

TSRA31 BET

3" Track Spot Luminaire with Regressed Arm

3" Diameter Track spot designed for retail, hospitality and commercial spot lighting applications.

LUMENS / WATTAGE DATA

PART NUMBER	DELIVERED LUMENS*	SYSTEM WATTS	LPW
TSRA31 21L BET	2100	21	100

*1 Nominal Delivered Lumens

*90CRI has same delivered lumens as original 80CRI version due to use of special trigain phosphor LED diodes

FEATURES

TSRA31 fixture delivers approximately 2100 initial lumens viz precise TIR optics. Available in four distinct beam patterns. Regressed optic produces clean beam with smooth edge and is field interchangeable to other beam angles without tools. Integral flat black baffle reduces peripheral brightness. Sturdy, regressed support arm has positive friction-grip hardware that will not sag, or rotate out of aiming position over time. Clean cylindrical housing has no exposed hardware and can rotate 359 degrees with up to 90 degree aiming from nadir. Integral on/off switch for convenience.

CONSTRUCTION

TSRA31 is constructed of die cast aluminum and fabricated steel and is finished with durable powder coat finish that can be easily cleaned and maintained.

ELECTRONICS

TSRA31 has best in class LED system with 5 MacAdam ellipse binning and 90+ CRI. Integral 120V power supply is dimmable via ELV type dimming protocol control devices (contact factory for more information).

CODE COMPLIANCE

ETL listed for dry location. Manufactured and tested to UL Standards No. 1574.

WARRANTY

5 year warranty standard. L70>60,000 hours.

PROJECT: _____

QUANTITY: _____

TYPE: _____



PRODUCT SELECTOR GUIDE

SERIES	FAMILY	LUMENS	CCT	BEAM	DIMMING	ADAPTOR	FINISH	ACCESSORIES
TS	RA31	21L			E1	BET		

EXAMPLE

TS	RA31	21L	35HK	MD	E1	BET	MW	BETHL31A
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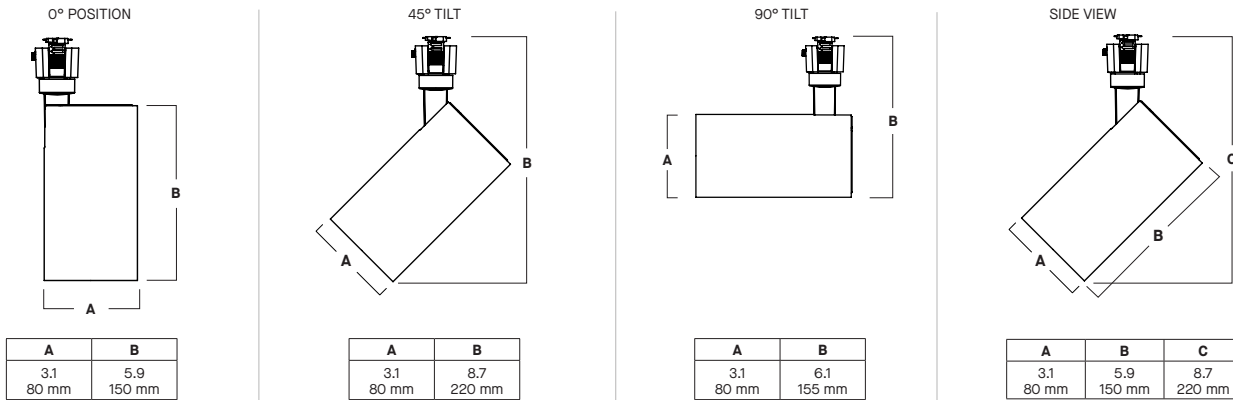
SERIES	FAMILY	LUMENS	CCT	BEAM	DIMMING	ADAPTOR	FINISH	ACCESSORIES									
TS	RA31	21L	2100 Lm	90 CRI		E1	Electronic Driver, 120V. ELV / TRIAC Dimming	BET	Basix 1 CIR/1 NEUT 120V	MW	Matte White	MB	Matte Black	ORDER SEPARATELY			
				30HK	3000 K									XN	20°	BETHL31A	Hex Louver
				35HK	3500 K									ND	28°	BETSNW31A	Snoot white (Matte Black Interior)
				40HK	4000 K									MD	39°	BETSNB31A	Snoot black (Matte Black Interior)
				XW	60°			BET70WH	Mono Point Canopy White								
								BET70BK	Mono Point Canopy Black								

GREEN TEXT INDICATES QUICK SHIP OPTIONS



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FIXTURE DIMENSIONS



FINISH



PAINT TIMES

TIER	COST	AVERAGE PAINT TIME*
Tier 1 - Standard Finishes	\$	🕒
Custom Color	Contact Factory	Contact Factory

