

A35601-	-	· -	· -	-
base namber	Color	Finishes	Finishes (Triangle)	Reflector

1.To build a product code in our configurator select the specify button on the base model # product page

2. To build a manual product code on this datasheet choose from the options listed below in blue font and add the suffix to the base model #

GENERAL

Series: Invader Standard	
Brand: Prolicht	
Division: Architectural	
Mounting Type: Recessed	
Mounting Location: Ceiling	
Subcategory: Downlight	

Mounting Location: Ceiting
Subcategory: Downlight
PHYSICAL
Shape: Round
Diameter (mm): 109
Diameter (in): 4 ⁵ / ₁₆
Height (mm): 105
Height (in): $4\frac{1}{8}$
Min. Recessing Depth (mm): 120
Min. Recessing Depth (in): $4\frac{3}{4}$
Light Distribution: Adjustable / Direct
Weight (kg): 0.434
Weight (lbs): 0.96

Fixture Finish: SSR / BKV / CWI / CRY / HAB / UFT / ITA / RUA / FTG / MYG / LOD / PUS / FRO / FUP / KIA / POP / BLS / SPG / MEY / GOH / GUM / CHC / COM / ABZ / JAG / OBR / MOS / ROR

Fixture Material: Aluminum
Cut-out Measurements: 104mm / 4 1/8'

ELECTRICAL

Lamp Type: LED (Zhaga Standard)

Input Wattage (W): 14.3

Total Output Wattage (W): 13

Dimming: Tri-Mode (Non-Dimming and Phase Dimming (120Vac only) and 0-10V Dimming)

Driver Included: No

Driver Location: Recessed Housing

Driver Type: Constant Current - Universal

Housing: See components

Input Voltage (V): 120 - 277

Constant Current (MA): 350

LED

Number of LEDs: 1

Color Temperature (°K): 2700 / 3000 / 3500 / 4000

Max. Delivered Lumen (lm): 890 / 920 / 970 / 990

Nominal Lumen (lm): 1304 / 1352 / 1421 / 1450

CRI: >90 CRI

Lamp Life (hrs): 50000

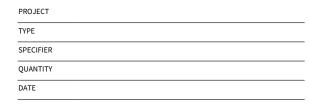
OPTICAL

Reflector°: 20 / 40 / 60

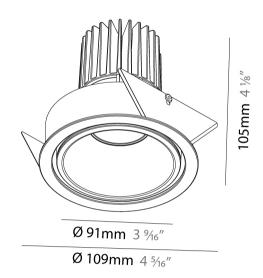
Adjustability: Rotational 180°; Tilt 30°

RATINGS AND CERTIFICATIONS

Certified By: Certified for North American Standards

















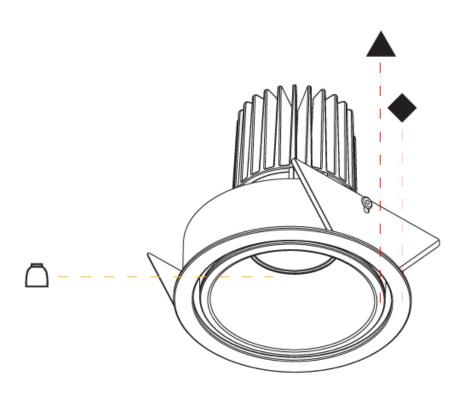






A35601-

PROJECT
ТҮРЕ
SPECIFIER
QUANTITY
DATE







A35602		-	-
base number	Color	Finishes	Reflector

1.To build a product code in our configurator select the specify button on the base model # product page

2. To build a manual product code on this datasheet choose from the options listed below in blue font and add the suffix to the base model #

GENERAL

Series: Invader Standard	
Subseries: Invader Standard	
Brand: Prolicht	
Division: Architectural	
Mounting Type: Recessed	
Mounting Location: Ceiling	
Subcategory: Downlight	

