



# TRB-400

## MaxLumina® Rotating Beacon

A compact, stand-alone, major light station beacon equipped with uniquely designed injection moulded acrylic dioptric fresnel lenses, the TRB-400 MaxLumina® Rotating Beacon is electric powered and lends itself to DC storage battery operation that can maintain a proper charge level through photovoltaic recharging from solar panels. Lens carousel, lampchanger and flasher, gearless direct drive motor and electronic control module are contained in a weather tight aluminum housing (IP65) with cast acrylic glazing and stainless steel fasteners. Mounted on a light tower of proper height, the TRB-400 gives coastal shipping a 24NM range light.

### FEATURES

- **CHOICE OF 6-LENS OR 8-LENS CAROUSEL**

- Lens carousels are rotated counter clockwise. Simple or complex flash characters are provided by insertion of blanking panels and selected rotation period programmed into the electronic control module. Lenses are available in all IALA colours.

- **CHOICE OF TWO LAMPCHANGERS**

- Available are the LC-70 lampchanger using Metal Halide lamps and TF-3B lampchanger/flasher using Quartz Halogen lamps. These units are engineered to hold three standard lamps and to eliminate shadowing of the operating lamp for maximum intensity and 360° visibility. Lampchangers come with electronic lamp controllers including monitoring circuits.

- **REMOTE MONITOR AND REPORT**

- STATUS** - The TRB-400 is operated with the use of the MicroPower OMNIBUS® II circuit. A general purpose light beacon controller that monitors and reports status of the following: status of operating lamp, number of available lamps, battery voltage (loaded and unloaded), sunswitch status, lamp fuse status, rotation period, lamp current.

- **CONTROL FUNCTIONS** - The MicroPower OMNIBUS II circuit provides the following control functions: enable or disable flash sequence, override or restore sunswitch control, recount good lamps, communication with a standby lantern.

TRB-400



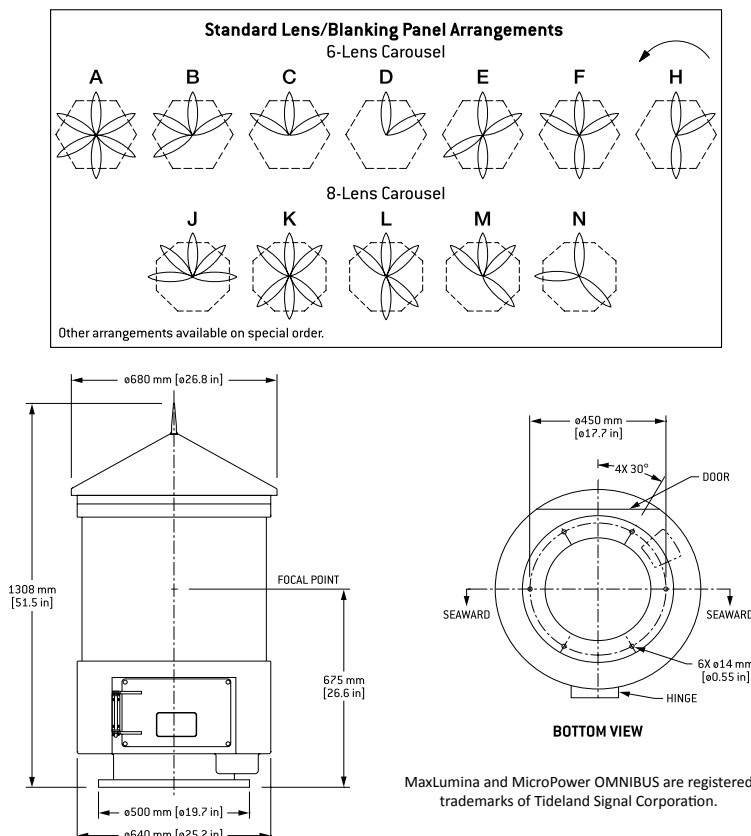
- **SWITCHOVER FROM MAIN TO STANDBY LANTERN**

- A standby lantern equipped with MicroPower OMNIBUS II circuit is normally disabled but is automatically enabled if the main lantern is not operating within specifications. Switchover from main to standby lantern is affected via a command and control communication protocol between the MicroPower OMNIBUS II circuits in the two lanterns.