*CONTACT FACTORY FOR SPECIFIC PRODUCT LEAD TIMES

FIXTURE ACCESSORIES



TS - RA31 - 21L - 35HK - XN - xx - xx - MW

CANDLEPOWER CURVE TEST TSRA31-3	INTENSITY CANDELA 0° AZIMUTH	ZONAL LUMENS		SINGLE UNIT: PERFORMANCE HORIZONTAL FOOTCANDLES INITIAL DOWNLIGHT ONLY				MULTIPLE UNITS: PERFORMANCE 80/50/20% REFLECTANCES HORIZONTAL FOOTCANDLES AND WATTS/SQ FT								
		0.00°	0° - 10°	823	42%	Mounting Distance	FC at Beam Center	Diameter at Beam Angle	FC at Beam Edge	Ceiling Height	Fixture Spacing	RCR 4		RCR 6		
	0.00°	11199	0° - 10°	823	42%	8.0'	175 fc	2.9'	83 fc	14'	2'	488	5.12	460	5.16	
	5.00°	10057	0° - 20°	1535	78%	10.0'	112 fc	3.6'	53 fc	18'	4'	107	1.13	128	1.44	
	10.00°	5868	0° - 30°	1777	90%	12.0'	78 fc	4.4'	37 fc	22'	4'	121	1.27	104	1.17	
	15.00°	2409	0° - 40°	1863	95%	14.0'	57 fc	5.1'	27 fc	Delivered Illuminance Rating: (DIR)						
	20.00°	1048	0° - 60°	1914	97%	16.0'	44 fc	5.8'	21 fc	95 FC per W/Sq. Ft. 89 FC per W/Sq. Ft.						
	30.00°	248	0° - 80°	1926	98%	20.0'	28 fc	7.3'	13 fc	2' Suspension Length to luminous aperture						
	40.00°	73	0° - 90°	1931	98%	24.0'	19 fc	8.7'	9 fc	Square rooms used for multiple units: RCR 4: Length & Width = Ceiling Ht. - 4.5' x 2.50 RCR 6: Length & Width = Ceiling Ht. - 4.5' x 1.66						
	50.00°	27	Total	1963	100%	28.0'	14 fc	10.2'	7 fc	+ Average Initial Footcandles at 2.5' Above Floor						
	60.00°	10														
	70.00°	5														
	80.00°	4														
	90.00°	5														

Delivered Lumens: **1963**
 Luminaire Watts: **20.07**
 LER: **97.81**

CP at 0deg (Nadir): **11199**
 CRI:

Beam Angle: **20.6**
 Spacing Ratio: **0.35**

Lumen Multiplier:
 CCT Multiplier:

TS - RA31 - 21L - 35HK - ND - xx - xx - MW

CANDLEPOWER CURVE TEST TSRA31-2	INTENSITY CANDELA 0° AZIMUTH	ZONAL LUMENS		SINGLE UNIT: PERFORMANCE HORIZONTAL FOOTCANDLES INITIAL DOWNLIGHT ONLY				MULTIPLE UNITS: PERFORMANCE 80/50/20% REFLECTANCES HORIZONTAL FOOTCANDLES AND WATTS/SQ FT								
		0.00°	0° - 10°	634	32%	Mounting Distance	FC at Beam Center	Diameter at Beam Angle	FC at Beam Edge	Ceiling Height	Fixture Spacing	RCR 3		RCR 5		
	0.00°	7679	0° - 10°	634	32%	8.0'	120 fc	4.0'	55 fc	14'	4'	125	1.28	125	1.39	
	5.00°	7065	0° - 20°	1525	78%	10.0'	77 fc	5.0'	35 fc	18'	4'	117	1.20	89	0.99	
	10.00°	5621	0° - 30°	1763	90%	12.0'	53 fc	6.0'	24 fc	22'	8'	28	0.29	24	0.26	
	15.00°	3353	0° - 40°	1847	94%	14.0'	39 fc	7.0'	18 fc	Delivered Illuminance Rating: (DIR)						
	20.00°	1217	0° - 60°	1905	97%	16.0'	30 fc	8.0'	14 fc	98 FC per W/Sq. Ft. 90 FC per W/Sq. Ft.						
	30.00°	229	0° - 80°	1918	98%	20.0'	19 fc	10.0'	9 fc	2' Suspension Length to luminous aperture						
	40.00°	81	0° - 90°	1923	98%	24.0'	13 fc	12.0'	6 fc	Square rooms used for multiple units: RCR 3: Length & Width = Ceiling Ht. - 4.5' x 3.33 RCR 5: Length & Width = Ceiling Ht. - 4.5' x 2.00						
	50.00°	35	Total	1956	100%	28.0'	10 fc	14.0'	4 fc	+ Average Initial Footcandles at 2.5' Above Floor						
	60.00°	11														
	70.00°	4														
	80.00°	4														
	90.00°	4														

