KENNZAHL LED BELECUHTUNG

PAR pro Watt (PAR in µmol/m²/sec)

Gemessen mit einem geeichte Spektrometer, Raumtemperatur ca. 19°Celsius, komplett abgedunkelt

Fläche: 84 x 60 cm

Modulalter		18 Mt.	neu	neu	neu	neu	neu	12 Mt.	neu	neu	neu	neu	neu	4 Mt.	neu	neu	2 Mt.	neu	neu	neu	neu	neu	neu	neu	neu	neu	neu	neu	neu	neu	neu	neu	neu	neu	neu	neu	neu	neu	2 Mt.	neu	neu	neu	neu	neu	neu	neu	neu	14 Mt.	neu	neu	neu
	Einheit	ACI-Aquatil Led	Aqua Illumination Hydra	Aqua Illumination Sol Blue	Aqua Medic aquaSun 100W	Aqua Medic Ocean Light LED twin 2 x 36 W	aquaBAR 75	Aqua Styl Light RGB 3 x 12 W	ATI Hybrid Powermodul	ATI Hybrid nur LED 1 x 72 Watt	ATI Sirius x2	ATI Sirius x4	BLAU Lumina LED 36 2x24w	Cidly Apollo 6 / 16'000 K	Cidly Artemis (BrightLux-Dioden) 90° Linsen	Cidly UFO	Cidly 3 x 55 Watt	Cidly Phantom 2 (Cree)	Cidly Phantom 2 (BrightLux) 90° Linsen	Cidly Phantom 2 (BrightLux) 120° Linsen	CoRi Sun	CT Lighting Technology G3	Ecotech Marine LED Radion XR30w Pro	Ecotech Marine LED Radion XR30w	GHL Mitras 6100LX	Giesemann Futura	Giesemann Teszla	ECO Lamps KR nano	Illutronix SeaLight SW-100L	LEDURON Aquatic Light 30W / Reefwhite; 14'000K	LEDURON Aquatic Light 50W / Reefwhite; 14'000K	LEDURON Aquatic Light 100W / Reefwhite; 14'000K	LEDURON Aquatic Light 30W; Blue XP	LEDURON Aquatic Light 60W; Blue XP	LEDURON Aquatic Light 90W; Blue XP	Maxspect R420r; 16'000K	Maxspect R420r; 16'000K	Maxspect R420r; 16'000K	Orphek Atlantik V1	Orphek Atlantik V2.1	Orphek PR 72-Reef	Pacific Sun Pandora Hyperion S 145W LED; 2 x 24 T5	Pacific Sun Pandora Hyperion S 145W LED	Pacific Sun Metis Hyperion R2 2x150W		Solar Stinger SunStrip 11W	SunaEco 1500 Ocean Blue XP	Vertex Illumina SR 600-260	T5 4 x 24 W ATI Aqua Blue Special	ATI Sunpower 8x39 Watt	UFO mit HQI 150 W, Aqua Medic 16000K
30cm	PAR	189.63	177.64	220.97	253.28	148.98	145.30	118.17	224.87	259.49	308.83	300.65	130.60	219.63	191.64	146.76	118.14	220.71	255.57	191.35	206.77	184.40	177.90	163.66	#DIV/0!	120.10	134.90	200.24	194.18	291.61	303.91	310.27	175.22	228.07	210.82	153.07	145.75	155.19	223.14	202.07	211.52	129.41	129.51	149.57	164.40	183.93	103.76	181.19	198.30	76.55
45cm	PAR	144.36	154.91	191.28	216.69	132.91	95.19	84.54	185.88	223.49	262.43	239.03	117.28	206.23	194.13	101.90	73.40	211.72	202.53	187.35	186.76	144.54	167.04	134.99	#DIV/0!	86.40	97.90	184.48	159.33	263.18	272.55	271.68	150.78	195.05	180.06	147.53	132.75	137.18	188.43	179.28	193.03	92.42	92.31	107.95	131.98	144.97	75.43	151.06	138.47	58.00
60cm	PAR	106.50	124.02	162.12	175.07	121.77	68.67	66.15	141.63	175.11	208.83	185.35	105.42	179.11	168.12	76.64	54.90	173.47	148.93	164.63	161.76	121.07	114.75	109.91	#DIV/0!	64.15	74.34	167.49	124.90	214.44	208.10	210.94	130.72	148.60	175.74	110.39	109.84	110.68	142.78	152.09	163.56	68.07	67.56	79.30	96.59	110.50	56.88	119.75	103.97	45.72
Mittelwert		**146.83**	**152.19**	**191.46**	**215.01**	**134.56**	**103.05**	**89.62**	**184.13**	**219.36**	**260.03**	**241.68**	**117.77**	**201.66**	**184.63**	**108.43**	**82.15**	**201.97**	**202.34**	**181.11**	**185.10**	**150.00**	**153.23**	**136.19**	**#DIV/0!**	**90.22**	**102.38**	**184.07**	**159.47**	**256.41**	**261.52**	**264.30**	**152.24**	**190.57**	**188.87**	**137.00**	**129.45**	**134.35**	**184.78**	**177.81**	**189.37**	**96.63**	**96.46**	**112.27**	**130.99**	**146.47**	**78.69**	**150.67**	**146.91**	**60.09**

