

A-2.6 PRODUCT INFORMATION SHEETS

The following pages contain a compendium of Product Information Sheets, as available for the Project at this time.

- LANDSCAPING
 - Urban Accessories, ‘Jamison’, 4’x6’ Natural Raw Unfinished Cast Aluminum
 - Trojan Industries Tree Well Frame 406
 - City of Calgary Roads ‘Typical Tree Trench 454.1002.004

- TACTILE STRIPS
 - Kinesik Advantage Cast Iron Tactile Strip

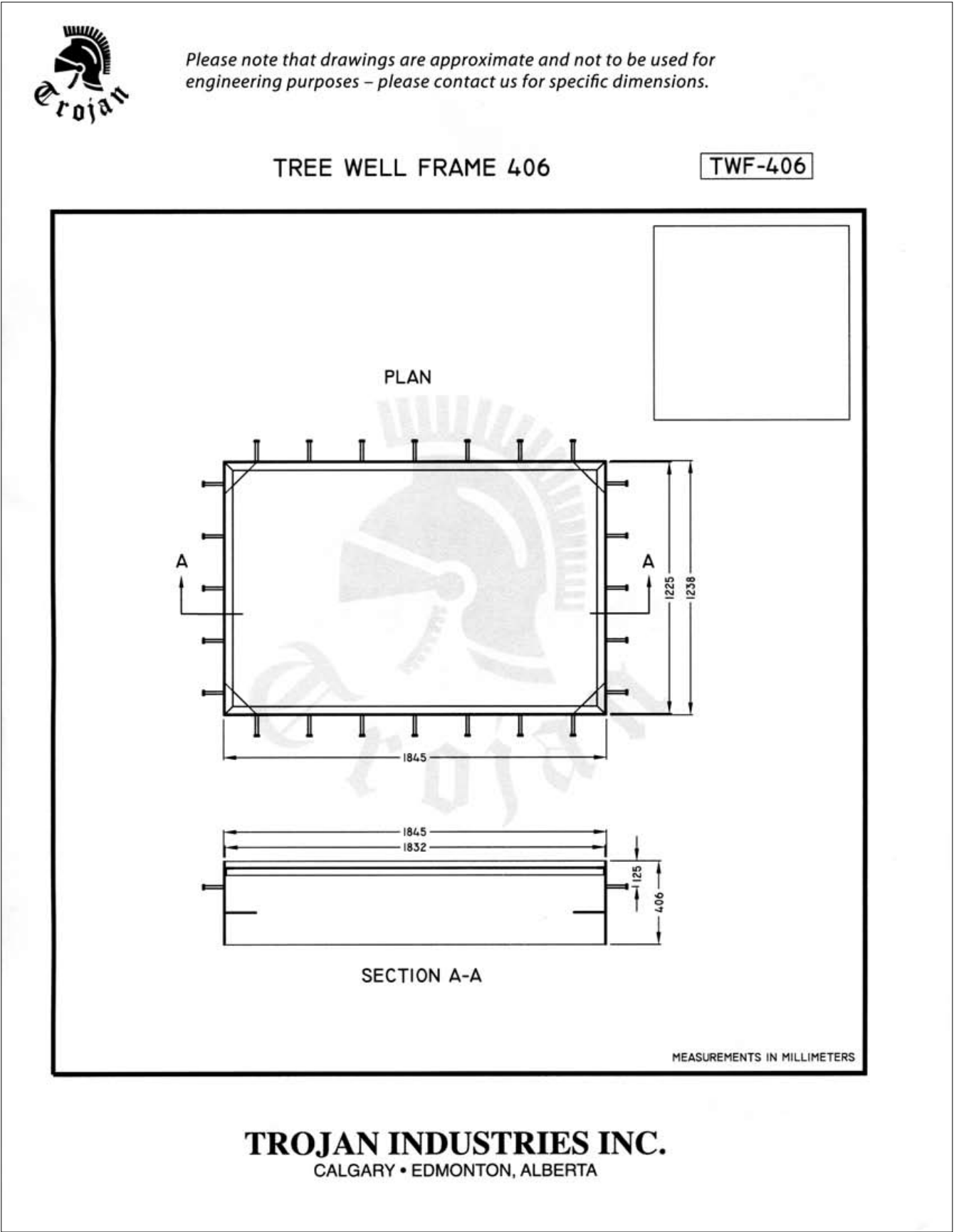
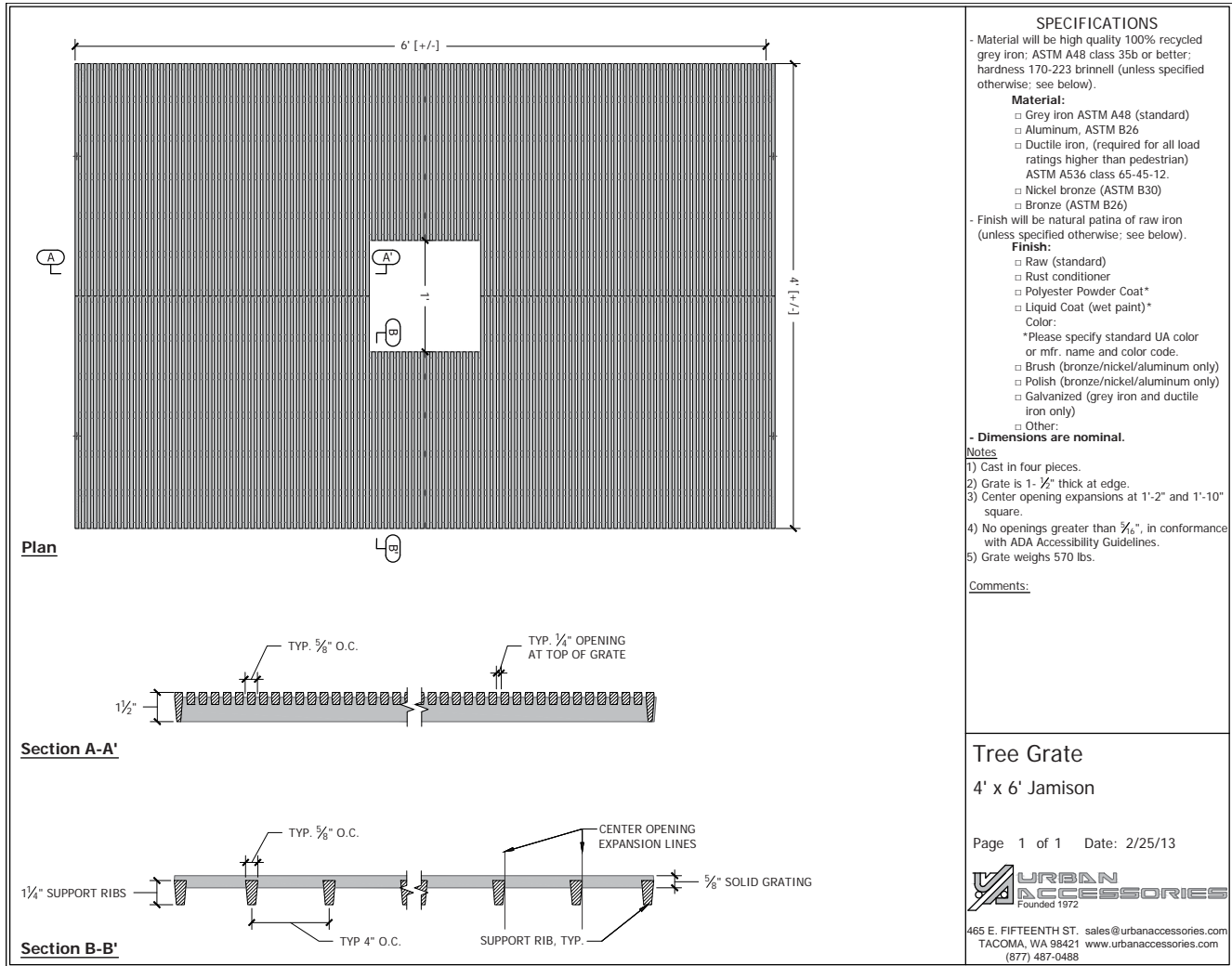
- METAL GRATING
 - ASG Aluminum Bar Grating, Imperial Type 7-4
 - SlipNOT Grating 7 - 4. Grade 2 (Medium) Stainless on Aluminium
 - SlipNOT Grate Plate, Grade 2 (Medium) Aluminum on Aluminium

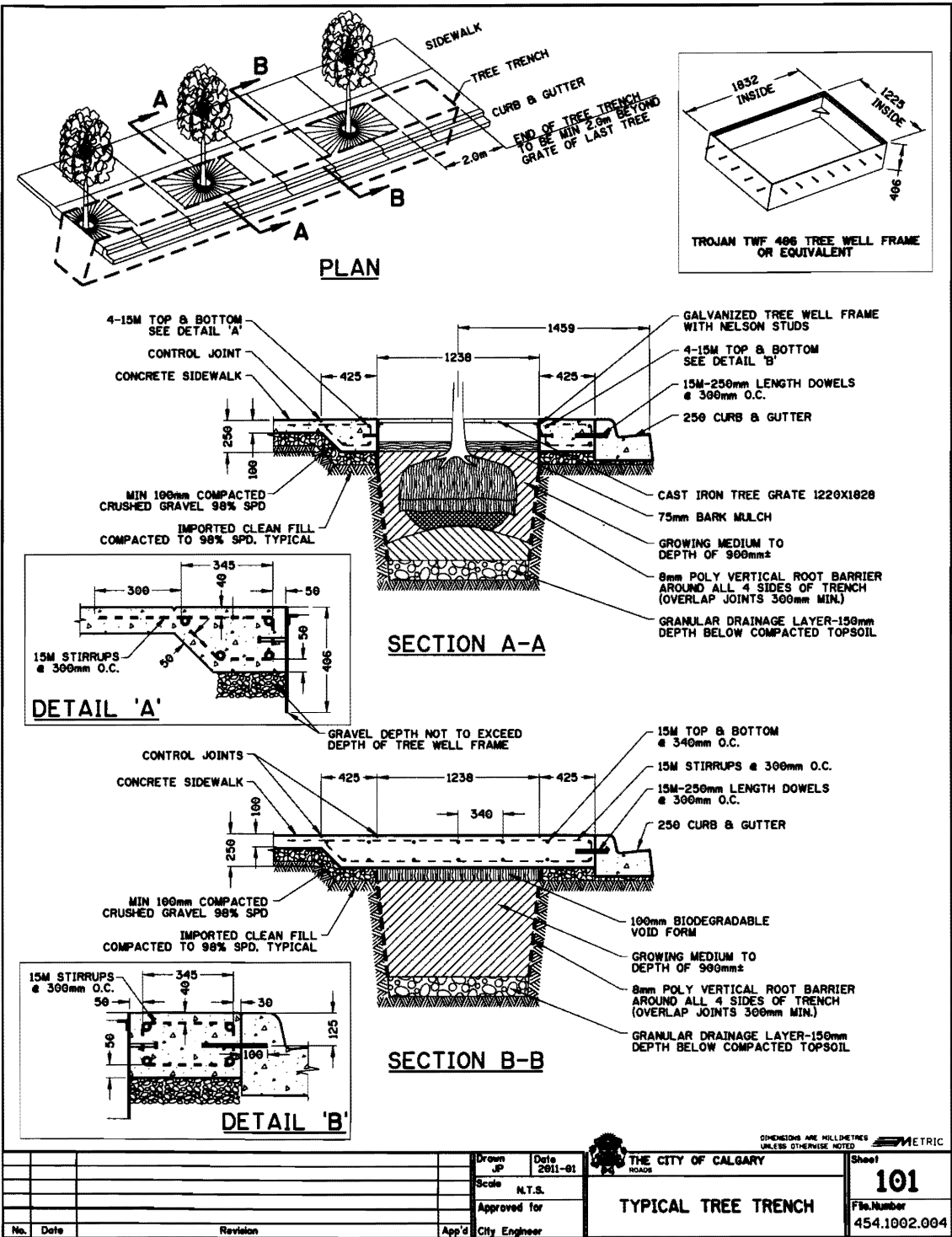
- POLYCARBONATE
 - 3-Form Koda XT
 - 3-Form Chroma

- PUBLIC ART LIGHTING
 - Traxon Nano Linear Allegrro AC XB RGB
 - Traxon String RGB

- STREET LIGHTING
 - Cooper Lighting ‘Gleon’ Galleon LED 1 - 10 Light Squares
 - Kensington Street Light Pole
 - GVA STR9 Monochromatic Linear LED

- SECURITY SYSTEM
 - Commend CSHo2 Call Box/USM931A Substation/AP 50-Watt Amplifier AF 501 & IP-Subscriber Cards G8-IP
 - SH-931 Station Heater
 - DNH Loudspeaker
 - Alcatel-Lucent Ominiswitch 6850E
 - Panasonic Super Dynamic Full HD Vandal Resistant Dome Network Camera WV-SW558









Designed for Durability Engineered for Ultimate Strength

Advantage™ Cast Iron Tactile Walking Surface Indicator (TWSI) plates are manufactured in strict accordance with ASTM A-48, Class 35B Grey Cast Iron. The Advantage™ Cast in Place System is lightweight with exceptional high strength, and utilizes the most advanced metallurgical Engineering Science and Technology to meet and exceed the most stringent municipal standards. Advantage™ Cast Iron is aesthetically pleasing, has exceptional longevity and incorporates integral texture for a permanent slip resistant surface.



PRODUCT FEATURES



- Lightweight and easy to install
- Bolted connection allows for easy connectability between two or more plates
- Available in various sizes and radii
- Engineered to withstand abuse of heavy vehicular traffic such as snow plows, forklifts, and other rolling loads
- Maintenance-free natural patina
- ASTM A48, Class 35B Grey Cast Iron
- Can be recycled after its lifecycle
- Largest selection of standard and radius tiles
- 10 year manufacturer's warranty

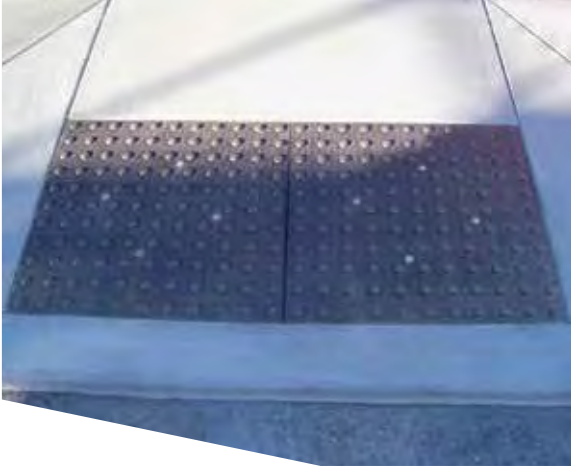
COMPLIANCE

Advantage™ Cast Iron Tactile Systems are in full compliance with Canadian Accessibility Codes. Kinesik tactile walking surface indicators meet the most recent AODA, CSA, and ISO, provincial and national building codes. Kinesik Engineered Products Incorporated is your one stop source for all tactile systems for people who have visual impairments, and only Kinesik provides a complete range of products designed for safety and convenience.

See back for details.



Phone: 855.364.7763






PROFESSIONAL ASSOCIATIONS

Kinesik is proud to be a member of the following organisations



STANDARD COLOUR



Uncoated
Natural Patina

ADVANTAGE CAST IRON SIZES

Standard	Radial
18"x24" (457 mm x 610 mm)	10' (3,048 mm) 25' (7,620 mm)
24"x24" (610 mm x 610 mm)	15' (4,572 mm) 30' (9,144 mm)
30"x24" (762 mm x 610 mm)	17'6" (5,334 mm) 35' (10,668 mm)
	20' (6,096 mm)

PLATE SPECIFICATIONS

Standard Specification for Grey Iron Castings, Class 35B

ASTM Reference	Test Description	Value
ASTM C 1028	Static Coefficient of Friction	≥ 1.1 wet/dry
ASTM A 327	Impact Resistance	No damage @ 54 J
ASTM A 48	Compressive Strength	785 MPa
ASTM E8/E8M-13a	Tensile Strength	≥ 241 MPa
ASTM C 501	Abrasive Wear Index	≥ 8200

APPLICATIONS

TWSI – Truncated Domes

- An unprotected drop off edge, such as a transit platform where the change in elevation is greater than 250mm or the slope is steeper than in a ratio of 1:3 (33%).
- The unprotected edges of a reflecting pool.
- An entry into a vehicular route or area where no curbs or other elements separate it from a pedestrian route such as curb ramps, wheel chair ramps, top of stairs/escalators and blended transitions.

KINESIK Engineered Products Incorporated

2213 North Sheridan Way
Mississauga, Ontario L5K 1A3
Canada


Phone: 855.364.7763
Fax: 800.769.4463
www.kinesik.ca

Distributor

ADVCH1115

1

BAR GRATING



BAR GRATING - ALUMINUM

IMPERIAL - Type 7-4 Spacing

7-4

7/16"

TABLE OF SAFE LOADS - IMPERIAL

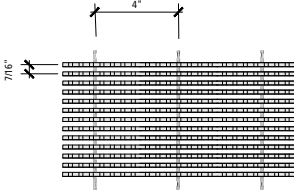
U - Safe Uniform Load, in lbs. per sq. ft
C - Safe Concentrated Load, in lbs. per foot of grating width
D - Deflection in inches

Note: Spans to the right of heavy line not recommended. Deflections shown based on tabulated loadings. For lesser design loads reduce deflection in direct proportion. For serrated surface increase depth by one size.

For serrated surface, increase depth by 1/4" for load rate

GENERAL

Loads and deflections are theoretical and based on static loading.




7-4 SPACING

ALUMINUM TYPE 7-4																	
SIZE OF BEARING BAR	APPROX. WT/LBS/SQ.FT TYPE 7-4		SPAN IN INCHES												SEC. MOD. PER FEET OF WIDTH		
			1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"	5'-0"	5'-6"	6'-0"	6'-6"		7'-0"	8'-0"
1" X 3/16"	6.3	U	6856	3047	1714	1097	762	560	429	339	274						0.857
		D	0.036	0.081	0.144	0.225	0.324	0.441	0.577	0.730	0.899						
		C	3428	2285	1714	1371	1143	980	857	762	686						
		D	0.027	0.064	0.115	0.180	0.259	0.353	0.461	0.583	0.72						
1 1/4" X 3/16"	7.78	U	10716	4763	2679	1714	1190	875	670	529	429	354	298				1.339
		D	0.027	0.064	0.115	0.180	0.259	0.353	0.461	0.583	0.721	0.871	1.038				
		C	5358	3572	2679	2143	1786	1531	1339	1190	1071	974	893				
		D	0.021	0.051	0.092	0.144	0.207	0.282	0.369	0.466	0.576	0.697	0.83				
1 1/2" X 3/16"	9.28	U	15428	6857	3857	2469	1714	1259	964	762	617	510	429	365			1.929
		D	0.024	0.054	0.096	0.150	0.216	0.294	0.384	0.486	0.600	0.726	0.865	1.014			
		C	7714	5143	3857	3086	2571	2204	1929	1714	1543	1403	1286	1187			
		D	0.021	0.044	0.077	0.120	0.173	0.235	0.307	0.389	0.480	0.581	0.691	0.811			
1 3/4" X 3/16"	10.8	U	21000	9333	5250	3360	2333	1714	1313	1037	840	694	583	497	429	328	2.625
		D	0.015	0.044	0.082	0.129	0.185	0.252	0.329	0.417	0.514	0.622	0.740	0.869	1.009	1.316	
		C	10500	7000	5250	4200	3500	3000	2625	2333	2100	1909	1750	1615	1500	1313	
		D	0.016	0.037	0.066	0.103	0.148	0.202	0.263	0.333	0.411	0.498	0.592	0.695	0.806	1.054	
2" X 3/16"	12.32	U	27428	12190	6857	4389	3048	2239	1714	1355	1097	907	762	649	560	429	3.429
		D	0.014	0.039	0.072	0.113	0.162	0.220	0.288	0.365	0.450	0.545	0.648	0.760	0.882	1.153	
		C	13714	9143	6857	5486	4572	3918	3429	3048	2743	2494	2286	2110	1959	1714	
		D	0.018	0.034	0.058	0.090	0.130	0.176	0.230	0.292	0.360	0.436	0.518	0.608	0.706	0.921	
2 1/4" X 3/16"	13.83	U	34716	15429	8679	5554	3857	2834	2170	1714	1389	1148	964	822	708	542	4.339
		D	0.016	0.036	0.064	0.100	0.144	0.196	0.256	0.324	0.400	0.484	0.576	0.676	0.783	1.023	
		C	17358	11572	8679	6943	5786	4959	4339	3857	3471	3156	2893	2670	2480	2170	
		D	0.017	0.030	0.051	0.080	0.117	0.157	0.205	0.259	0.320	0.387	0.461	0.541	0.627	0.819	
2 1/2" X 3/16"	15.33	U	42856	19047	10714	6857	4762	3499	2679	2116	1714	1417	1190	1014	875	670	5.357
		D	0.018	0.034	0.058	0.090	0.130	0.176	0.230	0.292	0.360	0.436	0.518	0.608	0.706	0.922	
		C	21428	14285	10714	8572	7143	6123	5357	4762	4286	3896	3571	3297	3061	2679	
		D	0.012	0.026	0.046	0.072	0.104	0.141	0.184	0.233	0.288	0.348	0.415	0.487	0.564	0.737	

Maximum allowable fiber stress of 18.000 P.S.I

38

Accurate Screen + Grating Product Catalogue



METAL GRATING- SlipNOT Grating 7 - 4, Grade 2 (Medium) Aluminum on Aluminum

Available Widths					
4-1/8"	7-5/8"	11-9/16"	15-1/16"	18-9/16"	22-1/16"
4-9/16"	8-1/16"	12"	15-1/2"	19"	22-1/2"
5"	8-15/16"	12-7/16"	15-15/16"	19-7/16"	22-15/16"
5-7/16"	9-3/8"	12-7/8"	16-3/8"	19-7/8"	23-3/8"
5-7/8"	9-13/16"	13-5/16"	16-13/16"	20-5/16"	23-13/16"
6-5/16"	10-1/4"	13-3/4"	17-1/4"	20-3/4"	
6-3/4"	10-11/16"	14-3/16"	17-11/16"	21-3/16"	
7-3/16"	11-1/8"	14-5/8"	18-1/8"	21-5/8"	

SPANS UP TO 20'

SPAN

WIDTH

Bearing Bars

7/16" c-c spacing

1/4" Cross Bars

4" Cross Bar Spacing

Swaged or Press-Locked Construction

Available Alloys

Steel

Galvanized Steel

Stainless Steel

Aluminum

Bearing Bar Options

1" x 3/16"

1-3/4" x 3/16"

1-1/4" x 3/16"

2" x 3/16"

1-1/2" x 3/16"

2-1/4" x 3/16"

No Banding

Trim Banded

ADA Compliant Spacing

Ends Open

End Bars Welded Same Size As Bearing Bars

SlipNOT

Metal Safety Flooring

2545 Beaufait Street

Detroit, Michigan 48207

800/754-7668 Phone

313/923-4555 Fax

info@slipnot.com (Email)

SlipNOT Bar Grating 7-4

Copyright 2004, The WS Molnar Company

All Rights Reserved

SlipNOT®

Metal Safety Flooring

OUR PRIORITY:
YOUR SAFETY

SlipNOT® Specifications for Grade 2:

STEEL

SlipNOT®, grit-free, steel Grip Plate® / Grip Grate® Grade #2 – Medium, as manufactured by the W.S. Molnar Company (1-800-SlipNOT) is available in stock sizes or manufactured to detailed specifications on drawings. Steel Grip Plate® / Grip Grate® shall incorporate an anti-slip primarily martensitic steel surface covering 100% of the substrate consisting of a random hatch matrix with a surface hardness between 55 – 63 on the Rockwell “C” scale and a surface to substrate bond strength of at least 4,000 psi. The non-slip surface shall have a minimum coefficient of friction of 0.8 and be listed as slip resistant by Underwriters Laboratories.

STAINLESS STEEL

SlipNOT®, grit-free, stainless steel Grip Plate® / Grip Grate® Grade #2 – Medium, as manufactured by the W.S. Molnar Company (1-800-SlipNOT) is available in stock sizes or manufactured to detailed specifications on drawings. Stainless steel Grip Plate® / Grip Grate® shall incorporate an anti-slip stainless steel surface covering 100% of substrate consisting of a random hatch matrix with a surface hardness between 55 – 63 on the Rockwell “C” scale and a surface to substrate bond strength of at least 4,000 psi. The non-slip surface shall have a minimum coefficient of friction of 0.8 and be listed as slip resistant by Underwriters Laboratories.

ALUMINUM

SlipNOT®, grit-free, aluminum Grip Plate® / Grip Grate® Grade #2 – Medium, as manufactured by the W.S. Molnar Company (1-800-SlipNOT) is available in stock sizes or manufactured to detailed specifications on drawings. Aluminum Grip Plate® / Grip Grate® shall incorporate an anti-slip aluminum surface covering 100% of substrate consisting of a random hatch matrix and a bond strength of at least 2,000 psi. The non-slip surface shall have a minimum coefficient of friction of 0.8 and be listed as slip resistant by Underwriters Laboratories.

www.slipnot.com | info@slipnot.com

SlipNOT® Metal Safety Flooring products may be covered by one or more of the following patents; 5,711,119, 6,839,951 and 6,863,932.