Mounting Type: Recessed
Mounting Location: Ceiling
Subcategory: Downlight
PHYSICAL
Shape: Round
Diameter (mm): 85
Diameter (in): 3 ³ / ₈
Height (mm): 105
Height (in): 4 1/8
Ceiling Thickness (mm): 5 - 30
Min. Recessing Depth (mm): 110
Min. Recessing Depth (in): 4 5/16
Light Distribution: Downlight
Weight (kg): 0.322
Weight (lbs): 0.71
Fixture Finish: SSR / BKV / CWI / CRY / HAB / UFT / ITA / RUA / FTG / MYG LOD / PUS / FRO / FUP / KIA / POP / BLS / SPG / MEY / GOH / GUM / CHC /

COM / ABZ / JAG / OBR / MOS / ROR Fixture Material: Aluminum

Cut-out Measurements: Dia: 80mm 3 1/8"

ELECTRICAL

Lamp Type: LED (Zhaga Standard)

Input Wattage (W): 14.3

Total Output Wattage (W): 13

Dimming: Tri-Mode (Non-Dimming and Phase Dimming (120Vac only) and 0-10V Dimming)

Driver Included: No

Driver Location: Recessed Housing

Driver Type: Constant Current - Universal

Housing: See components

Input Voltage (V): 120 - 277

Constant Current (MA): 350

LED

Number of LEDs: 1

Color Temperature (°K): 2700 / 3000 / 3500 / 4000

Max. Delivered Lumen (lm): 870 / 910 / 951 / 970

Nominal Lumen (lm): 1304 / 1352 / 1421 / 1450

CRI: >90 CRI

Lamp Life (hrs): 50000

OPTICAL

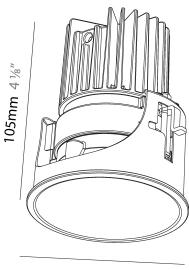
Reflector°: 20 / 40 / 60

RATINGS AND CERTIFICATIONS

Certified By: Certified for North American Standards







Ø 85mm 3 3/8"











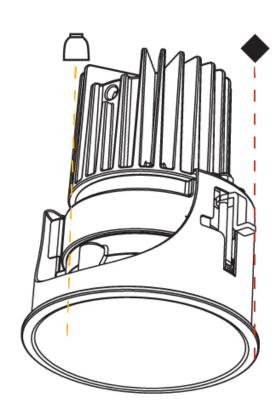






A35602-

PROJECT
ТҮРЕ
SPECIFIER
QUANTITY
DATE







A35603-		-	-	
base number	Color	Finishes	Reflector	

1.To build a product code in our configurator select the specify button on the base model # product page

2. To build a manual product code on this datasheet choose from the options listed below in blue font and add the suffix to the base model #

GENERAL

Series: Invader Standard
Brand: Prolicht
Division: Architectural
Mounting Type: Recessed
Mounting Location: Ceiling
Subcategory: Downlight

Division. Architecturat
Mounting Type: Recessed
Mounting Location: Ceiling
Subcategory: Downlight
PHYSICAL
Shape: Round
Diameter (mm): 85
Diameter (in): 3 ³ / ₈
Height (mm): 87
Height (in): $3\frac{7}{16}$
Ceiling Thickness (mm): 10 / 12.5 / 15
Ceiling Thickness (in): 3/8 or 1/2 or 9/16
Min. Recessing Depth (mm): 90
Light Distribution: Downlight
Weight (kg): 0.233
Weight (lbs): 0.51
Fixture Material: Aluminum Die Cast
Cut-out Measurements: Dia: 80mm 3 1/8"
ELECTRICAL

LED	
Number of LEDs: 1	
Color Temperature (°K): 2700 / 3000 / 3500 / 4000	
Max. Delivered Lumen (lm): 650 / 680 / 715 /730	
Nominal Lumen (lm): 960 / 995 / 1046 / 1067	
CRI: >90 CRI	
Lamp Life (hrs): 50000	
OPTICAL	