PAR-Mittelwert pro Modul

30cm		64.36	104.97	100.44	165.78	59.59	79.25	34.38	235.77	116.38	262.04	526.59	46.30	248.91	76.65	112.96	97.38	240.78	302.03	211.07	82.71	93.88	177.90	116.05	#DIV/0!	129.57	55.19	40.65	127.10	58.32	106.83	180.52	33.98	80.17	111.16	137.30	97.17	58.32	250.19	217.99	84.61	148.62	109.89	236.59	11.56	33.44	108.17	111.87	328.10	75.62
45cm		48.99	91.54	86.95	141.83	53.16	51.92	24.59	194.89	85.27	222.67	418.67	41.58	233.73	77.65	78.43	60.50	230.97	239.35	206.65	74.70	73.58	167.04	95.72	#DIV/0!	93.20	40.05	37.45	104.29	52.64	95.81	158.07	29.24	68.56	94.94	132.33	88.50	51.55	211.27	193.40	76.12	106.14	78.33	170.75	9.28	26.36	78.63	93.38	224.08	57.30
60cm		36.15	73.28	73.69	114.59	48.71	37.45	19.24	148.50	78.54	177.18	324.65	37.38	202.99	67.25	58.99	45.25	189.24	176.01	181.59	64.70	61.64	114.75	77.93	#DIV/0!	69.21	30.41	34.01	81.75	42.89	73.15	122.73	25.35	52.24	71.89	99.01	73.22	41.59	160.09	164.07	65.42	78.18	57.32	125.44	6.79	20.09	59.29	74.03	168.24	45.16
Mittelwert	**PAR**	**49.83**	**89.93**	**87.03**	**140.74**	**53.82**	**56.21**	**26.07**	**193.05**	**93.39**	**220.63**	**423.31**	**41.75**	**228.54**	**73.85**	**83.46**	**67.71**	**220.33**	**239.13**	**199.77**	**74.04**	**76.37**	**153.23**	**96.57**	**#DIV/0!**	**97.33**	**41.88**	**37.37**	**104.38**	**51.28**	**91.93**	**153.77**	**29.53**	**66.99**	**92.66**	**122.88**	**86.30**	**50.48**	**207.18**	**191.82**	**75.38**	**110.98**	**81.85**	**177.59**	**9.21**	**26.63**	**82.03**	**93.09**	**240.14**	**59.36**

Summen PAR-Mittelwert pro Modul

30cm		10'619	17'320	16'573	27'354	9'833	13'077	5'672	38'903	19'203	43'236	86'888	7'640	41'070	12'648	18'639	16'067	39'728	49'836	34'826	13'647	15'490	29'353	19'148	0	21'379	9'106	6'708	20'971	9'623	17'627	29'786	5'607	13'228	18'341	22'655	16'033	9'622	41'282	35'968	13'960	24'523	18'132	39'038	1'907	5'518	17'848	18'459	54'137	12'478
45cm		8'084	15'104	14'346	23'402	8'772	8'568	4'058	32'157	16'538	36'740	69'081	6'861	38'565	12'813	12'941	9'983	38'110	39'493	34'098	12'326	12'141	27'562	15'794	0	15'379	6'608	6'180	17'208	8'685	15'808	26'081	4'825	11'313	15'665	21'835	14'603	8'505	34'859	31'911	12'740	17'513	12'924	28'174	1'531	4'349	12'974	15'408	36'973	9'454
60cm		5'964	12'092	12'159	18'908	8'037	6'180	3'175	24'503	12'959	29'236	53'567	6'167	33'494	11'096	9'734	7'467	31'225	29'042	29'962	10'676	10'170	18'934	12'859	0	11'420	5'018	5'611	13'489	7'077	12'070	20'250	4'183	8'619	11'862	16'337	12'082	6'862	26'415	27'072	10'795	12'899	9'458	20'697	1'121	3'315	9'784	12'215	27'759	7'452
Mittelwert	**PAR**	**8'222**	**14'839**	**14'359**	**23'221**	**8'881**	**9'275**	**4'302**	**31'854**	**16'233**	**36'404**	**69'845**	**6'889**	**37'710**	**12'186**	**13'771**	**11'172**	**36'354**	**39'457**	**32'962**	**12'216**	**12'600**	**25'283**	**15'934**	**0**	**16'059**	**6'911**	**6'166**	**17'223**	**8'462**	**15'168**	**25'372**	**4'872**	**11'053**	**15'289**	**20'276**	**14'239**	**8'330**	**34'185**	**31'650**	**12'498**	**18'312**	**13'505**	**29'303**	**1'520**	**4'394**	**13'535**	**15'361**	**39'623**	**9'795**

Kosten pro Modul

Verkaufsempfehlung der Hersteller, wenn keine Angaben vorhanden sind Onlineshops Aquaterashop Mrutzek Meerwasseraquaristik/K4U inkl. Mwst.