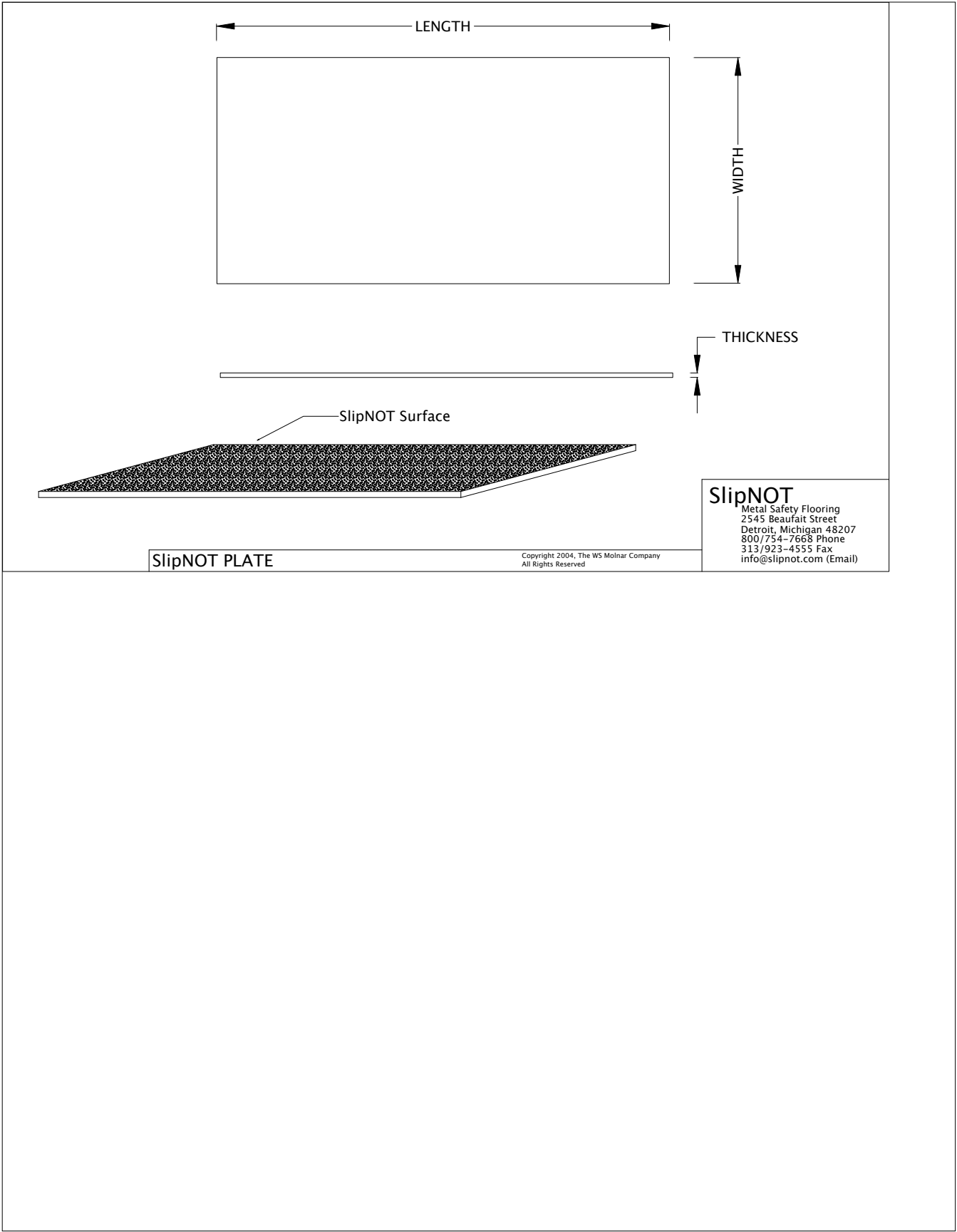
2545 Beaufait Street | Detroit, MI 48207 | Phone: 313.923.0400 | Toll Free: 800.SlipNOT | Fax: 313.923.4555

2 of 2

4th Street SW Underpass Enhancement Project

31 of 90

METAL GRATING- SlipNOT Grate Plate Grade 2 (Medium) Aluminum on Aluminum



SlipNOT[®]

Metal Safety Flooring

OUR PRIORITY: YOUR SAFETY

SlipNOT[®] Specifications for Grade 2:

STEEL

SlipNOT[®], grit-free, steel Grip Plate[®] / Grip Grate[®] Grade #2 – Medium, as manufactured by the W.S. Molnar Company (1-800-SlipNOT) is available in stock sizes or manufactured to detailed specifications on drawings. Steel Grip Plate[®] / Grip Grate[®] shall incorporate an anti-slip primarily martensitic steel surface covering 100% of the substrate consisting of a random hatch matrix with a surface hardness between 55 – 63 on the Rockwell “C” scale and a surface to substrate bond strength of at least 4,000 psi. The non-slip surface shall have a minimum coefficient of friction of 0.8 and be listed as slip resistant by Underwriters Laboratories.

STAINLESS STEEL

SlipNOT[®], grit-free, stainless steel Grip Plate[®] / Grip Grate[®] Grade #2 – Medium, as manufactured by the W.S. Molnar Company (1-800-SlipNOT) is available in stock sizes or manufactured to detailed specifications on drawings. Stainless steel Grip Plate[®] / Grip Grate[®] shall incorporate an anti-slip stainless steel surface covering 100% of substrate consisting of a random hatch matrix with a surface hardness between 55 – 63 on the Rockwell “C” scale and a surface to substrate bond strength of at least 4,000 psi. The non-slip surface shall have a minimum coefficient of friction of 0.8 and be listed as slip resistant by Underwriters Laboratories.

ALUMINUM

SlipNOT[®], grit-free, aluminum Grip Plate[®] / Grip Grate[®] Grade #2 – Medium, as manufactured by the W.S. Molnar Company (1-800-SlipNOT) is available in stock sizes or manufactured to detailed specifications on drawings. Aluminum Grip Plate[®] / Grip Grate[®] shall incorporate an anti-slip aluminum surface covering 100% of substrate consisting of a random hatch matrix and a bond strength of at least 2,000 psi. The non-slip surface shall have a minimum coefficient of friction of 0.8 and be listed as slip resistant by Underwriters Laboratories.

www.slipnot.com | info@slipnot.com

SlipNOT[®] Metal Safety Flooring products may be covered by one or more of the following patents; 5,711,119, 6,839,951 and 6,863,932.

2545 Beaufait Street | Detroit, MI 48207 | Phone: 313.923.0400 | Toll Free: 800.SlipNOT | Fax: 313.923.4555



Product Description

3form Koda XT offers color, durability and design freedom for the most extreme environments and applications. These panels exhibit the highest performance of any engineered resin panels. Color, finish, and translucency coupled with end-less shaping options, Koda XT is the perfect medium for your exterior architectural application.

A product line developed specifically for exterior projects, Koda XT has the added benefits of being constructed from polycarbonate, offering high design and performance.

FEATURES AND BENEFITS

- Form and shape to create eye-catching installations
- Extremely tough, allowing for easy fabrication and maximum installed durability
- Extremely versatile, enabling designers to achieve full design potential
- Lightweight, half the density of glass, making for easier installation and reducing structural support requirements
- Good chemical resistance, reducing potential harm incurred by cleaning agents

AVAILABLE COLORS

Crystal Clear

Koda Color

C3 COLOR SYSTEM

3form's patented C3 color system can be combined with Koda XT in quantities as few as one panel. Use the C3 Color Matching System to create over 10,000 colors.

CUSTOM COLORS

Koda XT can be customized to match nearly any translucent or transparent color. Minimums will apply.

TEXTURES/PATTERNS/FINISHES

3form provides the option of substituting between 4 optional finishes. In most cases, you can even pick different front and back finishes. Finishes include:

- **Patent** - A high gloss finish with highest light transmission
- **Patina** - A non-glare finish with smooth appearance
- **Polish*** - Glass like finish
- **Sandstone** - A durable finish with subtle texture
- **Stucco** - A durable finish with a pebbled texture
- **Vellum** - A random brushed finish similar to 3form renewable matte

* Polish finish is only available on Crystal Clear

PANEL SIZES AND TOLERANCES

3form Koda XT panels are offered in standard 4' x 8' (1.2 m x 2.4 m) and 4'x10' (1.2m x 3.0m) sizes. Custom lengths and widths up to 12' long and 6' wide are possible. All dimensions and squareness (standard with custom) are subject to a 3/16" (4.7 mm) tolerance.

Standard thickness of Koda XT is 1/2" (12.7 mm) and 1/4"* (6.3 mm).

* 1/4" Koda XT is only available in Crystal Clear.

CRYSTAL CLEAR & CUSTOM COLORS

NOMINAL THICKNESS GAUGE	MINIMUM ALLOWANCE GAUGE	MAXIMUM ALLOWANCE GAUGE
1/2" (12.7 mm)	0.427" (10.85 mm)	0.500" (12.7 mm)
1/4" (6.3 mm)	0.212" (5.38 mm)	0.260" (6.6 mm)

KODA COLOR & C3

NOMINAL THICKNESS GAUGE	MINIMUM ALLOWANCE GAUGE	MAXIMUM ALLOWANCE GAUGE
1/2" (12.7 mm)	0.451 (11.45 mm)	0.585 (14.86 mm)

Sheet tolerance readings are based on an average of several measurements along both long edges of each panel. These measurements are taken 2-3 inches (50-75 mm) from the edges of the panel.

Custom gauges of Koda XT are possible. Your 3form Sales Representative can assist you with questions regarding custom gauges for your application.

FLATNESS TOLERANCE

Koda XT panels shall not have distortion in the form of a wrinkle, twist or scallop along the perimeter of the sheet. Overall warp extending across the sheet is permitted to a maximum of 1/4" (6.3 mm) for each 48" (1.2 m) or fraction thereof. Panel is to be measured when laying horizontally under its own weight on a flat continuous surface.

Specifications

FLAMMABILITY & SMOKE TEST RESULTS – BUILDING CODE APPROVALS

Koda XT panels have been independently tested and meet the criteria for approved interior finishes and light transmitting resin materials as described in the 2009 International Building Code®.

TEST	3FORM KODA XT	RESULT
ASTM D 2843 Smoke Density	48.9	PASS Below 75
ASTM D 635 Flame Spread	Self extinguishing	PASS CC1
ASTM D 1929 Self-ignition Temperature	1004°F	PASS Greater than 650°F
ASTM E84-03 Flame Spread, 1/4" thickness Smoke Developed	65 450	Class B: 26-75 Class B: ≤450
ASTM E84-03 Flame Spread, 1/2" thickness Smoke Developed	55 400	Class B: 26-75 Class B: ≤450
CAN/ULC 102.2 Flame Spread, 1/2" thickness Smoke Developed	37 280	N/A N/A

PANEL WEIGHT

THICKNESS (INCHES)	WEIGHT FLUX (LB/FT²)
1/2" (12.7 mm)	3.1 lb/ft² (15.1 kg/m²)
1/4" (6.3 mm)	1.5 lb/ft² (7.31 kg/m²)

EXPANSION/CONTRACTION ALLOWANCES

Like all resin products, 3form Koda XT will expand and contract nominally with fluctuations in temperature. The following formula provides allowances that should be made in framed or fitted applications:

- Longest length of panel (inches) x temperature change of the sheet (°F) x 0.00004 = Amount of Linear Expansion/Contraction (inches)

example:

- 48" x 96" panel that experiences a 100°F temperature change will expand/contract: 96 inches x 100 degrees°F x 0.00004 in/in °F = 0.384 inches (expansion)

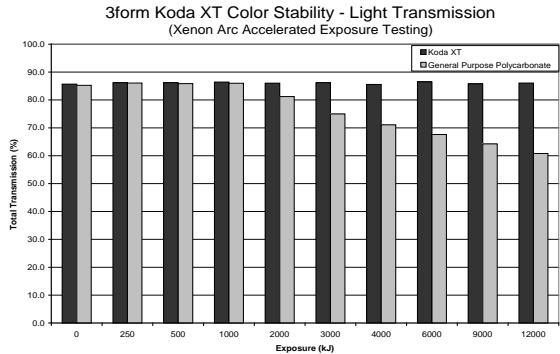
Allowances should also be made in the following situations:

- Fastening points
- Channel depths in frames
- Holes for standoffs and other hardware
- Meeting points for multiple sheets of 3form Koda XT

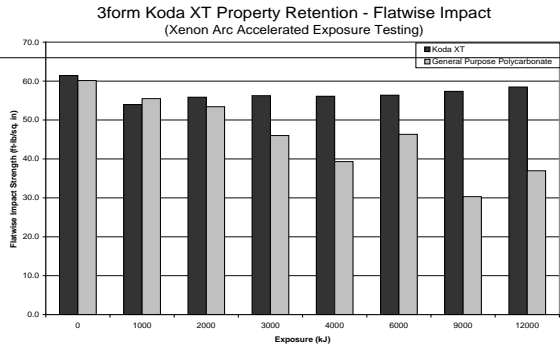
ULTRAVIOLET EXPOSURE PERFORMANCE

3form Koda XT panels incorporate ultraviolet stabilization technologies that are proven to maintain aesthetics and performance. The following charts provide an overview of the effectiveness of the UV stabilization technology that is incorporated with 3form Koda XT panels.

One important characteristic of a materials performance is the ability to maintain consistent aesthetics. The following chart demonstrates the performance of both Koda XT and unstabilized polycarbonate in terms of maintaining consistent light transmission. It is shown that the 3form Koda XT with UV stabilization exhibits excellent performance following 12,000 kJ of exposure (representing approximately 10-years outdoor Florida exposure).



Another important factor to consider is the ability of a material to maintain its physical integrity after exposure to solar radiation. The following chart shows how the impact strength is maintained after 12,000 kJ of accelerated exposure of Koda XT.



DEFLECTION

3form Koda XT will exhibit different amounts of deflection given a variety of factors; fastening techniques, loads, panel thickness and panel dimensions to list a few. The 3form Technical Help desk can assist you with general deflection guidelines for your application with the Koda XT Deflection Charts technical white paper. If your application has specific engineering requirements, please contact the 3form Product Technology team for additional direction.

HEAT FORMING/COLD BENDING

3form Koda XT can be heat formed* to incorporate shape and structure into your application. Please contact 3form Technical Service for details.

3form Koda XT can be cold bent for simple bends and curved areas. As a rule, a minimum radius of 1000 times thickness is acceptable for Koda XT.

KODA XT THICKNESS	MINIMUM COLD BEND RADI
1/2" (12.7 mm)	500" (1270 mm)
1/4" (6.3 mm)	250" (635 mm)

*Koda XT C3 is not able to be heat formed.

EDGE FINISHING

Edges of 3form Koda XT panels are able to be machined or routed into a variety of different forms. In addition to a straight edge, edges may accept beveling, rounding, etc. Sanding, buffing, chemical polishing and heat/flame polishing are not recommended for exterior applications due to added stress that is imparted on the material from these techniques.

SOUND TRANSMISSION CLASS (STC) VALUES FOR KODA XT

Measurement protocol: ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements

KODA XT THICKNESS	STC VALUES
1/2" (0.500")	34

Selected Mechanical and Physical Properties for 3form Koda XT

		TYPICAL VALUE			
		0.118" (3 MM)		0.236" (6 MM)	
PROPERTY*	ASTM METHOD	SI	U.S.	SI	U.S.
GENERAL					
Density	D 1505	1,200 kg/m³	0.043 lb/in³	1,200 kg/m³	0.043 lb/in³
Water Absorption	D 570 23°C (73°F), 24h immersion	0.15%	0.15%	—	—
MECHANICAL					
Tensile Stress @ Yield	D 638	62 MPa	9,000 psi	—	—
Tensile Stress @ Break	D 638	65.5 MPa	9,500 psi	—	—
Elongation	D 638	110%	110%	—	—
Tensile Modulus	D 638	2,344 MPa	340,000 psi	—	—
Flexural Modulus	D 790	2,380 MPa	345,000 psi	—	—
Flexural Strength	D 790	93 MPa	13,500 psi	—	—
Compressive Strength	D 695	86 MPa	12,500 psi	—	—
Compressive Modulus	D 695	2,380 MPa	345,000 psi	—	—
Shear Strength, Ultimate	D 732	69 MPa	10,000psi	—	—
Shear Strength, Yield	D 732	41 MPa	6,000 psi	—	—
Shear Modulus	D 732	786 MPa	114,000 psi	—	—
Rockwell Hardness	D 785	M70/R118	M70/R118	—	—
Safety Glazing	ANSI 97.1	PASS		—	
Izod Impact Strength, Notched	D 256 @ 32°F	747 J/m	14 ft-lb/in.	—	—
Impact Strength, Unnotched	D 4812 @ 32°F	3,202 J/m	60 ft-lb/in. No Failure	—	—
Impact Resistance—Puncture, Energy @ Max. Load	D 3763 @ 32°F	>61 J	>45 ft-lb		
Miami-Dade Notice of Acceptance (NOA)				NOA No. 12-0120.01	
ICC-ES Listing				ESL-1019	
THERMAL					
Continuous Max Use Temperature - Standard, Koda Color and Custom Colors	—	132°C	270°F	132°C	270°F
Continuous Max Use Temperature - C3 Colors	—	93°C	200°F	93°C	200°F
Heat Deflection Temperature	D648 @ 66psi	137.7°C	280°F		
Forming Temperature	—	163-182°C	325-360°F	163-182°C	325-360°F
Thermal Conductivity	ASTM C 177	0.195 W/m²K	1.35 Btu-in/hr-ft²-°F	0.195 W/m²K	1.35 Btu-in/hr-ft²-°F
Coefficient of Thermal Expansion	ASTM D 696	6.75 x 10 ⁻⁵ m/m/°C	3.75 x 10 ⁻⁵ in/in/ °F	6.75 x 10 ⁻⁵ m/m/°C	3.75 x 10 ⁻⁵ in/in/ °F

* Unless noted otherwise, all tests are run @ 23°C (73°F) and 50% relative humidity, using specimens machined from extruded sheeting with a thickness as indicated.

**Nonbreak as defined in ASTM D 4812 using specimens having a thickness as indicated. Properties

Chemical Resistance of 3form Koda XT to Select Compounds

6 DAY FULL IMMERSION TESTING @ 73°F (23°C)

Polymer materials are affected by chemicals in different ways. Changes in performance or appearance can be attributed to fabrication methods, exposure conditions, concentration of chemical substances or exposure duration. Such factors can even influence the final effect of substances that 3form Koda XT is considered “Resistant” to under test conditions. Further details are explained below:

FABRICATION

Stresses generated from sanding, grinding, drilling, polishing, machining, sawing and/or forming (hot or cold).

EXPOSURE

Exposure duration, stresses imparted during the application life-cycle due to loads, temperature changes, heat, environments, etc.

APPLICATION OF CHEMICALS

Application from contact, rubbing, wiping, spraying, soaking, etc. Also having an effect is the relative concentration of the chemical in question.

The following data is based on complete immersion of Koda XT in the chemical or reagent shown. Samples remained immersed and were stored at 23°C (73°F) for a period of six days. Following the test period the samples were removed from immersion and inspected. This table represents the changes in appearance of the immersed samples over the testing period.

The following table provides indicative performance of the chemical resistance characteristics of Koda XT. The following codes are used to describe the chemical resistance characteristics:

R = RESISTANT

3form Koda XT is able to withstand the identified compound for long exposure periods (6 days, full immersion)

LR = LIMITED RESISTANCE

3form Koda XT is only resistant when in contact with this compound for short periods at room temperature. It is advised that further determination of the effect of the substance be further tested in your particular application.

NR = NOT RESISTANT

3form Koda XT is not resistant to the compound. The material will swell, craze, haze, dissolve or experience some physical change when exposed to this substance.

REAGENT	RESULT	REAGENT	RESULT
Acetic Acid, 10% in water	R	Acetone	NR
Ammonia, 0.1% in water	NR	Ammonium nitrate, 10% in water	R
Benzene	NR	Benzine (no aromatic hydrocarbons)	R
Butyl Acetate	NR	Carbon tetrachloride	NR
Chloroform	NR	Citric Acid, 10% in water	R
Dibutyl phthalate	NR	Diethyl ether	NR
Dimethyl formamide	NR	Diocetyl phthalate	NR
Dioxane	NR	Ethanol, 100%	R
Ethyl Acetate	NR	Ethylene chloride	NR
Ethylene glycol, 1:1 with water	R	Glycerin	NR
Hexane	R	Hydrochloric Acid, 10% in water	R
Hydrogen Peroxide, 30% in water	R	Iron (III) chloride, saturated solution	R
Isocotate (2,2,4-trimethyl pentane)	R	Isopropanol (pure)	R
Methanol	NR	Methyl Ethyl Ketone	NR

REAGENT	RESULT	REAGENT	RESULT
Methylamine	NR	Methylene chloride	NR
Nitric Acid, 10% in water	R	n-propanol	NR
Ozone, 1% in air	NR	Paraffin, paraffin oil, free from aromatic hydrocarbons	R
Phosphoric acid, 1% in water	R	Propane	R
Silicone Oil	R	Sodium Carbonate, 10% in water	R
Sodium Chloride, 10%	R	Sodium Hydroxide, 1%	NR
Sodium Nitrate, 10% in water	R	Styrene	NR
Sulfuric Acid, 10% in water	R	Tetrachloroethane	NR
Tetrachloroethylene	NR	Trichloroethylene	NR
Tricresyl Phosphate	NR	Triethylene Glycol	R
Xylene	NR		

Cleaning Instructions

3form Koda XT, like all thermoplastic resin materials, should be cleaned periodically. A regular, quarterly cleaning program will dramatically help prevent noticeable weathering and dirt build-up.

Rinse the sheets with lukewarm water. Remove dust and dirt from Koda XT with a soft non-abrasive cloth or sponge and a solution of mild soap and/or liquid detergent in water. A 50:50 solution of isopropyl alcohol and water also works well. Rinse thoroughly with lukewarm water.

Always use a soft, damp cloth to blot dry. Rubbing with a dry cloth can scratch the material and create a static charge. Never use scrapers or squeegees on Koda XT. Also avoid scouring compounds, gasoline, benzene, acetone, carbon tetrachloride, certain deicing fluids, lacquer thinner or other strong solvents.

COMPATIBLE CLEANERS:

- Top Job, Joy®
- Palmolive Liquid®
- Windex® Ammonia free

[Top Job and Joy are registered trademarks of Proctor & Gamble, Palmolive is a registered trademark of Colgate Palmolive, Windex is a registered trademark of Drackett Products Company]

DO NOT:

- Use a squeegee.
- Strong solvents, highly alkaline or abrasive cleaning agents.
- Clean in hot sun or elevated temperatures.
- Rub with a dry cloth.

PRESSURE WASHING

Pressure washing can also be an effective way to remove miscellaneous debris from surfaces of 3form Koda XT installations.

Pre-soak panels with a light water spray to loosen and remove incidental surface debris.

It is recommended that the water pressure for cleaning Koda XT panels be 1,500 psi or less. 3form Koda XT is a tough material but can be damaged if high pressure is concentrated in a single position too long. Use a gradual sweeping motion over the application. Never concentrate water spray in a single position. Pressure nozzle should never be positioned closer than 8" (203 mm) from the panel surface.

Always test a portion of the sheet first before spraying. If test piece shows any sign of material fatigue, abrasion or delamination – discontinue pressure washing and proceed with manual cleaning instructions as described above.

Coated or painted parts are not suitable for pressure washing as finish may be stripped off. Pressure washing is not suitable for Koda XT panels that have been seamed or sealed. If using detergent, use mild detergents only. Rinse sheet with light water spray after washing.

DO NOT:

- Concentrate spray in single position.
- Use more than 1,500 psi pressure.
- Position pressure nozzle closer than 8" (203 mm) from panel.
- Proceed with pressure washing if test piece shows detrimental effects to panel.
- Pressure wash Koda XT panels that have been painted or coated to maintain coating integrity.

If debris or dirt is not removed by pressure washing attempt to clean with manual procedures described in preceding section.

IMPORTANT

If a cleaning material is found to be incompatible in a short-term test, it will usually be found to be incompatible in the field. The converse, however, is not always true. Favorable performance is no guarantee that actual end-use conditions have been duplicated. Therefore, these results should be used as a guide only and it is recommended that the user test the products under actual end-use conditions.

For more information, please visit 3-form.com or call 877-649-2670.



Product Description

3form Chroma is produced from optical grade engineered resin. Chroma is available in thick-gauge formats which lends itself well for use in many horizontal applications. Chroma is a highly functional material that brings impact when color is introduced. Chroma is produced with brilliant colors that can be layered (up to five colors) to create an enormous range of hues, opacities and amazing effects. The surface of Chroma features a standard durable renewable matte texture that can be easily refinished throughout its lifetime. Chroma incorporates 38% recycled content* (29% pre-consumer, 9% post-consumer) without compromising its amazing clarity. *2" Chroma does not contain recycled content

Chroma XT is exterior grade Chroma suitable for use as signage, lighting, awnings, tables or canopies. Use Chroma XT to bring amazing color and design to your exterior applications.

FEATURES AND BENEFITS

- Great for edge lighting – tremendous optical properties and high light transmission
- Rigid - stable and sturdy material for horizontal applications
- Qualifies for 3form Reclaim™ – keeping end-of-life material out of landfills
- Combine up to five colors to create any color imaginable
- Renewable Matte Surface is able to be completely refinished to maintain product “newness”

AVAILABLE COLORS

3form Chroma comes in a variety of translucent warm and cool colors. Colors can be made opaque with the addition of the color - White Out.

(Visit www.3-form.com for the complete list of available color options.)

CHROMA REFLECT

3form Chroma Reflect™ pairs C3 colors with a reflective opaque mirror. Chroma Reflect panels are 1-sided and opaque. Chroma Reflect can be paired with up to three layers of Chroma color. The back finish of Chroma Reflect is left unfinished to allow for more versatility during fabrication. Chroma Reflect adds an extra 1/8" (3 mm) to the standard thickness of Chroma panels. Additionally, Chroma Reflect is not suitable for exterior use and requires special fabrication techniques.

TEXTURES/PATTERNS/FINISHES

All Chroma sheets come standard with a Renewable matte finish on the front face that allows the product to be continually rejuvenated if ever desired or necessary during the service life of the material. The back side of 3form Chroma in translucent colors is finished with a matte finish, but this side should not be renewed. Chroma Clear comes standard with renewable matte surfaces on front and back.

Chroma panels can be ordered with an optional Renewable Matte Back Finish, that allows refinishing of both sides of the panel. The Renewable Matte Back Finish increases the thickness by an extra 1/16" (1.5 mm).

Chroma panels that are opaque (unless specified differently) are finished with a gloss backside texture to allow for more versatility during fabrication. Chroma is also available with an optional Patent finish. Patent is a high gloss finish with the highest light transmittance, but does not allow for refinishing. (Chroma Reflect is not available with Patent finishes)

FINISHES AVAILABLE

Renewable Matte	Patent	Sandstone	Patina
-----------------	--------	-----------	--------

PANEL SIZES AND TOLERANCES

All dimensions and squareness (standard or custom) are subject to a +1/4" or - 3/16" (+6 mm or -5 mm) tolerance. Squareness (standard or custom) is subject to a 1/8" (3.1 mm) tolerance.

Chroma is available in 1/4 inch (6.3 mm), 1/2 inch (12.7 mm), 1 inch (25.4 mm) and 2 inch (50.8 mm) thicknesses.

PANEL SIZE TABLE

NOMINAL GAUGE	PANEL DIMENSIONS
1/4" (6.3 mm)	48" x 96" (122 cm x 243.8 cm), 48" x 120" (122 cm x 304.8 cm)
1/2" (12.7 mm)	48" x 96" (122 cm x 243.8 cm), 48" x 120" (122 cm x 304.8 cm)
1" (25.4 mm)	48" x 96" (122 cm x 243.8 cm), 48" x 120" (122 cm x 304.8 cm)
2" (50.8 mm)	48" x 96" (122 cm x 243.8 cm)

Given the unique manufacturing process for 3form Chroma, a given gauge is subject to a +/- 10% thickness tolerance. Thickness values are based on measurements 2-3" (50-75 mm) from the edge, along both long edges of each panel.

THICKNESS TOLERANCE TABLE

STANDARD CHROMA, HIRES AND XT PANELS (XT NOT AVAILABLE IN 1/4")

GAUGE*	MINIMUM ALLOWANCE	MAXIMUM ALLOWANCE
1/4" (6.3 mm)	0.200" (5.1 mm)	0.335" (8.5 mm)
1/2" (12.7 mm)	0.450" (11.4 mm)	0.585" (14.9 mm)
1" (25.4 mm)	0.900" (22.9 mm)	1.100" (27.9 mm)
2" (50.8 mm)	1.800" (45.7 mm)	2.200" (55.9 mm)

REFLECT AND PANELS WITH RENEWABLE MATTE BACK FINISH

GAUGE*	MINIMUM ALLOWANCE	MAXIMUM ALLOWANCE
5/8" (15.9 mm)	0.515" (13.1 mm)	0.710" (18.0 mm)
1-1/8" (28.6 mm)	0.965" (24.5 mm)	1.225" (31.1 mm)
2-1/8" (53.9 mm)	1.865" (47.4 mm)	2.325" (59.1 mm)

*Chroma Reflect adds 1/8" (3 mm) and renewable matte back finish materials add 1/16" (1.5 mm) to overall thickness.

FLATNESS TOLERANCE

Chroma panels shall not have distortion in the form of a wrinkle, twist or scallop along the perimeter of the sheet. Warp in the form of a curve (bow warp) extending across the sheet is permitted to a maximum of 1/4" (6.3 mm) for each 48" (1.2 m), or fraction thereof. Panel is to be measured laying horizontally under its own weight on a flat continuous surface.

