MADE IN GERMANY

Light perfected.

NORKA

LED PRODUCT RANGE 2020/2021

New Products 2021

„NORKA finds
solutions:
With devotion,
precision and
competence.“

DEAR READER,

Every year we manufacture over a hundred thousand luminaires at our factory in Hülsen in Lower Saxony, and enable you with our latest innovations to illuminate even the harshest of environments in an energy-saving and efficient manner. The expertise accumulated from over 70 years of NORKA has a key impact on our products and production. Knowledge of construction, light control and materials as well as the challenges facing luminaires under extreme conditions form the basis for our products.
Light perfected. – Made in Germany.

This catalogue supplement contains our new articles for 2021. We would like to draw particular attention to the ZUG LED family of products: Their high protection ratings such as IP 68 and IP 69K, their durable materials and their timeless shape make them perfect for use in harsh environments. These include food production facilities or work pits as well as sophisticated design projects such as swimming pools or underground and suburban railway stations. The luminaires in the ZUG LED family provide reliable lighting in many different areas. We now offer an even greater variety of products:
The ZUG LED EXTREME luminaire can be used to illuminate environments up to +65 °C in an energy-saving and efficient manner. For areas requiring high luminous flux, extra light is provided by the ZUG LED HIGH OUTPUT luminaire with 13,100 lumens.

Check out our new products in this brochure or browse through our topic-based information at norka.com.

Best regards,

Nicole Sass   Florian Schönfeld

OUR LUMINAIRES' WORK PLACES

We offer lighting for a wide range of environments with challenging requirements: From ammonia, seawater and other chemical challenges to high ambient temperatures and high colour rendering. We find solutions: With devotion, precision and competence. You can find our product recommendations for individual areas of application in our topic-based information at norka.com.

Discover our products for your application at our website.

Railway and Public Transport

For lighting bus and train operations, we provide you with robust luminaires for plattforms, work pits or underpasses. A part of our luminaires also fulfil the standards required for the usage in the German Railway Network.

norka.com/go/railway

Industry

Dustproof and waterproof luminaires are our standard products. In addition, we offer product variants which are resistant to harmful environmental influences such as ammonia and seawater or which can easily withstand temperatures above +60 °C.

norka.com/go/industry

Agriculture and Animal Husbandry

Lighting in agriculture and animal husbandry must be easy to clean and resistant to ammonia, hydrogen sulphide and other chemicals. At the same time, uniform illumination and high-quality lighting are required for animal welfare. At our company, you will find appropriate lighting for poultry, pigs and co.

norka.com/go/agriculture

Food and Beverage Industry

In production facilities for beverages and food, the lighting must comply with the IFS Food Standard, because hygiene is paramount. At NORKA you will find HACCP- and IFS-compliant luminaires for production, slaughterhouses or warehouses.

norka.com/go/food

Emergency Lighting

Emergency luminaires are an essential part of lighting systems in buildings – even in harsh environments. A large number of NORKA luminaires can be integrated into central emergency lighting systems. In addition, we offer centrally-powered safety luminaires and single-battery emergency and safety luminaires with protection ratings IP65 and IP67.

norka.com/go/emergency

Public Buildings

The requirements for lighting in state and municipal contexts are manifold: Vandalism in detention cells, graffiti on public toilets or harmful gases in sewage treatment plants are just a few examples. At our company, you will find lighting solutions that meet your particular challenge.

norka.com/go/public

Sport and Venue Arenas

For sports halls and events facilities, the focus is on high illumination levels and uniformity. An additional lighting control system ensures ultimate user convenience. In sports halls and swimming pools, ball impact safety and chlorine resistance also have to be taken into consideration.

norka.com/go/sports

Tunnels and Traffic

Around pedestrian, cycle and road traffic, the right lighting ensures safety. At the same time, luminaires in these areas are exposed to vandalism, fine dust, moisture or large forces such as air pressure and suction. NORKA offers solutions not only for underpasses, multi-storey car parks or public toilet facilities, but also active traffic guidance systems and tunnel lighting.
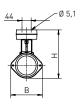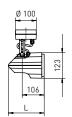
norka.com/go/traffic

ANTARES LED

narrow beam

concentrated wide beam
CDP prism screen

Ø 5,1   44   Ø 100   H   B   123   106   L

	Lamp	Version	L	B	H	a	Max. weight
NEW	LED	Floodlight	172 mm	152 mm	232 mm	-	0.9 kg

AREAS OF APPLICATION
Polymer floodlight for ceiling and wall-surface mounting with LED. Useable in industrial facilities, under canopies and for facade illumination.

HOUSING
Luminaire housing made from weather-proof thermoplastic PPO, similar to RAL 9005. Aluminium swivel bracket, coated. Useable for indoor and outdoor areas according to protection rating IP54. Additional cover frame and cover screen for preventing water accumulation during uplighting optionally available (see accessories). Short sealing system comprised of age-resistant, form-retaining silicone/synthetic rubber.

LIGHTING TECHNOLOGY
Cover screen made from single-pane safety glass, PC opal white or CDP prism screen with internal aluminium reflector.

ELECTRICAL CONSTRUCTION
Luminaire ready for installation and connection via plug-in terminal. Built-in driver, supply voltage 220-240 V AC/DC. 2 kV transient filter. One cable entry M20.

MOUNTING
Ceiling or wall fixation via swivel bracket.

ANTARES LED – SINGLE-PANE SAFETY GLASS, NARROW BEAM

Version		Luminous flux/lm	System power/W	Ambient temperature	Article no.
Floodlight	☐ 840/4000	1800	12	-25 °C to +40 °C	972 100 24 61

ANTARES LED – CDP PRISM SCREEN, CONCENTRATED WIDE BEAM

Version		Luminous flux/lm	System power/W	Ambient temperature	Article no.
Floodlight	☐ 840/4000	1800	12	-25 °C to +40 °C	972 100 94 61

ANTARES LED OPTIONS

Version	Article no.
DALI	100 502
RAL coating	972 960
Swimming pool version	972 970
Other colour temperatures	available on request

ANTARES LED ACCESSORIES

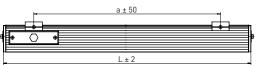| Version	Article no.
Cover frame for ceiling illumination	970 929

BRIG

IP 65 | CE | D | ⏚ | ◇ | IK 03 PMMA

a ± 50		52		
L ± 2		42	71	

○ FOCUSSED LIGHTING
(see appendix E)

⇄ XARA® lighting control
(see appendix B)

◣	medium beam
◤	extreme wide beam
◣	wide beam
◢	narrow beam
◣	concentrated beam
◢	asymmetric beam

Lamp		Version	L	B	H	a	Max. weight
NEW	230 V AC/DC LED - Focussed Lighting	m600	600 mm	52 mm	71 mm	458 ± 50 mm	1.2 kg
NEW	230 V AC/DC LED - Focussed Lighting	m1200	1160 mm	52 mm	71 mm	1018 ± 50 mm	2.2 kg
NEW	230 V AC/DC LED - Focussed Lighting	m1500	1440 mm	52 mm	71 mm	1298 ± 50 mm	2.7 kg
	24 V DC LED	m500	508 mm	52 mm	71 mm	366 ± 50 mm	0.9 kg
	24 V DC LED	m1000	988 mm	52 mm	71 mm	846 ± 50 mm	1.8 kg
	24 V DC LED	m1500	1468 mm	52 mm	71 mm	1326 ± 50 mm	2.7 kg
	24 V DC LED	m2000	1948 mm	52 mm	71 mm	1806 ± 50 mm	3.6 kg

AREAS OF APPLICATION
Aluminium luminaire for ceiling and surface wall mounting with LED stripes. Useable in subways, pedestrian tunnels, passages, multi-storey car parks, swimming pools, transport areas, under canopies and façades.

