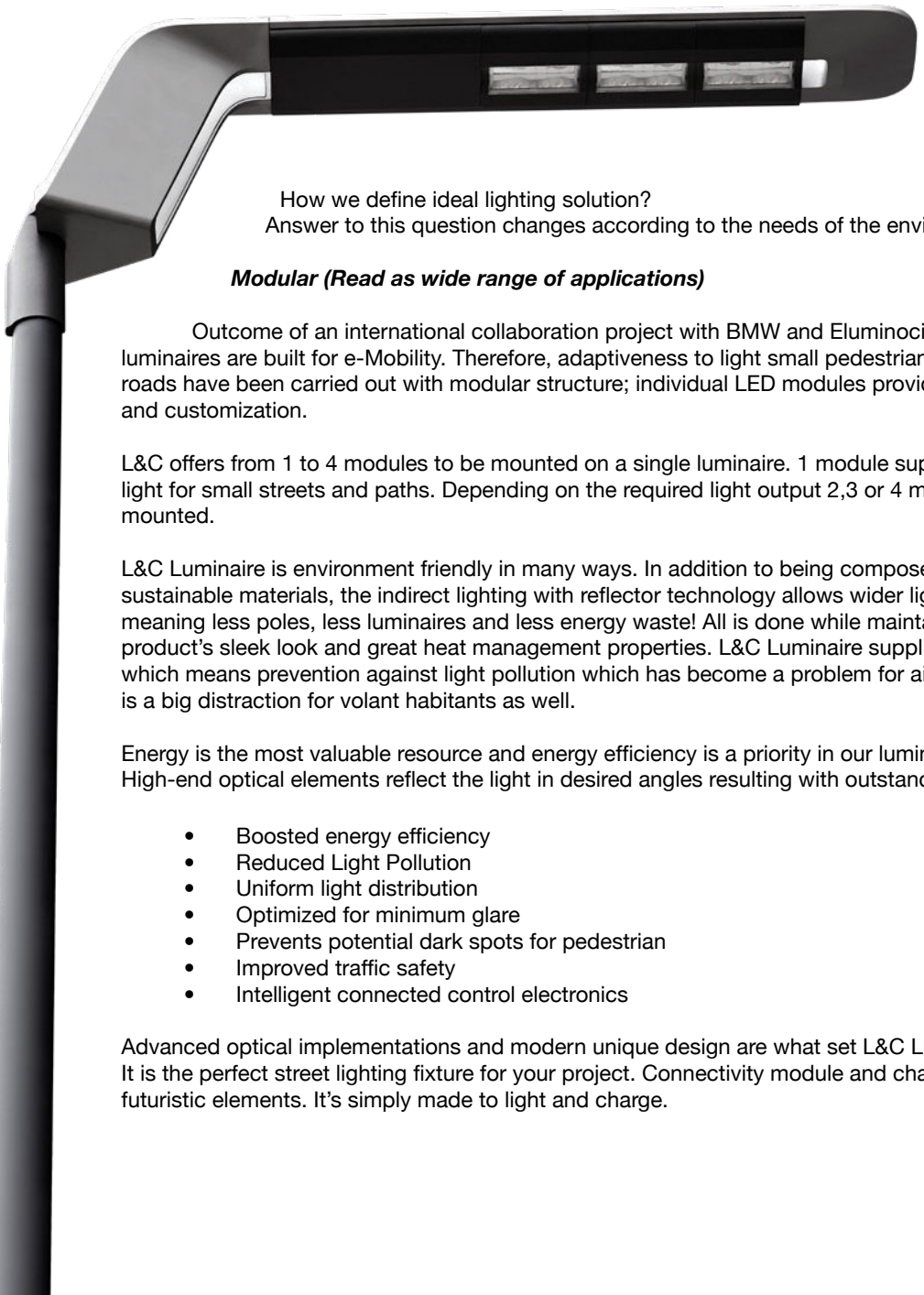
L&C LUMINAIRE

heper

L&C LUMINAIRE *CONTEMPORARY* LED STREET LIGHTING



How we define ideal lighting solution?
Answer to this question changes according to the needs of the environment.

Modular (Read as wide range of applications)

Outcome of an international collaboration project with BMW and Eluminocity, L&C luminaires are built for e-Mobility. Therefore, adaptiveness to light small pedestrian paths to main roads have been carried out with modular structure; individual LED modules provide flexibility and customization.

L&C offers from 1 to 4 modules to be mounted on a single luminaire. 1 module supplies sufficient light for small streets and paths. Depending on the required light output 2,3 or 4 modules can be mounted.

L&C Luminaire is environment friendly in many ways. In addition to being composed of sustainable materials, the indirect lighting with reflector technology allows wider light distribution meaning less poles, less luminaires and less energy waste! All is done while maintaining the product's sleek look and great heat management properties. L&C Luminaire supplies full cut-off which means prevention against light pollution which has become a problem for air traffic and it is a big distraction for volant habitants as well.

Energy is the most valuable resource and energy efficiency is a priority in our luminaires.
High-end optical elements reflect the light in desired angles resulting with outstanding outcomes;

- Boosted energy efficiency
- Reduced Light Pollution
- Uniform light distribution
- Optimized for minimum glare
- Prevents potential dark spots for pedestrian
- Improved traffic safety
- Intelligent connected control electronics

Advanced optical implementations and modern unique design are what set L&C Luminaire apart. It is the perfect street lighting fixture for your project. Connectivity module and charge unit are its futuristic elements. It's simply made to light and charge.

01

L&C LUMINAIRE **LED MODULE OVERVIEW**

L&C luminaires are built with specially engineered LED modules. Each LED module consists of four high-powered LEDs, and microfaceted reflectors introduce comfortable indirect lighting. Built with a tightly sealed housing (IP66) that keeps the optics dust-free. Housing design embodies technical advantages and successfully dissipates excessive heat from the LEDs so that consistent performance over system's lifetime is ensured.

