



SYRIUS

THE NEXT GENERATION
IN LIGHTING

Innovative Optical Waveguide Platform

CREE  LIGHTING

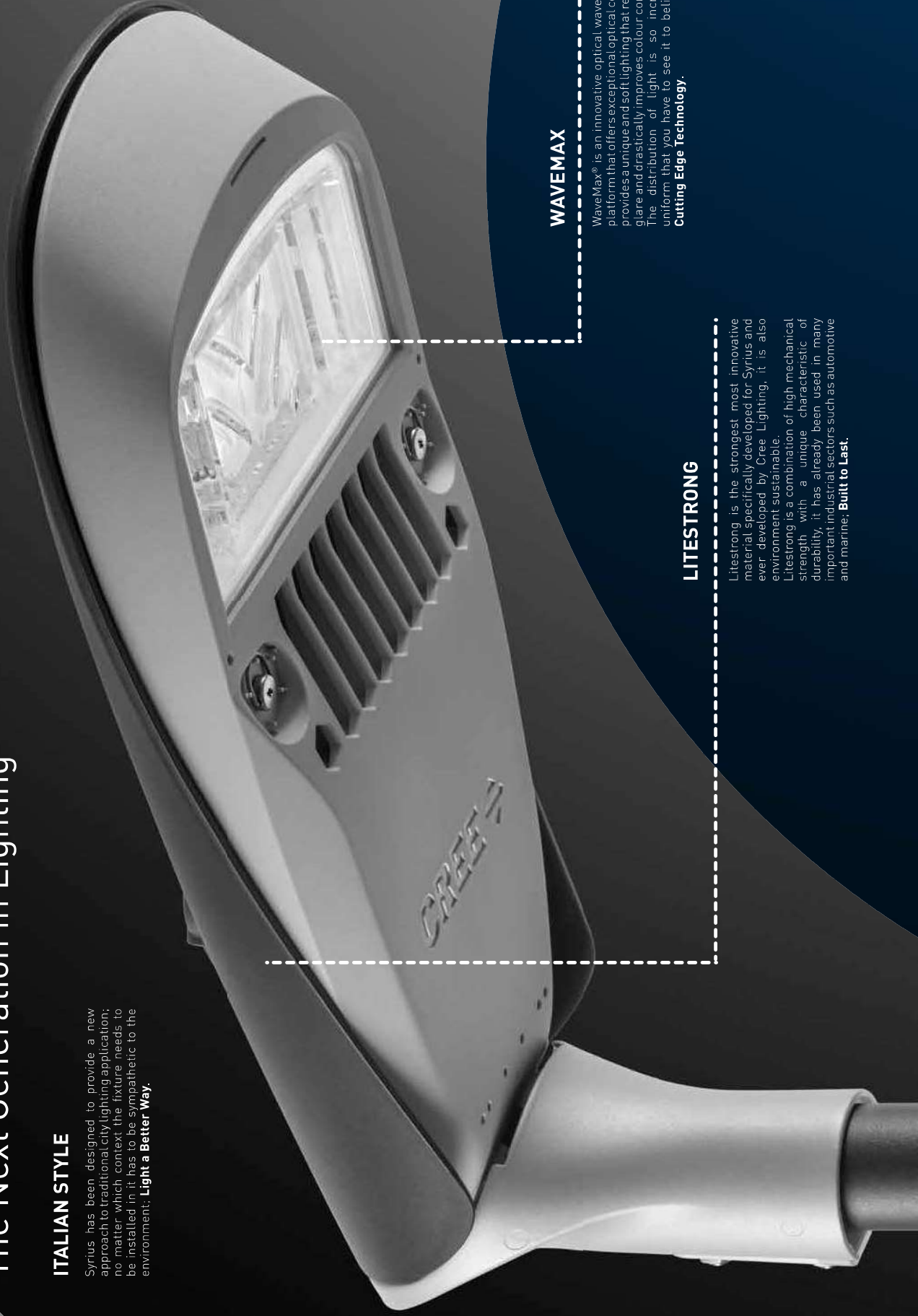
Brenner VuK GmbH
LED.beLICHTungen

AT - 1230 Wien · Isoppgasse 22
T 0664 4554227 · F (01) 318 0567
LED.at@aon.at · www.LED-brenner.at

The Next Generation in Lighting

ITALIAN STYLE

Syrus has been designed to provide a new approach to traditional city lighting application; no matter which context the fixture needs to be installed in it has to be sympathetic to the environment; **Light a Better Way.**



WAVEMAX

WaveMax® is an innovative optical waveguide platform that offers exceptional optical control, provides a unique and soft lighting that reduces glare and drastically improves colour contrast. The distribution of light is so incredibly uniform that you have to see it to believe it; **Cutting Edge Technology.**

LITESTRONG

Litestrong is the strongest most innovative material specifically developed for Syrus and ever developed by Cree Lighting, it is also environment sustainable. Litestrong is a combination of high mechanical strength with a unique characteristic of durability, it has already been used in many important industrial sectors such as automotive and marine. **Built to Last.**

WAVEMAX® TECHNOLOGY

FROM THE COMPANY THAT CHANGED THE WAY IN WHICH THE WORLD APPROACHES LIGHT, OUR SMARTEST LIGHT EVER.