HOUSING
Silver anodised aluminium profile housing. Useable for indoor and outdoor areas according to protection rating IP 65.

LIGHTING TECHNOLOGY
Luminaire with a variety of beam angles.

ELECTRICAL CONSTRUCTION
Luminaire ready for mounting and installation. One cable entry M20 per face side. There are two types of luminaires:
Type 1: Focussed lighting
Cover screen made of PMMA Transopal® (impact strengthened). Built-in driver 230 V AC/DC. 2 kV transient filter with 3 x 1.5 mm² through-wiring. Protection class I.
Type 2: 24 V
Cover screen made of PMMA clear. For operation on 24 V constant voltage, protection class III. A separate driver, which supplies 24 V constant voltage is required. This can be found with the accessories. Please select a device with a suitable connected load.

MOUNTING
Single or row mounting. Ceiling mounting with aluminium clamps. Wall mounting using two stainless steel wall brackets or pendant suspension.

BRIG – TYPE 1 – FOCUSSED LIGHTING ⊙, MEDIUM BEAM

Version		Luminous flux/lm	System power/W	Ambient temperature	Article no. + MC
m600	☐ 840/4000	1100 - 1710 - 2520	8 - 11 - 16	-25 °C to +40 °C	539 280 34 24 – E – ….
m1200	☐ 840/4000	2190 - 3410 - 5040	13 - 20 - 29	-25 °C to +40 °C	539 480 34 24 – E – ….
m1500	☐ 840/4000	2740 - 5290 - 6300	16 - 30 - 36	-25 °C to +40 °C	539 680 34 24 – E – ….

▨ Standard luminous flux T8, for other lumen packages, see appendix E

BRIG – TYPE 1 – FOCUSSED LIGHTING ⊙, CONCENTRATED BEAM

Version		Luminous flux/lm	System power/W	Ambient temperature	Article no. + MC
m600	☐ 840/4000	1100 - 1710 - 2520	8 - 11 - 16	-25 °C to +40 °C	539 280 84 24 – E – ….
m1200	☐ 840/4000	2190 - 3410 - 5040	13 - 20 - 29	-25 °C to +40 °C	539 480 84 24 – E – ….
m1500	☐ 840/4000	2740 - 5290 - 6300	16 - 30 - 36	-25 °C to +40 °C	539 680 84 24 – E – ….

▨ Standard luminous flux T8, for other lumen packages, see appendix E

BRIG – TYPE 2 – 24 V LED, EXTREME WIDE BEAM

Version		Luminous flux/lm	System power/W	Ambient temperature	Article no.
m500	☐ 840/4000	1220	12	-40 °C to +40 °C	539 412 04 39
m1000	☐ 840/4000	2440	24	-40 °C to +40 °C	539 424 04 39
m1500	☐ 840/4000	3660	36	-40 °C to +40 °C	539 436 04 39
m2000	☐ 840/4000	4880	48	-40 °C to +40 °C	539 448 04 39

The driver (constant 24 V voltage) has to be ordered separately.

BRIG – TYPE 2 – 24 V LED, FRESNEL LENS 6°, NARROW BEAM WITH ASYMMETRIC BEAM ANGLE

Version		Luminous flux/lm	System power/W	Ambient temperature	Article no.
m500	☐ 840/4000	1220	12	-40 °C to +40 °C	539 416 04 39
m1000	☐ 840/4000	2440	24	-40 °C to +40 °C	539 428 04 39
m1500	☐ 840/4000	3660	36	-40 °C to +40 °C	539 441 04 39
m2000	☐ 840/4000	4880	48	-40 °C to +40 °C	539 452 04 39

The driver (constant 24 V voltage) has to be ordered separately.

BRIG – TYPE 2 – 24 V LED, FRESNEL LENS 12°, NARROW BEAM

Version		Luminous flux/lm	System power/W	Ambient temperature	Article no.
m500	☐ 840/4000	1220	12	-40 °C to +40 °C	539 413 04 39
m1000	☐ 840/4000	2440	24	-40 °C to +40 °C	539 425 04 39
m1500	☐ 840/4000	3660	36	-40 °C to +40 °C	539 437 04 39
m2000	☐ 840/4000	4880	48	-40 °C to +40 °C	539 449 04 39

The driver (constant 24 V voltage) has to be ordered separately.

> Version Type 2 – 24 V LED – with Cover screen
  made of PMMA clear

For additional articles, please turn the page! ▶

BRIG – TYPE 2 – 24 V LED, FRESNEL LENS 30°, CONCENTRATED BEAM

Version		Luminous flux/lm	System power/W	Ambient temperature	Article no.
m500	☐ 840/4000	1220	12	-40 °C to +40 °C	539 414 04 39
m1000	☐ 840/4000	2440	24	-40 °C to +40 °C	539 426 04 39
m1500	☐ 840/4000	3660	36	-40 °C to +40 °C	539 439 04 39
m2000	☐ 840/4000	4880	48	-40 °C to +40 °C	539 450 04 39

The driver (constant 24 V voltage) has to be ordered separately.

BRIG – TYPE 2 – 24 V LED, FRESNEL LENS 60°, WIDE BEAM

Version		Luminous flux/lm	System power/W	Ambient temperature	Article no.
m500	☐ 840/4000	1220	12	-40 °C to +40 °C	539 415 04 39
m1000	☐ 840/4000	2440	24	-40 °C to +40 °C	539 427 04 39
m1500	☐ 840/4000	3660	36	-40 °C to +40 °C	539 440 04 39
m2000	☐ 840/4000	4880	48	-40 °C to +40 °C	539 451 04 39

The driver (constant 24 V voltage) has to be ordered separately.

BRIG LED OPTIONS

Version	Article no.
Rear cable entry, M16 (pair)	539 438

BRIG LED – VERSION TYPE 1 – FOCUSSED LIGHTING ⦿
OPTIONS

Version	Article no.
Version m600 asymmetric beam Fresnel lens 6° with screen cover PMMA clear	539 282
Version m1200 asymmetric beam Fresnel lens 6° with screen cover PMMA clear	539 482
Version m1500 asymmetric beam Fresnel lens 6° with screen cover PMMA clear	539 682
DALI	100 502

BRIG LED – VERSION TYPE 2 – 24 V DC LED
OPTIONS

Version	Article no.
Dimmable version	available on request
LED through wiring with second access cover, 2 × 1.5 mm²	539 624
LED through wiring with second access cover, 2 × 2.5 mm²	539 932
Additional colour temperatures for version 24V: 3000 K and 5400 K (please specify when placing order)	available on request
Other LED colours: red, blue, green, amber (please specify when ordering)	available on request

BRIG LED ACCESSORIES

Version	Article no.
Continuous row mounting clamp (1 piece)	539 010
Wall bracket, 30 cm, aluminium (pair)	539 921
Wall bracket, 15 cm, aluminium (pair)	539 922

BRIG LED – VERSION TYPE 2 – 24 V DC LED ACCESSORIES

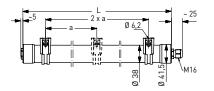| Version	Article no.
Driver in polymer housing, IP 65, protection class II, Supply voltage 24 V DC, primary power supply 230/240 V AC/DC Max. 35 W connected load, 180 x 94 x 57 mm (LxBxH)	537 184
Max. 100 W connected load, 254 x 180 x 63 mm (LxBxH)	537 182
Max. 200 W connected load, 254 x 180 x 90 mm (LxBxH)	537 183
Driver without polymer housing, Supply voltage 24 V DC, primary power supply 230/240 V AC/DC Max. 35 W connected load, 99 x 82 x 36 mm (LxBxH)	643 64
Max. 100 W connected load, 191 x 99 x 45 mm (LxBxH)	614 79
Max. 200 W connected load, 210 x 99 x 50 mm (LxBxH)	547 40