The LED Module technology enabled us to serve our customers better services;

- **Energy efficient upgrade:** Changing classical street lighting to LED technology helps us to save up on energy expenses and reduced energy consumption up to 30% - 50%.
- **Optimized light distribution:** Four micro-facated freeform optics are utilized in each module. Minimized glare and optimized lighting distribution are our strengths. Our reflector technology redirects the light exactly where it is needed**.**
- **Increased security for pedestrians and traffic:** Lighting is directly correlated with "feeling of safety" both for pedestrians and drivers. Reduced glare conveys driver's eye comfort and helps driving more securely during night time.Optimized levels of lighting help public security to be sustained.
- **Scalable configuration options:** Thanks to its modular configuration options, LED street lighting fixtures can be applied to a wide range of scenarios. Whether it is a small street or multiline road, you'll have the scalable configuration options with us.
- **Combine to connect:** Light & Charge luminaires have been designed and engineered to be a part of Smart City applications. Contact us for more information on Charge-Module and Connect-Module collaborations and availability for your market.

02

L&C LUMINAIRE **LED MODULE OPTICAL TECHNOLOGY**

Heper's specially designed LED module is the L&C Luminaire's prominent feature. It is an outcome of Heper's quest for excellence, incorporating years of multi-disciplinary engineering work. Instead of using standard PCB+LED chip+lens combination, we wanted to think outside the box to achieve a more optimised light distribution. This led us to align the LED chips upwards having an indirect lighting concept. Light is reflected throughout the reflector all the way through. Thus, obtaining a wider bat-wing type of asymmetrical light distribution which is what is requested for street and road lighting. Combining modularity and optical excellence, L&C Luminaire is our latest state of the art light source.

03

L&C LUMINAIRE **LED MODULE**
THERMAL OPTIMISED HOUSING

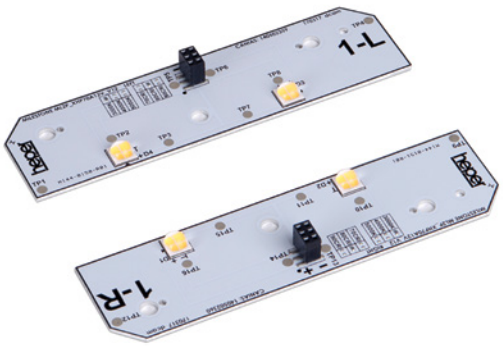
Throughout the transition from conventional light sources to LEDs, heat management has been the most important issue to resolve. After all, it is only possible to talk about the high praised long lifetime of LED chips when the junction heat is sufficiently managed. L&C Luminaire LED Module's body characteristic is designed to handle this problem in the best way possible.

The ability to align the chips upwards allowed us to handle this problem from underneath. Being a relatively easier space to manage the heat, bottom of the luminaire is somewhat "self-cleaning" when compared to the top. It is not exposed to direct sun light and dirt wouldn't pile up over the surface. It can also be easily cleaned from underneath.

04

L&C LUMINAIRE **LED MODULE**
LED CHIP AND PCB TECHNOLOGY

The advantages LED brings to lighting applications are undeniable. Long lifetime, energy saving properties and their small size are the main ones. L&C Luminaire LED module takes this to another level using only extreme high power, multi-die, best quality LED chips.



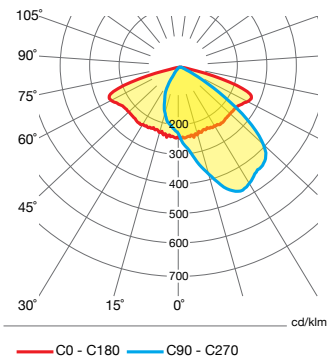
- Less than %10 loss at L90 at 35K hours. This is impressive when compared to %30 loss at L70 for a standard mid-power chip.
- Ability to use low number of chips provides smaller PCB for a better design.
- Being thermally excellent with thermal resistance rate of 0.9°C/W, LED lifetime is increased while requiring less heat sink area.
- MacAdam Step 3 chips bring optical consistency. L&C Luminaire LED module PCB design is also quite innovative. Constructed with materials with excellent thermal conductivity, two separate PCBs are used in one module. Thanks to its unique design, it is possible to control these two PCBs separately. It means just by changing control, it is possible to have different optical outputs.

05

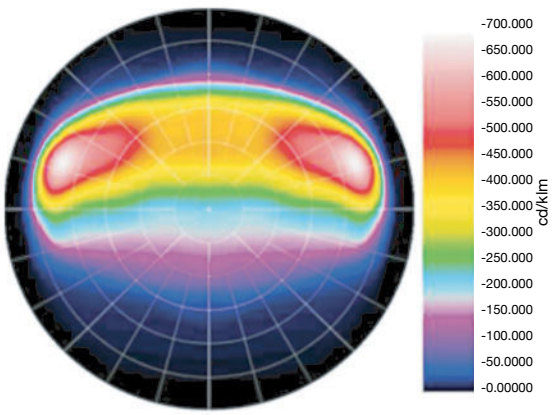
L&C LUMINAIRE **LED MODULE REFLECTOR TECHNOLOGY**

L&C Luminaire LED Module introduces the indirect lighting concept through its multifaceted reflectors. Light beams coming out of the upward aligned LED chips are reflected in a way that almost sending them horizontally with no uplight. Thus, light can reach distances that standard lenses may fail to do.