Delivered Lumens: **1956**
 Luminaire Watts: **20.06**
 LER: **97.51**

CP at 0deg (Nadir): **7679**
 CRI:

Beam Angle: **28.03**
 Spacing Ratio: **0.47**

Lumen Multiplier:
 CCT Multiplier:

HOW TO USE PERFORMANCE DATA

SINGLE UNIT	MULTIPLE UNITS
<p> Cone of Light of a single, symmetrical beam luminaire. Direct initial illumination (FC) and Beam Angle diameter directly beneath fixture; shown at different distances from aperture to horizontal plane. Calculated using Inverse Square Law. </p> $FC_H = CP \times (\cos \theta) \div D^2$ <p> Beam Diam. = 1/2 Beam Angle (Tan) x 2D </p> <ul style="list-style-type: none"> • CP Candela at 0° (Nadir) • Cos θ Cosine of θ Angle • D Distance (Mounting Height AFF) • FC_H Footcandles, Horizontal • Beam Angle Cone of light to 50% max. CP • Beam Diam. Pattern of light at Beam Angle 	<p> Square grid layout of multiple luminaires in unfurnished, square rooms of different proportions (Room Cavity Ratios) with 80/50/20% room surface reflectances. 2' Suspension Length to aperture. Initial average illumination (FC) calculated at 2.5' above floor, using Zonal Cavity Method. W/Sq. Ft. of layout shown for each ceiling height and RCR. </p> <p> Delivered Illuminance Rating (DIR*): System performance indicator expressed as ratio of approximate initial FC per W/Sq. Ft. delivered to horizontal plane below, for the range of ceiling heights indicated. </p> <ul style="list-style-type: none"> • To estimate FC for Fixture Spacing that is different than shown (do not exceed Spacing Ratio): FC = Chart Spacing² ÷ Different Spacing² x Chart FC • To estimate Sq. Ft. per fixture for a specific target FC: Sq. Ft. / Fixture = Chart FC x Chart Spacing² ÷ Target FC • To estimate Fixture Quantity in a room: Fixture Qty. = Sq. Ft. of Rm. ÷ Sq. Ft. per fixture • To estimate Watts/Sq. Ft.: W/ Sq. Ft. = Luminaire Watts x Qty. ÷ Sq. Ft. of Rm.

TS - RA31 - 21L - 35HK - MD - xx - xx -MW

CANDLEPOWER CURVE TEST TSRA31-1	INTENSITY CANDELA 0° AZIMUTH	ZONAL LUMENS		SINGLE UNIT: PERFORMANCE HORIZONTAL FOOTCANDLES INITIAL DOWNLIGHT ONLY				MULTIPLE UNITS: PERFORMANCE 80/50/20% REFLECTANCES HORIZONTAL FOOTCANDLES AND WATTS/SQ FT								
		0.00°	0° - 10°	435	22%	Mounting Distance	FC at Beam Center	Diameter at Beam Angle	FC at Beam Edge	Ceiling Height	Fixture Spacing	RCR 3		RCR 5		
	0.00°	4901	0° - 10°	435	22%	8.0'	77 fc	5.6'	32 fc	14'	4'	127	1.29	126	1.40	
	5.00°	4763	0° - 20°	1350	67%	10.0'	49 fc	7.0'	21 fc	18'	6'	48	0.49	40	0.44	
	10.00°	4203	0° - 30°	1850	92%	12.0'	34 fc	8.4'	14 fc	22'	8'	29	0.29	24	0.26	
	15.00°	3376	0° - 40°	1924	95%	14.0'	25 fc	9.8'	10 fc	Delivered Illuminance Rating: (DIR) 98 FC per W/Sq. Ft. 90 FC per W/Sq. Ft.						
	20.00°	2306	0° - 60°	1967	98%	16.0'	19 fc	11.2'	8 fc							
	30.00°	266	0° - 80°	1978	98%	20.0'	12 fc	14.1'	5 fc	2' Suspension Length to luminous aperture Square rooms used for multiple units: RCR 3: Length & Width = Ceiling Ht. -4.5' x 3.33 RCR 5: Length & Width = Ceiling Ht. -4.5' x 2.00 + Average Initial Footcandles at 2.5' Above Floor						
	40.00°	60	0° - 90°	1983	98%	24.0'	9 fc	16.9'	4 fc							
	50.00°	25	Total	2015	100%	28.0'	6 fc	19.7'	3 fc							
	60.00°	9														
	70.00°	4														
	80.00°	3														
90.00°	5															

Delivered Lumens: 2015
 Luminaire Watts: 20.23
 LER: 99.60

CP at 0deg (Nadir): 4901
 CRI:

Beam Angle: 38.72
 Spacing Ratio: 0.63

Lumen Multiplier:
 CCT Multiplier:

TS - RA31 - 21L - 35HK - XW - xx - xx - MW

CANDLEPOWER CURVE TEST TSRA31-4	INTENSITY CANDELA 0° AZIMUTH	ZONAL LUMENS		SINGLE UNIT: PERFORMANCE HORIZONTAL FOOTCANDLES INITIAL DOWNLIGHT ONLY				MULTIPLE UNITS: PERFORMANCE 80/50/20% REFLECTANCES HORIZONTAL FOOTCANDLES AND WATTS/SQ FT								
		0.00°	0° - 10°	204	11%	Mounting Distance	FC at Beam Center	Diameter at Beam Angle	FC at Beam Edge	Ceiling Height	Fixture Spacing	RCR 2		RCR 4		
	0.00°	2164	0° - 10°	204	11%	6.5'	51 fc	7.5'	17 fc	9'	4'	126	1.32	81	0.97	
	5.00°	2155	0° - 20°	744	39%	7.5'	38 fc	8.6'	13 fc	12'	6'	53	0.55	34	0.41	
	10.00°	2094	0° - 30°	1384	72%	8.5'	30 fc	9.8'	10 fc	16'	8'	32	0.33	28	0.33	
	15.00°	1950	0° - 40°	1790	93%	10.0'	22 fc	11.5'	7 fc	Delivered Illuminance Rating: (DIR) 96 FC per W/Sq. Ft. 84 FC per W/Sq. Ft.						
	20.00°	1708	0° - 60°	1883	98%	12.0'	15 fc	13.8'	5 fc							
	30.00°	1080	0° - 80°	1895	98%	14.0'	11 fc	16.1'	4 fc	1' Suspension Length to luminous aperture Square rooms used for multiple units: RCR 2: Length & Width = Ceiling Ht. -3.5' x 5.00 RCR 4: Length & Width = Ceiling Ht. -3.5' x 2.50 + Average Initial Footcandles at 2.5' Above Floor						
	40.00°	227	0° - 90°	1900	98%	16.0'	8 fc	18.4'	3 fc							
	50.00°	40	Total	1930	100%	20.0'	5 fc	23.0'	2 fc							
	60.00°	11														
	70.00°	5														
	80.00°	4														
90.00°	4															

Delivered Lumens: 1930
 Luminaire Watts: 20.35
 LER: 94.84

CP at 0deg (Nadir): 2164
 CRI:

Beam Angle: 59.89
 Spacing Ratio: 0.91

Lumen Multiplier:
 CCT Multiplier:

HOW TO USE PERFORMANCE DATA

SINGLE UNIT	MULTIPLE UNITS
<p> Cone of Light of a single, symmetrical beam luminaire. Direct initial illumination (FC) and Beam Angle diameter directly beneath fixture; shown at different distances from aperture to horizontal plane. Calculated using Inverse Square Law. </p> <p> $FC_{H} = CP \times (\cos \theta) \div D^2$ </p> <p> Beam Diam. = $\frac{1}{2}$ Beam Angle (Tan) x 2D </p> <ul style="list-style-type: none"> • CP Candela at 0° (Nadir) • Cos θ Cosine of θ Angle • D Distance (Mounting Height AFF) • FC_{H} Footcandles, Horizontal • Beam Angle Cone of light to 50% max. CP • Beam Diam. Pattern of light at Beam Angle 	<p> Square grid layout of multiple luminaires in unfurnished, square rooms of different proportions (Room Cavity Ratios) with 80/50/20% room surface reflectances. 2' Suspension Length to aperture. Initial average illumination (FC) calculated at 2.5' above floor, using Zonal Cavity Method. W/Sq. Ft. of layout shown for each ceiling height and RCR. </p> <p> Delivered Illuminance Rating (DIR®): System performance indicator expressed as ratio of approximate initial FC per W/Sq. Ft. delivered to horizontal plane below, for the range of ceiling heights indicated. </p> <ul style="list-style-type: none"> • To estimate FC for Fixture Spacing that is different than shown (do not exceed Spacing Ratio): $FC = \text{Chart Spacing}^2 \div \text{Different Spacing}^2 \times \text{Chart FC}$ • To estimate Sq. Ft. per fixture for a specific target FC: $\text{Sq. Ft.} / \text{Fixture} = \text{Chart FC} \times \text{Chart Spacing}^2 \div \text{Target FC}$ <ul style="list-style-type: none"> • To estimate Fixture Quantity in a room: $\text{Fixture Qty.} = \text{Sq. Ft. of Rm.} \div \text{Sq. Ft. per fixture}$ • To estimate Watts/Sq. Ft.: $W / \text{Sq. Ft.} = \text{Luminaire Watts} \times \text{Qty.} \div \text{Sq. Ft. of Rm.}$