Specifications

FLAMMABILITY & SMOKE TEST RESULTS

BUILDING CODE APPROVALS

3form Chroma conforms to the 2009 International Building Code® for light-transmitting plastics. The provisions of these codes provide adequate regulation for most applications of light-transmitting plastics:

TEST	3FORM CHROMA	RESULT
ASTM D 2843 Smoke Density	4.1%	PASS Less than 75
ASTM D 635 Flame Spread	Rate of burning: 1.2 in/min	PASS CC2
ASTM D 1929 Self-ignition Temp.	852°F	PASS Greater than 650°F
ASTM E 84 Flame Spread, 1/2" Thickness Smoke Developed	95 450	Class C (76-200) 450 (less than 450)
ASTM E 84 Flame Spread, 1" Thickness Smoke Developed	115 150	Class C (76-200) 450 (less than 450)

PANEL WEIGHT

THICKNESS (INCHES)	WEIGHT FLUX (LB/FT²)
1/4" (6.3 mm)	1.5 lb/ft² (7.3 kg/m²)
1/2" (12.7 mm)	3.1 lb/ft² (15.1 kg/m²)
1" (25.4 mm)	6.2 lb/ft² (30.2 kg/m²)
2" (50.8 mm)	12.4 lb/ft² (60.5 kg/m²)
*Chroma XT panels weigh an additional 0.4 lb/ft² (1.9 kg/m²)	
**Chroma Reflect panels weigh an additional 0.8 lb/ft² (3.8 kg/m²)	

EXPANSION/CONTRACTION ALLOWANCES

Like all resin products, 3form Chroma will expand and contract nominally with fluctuations in temperature. The following formula provides allowances that should be made in framed or fitted applications:

- Longest length of panel (inches) x temperature change of the sheet (°F) x 0.00004 =Amount of Linear Expansion/Contraction (inches)

example:

- A 48" x 96" panel that experiences a 50°F temperature change will expand/contract: 96 inches x 50 degrees x 0.00004 = 0.192 inches

Installers should take extra precautions if installation is occurring before the HVAC systems are operational. Allowances should also be made in the following situations:

- Fastening points
- Channel depths in frames
- Holes for standoffs and other hardware
- Meeting points for multiple sheets of 3form Chroma

ETCHING

3form Chroma may be etched with two different finishing options to produce patterns, text, or anything imaginable. When etching, two dif-

ferent surface finishes may be specified: Polished and Renewable matte. Following are some limitations to the etching process:

Chroma XT products are not able to accept etching as the etching process creates part stress that could induce crazing.

Only 1/2"-2" Chroma may be etched.

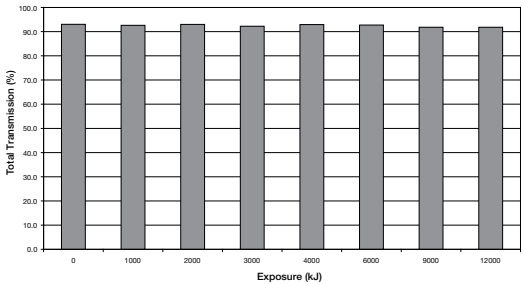
- Limited to 1/8" deep
- Etch must be greater than 1/2" wide

UV EXPOSURE PERFORMANCE

Chroma XT is an excellent choice for exterior applications. The chart demonstrates that the change in light transmission remains unchanged. (12,000 kJ of exposure represents approximately 10 years of outdoor exposure in Florida) Should your application be for exterior use, please notify your 3form Sales Representative.

*Chroma Reflect cannot be used in exterior applications.

3form Chroma XT Color Stability - Light Transmission
(Xenon Arc Accelerated Exposure Testing)



USAGE LIMITATIONS

3form Chroma should never come in direct contact with metal fasteners. Non-metallic* gaskets, washers, and tubing are to be utilized in conjunction with mechanical connections such as point supports and frames. Holes for fasteners must be located a minimum of 2" from the edge of the hole to the edge of the panel. Please contact the 3form Technical Help Line should you have any questions regarding the use of Chroma with mechanical fasteners.

*Gaskets, washers and tubing must be produced with a non-plasticized material. Suitable materials include: neoprene, teflon, nylon, silicone.

DEFLECTION

3form Chroma will exhibit different amounts of deflection given a variety of factors: fastening techniques, loads, gauges and panel dimensions to list a few. Your 3form Representative can assist you with general deflection guidelines for your application using the Chroma Deflection Charts. If your application has specific engineering requirements, please contact the 3form Technical Help Desk for additional direction at 801-649-2670.

HEAT FORMING/COLD BENDING

3form Chroma can be heated and formed to produce simple or even complex curves and shapes. The table below lists the minimum inner radius for a heat formed shape. Tighter radii may be possible, contact 3form Technical Service for details.

THICKNESS	MINIMUM HEATFORMING RADIUS
1/4" (6.3 mm)	4" (101.6 mm)
1/2" (12.7 mm)	4" (101.6 mm)
1" (25.4 mm)	8" (203.2 mm)
2" (50.8 mm)	12" (304.8 mm)

The optimal forming temperature ranges from 300°- 330°F. Large and complex forming geometries should be specified to be produced by the 3form Fabrication experts.

SPECIAL CONSIDERATIONS FOR THE HEAT-FORMING OF CHROMA HIGHRES.

1/2" thickness only (Maximum finished sizes of 46" x 94" and 46" x 118")
Renewable Matte finishes only
No Complex Curves

Though 3form Chroma is commonly used in flat or heat curved applications, the polymeric nature of the material allows a minimal amount of cold bending for a given panel. Cold bending is not possible on 1" and 2" gauges. Cold bending is NOT RECOMMENDED on any thickness of Chroma XT. The table below shows the minimum suggested radius for 3form Chroma at a given gauge:

THICKNESS	MINIMUM BEND RADIUS
0.250" (6.3 mm)	150" (381 cm)
0.500" (12.7 mm)	225" (571 cm)

EDGE FINISHING

Edges of 3form Chroma panels are able to be machined or routed into a variety of different forms. In addition to a straight edge, edges may accept beveling, rounding, etc. Additional finishing, such as sanding or polishing, can also be provided to some edges.

FABRICATION LIMITATIONS

Chroma Reflect requires special consideration during fabrication. When cutting panels using table saws or panels saws where the blade is situated below the panel, the back side (reflect side) of the panel needs to be facing UP. The back side of the panel should be facing down if it is being cut by a circular saw or a panel saw where the blade is above the panel.

Chroma reflect panels can be cut with a CNC router or a plunge router. Chroma Reflect MUST be scored with a 1/16" or 1/8" blade or tool before routing. All CNC cutting must be done from the back side. Chroma Reflect panels CAN NOT be cut with a jig saw or reciprocating saw.

REFINISHING

One of the unique benefits of 3form Chroma is its ability to be refinished. If 3form Chroma needs to be refinished for any reason, the panels may be renewed by sanding. Make sure to sand the entire surface to obtain a uniform finish over the whole panel. Begin by dry sanding with a course grit paper (100 or 150 grit) to remove blemishes/scratches. Continue sanding with gradually finer grit papers until the surface is smooth and level and the blemish/scratches are removed. Complete the refinishing process by sanding with a 220 grit paper to attain a matte finish. Only the primary surface (non-colored side) is refinishable. After sanding, clean the surface with warm water and a mild detergent. Dry with a clean, cotton cloth and finish by treating the panel with Countertop Magic®. Even finer grit papers may be used to attain a satin or semi-polished appearance. With papers greater than 400 grit, wet sanding (with water) should be employed. Be sure to keep sanders in motion at all times when refinishing surfaces or edges. Only use light pressure with power sanders in order to maintain evenness and avoid overheating of the sheet surface.

SOUND TRANSMISSION CLASS (STC) VALUES FOR CHROMA

Measurement protocol: ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements

THICKNESS	STC VALUES
1/2" (12.7 mm)	32
1" (25.4 mm)	36

THERMAL INSULATION VALUES FOR CHROMA

Insulation values are a function of both the convective properties (U-Values and shading coefficients) and the conductive properties (thermal conductivity).

APRIL 12 2016 | MATSPEC - CHROMA | REV 036

CHROMA RENEW/RENEW THICKNESS	WINTER U-VALUE (BTU/HR-FT²-°F)	SUMMER U-VALUE (BTU/HR-FT²-°F)
1/2" (12.7 mm)	0.82	0.81
1" (25.4 mm)	0.65	0.65
2" (50.8 mm)	NOT TESTED	NOT TESTED

Select Mechanical and Physical Properties for 3form Chroma

		TYPICAL VALUES	
PROPERTY	ASTM METHOD	US CUSTOM	METRIC
GENERAL			
Density	D1505	1.19 g/cm³	1.19 x 10 ⁻³ kg/cm³
Water Absorption	D579 24hrs @ 73°F	0.2%	0.2%
MECHANICAL			
Tensile Strength	D638	10,000 psi	69 MPa
Elongation at Rupture	D638	4.5%	4.5%
Tensile Modulus	D638	400,000 psi	2800 MPa
Flexural Strength (rupture)	D790	17,000 psi	117 MPa
Flexural Modulus	D790	480,000 psi	3300 MPa
Compressive Strength (yield)	D695	17,000 psi	117 MPa
Compressive Deformation	D621 4000 psi, 122°F, 24 hours)	≤0.85%	
Shear Ultimate Strength	D732	10,000 psi	703 kg/cm²
Shear Modulus	D5279	167,000 psi	1151 MPa
Impact Strength (charpy method)	D256 notched	2.1 lb*in/in	0.9 kgI*cm/cm
	D256 un-notched	7 lb*in/in	3.17 kgI*cm/cm
Izod Impact Strength	D256 notched	≤0.25 ft-lb/in	≤13.3 J/m
Rockwell Hardness	D785	M-93	M-93
Barcol Hardness	D2583	48	48
Residual Shrinkage (internal strain)	D702	2%	2%
Coefficient of Friction	D2047 dry D2047 wet	0.73 0.79	
Dynamic Coef. of Friction	ANSI A137.1	.043 (average of 3 tests, all above 0.42)	
Poisson's Ratio	E132	0.35-0.40	
OPTICAL			
Refractive Index	D542	1.49	1.49
Light Transmission (total)	D1003	92%	92%
Haze	D1003	<1%	<1%
THERMAL			
Max Continuous Use Temperature		180°F	82°C
Max Instantaneous Use Temperature		212°F	100°C
Deflection Temperature	D648 @ 264 psi	195°F	90°C
Vicat Softening Point	D1525	239°F	115°C
Forming Temperature		300-330°F	149-157°C
Coefficient of Thermal Conductivity (k-factor)	cenco-fitch	1.3 btu/(hr)ft²(°F)	0.19 w/m²K
Coefficient of Thermal Expansion	D696 @ 60°F (16°C)	4.0 x 10 ⁻⁵ (in/in/°F)	7.2 x 10 ⁻⁶ (mm/mm/°C)

Chemical Resistance of 3form Chroma to Select Compounds

7 DAY FULL IMMERSION TESTING @ 73°F (23°C)

Polymer materials are affected by chemicals in different ways. Changes in performance or appearance when exposed to chemicals can be attributed to fabrication methods, exposure conditions, concentration

of chemical substances or exposure duration. Such factors can even influence the final effect on substances that 3form Chroma is considered “Resistant” to under test conditions. Further details are explained below:

FABRICATION

Stresses generated from sanding, grinding, drilling, polishing, machining, sawing and/or forming (hot or cold).

EXPOSURE

Exposure duration, stresses imparted during the application life-cycle due to loads, temperature changes, heat, environments, etc.

APPLICATION OF CHEMICALS

Application from contact, rubbing, wiping, spraying, soaking, etc. Also having an affect is the relative concentration of the chemical in question.

The following table provides indicative performance of the chemical resistance characteristics of clear 3form Chroma panels. The following codes are used to describe the chemical resistance characteristics:

R = RESISTANT

3form Chroma is able to withstand the identified compound for long exposure periods. (7 days, full immersion)

LR = LIMITED RESISTANCE

3form Chroma is only resistant when in contact with this compound for short periods at room temperature. It is advised that further determination of the effect of the substance be further tested in your particular application.

N = NOT RESISTANT

3form Chroma is not resistant to the compound. The material will swell, craze, haze, dissolve or experience some physical change when exposed to this substance.

REAGENT	RESULT	REAGENT	RESULT
acetic acid (5%)	R	hydrochloric acid	R
acetic acid (glacial)	N	hydrofluoric acid (40%)	N
acetic anhydride	LR	hydrogen peroxide (3%)	R
acetone	N	hydrogen peroxide (28%)	N
acrylic paints and lacquers	LR	iso octane	R
ammonia (aqueous solution)	R	isopropyl alcohol	LR
ammonium chloride (saturated)	R	kerosene	R
ammonium hydroxide (10%)	R	lacquer thinner	N
ammonium hydroxide (conc.)	R	lactic acid (80%)	LR
aniline	N	methane	R
battery Acid	R	methyl alcohol (50%)	LR
benzaldehyde	N	methyl alcohol (100%)	N
benzene	N	methyl ethyl ketone (MEK)	N
bituminous emulsion	N	methylene chloride	N
bleach (see sodium hypochlorite)	R	mineral oil	R
bromine	N	mortar	R
butanol	LR	motor fuel (benzene-free)	R
butyl acetate	N	motor fuel (with benzene)	N
calcium chloride (saturated)	R	muratic acid (20%)	R
calcium hypochlorite	R	nitric acid (10%)	R
carbon tetrachloride	N	nitric acid (40%)	LR
cement	R	nitric acid (conc.)	N
chlorine water	LR	oil paints (pure)	R
chloroform	N	olive oil	R
chromic acid (40%)	N	oxygen	R
citric acid (10%)	R	ozone	R
cottonseed oil (edible)	R	phenol solution (5%)	N
detergent solution	R	phosphoric acid (10%)	R

APRIL 12 2016 | MATSPEC - CHROMA | REV 036

REAGENT	RESULT	REAGENT	RESULT
diesel oil	R	plaster of paris	R
diethyl ether	N	soap solution (ivory)	R
dimethyl formamide	N	sodium carbonate (2%)	R
dioclyle formamide	N	sodium carbonate (20%)	R
ethyl acetate	N	sodium chloride (10%)	R
ethyl alcohol (50%)	LR	sodium hydroxide (1%)	R
ethyl alcohol (95%)	N	sodium hydroxide (10%)	R
ethyl dichloride	N	sodium hydroxide (60%)	R
ethylene glycol	R	sodium hypochlorite (5%)	R
2-ethylhexyl sebacate	R	stearic acid	R
formaldehyde (40%)	R	sulfuric acid (3%)	R
formic acid (2%)	R	sulfuric acid (30%)	R
formic acid (40%)	LR	sulfuric acid (conc.)	N
gasoline (regular, leaded)	LR	thinners (general)	N
glycerine	R	toluene	N
glycerol	R	trichloroethylene	N
glycol	R	turpentine	LR
heptane	R	urine	R
hexane	R	water (distilled)	R
hot bitumen	LR	xylene	N

Cleaning Instructions

3form Chroma, like all thermoplastic materials should be cleaned periodically. A regular cleaning program will help to maintain the aesthetics and life of the material. 3form recommends the use of Countertop Magic, Novus® No. 1 and Brillianize® plastic cleaners. Rinse or wipe the sheet with lukewarm water. Remove dust and dirt from 3form Chroma with a damp, soft cloth or sponge and a solution of mild soap and/or liquid detergent in water. Rinse or wipe the 3form Chroma again thoroughly with lukewarm water. For more stubborn stains, dirty spots or grease, surface cleaners like Fantastik® or Formula 409® also work well. A scotch brite sponge can also help remove tough grease stains. After all cleaning steps, be sure to rinse thoroughly with lukewarm water.

Always use a soft, damp cloth to blot dry. Rubbing with a dry cloth can scratch the material and create a static charge. Never use scrapers or squeegees on 3form Chroma. Also avoid scouring compounds, gasoline, benzene, acetone, carbon tetrachloride, certain deicing fluids, lacquer thinner or other strong solvents.

DO NOT:

- Use squeegees or scrapers as they may scratch the sheet
- Use scouring compounds or solvents such as: acetone, gasoline, benzene, carbon tetrachloride, or lacquer thinner to clean the sheet
- Use abrasives or highly alkaline cleaners
- Use a dry cloth or a cloth of synthetic fiber such as rayon or polyester as they may scratch the sheet.
- Use Windex® or Glass Plus® cleaners

DO:

- Use warm water, mild detergent and a soft cloth or chamois
- Rinse surface thoroughly after cleaning with lukewarm water
- Blot dry with slightly damp, soft cloth or chamois

IMPORTANT

If a cleaning material is found to be incompatible in a short-term test, it will usually be found to be incompatible in the field. The converse, however, is not always true. Favorable performance is no guarantee that actual end-use conditions have been duplicated. Therefore, these results should be used as a guide only and it is recommended that the user test the products under actual end-use conditions.

For more information, please visit 3-form.com or call 877-649-2670.



Date: _____ Quantity: _____

Company: _____

Project: _____



Nano Liner Allegro AC XB RGB

The Nano Liner Allegro AC XB RGB series is a slim-profile, AC-line powered high-brightness luminaire. The series is controllable via DMX512, and is available in four lengths, from 310mm to 1216mm with 16.7 million additive RGB colors, and various optics. The simplicity of the luminaire's topology means it can be easily daisy-chained to form long runs.



Product Specifications

	XB-9	XB-18	XB-27	XB-36
Light Source	9 LEDs	18 LEDs	27 LEDs	36 LEDs
Color Range	16.7 million additive RGB colors			
Beam Angle	40°, 50° x 10°			
Luminous Flux	309 lm	618 lm	927 lm	1236 lm
Efficacy	25 lm/W typ.			
Lumen Maintenance	L70 @25°C - 80,000hrs			
Cover Lens	Tempered glass cover			
Housing	Aluminium			
Adjustment Options	±90 tilt			
Dimensions (L x W x H)	310 x 42 x 78mm 12" x 1.7" x 3"	612 x 42 x 78mm 24" x 1.7" x 3"	913 x 42 x 78mm 36" x 1.7" x 3"	1216 x 42 x 78mm 48" x 1.7" x 3"
Weight	1.5kg/3.3lbs	2.7kg/5.9lbs	3.7kg/8.1lbs	5.0kg/11lbs
Regulatory Listing & Safety Approval	CE			
Operating Temperature	−30°C to +50°C / −22°F to +122°F (−20°C / −4°F starting)			
Storage Temperature	−40°C to +70°C / −40°F to +158°F			
Environment	Outdoor (IP66), suitable for coastal environments			
Humidity	85%, non-condensing			

Electrical Specifications

Input Voltage	230V AC nominal			
Power Consumption	12.5W max.	25W max.	37.5W max.	50W max.
Power Factor	≥ 0.9			

System Specifications

Power	AC line			
Control	DMX512; controllable in 300mm/ 1ft sections			
Power Supply	Built-in			
Fixture Interconnection	32PXL, 9.9A per run max.			

LED CHARACTERISTICS Because LEDs are semiconductor devices, their performances are subject to inherent variability commonly found in semiconductor industry. To improve consistency in performance across the same product, LED manufacturers "sort" LEDs into bins according to different preset parameters, such as forward driving voltage, illumination, etc. Whereas binning is a sorting function, it is not a correction process. Inherent variability in the manufacturing process results always in different binning distributions according to different production lots. Traxon uses automatically binned LEDs on its products, thereby minimizing output variations within the model range.

As with all electronic devices, LED output degrades over time – a term called lumen depreciation. This also explains why it is nearly impossible to expect photometric performances of two LED products with different service life spans to be the same. The rate of LED degrade is a complicate function of many factors such as operating efficiency, duration of continuous operation, and more significantly, environmental conditions (ambient temperature for example). If allowed working under optimal operating temperature range and with good ventilation, LED devices enjoy long service lives over conventional light sources. When using/installing LED devices, care should be taken to ensure that the devices will operate within the operating conditions specified in respective product literature.

Lumen measurement complies with LM-79-08 standard.
Lumen maintenance is calculated based on LM-80 compliant measurement.

www.traxontechnologies.com

©2015 TRAXON TECHNOLOGIES - AN OSRAM BUSINESS. ALL RIGHTS RESERVED. TRAXON™, TX CONNECT®, ARE TRADEMARKS OF TRAXON TECHNOLOGIES. U.S. PATENTS, E.U. PATENTS, JAPAN PATENTS, OTHER PATENTS PENDING. SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Product Specification

12/15 V2.3

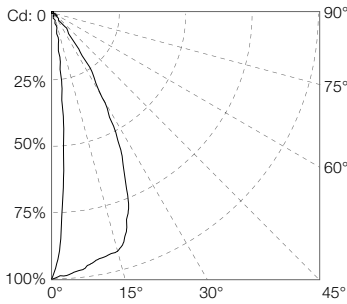
1 of 8



Nano Liner Allegro AC XB RGB

Photometrics

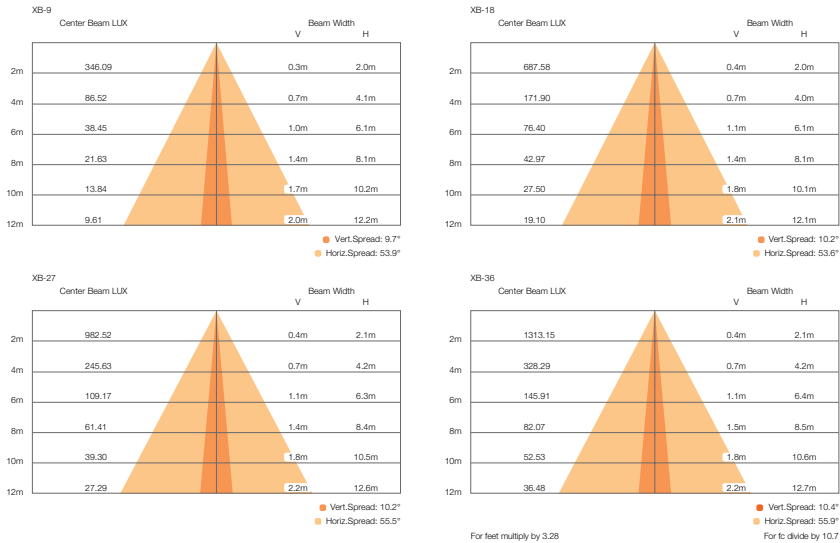
Candela Distribution



Light Output

Color	Luminous Flux (lm)	Candela Distribution @100%	Efficacy (lm/W)
XB-9			
White (full on)	298.76	1384.38	24.1
XB-18			
White (full on)	610.64	2750.34	24.6
XB-27			
White (full on)	912.34	3930.08	24.5
XB-36			
White (full on)	1235.90	5252.61	24.9

Illuminance at a Distance



www.traxontechnologies.com

©2015 TRAXON TECHNOLOGIES - AN OSRAM BUSINESS. ALL RIGHTS RESERVED. TRAXON™, TX CONNECT®, ARE TRADEMARKS OF TRAXON TECHNOLOGIES. U.S. PATENTS, E.U. PATENTS, JAPAN PATENTS, OTHER PATENTS PENDING. SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Product Specification

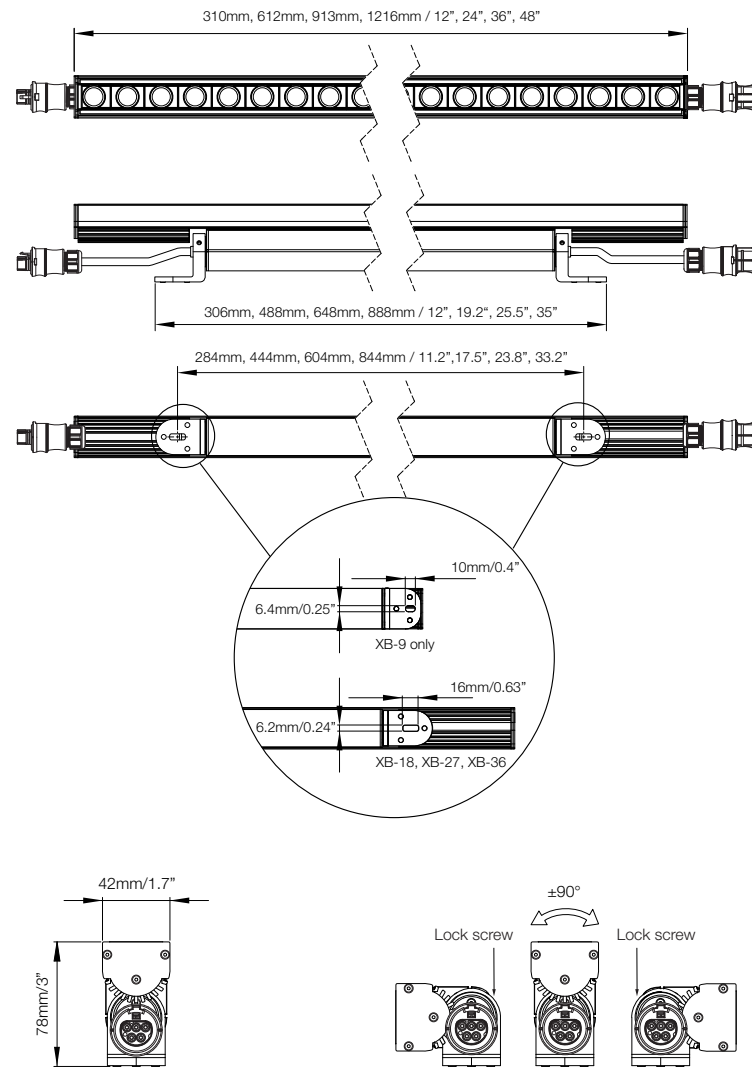
12/15 V2.3

2 of 8



Nano Liner Allegro AC XB RGB

Dimensions



www.traxontechnologies.com

©2015 TRAXON TECHNOLOGIES - AN OSRAM BUSINESS. ALL RIGHTS RESERVED. TRAXON™, TX CONNECT® ARE TRADEMARKS OF TRAXON TECHNOLOGIES. U.S. PATENTS, E.U. PATENTS, JAPAN PATENTS, OTHER PATENTS PENDING. SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Product Specification

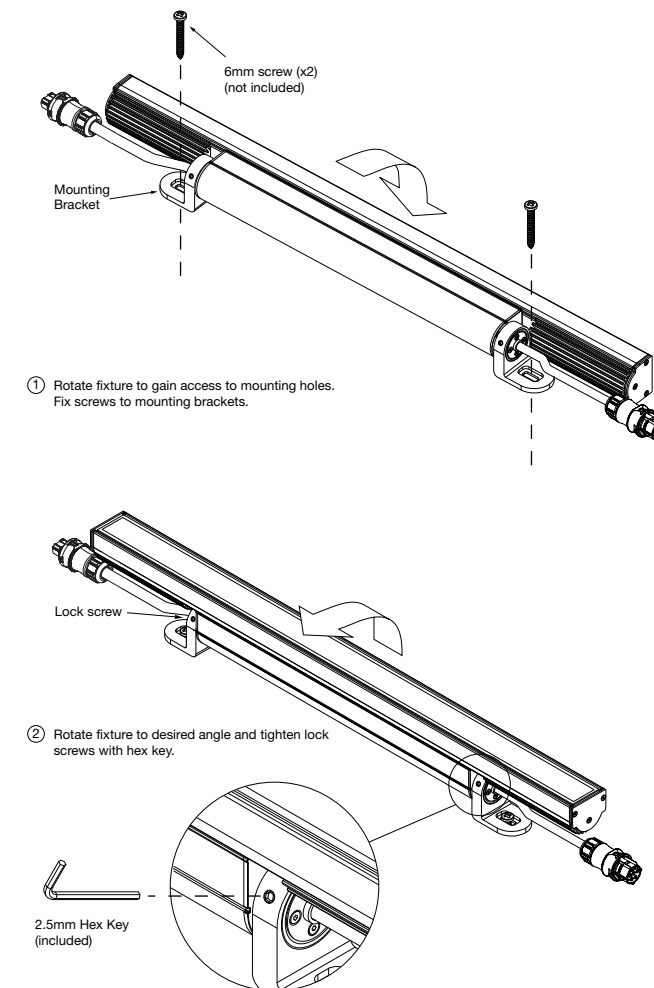
12/15 V2.3

3 of 8



Nano Liner Allegro AC XB RGB

Mounting



www.traxontechnologies.com

©2015 TRAXON TECHNOLOGIES - AN OSRAM BUSINESS. ALL RIGHTS RESERVED. TRAXON™, TX CONNECT®, ARE TRADEMARKS OF TRAXON TECHNOLOGIES. U.S. PATENTS, E.U. PATENTS, JAPAN PATENTS, OTHER PATENTS PENDING. SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Product Specification