Utilizing multifaceted reflector technology brings out additional advantages such as more homogenous distribution and better glare management. Specially designed microfacets break the light in multiple directions resulting in a homogenously illuminated zone and since there is no direct eye contact with the light source, glare is majorly reduced. Reflectors used in L&C Luminaire LED Module is coated with high tech materials including silver and gold coating options for higher reflectivity levels and better efficiency.



eluminocity L&C Luminaire 1 Milestone®



06

L&C LUMINAIRE
TECHNICAL SPECIFICATIONS

Heat Sink

Reflector

PCB

Diffuser

Heat Sink

MECHANICAL PROPERTIES
- Corrosion resistant die-cast aluminum housing.
- Easy installation, easier maintenance
- Optimized thermal management system
- Ingress protection: IP66, IK08
- Electrical Insulation: Class I-II
- The system complies with European standards EN60598, ENEC and UL certified
- Corrosion resistant and superior quality finishes for all weather conditions.

ELECTRICAL PROPERTIES
- LED Quantity: 4 High Power multichips.
- Power Consumption: 35W @700mA.
- PCB: Optimized PCB design with touchdown technology
- Various control options.
- Input Voltage: 220-240V / 120-277V

OPTICAL PROPERTIES
- Different number of module combinations for various lighting requirements.
- Color Temperature Range: 2700K-6500K
- Total Luminous Flux: 4000lm for 4000K @700mA
- Lifetime: L90> 118.000 h
- Minimized Glare
- Multi-faceted reflector surface with optical efficiency >90%
- Smooth and full cut-off light distribution.

07

L&C LUMINAIRE
TECHNICAL SPECIFICATIONS

APPLICATION AREAS
- Roads
- Streets
- Highways
- Bridges
- Parking lots
- Pedestrian Crosses
- Urban Areas
- Roundabouts

GENERAL
- Equipped with Heper's patented LED module
- Optimized road lighting distribution to meet various road classes
- Operating temperature: -40C / +55C
- Better thermal management with upward aligned LED chips
- Easy installation and maintenance with modular structure
- In compliance with EN 60598
- ENEC, CE and UL certified

ELECTRICAL
- Drive current: 350 mA, 525mA, 700mA
- Optimized PCB-Design; aluminum PCB or FR-4 PCB with touchdown technology
- Insulation class: CLASS I, CLASS II
- Energy class: A+
- Power factor: > 0.95
- Input Voltage: 220V-240V / 120V-277V at 50Hz /60Hz
- Control type: On/Off, 1-10V, DALI
- Surge Protection: 10kV

OPTICAL
- Equipped with Heper's patented LED module
- Indirect lighting with reflector technology
- Homogenous lighting distribution thanks to multifaceted reflectors
- Full cut-off wide light distribution with no up light
- Better glare management with no direct eye contact with light source
- Extreme high power multi LED chips
- MacAdam Ellipse 3
- Lumen Output: 3500lm – 16000lm
- Color Temperature: 3000K, 4000K
- CRI > 70(4000K), CRI > 80(3000K)
- Lumen depreciation: L90B50 > 118000 h
- Photobiological safety: Risk Group 0
- BUG Rating: B2 – U0 – G1
- Efficacy: 114 lm/W
- ULOR: 0%

BODY
- Corrosion resistant aluminum housing composed of die-cast and extrusion parts
- Electrostatic powder coating (RAL9006)
- Ingress protection: IP66
- Impact protection: IK08

EXTRAS
- Nema Socket
- RF Module
- Higher CRI LED chips
- Programmable driver for different scenerios
- Different drive currents
- Marine grade coating
- Halogen free cabling

EXTRAS SENSORS & CONNECTIVITY
- Motion detection
- Speed detection
- LTE connectivity
- Air monitoring
- Park space marking

CE IK08, IP66, EN60598

Source: Eluminocity GmbH,
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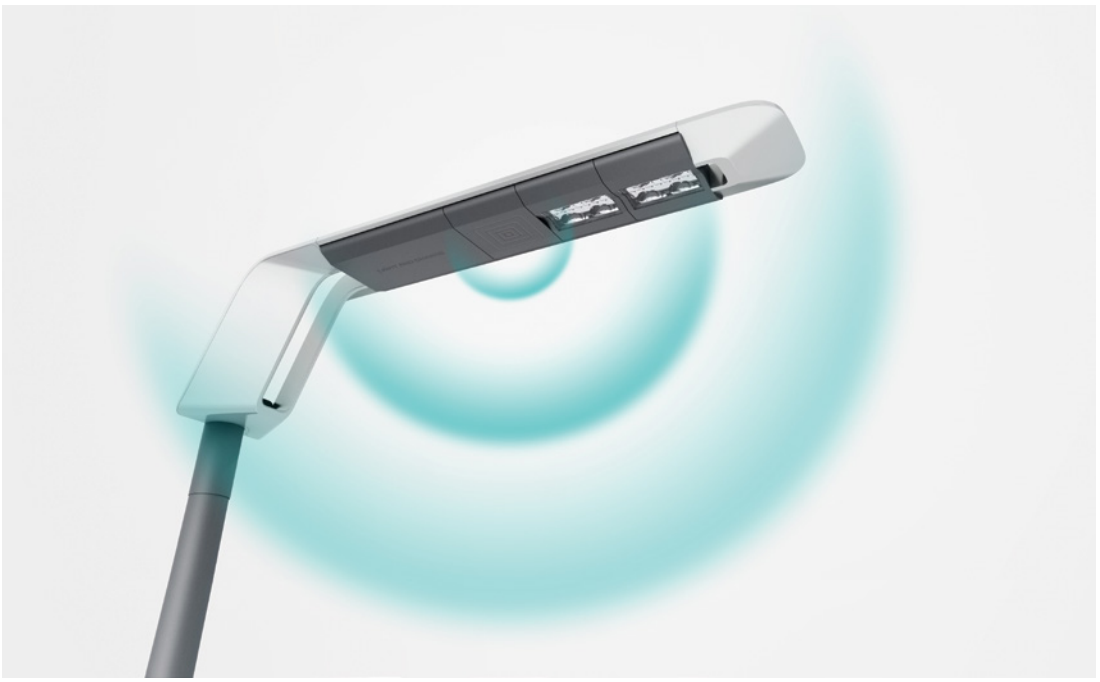
08

L&C LUMINAIRE
CONNECTIVITY

In today's world everything is getting smarter. Urban areas are no exception for that. That's why the L&C luminaire is equipped with a radar connectivity module to enhance the intelligence all around. This way, our luminaire becomes even more adaptable and environment friendly.

