



INTERIOR PARKING GARAGE LIGHTING
DESIGNED BY ELECTRICAL ENGINEER

LIGHTING CALCULATIONS AND DESIGN BY:
Lighting Fundamentals, LLC
CHARLIE LEAVITT, LC, MIES
LIGHTING FUNDAMENTALS, LLC
PO Box 50827
Mendota Heights, MN 55150-0877
(651) 399-7768

All Luminaires Are Full Cut-Off Type - Uplight = 0

Symbol	Qty	Label	Arrangement	LLF	Description	Lum. Watts	Lum. Lumens	BUG Rating
CC-1	4	CC-1	SINGLE	1.000	Leotek #AR13-48N-MV-NW-3-DB-120 Single Mounted On A Square Steel Pole - Mounting Height Is 28' Including Base	87,3444	13106	B3-U0-G3
CC-2	2	CC-2	BACK-BACK	1.000	Leotek #AR13-48N-MV-NW-3-DB-120 Back To Back Mounted On A Square Steel Pole - Mounting Height Is 28' Including Base	87,3444	13106	B3-U0-G3
EX-1	1	WW	SINGLE	1.000	Leotek #ES1-24H-MV-NW-W-XX-530 Wall Mounted At 11'	43.5	4541	B1-U0-G1
EX-2	2	EXT	SINGLE	0.700	Existing 400 Watt Metal Halide Shoebox Luminaire Mounted Off This Site But Still Contributing 25' MH	482	27938	B4-U0-G4

All New LED Luminaires Are Equipped With 0 - 10 Volt Dimming Drivers & Will Be Controlled By Building Control System.

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Parking Area	Illuminance	Fc	3.015	7.1	1.1	2.77	6.45
Property Line	Illuminance	Fc	0.58	2.9	0.0	N.A.	N.A.

Parking Area Is 22,899 Square Feet.

Total Lighting Wattage Is 742.252 Watts

Lighting Power Density = .0324 Watts Per Square Foot

LEOTEK
LITE-ON GROUP

Project: 8131 34th Avenue, Bloomington, MN
Type: CC-1 & CC2
Catalog No: AR13-48N-MV-NW-3-DB-120

ARIETA® 13 Architectural LED Area Luminaire
AR13 N-Series Specification Data Sheet

Single Mounted On Bronze Square Steel Pole At 28' Mounting Height, Including Base.