## FEATURES (cont.)

- GEARLESS DIRECT DRIVE SYSTEM** - Provides for a useful life of 25 years with no scheduled maintenance for the life of the motor. Drive motor is a 12-pole brushless DC motor designed for smooth operation over the range of 6 to 120 seconds rotation period. Commutation sensors and speed encoder are integrated into the motor. The motor and its internal bearing assembly are sized and lubricated to support the drive hub assembly that includes the directly coupled lens carousel. Motor bearings have a maximum rated speed of 4800RPM. Maximum rotation speed of the TRB-400 is 10RPM, minimising stress. All conditions such as load weight, load inertia, shock, corrosion to salt atmosphere, dust and any other possible contamination event, are provided for adequately. Sixteen preprogrammed rotation periods are available in the motor control circuit. In the field, the user can select any of these rotation periods by touching the membrane control switch on the electronic control module.
- JUNCTION BOXES** - One of two available junction boxes is supplied with each rotating beacon:
  - JB-1 DC**, for use with DC input power, has a moulded fiberglass NEMA-4X enclosure, UL-508 listed, with overall dimensions of 228mm (9.0") long x 121mm (4.8") wide x 134mm (5.3") high. Included are the cables with connectors to plug into the receptacles on the beacon, sunswitch sensing element, and terminals for field connection of input DC power, standby beacon, and monitor and control input/output.
  - JB02 AC**, for use with AC mains input power, has a 16-gauge stainless steel NEMA-4X enclosure, UL-508 listed, with overall dimensions of 394mm (15.5") long x 329mm (12.9") wide x 152mm (6.0") high. Included are the cables with connectors to plug into the receptacles on the beacon, sunswitch sensing element, and terminals for field connection of input AC power, standby beacon, and monitor and control input/output. Also contained within the enclosure is a universal input AC to DC converter.