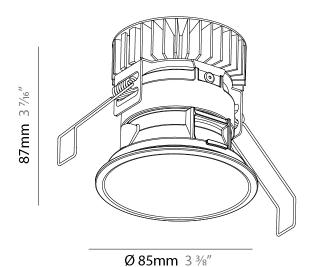
Reflector°: 20 / 40 / 60

RATINGS AND CERTIFICATIONS

Certified By: Certified for North American Standards IP rating: IP20

PROJECT		
ТҮРЕ		
SPECIFIER		
QUANTITY		
DATE		













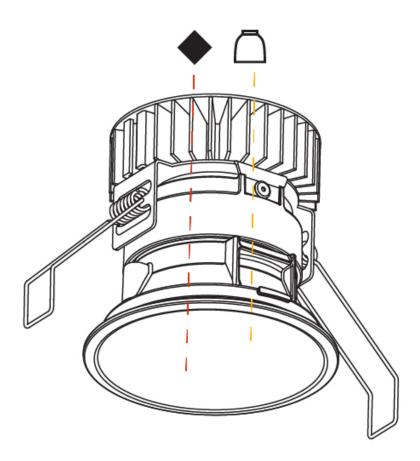






A35603-

PROJECT
ТҮРЕ
SPECIFIER
QUANTITY
DATE







A35826		-	-	-
base number	Color	Finishes	Ceiling	Reflector

1.To build a product code in our configurator select the specify button on the base model # product page

2. To build a manual product code on this datasheet choose from the options listed below in blue font and add the suffix to the base model #

GENERAL

Series: Invader Standard
Brand: Prolicht
Division: Architectural
Mounting Type: Trimless
Mounting Location: Ceiling
Subcategory: Downlight

Mounting Location: Ceiling
Subcategory: Downlight
PHYSICAL
Shape: Round
Diameter (mm): 71
Diameter (in): 2 13/16
Depth (mm): 99
Depth (in): 3 $\frac{7}{8}$
Ceiling Thickness (mm): 10 / 12.5 / 15
Ceiling Thickness (in): 3/8 or 1/2 or 9/16
Min. Recessing Depth (mm): 115
Min. Recessing Depth (in): 4 ½
Light Distribution: Downlight
Weight (kg): 0.342
Weight (lbs): 3/4
Fixture Finish: SSR / BKV / CWI / CRY / HAB / UFT / ITA / RUA / FTG / MYG LOD / PUS / FRO / FUP / KIA / POP / BLS / SPG / MEY / GOH / GUM / CHC /

COM / ABZ / JAG / OBR / MOS / ROR

Fixture Material: Aluminum

Cut-out Measurements: 79mm / 3 1/8"

Upon Request: Unique Sizes Unique Ceiling Thickness

ELECTRICAL

Lamp Type: LED (Zhaga Standard) Input Wattage (W): 13.3 Total Output Wattage (W): 12 Dimming: Tri-Mode (Non-Dimming and Phase Dimming (120Vac only) and 0-10V Dimming) Driver Included: No Driver Location: Recessed Housing Driver Type: Constant Current - Universal Driver Class: Class 2 Housing: See components Input Voltage (V): 120 - 277

Number of LEDs: 1

Constant Current (MA): 350

Color Temperature (°K): 2700 / 3000 / 3500 / 4000 Max. Delivered Lumen (lm): 890 / 920 / 970 / 990 Nominal Lumen (lm): 1304 / 1352 / 1421 / 1450 CRI: >90 CRI Lamp Life (hrs): 50000 Upon Request: RGB-W Tunable White Special Color Temperature