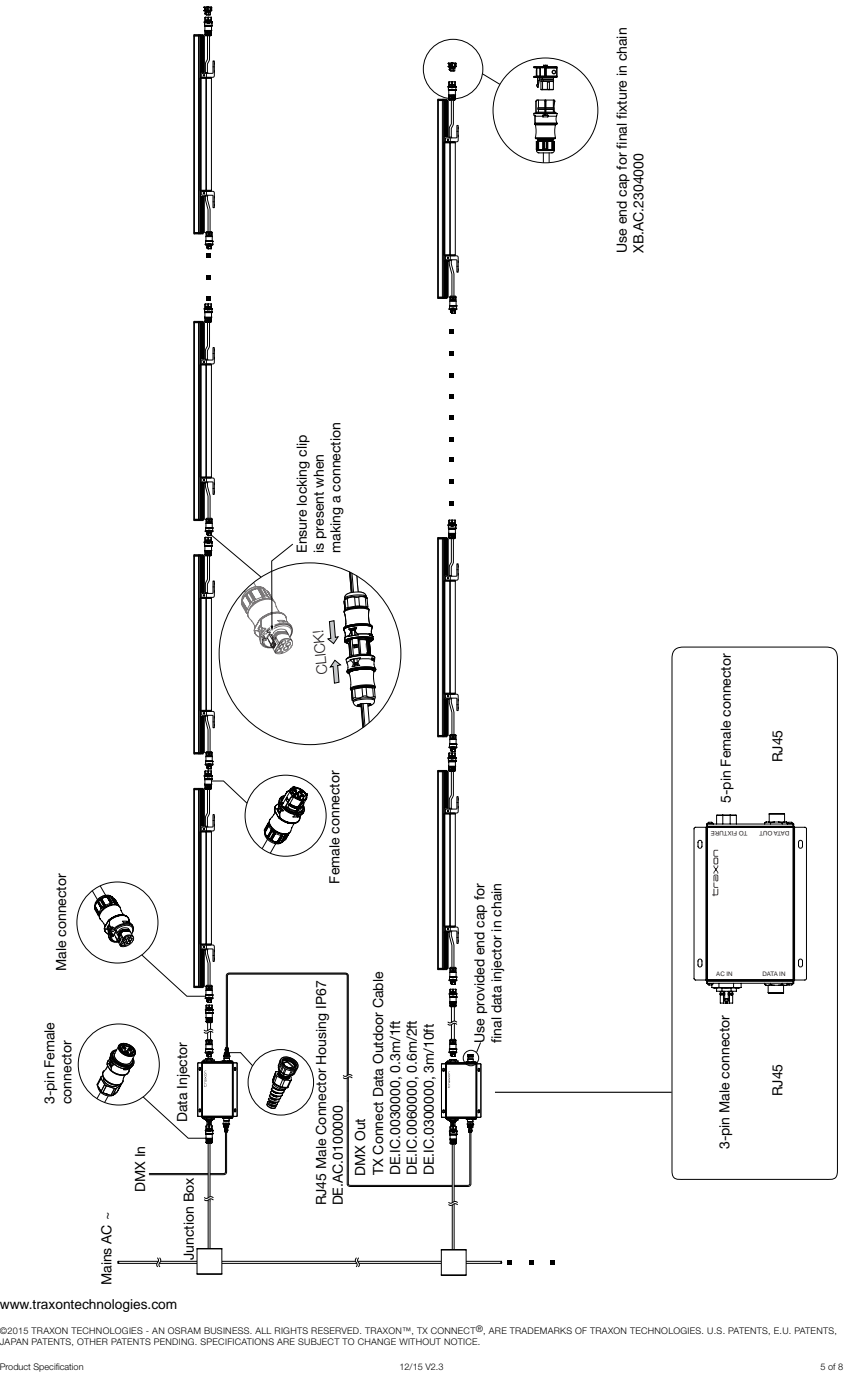
12/15 V2.3

4 of 8



Nano Liner Allegro AC XB RGB

System Diagram



Nano Liner Allegro AC XB RGB

Ordering

Fixtures (MULTI-PXL version) 230V		
Model No.	Description	Item Code
XB.N0.5316140	Nano Liner Allegro AC XB-9 RGB 40deg (CE 230V)	AA614490155
XB.N0.5314140	Nano Liner Allegro AC XB-9 RGB 50x10deg (CE 230V)	AA614480155
XB.N1.5316140	Nano Liner Allegro AC XB-18 RGB 40deg (CE 230V)	AA614610155
XB.N1.5314140	Nano Liner Allegro AC XB-18 RGB 50x10deg (CE 230V)	AA614600155
XB.N2.5316140	Nano Liner Allegro AC XB-27 RGB 40deg (CE 230V)	AA614820155
XB.N2.5314140	Nano Liner Allegro AC XB-27 RGB 50x10deg (CE 230V)	AA614810155
XB.N3.5316140	Nano Liner Allegro AC XB-36 RGB 40deg (CE 230V)	AA614980155
XB.N3.5314140	Nano Liner Allegro AC XB-36 RGB 50x10deg (CE 230V)	AA614970155

Fixtures (1PXL version) 230V		
Model No.	Description	Item Code
XB.N1.5316141	Nano Liner Allegro AC XB-18 RGB 1PXL 40deg (CE 230V)	AA614630155
XB.N1.5314141	Nano Liner Allegro AC XB-18 RGB 1PXL 50x10deg (CE 230V)	AA614620155
XB.N2.5316141	Nano Liner Allegro AC XB-27 RGB 1PXL 40deg (CE 230V)	AA614840155
XB.N2.5314141	Nano Liner Allegro AC XB-27 RGB 1PXL 50x10deg (CE 230V)	AA614830155
XB.N3.5316141	Nano Liner Allegro AC XB-36 RGB 1PXL 40deg (CE 230V)	AA615000155
XB.N3.5314141	Nano Liner Allegro AC XB-36 RGB 1PXL 50x10deg (CE 230V)	AA614990155

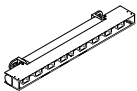
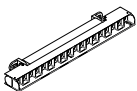
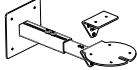
Accessories		
Model No.	Description	Item Code
XB.AC.3100001	Allegro AC Data Injector II (CE / ETL) (120V / 230V / 277V)	AA792880055
XB.AC.2302000	5-pin Field Installable AC Connector Plug IP66	AA438580235
XB.AC.2303000	5-pin Field Installable AC Connector Socket IP66	AA438570235
XB.AC.3106000	3-pin Field Installable AC Connector Socket IP66 Green	AA792890035
XE.ID.9999910	AC XB Interconnection Cable, 5-wire, CE (100m/328ft reel)	AA556610055
XE.IF.9999910	AC XB Power Cable, 3-wire, CE (100m/328ft reel)	AA556620055
XB.AC.2304000	5-pin Connector Socket End Cap IP66	AA508870335
DE.AC.0100000	RJ45 Male Connector Housing IP67	AA556100155
DE.IC.0030000	TX Connect Data Outdoor Cable 0.3m/1ft	AA438790055
DE.IC.0060000	TX Connect Data Outdoor Cable 0.6m/2ft	AA664580055
DE.IC.0300000	TX Connect Data Outdoor Cable 3m/10ft	AA438810055



Nano Liner Allegro AC XB RGB

Accessories

Accessories - Light Directing

	Description	Item Code
	Nano Liner Allegro AC XB-9 Symmetrical Louver 12"	AA788210054
	Nano Liner Allegro AC XB-18 Symmetrical Louver 24"	AA788220054
	Nano Liner Allegro AC XB-27 Symmetrical Louver 36"	AA788230054
	Nano Liner Allegro AC XB-36 Symmetrical Louver 48"	AA788240054
	Nano Liner Allegro AC XB-9 Asymmetrical Louver 12"	AA788250054
	Nano Liner Allegro AC XB-18 Asymmetrical Louver 24"	AA788260054
	Nano Liner Allegro AC XB-27 Asymmetrical Louver 36"	AA788270054
	Nano Liner Allegro AC XB-36 Asymmetrical Louver 48"	AA788280054
	Wall Mount Arm 6"-12"	AA782820054
	Wall Mount Arm 12"-24"	AA782830054

www.traxontechnologies.com

©2015 TRAXON TECHNOLOGIES - AN OSRAM BUSINESS. ALL RIGHTS RESERVED. TRAXON™, TX CONNECT®, ARE TRADEMARKS OF TRAXON TECHNOLOGIES. U.S. PATENTS, E.U. PATENTS, JAPAN PATENTS, OTHER PATENTS PENDING. SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Product Specification

12/15 V2.3

7 of 8

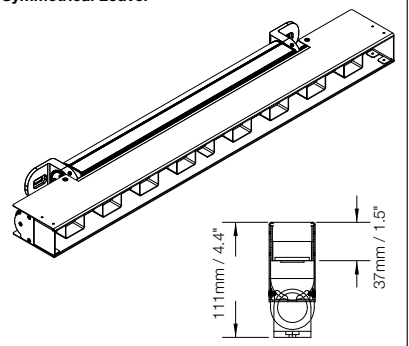


Nano Liner Allegro AC XB RGB

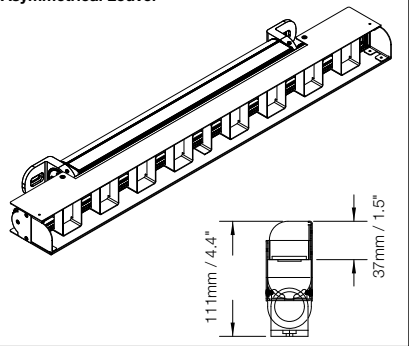
Accessories

Accessories - Mounting

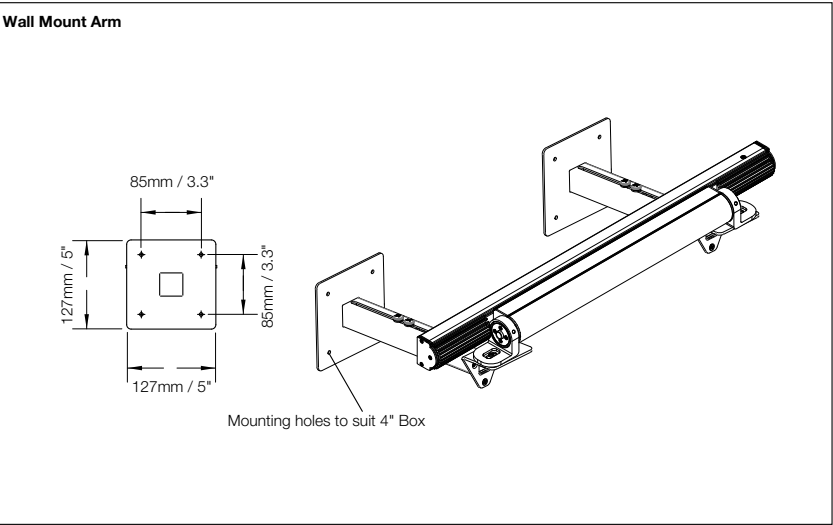
Symmetrical Louver



Asymmetrical Louver



Wall Mount Arm






©2015 TRAXON TECHNOLOGIES - AN OSRAM BUSINESS. ALL RIGHTS RESERVED. TRAXON™, TX CONNECT®, ARE TRADEMARKS OF TRAXON TECHNOLOGIES. U.S. PATENTS, E.U. PATENTS, JAPAN PATENTS, OTHER PATENTS PENDING. SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Product Specification

12/15 V2.3

8 of 8




Date: _____

Quantity: _____







Company: _____

Project: _____



String RGB

Each String RGB consists of 32 high intensity Nichia LEDs in series (per string) with a 62.5mm pitch. The LEDs on the string are single dot controllable by DMX or e:pix, and is connected using the Traxon TX Connect system. Each package comes with 5 String RGBs and a Pixel Distributor. The String RGB is the perfect all-purpose solution for challenging surfaces where unique, eye-catching decoration is desired.



Product Specifications

Model	String RGB	String RGB with diffuser dome
Light Source	32 High intensity Nichia SMT LEDs on each string. Total 160 LEDs on 5 strings.	
Color Range	16.7 Million additive RGB colors	
Color Resolution	3 x 14-bit (Gamma correction)	
Viewing Angle	120°	170°
LED Pitch	62.5mm / 2.46"	
Cover Lens	Clear PVC	PC diffuser dome
Housing	Thermoplastic Polyurethane Elastomer	
Housing Color	White / Grey	
Adjustment Options	Flexible cable	
Dimensions (L x W x H)	2300 x 18.8 x 10.5mm (per string) 90.55" x 0.74" x 0.41" (per string)	
Weight	0.3kg / 0.66lbs (per string), 0.9kg / 2lbs (Pixel Distributor)	
Regulatory Listing & Safety Approval	CE, FCC, cETLus	
Operating Temperature	-20°C to 50°C / -4°F to 122°F	
Storage Temperature	-20°C to 70°C / -40°F to 158°F	
Environment	Outdoor (Strings - IP67 rated; Pixel Distributor - IP66 rated)	
Humidity	0 to 90%, non-condensing	

Electrical Specifications

Operating Voltage	24V DC
Power Consumption	98W max. (Pixel Distributor and 5 Strings)

System Specifications

Power/Data Interface	TX CONNECT Smart
Control	DMX512 / e:pix
Power Supply	LED Engine Smart 150W Indoor / Outdoor
Addressing Options	Auto-Addressing

This product is NOT suitable for coastal environments. Any such installation will void the product warranty.

LED CHARACTERISTICS Because LEDs are semiconductor devices, their performances are subject to inherent variability commonly found in semiconductor industry. To improve consistency in performance across the same product, LED manufacturers "sort" LEDs into bins according to different preset parameters, such as forward driving voltage, illumination, etc. Whereas binning is a sorting function, it is not a correction process. Inherent variability in the manufacturing process results always in different binning distributions according to different production lots. Traxon uses automatically binned LEDs on its products, thereby minimizing output variations within the model range.

As with all electronic devices, LED output degrades over time – a term called lumen depreciation. This also explains why it is nearly impossible to expect photometric performances of two LED products with different service life spans to be the same. The rate of LED degrade is a complicate function of many factors such as operating efficiency, duration of continuous operation, and more significantly, environmental conditions (ambient temperature for example). If allowed working under optimal operating temperature range and with good ventilation, LED devices enjoy long service lives over conventional light sources. When using/installing LED devices, care should be taken to ensure that the devices will operate within the operating conditions specified in respective product literature.

Lumen measurement complies with LM-79-08 standard.
Lumen maintenance is calculated based on LM-80 compliant measurement.

www.traxontechnologies.com

©2016 TRAXON TECHNOLOGIES - AN OSRAM BUSINESS. ALL RIGHTS RESERVED. TRAXON™, TX CONNECT®, ARE TRADEMARKS OF TRAXON TECHNOLOGIES. U.S. PATENTS, E.U. PATENTS, JAPAN PATENTS, OTHER PATENTS PENDING. SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Product Specification

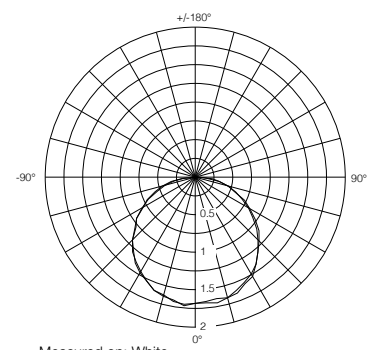
02/16 V1.8

1 of 9

String RGB

Photometrics

Candela Distribution



Measured on: White
Beam angle (50% Imax): 117°

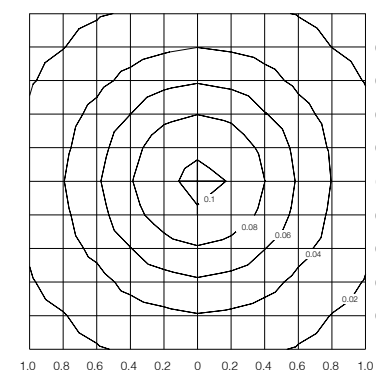
Light Output

Color	Luminous Flux (lm)	Power (Watts)	Efficacy (lm/W)
White	5.25	0.46	11.41
Red	1.17	0.16	7.31
Green	2.8	0.16	17.50
Blue	0.35	0.16	2.19

Illuminance

Distance	10cm/3.9"	25cm/9.8"	50cm/19.7"	75cm/29.5"	100cm/39.4"
Lux	168	27	7	3	2
50% Imax (diameter)	33cm/13.0"	82cm/32.3"	163cm/64.2"	245cm/96.5"	326cm/128.3"

Illuminance at a Distance



ISO-Illuminance Unit: [lx]

Measured on: White

Coordinate Scale: d/h
Height: 4 m
Max. Illuminance: 0.105 lx

Photometric measurements are carried out by an independent laboratory. IES and LDT files are available for download from the Traxon website.

www.traxontechnologies.com

©2016 TRAXON TECHNOLOGIES - AN OSRAM BUSINESS. ALL RIGHTS RESERVED. TRAXON™, TX CONNECT®, ARE TRADEMARKS OF TRAXON TECHNOLOGIES. U.S. PATENTS, E.U. PATENTS, JAPAN PATENTS, OTHER PATENTS PENDING. SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Product Specification

02/16 V1.8

2 of 9

1 of 9

2 of 9

4th Street SW Underpass Enhancement Project

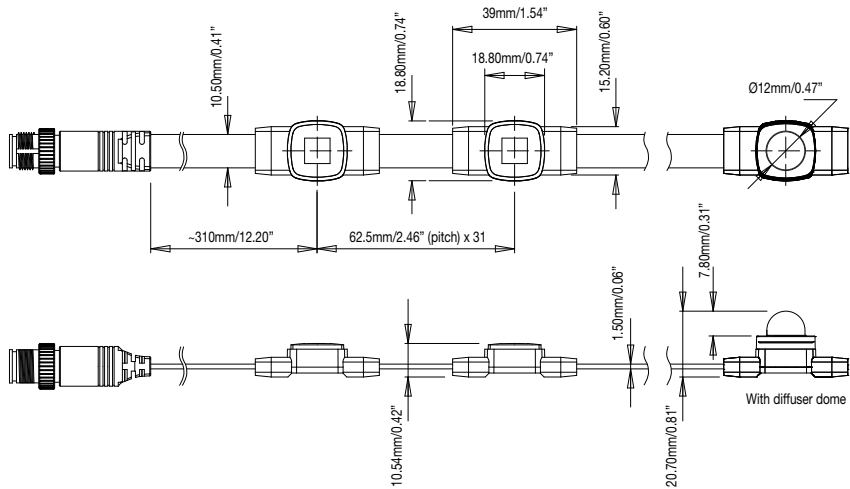
41 of 90



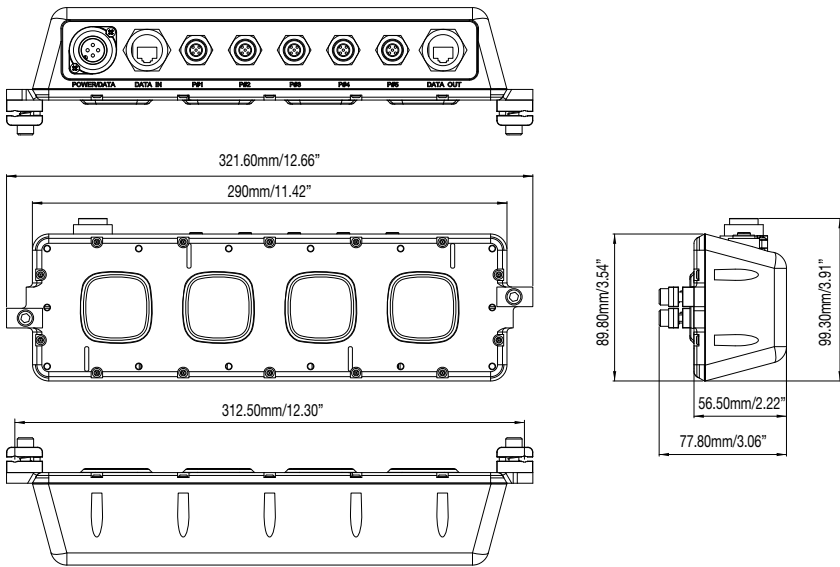
String RGB

Dimensions

String



Pixel Distributor



www.traxontechnologies.com

©2016 TRAXON TECHNOLOGIES - AN OSRAM BUSINESS. ALL RIGHTS RESERVED. TRAXON™, TX CONNECT®, ARE TRADEMARKS OF TRAXON TECHNOLOGIES. U.S. PATENTS, E.U. PATENTS, JAPAN PATENTS, OTHER PATENTS PENDING. SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

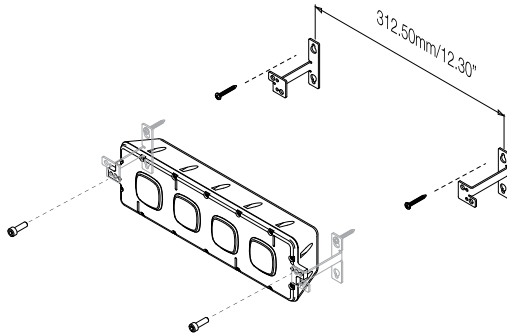
Product Specification 02/16 V1.8 3 of 9



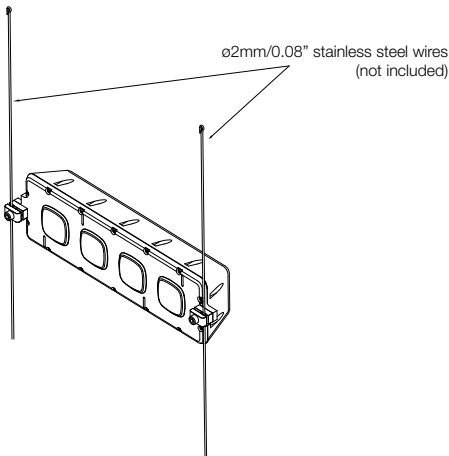
String RGB

Mounting

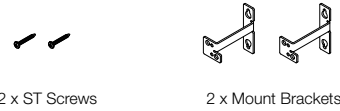
Mounting Wall with Bracket



Mounting on Wire



Mounting Accessories



www.traxontechnologies.com

©2016 TRAXON TECHNOLOGIES - AN OSRAM BUSINESS. ALL RIGHTS RESERVED. TRAXON™, TX CONNECT®, ARE TRADEMARKS OF TRAXON TECHNOLOGIES. U.S. PATENTS, E.U. PATENTS, JAPAN PATENTS, OTHER PATENTS PENDING. SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

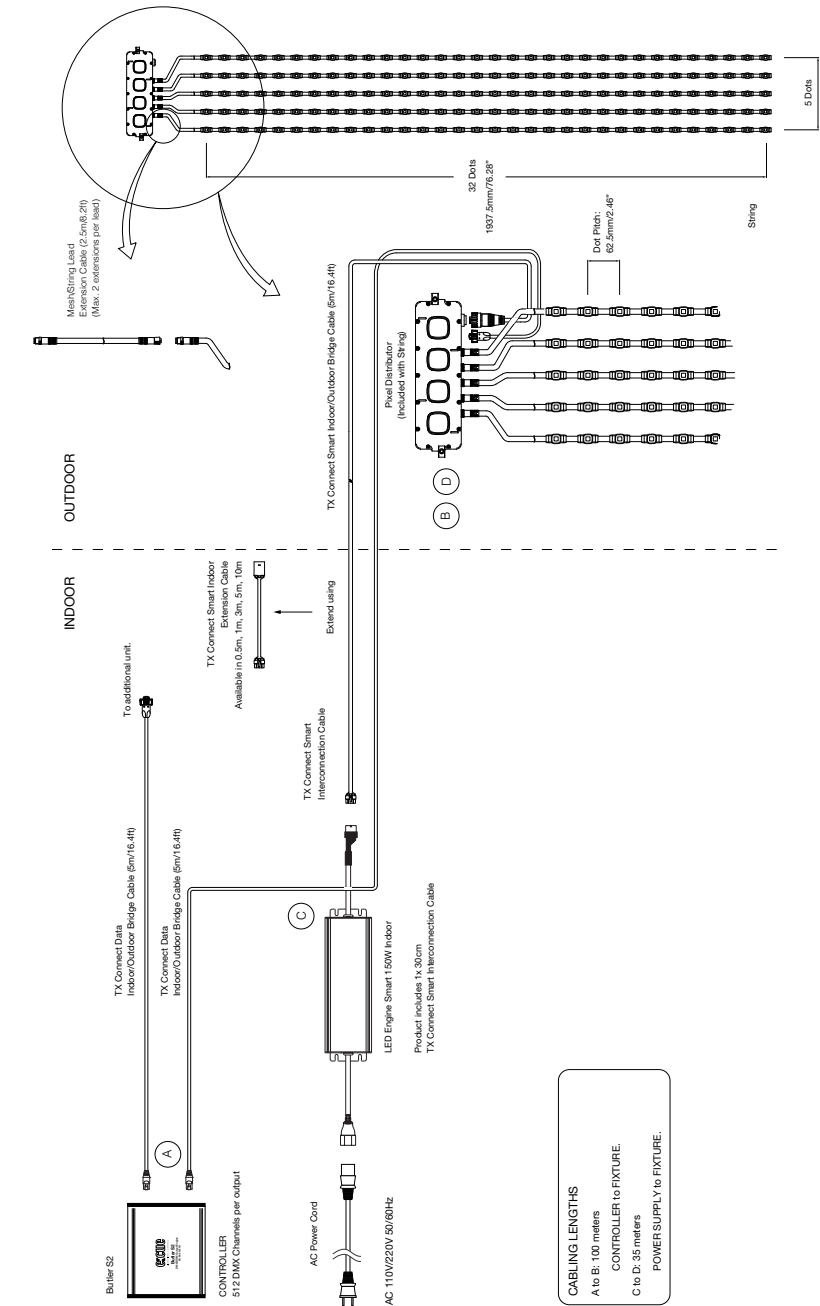
Product Specification 02/16 V1.8 4 of 9



String RGB

System Diagram

System Diagram - Indoor System



www.traxontechnologies.com

©2016 TRAXON TECHNOLOGIES - AN OSRAM BUSINESS. ALL RIGHTS RESERVED. TRAXON™, TX CONNECT® ARE TRADEMARKS OF TRAXON TECHNOLOGIES. U.S. PATENTS, E.U. PATENTS, JAPAN PATENTS, OTHER PATENTS PENDING. SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Product Specification 02/16 V1.8 7 of 9



String RGB

Ordering

Model No.	Description	Item Code
DO.SA.7014100	String RGB	AA619730055
DO.TA.7014100	String RGB with Diffuser Dome	AA638090055

Standard Accessories (Included in Delivery)

Model No.	Description	Item Code
N/A	1x Pixel Distributor, 2x Mounting Brackets, 2x ST Screws	N/A