With the radar module it is all possible to obtain information about traffic density, air purity etc. As well as to detect motion and speed to control light for energy efficiency. With the help of the developed software using latest technology equipment, even detailed tasks such as object detection, crowd density information, parking spot finding etc. will become possible. This ability for connectivity will guide the cities to be smarter.



Source: Eluminocity GmbH

Source: Eluminocity GmbH,
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NEXT GENERATION STREET LIGHTING

L&C LUMINAIRE

Luminous flux: from 3500lm up to 16000lm with 1, 2, 3 & 4 Milestone® LED modules

L&C LUMINAIRE PRODUCT FAMILY

TECHNICAL SPECIFICATIONS

LUMINAIRE				
CODE	**DESCRIPTION**	**POWER (700 mA)**	**LUMEN**	**COLOR TEMPERATURE**
LL2016.661	L&C 1 Module	35W	3500 lm - 4000 lm	3000K / 4000K
LL2016.662	L&C 2 Module	70W	7000 lm - 8000 lm	3000K / 4000K
LL2016.663	L&C 3 Module	105W	10500 lm - 12000 lm	3000K / 4000K
LL2016.664	L&C 4 Module	140W	14000 lm - 16000 lm	3000K / 4000K

POLES								
CODE	**DESCRIPTION**	**H1**	**H2**	**D1**	**D2**	**ANCHORAGE**	**FLANGE COVER**	**CUT-OUT**
PAFK.055.050	Aluminum Conical Pole Flanged	5000	-	Ø60	Ø122	90BJ004	C1D2B	51
PABK.055.050	Aluminum Conical Pole Buried	5000	800	Ø60	Ø122	-	-	51
PAFK.013.060	Aluminum Conical Pole Flanged	6000	-	Ø60	Ø122	90BJ004	C1D2B	51
PABK.013.060	Aluminum Conical Pole Buried	6000	1000	Ø60	Ø122	-	-	51
PAFK.050.060	Aluminum Conical Pole Flanged	6000	-	Ø60	Ø148	90CJ005	C1F2C	51
PABK.050.060	Aluminum Conical Pole Buried	6000	1000	Ø60	Ø148	-	-	51
PAFK.096.080	Aluminum Conical Pole Flanged	8000	-	Ø60	Ø165	90CJ006	C1G2C	51
PABK.096.080	Aluminum Conical Pole Buried	8000	1200	Ø60	Ø165	-	-	51

Source: Eluminocity GmbH,
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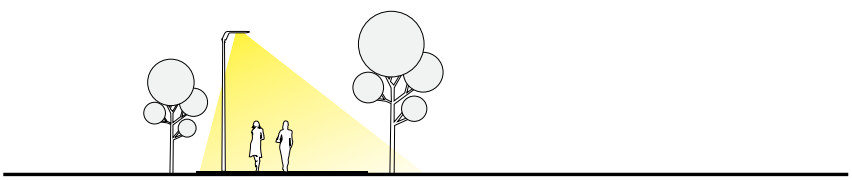
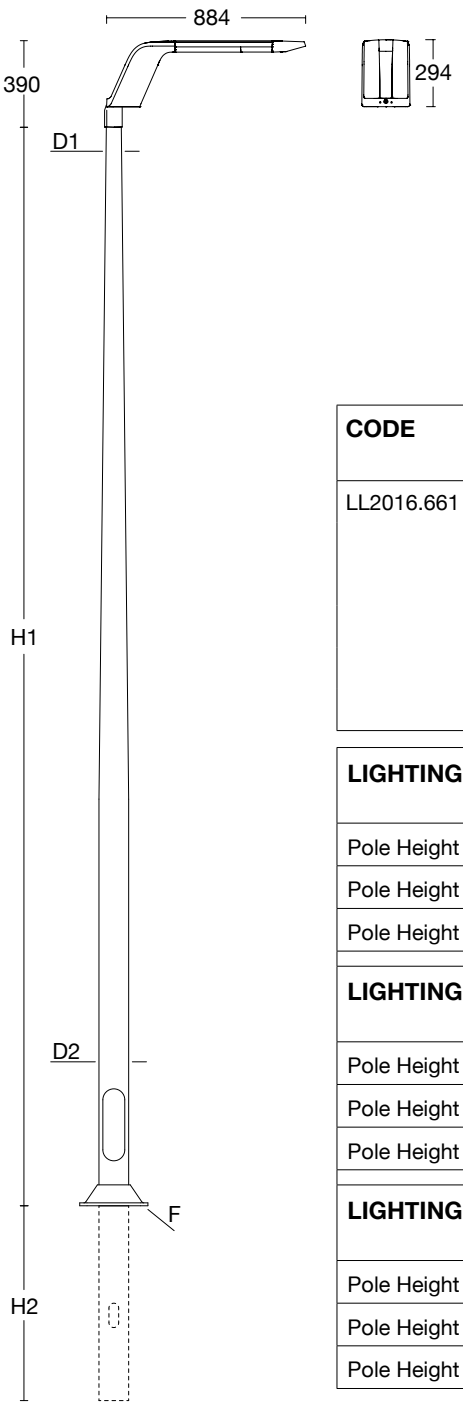
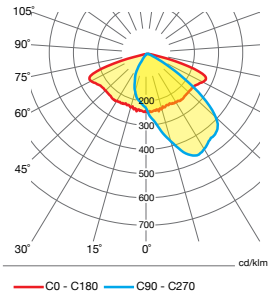
Photo Ref: BMW Welt, Munich, Germany