Modul	€	630.00	499.00	498.00	800.00	242.10	695.00	293.70	879.00	390.00	539.00	939.00	395.00	369.00	259.00	259.00	259.00	532.00	532.00	532.00	416.00	200.00	749.00	549.00	839.00	1'359.00	398.00	305.00	549.00	159.00	189.00	279.00	169.00	229.00	299.00	490.00	430.00	299.00	799.00	1'049.00	295.00	799.00	699.00	995.00	117.00	190.00	1'070.00	300.00	437.00	360.00
Steuerung/Leutmittel	€		94.00	94.00				52.75																						50.00									59.50										60.00	135.20	65.70
Aufhängung	€		29.95	29.25		134.00																	47.90	47.90		29.10	29.10																								
Total		**630.00**	**622.95**	**621.25**	**800.00**	**376.10**	**695.00**	**346.45**	**879.00**	**390.00**	**539.00**	**939.00**	**395.00**	**369.00**	**259.00**	**259.00**	**259.00**	**532.00**	**532.00**	**532.00**	**416.00**	**200.00**	**796.90**	**596.90**	**839.00**	**1'388.10**	**427.10**	**305.00**	**599.00**	**159.00**	**189.00**	**279.00**	**169.00**	**229.00**	**299.00**	**490.00**	**430.00**	**299.00**	**858.50**	**1'049.00**	**295.00**	**799.00**	**699.00**	**995.00**	**117.00**	**190.00**	**1'070.00**	**360.00**	**572.20**	**425.70**

Leistung pro Modul

Herstellerangabe

Leistung	**W**	**50**	**95**	**75**	**100**	**72**	**75**	**36**	**171**	**72**	**145**	**290**	**48**	**209**	**75**	**120**	**127**	**200**	**200**	**200**	**66**	**85**	**170**	**120**	**120**	**195**	**66**	**40**	**100**	**30**	**50**	**100**	**30**	**60**	**90**	**160**	**120**	**60**	**186**	**186**	**72**	**193**	**145**	**300**	**11**	**24**	**160**	**96**	**312**	**150**

Lautstärke pro Modul

Gemessen direkt am Lüfter

Lautstärke	**dB**	**50**	**61**	**61.5**	**-**	**-**	**-**	**-**	**50**	**50**	**50**	**50**	**-**	**70.5**	**74.5**	**64**	**56**	**70.5**	**70.5**	**70.5**	**-**	**65**	**62**	**62**		**64.5**	**64.5**	**-**	**-**	**-**	**56.5**	**49**	**-**	**56**	**49**	**52**	**52**	**52**	**74**	**74**	**-**	**72.5**	**72.5**	**72**	**-**	**-**	**kA.**	**-**	**-**	**-**

€ pro Watt

Division von Modulkosten inkl. Steuerung duch Leistung pro Modul (Herstllerangabe)

Kosten / Watt	**€/W**	**12.60**	**6.56**	**8.28**	**8.00**	**5.22**	**9.27**	**9.62**	**5.14**	**5.42**	**3.72**	**3.24**	**8.23**	**1.77**	**3.45**	**2.16**	**2.04**	**2.66**	**2.66**	**2.66**	**6.30**	**2.35**	**4.69**	**4.97**	**6.99**	**7.12**	**6.47**	**7.63**	**5.99**	**5.30**	**3.78**	**2.79**	**5.63**	**3.82**	**3.32**	**3.06**	**3.58**	**4.98**	**4.62**	**5.64**	**4.10**	**4.14**	**4.82**	**3.32**	**10.64**	**7.92**	**6.69**	**3.75**	**1.83**	**2.84**

PAR pro €

Summen -PAR - Mittelwert diviediert durch Kosten

PAR / €	**PAR/€**	**13.1**	**23.8**	**23.1**	**29.0**	**23.6**	**13.3**	**12.4**	**36.2**	**41.6**	**67.5**	**74.4**	**17.4**	**102.2**	**47.0**	**53.2**	**43.1**	**68.3**	**74.2**	**62.0**	**29.4**	**63.0**	**31.7**	**26.7**	**0.0**	**11.6**	**16.2**	**20.2**	**28.8**	**53.2**	**80.3**	**90.9**	**28.8**	**48.3**	**51.1**	**41.4**	**33.1**	**27.9**	**39.8**	**30.2**	**42.4**	**22.9**	**19.3**	**29.5**	**13.0**	**23.1**	**12.6**	**42.7**	**69.25**	**23.0**

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