LUZERN 38 LED

IP 65 | CE | D | ☐ | ◈ | IK 07 PMMA | IK 09 PC

FOCUSSED LIGHTING
(see appendix E)

XARA® lighting control
(see appendix B)

K Other colour temperatures
(see appendix D)

medium beam

	Lamp	Version	L	B	H	a	Max. weight
NEW	230 V AC/DC LED - Focussed Lighting	m600	690 mm	50 mm	58 mm	600 mm	0.6 kg
NEW	230 V AC/DC LED - Focussed Lighting	m1200	1250 mm	50 mm	58 mm	1160 mm	0.9 kg
NEW	230 V AC/DC LED - Focussed Lighting	m1500	1530 mm	50 mm	58 mm	1440 mm	1.3 kg
	24 V DC LED	m500	605 mm	50 mm	58 mm	495 mm	0.4 kg
	24 V DC LED	m1000	1085 mm	50 mm	58 mm	975 mm	0.6 kg
	24 V DC LED	m1500	1565 mm	50 mm	58 mm	1450 mm	0.9 kg
	24 V DC LED	m2000	2045 mm	50 mm	58 mm	2 x 968 mm*	1.1 kg

*m2000 including third mounting clamp

AREAS OF APPLICATION
Tubular luminaire with LED lamps. Useable in industrial applications and for decorative indoor and outdoor lighting.

HOUSING
Polymer luminaire tube (Ø 38 mm). End caps white. Useable for indoor and outdoor areas according to protection rating IP 65.

LIGHTING TECHNOLOGY
Luminaire tube made of PMMA Transopal® (impact strengthened) or PC Tropal® (fracture proof).

ELECTRICAL CONSTRUCTION
Luminaire ready for mounting and installation. One cable gland M16 on face side.
There are two types of luminaires:
Type 1: Focussed lighting
Built-in driver 230 V AC/DC. 2 kV transient filter and 2 x 1.5 mm² 2 m connecting cable without plug (Version 1). Protection class II.
Type 2: 24 V
For operation on 24 V constant voltage, protection class III. A separate driver, which supplies 24 V constant voltage is required. This can be found with the accessories. Please select a device with a suitable connected load.

MOUNTING
Single mounting. Ceiling or wall fixing using two or three stainless steel/transparent polymer mounting clamps, variable mounting distance or pendant suspension.

LUZERN 38 LED – TYPE 1 – FOCUSSED LIGHTING ⦿

Version		Luminous flux/lm	System power/W	Ambient temperature	Article no. + MC
m600	☐ 840/4000	1100 - 1710 - 2520	8 - 11 - 16	-25 °C to +35 °C	538 280 34 **A**4 – E – ….
m1200	☐ 840/4000	2190 - 3410 - 5040	13 - 20 - 29	-25 °C to +35 °C	538 480 34 **A**4 – E – ….
m1500	☐ 840/4000	2740 - 5290 - 6300	16 - 30 - 36	-25 °C to +35 °C	538 680 34 **A**4 – E – ….

▨ Standard luminous flux T8, for other lumen packages, see appendix E

When ordering, please replace the highlighted letters with the corresponding numbers

Luminaire tube / A

3 = PC Tropal® (fracture proof)
4 = PMMA Transopal® (impact strengthened)

LUZERN 38 LED – TYPE 2 – 24 V DC LED

Version		Luminous flux/lm	System power/W, 24 V	Ambient temperature	Article no.
m500	☐ 840/4000	1220	12	-40 °C to +30 °C	538 **A**12 34 00
m1000	☐ 840/4000	2440	24	-40 °C to +30 °C	538 **A**24 34 00
m1500	☐ 840/4000	3660	36	-40 °C to +30 °C	538 **A**36 34 00
m2000	☐ 840/4000	4880	48	-40 °C to +30 °C	538 **A**48 34 00

When ordering, please replace the highlighted letters with the corresponding numbers

Luminaire tube / A

3 = PC Tropal® (fracture proof)
4 = PMMA Transopal® (impact strengthened)

LUZERN 38 LED OPTIONS

Version	Article no.
Halogen-free version	538 032
Through wiring, 2 × 1.5 mm²	538 690
Luminaire tube coated, increased resistance to acids, bases, cleaning agents (anti-graffiti coating)	538 010
② 2 m connecting cable, Lapp Ölflex Classic 110 black 2 × 1.5 mm², with plug	250 15
③ 2 m connecting cable, Lapp Ölflex Classic 110 black 2 × 1.5 mm² with plug and 2 m connecting cable, Lapp Ölflex Classic 110 black 2 × 1.5 mm² with coupling	250 13
④ 2 m connecting cable, Lapp Ölflex Classic 110 black 2 × 1.5 mm² with open end and 2 m connecting cable, Lapp Ölflex Classic 110 black 2 × 1.5 mm² with coupling	250 12
⑤ 2 m connecting cable, Lapp Ölflex Classic 110 black 2 × 1.5 mm², with plug and coupling	250 10

LUZERN 38 LED – VERSION TYPE 1 – FOCUSSED LIGHTING ⦿
OPTIONS

Version	Article no.
DALI	100 502
Other colour temperatures	see appendix D

LUZERN 38 LED – VERSION TYPE 2 – 24 V DC LED
OPTIONS

Version	Article no.
Through wiring with 2 couplings and 2 × 2 m connecting cable (2 × 1.5 mm²) (24 V)	available on request
2 m connecting cable, Lapp Ölflex Classic 110 black 2 × 1.5 mm², with open end (230 V) ①	250 11
Other LED colours: red, blue, green, amber (please specify when ordering)	available on request
Additional colour temperatures for version 24V: 3000 K and 5000 K (specify when placing order)	available on request
Sealing cap transparent	538 001

LUZERN 38 LED ACCESSORIES

Version	Article no.
Empty tube for continuous row version, length as specified, max. 4 m	available on request
Plug + connector (piece)	available on request
Plug + connector with 5 m connecting cable, Lapp Ölflex Classic 110 black 2 x 1.5 mm² (Piece)	available on request
Suspension system 1 m made of polymer, with stainless steel clamps (pair)	537 266
Mounting clamps, stainless steel/polymer transparent, Ø 38 mm, for suspension system (pair)	538 319
Mounting clamps, chlorine resistant, polymer grey, Ø 38 mm, for ceiling and wall mounting (pair)	538 003

LUZERN 38 LED – VERSION TYPE 2 – 24 V DC LED
ACCESSORIES

Version	Article no.
Driver in polymer housing, IP 65, protection class II, 24 V DC supply voltage, primary power supply 230/240 V, 0/50/60 Hz. Max. 35 W connected load, 180 x 94 x 57 mm (LxBxH)	537 184
Max. 100 W connected load, 254 x 180 x 63 mm (LxBxH)	537 182
Max. 200 W connected load, 254 x 180 x 90 mm (LxBxH)	537 183
Driver without polymer housing, 24 V DC supply voltage, primary power supply 230/240 V AC/DC. Max. 35 W connected load, 99 x 82 x 36 mm (LxBxH)	643 64
Max. 100 W connected load, 191 x 99 x 45 mm (LxBxH)	614 79
Max. 200 W connected load, 210 x 99 x 50 mm (LxBxH)	547 40

> Mounting clamps for LUZERN 38 LED stainless steel/transparent polymer (pair), included in scope of delivery

> Mounting clamps for LUZERN 38 LED, stainless steel/polymer transparent, Ø 38 mm, for suspension system (pair), Article no. 538 319

> Mounting clamps for LUZERN 38 LED, chlorine resistant, polymer grey, Ø 38 mm, for ceiling and wall mounting (pair) Article no. 538 003