L&C 1*MODULE







CODE	DESCRIPTION	CCT	DRIVE CURRENT	LUMEN OUTPUT	POWER
LL2016.661	L&C 1* Module	3000K	350mA	1870 lm	20W
		3000K	525mA	2700 lm	28W
		3000K	700mA	3500 lm	35W
		4000K	350mA	2150 lm	20W
		4000K	525mA	3100 lm	28W
		4000K	700mA	4000 lm	35W

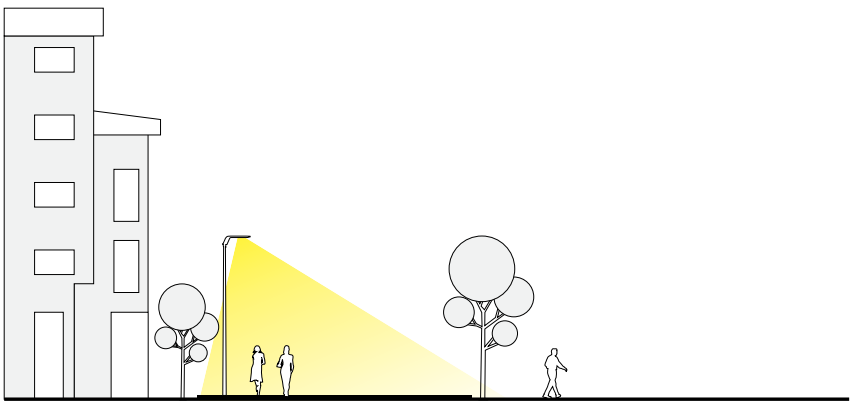
LIGHTING CLASS (EN13201:2016)	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Pole Height = 4m, max pole distance:	**25m**	**25m***	**25m***	**25m***	**25m***	**25m***
Pole Height = 6m, max pole distance:	**20m**	**31m**	**35m**	**36m***	**36m***	**36m***
Pole Height = 8m, max pole distance:		**25m**	**33m**	**45m**	**48m***	**48m***

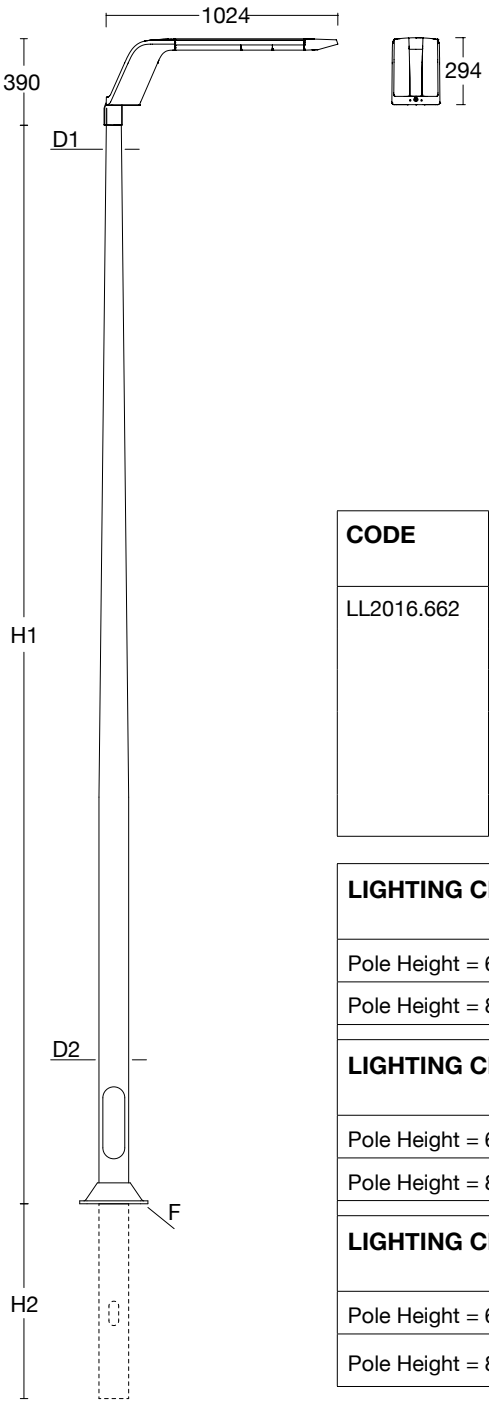
LIGHTING CLASS (EN13201:2016)	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
Pole Height = 4m, max pole distance:						**21m***
Pole Height = 6m, max pole distance:			**18m**	**25m**	**32m**	**32m***
Pole Height = 8m, max pole distance:				**20m**	**31m**	**42m**

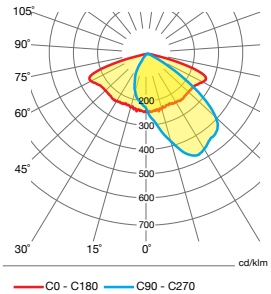
LIGHTING CLASS (EN13201:2016)	**C0**	**C1**	**C2**	**C3**	**C4**	**C5**
Pole Height = 4m, max pole distance:		**16m**	**17m**	**17m***	**17m***	**17m***
Pole Height = 6m, max pole distance:			**15m**	**18m**	**18m***	**18m***
Pole Height = 8m, max pole distance:					**25m**	**25m***

L&C 1*MODULE
*Luminaire has to be dimmed.
Weight: 9 kg
Wind surface area: 0.10 m2