Traditionally, the design of light fixtures have been strongly influenced by the technology used inside them. LED lighting promised to change this trend, but up until now the appearance of products has not substantially changed because the efforts to break the linear relationship between a light source and the product itself have resulted disappointing.

With the introduction of **WaveMax® technology**, Cree Lighting ushers in a new era of LED lighting using this innovative optical waveguide platform. The optical fixtures offer a much higher quality compared to the products used on the market until now, mainly through a few basic aspects which **benefit the human eye**:

- Removing direct emission which is the main cause of discomfort glare on the human eye.

- Less brightness contrast in the emitting surface between the areas of light and shadow which is one of the major aspects of visual discomfort.
- Reducing pixelation effect, a negative phenomenon for the human eye.
- Improving colour consistency and distribution of the light.

The attention to details of all aspects of the "Syrius" project make it a major milestone for Cree Lighting by creating a sustainable product with cutting-edge technology, redefining the limits of lighting fixture design, optimizing performance and providing a broader range of aesthetic options.



Comfort & Appeal



Efficiency



Uniformity



Control





WAVEMAX® TECHNOLOGY

CUTTING EDGE TECHNOLOGY

With the introduction of Sirius, Cree Lighting changes the way in which the world looks at lighting and light itself. WaveMax®, an optical waveguide, acts to channel and guide light waves from, for instance, Point A to Point B, and crucially, to keep them confined while conveying them. A fiber optic strand is a common example of a wave guide. Shine a light at one end, and thanks to a property called **Total Internal Reflection** (TIR), the light appears at the other end of the strand with very little light lost along its length.

This is true for any waveguide of the proper geometries. Additionally, WaveMax® ensures that the light is released and controlled properly, in fact the Cree Lighting engineers have created **Diamond Facet™** optical elements, whose unique microscopic characteristics, located inside the optical waveguide platform, extract and distribute a uniform, comfortable light with **exceptional efficiency**.

By using optical elements **WaveMax® Technology** offers exceptional optical control, thus



guaranteeing that the **light is soft and pleasant and delivered with maximum precision**. This unique approach makes light a crucial element that accompanies the end of the day reducing the stress perceived when our gaze is

annoyed by the LEDs' brightness. These advances in optical technology make it possible to obtain a more comfortable environment for people and social settings.

MAXIMUM COMFORT

LED lighting is now synonymous with energy saving which makes it an obvious choice in both projects to make old systems more efficient and in the design of new systems. People, however, increasingly complain about new LED street lighting due to the brightness of the LEDs exposed directly to the human eye. To respond to this critical issue Cree Lighting changes the perspective with which the product is conceived. The product is no longer recognized as simply a source of light and energy savings, but rather as a tool to improve the comfort and, therefore, **the quality of life of city dwellers**; thus the urban setting should be thought in the same way as we think our garden or even our home, so that it can be appreciated and enjoyed in total comfort.

WaveMax® technology provides a unique, soft lighting that reduces glare and drastically improves colour contrast. **Sirius is approved by International Dark Sky Association.**



VISUAL COMFORT

One of the elements which has the greatest impact on visual comfort is the chromatic uniformity of the surface that delivers the light. Traditional LED technology, even though the LEDs

SYRIUS



TRADITIONAL OPTICS



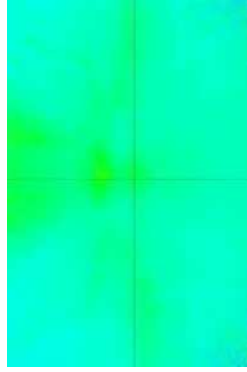
WaveMax® technology has solved the root of the problem by removing the LEDs from the field of vision and having as a result low glare levels which, together with the ideal levels of luminosity and superior colour quality, guarantee uniform light and creates installations with a visually and aesthetically superior level of comfort.

The total absence of direct luminance ensures an unprecedented and perceptible result, in terms of visual comfort and ability to relax the eye, for all users (drivers and pedestrians), eliminating the annoying problem of glare that currently plagues our roads.

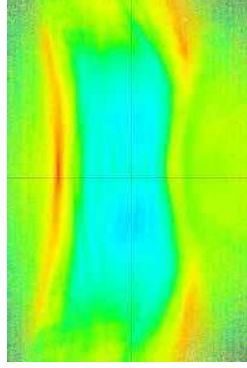
COLOUR CONSISTENCY

If we compare the Syrius optical system with "direct" traditional optics, the distribution of the light emitted is so accurate and optimised that there is almost total uniformity on the ground and the colour consistency is significantly improved.