> Plug + connector with 5m connecting cable, Lapp Ölflex Classic 110 black 2 x 1.5 mm² (Piece), available on request

> Plug + connector, available on request

DEFAULT CONNECTING CABLE – TYPE 1 – 230 V

Variant (1)

> 2 m connecting cable, Lapp Ölflex Classic 110 black 2 × 1.5 mm²,
> **with open end**

> **Optional for Type 2 - 24 V DC LED**: Article no. 250 11

OPTIONS CONNECTING CABLES – TYPE 1 – 230 V AND TYPE 2 – 24 V DC LED

Variant (2)

> 2 m connecting cable, Lapp Ölflex Classic 110 black 2 × 1.5 mm²,
> **with plug**
> Article no. 250 15

Variant (3)

> 2 m connecting cable, Lapp Ölflex Classic 110 black 2 × 1.5 mm²,
> **with plug** and 2 m connecting cable, Lapp Ölflex Classic 110 black
> 2 × 1.5 mm², **with coupling**
> Article no. 250 13

Variant (4)

> 2 m connecting cable, Lapp Ölflex Classic 110 black 2 × 1.5 mm²,
> **with open end** and 2 m connecting cable, Lapp Ölflex Classic 110
> black 2 × 1.5 mm², **with coupling**,
> Article no. 250 12

Variant (5)

> 2 m connecting cable, Lapp Ölflex Classic 110 black 2 × 1.5 mm²,
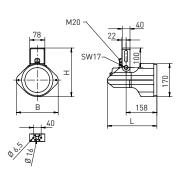> **with plug and coupling**,
> Article no. 250 10

SPICA LED

| IP 54 | | | CE | | D | IK 05 PMMA | IK 08 PC | IK 08 ESG |

medium beam
cover screen
PC opal white

narrow beam

concentrated beam
CDP prism screen

	Lamp	Version	L	B	H	a	Max. weight
NEW	LED	Floodlight	256 mm	215 mm	250 mm	-	1.4 kg

AREAS OF APPLICATION
Polymer floodlight for ceiling and wall-surface mounting with LED. Useable in industrial facilities, under canopies and for facade illumination.

HOUSING
Luminaire housing made from weather-proof thermoplastic PPO, similar to RAL 9005. Aluminium swivel bracket, coated. Useable for indoor and outdoor areas according to protection rating IP54. Additional cover frame and cover screen for preventing water accumulation during uplighting optionally available (see accessories). Short sealing system comprised of age-resistant, form-retaining silicone/synthetic rubber.

LIGHTING TECHNOLOGY
Cover screen made from single-pane safety glass, PC opal white or CDP prism screen with internal aluminium reflector.

ELECTRICAL CONSTRUCTION
Luminaire ready for installation and connection via plug-in terminal. Built-in driver, supply voltage 220-240 V AC/DC. 2 kV transient filter. One cable entry M20.
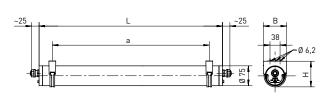
MOUNTING
Ceiling or wall fixation via swivel bracket.

SPICA LED – SINGLE-PANE SAFETY GLASS, NARROW BEAM

Version	Luminous flux/lm	System power/W	Ambient temperature	Article no.
Floodlight ☐ 840/4000 K	3400 lm	22	-25 °C to +40 °C	983 100 24 61

SPICA LED – COVER SCREEN PC OPAL WHITE, MEDIUM BEAM

Version	Luminous flux/lm	System power/W	Ambient temperature	Article no.
Floodlight ☐ 840/4000 K	4240 lm	27	-25 °C to +30 °C	983 100 34 01

SPICA LED – CDP PRISM SCREEN, CONCENTRATED BEAM

Version	Luminous flux/lm	System power/W	Ambient temperature	Article no.
Floodlight ☐ 840/4000 K	3400 lm	22	-25 °C to +40 °C	983 100 84 11

SPICA LED OPTIONS

Version	Article no.
DALI	100 502
RAL coating	983 960
Swimming pool version	983 970

SPICA LED ACCESSORIES

Version	Article no.
Cover frame for ceiling illumination	981 929

ZUG LED EXTREME

EL | IP 65 | IP 66 | IP 67 | IP 68 20m | IP 69K | ⬛ | ⬛ | CE | ⬛ | ⬛ | IK 09 PMMA | IK 10 PC

XARA® lighting control
(see appendix B)

K Other colour temperatures
(see appendix D)

medium beam

	Lamp	Version	L	B	H	a	Max. weight
NEW	LED	m1200	1410 mm	88 mm	97 mm	1310 ± 25 mm	4.0 kg
NEW	LED	m1500	1710 mm	88 mm	97 mm	1610 ± 25 mm	4.9 kg
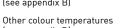
AREAS OF APPLICATION
Tubular luminaire with LED lamps. Useable in industrial applications, in work pits used for maintenance and repair work and for decorative indoor and outdoor lighting with special requirements, such as swimming pools (see options). **Long expected service life, useable up to +65°C.**

HOUSING
Polymer luminaire tube (Ø 75 mm) with two quick-mounting pressure caps and protection against unauthorised opening. Useable for indoor and outdoor areas according to protection rating IP 65, IP 66 and IP 67. Resistant to pressurised water up to 20 m; due to protection rating IP 68, 20 m. Suitable for intensive cleaning processes using pressure washers due to high protection rating IP 69K.

LIGHTING TECHNOLOGY
Luminaire tube made of PMMA Transopal® (impact strengthened) or PC Tropal® (fracture proof), homogeneous illumination.

ELECTRICAL CONSTRUCTION
Luminaire ready for mounting and installation. One cable gland M20 per face side and 4 x 1.5 mm² through-wiring. Built-in driver 230 V AC/DC, optionally suitable for emergency lighting.
L80 B10 > 100,000 h at +65 °C.
4 kV transient filter. 8 years warranty.

MOUNTING
Single or row mounting. Ceiling or wall fixing using two mounting clamps made of stainless steel / polymer black/clear with variable mounting distance, including protections against unauthorised opening.

ZUG LED EXTREME

Version		Luminous flux/lm	System power/W	Ambient temperature	Article no.
m1200	☐ 840/4000	4030	28	-40 °C to +65 °C	777 480 34 **A**1
m1500	☐ 840/4000	5050	35	-40 °C to +65 °C	777 680 34 **A**1

When ordering, please replace the highlighted
letters with the corresponding numbers

Protection tube / A

2 = PMMA Transopal® (impact strengthened)
8 = PC Tropal® (fracture proof)

ZUG LED EXTREME OPTIONS

Version	Article no.
DALI	100 502
Through wiring 4 × 2.5 mm²	775 981
Through wiring 5 × 1.5 mm²	775 831
Through wiring 5 × 2.5 mm²	775 392
Luminaire tube coated, increased resistance to acids, bases, cleaning agents (anti-graffiti coating)	775 010
Halogen-free version	770 035
Emergency lighting versions (Please specify precise specifications in your inquiry)	available on request
Swimming pool version without polymer mounting clamps	770 038
Swimming pool version with polymer mounting clamps	770 039
Inrush current limiter (including 4 kV transient filter)	100 922
Other colour temperatures	see appendix D

ZUG LED EXTREME ACCESSORIES

Version	Article no.
Empty tube for continuous row version, length as specified, max. 4 m	available on request
Mounting clamps, stainless steel/black polymer (pair), (not suitable for chlorine atmosphere)	770 209
Mounting clamps, stainless steel, angled (pair), (not suitable for chlorine atmosphere)	770 118
Mounting clamps, suitable for swimming pools, polymer grey, Ø 75 mm, for ceiling and wall mounting (pair)	770 210
Mounting clamp stainless steel/transparent polymer (pair), (not suitable for chlorine atmosphere)	770 208
Quick mounting clamps (pair), (not suitable for chlorine atmosphere)	770 211
Suspension system for 1 m suspension with stainless steel clamps (pair), (not suitable for chlorine atmosphere)	770 166