L&C 2*MODULE







CODE	DESCRIPTION	CCT	DRIVE CURRENT	LUMEN OUTPUT	POWER
LL2016.662	L&C 2* Module	3000K	350mA	3750 lm	39W
		3000K	525mA	5400 lm	53W
		3000K	700mA	7000 lm	70W
		4000K	350mA	4300 lm	39W
		4000K	525mA	6200 lm	53W
		4000K	700mA	8000 lm	70W

LIGHTING CLASS (EN13201:2016)	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Pole Height = 6m, max pole distance:	**35m**					
Pole Height = 8m, max pole distance:	**33m**	**45m**	**48m**			

LIGHTING CLASS (EN13201:2016)	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
Pole Height = 6m, max pole distance:						
Pole Height = 8m, max pole distance:		**20m**	**31m**	**35m**		

LIGHTING CLASS (EN13201:2016)	**C0**	**C1**	**C2**	**C3**	**C4**	**C5**
Pole Height = 6m, max pole distance:		**18m**				
Pole Height = 8m, max pole distance:			**25m**			

L&C 2*MODULE
Weight: 10 kg
Wind surface area: 0.11 m2

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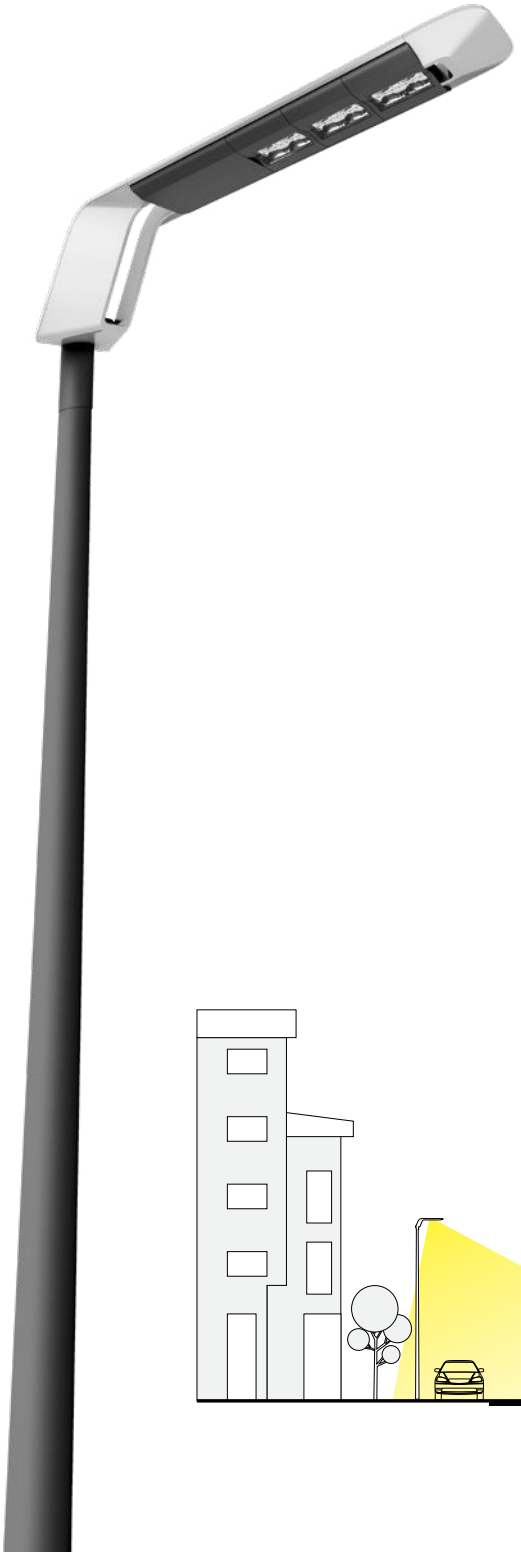
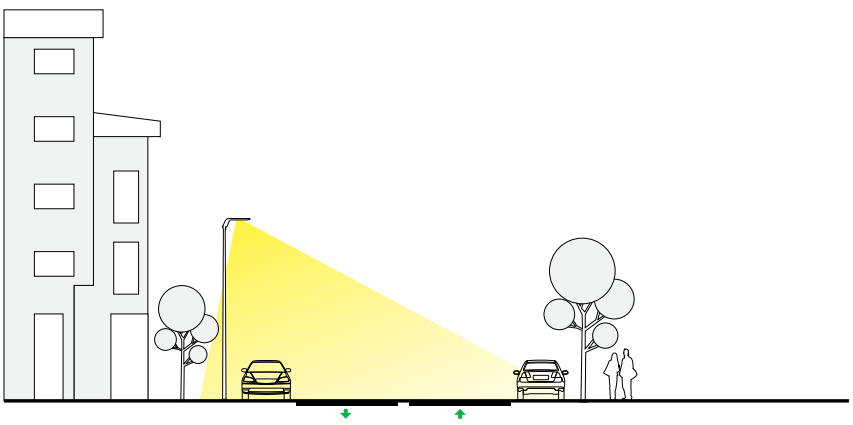
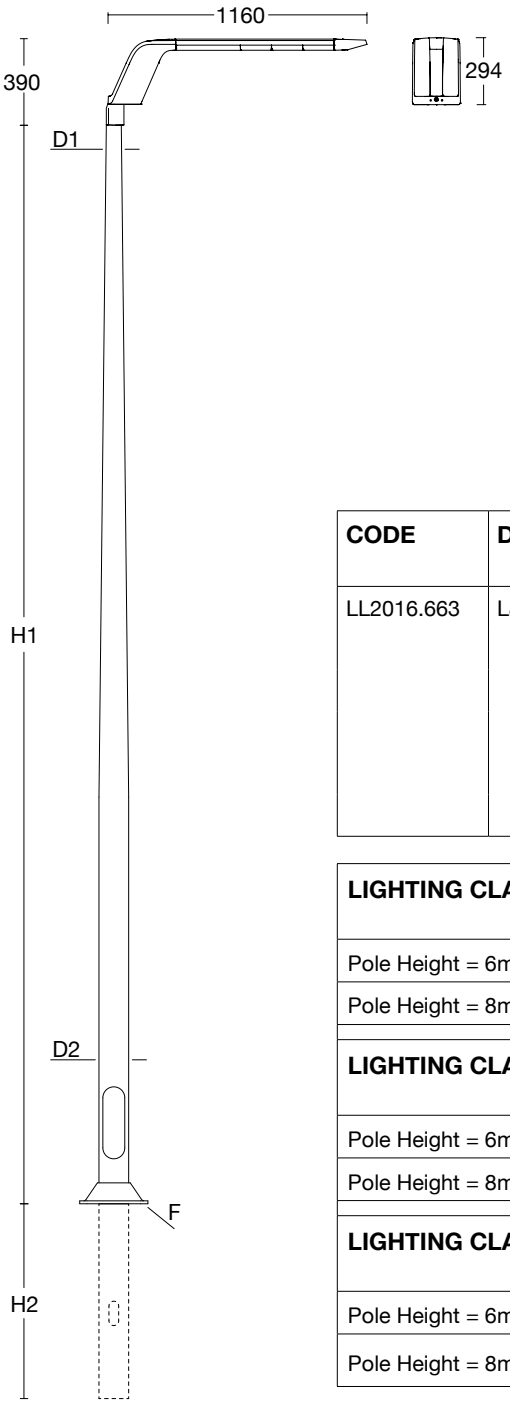
Source: Eluminocity GmbH,
Copyright BMW Group