SYRIUS



TRADITIONAL OPTICS



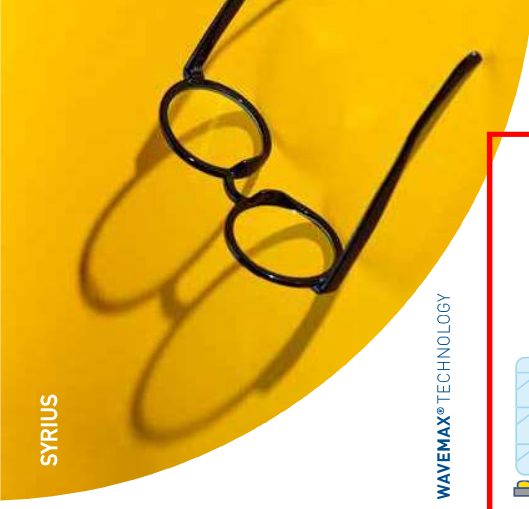
The WaveMax® optic ensures a result in which we see objects with their **real colours** and observe them better without causing visual stress to our eyes.

PIXELLATION

Contrast sensitivity is the ability to notice the slightest variation in light intensity (luminance) between two objects or areas adjacent to the surroundings, and it is essential to distinguish objects from the background and understand where one begins and the other ends. The WaveMax® optical system makes it possible to **reduce the effect of pixelation** a negative phenomenon for the human eye.

This principle is based on the reduction of overlapping shadows between different sources, making the images clearer, removing the distortion of the illuminated objects and returning a more real, authentic and comfortable image to the human eye.

SYRIUS



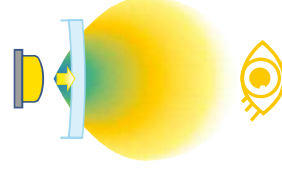
TRADITIONAL OPTICS

CREE LIGHTING

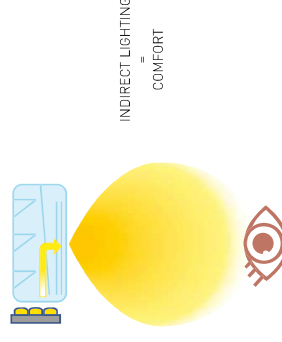
SYRIUS

A NEW ERA IN LIGHTING.
REMOVING LEDS FROM SIGHT!

TRADITIONAL OPTICAL TECHNOLOGY



WAVEMAX® TECHNOLOGY





IK 10

LITESTRONG

Cree Lighting has always endeavoured to respect the highest standards in terms of quality and environmental performance and thus, guarantee the highest levels of excellence for its products. Indeed, thinking about a sustainable product means looking at the impact it has on people and the environment from all sides. Accordingly, we have developed for Syrius a totally **innovative material**; in fact, metal replacement is a practice already in use for several years in various industrial sectors such as marine or automotive (i.e., structural part of motorbike usually produced in steel or aluminum), and specifically, in the motorbike race (MotoGP, Dakar Rally) where high performance is required in terms of durability, mechanical strength and constant lightening of materials.

The result is **Litestrong**, a combination of technopolymers, specifically developed by Cree Lighting's Research and Development department and capable of guaranteeing unique results.

The Litestrong production process requires 68% less energy compared to a similar product made of die-cast aluminium of the same weight. It consumes

94% less water and reduces its overall ecological footprint by 67%. The result is a product with a material density that it is 41% lower, that weighs less and is easier to handle which is an undisputed advantage during installation.

There is also **no pollution** from fine dust particles or from the disposal of paints or similar, plus less pollution from painting systems because the colour of the product is created during the production process itself and does not require a second phase of surface finishing. Litestrong is recyclable, intrinsically lighter and, therefore, has a lower environmental impact with the transportation of materials.

Despite all the advantages in terms of **environmental sustainability**, Litestrong is the strongest material ever produced by Cree Lighting, featuring unique characteristics of **durability** to atmospheric agents, corrosion and mechanical resistance. Moreover, the thermal management means it is ideal for the most severe environmental temperatures without alternating its characteristics.

SUSTAINABILITY



COOL FLOW

Thermal COOL FLOW system is based on an airflow management technique that improves the LEDs performance. This breaks new ground and extends the product's useful life, making it considerably longer than market standards.

INDIRECT LIGHT

Indirect LED source helps create a smooth distribution of light and reduces perceived glare.

WAVEMAX® TECHNOLOGY

Innovative optical elements capture and distribute light precisely where it is needed while dramatically reducing glare.