> Mounting clamps for ZUG LED EXTREME stainless steel/black/transparent polymer (pair), included in scope of delivery

> Mounting clamps for ZUG LED EXTREME stainless steel/black polymer (pair), Article no. 770 209

> Mounting clamps for ZUG LED EXTREME stainless steel, angled (pair), Article no. 770 118

> Mounting clamps for ZUG LED EXTREME, suitable for swimming pools (pair) Article no. 770 210

> Quick mounting clamps (pair) for ZUG LED EXTREME, Article no. 770 211

> Mounting clamps for ZUG LED EXTREME stainless steel/transparent polymer (pair), Article no. 770 208

> Suspension system for 1 m suspension with stainless steel clamps (pair), Article no. 770 166

> ZUG LED EXTREME continuous row version with empty tube, available on request; shown with mounting clamp, article no. 770 209

ZUG LED EXTREME ACCESSORIES

| Wall and ceiling installation system made of stainless steel	Article no.
End cap with internal luminaire fastening clamp* (* Fixes the luminaire in 5 x 45° steps for a uniform appearance in the continuous row system), (not suitable for chlorine atmosphere)	775 007
Centre piece (not suitable for chlorine atmosphere)	775 008
End cap without luminaire fastening clamp (not suitable for chlorine atmosphere)	775 009
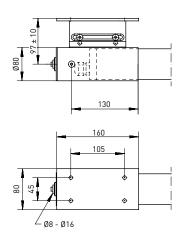
> Wall and ceiling installation system d75 for ZUG LED EXTREME with end cap and centre piece
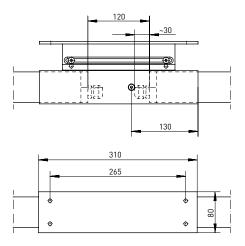

> End cap d75 for ZUG LED EXTREME
  Article no. 775 007 with internal luminaire fastening clamp
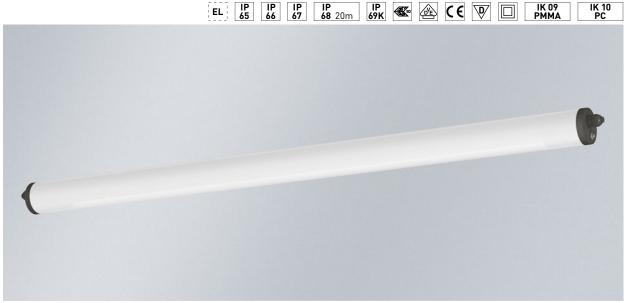 Article no. 775 009 without luminaire fastening clamp

> Centre piece d75 for ZUG LED EXTREME
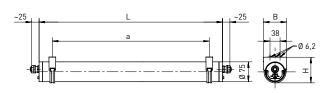 Article no. 775 008

ZUG LED HIGH OUTPUT

| EL | IP 65 | IP 66 | IP 67 | IP 68 20m | IP 69K | | | CE | | | IK 09 PMMA | IK 10 PC |

XARA® lighting control
(see appendix B)

K Other colour temperatures
(see appendix D)

medium beam

	Lamp	Version	L	B	H	a	Max. weight
NEW	LED	m1200	1410 mm	88 mm	97 mm	1310 ± 25 mm	4.0 kg
NEW	LED	m1500	1710 mm	88 mm	97 mm	1610 ± 25 mm	4.9 kg

AREAS OF APPLICATION
Tubular luminaire with LED lamps. Useable in industrial applications and for areas with special safety requirements and special demands on the illumination level from great mounting heights. **Useable up to +35 °C.**

HOUSING
Polymer luminaire tube (Ø 75 mm) with two quick-mounting pressure caps and protection against unauthorised opening. Resistant to pressurised water up to 20 m, compliant with IP 68 rating, 20 m. Useable in indoor and outdoor areas according to IP 65 and IP 66. Suitable for intensive cleaning processes using pressure washers due to high protection rating IP 69K.

LIGHTING TECHNOLOGY
Luminaire tube made of PMMA Transopal® (impact strengthened) or PC Tropal® (fracture proof), homogeneous illumination.

ELECTRICAL CONSTRUCTION
Luminaire ready for mounting and installation. Two face side cable glands (M20) and 4 x 1.5 mm² through-wiring. Built-in driver 230 V AC/DC, optionally suitable for emergency lighting.
L80 B10 > 100,000 h at +35 °C.
4 kV transient filter. 8 years warranty.

MOUNTING
Single or row mounting. Ceiling or wall fixing using two mounting clamps made of stainless steel/polymer black/clear with variable mounting distance, including protections against unauthorised opening.

ZUG LED HIGH OUTPUT

Version		Luminous flux/lm	System power/W	Ambient temperature	Article no.
m1200 HO1	☐ 840/4000	5330	38	-40 °C to +35 °C	778 480 34 **A**1 – 5330lm
m1200 HO2	☐ 840/4000	6610	48	-40 °C to +35 °C	778 480 34 **A**1 – 6610lm
m1200 HO3	☐ 840/4000	7900	58	-40 °C to +35 °C	778 480 34 **A**1 – 7900lm
m1500 HO1	☐ 840/4000	6600	47	-40 °C to +35 °C	778 680 34 **A**1 – 6600lm
m1500 HO2	☐ 840/4000	11490	85	-40 °C to +35 °C	778 680 34 **A**1 – 11490lm
m1500 HO3	☐ 840/4000	13100	97	-40 °C to +35 °C	778 680 34 **A**1 – 13100lm

When ordering, please replace the highlighted
letters with the corresponding numbers

Protection tube / A

2 = PMMA Transopal® (impact strengthened)
8 = PC Tropal® (fracture proof)

ZUG LED HIGH OUTPUT OPTIONS

Version	Article no.
DALI	100 502
Through wiring 4 × 2.5 mm²	775 981
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Halogen-free version	770 035
Emergency lighting versions (Please specify precise specifications in your inquiry)	available on request
Swimming pool version without polymer mounting clamps	770 038
Swimming pool version with polymer mounting clamps	770 039
Inrush current limiter (including 4 kV transient filter)	100 922
Other colour temperatures	see appendix D

ZUG LED HIGH OUTPUT ACCESSORIES

Version	Article no.
Empty tube for continuous row version, length as specified, max. 4 m	available on request
Mounting clamps, stainless steel/black polymer (pair), (not suitable for chlorine atmosphere)	770 209
Mounting clamps, stainless steel, angled (pair), (not suitable for chlorine atmosphere)	770 118
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Mounting clamp stainless steel/transparent polymer (pair), (not suitable for chlorine atmosphere)	770 208
Quick mounting clamps (pair), (not suitable for chlorine atmosphere)	770 211
Suspension system for 1 m suspension with stainless steel clamps (pair), (not suitable for chlorine atmosphere)	770 166

> Mounting clamps for ZUG LED HIGH OUTPUT, stainless steel/black/transparent polymer (pair), included in scope of delivery

> Mounting clamps for ZUG LED HIGH OUTPUT stainless steel/black polymer (pair), Article no. 770 209

> Mounting clamps for ZUG LED HIGH OUTPUT, stainless steel, angled (pair), Article no. 770 118

> Mounting clamps for ZUG LED HIGH OUTPUT, suitable for swimming pools (pair) Article no. 770 210

> Quick mounting clamps (pair) for ZUG LED HIGH OUTPUT, Article no. 770 211

> Mounting clamps for ZUG LED HIGH OUTPUT stainless steel/transparent polymer (pair), Article no. 770 208