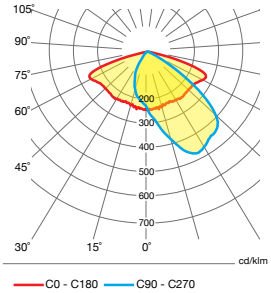
9th St
M KE 3512

L&C 3*MODULE









CODE	DESCRIPTION	CCT	DRIVE CURRENT	LUMEN OUTPUT	POWER
LL2016.663	L&C 3* Module	3000K	350mA	5650 lm	60W
		3000K	525mA	8100 lm	85W
		3000K	700mA	10500 lm	105W
		4000K	350mA	6400 lm	60W
		4000K	525mA	9250 lm	85W
		4000K	700mA	12000 lm	105W

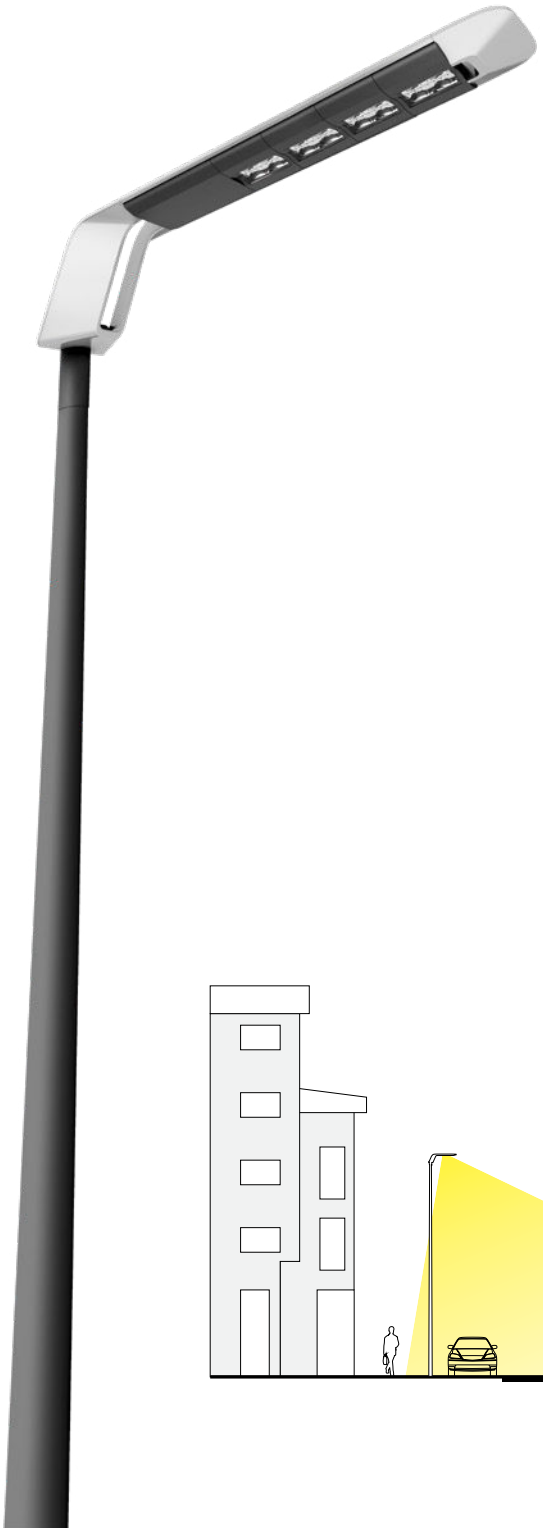
LIGHTING CLASS (EN13201:2016)	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Pole Height = 6m, max pole distance:	**45m**					
Pole Height = 8m, max pole distance:	**32m**	**50m**	**66m**			