## TRB-400 MaxLumina® Rotating Beacon



**EFFECTIVE INTENSITY TABLES**  
(Schmidt-Clausen Method of Calculation)

**6-Lens Carousel**

Lamp Size	Hor. Div. <sup>1</sup> (deg)	Ver. Div. <sup>2</sup> (deg)	Fix Int. <sup>3</sup> (cd)	Effective Intensity (E.F.I.) in White															
				120 sec 0.5 rpm	90 sec .666 rpm	72 sec .833 rpm	60 sec 1.0 rpm	48 sec 1.25 rpm	40 sec 1.5 rpm	30 sec 2.0 rpm	24 sec 2.5 rpm	20 sec 3.0 rpm	15 sec 4.0 rpm	12 sec 5.0 rpm	10 sec 6.0 rpm	9 sec 6.66 rpm	8 sec 7.5 rpm	7 sec 8.57 rpm	6 sec 10.0 rpm
12V/10W** On-Time	1.05°	1.47°	144,836	47,271 0.350	39,015 0.263	33,184 0.210	28,870 0.175	24,166 0.140	20,781 0.117	16,232 0.087	13,317 0.070	11,291 0.058	8,655 0.044	7,013 0.035	5,900 0.029	5,335 0.026	4,764 0.023	4,105 0.020	3,605 0.017
20W* On-Time	1.10°	1.55°	335,851	121,840 0.367	101,688 0.275	87,181 0.220	76,298 0.183	64,283 0.147	55,538 0.122	43,659 0.092	35,966 0.073	30,578 0.061	23,529 0.046	19,121 0.037	16,104 0.031	14,572 0.028	13,021 0.024	11,457 0.021	9,872 0.018
35W* On-Time	1.20°	1.70°	508,904	203,491 0.400	171,796 0.300	148,523 0.240	130,802 0.200	110,981 0.160	96,377 0.133	76,296 0.100	63,140 0.080	53,854 0.066	41,614 0.050	33,908 0.040	28,609 0.033	25,913 0.030	23,177 0.027	20,412 0.023	17,605 0.020
50W* On-Time	1.30°	1.90°	629,343	264,095 0.433	224,341 0.325	194,837 0.260	172,191 0.217	146,670 0.173	127,738 0.144	101,527 0.108	84,242 0.086	71,987 0.072	55,761 0.054	45,505 0.043	38,435 0.036	34,832 0.033	31,172 0.029	27,468 0.025	23,705 0.022
75W** On-Time	1.40°	2.00°	652,474	300,366 0.467	258,448 0.350	226,630 0.280	201,788 0.233	173,344 0.187	151,928 0.156	121,826 0.117	101,679 0.093	87,251 0.078	67,963 0.058	55,659 0.047	47,127 0.039	42,761 0.035	38,316 0.031	33,808 0.027	29,214 0.023
100W** On-Time	1.40°	2.16°	972,732	445,312 0.467	382,858 0.350	335,444 0.280	298,598 0.233	256,367 0.187	224,601 0.156	179,996 0.117	150,171 0.093	128,826 0.078	100,310 0.058	82,130 0.047	69,529 0.039	63,083 0.035	56,521 0.031	49,865 0.027	43,086 0.023
110W/12V On-Time	1.40°	2.50°	996,468	446,064 0.467	382,275 0.350	334,120 0.280	296,859 0.233	254,324 0.187	222,450 0.156	177,867 0.117	148,172 0.093	126,977 0.078	98,724 0.058	80,757 0.047	68,323 0.039	61,969 0.035	55,504 0.031	48,952 0.027	42,282 0.023
70W***/120VAC On-Time	1.90°	3.32°	1,277,613	679,689 0.633	598,449 0.475	534,212 0.380	482,429 0.317	421,295 0.253	373,911 0.211	305,249 0.158	257,891 0.127	223,255 0.106	175,983 0.079	145,232 0.063	123,629 0.053	112,487 0.048	101,077 0.042	89,439 0.037	77,512 0.032

**8-Lens Carousel**

Lamp Size	Hor. Div. <sup>1</sup> (deg)	Ver. Div. <sup>2</sup> (deg)	Fix Int. <sup>3</sup> (cd)	Effective Intensity (E.F.I.) in White															
				120 sec 0.5 rpm	90 sec .666 rpm	72 sec .833 rpm	60 sec 1.0 rpm	48 sec 1.25 rpm	40 sec 1.5 rpm	30 sec 2.0 rpm	24 sec 2.5 rpm	20 sec 3.0 rpm	15 sec 4.0 rpm	12 sec 5.0 rpm	10 sec 6.0 rpm	9 sec 6.66 rpm	8 sec 7.5 rpm	7 sec 8.57 rpm	6 sec 10.0 rpm
12V/10W** On-Time	0.85°	1.60°	117,382	35,408 0.283	29,006 0.213	24,542 0.170	21,268 0.142	17,728 0.113	15,199 0.094	11,824 0.071	9,676 0.057	8,188 0.047	6,263 0.035	5,071 0.028	4,260 0.024	3,849 0.021	3,435 0.019	3,019 0.017	2,597 0.014
20W* On-Time	1.00°	1.65°	259,965	89,147 0.333	73,950 0.250	63,125 0.200	55,064 0.167	46,227 0.133	39,834 0.111	31,204 0.083	25,647 0.067	21,770 0.056	16,692 0.042	13,568 0.033	11,417 0.028	10,326 0.025	9,223 0.022	8,112 0.019	6,986 0.017
35W* On-Time	1.10°	1.83°	396,299	149,650 0.367	125,472 0.275	107,929 0.220	94,690 0.183	79,999 0.147	69,256 0.122	54,591 0.092	45,052 0.073	38,351 0.061	29,558 0.046	24,045 0.037	20,266 0.031	18,345 0.028	16,398 0.024	14,434 0.021	12,442 0.018
50W* On-Time	1.15°	2.00°	499,528	200,807 0.383	169,642 0.288	146,696 0.230	129,274 0.192	109,730 0.153	95,319 0.128	75,491 0.096	62,492 0.077	53,319 0.064	41,205 0.048	33,579 0.038	28,336 0.032	25,666 0.029	22,958 0.026	20,220 0.022	17,441 0.019
75W** On-Time	1.35°	2.10°	465,540	208,498 0.450	178,693 0.338	156,226 0.270	138,778 0.225	118,899 0.180	104,001 0.150	83,162 0.113	69,279 0.090	59,369 0.075	46,162 0.056	37,762 0.045	31,948 0.038	28,977 0.034	25,954 0.030	22,891 0.026	19,772 0.023
100W** On-Time	1.35°	2.25°	743,576	332,501 0.450	284,909 0.338	249,046 0.270	221,203 0.225	189,490 0.180	165,729 0.150	132,500 0.113	110,371 0.090	94,575 0.075	73,529 0.056	60,145 0.045	50,882 0.038	46,149 0.034	41,335 0.030	36,455 0.026	31,487 0.023
110W/12V On-Time	1.35°	2.45°	723,697	312,927 0.450	266,891 0.338	232,484 0.270	205,934 0.225	175,868 0.180	153,463 0.150	122,301 0.113	101,659 0.090	86,978 0.075	67,406 0.056	55,132 0.045	46,600 0.038	42,247 0.034	37,822 0.030	33,341 0.026	28,784 0.023
70W***/120VAC On-Time	1.80°	3.25°	998,416	518,072 0.600	454,217 0.450	404,107 0.360	363,956 0.300	316,830 0.240	280,509 0.200	228,191 0.150	192,320 0.120	166,195 0.100	130,689 0.075	107,684 0.060	91,565 0.050	83,264 0.045	74,777 0.040	66,128 0.035	57,273 0.030