Optional Accessories

Model No.	Description	Item Code
DO.AC.0000800	Connector End Cap M12	AA438670055
DO.AC.0001200	Dot Clip	AA556170055
DO.AC.0002300	Dot Clip (for dot with dome)	AA556180055

TX Control

Model No.	Description	Item Code
EN.LC.9300000	LCE2	AA629450035
EN.LC.9400000	LCE2 fx	AA629460035
EN.BU.0000001	Butler S2	AB436200031
160185	Video Micro Converter (DMX/e:pix)	AA438940235

www.traxontechnologies.com

©2016 TRAXON TECHNOLOGIES - AN OSRAM BUSINESS. ALL RIGHTS RESERVED. TRAXON™, TX CONNECT® ARE TRADEMARKS OF TRAXON TECHNOLOGIES. U.S. PATENTS, E.U. PATENTS, JAPAN PATENTS, OTHER PATENTS PENDING. SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Product Specification 02/16 V1.8 8 of 9



String RGB

Ordering

TX Connect

Model No.	Description	Item Code
DO.AC.0000710	String Lead Extension Cable (white), 2.5m/8.4ft	AA639100055
TE.AC.0000100	TX CONNECT Smart Indoor/Outdoor Bridge Cable, 5m/16.4ft	AA438890055
DE.AC.0000100	TX CONNECT Data Indoor/Outdoor Bridge Cable, 5m/16.4ft	AA508850055
TI.EC.0100000	TX CONNECT Smart Extension Cable, 1m/3.28ft	A6342330055
TI.EC.0300000	TX CONNECT Smart Extension Cable, 3m/9.84ft	A6342410055
TI.EC.0500000	TX CONNECT Smart Extension Cable, 5m/16.4ft	AA580410055
TI.EC.1000000	TX CONNECT Smart Extension Cable, 10m/32.8ft	A6342680055
TE.IC.0500000	TX CONNECT Smart Outdoor Interconnection Cable, 5m/16.4ft	AA438920055
TE.IC.1500000	TX CONNECT Smart Outdoor Interconnection Cable, 15m/49.2ft	AA438910055
TE.IC.3000000	TX CONNECT Smart Outdoor Interconnection Cable, 30m/98.4ft	AA556320055
DI.IC.0100000	TX CONNECT Data Cable, 1m/3.28ft	AA556130055
DI.IC.0300000	TX CONNECT Data Cable, 3m/9.8ft	A63408C0055
DI.IC.0500000	TX CONNECT Data Cable, 5m/16.4ft	AA556140055
DI.IC.1000000	TX CONNECT Data Cable, 10m/32.8ft	A6341040055
DI.IC.2000000	TX CONNECT Data Cable, 20m/65.6ft	AA556150055
DE.IC.0060000	TX CONNECT Data Outdoor Cable, 0.6m/1.97ft	AA438800055
DE.IC.0300000	TX CONNECT Data Outdoor Cable, 3m/9.84ft	AA438810055
DE.AC.0100000	RJ45 Male Connector Housing IP67	AA556100155

TX Power

Model No.	Description	Item Code
PS.IC.0010000	LED Engine SMART 150W 24V Indoor	AA5571301HA
PS.OA.0010000	LED Engine SMART 150W 24V Outdoor	AA6241000HA
PS.AC.0000100	AC Power Cord (2m/6.6ft) - EU	AA553860055
PS.AC.0000200	AC Power Cord (2m/6.6ft) - US	AA556290055
PS.AC.0000300	AC Power Cord (2m/6.6ft) - UK	AA556300155
PS.AC.0000400	AC Power Cord (2m/6.6ft) - AU	AA556310055



©2016 TRAXON TECHNOLOGIES - AN OSRAM BUSINESS. ALL RIGHTS RESERVED. TRAXON™, TX CONNECT®, ARE TRADEMARKS OF TRAXON TECHNOLOGIES. U.S. PATENTS, E.U. PATENTS, JAPAN PATENTS, OTHER PATENTS PENDING. SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Product Specification

02/16 V1.8

9 of 9

STREET LIGHTING - Cooper Lighting 'Gleleon' Galleon LED 1- 10 Light Squares

McGRAW-EDISON®



DESCRIPTION

The Galleon™ LED luminaire delivers exceptional performance in a highly scalable, low-profile design. Patented, high-efficiency AccuLED Optics™ system provides uniform and energy conscious illumination to walkways, parking lots, roadways, building areas and security lighting applications. IP66 rated.

SPECIFICATION FEATURES

Construction
Extruded aluminum driver enclosure thermally isolated from Light Squares for optimal thermal performance. Heavy-wall, die-cast aluminum end caps enclose housing and die-cast aluminum heat sinks. A unique, patent pending interlocking housing and heat sink provides scalability with superior structural rigidity. 3G vibration tested. Optional tool-less hardware available for ease of entry into electrical chamber. Housing is IP66 rated.

Optics
Choice of 16 patented, high-efficiency AccuLED Optics. The optics are precisely designed to shape the distribution maximizing efficiency and application spacing. AccuLED Optics create consistent distributions with the scalability to meet customized application requirements. Offered standard in 4000K (+/- 275K) CCT and minimum 70 CRI. Optional 6000K CCT and 3000K CCT. For the ultimate level of spill light control, an optional house side shield accessory can

be field or factory installed. The house side shield is designed to seamlessly integrate with the SL2, SL3, SL4 or AFL optics.

Electrical
LED drivers are mounted to removable tray assembly for ease of maintenance. 120-277V 50/60Hz, 347V 60Hz or 480V 60Hz operation. Standard with 0-10V dimming. Shipped standard with Cooper Lighting proprietary circuit module designed to withstand 10kV of transient line surge. The Galleon LED luminaire is suitable for operation in -40°C to 40°C ambient environments. For applications with ambient temperatures exceeding 40°C, specify the HA (High Ambient) option. Light Squares are IP66 rated. Greater than 90% lumen maintenance expected at 60,000 hours. Available in standard 1A drive current and optional 530mA and 700mA drive currents.

Mounting
Extruded aluminum arm includes internal bolt guides allowing for

easy positioning of fixture during assembly. Designed for pole or wall mounting. When mounting two or more luminaires at 90° or 120° apart, the EA extended arm may be required. Refer to the arm mounting requirement table on page 3. For wall mounting, specify wall mount bracket option. 3G vibration rated.

Finish
Housing finished in super durable TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Heat sink is powder coated black. Standard colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available. Consult the McGraw-Edison Architectural Colors brochure for the complete selection.

Warranty
Five-year warranty.



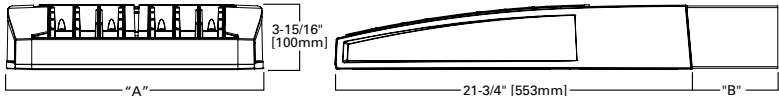
GLEON GALLEON LED

1-10 Light Squares
Solid State LED

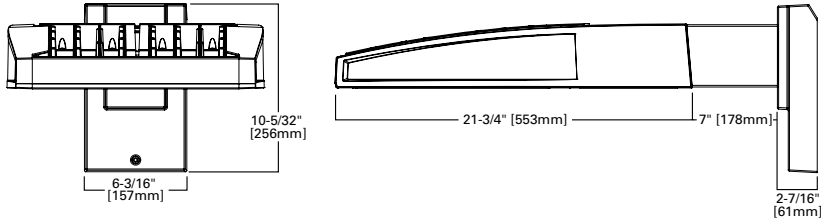
AREA/SITE LUMINAIRE

DIMENSIONS

POLE MOUNT



WALL MOUNT



DIMENSION DATA

Number of Light Squares	"A" Width	"B" Standard Arm Length	"B" Optional Arm Length ¹	Weight with Arm (lbs.)	EPA with Arm ² (Sq. Ft.)
1-4	15-1/2" (394mm)	7" (178mm)	10" (254mm)	33 (15.0 kgs.)	0.96
5-6	21-5/8" (549mm)	7" (178mm)	10" (254mm)	44 (20.0 kgs.)	1.00
7-8	27-5/8" (702mm)	7" (178mm)	13" (330mm)	54 (24.5 kgs.)	1.07
9-10	33-3/4" (857mm)	7" (178mm)	16" (406mm)	63 (28.6 kgs.)	1.12

NOTES: 1. Optional arm length to be used when mounting two fixtures at 90° on a single pole. 2. EPA calculated with optional arm length.

Cooper Lighting

by F.T.N

CERTIFICATION DATA
UL/cUL Wet Location Listed
ISO 9001
LM79 / LM80 Compliant
3G Vibration Rated
ARRA Compliant
IP66 Rated

ENERGY DATA
Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120V-277V 50/60Hz
347V & 480V 60Hz
-40°C Min. Temperature
40°C Max. Temperature
50°C Max. Temperature (HA Option)



ADH140426
2014-03-28 09:40:23

GLEON GALLEON LED

OPTIC ORIENTATION

Standard

Optics Rotated Left @ 90° [L90]

Optics Rotated Right @ 90° [R90]

DRILLING PATTERN

TYPE "N"

OPTICAL DISTRIBUTIONS

Asymmetric Area Distributions

T2 (Type II)

SL2 (Type II with Spill Control)

T3 (Type III)

SL3 (Type III with Spill Control)

T4FT (Type IV Forward Throw)

T4W (Type IV Wide)

SL4 (Type IV with Spill Control)

Asymmetric Roadway Distributions

RW (Rectangular Wide Type I)

T2R (Type II Roadway)

T3R (Type III Roadway)

Symmetric Distributions

5NQ (Type V Square Narrow)

5MQ (Type V Square Medium)

5WQ (Type V Square Wide)

Specialized Distributions

AFL (Automotive Frontline)

SLL (90° Spill Light Eliminator Left)

SLR (90° Spill Light Eliminator Right)

ARM MOUNTING REQUIREMENTS

Configuration	90° Apart	120° Apart
GLEON-AE-01	7" Arm (Standard)	7" Arm (Standard)
GLEON-AE-02	7" Arm (Standard)	7" Arm (Standard)
GLEON-AE-03	7" Arm (Standard)	7" Arm (Standard)
GLEON-AE-04	7" Arm (Standard)	7" Arm (Standard)
GLEON-AE-05	10" Extended Arm (Required)	7" Arm (Standard)
GLEON-AE-06	10" Extended Arm (Required)	7" Arm (Standard)
GLEON-AE-07	13" Extended Arm (Required)	13" Extended Arm (Required)
GLEON-AE-08	13" Extended Arm (Required)	13" Extended Arm (Required)
GLEON-AE-09	16" Extended Arm (Required)	16" Extended Arm (Required)
GLEON-AE-10	16" Extended Arm (Required)	16" Extended Arm (Required)

2 @ 180°

Triple

4 @ 90°

2 @ 90°

Triple

2 @ 120°

Cooper Lighting

Eaton

1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

Eaton's Cooper Lighting Business

1121 Highway 74 South
Peachtree City, GA 30269
P: 770-488-4900
www.cooperlighting.com

Specifications and dimensions subject to change without notice.

ADH140426
2014-03-28 09:40:23

GLEON GALLEON LED

NOMINAL POWER AND LUMENS (1A)

Number of Light Squares	1	2	3	4	5	6	7	8	9	10
Drive Current	1A	1A	1A	1A	1A	1A	1A	1A	1A	1A
Nominal Power (Watts)	56	107	157	213	264	315	370	421	475	528
Input Current @ 120V (A)	0.47	0.90	1.31	1.79	2.21	2.64	3.09	3.51	3.96	4.41
Input Current @ 208V (A)	0.28	0.51	0.74	1.02	1.25	1.48	1.76	1.99	2.22	2.50
Input Current @ 240V (A)	0.25	0.45	0.65	0.90	1.10	1.30	1.55	1.75	1.95	2.20
Input Current @ 277V (A)	0.23	0.41	0.59	0.82	1.00	1.18	1.41	1.69	1.77	2.00

Optics

T2

Lumens

5,272

10,303

15,373

20,313

25,168

30,118

35,618

40,357

45,018

49,842

BUG Rating

B1-U0-G1

B2-U0-G2

B2-U0-G2

B3-U0-G3

B3-U0-G4

B3-U0-G4

B3-U0-G4

B3-U0-G5

B4-U0-G5

B4-U0-G5

T2R

Lumens

5,597

10,938

16,321

21,565

26,719

31,974

37,813

42,844

47,792

52,914

BUG Rating

B1-U0-G1

B2-U0-G2

B2-U0-G2

B3-U0-G3

B3-U0-G3

B3-U0-G4

B3-U0-G4

B3-U0-G4

B4-U0-G4

B4-U0-G5

T3

Lumens

5,374

10,501

15,669

20,704

25,652

30,697

36,303

41,134

45,884

50,802

BUG Rating

B1-U0-G2

B2-U0-G2

B2-U0-G3

B3-U0-G3

B3-U0-G4

B3-U0-G4

B3-U0-G5

B3-U0-G5

B4-U0-G5

B4-U0-G5

T3R

Lumens

5,493

10,735

16,017

21,164

26,222

31,379

37,110

42,048

46,904

51,930

BUG Rating

B1-U0-G2

B1-U0-G2

B2-U0-G3

B2-U0-G4

B3-U0-G4

B3-U0-G4

B3-U0-G5

B3-U0-G5

B3-U0-G5

B3-U0-G5

T4FT

Lumens

5,405

10,562

15,760

20,824

25,801

30,875

36,514

41,372

46,150

51,086

BUG Rating

B1-U0-G2

B2-U0-G2

B2-U0-G3

B3-U0-G4

B3-U0-G4

B3-U0-G5

B3-U0-G5

B3-U0-G5

B3-U0-G5

B3-U0-G5

T4W

Lumens

5,335

10,426

15,556

20,555

25,468

30,476

36,042

40,938

45,554

50,436

BUG Rating

B1-U0-G2

B2-U0-G2

B2-U0-G3

B3-U0-G4

B3-U0-G4

B3-U0-G5

B3-U0-G5

B4-U0-G5

B4-U0-G5

B4-U0-G5

SL2

Lumens

5,263

10,285

15,347

20,278

25,124

30,066

35,556

40,288

44,940

49,756

BUG Rating

B1-U0-G2

B2-U0-G2

B2-U0-G3

B3-U0-G3

B3-U0-G4

B3-U0-G4

B3-U0-G5

B3-U0-G5

B4-U0-G5

B4-U0-G5

SL3

Lumens

5,373

10,500

15,667

20,701

25,649

30,693

36,298

41,128

45,878

50,794

BUG Rating

B1-U0-G2

B2-U0-G3

B2-U0-G3

B3-U0-G4

B3-U0-G4

B3-U0-G4

B3-U0-G5

B3-U0-G5

B3-U0-G5

B3-U0-G5

SL4

Lumens

5,105

9,976

14,886

19,669

24,370

29,163

34,488

39,078

43,591

48,262

BUG Rating

B1-U0-G2

B1-U0-G3

B1-U0-G3

B2-U0-G4

B2-U0-G4

B2-U0-G5

B3-U0-G5

B3-U0-G5

B3-U0-G5

B3-U0-G5

5NQ

Lumens

5,542

10,830

16,160

21,352

26,455

31,658

37,439

42,421

47,320

52,392

BUG Rating

B2-U0-G1

B3-U0-G1

B3-U0-G2

B4-U0-G2

B4-U0-G2

B5-U0-G2

B5-U0-G3

B5-U0-G3

B5-U0-G3

B5-U0-G4

5MQ

Lumens

5,844

11,029

16,457

21,745

26,942

32,241

38,128

43,202

48,191

53,356

BUG Rating

B3-U0-G1

B4-U0-G2

B4-U0-G2

B5-U0-G3

B5-U0-G3

B5-U0-G4

B5-U0-G4

B5-U0-G4

B5-U0-G4

B5-U0-G5

5WQ

Lumens

5,659

11,059

16,501

21,803

27,014

32,327

38,230

43,317

48,320

53,498

BUG Rating

B3-U0-G1

B4-U0-G2

B4-U0-G2

B5-U0-G3

B5-U0-G4

B5-U0-G4

B5-U0-G4

B5-U0-G5

B5-U0-G5

B5-U0-G5

SLR/SLR

Lumens

4,722

9,227

13,767

18,191

22,539

26,971

31,897

36,141

40,315

44,635

BUG Rating

B1-U0-G2

B1-U0-G3

B2-U0-G3

B2-U0-G3

B3-U0-G4

B3-U0-G4

B3-U0-G5

B3-U0-G5

B3-U0-G5

B3-U0-G5

RW

Lumens

5,492

10,732

16,014

21,159

26,216

31,372

37,101

42,038

46,893

51,918

BUG Rating

B2-U0-G1

B3-U0-G1

B4-U0-G2

B4-U0-G2

B4-U0-G2

B5-U0-G3

B5-U0-G3

B5-U0-G3

B5-U0-G4

B5-U0-G4

AFL

Lumens

5,512

10,771

16,072

21,236

26,311

31,486

37,236

42,191

47,063

52,107

BUG Rating

B1-U0-G1

B1-U0-G1

B2-U0-G2

B2-U0-G2

B3-U0-G3

B3-U0-G3

B3-U0-G3

B3-U0-G3

B3-U0-G3

B3-U0-G4

* Nominal data for 4000K CCT.

Cooper Lighting

Eaton

1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

Eaton's Cooper Lighting Business

1121 Highway 74 South
Peachtree City, GA 30269
P: 770-488-4900
www.cooperlighting.com

Specifications and dimensions subject to change without notice.


ADH140426
2014-03-28 09:40:23


2 of 6

3 of 6

46 of 90

the marc boutin architectural collaborative inc. with Krzysztof Wodiczko

GLEON GALLEON LED										
NOMINAL POWER AND LUMENS (700MA)										
Number of Light Squares	1	2	3	4	5	6	7	8	9	10
Drive Current	700mA	700mA	700mA	700mA	700mA	700mA	700mA	700mA	700mA	700mA
Nominal Power (Watts)	38	72	105	138	176	210	243	276	314	348
Input Current @ 120V (A)	0.32	0.59	0.86	1.14	1.45	1.72	2	2.28	2.58	2.86
Input Current @ 208V (A)	0.21	0.36	0.51	0.67	0.87	1.02	1.18	1.34	1.53	1.69
Input Current @ 240V (A)	0.19	0.32	0.45	0.59	0.77	0.90	1.04	1.18	1.35	1.49
Input Current @ 277V (A)	0.20	0.29	0.40	0.51	0.69	0.80	0.91	1.02	1.20	1.31
Optics										
T2	Lumens	3,854	7,531	11,237	14,847	18,395	22,013	26,033	29,497	32,904
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4
T2R	Lumens	4,091	7,995	11,929	15,762	19,529	23,370	27,638	31,316	34,932
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4
T3	Lumens	3,928	7,676	11,453	15,133	18,750	22,437	26,534	30,065	33,537
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5
T3R	Lumens	4,015	7,846	11,707	15,469	19,166	22,936	27,124	30,733	34,283
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5
T4FT	Lumens	3,951	7,720	11,519	15,221	18,858	22,567	26,688	30,240	33,732
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5
T4W	Lumens	3,900	7,620	11,370	15,024	18,615	22,276	26,343	29,849	33,296
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
SL2	Lumens	3,847	7,518	11,217	14,821	18,364	21,975	25,988	29,447	32,847
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5
SL3	Lumens	3,927	7,675	11,451	15,131	18,747	22,434	26,531	30,061	33,533
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5
SL4	Lumens	3,731	7,292	10,880	14,376	17,812	21,315	25,208	28,562	31,861
	BUG Rating	B1-U0-G2	B1-U0-G2	B1-U0-G3	B1-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G4	B2-U0-G5	B3-U0-G5
5NQ	Lumens	4,051	7,916	11,811	15,606	19,336	23,139	27,365	31,006	34,587
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G2	B5-U0-G3
5MQ	Lumens	4,125	8,062	12,029	15,894	19,692	23,565	27,869	31,577	35,224
	BUG Rating	B2-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4
5WQ	Lumens	4,136	8,083	12,061	15,936	19,745	23,628	27,943	31,661	35,318
	BUG Rating	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G4	B5-U0-G4	B5-U0-G4
SLL/SLR	Lumens	3,451	6,744	10,063	13,296	16,474	19,714	23,314	26,416	29,467
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G4	B3-U0-G5
RW	Lumens	4,014	7,844	11,704	15,465	19,162	22,930	27,118	30,726	34,274
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3
AFL	Lumens	4,029	7,873	11,747	15,522	19,231	23,014	27,216	30,838	34,399
	BUG Rating	B1-U0-G1	B1-U0-G1	B2-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3
* Nominal data for 4000K CCT.										
<div>Cooper Lighting</div> <div>by </div>		<div>Eaton</div> <div>1000 Eaton Boulevard Cleveland, OH 44122 United States Eaton.com</div>		<div>Eaton's Cooper Lighting Business</div> <div>1121 Highway 74 South Peachtree City, GA 30269 P: 770-486-4800 www.cooperlighting.com</div>		<div>Specifications and dimensions subject to change without notice.</div>		<div>ADH140426</div> <div>2014-03-28 09:40:23</div>		

GLEON GALLEON LED										
NOMINAL POWER AND LUMENS (530MA)										
Number of Light Squares	1	2	3	4	5	6	7	8	9	10
Drive Current	530mA	530mA	530mA	530mA	530mA	530mA	530mA	530mA	530mA	530mA
Nominal Power (Watts)	30	54	80	105	130	159	184	209	234	259
Input Current @ 120V (A)	0.25	0.45	0.66	0.86	1.07	1.32	1.52	1.72	1.93	2.14
Input Current @ 208V (A)	0.17	0.28	0.39	0.51	0.63	0.78	0.9	1.02	1.14	1.26
Input Current @ 240V (A)	0.17	0.25	0.35	0.45	0.55	0.70	0.80	0.90	1.00	1.10
Input Current @ 277V (A)	0.19	0.24	0.32	0.40	0.49	0.64	0.72	0.80	0.89	0.98
Optics										
T2	Lumens	3,079	6,017	8,978	11,862	14,697	17,588	20,800	23,567	26,289
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G4
T2R	Lumens	3,269	6,388	9,531	12,593	15,603	18,672	22,082	25,020	27,909
	BUG Rating	B1-U0-G1	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G4
T3	Lumens	3,138	6,133	9,150	12,091	14,980	17,926	21,200	24,021	26,795
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4
T3R	Lumens	3,208	6,269	9,354	12,359	15,313	18,325	21,671	24,555	27,390
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4	B3-U0-G4
T4FT	Lumens	3,156	6,168	9,203	12,161	15,067	18,030	21,323	24,160	26,950
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5
T4W	Lumens	3,116	6,088	9,084	12,004	14,872	17,797	21,047	23,848	26,602
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5
SL2	Lumens	3,074	6,006	8,962	11,842	14,672	17,558	20,764	23,527	26,244
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G3	B2-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G4	B3-U0-G4
SL3	Lumens	3,138	6,132	9,149	12,089	14,978	17,924	21,197	24,018	26,791
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G4
SL4	Lumens	2,981	5,826	8,693	11,486	14,231	17,030	20,140	22,820	25,456
	BUG Rating	B0-U0-G1	B1-U0-G2	B1-U0-G3	B1-U0-G3	B1-U0-G3	B2-U0-G3	B2-U0-G4	B2-U0-G4	B2-U0-G5
5NQ	Lumens	3,236	6,324	9,437	12,469	15,449	18,487	21,863	24,773	27,634
	BUG Rating	B1-U0-G0	B2-U0-G1	B3-U0-G1	B3-U0-G2	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G2
5MQ	Lumens	3,296	6,441	9,610	12,698	15,733	18,828	22,266	25,229	28,142
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3
5WQ	Lumens	3,305	6,458	9,636	12,732	15,775	18,878	22,325	25,296	28,217
	BUG Rating	B2-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3	B5-U0-G3	B5-U0-G3	B5-U0-G4
SLL/SLR	Lumens	2,757	5,388	8,040	10,623	13,162	15,751	18,627	21,105	23,543
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G4	B3-U0-G4
RW	Lumens	3,207	6,267	9,351	12,356	15,309	18,320	21,666	24,549	27,384
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3
AFL	Lumens	3,219	6,290	9,385	12,401	15,365	18,387	21,745	24,638	27,484
	BUG Rating	B1-U0-G1	B1-U0-G1	B1-U0-G1	B2-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G2	B3-U0-G3
* Nominal data for 4000K CCT.										
<div>Cooper Lighting</div> <div>by </div>		<div>Eaton</div> <div>1000 Eaton Boulevard Cleveland, OH 44122 United States Eaton.com</div>		<div>Eaton's Cooper Lighting Business</div> <div>1121 Highway 74 South Peachtree City, GA 30269 P: 770-486-4800 www.cooperlighting.com</div>		<div>Specifications and dimensions subject to change without notice.</div>		<div>ADH140426</div> <div>2014-03-28 09:40:23</div>		

LUMEN MULTIPLIER

Ambient Temperature	Lumen Multiplier
0°C	1.02
10°C	1.01
25°C	1.00
40°C	0.99
50°C	0.97

LUMEN MAINTENANCE

Ambient Temperature	TM-21 Lumen Maintenance (60,000 Hours)	Theoretical L70 (Hours)
25°C	> 94%	> 350,000
40°C	> 93%	> 250,000
50°C	> 90%	> 170,000