OPTICAL

Reflector°: 20 / 40 / 60 Adjustability: Fixed Upon Request: Special Beam Angles

RATINGS AND CERTIFICATIONS

Certified By: Certified for North American Standards

IP rating: IP20

Zaneen Group Inc. © 2024, T 1800-388-3382, F 416-247-9319, www.zaneen.com

PROJECT		
TYPE		
SPECIFIER		
QUANTITY		
DATE		











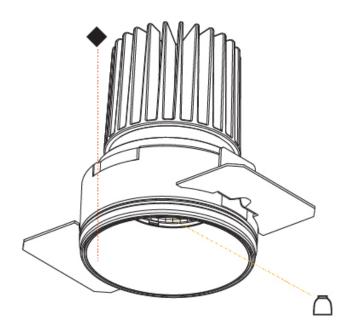






A35826-

PROJECT	
ТҮРЕ	
SPECIFIER	
QUANTITY	
DATE	







A37912		-	-
base number	Color	Finishes	Reflector
	Temperature	(Diamond)	Options

1.To build a product code in our configurator select the specify button on the base model # product page

2. To build a manual product code on this datasheet choose from the options listed below in blue font and add the suffix to the base model #

GENERAL

Series: Invader Standard	
Brand: Prolicht	
Division: Architectural	
Mounting Type: Trimless	
Mounting Location: Ceiling	
Subcategory: Downlight	

Mounting Type: Trimless
Mounting Location: Ceiling
Subcategory: Downlight
PHYSICAL
Shape: Round
Diameter (mm): 39
Diameter (in): 1 $^{9}\!\!/_{16}$
Height (mm): 72
Height (in): 2 13/16
Ceiling Thickness (mm): 10 / 12 / 15
Ceiling Thickness (in): 3/8 or 1/2 or 9/16
Min. Recessing Depth (mm): 150
Min. Recessing Depth (in): 5 1/8
Light Distribution: Downlight
Weight (kg): 0.129
Weight (lbs): 0.28
Fixture Finish: SSR / BKV / CWI / CRY / HAB / UFT / ITA / RUA / FTG / MYG LOD / PUS / FRO / FUP / KIA / POP / BLS / SPG / MEY / GOH / GUM / CHC /

COM / ABZ / JAG / OBR / MOS / ROR Fixture Material: Aluminum

Cut-out Measurements: 45mm / 1 3/4"

Upon Request: Unique Sizes Unique Ceiling Thickness

ELECTRICAL

Lamp Type: LED (Zhaga Standard)

Input Wattage (W): 7.7

Total Output Wattage (W): 6.8

Dimming: Tri-Mode (Non-Dimming and Phase Dimming (120Vac only) and 0-10V Dimming)

Driver Included: No

Driver Location: Remote

Driver Type: Constant Current - 120 / 277Vac

Input Voltage (V): 120 - 277 Constant Current (MA): 250

LED

Number of LEDs: 1

Color Temperature (°K): 2700 / 3000 / 3500 / 4000

Max. Delivered Lumen (lm): 660 / 690 / 725 / 740

Nominal Lumen (lm): 734 / 762 / 801 / 817

CRI: >90 CRI

Lamp Life (hrs): 50000

Upon Request: RGB-W Tunable White Special Color Temperature

ΟΡΤΙζΔΙ

Reflector°: 33 / 47 / 65

Upon Request: Special Beam Angles

RATINGS AND CERTIFICATIONS

Certified By: Certified for North American Standards

PROJECT	
TYPE	
SPECIFIER	
QUANTITY	
DATE	













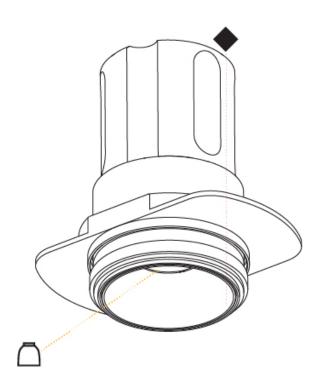






A37912-

PROJECT	
TYPE	
SPECIFIER	
QUANTITY	
DATE	







A37946	. .	-	-
base number	Color	Finishes (Diamond)	Reflector

1.To build a product code in our configurator select the specify button on the base model # product page

2. To build a manual product code on this datasheet choose from the options listed below in blue font and add the suffix to the base model #