- \* HP (High Pressure)      <sup>1</sup>Horizontal Divergence (degrees)
- \*\*Halogen                    <sup>2</sup>Vertical Divergence (degrees)
- \*\*\*Metal Halide - UVP    <sup>3</sup>Fixed Intensity (cd)

NOTE: Time to complete one revolution in seconds

Fixed intensity figures are the result of measurements through the lens only. Effective Intensity figures are reduced by 10% for glazing losses. To correct effective intensity for coloured lenses, multiply intensity by 0.9 for red and green and by 0.65 for yellow.

All Lamps listed herein were measure within the 6-lens carousel and the 8-lens carousel at the U.S. Coast Guard light range, and the IALA recommended Schmidt-Clausen Method of Calculation has been used to determine the effective intensities ( E.F.I. ) shown in these tables.

# SPECIFICATIONS

<b>Power Consumption</b>	
Lamp	As Specified
Motor	2.5 W Average
Lens	Choice of 6-lens carousel or 8-lens carousel with moulded acrylic lenses in clear (for white), red, green, or yellow; Black aluminium panels for blanking
Focal Distance	200mm
Focal Diameter	400mm
<b>Lamps</b>	
Standard Marine Lamps	12VDC, 10 to 110W
Metal Halide Lamps	70W
Vertical Divergence	Variable with choice of lamps (see Effective Intensity Tables)
<b>Input</b>	
DC	9 to 36VDC
AC	120 or 240VAC, 50/60Hz
Rotation Periods	16 rotation periods, field selectable
Standard Periods	120, 90, 72, 60, 48, 40, 30, 24, 20, 15, 12, 10, 9, 8, 7, and 6 seconds per revolution
Accuracy	± 1 %
Sunswitch	External
Environment	IP65
Temperature Range (ambient)	-40° C to +55° C
Height	1308mm (51.5")
Diameter	680mm (26.8")
Weight	110kg (238lb)
<b>Recommended Service Intervals for the following:</b>	
Drive Assembly (Motor) Bearings	25 years
Optional	Blank or transparent lenses are available for replacements or for special configurations

NOTE: Specifications are subject to change.

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