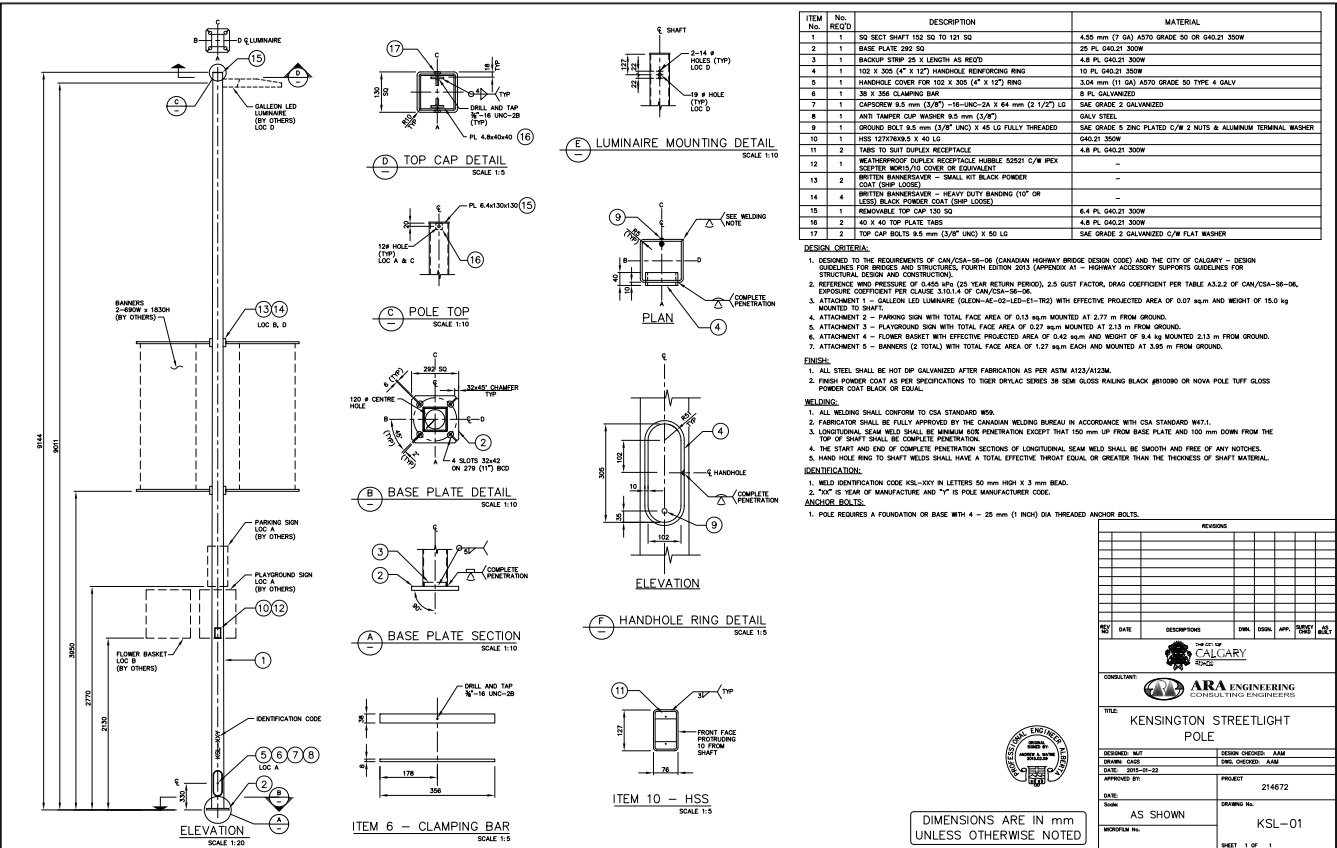
ORDERING INFORMATION

Sample Number: GLEON-AE-04-LED-E1-T3-GM-700

Product Family	Light Engine	Number of Light Squares ¹	Lamp Type	Voltage	Distribution	Color	Mounting
GLEON=Galleon	AE=1A Drive Current	01=1 02=2 03=3 04=4 05=5 06=6 07=7 08=8 09=9 10=10	LED=Solid State Light Emitting Diodes	E1=120-277V 347=347V ² 480=480V ²	T2=Type II T2R=Type II Roadway T3=Type III T3R=Type III Roadway T4FT=Type IV Forward Throw T4W=Type IV Wide 5NQ=Type V Narrow 5MQ=Type V Square Medium 5WQ=Type V Square Wide SL2=Type II w/Spill Control SL3=Type III w/Spill Control SL4=Type IV w/Spill Control SLL=90° Spill Light Eliminator Left SLR=90° Spill Light Eliminator Right RW=Rectangular Wide Type I AFL=Automotive Frontline	AP=Grey BZ=Bronze BK=Black DP=Dark Platinum GM=Graphite Metallic WH=White	[Blank]=Arm for Round or Square Pole EA=Extended Arm ³ MA=Mast Arm Adapter ⁴ WM=Wall Mount
Options (Add as Suffix)					Accessories (Order Separately)		
2L=Two Circuits ^{5,6} 7030=70 CRI 3000K ⁷ 7060=70 CRI 6000K ⁷ 530=Drive Current Factory Set to 530mA ⁸ 700=Drive Current Factory Set to 700mA ⁸ P=Button Type Photocontrol (120, 208, 240 or 277V) R=NEMA Twistlock Photocontrol Receptacle HA=50°C High Ambient ⁹ MS/DIM-L08=Motion Sensor for Dimming Operation, Maximum 8' Mounting Height ^{9, 10, 11, 12} MS/DIM-L20=Motion Sensor for Dimming Operation, 9' - 20' Mounting Height ^{9, 10, 11, 12} MS/DIM-L40=Motion Sensor for Dimming Operation, 21' - 40' Mounting Height ^{9, 10, 11, 12} MS/X-L08=Bi-Level Motion Sensor, Maximum 8' Mounting Height ^{11, 12, 13, 14} MS/X-L20=Bi-Level Motion Sensor, 9' - 20' Mounting Height ^{10, 11, 14} MS/X-L40=Bi-Level Motion Sensor, 21' - 40' Mounting Height ^{10, 11, 14} DIMRF-LW=LumaWatt Wireless Sensor, Wide Lens for 8' - 16' Mounting Height ¹³ DIMRF-LN=LumaWatt Wireless Sensor, Narrow Lens for 16' - 40' Mounting Height ¹³ L90=Optics Rotated 90° Left R90=Optics Rotated 90° Right MT=Factory Installed Mesh Top TH=Tool-less Door Hardware LCF=Light Square Trim Plate Painted to Match Housing HSS=Factory Installed House Side Shield ¹⁵					OA/RA1016=NEMA Photocontrol Multi-Tap - 105-285V OA/RA1027=NEMA Photocontrol - 480V OA/RA1201=NEMA Photocontrol - 347V OA/RA1013=Photocontrol Shorting Cap OA/RA1014=120V Photocontrol MA1252=10kV Surge Module Replacement MA1036-XX=Single Tenon Adapter for 2-3/8" O.D. Tenon MA1037-XX=2 @ 180° Tenon Adapter for 2-3/8" O.D. Tenon MA1197-XX=3 @ 120° Tenon Adapter for 2-3/8" O.D. Tenon MA1188-XX=4 @ 90° Tenon Adapter for 2-3/8" O.D. Tenon MA1189-XX=2 @ 90° Tenon Adapter for 2-3/8" O.D. Tenon MA1190-XX=3 @ 90° Tenon Adapter for 2-3/8" O.D. Tenon MA1191-XX=2 @ 120° Tenon Adapter for 2-3/8" O.D. Tenon MA1038-XX=Single Tenon Adapter for 3-1/2" O.D. Tenon MA1039-XX=2 @ 180° Tenon Adapter for 3-1/2" O.D. Tenon MA1192-XX=3 @ 120° Tenon Adapter for 3-1/2" O.D. Tenon MA1193-XX=4 @ 90° Tenon Adapter for 3-1/2" O.D. Tenon MA1194-XX=2 @ 90° Tenon Adapter for 3-1/2" O.D. Tenon MA1195-XX=3 @ 90° Tenon Adapter for 3-1/2" O.D. Tenon FSIR-100=Wireless Configuration Tool for Occupancy Sensor ¹⁶ GLEON-MT1=Field Installed Mesh Top for 1-4 Light Squares GLEON-MT2=Field Installed Mesh Top for 5-6 Light Squares GLEON-MT3=Field Installed Mesh Top for 7-8 Light Squares GLEON-MT4=Field Installed Mesh Top for 9-10 Light Squares LS/HSS=Field Installed House Side Shield ^{16, 17}		

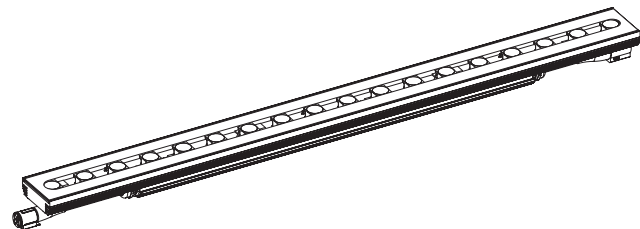
Notes:

1. Standard 4000K CCT and minimum 70 CRI.
2. LumaWatt Wireless Sensors not currently available for 347V or 480V applications.
3. May be required when two or more luminaires are oriented on a 90° or 120° drilling pattern. Refer to arm mounting requirement table.
4. Factory installed.
5. Only available in 5-10 Light Squares.
6. Not available with LumaWatt wireless sensors.
7. Use de-rated IES files for 3000K and 6000K when performing layouts. These files are published on the Gallaeon luminaire product page on the website.
8. 1 Amp standard. Use dedicated IES files for 530mA and 700mA when performing layouts. These files are published on the Navion luminaire product page on the website.
9. Must specify dimming driver. Consult factory for more information.
10. 120V or 277V 60Hz and 230V 50Hz only. Replace E1 with specific voltage. Consult factory for availability in 347V and 480V.
11. The FSIR-100 accessory is required to adjust parameters.
12. Not available with HA option.
13. LumaWatt wireless sensors are factory installed only requiring network components RF-EM1, RF-GW1 and RF-ROUT1 in appropriate quantities. See www.cooperlighting.com for LumaWatt application information.
14. Sensor mounted externally. Available in 2, 3, 4, or 6 Light Square configurations. Replace "X" with number of Light Squares in low output mode. For ON/OFF operation, replace "X" with "0". Maximum two Light Squares in low output mode. Not available with dimming driver. No terminal block with bi-level operation.
15. Only for use with SL2, SL3, SL4 and AFI distributions. The Light Square trim plate is painted black when the HSS option is selected.
16. This tool enables adjustment of parameters including high and low modes, sensitivity, time delay, cutoff and more. Consult your Eaton's Cooper Lighting business representative for additional details.
17. One required for each Light Square.

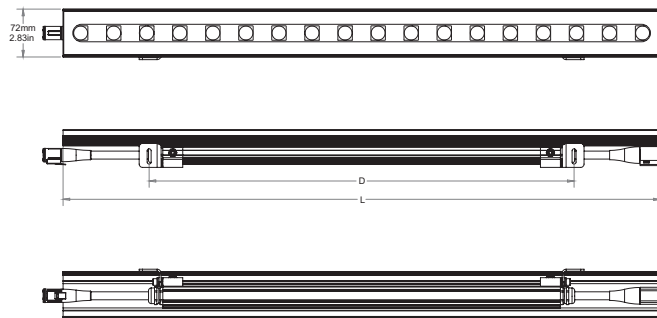


STR9® Monochromatic

Product Specification Sheet



Mechanical Drawing



Nominal	L		D	
	<u>mm</u>	<u>in</u>	<u>mm</u>	<u>in</u>
300'	298	11.73	150	6
600	598	23.5	330	13
900	898	35.4	630	24
1200	1198	47.2	930	36
1500	1498	59.0	1230	48
1800'	1798	70.8	1530	60
2100'	2098	82.6	1830	72
2400'	2398	94.4	2130	83

Specification Logic

FAMILY	NOMINAL LENGTH	BODY COLOR	POWER per 300mm/1ft.	LED COLOR	OPTICS (FWHM Beam Angle)	VOLTAGE*
STR9	300" 600 900 1200 1500 1800 ¹ 2100 ¹ 2400 ¹	CM - Clear Matte BM - Black Matte	5W - ASHRAE/IESNA 7.5W 15W	2700K 3000K 3500K 4000K 5000K 6500K RD - Red AM - Amber GR - Green BL - Blue RB - Royal Blue	10 - 10°x10° 30 - 30°x30° 60 - 60°x60° 80 - 80°x80° 10x60 - Elliptical 10°x 60° 30x60 - Elliptical 30°x60° Other distributions available. Consult factory.	ELV - 24V~48V DC ^{2,3} INF - 380V DC ⁴

3 - For landscape lighting use 24VDC Power-Data Equipment

4 - For long runs: Full luminaire addressability for dimming: Remote INFINITY® Power-Data Equipment required

Product Configuration

GVA Lighting, Inc. 3400 Ridgeway Drive, # 14 Mississauga, Ontario L5L 0A2, Canada
Tel: + 1 905 569 6044 **Fax:** + 1 905 569 9823 **Email:** info@gvalighting.com
gvalighting.com

SP-STR9-MONO-23.10.15 PAGE 1 / 7



Date: _____

Type: _____

Company: _____

Project:

High performance, high power linear surface mount wall washer and wall grazer for exterior applications

Features

- Up to 3600 lumens per meter or 1200 lumens per foot
- Three power options: 5W (ASHRAE/IESNA), 7.5W and 15W per 300mm/1ft
- Superior quality of white light: excellent LED to LED color consistency and specified color over angle
- Diffusing optical film creates uniform light output immediately adjacent to luminaire
- LED pitch is maintained within and between luminaires: no dark spots between fixtures
- DMX, DALI or 0~10V dimming through GVA's power-data equipment
- Through wiring for end-to-end connection via snap-in connectors: no junction boxes
- Small fixture size: 56mm/2.2" high, 72mm/2.83" wide
- Four standard nominal lengths: 600, 900, 1200 and 1500mm or 2, 3, 4 and 5ft
- UNIBODY design + proprietary sealing process for industry-best environmental protection: IP66 rated
- Projected lifetime: $L70 > 54,000\text{hrs}$ @ $t_a=50^\circ\text{C}/122^\circ\text{F}$
- Operating temperatures: -40°C to $+50^\circ\text{C}$, -40°F to 122°F
- Optically clear tempered glass lens: no yellowing over time
- 8 adjustable and 3 non-adjustable mounting brackets
- INFINITY® GVA's proprietary technology allows exceptionally long lighting circuits
- Guaranteed long life time and high performance: no electrolytic capacitors in all DC designs

Options

- Custom lengths: 300', 1800', 2100' or 2400' mm
- Glare control louvers
- Custom LED color combinations
- Non-standard beam distributions
- Maximum lumen output adjustable during commissioning

STR9® Monochromatic

Product Specification Sheet

Product Specifications: STR9-MONO™										
Nominal Length			300 ¹	600	900	1200	1500	1800 ¹	2100 ¹	2400 ¹
Electrical	Rated Input Voltage (Nominal)		24VDC, 48VDC or 380VDC							
	Power Consumption (Max.)	5W	5W	10W	15W	20W	25W	30W	35W	40W
		7.5W	7.5W	15W	22.5W	30W	37.5W	45W	52.5W	60W
		15W	15W	30W	45W	60W	75W	90W	105W	120W
Optical	Light Source		6 x Nichia 219 LEDs per 300mm/1ft							
	CRI		83							
	Lumen Output (typical)	5W	400	800	1200	1600	2000	2400	2800	3200
		7.5W	600	1200	1800	2400	3000	3600	4200	4800
		15W	1200	2400	3600	4800	6000	7200	8400	9600
Beam Angle (FWHM)		10°, 30°, 60°, 80°, 10°x60°, 30°x60°								
Control	Control Protocol		DMX, DALI or 0-10V control through GVA Power-Data Equipment							
Physical	Size (WxH)	mm	72 x 56.4							
		inches	2.83 x 2.22							
	Length	mm	298	598	898	1198	1498	1798	2098	2398
		inches	11.7	23.5	35.4	47.2	59.0	70.8	82.6	94.4
	Weight	kg	1	2	3	4	5	6	7	8
		lbs	2.2	4.4	6.6	8.8	11	13.2	15.4	17.6
	Housing		Solid Extruded aluminum UNIBODY, tempered flat glass lens							
	Fixture Connections		IP68 rated input and output snap-in connectors for end-to-end connection (sealed unmatd)							
	Rated Operation Temperature		-40°C to +50°C, -22°F to 122°F							
	Minimum Starting Temperature		-30°C, -22°F							
Environment		Dry, Damp or Wet Locations, 0-100% humidity								
Certification & Safety	Certifications		cULus, CE, RoHS							
	IEC Classifications		Class 1 LED Luminaire							

These figures are subject to change without notice

1 - Custom configuration, consult factory

Selecting Luminaire Voltage

24V DC - for short runs only, up to 13.8m/46ft

- use when class 2 circuit is required

48V DC - for any short and medium length run, up to 34.5m/115ft

380V DC - for long runs, up to 325.5m/1085ft

- compatible with data center power grids

- compatible with solar and wind power

Maximum Run Lengths

Input Voltage	Power per 300mm/1ft		
	5W	7.5W	15W
24V DC	13.8m/46ft	12m/40ft	6m/20ft
48V DC	34.5m/115ft	24m/80ft	12m/40ft
380V DC	325.5m/1085ft	225m/750ft	117m/390ft

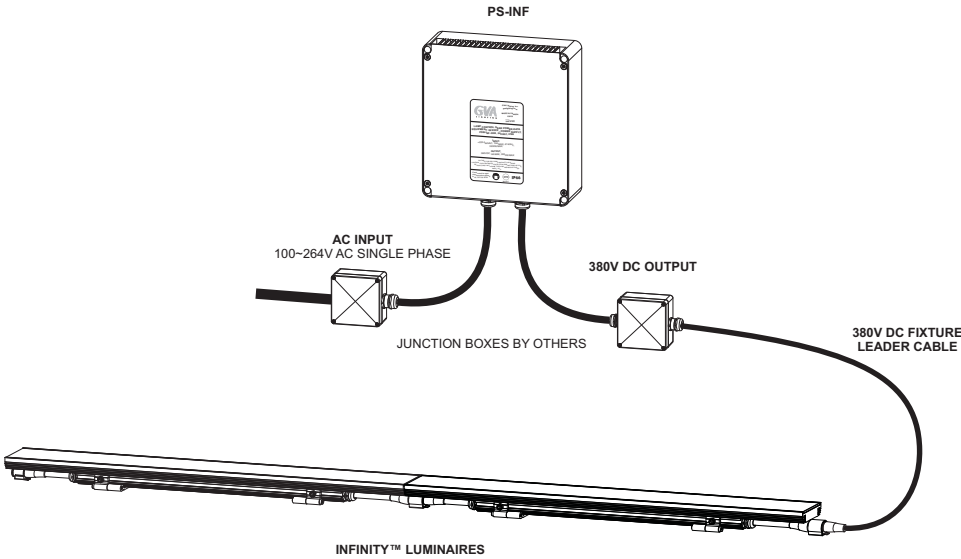
Ratings are for 30°C, de-rating will be used for higher ambient temperatures

GVA Lighting, Inc. 3400 Ridgeway Drive, # 14 Mississauga, Ontario L5L 0A2, Canada
Tel: +1 905 569 6044 Fax: +1 905 569 9823 Email: info@gvalighting.com
gvalighting.com

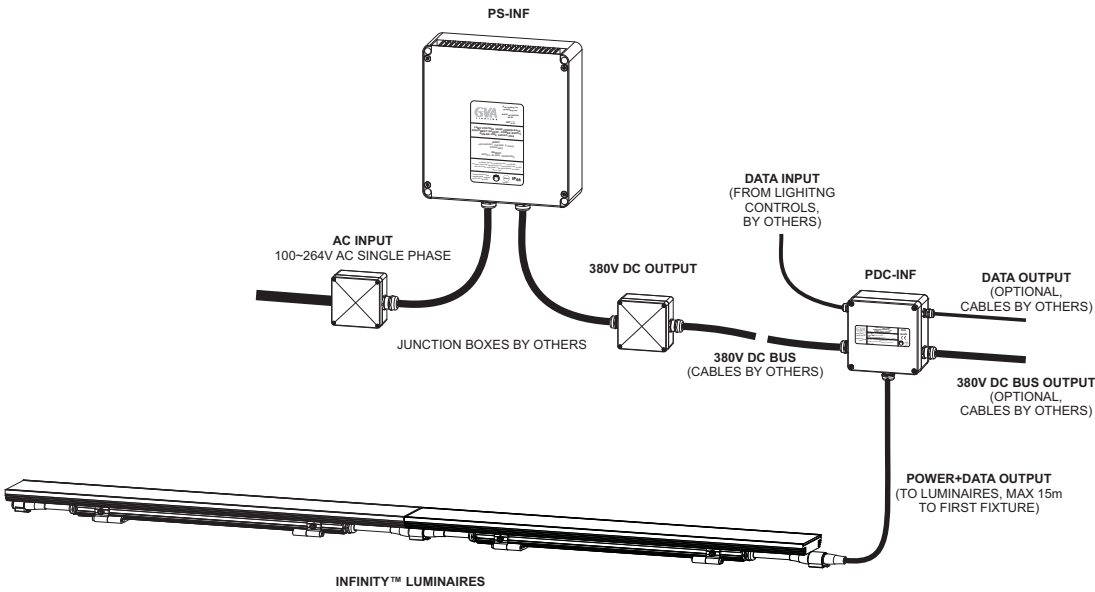
SP-STR9-MONO-23.10.15 PAGE 2 / 7

Product Specification Sheet

Typical System Diagram: INFINITY™, No Dimming Control

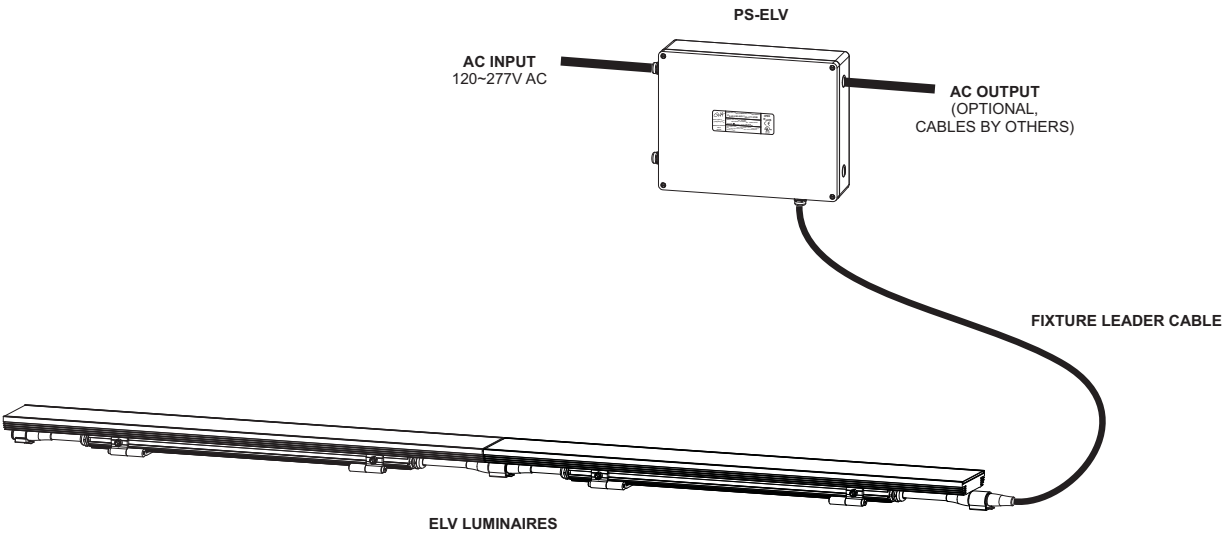


Typical System Diagram: INFINITY™, with Dimming Control

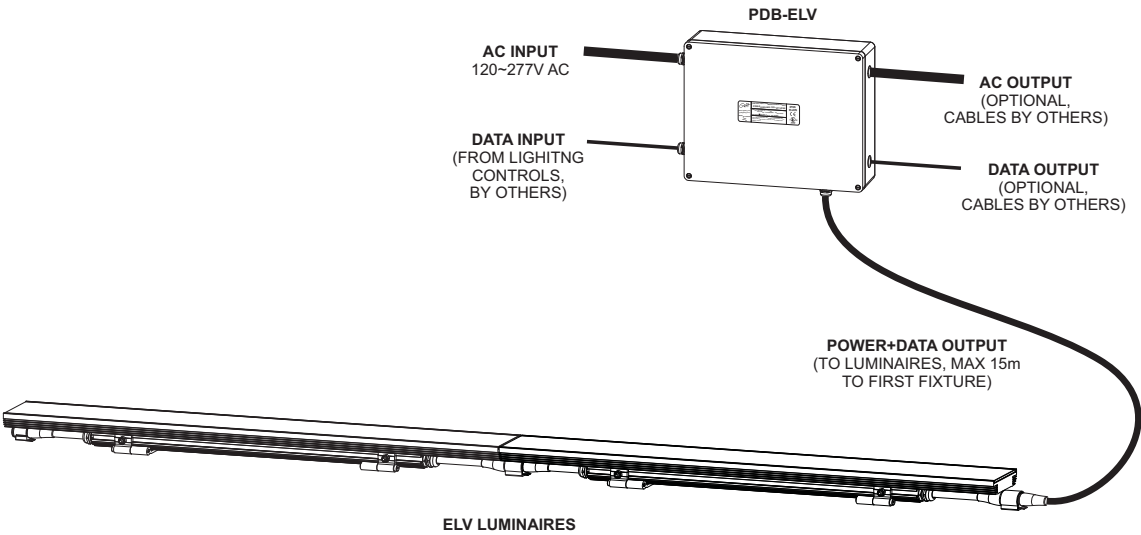


Product Specification Sheet

Typical System Diagram: ELV, No Dimming Control



Typical System Diagram: ELV, with Dimming Control




STR9® Monochromatic

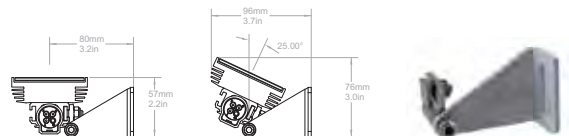
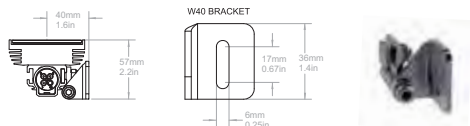
Product Specification Sheet

Mouting Accessories (1 kit required per luminaire)

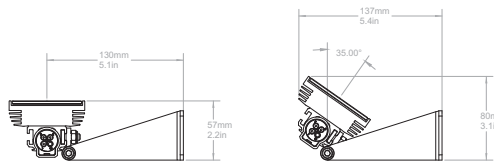
Wxxx - Adjustable Wall Mount Bracket	ITEM NUMBER
MOUNTING BRACKET, KIT, STR9, W40, CLR MATTE ANDZD	121128
MOUNTING BRACKET, KIT, STR9, W40, BLK MATTE ANDZD	121129
MOUNTING BRACKET, KIT, STR9, W80, CLR MATTE ANDZD	121130
MOUNTING BRACKET, KIT, STR9, W80, BLK MATTE ANDZD	121131
MOUNTING BRACKET, KIT, STR9, W130, CLR MATTE ANDZD	121132
MOUNTING BRACKET, KIT, STR9, W130, BLK MATTE ANDZD	121133
MOUNTING BRACKET, KIT, STR9, W155, CLR MATTE ANDZD	121134
MOUNTING BRACKET, KIT, STR9, W155, BLK MATTE ANDZD	121135
MOUNTING BRACKET, KIT, STR9, W180, CLR MATTE ANDZD	121136
MOUNTING BRACKET, KIT, STR9, W180, BLK MATTE ANDZD	121137



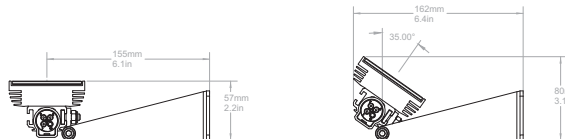
W40 - Wall Mount Adjustable **W80 - Wall Mount Adjustable**



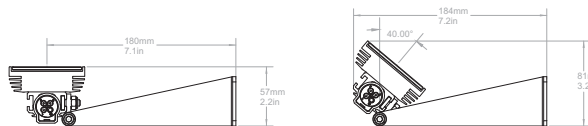
W130 - Wall Mount Adjustable



W155 - Wall Mount Adjustable

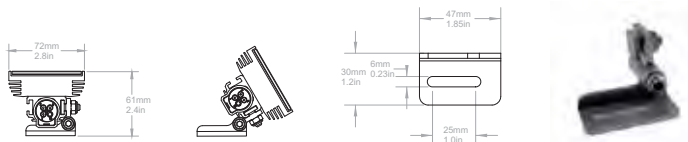


W180 - Wall Mount Adjustable



SMA - Surface Mount Adjustable Bracket	ITEM NUMBER
--	-------------

MOUNTING BRACKET, KIT, STR9, SMA, CLR MATTE ANDZD	121138
MOUNTING BRACKET, KIT, STR9, SMA, BLK MATTE ANDZD	121139



GVA Lighting, Inc. 3400 Ridgeway Drive, # 14 Mississauga, Ontario L5L 0A2, Canada
Tel: + 1 905 569 6044 Fax: + 1 905 569 9823 Email: info@gvalighting.com
gvalighting.com

