



RANGE OF MARITIME SIGNAL LIGHTS

The distance from which a light can be seen is strictly influenced by the meteorological visibility (or atmospheric transparency). This parameter, up to a few years back was difficult to evaluate, especially in open sea where usually there are no landmarks; thanks to “radar” we are now able to “measure” even this parameter.

During the early seventies the following definitions have been adopted:

Nominal range is the luminous range when the meteorological visibility is 10 sea miles, equivalent to a transmission factor of T=0.74.

Geographical range is the maximum distance at which an object or light from a light source can theoretically be seen by an observer, as limited only by the curvature of the earth, the refraction of the atmosphere, the elevation of the object or light and the height of the observer’s eye.

The luminous range is the maximum distance at which a given signal light can be seen by the eye of the observer at a given time, as determined by the intensity of the meteorological visibility prevailing at that time. It takes no account of elevation, observer’s height of eye or the curvature of the earth.

Example – a light of an intensity of 500 candelas (nominal range of approx. 8 miles), can be seen up to 12 n.miles when the meteorological visibility is 20 n.miles, but will be seen only at 3 n.miles if the meteorological visibility is 2 n.miles.

GEOGRAPHICAL RANGE TABLE

Height of light (in metres)	Geographical range in nautical miles								
	Height of the observer’s eye from sea level								
	2mt	3mt	5mt	7mt	10mt	15mt	20mt	25mt	30mt
2	5.9	6.5	7.6	8.4	9.5	11.0	12.2	13.3	14.3
3	6.5	7.2	8.3	9.1	10.2	11.7	12.9	14.0	15.0
5	7.6	8.3	9.3	10.2	11.2	12.7	14.0	15.1	16.0
7	8.4	9.1	10.2	11.0	12.1	13.6	14.8	15.9	16.9
10	9.5	10.2	11.2	12.2	13.2	14.6	15.9	17.0	17.8
15	11.0	11.7	12.7	13.6	14.6	16.1	17.4	18.5	19.5
20	12.2	12.9	14.0	14.8	15.9	17.4	18.6	19.7	20.7
25	13.3	14.0	15.1	15.9	17.0	18.5	19.7	20.8	21.8
30	14.3	15.0	16.0	16.9	17.8	19.5	20.7	21.8	22.8

The geographical range is calculated according to the following formula:

$$P = 2.08 \times (\sqrt{H} + \sqrt{E})$$

where: P = geographical range in nautical miles

H = height of light from sea level in metres

E = height of observer’s eye from sea level in metres



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FIXED INTENSITY TABLE

(Schmidt-Clausen method)



CS 155

Lamp Type C-8	Period of incandescence sec	Intensity fixed light cd	Fixed intensity in candelas – white light						
			0.1 sec	0.3 sec	0.5 sec	0.7 sec	1.0 sec	1.5 sec	2.0 sec
6V 0,25A	0,050	30	10	18	21	23	25	26	27
6V 0,46A	0,076	80	27	48	57	62	67	71	73
6V 0,70A	0,100	100	-	60	71	78	83	88	91
6V 0,92A	0,130	120	-	72	86	93	100	106	109
12V 0,25A	0,050	50	17	30	36	39	42	44	45
12V 0,55A	0,088	100	33	60	71	78	83	88	91
12V 0,77A	0,110	130	-	78	93	101	108	115	118
12V 1,15A	0,150	225	-	135	161	175	188	199	205
12V 2,03A	0,230	460	-	276	329	358	383	406	418
12V 3,05A	0,310	630	-	-	450	490	525	556	573
12V 10W Hal.	0,130	160	-	96	114	124	133	141	145
12V 20W Hal.	0,217	550	-	330	393	428	458	485	500
12V 35W Hal.	0,298	850	-	-	607	661	708	750	773
12V 50W Hal.	0,401	1150	-	-	821	894	958	1015	1045



CS 250

Lamp Type C-8	Period of incandescence sec	Intensity fixed light cd	Fixed intensity in candelas – white light						
			0.1 sec	0.3 sec	0.5 sec	0.7 sec	1.0 sec	1.5 sec	2.0 sec
6V 0,25A	0,050	35	12	21	25	27	29	31	32
6V 0,46A	0,076	85	28	51	61	66	71	75	77
6V 0,70A	0,100	130	-	78	93	101	108	115	118
6V 0,92A	0,130	180	-	108	129	140	150	159	164
12V 0,25A	0,050	95	32	57	68	74	79	84	86
12V 0,55A	0,088	160	53	96	114	124	133	141	145
12V 0,77A	0,110	240	-	144	171	187	200	212	218
12V 1,15A	0,150	400	-	240	286	311	333	353	364
12V 2,03A	0,230	780	-	468	557	607	650	688	709
12V 3,05A	0,310	1150	-	-	821	894	958	1015	1045
12V 5A CC-8	0,340	3350	-	2010	2393	2606	2792	2956	3045
12V 10W Hal.	0,130	480	-	288	343	373	400	424	436
12V 20W Hal.	0,217	1400	-	840	1000	1089	1167	1235	1273
12V 35W Hal.	0,298	2300	-	-	1643	1789	1917	2029	2091
12V 50W Hal.	0,401	3150	-	-	2250	2450	2625	2779	2864