LITESTRONG

Innovative advanced technology material providing exceptional strength to weight ratio, good thermal characteristics and exemplary sustainability. Increasingly adopted in hi-tech and environmentally aware applications such as motorcycle racing, marine engines etc. The strongest material ever produced for Cree Lighting with a class leading **impact rating of IK10**.

DESIGNED TENON

Perfectly integrated to product design.

SUSTAINABILITY

Litestrong is recyclable with the highest material circularity indicators.

SYRIUS

DESIGN MADE IN ITALY



THE NEXT GENERATION IN LIGHTING

A new star is born in the Cree Lighting offer; a new slim-line, sophisticated shape defines its profile: Bright and slimline. **Syrius brings brightness and safety to city streets**, allowing residents to regain their urban space and to **enjoy their city by night**.

From the optical design, down to the smallest detail, Syrius has been designed specifically for urban areas and residential road systems. Regardless of the setting, each installation must be discreet during the day without compromising the identity of the neighbourhood whilst providing safety and comfort to residents and drivers during the night.

The concept behind Syrius is to offer a new sustainable approach to city lighting, with a revolutionary optical technology WaveMax®, which gives an **unprecedented visual comfort**.

CREE LIGHTING



DESIGNED FOR URBAN AREAS AND CITY DWELLERS

In some settings, the finish of a device can be just as important as its performance. With Syrius, playing with the colours makes it possible to completely change its aspect, either blending in to pass unnoticed or standing out to add character.

COLOURS REFERENCE



ELECTRONIC DATA

- Uses Cree WaveMax™ Technology
- Lumen output: 620 – 5000 lm
- System efficiency: up to 130 lm/W
- CCT: 2700K (ACR180, 300K (ACR170, 3000K (ACR180, 4000K (ACR170, 4000K (ACR180)
- Initial CCT LED selection: 4 MacAdam steps
- Voltage input: 220-240V 50/60Hz
- Driver: fitted with overtemperature protection to guarantee optimal performance and safety
- Power factor: up to > 0.98 at full load
- Duration: L90/H10 up to 205Khrs Ta=25° (According to IEC/ EN62711 and IESNA TM 21)
- Surge protection: 10kV/CWDM according to EN 61000-4-5 and EN 15157 (Class I SPD with LED signal)
- IP66 (IEC 60529) / M10

WEIGHT AND MAXIMUM SURFACE EXPOSED TO THE WIND

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	52
--	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	----

weight	0.058 m ²
static pressure exposure to the mine	

LMF – LUMEN MAINTENANCE FACTOR RECOMMENDED BY CREE						
Area	Power indicator	Initial LMF	25K hr LMF projected ¹	50K hr LMF projected ²	75K hr LMF calculated ³	100K hr LMF calculated ³
+25°C	A	1	0.99	0.97	0.96	0.95

¹ Lumen maintenance values calculated at 25°C with 70-71 hr on the basis of LM-80 data and on-site tests in the lighting fixture.

² In compliance with ESNM IV-21.1, the values indicated in the "projected" column represent interpolated values relative to the power values in ESNM IV-21.1. The values indicated in the "calculated" column are calculated based on a time span six times LM-79, under the same conditions as the LM-79 test.

³ In accordance with ESNM IV-21.1, the values indicated in the "projected" column are calculated based on a time span six times LM-79, under the same conditions as the LM-79 test.

⁴ The data duration in hours of the tests carried out according to ESNM IV-61:08 to which the device (D001, e.g.) the LED profile was subjected.

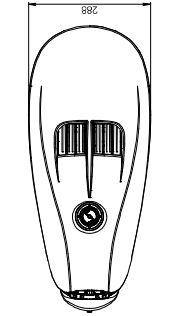
NEMA OPTIONS AVAILABLE		
AOC-N	Nema 7 pin with AOC	(on-off)
DIM-N*	Nema 7 pin with DIM cables	(on-off + Dim)
VWL-N	Nema 7 pin with VM	(on-off)
DL-N*	Nema 7 pin with DALI	(on-off + Dim)
AOC-NF	Nema 7 pin/Fuse with AOC	(on-off)
DIM-NF*	Nema 7 pin/Fuse with Dimmable cables	(on-off + Dim)
VWL-NF	Nema 7 pin/Fuse with VM	(on-off)
DL-NF*	Nema 7 pin/Fuse with DALI	(on-off + Dim)

- on-off: Nema allows on-off control only
- on-off + Dim: Nema allows for on-off and dimming control
- Cables DIM (1-10V and DALI) are connected to the NEMA socket

- Risk class exempt in accordance with the IEC EN 62473
- standard for photobiological safety (IEC/TR 62778 tested)

[illegible]

- SR - ZF



Brenner vuK **GmbH**
LED.beLICHTungen
AT - 1230 Wien · Isoppgasse 22
T 0664 4554227 · F (01) 318 0567
LED.at@aon.at · www.LED-brenner.at

23