GENERAL

Series: Invader Standard	
Brand: Prolicht	
Division: Architectural	
Mounting Type: Recessed	
Mounting Location: Ceiling	
Subcategory: Downlight	

Mounting Type: Recessed
Mounting Location: Ceiling
Subcategory: Downlight
PHYSICAL
Shape: Round
Diameter (mm): 148
Diameter (in): 5 ¹³ / ₁₆
Height (mm): 130
Height (in): $5\frac{1}{8}$
Ceiling Thickness (mm): 5 - 30
Ceiling Thickness (in): 1/16 - 1 3/16
Min. Recessing Depth (mm): 140
Min. Recessing Depth (in): 5 ½
Light Distribution: Downlight
Weight (kg): 0.9
Weight (lbs): 1.98
Fixture Finish: SSR / BKV / CWI / CRY / HAB / UFT / ITA / RUA / FTG / MYG , LOD / PUS / FRO / FUP / KIA / POP / BLS / SPG / MEY / GOH / GUM / CHC /

Fixture Finish: SSR / BKV / CWI / CRY / HAB / UFT / ITA / RUA / FTG / MYG / LOD / PUS / FRO / FUP / KIA / POP / BLS / SPG / MEY / GOH / GUM / CHC / COM / ABZ / JAG / OBR / MOS / ROR

Fixture Material: Aluminum Die Cast
Cut-out Measurements: 142mm / 5 9/16"

ELECTRICAL

Lamp Type: LED (Zhaga Standard)

Input Wattage (W): 28.6 Total Output Wattage (W): 26

Dimming: Tri-Mode (Non-Dimming and Phase Dimming (120Vac only) and 0-10V Dimming)

Driver Included: No

Driver Location: Recessed Housing

Driver Type: Constant Current - Universal

Housing: See components
Input Voltage (V): 120 - 277

Constant Current (MA): 700

LED

Number of LEDs: 1

Color Temperature (°K): 2700 / 3000 / 3500 / 4000

Max. Delivered Lumen (lm): 2210 / 2270 / 2391 / 2440

Nominal Lumen (lm): 3210 / 3290 / 3459

CRI: >90 CRI

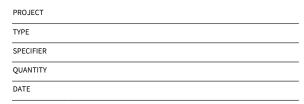
Lamp Life (hrs): 50000

OPTICAL

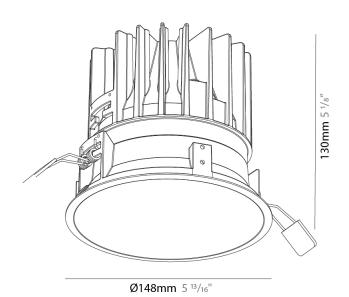
Reflector°: 18 / 26 / 40

RATINGS AND CERTIFICATIONS

Certified By: Certified for North American Standards





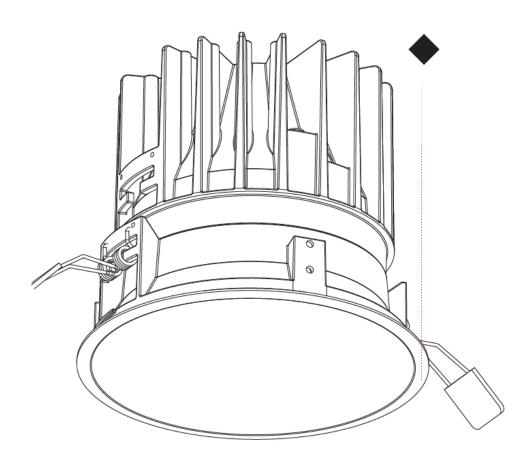






A37946-

PROJECT	
ТҮРЕ	
SPECIFIER	
QUANTITY	
DATE	







INVADER ADJUSTABLE RECESSED

A37962	•	-	-	-	
base number	Color	Finishes	Finishes	Reflector	•

1.To build a product code in our configurator select the specify button on the base model # product page

2. To build a manual product code on this datasheet choose from the options listed below in blue font and add the suffix to the base model #