> Suspension system for 1 m suspension with stainless steel clamps (pair), Article no. 770 166

> ZUG LED HIGH OUTPUT continuous row version with empty tube, available on request; shown with mounting clamp, article no. 770 209

ZUG LED HIGH OUTPUT ACCESSORIES

| Wall and ceiling installation system made of stainless steel	Article no.
End cap with internal luminaire fastening clamp* (* Fixes the luminaire in 5 x 45° steps for a uniform appearance in the continuous row system), (not suitable for chlorine atmosphere)	775 007
Centre piece (not suitable for chlorine atmosphere)	775 008
End cap without luminaire fastening clamp (not suitable for chlorine atmosphere)	775 009
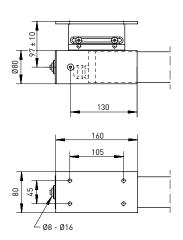
> Wall and ceiling installation system d75 for ZUG LED HIGH OUTPUT with end cap and centre piece
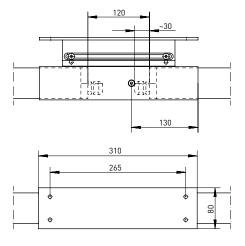

> End cap d75 for ZUG LED HIGH OUTPUT
  Article no. 775 007 with internal luminaire fastening clamp
  Article no. 775 009 without luminaire fastening clamp

> Centre piece d75 for ZUG LED HIGH OUTPUT
  Article no. 775 008

FURTHER INFORMATION AND APPENDIX

ILLUMINATION LEVELS

Recommended illumination levels according to DIN EN 12464-1:2011 (D) or DIN EN 12464-2:2014 (D)

Interior lighting

Type of room, task	E_m	UGRL	R_a
Traffic zones			
Transport areas and corridors	100	28	40
Stairs, escalators, moving walkways	150	25	40
Loading ramps, loading areas	150	25	40
Control rooms			
Canteens, kitchens	200	22	80
Break rooms	100	22	80
Exercise rooms	300	22	80
Wardrobes, washrooms, bathrooms, toilets	200	25	80
Sanitary rooms	500	19	80
Medical rooms	500	16	90
Control rooms			
Rooms for domestic systems, switchgear compartments	200	25	60
Telex and post rooms, telephone exchanges	500	19	80
Storage and cold rooms			
Storage rooms	100	25	60
Dispatch and packaging areas	300	25	60
(High) bay storage facilities			
Transport routes without personnel traffic	20	-	40
Transport routes with personnel traffic	150	22	60
Control room	150	22	60
Bakeries			
Preparation and baking rooms	300	22	80
Finishing, glazing, decorating	500	22	80
Cement, cement goods, concrete, bricks			
Drying	50	28	20
Material preparation, work on furnaces and mixers	200	28	40
General machine work	300	25	80
Rough moulding	300	25	80
Ceramics, tiles, glass, glass products			
Drying	50	28	20
Material preparation, general machine work	300	25	80
Enamelling, rolling, pressing, forming of simple parts, glazing, glass blowing	300	25	80
Grinding, engraving, glass polishing, forming of small parts, production of glass instruments	750	19	80
Grinding of optical glasses, crystal glass, hand grinding and engraving, work on medium-sized parts	750	16	80
Detailed work (e.g. grinding of fine decorations), hand painting	1000	16	90
Production and processing of synthetic precious stones	1500	16	90

Type of room, task	E_m	UGRL	R_a
Chemical industry, polymer and rubber industry			
Processing plants with remote control	50	–	20
Processing plants with occasional manual intervention	150	28	40
Constantly manned workstations in processing plants	300	25	80
Precision measuring rooms, laboratories	500	19	80
Medicine production	500	22	80
Tyre production	500	22	80
Colour proofing	1000	16	90
Cutting, reworking, inspection work	750	19	80
Electronics industry			
Cable and wire production	300	25	80
Winding – large coils	300	25	80
– medium-sized coils	500	22	80
– fine coils	750	19	80
Coil impregnation	300	25	80
Galvanising	300	25	80
Assembly work – major work (e.g. large transformers)	300	25	80
– normal work (e.g. switchboards)	500	22	80
– fine work (e.g. telephones)	750	19	80
– very fine work (e.g. measuring instruments)	1000	16	80
Electronic workshops, inspections, adjustments	1500	16	80
Food and beverage industry			
Workstations and zones – in breweries, on malting floors, – for washing, filling in barrels, for cleaning, filtering, peeling – for cooking in factories for tinned food and chocolate, – in sugar factories – for drying and fermenting of leaf tobacco, fermenting cellars	200	25	80
Sorting and washing of products, milling, mixing, packing	300	25	80
Workstations and critical areas in slaughterhouses, butchers, dairies, mills and on filter levels in sugar refineries	500	25	80
Slaughterhouses – meat inspection points	540	25	80
– work rooms and stables for ill animals or those showing signs of illness	300	25	–
– storage rooms and stables	110	25	80
Cutting and sorting of fruit and vegetables	300	25	80
Production of delicatessen products, kitchen work, production of cigars and cigarettes	500	22	80

Type of room, task	E_m	UGRL	R_a
Inspection of glasses and bottles, product inspections, garnishing, sorting and decorating	500	22	80
Laboratories	500	19	80
Colour inspections	1000	16	90
Foundries			
Accessible underfloor tunnels, cellars etc.	50	–	20
Platforms	100	25	40
Sand preparation	200	25	80
Fettling shop	200	25	80
Workstations on cupola furnace and mixer	200	25	80
Foundry workshops	200	25	80
Emptying points	200	25	80
Machine moulding shop	200	25	80
Manual and core moulding shop	300	25	80
Die casting shop	300	25	80
Model making	500	22	80
Jewellery production			
Processing of precious stones	1500	16	90
Manufacturing of jewellery items	1000	16	90
Watchmaking (manual)	1500	16	80
Watch manufacturing (automated)	500	19	80
Laundries and dry cleaning			
Goods receipt, labelling and sorting	300	25	80
Washing and dry cleaning	300	25	80
Ironing and pressing	300	25	80
Inspection and corrections	750	19	80
Leather and leather goods			
Work in vats, barrels and pits	200	25	40
Scraping, splitting, cutting, milling of skins	300	25	80
Upholstery work, shoe manufacture: Stitching, sewing, polishing, pressing, cutting, stamping	500	22	80
Sorting	500	22	90
Leather tanning (automated)	500	22	80
Quality control	1000	19	80
Colour proofing	1000	16	90
Shoemaking	500	22	80
Glove manufacturing	500	22	80
Metalworking and processing			
Open die forging	200	25	60
Cold rolling mills	200	25	60
Derusting and coating of steel components	200	25	60
Drop forging	300	25	60
Welding	300	25	60
– work areas with robots	300	25	60
Heavy-duty and normal machine work: Tolerances ⩾ 0.1 mm	300	22	60