Luminaire Data
Weight: 15.4 lbs (7 kg)
EPA: 0-47 ft

Ordering Information
Sample Catalog No. AR13-48N-MV-NW-3-DB-120 MSL3

Product	LED Code	Voltage	Nominal Color Temperature	Distribution	Finish	Output Code	Options
AR13	48N	MV	NW	3	DB	120	
		120-277V	3000K	2 Type 2	BK	WW-3000K	BSL Back Light Shield (Factory Installed)
		347-480V		3 Type 3	DK	030 FDC Fixed Output Code	PCR NEMA Photocoupler Photocoupler
				4 Type 4	WH	055 ANI 7-wire Photocoupler Photocoupler	MSL1 ANI 7-wire Photocoupler Photocoupler
				5 Type 5	GR	120 PCR-CR Control Ready 7-wire Photocoupler Photocoupler	MSL2 Motion Sensor with L3 Lens
				AW	NA	150 PCR-M Motion Sensor with L7 Lens	MSL3 Motion Sensor with L3 Lens
						170 PCR-M Motion Sensor with L7 Lens	MSL4 Motion Sensor with L7 Lens
						190 PCR-M Motion Sensor with L7 Lens	MSL5 Motion Sensor with L7 Lens
						210 PCR-M Motion Sensor with L7 Lens	MSL6 Motion Sensor with L7 Lens
						230 PCR-M Motion Sensor with L7 Lens	MSL7 Motion Sensor with L7 Lens
						250 PCR-M Motion Sensor with L7 Lens	MSL8 Motion Sensor with L7 Lens
						270 PCR-M Motion Sensor with L7 Lens	MSL9 Motion Sensor with L7 Lens
						290 PCR-M Motion Sensor with L7 Lens	MSL10 Motion Sensor with L7 Lens
						310 PCR-M Motion Sensor with L7 Lens	MSL11 Motion Sensor with L7 Lens
						330 PCR-M Motion Sensor with L7 Lens	MSL12 Motion Sensor with L7 Lens
						350 PCR-M Motion Sensor with L7 Lens	MSL13 Motion Sensor with L7 Lens
						370 PCR-M Motion Sensor with L7 Lens	MSL14 Motion Sensor with L7 Lens
						390 PCR-M Motion Sensor with L7 Lens	MSL15 Motion Sensor with L7 Lens
						410 PCR-M Motion Sensor with L7 Lens	MSL16 Motion Sensor with L7 Lens
						430 PCR-M Motion Sensor with L7 Lens	MSL17 Motion Sensor with L7 Lens
						450 PCR-M Motion Sensor with L7 Lens	MSL18 Motion Sensor with L7 Lens
						470 PCR-M Motion Sensor with L7 Lens	MSL19 Motion Sensor with L7 Lens
						490 PCR-M Motion Sensor with L7 Lens	MSL20 Motion Sensor with L7 Lens
						510 PCR-M Motion Sensor with L7 Lens	MSL21 Motion Sensor with L7 Lens
						530 PCR-M Motion Sensor with L7 Lens	MSL22 Motion Sensor with L7 Lens
						550 PCR-M Motion Sensor with L7 Lens	MSL23 Motion Sensor with L7 Lens
						570 PCR-M Motion Sensor with L7 Lens	MSL24 Motion Sensor with L7 Lens
						590 PCR-M Motion Sensor with L7 Lens	MSL25 Motion Sensor with L7 Lens
						610 PCR-M Motion Sensor with L7 Lens	MSL26 Motion Sensor with L7 Lens
						630 PCR-M Motion Sensor with L7 Lens	MSL27 Motion Sensor with L7 Lens
						650 PCR-M Motion Sensor with L7 Lens	MSL28 Motion Sensor with L7 Lens
						670 PCR-M Motion Sensor with L7 Lens	MSL29 Motion Sensor with L7 Lens
						690 PCR-M Motion Sensor with L7 Lens	MSL30 Motion Sensor with L7 Lens

Accessories
BSL Back Light Shield (Factory Installed)
RPA Round Pole Adapter
PFI1 Square Pole Top Fitter Single
PFI2 Square Pole Top Fitter Quad
PFI3 Square Pole Top Fitter Quad
PFI4 Square Pole Top Fitter Quad
WMI Wall Mount
BSK Bi-Directional Splice Kit
LLC Long Life Twist Lock Photocoupler
SC Tank Lock Shielding Cap
FSR100 Motion Sensor Configuration Tool

© 2019 Leotek Electronics USA, LLC
AR13_N_Series_Specification_Sheet_05-11-20. Specifications subject to change without notice.
Page 1

LEOTEK
LITE-ON GROUP

Project: 8131 34th Avenue, Bloomington, MN
Type: WW
Catalog No: ES1-24H-MV-NW-W-DB-350

Eseta™ LED Wall Sconce
ES1

Wall Mounted At 11' Above Grade

Luminaire Data
Weight: 9.9 lbs (4.5 kg)
14.6 lbs (6.6 kg) with EM, MS options

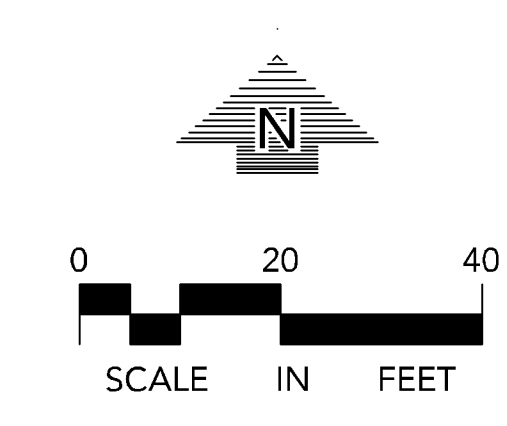
Ordering Information
Sample Catalog No. ES1-24H-MV-NW-W-DB-350

