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.

CHARACTERISTICS

- CHOICE OF 6- OR 8-LENS CAROUSEL – Lens carousels are rotated counterclockwise. 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 THREE LAMPCHANGERS – Available are the LC-70 lampchanger using Metal Halide lamps, TF-3B flasher using Quartz Halogen lamps, and the MaxiHalo-60 RB LED light source. Incandescent sources hold three standard lamps and eliminate shadowing of the operating lamp for maximum intensity and 360° visibility.
- REMOTE MONITOR AND REPORT STATUS – The TRB-400 reports status of the following: status of operating lamp, number of available lamps, battery voltage (loaded and unloaded), sunswitch status, rotation period, and lamp current.
- CONTROL FUNCTIONS – The control circuit provides the following control functions: override or restore sunswitch control, recount good lamps, communication with a standby lantern
- SWITCHOVER FROM MAIN TO STANDBY LANTERN – A standby lantern equipped with a standby light 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 TRB-400 and the standby light.
- GEARLESS DIRECT DRIVE SYSTEM – Provides for 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. Motor bearings have a maximum rated speed of 4800RPM. Maximum rotation speed of the TRB-400 is 10RPM, minimising stress. Sixteen preprogrammed rotation periods are available, controllable in the field.
- 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 terminal 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.

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Technical Details	
Power Consumption Lamp Motor	 As specified Average 2.5W
Lens focal distance focal diameter	Choice of 6-lens carousel or 8-lens carousel with moulded acrylic lenses in clear (for white), red, green; Black aluminum panels for blanking 200mm 400mm
Lamps Standard Marine Lamps Metal Halide Lamps LED option	 12VDC, 10 to 110W 75W 20W
Vertical Divergence	Variable with choice of lamps (see Effective Intensity Tables)
Input DC AC	 9 to 26VDC 120 or 240VAC, 50/60Hz
Rotation Periods Standard Periods	16 rotation periods, field selectable 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)
Recommended Service Intervals for the following: 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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Lamp Size	Hor. Div.	Ver. Div.	Fix Int. (cd)	Effective intensity (E.F.I.) in White														
				120 sec	90 sec	72 sec	60 sec	48 sec	40 sec	30 sec	24 sec	20 sec	15 sec	12 sec	10 sec	9 sec	8 sec	7 sec	6 sec
				.50 rpm	.666 rpm	.833 rpm	1.0 rpm	1.25 rpm	1.5 rpm	2.0 rpm	2.5 rpm	3.0 rpm	4.0 rpm	5.0 rpm	6.0 rpm	6.66 rpm	7.5 rpm	8.57 rpm	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 0.030	25,913 0.033	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 .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	42,127 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 .035	335,444 0.280	298,598 .0233	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
75W***/120VAC On-Time	1.90°	3.32°	1,406,652	748,338 0.633	658,892 0.475	588,167 0.380	531,154 0.317	463,856 0.253	411,676 0.211	336,079 0.158	283,937 0.127	245,804 0.106	193,757 0.079	159,900 0.063	136,116 0.053	123,848 0.048	111,285 0.042	98,472 0.037	85,341 0.032

Lamp Size	Hor. Div.	Ver. Div.	Fix Int. (cd)	Effective intensity (E.F.I.) in White														
				120 sec	90 sec	72 sec	60 sec	48 sec	40 sec	30 sec	24 sec	20 sec	15 sec	12 sec	10 sec	9 sec	8 sec	7 sec	6 sec
				.50 rpm	.666 rpm	.833 rpm	1.0 rpm	1.25 rpm	1.5 rpm	2.0 rpm	2.5 rpm	3.0 rpm	4.0 rpm	5.0 rpm	6.0 rpm	6.66 rpm	7.5 rpm	8.57 rpm	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	1.10°	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	38,784 0.023
75W***/120VAC On-Time	1.80°	3.25°	1,099,256	570,397 0.600	500,093 0.450	444,922 0.360	400,716 0.300	348,830 0.240	308,840 0.200	251,238 0.150	211,744 0.120	182,981 0.100	143,889 0.075	118,560 0.060	100,813 0.050	91,674 0.045	82,329 0.040	72,807 0.035	63,058 0.030

All Lamps listed herein were measure within the 6-lens carousel and the8-lens carousel at the U.S. Coast Guard light range, and the IALA recommended Schmidt-Clauses of Calculation has been used to determine the effective intensities (E.F.I.) shown in these tables

NOTE: 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, multiple intensity by 0.3 for red and green and by 0.65 for yellow

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Rotation	Seconds	120	90	72	60	48	40	30	24	20	15	12	10	9	8	7	6
	RPM	0.5	0.67	0.83	1	1.25	1.5	2	2.5	3	4	5	6	6.67	7.5	8.57	10
	Intensity	40765	39637	38506	37438	35970	34613	32186	30077	28228	25138	22659	20625	19471	18177	16759	15177
	Range	17.5	17.4	17.4	17.3	17.2	17.1	16.9	16.8	16.6	16.3	16.1	15.9	15.7	15.6	15.4	15.2

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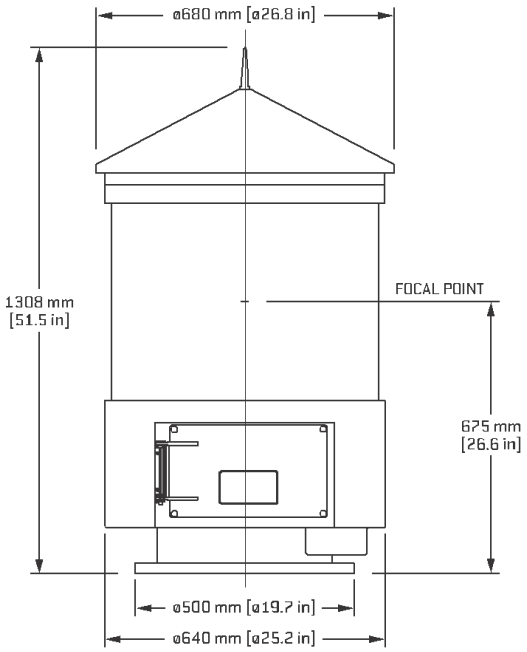

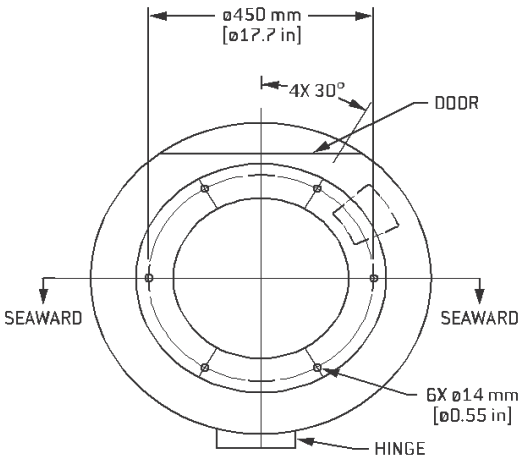

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