GENERAL

Series: Invader Standard	
Subseries: Invader Adjustable	
Brand: Prolicht	
Division: Architectural	
Mounting Type: Recessed	
Mounting Location: Ceiling	
Subcategory: Downlight	

mounting Type: Necesseu
Mounting Location: Ceiling
Subcategory: Downlight
PHYSICAL
Shape: Round
Diameter (mm): 62
Diameter (in): 2 ⁷ / ₁₆
Height (mm): 74
Height (in): 2 15/16
Min. Recessing Depth (mm): 150
Min. Recessing Depth (in): 5 1/8
Light Distribution: Adjustable / Direct
Weight (kg): 0.138
Weight (lbs): 0.304
Fixture Finish: SSR / BKV / CWI / CRY / HAB / UFT / ITA / RUA / FTG / MYG

Fixture Finish: SSR / BKV / CWI / CRY / HAB / UFT / ITA / RUA / FTG / MYG / LOD / PUS / FRO / FUP / KIA / POP / BLS / SPG / MEY / GOH / GUM / CHC / COM / ABZ / JAG / OBR / MOS / ROR

Fixture Material: Aluminum

Cut-out Measurements: 57mm / 2 1/4"

ELECTRICAL

Lamp Type: LED (Zhaga Standard)

Input Wattage (W): 7.7

Total Output Wattage (W): 7

Dimming: Tri-Mode (Non-Dimming and Phase Dimming (120Vac only) and 0-10V Dimming)

and 0-104 Dimining

Driver Included: No

Driver Location: Remote

Driver Type: Constant Current - 120 / 277Vac

Input Voltage (V): 120 - 277 Constant Current (MA): 250

LED

Number of LEDs: 1

Color Temperature (°K): 2700 / 3000 / 3500 / 4000

Max. Delivered Lumen (lm): 660 / 690 / 725 / 740

CRI: >90 CRI

Lamp Life (hrs): 50000

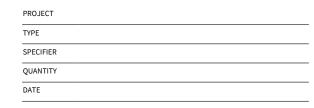
OPTICAL

Reflector°: 33 / 47 / 65

Adjustability: Rotational 180°; Tilt 30°

RATINGS AND CERTIFICATIONS

Certified By: Certified for North American Standards





















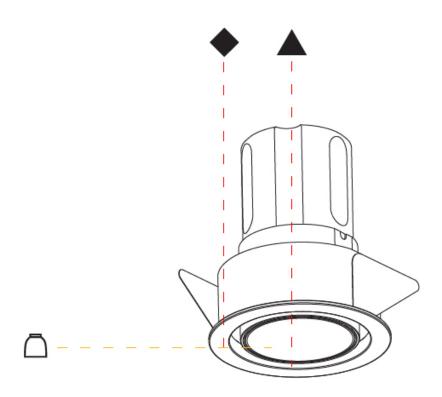




INVADER ADJUSTABLE RECESSED

A37962-

PROJECT
TYPE
SPECIFIER
QUANTITY
DATE







INVADER ON SQUARE SURFACE

A3D229	-		-	-	-
base number	LED Dimming	Color Temperature	Finishes (Diamond)	Finishes (Triangle)	Reflector

1.To build a product code in our configurator select the specify button on the base model # product page

2. To build a manual product code on this datasheet choose from the options listed below in blue font and add the suffix to the base model #

GENERAL

Series: Invader Standard	
Subseries: Invader On Square	
Brand: Prolicht	
Division: Architectural	
Mounting Type: Surface	
Mounting Location: Ceiling	
Subcategory: Spots	

Mounting Location: Ceiling	
Subcategory: Spots	
PHYSICAL	
Shape: Square	
Length (mm): 75	
Length (in): 2 15/16	
Width (mm): 75	
Width (in): 2 15/16	
Height (mm): 125	
Height (in): 5 1/8	
Light Distribution: Downlight	
Weight (kg): 0.449	
Weight (lbs): 1.08	
Fixture Finish: SSD / DKV / CMI / CDV / HAD / HET / ITA / DHA / ETC / MV	10