Type of room, task	E_m	UGRL	R_a
Fine machine work, grinding: Tolerances < 0.1 mm	500	19	60
Scribing, inspections	750	19	60
Wire and pipe drawing, cold forming	300	25	60
Processing of heavy plates: Thickness ⩾ 5 mm	200	25	60
Processing of lightweight plates: Thickness < 5 mm	300	22	60
Production of tools and cutting devices	750	19	60
Pre-assembly of heating and ventilation systems	200	25	60
Locksmith and plumbing	300	25	60
Repair shops for machines and systems	500	22	80
Assembly work: – heavy-duty	200	25	80
– medium fine	300	25	80
– fine	500	22	80
– very fine	750	19	80
Galvanising	300	25	80
Surface treatment and coating	750	25	80
Tool, gauge and fixture construction, precision engineering and microengineering	1000	19	80
Paper and paper products			
Work on block books, edge runners, wood milling	200	25	80
Paper production and processing, paper and corrugated cardboard machines, cardboard manufacturing	300	25	80
General bookbinding work (e.g. folding, sorting, glueing, cutting, stamping, stitching)	500	22	80
Power stations			
Fuel supply facilities	50	–	20
Boiler houses	100	28	40
Machinery shops	200	25	80
Side rooms (e.g. pump rooms, capacitor rooms etc.), switchgear (in buildings)	200	25	60
Control rooms	500	16	80
Maintenance work on turbines and generators	500	16	80
Outdoor switchgear	20	–	20
Printers			
Cutting, gold-plating, embossing, work on stones and plates, printing machines, die production	500	19	80
Paper sorting and hand printing	500	19	80
Typesetting, retouching and lithographic work	1000	19	80
Colour inspection on multicoloured printing	1500	16	90
Steel and copper plating	2000	16	80

ILLUMINATION LEVELS

Interior lighting

Type of room, task	E_m	UGRL	R_a
Mills, iron and steel works			
Production plants without manual intervention	50	–	20
Production plants with occasional manual intervention	150	28	40
Production plants with constant manual intervention	200	25	80
Slab storage	50	-	20
Blast furnace	200	25	20
Roll train, reels, cutting / separation sections	300	25	40
Control platforms, control stands	300	22	80
Testing, measuring and inspection sites	500	22	80
Accessible underfloor tunnels, conveyors, cellars etc.	50	–	20
Textile production and processing			
Workstations and zones on baths, bale separation	200	25	60
Carding, washing, pressing, working on the shredder, stretching, combing, smoothing, card cutting, pre-spinning, jute and hemp spinning	300	22	80
Spinning, twining, coiling, winding	500	22	80
Warping, weaving, braiding, knitting	500	22	80
Stitching, fine knitting, picking up stitches	750	22	80
Designing, drawing patterns	750	22	90
Dressing, dyeing	500	22	80
Drying room	100	28	60
Automatic textile printing	500	25	80
Napping, linking, brushing	1000	19	80
Colour inspection, material inspection	1000	16	90
Invisible mending	1500	19	90
Millinery	500	22	80
Automotive manufacturing			
Garages	300	25	80
Body construction and assembly	500	22	80
Painting, spray cabin, sanding cabin	750	22	80
Painting: inspection and corrections	1000	19	90
Upholstery	1000	19	80
Final inspection	1000	19	80
Wood production and processing			
Automatic processing (e.g. drying, plywood manufacturing)	50	28	40
Steam pits	150	28	40
Gate saws	300	25	60
Work on the bench, gluing, assembly	300	25	80
Sanding, painting, pattern making	750	22	80
Work on woodworking machines (e.g. turning, chamfering, dressing, joining, cutting, sawing, milling)	500	19	80
Selection of veneer	750	22	90
Marquetry, wood inlaying	750	22	90
Quality control	1000	19	90

Type of room, task	E_m	UGRL	R_a
Airports			
Arrival and departure lounges, baggage reclaim	200	22	80
Transport areas, escalators, moving walkways	150	22	80
Information desks, check-in desks	500	19	80
Customs and passport control desks	500	19	80
Waiting areas	200	22	80
Left luggage rooms	200	25	80
Security check area	300	19	80
Airport tower	500	16	80
Hangars for tests and repairs	500	22	80
Engine testing areas	500	22	80
Measuring areas in hangars	500	22	80
Car parks			
Entries and exits (daytime)	300	25	20
Entries and exits (nighttime)	75	25	20
Driveways	75	25	20
Parking spaces	75	-	20
Ticket window	300	19	80

Type of room, task	E_m	UGRL	R_a
Agriculture			
Loading and operating of conveyors and machines	200	25	80
Stables	50	–	40
Milking zones	100	25	40
Milking stands	200	25	40
Barn, loft, shed	50	–	40
Stables for ill animals, calving pens	200	25	80
Feed preparation, milk storage and processing, device cleaning	200	25	80
Greenhouses – general lighting, depending on plant type	50 to 500	25	–
– growth support	1000 to 5000	25	–
Workshop, heavy-duty assembly work	200	25	80
Animal stands	50	–	40
Open tool sheds	50	–	20
Tank storage	200	25	60
Bottle storage	200	25	60
Wine pressing	300	22	80
Cold rooms, storage rooms	300	22	80
Sales and sampling areas	300	19	80
Parking for vehicles	100	25	60
Equipment and storage rooms with special equipment (shelves, cabinets)	100	22	60
Common rooms, kitchens, operation centres	200	22	80
– general lighting	300	19	80
– at workstation	500	19	80
Workshops	300	25	80
Wash halls	100	25	80
Duty rooms, break rooms	100	22	80
– reading tasks	300	22	80
Washrooms, showers, toilets, changing rooms, drying rooms	200	25	80

NOTE: For more details on planning lighting systems, uniform lighting, colour temperatures, colour rendering, glare reduction, details on measurement, the distribution of measuring points in the room and general lighting requirements, please refer to DIN EN 12464-1:2011 (D).

[1] $E_{min} / E_{max} \geq 0.33$ [2] $E_{min} / E_{max} \geq 0.20$

ILLUMINATION LEVELS

Outdoor lighting

Type of area, task or activity	E_m lx	U_0	GR_L	R_a
General transport areas				
Footpaths, for pedestrians only	5	0.25	50	20
Routes for slow moving vehicles (max.10 km/h), e.g. bicycles, lorries, diggers	10	0.40	50	20
Regular traffic (max. 40 km/h)	20	0.40	45	20
Pedestrian footpaths, vehicle turning points, loading/unloading points	50	0.40	50	20
Airports				
Areas in front of hangars	20	0.10	55	20
Airport apron	30	0.20	50	40
Loading areas	50	0.20	50	40
Tank storage	50	0.20	50	40
Aircraft maintenance areas	200	0.50	45	60
Building sites				
Clearing work, excavation and loading	20	0.25	55	20
Building areas, laying of drainage pipes, transportation, auxiliary and storage work	50	0.40	50	20
Installation of supporting structure elements, simple reinforcement tasks, shuttering work and final assembly, laying of electrical lines and cables	100	0.40	45	40
Connection of supporting structure elements, demanding assembly of electrical lines, machines and supply lines	200	0.50	45	40
Canals, locks and port facilities				
Quay facilities (waiting areas) on locks and canals	10	0.25	50	20
Pontoons and junctions for pedestrians only	10	0.25	50	20

Type of area, task or activity	E_m lx	U_0	GR_L	R_a
Lock operating and monitoring areas	20	0.25	55	20
Freight handling, loading and unloading	30	0.25	55	20
Passenger areas at harbours	50	0.40	50	20
Connection of hoses, pipes and wires	50	0.40	50	20
Hazard points on roads and pavements	50	0.40	45	20
Service stations and petrol stations				
Parking spaces for vehicles	5	0.25	50	20
Entry and exit: dark surroundings (e.g. in countryside and small towns)	20	0.40	45	20
Entry and exit: bright surroundings (e.g. in cities)	50	0.40	45	20
Air and water inspection areas, other service areas	150	0.40	45	20
Reading point for measuring devices	150	0.40	45	20

