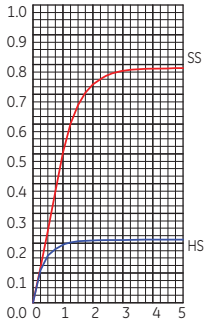


ERS4 Asymmetric Forward Very Short (TXDX)

21,800 Lumens
5700K
GE455017.ies

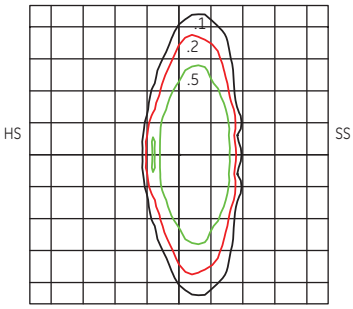


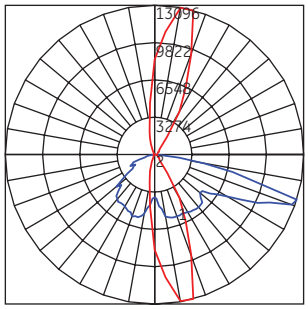


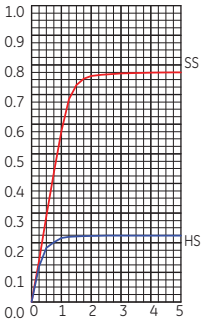


ERS4 Asymmetric Medium (TXEX)

20,500 Lumens
5700K
GE455007.ies







STREETWORKS™

energy solutions

DESCRIPTION

The OVH Flat Glass roadway luminaire is ideal for roadways where cutoff is preferred or light trespass is an issue. Suitable for 3G vibration conditions.

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Construction
HOUSING: Die-cast aluminum housing and latch. 3G vibration rated. DOOR: Die-cast aluminum door frame with integral hinges for toolless relamping and maintenance. ANSI wattage/source label.

Electrical
SOCKET: Adjustable mogul-base porcelain socket. 150W Metal Halide and below is medium-base. BALLAST ASSEMBLY: Hard mounted ballast with encapsulated starter for protection from environmental abuse. Standard two position tunnel type compression terminal block. Three position available. Consult your Streetworks Representative. PHOTOCONTROL: Optional NEMA twistlock photocontrol receptacle also available.

Optical
LENS: Removable tempered flat glass for use with High Pressure Sodium, Metal Halide and Pulse Start Metal Halide lamp sources. REFLECTOR: The optical system is a hydroformed anodized aluminum reflector with a Dacron polyester filter.

Mounting
Two-bolt/one bracket slipfitter with cast-in pipe stop and leveling steps. Fixed-in-place birdguard seals around 1-1/4" or 2" mounting arms (Birdguard not needed for 2" arm).

Finish
Standard grey polyester powder coat finish. Optional bronze, black and white finishes available.

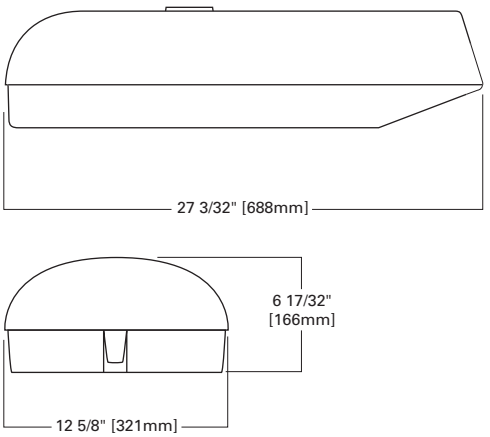
OVH
FLAT GLASS

50 - 250W
Pulse Start Metal Halide
High Pressure Sodium
Metal Halide

ROADWAY LUMINAIRE

DARK SKY COMPLIANT FCO Full Cutoff

DIMENSIONS



EPA
Effective Projected Area:
.80 Square Feet

SHIPPING DATA
Approximate Net Weight:
28 lbs. (13 kgs.)