Product	No. & Type of LEDs	Voltage	Color Temperature	Distribution	Finish	Drive Current	Options
ES1	24H	MV	NW	W	DB	350	
	48H	120-277V	3000K	W Wide	BK	350mA	PC1 Photo Control
		347-480V	4000K	W Wide	DK	530mA	MSL1 Motion Sensor, L2 Lens
			5000K	FT Forward Throw	BR	700mA	MSL2 Motion Sensor, L3 Lens
					GR		EM Emergency Battery System
					WH		FSR100 Motion Sensor Configuration Tool

Notes:
1. Consult factory for other color temperatures.
2. Consult factory for non-standard finish options. See page 3 for specifications.
3. Factory set drive current, non field adjustable. 700mA is not available for 48H version. Refer to performance data on page 2. Consult factory for other drive current options.
4. Motion Sensor available with MV only. Motion Sensor default setting dims luminaire to 50% when no motion is detected for 5 minutes. Field adjustable settings available using FSR100 option.
5. Emergency Battery System available with MV only. 3 year limited warranty on Emergency Battery System.
6. Available with MV. Consult factory for MV options, single voltage only, either 347V or 480V.

© 2019 Leotek Electronics USA
ES1 Spec Sheet_05_28_19. Specifications subject to change without notice.
Page 1

Lighting by:
Charlie Leavitt, LC, MIES
Lighting Fundamentals, LLC
PO Box 50827
Mendota Heights, MN 55150-0877
charlie@lightingfundamentalsllc.com
651-399-7768



BLOOMINGTON MULTI-FAMILY
BLOOMINGTON, MN
ROERS COMPANIES
110 Cheshire Lane, Suite 120
Minnetonka, MN 55305

LOUCKS
PLANNING
CIVIL ENGINEERING
LAND SURVEYING
LANDSCAPE ARCHITECTURE
ENVIRONMENTAL
7200 Hemlock Lane, Suite 300
Maple Grove, MN 55349
763.424.5505
www.loucksinc.com

CADD QUALIFICATION

CADD files prepared by the Consultant for this project are instruments of the Consultant's professional services for use solely with respect to this project. These CADD files shall not be used on other projects or for purposes not intended by the Consultant. With the Consultant's approval, users may be permitted to create copies of the CADD drawings files for information and reference only. All alterations or corrections, additions, or deletions to these CADD files shall be made at the risk of the user making such corrections, additions or deletions and that user shall hold harmless and indemnify the Consultant from any claim, responsibility, claims, and liabilities.

SUBMITTAL/REVISIONS

Date	Description
12/22/20	CITY SUBMITTAL
03/26/21	FOOTINGS & FOUNDATION SET
05/21/21	CITY COMMENTS
06/08/21	CITY COMMENTS
06/10/21	CITY COMMENTS
06/22/21	CITY SUBMITTAL
07/07/21	FIRE DEPT COMMENTS
08/04/21	ADD CITY DETAILS
09/17/21	PERMIT SET

PROFESSIONAL SIGNATURE

QUALITY CONTROL

C1-1	DEMO PLAN
C2-1	SITE PLAN
C3-1	GRADING PLAN
C3-2	SWPPP
C3-3	SWPPP NOTES
C4-1	SANITARY AND WATERMAIN
C4-2	STORM SEWER
C5-1	CIVIL DETAILS
C8-2	CIVIL DETAILS
L1-1	LANDSCAPE PLAN
L1-2	LANDSCAPE DETAILS
P1-1	PHOTOMETRICS PLAN
P1-2	PHOTOMETRICS PLAN

INITIAL LIGHTING PHOTOMETRICS PLAN
P1-1



LIGHTING CALCULATIONS AND DESIGN BY:
Lighting Fundamentals, LLC
CHARLIE LEAVITT, LC, MIES
LIGHTING FUNDAMENTALS, LLC
PO Box 50827
Mendota Heights, MN 55150-0877
(651) 399-7768