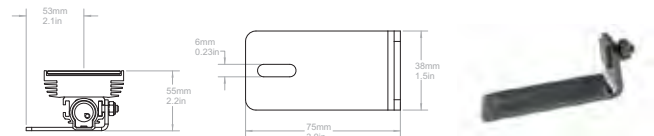
SP-STR9-MONO-23.10.15 PAGE 7 / 7

5 of 7

STR9® Monochromatic

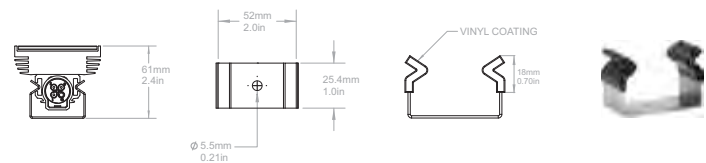
Product Specification Sheet

SML - Surface Mount Bracket, Non-Adjustable	ITEM NUMBER
MOUNTING BRACKET, KIT, STR9, SML, CLR MATTE ANDZD	121140
MOUNTING BRACKET, KIT, STR9, SML, BLK MATTE ANDZD	121141



CLP - Clip Mount Non-Adjustable	ITEM NUMBER
---------------------------------	-------------

MOUNTING BRACKET, KIT, STR9, CLP, STAINLESS STEEL	121147
---	--------

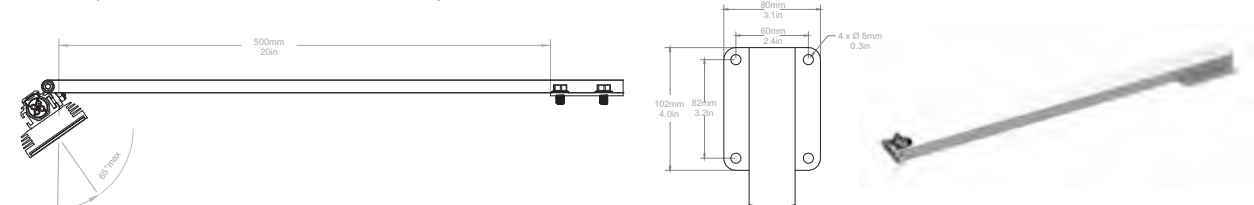


CTLx - Adjustable Cantilever Bracket	ITEM NUMBER
--------------------------------------	-------------

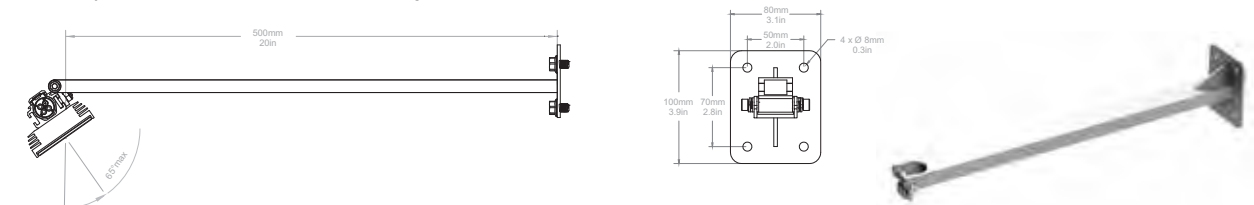
MOUNTING BRACKET, KIT, STR9, CTLH, CLR MATTE ANDZD	121142
MOUNTING BRACKET, KIT, STR9, CTLH, BLK MATTE ANDZD	121143
MOUNTING BRACKET, KIT, STR9, CTLV, CLR MATTE ANDZD	121144
MOUNTING BRACKET, KIT, STR9, CTLV, BLK MATTE ANDZD	121145



CTLH - Adjustable Cantilever Bracket - Horizontal Mounting Surface



CTLV - Adjustable Cantilever Bracket - Vertical Mounting Surface



MCD - Non-Adjustable Cantilever Bracket	ITEM NUMBER
---	-------------

MOUNTING BRACKET, KIT, STR9, MCD, STAINLESS STEEL	121146
---	--------



GVA Lighting, Inc. 3400 Ridgeway Drive, # 14 Mississauga, Ontario L5L 0A2, Canada
Tel: + 1 905 569 6044 **Fax:** + 1 905 569 9823 **Email:** info@gvalighting.com
gvalighting.com

SP-STR9-MONO-23.10.15 PAGE 8 / 7

6 of 7

Applications-

- Hospitals
 - Parking garages
 - Airports
 - Jails / Correctional Facilites
- Toll booth / tunnels
 - Schools / campuses
 - Apartment complexes
 - Mass transit

Technical Data – Benefits

TECHNICAL DATA-

- Depending on desired faceplate (consult with Commend USA sales for support)

SYSTEM REQUIREMENTS

- Full scope of operation only with GE 800 / GE 300:
- GE 800 (min. PRO 800 1.1) with G8-GED (min. G3-8-SUB 3.2)
 - GE 300 (min. PRO 800 1.1) with G3-GED (min. G3-8-SUB 3.2)
 - Configuration software min. CCT 800 1.1

- Backwards compatibility to GE 700 / GE 200:
- GE 700 (min. Pro 5.0) with G7-GED-4 (min. software 02.2)
 - GE 200 (min. Pro 5.0) with G2-GED-4

BENEFITS

- High visibility
- Weather / Vandal resistant
- Trim rings available to fit smaller substations
- Ideal for people in duress
- Attractive and durable housing
- Mass notification reliability
- Scream alarm feature in Commend stations
- Separate strobe is available

EXTENT OF SUPPLY

- 1 security housing:
- 4 3/8" x 3 Lag bolts and 3 Lag bolt anchors

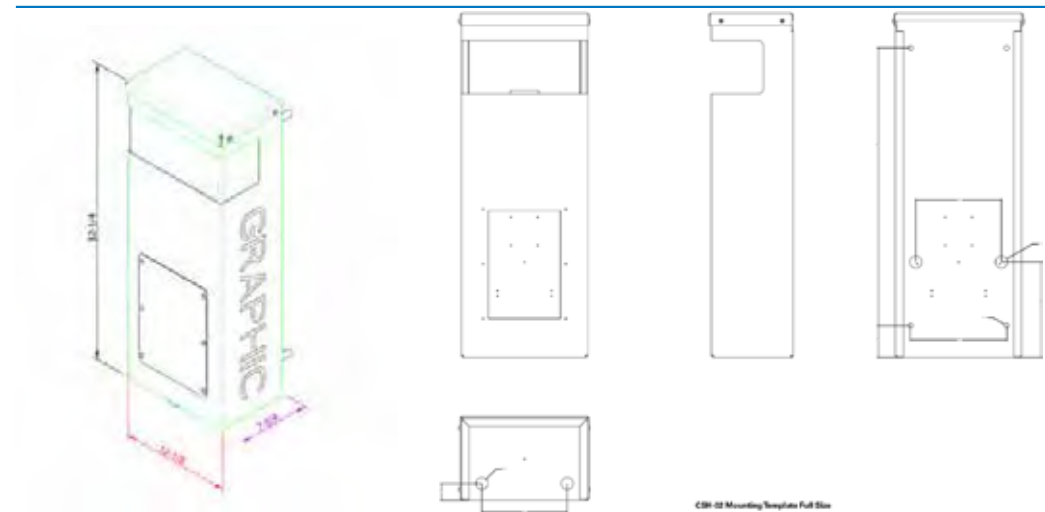


Installation

PRECAUTIONS

- When opening the stations ESD precautions must be observed.
- The stations may only be opened by authorised service engineers.

CONNECTION DIAGRAM



COLOR CHOICES



DATASHEET

USM931A



Substation USM931A

Tamper/Weather resistant security substation connects to Commend servers via Cat 5 cable. It is used for either stanchion or security wall housing mounts, when both attractive appearance and extreme durability are important.

USM931A

- IP / DSP Substation
- Full open duplex communications
- Connects using Cat. 5 cable
- Rugged 11 gauge stainless steel faceplate
- True tamper resistant construction
- Rugged call button
- Weather resistant
- Sensitive electret microphone
- Mounts in most major stanchions and security wall housings
- Mic Open LED
- Full Supervision (speaker, microphone, station electronics, cable, network)
- Red Piezo Button
- "EMERGENCY" in red text

USM931A-2T

- IP / DSP Substation
- Full open duplex communications
- Connects using Cat 5 cable
- Rugged 11 gauge stainless steel faceplate
- True tamper resistant construction
- 2 Rugged call buttons
- Weather resistant
- Sensitive electret microphone
- Mounts in most major stanchions and security wall housings
- Mic Open LED
- Full Supervision (speaker, microphone, station electronics, cable, network)
- Red Piezo Button
- Second Black Piezo button
- "911" in red text and "HELP" in black text



DATASHEET

USM931A

Technical Data – Benefits

INTERCOM TECHNICAL DATA

Operating temperature range:	-20°C to +60°C (-4°F to 140°F)
Storage temperature range:	-25°C to +50°C (-13°F to 122°F)
Relative Humidity:	up to 95% not condensing
Call button:	Possibility for connection of 3 single buttons
Microphone input:	for electret microphone or dynamic microphone Mic Input: nominal level 2.8 mV on 3.3 kΩ (Mic-feeding voltage 2.5 V)
Connection for loudspeaker:	2.5 W at 4Ω / 1.5 W at 8Ω LS-Output: max 3.5V _{eff} (LS-Pot max, Vol. 9)
Ext. microphone,loudspeaker:	Possibility for connection of e.g. headset, handset EP Output: max 850 mV _{eff} (Vol. 9), R _i = 200Ω EM Input: nominal level 14mV on 3.3Ω (Mic-feeding voltage 2.5V)
Line input:	for feed-in of audio (e.g.music, radio conference) Line-Input: nominal level 0 dBu 0.775 V at 10 kΩ
Amplifier:	Built-in amplifier class "D" with 2.5 W
Status indication:	Possibility for connection of a LED 6 mA
Inputs:	3 inputs for floating contacts (recognizes 5 input states)
Outputs:	2 relay outputs (changeover contacts) 30 V / 1 A: 100,000 make-and-break cycles
Frequency range:	50 - 16,000 Hz (depending on connected loudspeaker)
Connection:	pluggable screw terminals
-IP Uplink/Downlink:	shielded RJ45 modular jacks
-Expansion plug for e.g. EB2E2AHE	
Cabling:	min. Cat. 5
Power supply:	12-24 VAC or 15-35 VDC, 500 mA or PoE
PoE (power over ethernet):	IEEE 802.3af standard Power consumption of the terminal device: Class 0 (0.44 W to 12.95 W)
Protocol:	IoIP-Protocol based on UDP/IP
Data rate:	2 x 10/100 MBit/s (full / half duplex)
Measurements:	9.56 x 11.81 see drawing page 3

EXTENT OF SUPPLY

- Intercom Terminal

BENEFITS

- Communication via data networks- no additional cabling required
- Crystal clear 16 kHz speech quality for optimum intelligibility
- Integration in existing housings and panels
- Connection possibilities for-
 - Microphone and loudspeaker
 - Multiple tamper resistant call buttons
 - IP-devices (IP-camera, parking terminals,etc.)
 - LED for indication of conversations
- Inputs and outputs for control and indication functions e.g. control of barriers
- Local power supply or POE (intercom module only)
- In case of a changing public IP-address, dynamic registration is possible
- Supports DSP-functionlities such as Open Duplex®, Audio Monitoring, Loudspeaker/Microphone Surveillance, etc.
- Option boards offer additional powerful features
- Line input for feed-in of audio
- Configurable Ethernet parameters
- Easy administration via intercom server configuration

SYSTEM REQUIREMENTS:

- GE200 (min. PRO 6.0) with G2-DSP-IP-4
- GE700 (min PRO 6.0) with G7-DSP-IP-4
- GE300 (min PRO 800 1.0) with G3-IP-4
- GE800 (min PRO 800 1.0) with G8-IP-4

*Intercom station will detect as ET908 in programming software



CSH01 MOUNTING



CSH02 MOUNTING



CSH03 MOUNTING

DATASHEET

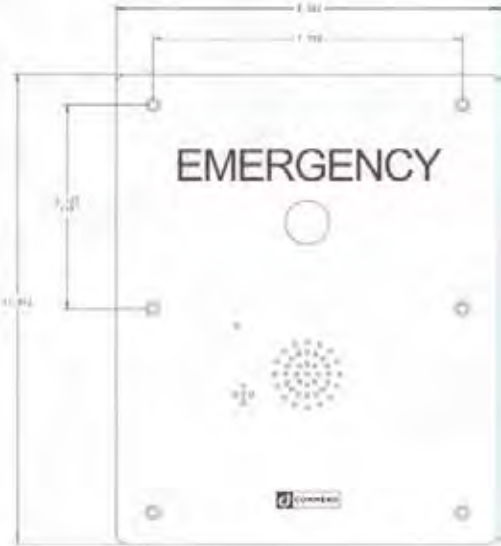
» USM931A

Installation

PRECAUTIONS

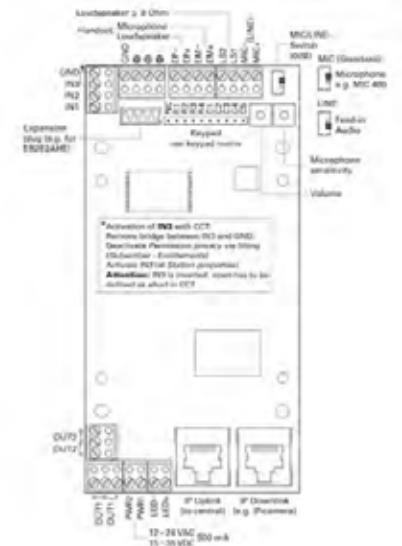
- When opening the stations ESD precautions must be observed.
- The stations may only be opened by authorized service engineers.

CONNECTION DIAGRAM USM931

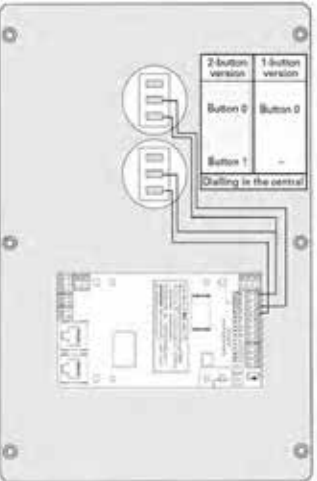


LINE LENGTH IN LAN

The maximum line length of Cat 5 cabling in a LAN is 100 m (328 ft) - e.g. from switch to ET908.



CONNECTION DIAGRAM USM931-2T (PRELIMINARY PHOTOS)



DATASHEET

AF 50I



IP 50-Watt Amplifier AF 50I

Series AF 50 provides a particularly high output range and various audio ports. Amplifiers of this series are universally suitable for any size of application up to complex public address and Intercom solutions. The devices are specifically optimised for installation either in a 19-inch rack or on-site. This added flexibility helps to save on cabling and the resulting costs.

The range of application environments is suitably flexible as well, serving the public address needs in areas from public service facilities (e.g. railway stations) to auditoriums or waiting rooms, and covering the Intercom requirements of noisy industrial facilities, garages, tunnels or office buildings.

AF 50I

50 watt IP-amplifier with polycarbonate housing for connection to an Intercom Server. Output power 1 x 50 watt at 4 ohm loudspeaker or 2 x 25 watt at 8 ohm loudspeakers or 50 watt at the audio output 70V/100V.



Technical Data – Benefits

TECHNICAL DATA

IP rating:	IP 20
Operating temperature range:	–25° C to +55° C (–13° F to 131° F)
Storage temperature range:	–25° C to +70° C (–13° F to 158° F)
Relative Humidity:	up to 95%
Plug:	
- RJ 45 modular jacks with LEDs for connection to the Intercom Server (IP Uplink/Downlink)	
- Pluggable screw terminals (0.08 mm² - 1.5mm²):	power supply, outputs, microphone, inputs,
	line-output, 70V/100V audio output
- Pluggable screw terminals (0.08 mm² - 2.5mm²):	loudspeaker
- Expansion plug for e.g. EB2E2A	
Cabling:	min. Cat. 5
Power supply:	20 - 26 VDC
(max. 2.6 A at 4 Ω / 50W or max. 1.3A at 8 Ω / 25W, max. 3A at the 70V/100V audio output)	
For a faultless operation a earthed power supply unit, e.g.: PA70W24V, is recommended.	
	or PoE
If power supply over Intercom Server is used, an attenuation of up to 12 dB is possible, this is equal to an output power of 6 watt.	
PoE (Power over Ethernet):	IEEE 802.3af standard
Power consumption of the terminal device:	Class 0 (0.44 W to 12.95 W)
Output power:	50 watt (RMS)
Audio outputs:	low resistance, minimum impedance 4 Ω or 70V/100V audio output
Microphone input:	nominal level 14 mV at 3.3 k Ω (MIC supply voltage 2.5V)
Line output:	nominal level 0 dB and 0.775V
Input:	2 input for floating contacts (detection of 5 input states)
Controinput:	0 - 10V, for remote volume control
Output:	- relay output (changeover contact) 30V / 1A 100 000 switch cycles
Protocol:	IoIP-Protocol based on UDP/IP
Frequency response:	50 Hz to 15 kHz (–3 dB)
Transmission bandwidth:	16 kHz
Measurements:	201 x 44 x 255 mm (7.91 x 1.73 x 10.04 inch)
Weight including package:	1600 g (3.53 lbs)

EXTENT OF SUPPLY

- Amplifier incl. Short Reference

Note: Power supply not in extent of supply.

BENEFITS

- 50 W output power
- Low resistance and 70V/100V audio output
- Class-D amplifier, optimised for high efficiency at low operating temperatures
- Short-circuit and overrange protected
- Line monitoring between amplifier and Intercom Server
- Easy integration in existing Intercom Systems
- Support of Terminal features (e.g.: connection monitoring, function monitoring, DSP- tone)
- Single or double mount in a 19" Rack
- Rugged enclosure made from polycarbonate

LINE LENGTH

Intercom Server - Amplifier

The maximum line length of Cat. 5 cabling in a LAN is 100 m (328 ft) – e.g. from switch to amplifier.

Amplifier - Loudspeaker

It is recommended to select the line length between amplifier and loudspeaker as short as possible.

cable diameter	line length at loudspeaker impedance	
	4 Ω	8 Ω
ø 0.5 mm (AWG: 24)	10 m (32.8 ft)	20 m (65.6 ft)
ø 0.6 mm (AWG: 22)	14 m (45.9 ft)	28 m (91.9 ft)
ø 0.8 mm (AWG: 20)	24 m (78,7 ft)	48 m (157.5 ft)
ø 1.0 mm (AWG: 18)	37 m (121.4 ft)	73 m (239.5 ft)
ø 1.4 mm (AWG: 15)	73 m (239.5 ft)	146 m (479 ft)
ø 1.8 mm (AWG: 13)	122 m (400 ft)	244 m (800 ft)

The specified line length correspond to a halving of the performance of the speaker or - 3dB voltage drop.

PRECAUTIONS

- Observe the precautions for handling of electrostatic sensitive devices!
- The devices may only be installed by authorised service engineers.



System/Network Requirements

SYSTEM REQUIREMENTS

MINIMUM REQUIREMENTS
GE 800 / GE 300 / GE 700-UPG: <ul style="list-style-type: none">• Intercom Server Software min. PRO 800 1.3 build 9• Configuration software min. CCT 800 1.3 build 935• IP-subscriber card G8-IP / G3-IP min. firmware 4.2• NET firmware min. 5.4 build 2
Backward Compatibility to GE 700 / GE 200: <ul style="list-style-type: none">• GE 700 (min. PRO 6.0) with G7-DSP-IP• GE 200 (min. PRO 6.0) with G2-DSP-IP• Detected as ET 908 – therefore they can only be used with the feature scope of an ET 908.• <i>Firmware download only possible with GE700-UPG or via IPStationConfig!</i>

REQUIREMENTS TO THE NETWORK

IP-Addresses and Ports

- For the AF 50I the DHCP functionality is available.
If DHCP is not used, the AF 50I must have a fixed IP-address.
- In case of a changing public IP-address, dynamic registration of an AF 50I is possible.
- Communication from the program IPStationConfig is done via Port 16399 (can not be configured).
- Communication from the AF 50I to the Intercom Server (UDP protocol) is done via port 16400 (configurable).

QoS Requirements

- Maximum One-Way-Delay 100ms
- Delay-Jitter not above 50ms
- 0% packet loss for perfect audio quality

Bandwidth

- Required Bandwidth incl. protocol overhead per AF 50I, for upload/download each: speech and data 96 kBit/s
- Speech is compressed according to G.722 standard

SYSTEM OVERVIEW

The following diagram shows an example of connection of Intercom terminals via an IP-network.

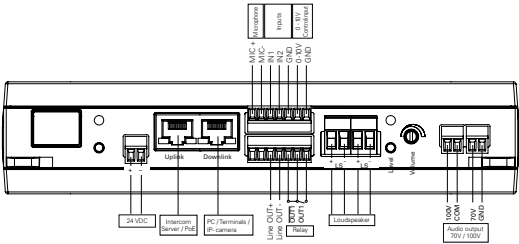


DATASHEET

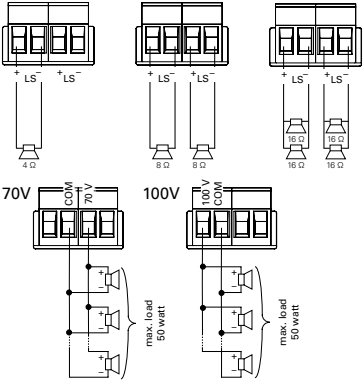
➤ AF 501

Installation

CONNECTION



Connection loudspeaker:



SETTINGS

The volume control is carried out via the potentiometer "Volume" and via CCT 800 at Subscriber > Audio - Features

LED STATUS INDICATION

LED "Power" (front side)

- Permanent green: power supply existent
- Green blinking: Power Supply over PoE - only limited operation possible!

LED "Fault" (front side)

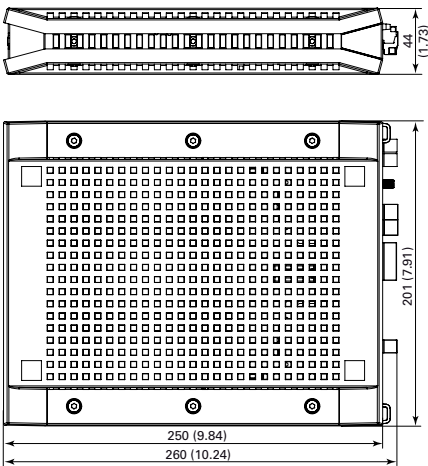
- Permanent red: short-circuit at the loudspeaker

LED "Level" (back side)

- LED red: too much amplification (Clipping)
- LED green / orange: amplification ok

MEASUREMENTS

Measurements in mm (inch), not scale!



MOUNTING

It is possible to mount the amplifier via Wall- / Tablemountkit or Rackmountkit:

Wallmountkit PF-WM (not in extent of supply)

-> Mounting see Short Reference PF-WM

Rackmountkit PF-RM (not in extent of supply)

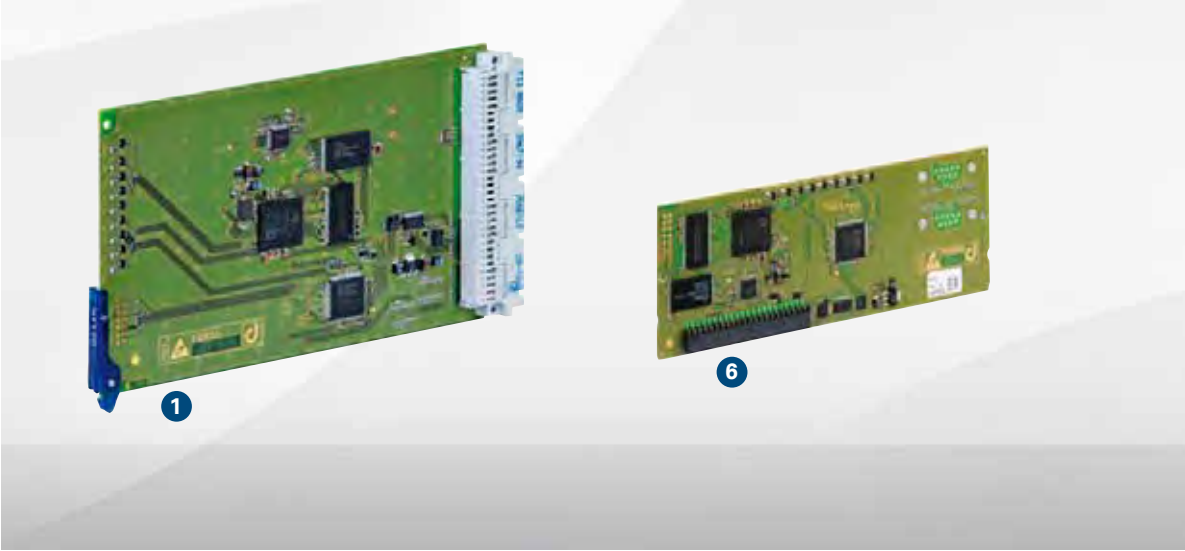
Single or double mount in a 19" Rack

-> Mounting see Short Reference PF-RM



DATASHEET

G8-IP | G3-IP



IP-Subscriber Cards G8-IP | G3-IP

IP-subscriber cards for the connection of up to 8 Intercom terminals to an Intercom Server via Ethernet networks with IP-protocol. Intercom systems using the G8-IP/G3-IP can mix IP-terminals, 2-wire digital and 4-wire analogue

Intercom terminals to assure maximum flexibility to answer user needs perfectly. The G8-IP/G3-IP connects directly to a LAN/WAN; no media converter or multiplexers are needed. Available with 4 or 8 subscribers per card.

1. **G8-IP-4B (Rev. AC)**
Subscriber card for GE 800 Intercom Servers for connection of up to 8 subscribers per card. A maximum of 112 subscribers per GE 800. Connection via the ethernet port of the Intercom Server.
2. **L8-IP-8B**
License upgrade to 8 subscribers with feature level B (basic intercom).
3. **L8-IP-4C | L8-IP-8C**
License upgrade to feature level C (advanced intercom) with 4 or 8 subscribers.
4. **L8-IP-4D | L8-IP-8D**
License upgrade to feature level D (control desk intercom) with 4 or 8 subscribers.
5. **L8-IP-4P | L8-IP-8P**
License upgrade to feature level P (variable/mixed feature levels) with 4 or 8 subscribers.

6. **G3-IP-4B (Rev. AC)**
Subscriber card for GE 300 Intercom Servers for connection of up to 8 subscribers per card. A maximum of 40 subscribers are possible per GE 300. Connection via the ethernet port of the Intercom Server.
7. **L3-IP-8B**
License upgrade to 8 subscribers with feature level B (basic intercom).
8. **L3-IP-4C | L3-IP-8C**
License upgrade to feature level C (advanced intercom) with 4 or 8 subscribers.
9. **L3-IP-4D | L3-IP-8D**
License upgrade to feature level D (control desk intercom) with 4 or 8 subscribers.
10. **L3-IP-4P | L3-IP-8P**
License upgrade to feature level P (variable/mixed feature levels) with 4 or 8 subscribers.



Technical Data – Benefits – Precautions

TECHNICAL DATA

Operating temperature range:	0 °C to +50 °C (32 °F to 122 °F)
Storage temperature range:	-20 °C to +60 °C (-4 °F to 140 °F)
Relative Humidity:	20 % to 80 %
Plug:	Card G3-IP: 40-way socket card Card G8-IP: 96-way PC board connector
Power supply:	from Intercom Server
Emergency power consumption:	50 mAh
Cabling:	min. Cat. 5
Protocol:	VoIP-Protocol based on UDP/IP
Data rate:	2 x 10/100 MBit/s (Full/Half Duplex)
Measurements:	G3-IP: 60 x 160 mm (2.36 x 6.30 inch) G8-IP: 100 x 167 mm (3.94 x 6.58 inch)
Weight including package:	G3-IP: ca. 140 g (0.3 lbs) G8-IP: ca. 180 g (0.4 lbs)

SYSTEM REQUIREMENTS

Consider also the "Requirements of the network".