Fixture Finish: SSR / BKV / CWI / CRY / HAB / UFT / ITA / RUA / FTG / MYG / LOD / PUS / FRO / FUP / KIA / POP / BLS / SPG / MEY / GOH / GUM / CHC / COM / ABZ / JAG / OBR / MOS / ROR

Fixture Material: Aluminum Die Cast

ELECTRICAL

Lamp Type: LED (Zhaga Standard)

Input Wattage (W): 10

Total Output Wattage (W): 9.1

Dimming: Tri-Mode (Non-Dimming and Phase Dimming (120Vac only) and 0-10V Dimming)

Driver Included: No

Driver Location: Integrated

Driver Type: Constant Current - Universal

Driver Class: Class 2

Input Voltage (V): 120 - 277

Constant Current (MA): 500

Number of LEDs: 1

Color Temperature (°K): 2700 / 3000 / 3500 / 4000

Max. Delivered Lumen (lm): Max. 939

CRI: >90 CRI

Lamp Life (hrs): 50000

OPTICAL

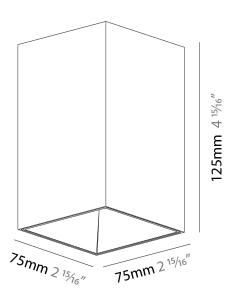
Reflector°: 18 / 34 / 60

RATINGS AND CERTIFICATIONS

Certified By: CSA Certified to UL and CSA Standards







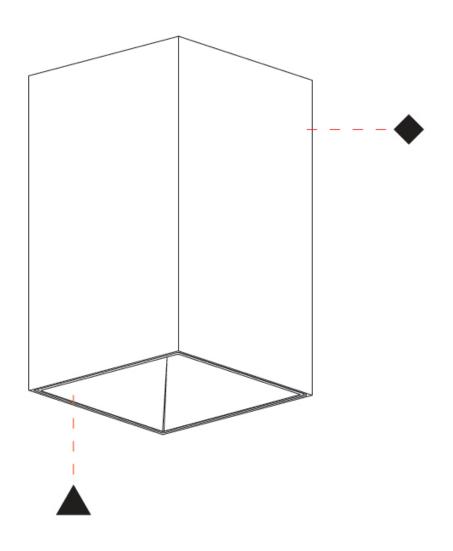




INVADER ON SQUARE SURFACE

A3D229-

PROJECT	
ТУРЕ	
SPECIFIER	
QUANTITY	
DATE	







INVADER STANDARD

COLOR FINISH CHART

PROJECT		
TYPE		
SPECIFIER		
QUANTITY		
DATE		

Fixture Finish



Digital: Not all screens are calibrated the same, and therefore, colors will appear differently between screens. **Physical:** When texture is involved, there will be variations in color, character and tone within a product series and between product families.

Gun Metal: No Gun Metal finish is alike. It combines a mixture of transparent and black color particles which ensures a highly individual effect and no luminaire being identical. **Champagne Cream, Copper Mine, Ancient Bronze + Jazz Gold:** These finishes have slight fading from specific powder coating production. Each luminaire will slightly vary.