All Luminaires Are Full Cut-Off Type - Uplight = 0

Symbol	Qty	Label	Arrangement	LLF	Description	Lum. Watts	Lum. Lumens	BUG Rating
CC-1	4	CC-1	SINGLE	0.810	Leotek #AR13-48N-MV-NW-3-DB-120 Single Mounted On A Square Steel Pole - Mounting Height Is 28' Including Base	87,3444	13106	B3-U0-G3
CC-2	2	CC-2	BACK-BACK	0.810	Leotek #AR13-48N-MV-NW-3-DB-120 Back To Back Mounted On A Square Steel Pole - Mounting Height Is 28' Including Base	87,3444	13106	B3-U0-G3
EXT	1	WW	SINGLE	0.810	Leotek #ES1-24H-MV-NW-W-XX-530 Wall Mounted At 11'	43.5	4541	B1-U0-G1
EXT	2	EXT	SINGLE	0.700	Existing 400 Watt Metal Halide Shoebox Luminaire Mounted Off This Site But Still Contributing 25' MH	482	27938	B4-U0-G4

All New LED Luminaires Are Equipped With 0 - 10 Volt Dimming Drivers & Will Be Controlled By Building Control System.

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Parking Area	Illuminance	Fc	2.51	5.9	1.0	2.51	5.90
Property Line	Illuminance	Fc	0.50	2.7	0.0	N.A.	N.A.

Parking Area Is 22,899 Square Feet.
Total Lighting Wattage Is 742.252 Watts
Lighting Power Density = .0324 Watts Per Square Foot

LEOTEK
LITE-ON GROUP

Project: 8131 34th Avenue Bloomington, MN
Type: CC-1 & CC2
Catalog No: AR13-48N-MV-NW-3-DB-120

ARIETA® 13 Architectural LED Area Luminaire
AR13 N-Series Specification Data Sheet

Single Mounted On Bronze Square Steel Pole At 28' Mounting Height, Including Base.

Luminaire Data
Weight: 15.4 lbs (7 kg)
EPA: 0-47 ft

Ordering Information
Sample Catalog No. AR13-48N-MV-NW-3-DB-120 MSL3

Product	LED Code	Voltage	Nominal Color Temperature	Distribution	Finish	Output Code	Options
AR13	48N	MV 120-277V HV 347-480V	NW 3000K	2 Type 2 3 Type 3 4 Type 4 5 Type 5 AER Auto Front Row	DB Black DK Dark Bronze WH White GR Gray GY Natural NA Aluminum	WW-3000K 030 040 055 060 100 120 150 190 NW-4000K CW-5000K	BSL Back Light Shield (Factory Installed) FDC Field Output Code NEMA Photocoupler Receptacle ANSI 7-wire Photocoupler Receptacle Control Ready 7-wire Photocoupler Receptacle Motion Sensor with L3 Lens 200V (80A) Surge Protector Part Night Dimming Part Night Dimming Optics Rotated Right Optics Rotated Left Utility Wattage Label

Accessories
BSL Enhanced Back Light Shield
RPA Round Pole Adapter
PFF1 Square Pole Top Fitter Single Wall Mount
PFF2 Square Pole Top Fitter Quad Wall Mount
VWF 8' x 12' Detent Splice Kit
LLC Long Life Twist Lock Photocoupler
SC Tank Lock Shielding Cap
FSR100 Motion Sensor Configuration Tool

© 2020 Leotek Electronics USA, LLC
AR13_N_Series_Specification_Sheet_05-11-20. Specifications subject to change without notice.

LEOTEK
LITE-ON GROUP

Project: 8131 34th Avenue Bloomington, MN
Type: WW
Catalog No: ES1-24H-MV-NW-W-DB-350

Eseta™ LED Wall Sconce
ES1

Wall Mounted At 11' Above Grade

Luminaire Data
Weight: 9.9 lbs (4.5 kg)
14.6 lbs (6.6kg) with EM, MS options

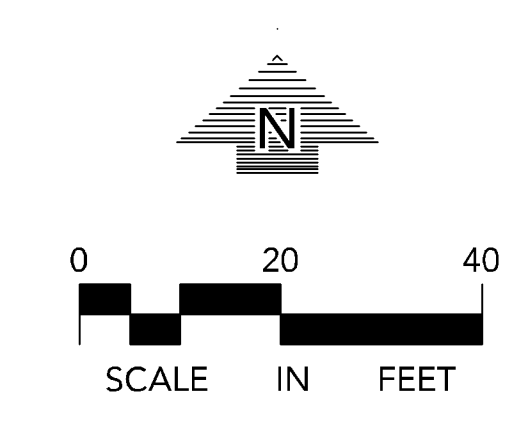
Ordering Information
Sample Catalog No. ES1-24H-MV-NW-W-DB-350