- G8-IP / G3-IP as of Rev. AC (= Generation 3 in CCT 800):
- GE 800 / GE 300 with Server software min. PRO 800 3.1
 - Configuration software min. CCT 800 3.1

PRECAUTIONS

- ESD precautions must be observed.
- Cards may be exchanged only with voltage switched off.
- Mounting and installation of the Intercom Servers and of the equipment may be carried out by authorised service personnel only.

CONNECTION

- The G8-IP is connected to the network (switch) via the RJ 45 sockets "UPLINK" or "DOWNLINK" of the G8A-NET installation board.
- The G3-IP is connected to the network (switch) via the RJ 45 socket "UPLINK" of the motherboard G3-GEM.

EXTENT OF SUPPLY

- G8-IP**
IP-subscriber card including Short reference
- G3-IP**
IP-subscriber card including Short reference

BENEFITS

- Handles up to 8 Intercom stations through an IP-network (LAN / WAN)
- Connects directly to the IP-network (LAN / WAN) – no media converters or multiplexers required
- Available with feature levels B, C, D and P = variable combination (see table below)
- Intercom systems can include IP-terminals (VoIP®), 2-wire digital and 4-wire analogue Intercom terminals in one system for maximum flexibility
- Only one public IP address required per Intercom Server
- Required network bandwidth min. 96 kBit/s, for upload and download each per conversation
- In case of a changing public IP-address, dynamic registration of an IP-terminal connected to the G8-IP/G3-IP is possible
- In standby (no conversations) only a small bandwidth in the network is used
- Best performance in networks with QoS (Quality of Service)
- 16 kHz audio bandwidth (depending on station type)
- No installation board required
- Speech Storage G8-IP / G3-IP as of Rev. AC:
 - 8 MB flash (7.5 MB audio memory)
 - Up to 450 seconds at 16 kHz / maximum of 90 seconds per audio file
 - Up to 900 seconds at 7 kHz / maximum of 180 seconds per audio file
 - A maximum of 120 pre-recorded audio files per card

G8-IP-8P/G3-IP-8P

Subscriber:	1	2	3	4	5	6	7	8
2 x D, 6 x B	D	D	B	B	B	B	B	B
1 x D, 2 x C, 5 x B	D	C	C	B	B	B	B	B
4 x C, 4 x B	C	C	C	C	B	B	B	B

G8-IP-4P/G3-IP-4P

Subscriber:	1	2	3	4
1 x D, 3 x B	D	B	B	B
2 x C, 2 x B	C	C	B	B



Network Requirements

REQUIREMENTS OF THE NETWORK

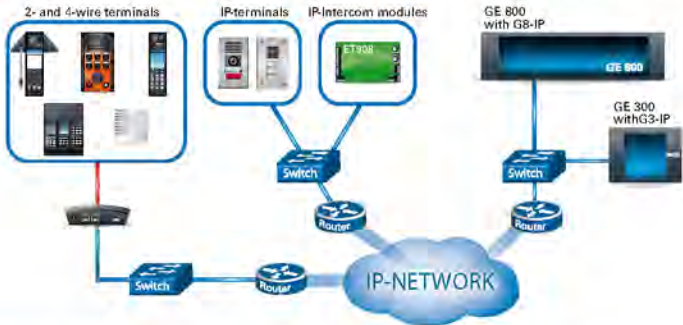
- IP-Addresses and Ports:
- Each G8-IP / G3-IP must have an own fixed IP-address (In case of a changing public IP-address, dynamic registration of an IP-terminal connected to the G8-IP / G3-IP is possible)
 - The communication to the Intercom Server (UDP-Protocol) requires Port 16400 (can be changed)
- QoS Requirements:
- Maximum one-way-delay 100 ms
 - Delay-Jitter not above 50 ms
 - 0% packet loss for perfect speech quality
- Bandwidth:
- Bandwidth incl. protocol overhead per IP-Intercom terminal, for upload and download each: speech and data 96 kBit/s
 - Speech is compressed according to the G.722 standard

LEGAL NOTICE

The manufacturer guarantees the functionality of its products as described in the data sheets and / or technical documentation. For error-free operation of the Intercom system, faultless transmission paths are mandatory. The functionality of transmission paths, in particular of IP-networks, exclusively is the responsibility of the operating company of the transmission path and therefore the manufacturer can not be responsible in any manner, for errors and problems, which result from problems or malfunctioning of the transmission path.

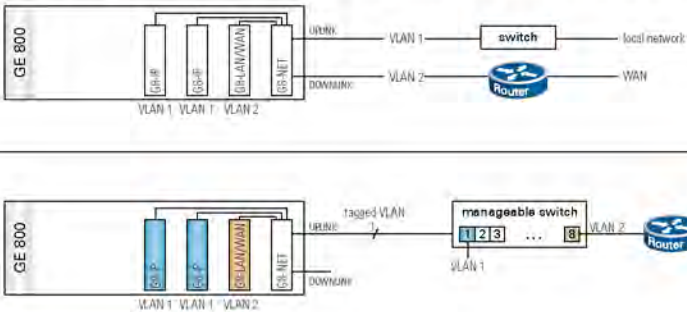
SYSTEM OVERVIEW

The following diagram shows an example of connection of Intercom terminals via an IP-network.



VLAN FUNCTIONALITY

With the VLAN functionality the networked Intercom Servers can be protected similar to a firewall. In this way only the required services/cards can be allowed access to the WAN/internet.




ALCATEL-LUCENT OMNISWITCH 6850E

STACKABLE LAN SWITCH

The Alcatel-Lucent OmniSwitch™ 6850E Stackable LAN Switch (SLS) family offers advanced stackable gigabit Ethernet switches for the enterprise networks. The OmniSwitch 6850E is available in 24 and 48 port configurations and provides wire-rate layer-2 and layer-3 switching simultaneously for IPv4 and IPv6. The OmniSwitch 6850E supports fine grained controls for quality of service (QoS) and for security including network access control (NAC), along with full support for 802.3at compliant power over Ethernet (PoE) and additional 10Gig ports for smooth expansion of existing installations where PoE+ or SFP+ is needed.



OS6850E-U24X



OS6-XNI-U2

These versatile LAN switches can be positioned:

- At the edge of mid- to large-sized converged enterprise networks
- At the aggregation layer
- In a small enterprise network core

They are also suitable as advanced CPEs for Ethernet access for metro and managed services.

FEATURES	BENEFITS
<p>Versatile features and models offering:</p> <ul style="list-style-type: none">• Gigabit and 10 Gigabit interfaces• IEEE 802.3af and 802.3at compliant PoE• Optional 10GigE plug-in module delivers additional 2 10 Gigabit SFP+ ports <p>Hardware-based virtual routing and forwarding (VRF) support</p> <p>Low power consumption, full support for 802.3at PoE+ providing up to 30W of PoE per port</p>	<p>With the variety of interfaces and models, the OmniSwitch 6850 family meets any customer configuration need and offers excellent investment protection and flexibility, as well as ease of deployment, operation and maintenance.</p> <p>Enterprise-wide cost reduction through hardware consolidation to achieve network segmentation and security without additional hardware installation.</p> <p>The OmniSwitch 6850E ensures efficient power management, reduces operating expenses and lowers total cost of ownership (TCO). Ensures that the new devices such as CCTV cameras, WLAN access points, and full featured desktop sets can be supported</p>
<p>Wire-rate performance for switching and routing at 10G and gigabit speeds. Advanced services are incorporated in the operating system; for example, QoS, access control lists (ACLs), L2/L3, VLAN stacking, and IPv6.</p>	<p>Outstanding performance when supporting real-time voice, data, and video applications for converged scalable networks</p>
<p>Redundancy at all levels including power supplies, software and hot-swappable Small Form Factor Pluggable (SFP) modules</p>	<p>A field-upgradeable solution that makes the network highly available and reduces operating expenses</p>
<p>Extensive security features for network access control (NAC), policy enforcement and attack containment.</p>	<p>Fully secures the network at the edge, at no additional cost.</p>
<p>Enhanced Unified Access features for converged campus network solutions</p> <ul style="list-style-type: none">• SIP Fluency to provision & monitor QoS treatment of SIP flows• Airgroup™ Network Services for Bonjour speaking devices• Integrated Policy with User Network Profile• Citrix VDI fluency enables differentiated services for VDI flows	<p>Unified Access and Application fluent Networks provide resilient architecture with automated controls, enhanced security and simplified management for both wired and wireless users resulting in reduced operational complexity & lesser cost.</p> <p>User Network Profiles add intelligence to the network to automatically adapt as users move around the enterprise network.</p> <p>Integration of services enable employees to access same applications and service across wired and wireless access and thus gives a consistent, seamless user experience.</p>

.....Alcatel-Lucent

Enterprise

ORK SWITCH (LOCATED IN CONTROL ROOM)

60 of 90

SECURITY SYSTEM- Panasonic Super Dynamic Full HD Vandal Resistant Dome Network Camera WV-SW559

Panasonic

Super Dynamic Full HD Vandal Resistant Dome Network Camera WV-SW559 WV-SW558



WV-SW559 WV-SW558

SmartHD

MEGA Super Dynamic

NVIF

IP66 standard

VIQS

Full HD 1080

Full HD / 1,920 x1,080 H.264 Vandal Resistant Network Camera featuring Super Dynamic

Key Features

- Super high resolution at Full HD/1,920 x 1,080 created by 3.1Megapixel high sensitivity MOS Sensor.
- 1,080p Full HD images up to 30 fps and 360p image up to 30fps simultaneously.
- Combining enhanced "UniPier®", Panasonic's proprietary System LSI platform and **2 areas VIQS** (Variable Image Quality on Specified area) function can decrease maximum 50%¹⁾ network bandwidth.
- Cropping function enables to provide whole image (1,920 x 1,080) and the part image (810 x 360) simultaneously. Up to 4 image capture areas can be specified, and it is also possible to control the sequence.
- Multiple H.264 (High profile) streams and JPEG streams ensure simultaneous real time monitoring and high resolution recording by enhanced "UniPier®".
- **Super Dynamic** and **ABS** (Adaptive Black Stretch) technologies deliver 128x wider dynamic range compared to conventional cameras.
- Face Super Dynamic Flange technology ensures clear face image.
- High sensitivity with Day & Night (IR) function:0.5 lx (Color), 0.06 lx (B/W) at F1.3 (WV-SW559)
- High sensitivity with Day & Night (Electrical) function:0.5 lx (Color), 0.3 lx (B/W) at F1.3 (WV-SW558)
- Using Panasonic distinctive LDC (Lens Distortion Compensation) function, natural image without distortion can be monitored though using wide angle lens.
- ABF (Auto Back Focus) ensures easy installation.
- ABF ensures stable focus in both color and B/W modes. (WV-SW559)
- Digital Noise Reduction: 3D-DNR ensures noise reduction in various conditions.
- Progressive scan ensures clear images with less motion blur and no tearing even when the subject is moving.
- Superior color reproduction by primary (RGB) color filter.
- Electronic sensitivity enhancement: Auto (Up to 16x) / OFF
- Selectable light control modes: Outdoor scene / Indoor scene (50 Hz) / Indoor scene (60 Hz) / ELC / Fixed electronic shutter
- Outdoor scene: Electronic shutter and ALC lens iris control are automatically controlled depending on the mode and luminance level.
- Indoor scene (50 Hz / 60 Hz): Flicker caused by fluorescent lightning will be automatically compensated.
- ELC: Up to 1/10,000 Electronic shutter is automatically applied for a fix iris lens.
- Fixed electronic shutter: Up to 1/10,000 fixed electronic shutter can be selectable.
- 3x Extra optical zoom at 360p resolution. (Picture Mode : 2 Mega pixel [16:9])
- VMD (Video Motion Detection) with 4 programmable detection areas, 15 steps sensitivity level and 10 steps detection size
- Privacy Zone can mask up to 2 private areas, such as house windows and entrances/exits.
- 2x, 4x digital zoom controlled by browser.

- Camera title display: Up to 20 alphanumeric characters on the browser
- Alarm sources including 3 terminal input, VMD and Panasonic alarm command can trigger actions such as SDXC/SDHC/SD memory recording(WV-SW559), FTP image transfer, E-mail notification, indication on browser, Alarm terminal output, and Panasonic alarm protocol output.
- Full duplex bi-directional audio allows interactive communication between camera site and monitoring site. (WV-SW559)
- JPEG image compression ratio can be changed by alarm so that higher quality image can be provided.
- Prioritized stream control: One of the video streams can be prioritized when multiple recorders or client PCs are accessing the camera so that the recorder or the client PC can maintain the frame rate.
- SDXC/SDHC/SD Memory card slot for manual recording (H.264 / JPEG), alarm recording (H.264 / JPEG) and backup upon network failure (JPEG) (WV-SW559)
- H.264 mac. bit rate/client and Total bit rate control allows flexible network traffic management.
- Frame rate priority mode controls bit rate and compression ratio to provide the specified frame rate.
- Internet mode: H.264 images can be transmitted over HTTP protocol.
- Multi-language: English / Italian / French / German / Spanish / Russian / Chinese / Japanese
- IPv4/IPv6 protocol supported.
- Supports SSL, DDNS (viewnetcam, RFC2136)
- Still images (JPEG) can be viewed on mobile phones via the Internet.
- Onvif compliant model
- IP66 rated water and dust resistant. Compatible with IEC60529 measurement standard.
- Vandal resistant mechanism for high reliability
- 2.8 ~ 10.0 mm, 3.6x Varifocal Auto Iris Lens

1) Compared with H.264-SPS12. Reduction ratios may vary depending on object and image quality setting conditions.

Standard Accessories

• Installation Guide.....1 pc.	• Fixing screws (M4 x 8 mm).....5 pcs. (of them: 1 for spare)
• CD-ROM ¹⁾1 pc.	• Base cover.....1 pc.
• Code label ²⁾1 pc.	• Mount bracket.....1 pc.

The following parts are used during installation procedures.

• AP alarm cable.....1 pc.	• Waterproof tape.....1 pc.
• Camera attachment.....1 pc.	
• 2P power cable.....1 pc.	

1) The CD-ROM contains the operating instructions and software programs.
2) This label may be required for network management. The network administrator shall obtain the code label.

Optional Accessories

Embedded Ceiling Mount Bracket WV-Q169	Smile Dome Cover WV-CW49
--	--------------------------

1 of 1

the marc boutin architectural collaborative inc. with Krzysztof Wodiczko

1 of 2

THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK

A-2.7 CASE STUDY INFORMATION SHEETS

The following pages contain additional information on the Case Study projects identified within the ‘Operations and Maintenance’ section of the report.

SLIPNOT SLIP-RESISTANT COATING

- 1. Aluminum Grated Walkway - The High Line, New York City, NY
- 2. SlipNot Coating to Steel Grating - Beargrass Creek Natural Reserve, St. Matthews, KY
- 3. Aluminum Grip Plate - Progressive Filed, Cleveland, OH

3-FORM KODA PRODUCT DURABILITY

- 1. Clear Koda XT - Mandarin Oriental Hotel, Boston, MA - 2008
- 2. Coloured Koda XT - El Paso Civic Center, El Paso, TX - 2009

TRANSLUCENT RESIN PERFORMANCE CASE STUDY

- 1. Engraved Acrylic - Reiss Headquarters, London, UK



The High Line

Diller Scofidio + Renfro

Non-Slip Stairs Integrated into the High Line Park in New York City

Project: The High Line
Location: New York, NY
Industry: Recreation
Website: www.thehighline.org

The High Line, located on Manhattan's West Side, is a newly renovated 1.5 mile long park that stretches from Gansevoort Street in the Meatpacking District to 34th Street. Constructed in the 1930's, the original intent of the High Line was to lift dangerous freight trains off of Manhattan streets. The abandoned elevated railroad has since been transformed into a fully functional, state of the art park, built with safety in mind.

The Situation:

Access points to the High Line are located at street level every two to three blocks. Heavy pedestrian usage for this popular park made safety a priority. To prevent the risk of slips, trips and falls, all of these access points required non-slip stairs, landings and walkways. Heavy pedestrian usage and weather elements were important considerations when choosing a material to incorporate. Other important aspects to the designers included corrosion resistance, longevity, low maintenance and a high coefficient of friction; wet or dry.



SlipNOT® Project Summary

- Manufactured slip resistant stainless steel stair treads with perforated risers, walkways and landings, customized and fabricated to architectural specifications, creating a unique and safe application.

Project Team

- Architectural Firm:**
Diller Scofidio + Renfro
Project Designer: Matthew Johnson
- Lead/Landscape Architectural Firm:**
Field Operations
Lead Project Designers: Lisa Tziona Switkin and Nahyun Hwang

Once all aspects and sections of The High Line are completed, it will be a one and a half mile long elevated park consisting of eco-friendly and safety materials.

The Solution:

After several years and numerous proposals, architects worked closely with the general contractor and metal fabricator to determine what material should be used for the non-slip stairs at the access points to the elevated park. After many contending options, SlipNOT® Metal Safety Flooring stood out from the rest and was specified by Diller Scofidio + Renfro for the anti-skid stairs due to the extreme slip resistance in every direction, corrosion and chemical resistance, adaptability, aesthetics, and durability. SlipNOT®'s ADA compliant, non-slip stairs will help ensure safety and accessibility for pedestrians.

SlipNOT® Metal Safety Flooring was contacted by the metal fabricator to incorporate the non-slip stairs into the overall greater project. The metal fabricator and SlipNOT® closely worked together for the Chelsea Street Market stairs, Southern Spur Entrance, 14th Street Landing and the Gansevoort Stair access points, following the specifications determined by Diller Scofidio + Renfro.

In order to create aesthetically pleasing yet safe non-slip stairs, ¼" stainless steel stair treads were customized to detailed specifications.

The specifications called for a solid non-slip surface for the tread and nosing portion, but the riser needed to consist of a perforated pattern to allow for drainage and translucence. The stairs were formed and fabricated to size then coated with the SlipNOT® slip resistant stainless steel surface.

The Impact:

Although the non-slip stairs are only one aspect of the one and a half mile long renovation, they provide safety and reliability for all residents and visitors entering the park. To provide public safety, the architect focused on minute details such as the non-slip stairs and landings that seem to have made the greatest impact on the overall transformation. The non-slip stairs indicate a subtle shift from the busy street level below to the quiet, raised setting on the High Line. The customer was pleased with the results and SlipNOT® continues to provide non-slip solutions for new areas of the ongoing project.

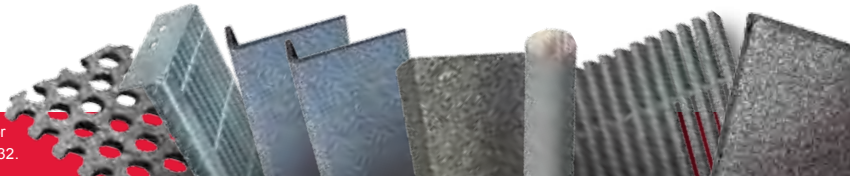
For more information please visit: <http://www.thehighline.org/about/park-information>



Pictures are referenced from the official High Line website and can be viewed at <http://www.thehighline.org/galleries/images/tags/stairs>.

www.slipnot.com | info@slipnot.com

SlipNOT® Metal Safety Flooring products may be covered by one or more of the following patents; 5,711,119, 6,839,951 and 6,863,932.



Phone: 313.923.0400 | Toll Free: 800.754.7668 | Fax: 313.923.4555



Beargrass Creek Nature Preserve

St. Matthews, KY

Galvanized Steel Close Mesh Steel Dove Tail Grating used for Elevated Walkways at the Beargrass Creek Nature Preserve

Company: Beargrass Creek Nature Preserve
Location: St. Matthews, KY
Industry: Recreation
Website: www.louisvillenaturecenter.org

Beargrass Creek is a picturesque urban nature preserve located near Louisville, KY, providing visitors with extensive walking trails and unique views of nature. To help combat flooding issues on walkways, an architectural firm contacted Ohio Gratings to provide material for elevated walkways. The material used needed to be able to withstand installation in an outdoor environment and allow drainage of debris and liquids to help prevent flooding on the walkways.



The Situation:

The architectural firm contacted Ohio Gratings, Inc. in order to provide grating for a recreational project they were working on. Ohio Gratings, Inc. and SlipNOT Metal Safety Flooring have a long-standing relationship in which a customer can order through Ohio Gratings and specify that they would like the SlipNOT slip resistant surface. Therefore the contractor was able to purchase the grating through Ohio Gratings, Inc. with the SlipNOT surface. The project was called the Beargrass Creek Nature Preserve, a 41 acre forest that includes recreational areas, trails and a natural retreat.

SlipNOT Project Summary

- Galvanized steel grating
- SlipNOT coated galvanized steel grating for the walkways in the nature park. The galvanized steel grating has provided Beargrass Creek with a corrosion resistant material that is ideal for an outdoor environment to help provide safety to park visitors.

The Beargrass Creek Nature Preserve is the only urban nature preserve owned by the Kentucky State Nature Preserves Commission, named after the Beargrass creek that runs through it. The park consists of wetlands (over 1,800 species of trees, shrubs and wildflowers), two miles of walking trails and the Louisville Nature Center.

The Solution:

To prevent issues with flooding from the creek due to storm water or increased development, SlipNOT was chosen for elevated walkways throughout the preserve. SlipNOT coated various pieces of close mesh steel dove tail grating for the project that is American with Disabilities Act (ADA) compliant, as well as high heel compatible. The steel grating was then galvanized to protect from rust and corrosion in the wet environment. SlipNOT galvanized steel is low maintenance and extremely durable.

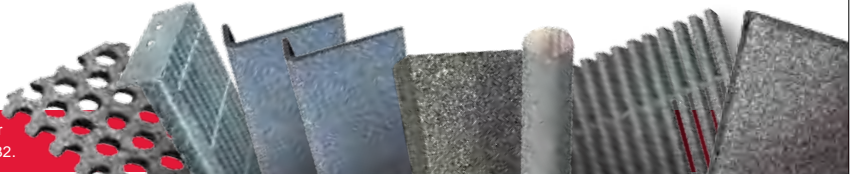
The Impact:

SlipNOT provided a slip resistant surface for the elevated walkway that will withstand the wet environment and provide traction for visitors. Close spaced grating was the perfect solution for the requirements of this project, it will continue to supply the drainage necessary in case of high water levels, while also allowing for high heel and wheel chair traffic.



www.slipnot.com | info@slipnot.com

SlipNOT Metal Safety Flooring products may be covered by one or more of the following patents; 5,711,119, 6,839,951 and 6,863,932.



Phone: 313.923.0400 | Toll Free: 800.754.7668 | Fax: 313.923.4555



Aluminum Floor Plates at Progressive Field

The Situation:

Opening in 1994, Progressive Field is home to the Cleveland Indians Major League Baseball team. The facility has hosted the All Star Game as well as the World Series and has had a record attendance of 45,274 fans.

Recently, the Right Field District has been renovated with new open standing area to watch the game and different eateries such as Melt, Barrio, Sweet Moses, and The Corner Bar. The standing area has rows of bar style rails which give fans a place to set their snacks and beverages. Changing this sitting area into standing room not only opened up more space for fans but created a unique experience for visitors to the field.

The Solution:

In order to give patrons a safe place to stand while enjoying their food and beverages, the designers wanted to incorporate a slip resistant flooring that would hold up well under foot traffic and external weather conditions. SlipNOT® Aluminum Grip Plate® offered the solution they were looking for. Different sizes of 1/4" 6061 aluminum plates were fabricated according to drawings and coated with a Grade 2 SlipNOT® slip resistant surface. Each plate had 12 countersunk holes in it so they could be bolted down.

SlipNOT® plates can either be custom fabricated prior to shipment or can be cut in the field. SlipNOT® suggests that all fabrication is done prior to the coating being applied. The flooring can be swept with a hard bristle brush or power washed after a game.

The Impact:

Visitors to the field benefit from not only the aesthetic qualities of this new space but also from the safety of the quality flooring installed. Inclement weather and spilled beverages are no match for the abrasive surface that the aluminum plates provide. By choosing SlipNOT®, the engineers working for Progressive Field created a fun and different area to watch the Cleveland Indians as well as kept patrons best interests in mind.

A local news channel posted an article covering the baseball field's renovations. Read more here: <http://www.wkyc.com/picture-gallery/sports/mlb/indians/2015/04/06/photo-gallery-indians-ballpark-renovations/25378283/>

LOCATION
Cleveland, OH

INDUSTRY
Recreational

PROJECT OVERVIEW
High traction aluminum plates at Progressive Field's Right Field District

SOLUTION
Various sized 1/4" Grade 2 aluminum plates

WEB SITE
<http://cleveland.indians.mlb.com/cle/ballpark/index.jsp>



MANDARIN ORIENTAL CASE STUDY

Installed in 2008

The Mandarin Oriental Hotel is one example where a clear, Koda XT product by 3-Form has been installed for a significant period of time with excellent performance. Installed primarily for the safety of guests, the polycarbonate canopy is able to withstand the impact of falling ice off the building during the winter months.



EL PASO CIVIC CENTER CASE STUDY

Installed in 2009

Installed in a high UV index environment, coloured Koda XT is used as a canopy within the El Paso Civic Center. Koda XT is a composite material that is extruded with a UV resistant additive to ensure colourfastness. As indicated on the specification sheet below, the material displays excellent performance after 10 years of Florida level UV exposure.



REISS HEADQUARTERS CASE STUDY

The Reiss Headquarters project provides a performative precedent for how the material, and material textures, perform under a variety of light conditions.

A link to the full case study can be found here:
<http://squireandpartners.com/rd/reiss-hq/>

Introduction

This competition winning project for Reiss was designed to house a concept store over three lower floors, and design studios, cutting rooms and administrative space on the floors above. The aspiration was for a building which would project a strong brand message for Reiss to the passing public, the building being located just off Oxford Street.

Design Development

Initially the facade was conceived as fabric behind a cast glass screen, capable of changing with the seasons. However this evolved through the design process to become something much more innovative and exciting. Realising the limitations of glass, the designers sought alternative materials and following trials throughout Europe and the Far East, settled on a highly engineered acrylic, milled vertically to mimic fabric draped across the facade.

Fabrication

The milled acrylic has a very high light conductivity which was important since the initial concept was for a 'glowing' facade visible from nearby Oxford Street. LED light strips attached to the base of each panel tunnel light up each vertical striation of the material to wash over the entire facade and give the impression of a light and playful material. The acrylic rainscreen forms part of a triple skin facade that aids cooling/heating during the summer and winter months respectively. The acrylic is supported at the foot of each panel, whilst a continuous rod runs up the edge of the panels to transfer wind loading. Both of these structural elements are connected back to a steel structure hung from the roof slab.

The Concept

The facade was conceived as a dynamic and translucent filter, presenting a semblance of the varied activities behind it while still preserving the capacity to change. Initially the idea was for a cast glass facade, behind which a material layer would provide a delicate screen capable of moving and changing colour. The facade design rejects the common retail concept of 'displaying wares' in place of sheer drama, instead concealing the entire building behind an opaque veil, offering only glimpses of light and movement from inside.



The Finished Building

The facade consists of a double-glazed layer lying behind an acrylic rain-screen. The acrylic layer has a complex machined profile - solid panels of acrylic are cut away by large vertical gauges of varying width and depth, within which are etched even finer vertical striations. The abstract effect is similar to that of a bar code but when viewed obliquely takes on the shimmering quality of a sheet of silk. The effect changes at night when the acrylic is edge-lit giving it the capacity to vary the building's appearance.

Horizontal slabs of up-lifted concrete balance the vertical emphasis of the facade, and the diagonal form of a staircase running from the second to the fourth floors offsets the orthogonal frame. The design team succeeded in creating a precious material from standard acrylic through highly skilled crafting - creating a design aesthetic to match the creative