INVADER STANDARD

PROJECT			
TYPE			
SPECIFIER			
QUANTITY			
DATE			

LEGEND

100				-	1 1 1 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
<u></u>	floor-mounted	¥	pivotable	⊛	special LED (upon request) RGB, RGBW, tunable, gold+, meat+, art+, fashion+
7	wall and ceiling: recessed and surface mounted	C	rotating	0	warm dim / natural dimming LED
\uparrow	ceiling-mounted and wall-mounted	Œ	illuminate tilted	0	rechargeable battery powered
\rightarrow	wall-mounted	I	color of suspension cable	in the second	fixture with natural vivid LED (upon request)
Y	omni-directional light distribution	1	length of suspension cable	CRI	color rendering index
À	direct light distribution	Δ	reflector degree selection	(K)	color temperature
X	direct/indirect light distribution	s s	super spot	(LM)	lumen (luminous flux)
Y	indirect light distribution	*	lens	₩	efficacy (lumens per watt)
	asymmetric light distribution	8	lens pack	UGR	Unified Glare Rating (UGR) range from 5-40
$\overline{\Lambda}$	aura light distribution	0	shine ring	*	marine grade (AISI 316 stainless steel)
R	round wall or ceiling cut-out	\odot	integrated shine ring with diffuser	30	walk on
\Box	square wall or ceiling cut-out		free individual colors 01-29	②	drive on
4	the supplied jig specifies the cutout dimensions	Ĉ	individual colors: 00 (free of charge), 01-25 (extra charge)	DSC	Dark Sky Compliance
□ ←,→	minimum distance (meters) lamp - object	♦	luminaire part to be colored (F1)	Ġ	Americans with Disabilities Act (less than 4" off the wall located between 27"-84" from floor)
$\hat{\pm}$	recessed depth		luminaire part to be colored (F2)		lamp protected against explosion
<u></u>	ceiling thickness in mm		luminaire part to be colored (F3)	4	blown glass using traditional methods by master glass blower
1	ceiling thickness selection		luminaire part to be colored (F4)	()	acoustic material
	dimmable DP (phase), DV (0-10V), DD (dali), DS (step-dim)	•	luminaire part to be colored (F5)		protection class I, protection insulation
	included or excluded LED driver/transformer/ control gear	•	color of 3-circuit adaptor		protection class II, protection insulation
8	separately switchable	\odot	indirect diffuser		ETL Certified to UL and CSA Standards
•	sensor	0	direct diffuser	շ (Մ) սո	UL Certified to UL and CSA Standards
	remote control	1	ball-proof (upon request)	(II)	CSA Certified to UL and CSA Standards
9	available upon request	O	accessory	Z	Certified for North American Standards

IP RATING

IP20	protected against ingress of solid bodies greater than 12.5mm (finger)
IP33	protected against ingress of solid bodies greater than 2.5mm protected against sprays of water up to 60 degrees from the vertical (rain)
IP40	protected against ingress of solid bodies greater than 1mm (wire) no protection against the ingress of moisture
IP43	protected against ingress of solid bodies greater than 1mm (wire) protected against sprays of water up to 60 degrees from the vertical (rain)
IP44	protected against ingress of solid bodies greater than 1mm (wire) protected against water splashed from all directions
IP54	protected against limited ingress of dust (wet rooms/covered outdoor areas) protected against water splashed from all directions
IP65	protected against ingress of dust protected against jets of water
IP66	protected against ingress of dust protected against powerful jets of water or heavy seas
IP67	protected against ingress of dust protected against immersion of water between 15cm - 1m for 30 minutes
IP68	protected against ingress of dust protected against immersion of water under pressure for long periods

IK RATING

above the surface)

IK02	above the surface)
IK03	protected against 0.35 joules impact (equivalent to 0.25kg mass dropped from 140mm above the surface)
IK04	protected against 0.5 joules impact (equivalent to 0.25kg mass dropped from 200mm above the surface)
IK05	protected against 0.7 joules impact (equivalent to 0.25kg mass dropped from 280mm above the surface)
IKO6	protected against 1 joules impact (equivalent to 0.25kg mass dropped from 400mm above the surface)
IK07	protected against 2 joules impact (equivalent to 0.5kg mass dropped from 400mm above the surface) $$
IK08	protected against 5 joules impact (equivalent to 1.7kg mass dropped from 300mm above the surface)
IK09	protected against 10 joules impact (equivalent to 5.0kg mass dropped from 200mm above the surface)

protected against 20 joules impact (equivalent to 5.0kg mass dropped from 400mm above the surface)

protected against 0.14 joules impact (equivalent to 0.25kg mass dropped from 56mm

protected against 0.2 joules impact (equivalent to 0.25kg mass dropped from 80mm