Product	No. & Type of LEDs	Voltage	Color Temperature	Distribution	Finish	Drive Current	Options
ES1	24H 48H	MV 120-277V HV 347-480V	NW 3000K WW 4000K CW 5000K	W Wide FT Forward Throw	DB Black DK Dark Bronze WH White	350mA 530mA 700mA	PC Photo Control MSL Motion Sensor, L2 Lens MSL Motion Sensor, L3 Lens EM Emergency Battery System FSR100 Motion Sensor Configuration Tool

Notes:
1. Consult factory for other color temperatures.
2. Consult factory for non-standard finish options. See page 3 for specifications.
3. Factory set drive current, non field adjustable. 700mA is not available for 48H version. Refer to performance data on page 2. Consult factory for other drive current options.
4. Motion Sensor available with MV only. Motion Sensor default setting dims luminaire to 50% when no motion is detected for 5 minutes. Field adjustable settings available using FSR100 option.
5. Emergency Battery System available with MV only. 3 year limited warranty on Emergency Battery System.
6. Available with MV. Consult factory for MV options, single voltage only, either 347V or 480V.

© 2019 Leotek Electronics USA
ES1 Spec Sheet_05_28_19. Specifications subject to change without notice.

Lighting by:
Charlie Leavitt, LC, MIES
Lighting Fundamentals, LLC
PO Box 50827
Mendota Heights, MN 55150-0877
charlie@lightingfundamentalsllc.com
651-399-7768



BLOOMINGTON MULTI-FAMILY
BLOOMINGTON, MN

ROERS COMPANIES
110 Cheshire Lane, Suite 120
Minnetonka, MN 55305

LOUCKS
PLANNING
CIVIL ENGINEERING
LAND SURVEYING
LANDSCAPE ARCHITECTURE
ENVIRONMENTAL
7200 Hemlock Lane, Suite 300
Maple Grove, MN 55349
763.424.5505
www.louckscinc.com

CADD QUALIFICATION
CADD files prepared by the Consultant for this project are instruments of the Consultant's professional services for use solely with respect to this project. These CADD files shall not be used on other projects or modified for this project, in whole or in part, without the written approval of the Consultant. With the Consultant's approval, users may be permitted to create copies of the CADD drawings files for information and reference only. All alterations or modifications, additions, or deletions to these CADD files shall be made at the user's risk and shall remain the responsibility of the user. The Consultant shall not be responsible for errors or omissions in any drawings, plans, or specifications.

SUBMITTAL/REVISIONS

Date	Description
12/22/20	CITY SUBMITTAL
03/26/21	FOOTINGS & FOUNDATION SET
05/21/21	CITY COMMENTS
06/08/21	CITY COMMENTS
06/10/21	CITY COMMENTS
06/22/21	CITY SUBMITTAL
07/07/21	FIRE DEPT COMMENTS
08/04/21	ADD CITY DETAILS
09/17/21	PERMIT SET

PROFESSIONAL SIGNATURE

QUALITY CONTROL

C1-1	DEMO PLAN
C2-1	SITE PLAN
C3-1	GRADING PLAN
C3-2	SWPPP
C3-3	SWPPP NOTES
C4-1	SANITARY AND WATERMAIN
C4-2	STORM SEWER
C5-1	CIVIL DETAILS
C8-2	CIVIL DETAILS
L1-1	LANDSCAPE PLAN
L1-2	LANDSCAPE DETAILS
P1-1	PHOTOMETRICS PLAN
P1-2	PHOTOMETRICS PLAN

MAINTAINED LIGHTING PHOTOMETRICS PLAN
P1-2