ISTA SYSTEMS CERTIFIED

COOPER Lighting
www.cooperlighting.com

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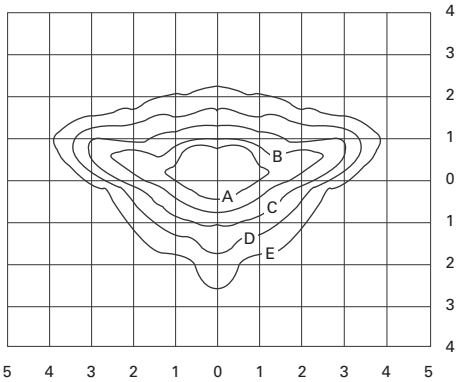
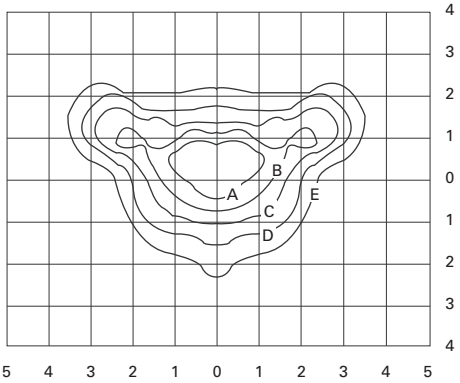
2010-03-10 11:14:40

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



OVH15SWW2D
150—Watt HPS
16,000—Lumen Clear Lamp
Type II-Medium Cutoff



OVH15SWW3D
150—Watt HPS
16,000—Lumen Clear Lamp
Type III-Medium Cutoff

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

Mounting Height	Footcandle Values for Isofootcandle Lines				
	A	B	C	D	E
OVH15SWW2D / OVH15SWW3D					
20'	3.20	1.60	0.80	0.32	0.16
25'	**2.00**	**1.00**	**0.50**	**0.20**	**0.10**
30'	1.38	0.69	0.35	0.14	0.07
35'	1.02	0.51	0.26	0.10	0.05

PHOTOMETRIC DISTRIBUTION (Curve Number)

Wattage	Light Source [1]	Lens Type	II MCO	III MCO
50-150	HPS	Flat Glass	OVH15S2D (150W)	OVH15S3D (150W)
175	MH	Flat Glass	OVH17M2D (175W)	OVH17M3D (175W)
200-250	HPS	Flat Glass	N/A	OVH25S2D (250W)

NOTE: 1 All light sources are clear unless noted otherwise.

ORDERING INFORMATION

Sample Number: OVH50SR22D4

Product Family
OVH=Flat_Glass_Luminaire

Lamp Wattage [1]
Pulse Start Metal Halide
70=70W
10=100W
15=150W[1]
17=175W
25=250W
High Pressure Sodium
50= 50W
70= 70W
10= 100W
15= 150W[2]
20= 200W
25= 250W
M (Probe Start) [3]
17= 175W
25= 250W

Lamp Type [4]
P=Pulse Start Metal Halide
S=High Pressure Sodium
M=Metal Halide

Ballast Type [4]
C=CWI
H=Reac. /HPF
K=10KV CWA[5]
N=Hi.Reac./NPF
P= Hi. Reac./HPF
R= Hi.Reac./NPF
W= CWA
M= Mag. Reg.

Voltage [4]
2=120V
0=208V
4=240V
7=277V
8=480V
9=347V
F=120/240 wired 120V
W=Multi-Tap wired 120V
V=Multi-Tap wired 240V
N=Multi-Tap wired 277V

Distribution
2=Type II
3=Type III

Optical Package
D=MCO

Options
CEC=California Title 20 Coompliant Ballast (Applies to 175-250W Pulse Start MH only)
1=Single Fuse (120, 277 or 347V)
2=Double Fuse, (208, 240, or 480V)
4=NEMA Photocontrol Receptacle
WH=White
BK=Black
BZ= Bronze
A= Raw Aluminum Unfinished
E= 150/100V HPS Ballast
H= Plug in Starter Receptacle
L= Lamp Included
K= Level Indicator
M= MOV Lightning Surge[6] Protectors
U= U.L./CSA Listed
3= Three Position Terminal Block

Accessories
OA/RA1016=NEMA Photocontrol - Multi-Tap
OA/RA1027=NEMA Photocontrol - 480V
OA/RA1014=NEMA Photocontrol - 120V
OA1213=TufGuard Vandal Shield
OA/RA1013=Photocontrol Shorting Cap

Notes: 1 150W and below Pulse Start Metal Halide are medium-base. All other lamps are mogul-base. Lamp not included. 2 150W Units are for S55 Lamps. 3 Probe Start Metal Halide available for non-US markets only (175-250W). 4 Refer to the technical section for lamp/ballast voltage compatibility. 5 Available 50-150W. 120/240 or single voltage only. 6 MOV option not available for any system requiring a three position terminal block (example - 240V with PCR wired 120V). In order for MOV option to function center terminal of three positon terminal block must be connected to "Earth" ground.