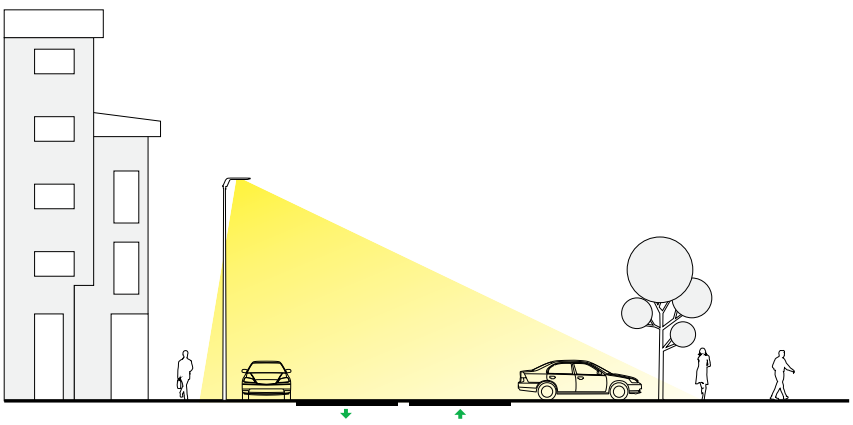
LIGHTING CLASS (EN13201:2016)	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
Pole Height = 6m, max pole distance:	**23m**	**31m**	**35m**			
Pole Height = 8m, max pole distance:			**30m**	**40m**	**60m**	**64m**

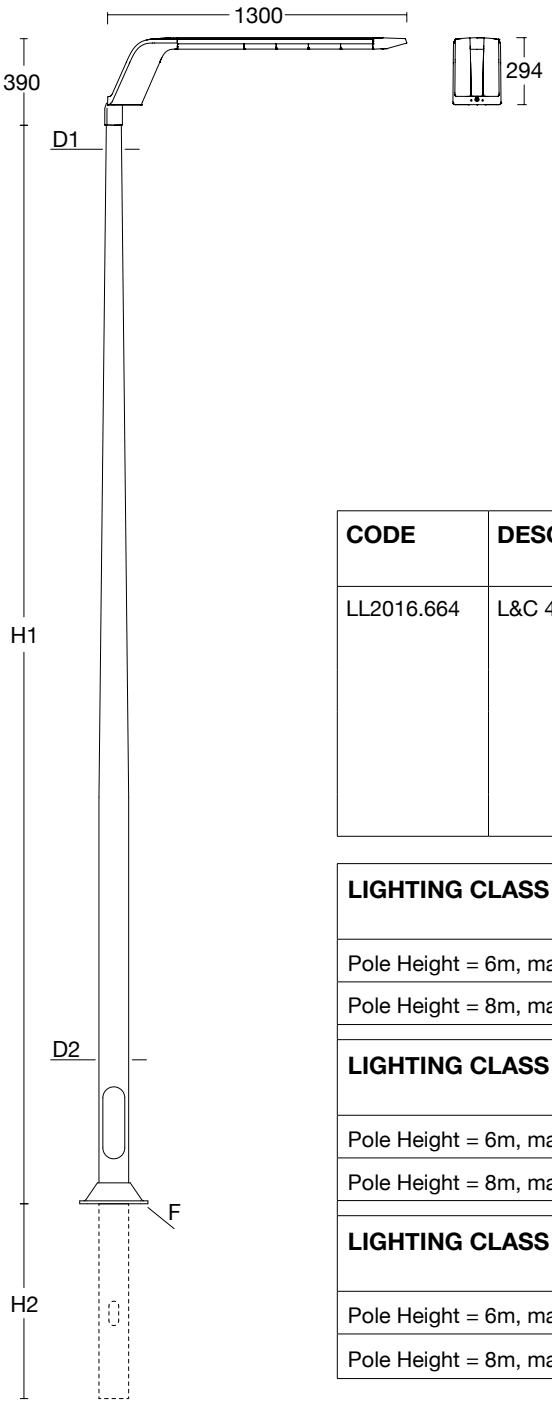
LIGHTING CLASS (EN13201:2016)	**C0**	**C1**	**C2**	**C3**	**C4**	**C5**
Pole Height = 6m, max pole distance:		**25m**				
Pole Height = 8m, max pole distance:			**24m**	**32m**	**40m**	

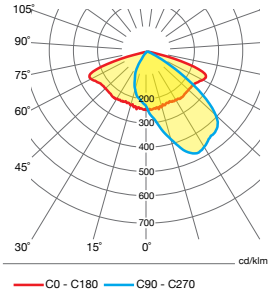
L&C 3*MODULE
Weight: 11 kg
Wind surface area: 0.11 m2

L&C 4*MODULE









CODE	DESCRIPTION	CCT	DRIVE CURRENT	LUMEN OUTPUT	POWER
LL2016.664	L&C 4* Module	3000K	350mA	7500 lm	80W
		3000K	525mA	10800 lm	112W
		3000K	700mA	14000 lm	140W
		4000K	350mA	8600 lm	80W
		4000K	525mA	12400 lm	112W
		4000K	700mA	16000 lm	140W

LIGHTING CLASS (EN13201:2016)	**P1**	**P2**	**P3**	**P4**	**P5**	**P6**
Pole Height = 6m, max pole distance:	**48m**					
Pole Height = 8m, max pole distance:	**44m**	**66m**				

LIGHTING CLASS (EN13201:2016)	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
Pole Height = 6m, max pole distance:	**29m**					
Pole Height = 8m, max pole distance:		**26m**	**40m**	**52m**	**64m**	

LIGHTING CLASS (EN13201:2016)	**C0**	**C1**	**C2**	**C3**	**C4**	**C5**
Pole Height = 6m, max pole distance:	**20m**	**25m**				
Pole Height = 8m, max pole distance:		**22m**	**32m**	**40m**		

L&C 4*MODULE
Weight: 12 kg
Wind surface area: 0.12 m2

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Printed on 29.01.2018
*Heper withholds the right to make modifications on
declared information without prior notice.

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