Type of area, task or activity	E_m lx	U_0	GR_L	R_a
Industrial plants and storage facilities				
Brief handling of large parts and materials, loading and unloading of bulky goods	20	0.25	55	20
Constant handling of large parts and materials, loading and unloading of freight, working areas on cranes, open loading platforms	50	0.40	50	20
Reading of labels, covered loading platforms, tool use, production of pre-cast reinforced-concrete units	100	0.50	45	20
Demanding electronic, machine and pipe installation, inspections	200	0.50	45	60
Offshore gas and oil platforms				
Sea surface underneath the platform	30	0.25	50	20
Ladders, steps, walkways	100	0.25	45	20
Boat pontoons, transport areas	100	0.25	50	20
Helicopter landing pad	100	0.40	45	20
Drilling tower	100	0.50	45	40
Processing areas	100	0.50	45	40
Pipeline depot, deck	150	0.50	45	40
Test room, vibrator, drill head	200	0.50	45	40
Pump areas	200	0.50	45	20
Lifeboat areas	200	0.40	50	20
Drilling floor, drilling area, platform on drilling tower	300	0.50	40	40
Sludge chamber, sampling room	300	0.50	40	40
Crude oil pumps	300	0.50	45	40
Plant areas	300	0.50	40	40
Turntable	500	0.50	40	40
Car parks				
Light traffic, e.g. parking for shops, houses and flats, bicycle storage)	5	0.25	55	20
Medium traffic, e.g. parking for warehouses, office buildings, factories, sports halls and multi-function buildings)	10	0.25	50	20
Heavy traffic, e.g. parking for schools, churches, major shopping centres, major sports facilities and multi-function buildings)	20	0.25	50	20

Type of area, task or activity	E_m lx	U_0	GR_L	R_a
Petrochemical plants and other high-risk industrial facilities				
Handling service tools, pressing hand valves, switching engines on and off, igniting burners	20	0.25	55	20
Loading and unloading of container vehicles and wagons with non-hazardous materials, inspection of leaks, pipes and gaskets	50	0.40	50	20
Loading and unloading of container vehicles and wagons with hazardous materials, replacing pump gaskets, general servicing tasks, reading of measuring instruments	100	0.40	45	40
Fuel loading/unloading points	100	0.40	45	20
Repair of machines and electrical equipment	200	0.50	45	60
Power plants, electric/gas/ heating power stations				
Personnel movement inside secure electric areas.	5	0.25	50	20
Handling of service tools, handling of coal	20	0.25	55	20
Complete inspection	50	0.40	50	20
General service tasks and reading of measuring instruments	100	0.40	45	40
Wind tunnels: service and maintenance	100	0.40	45	40
Repair of electrical equipment	200	0.50	45	60

ILLUMINATION LEVELS

Outdoor lighting

Type of area, task or activity	E_m lx	U_0	GR_L	R_a
Railways and tramways				
Please note the applicable railway regulations and the technical standards of the corresponding operator				
Sawmills				
Handling of wood on land and water, conveyors for wood chips and sawdust	20	0.25	55	20
Sorting of wood on land and water, wood unloading points and board loading points, lifting gear for loading the conveyor belts, stacking	50	0.40	50	20
Reading of addresses and markings on boards	100	0.40	45	40
Classification and packaging	200	0.50	45	40
Loading of peeling and splitting machines	300	0.50	45	40
Shipyards and docks				
General lighting on shipyard, storage areas for pre-assembled goods	20	0.25	55	40
Brief handling of large parts	20	0.25	55	20
Cleaning work on ship hull	50	0.25	50	20
Coating and welding work on ship hull	100	0.40	45	60
Installation of electrical and mechanical parts	200	0.50	45	60
Water and drainage systems				
Use of tools, operation of hand valves, commissioning and decommissioning engines, sealing off pipes, electronic unit	50	0.40	45	20
Handling of chemicals, leak tests, pump replacement, general maintenance tasks, reading of instruments	100	0.40	45	40
Repair of engines and electrical equipment	200	0.50	45	60

NOTE For more details on planning lighting systems, uniform lighting, colour temperatures, colour rendering, glare reduction and details on measurement, the distribution of measuring points in the room and general lighting requirements, please refer to EN 12464-2:2014 (D).

Sport	BK III	BK II	BK I
Athletics	200	300	500
Dancing	200	300	500
Football	200	500	750
Cycling	200	500	750
Horse riding	200	300	500
Gymnastics	200	300	500
Ice hockey	300	500	750
Judo	200	500	750
Karate	200	500	750
Artistic gymnastics	200	300	500
Handball	200	500	750
Basketball	200	500	750
Volleyball	200	500	750
Ice skating	300	500	750
Boxing	500	1000	2000
Table tennis	300	500	750
Tennis	300	500	750
Badminton	300	500	750
Squash	300	500	750
Swimming	200	300	500

Minimum horizontal illumination levels for various sports. Indoor facilities are divided into three lighting classes:

Lighting class (LC) I:
– Top-level competitions
– Top-level training

Lighting class (LC) II:
– Medium-level competitions
– Medium-level training

Lighting class (LC) III:
– Standard competitions (usually without spectators)
– General training
– General school sports and leisure sports activities

Specifications according to EN 12193, excerpt for indoor facilities

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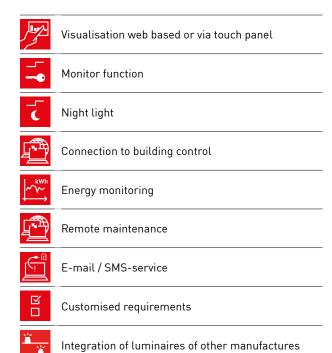http://norka.com/gtc.

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rate on the day of delivery.

⟳ XARA® FUNCTION OVERVIEW
APPENDIX B

Our XARA® lighting control system provides a vast range of functions. Here you find a selection of these. Please consult us for further functions.

Motion detection	Visualisation web based or via touch panel
Daylight-level and motion detection	Monitor function
Daylight detection control	Night light
Daylight detection control and motion detection	Connection to building control
Integration of switching elements	Energy monitoring
Time-dependent contorl / day and week plans	Remote maintenance
Integration of single and central battery emergency luminaires	E-mail / SMS-service
Error search driver failure	Customised requirements
Error search LED / lamp failure	Integration of luminaires of other manufactures
Error search communication DALI-bus	
Text book emergency luminaires according VDE 0108	

Ⓚ COLOUR TEMPERATURE
APPENDIX D

LED luminaires with FOCUSSED LIGHTING Ⓞ and additional selected luminaires are available in the colour temperatures listed here. Please additionally enter the article number of the desired colour temperature when ordering. The default colour temperature is 4000 K.

FURTHER COLOUR TEMPERATURES

For single lamp version, m600	Article no.
🟧 2700K	122 700
🟥 3000K	123 000
🟦 5000K	125 000
🟦 6500K	126 500
For single lamp version, m1200	
🟧 2700K	142 700
🟥 3000K	143 000
🟦 5000K	145 000
🟦 6500K	146 500
For single lamp version, m1500	
🟧 2700K	162 700
🟥 3000K	163 000
🟦 5000K	165 000
🟦 6500K	166 500
For twin lamp version, m600	
🟧 2700K	222 700
🟥 3000K	223 000
🟦 5000K	225 000
🟦 6500K	226 500
For twin lamp version, m1200	
🟧 2700K	242 700
🟥 3000K	243 000
🟦 5000K	245 000
🟦 6500K	246 500
For twin lamp version, m1500	
🟧 2700K	262 700
🟥 3000K	263 000
🟦 5000K	265 000
🟦 6500K	266 500

LUMEN PACKAGES OF LAMPS FOR m600

SINGLE LAMP
BERN LED, ERFURT LED, ZUG LED

Article number of the lumen package		System power/W	Lamp luminous flux/lm
MC 1		9	1300
MC 3	(≙ 18 W, T8)	11	1710
MC 5		13	2110
MC 7		17	2730
MC 9		18	2930

TWIN LAMP
ERFURT LED

Article number of the lumen package		System power/W	Lamp luminous flux/lm
MC 1		14	2600
MC 3	(≙ 2 x 18 W, T8)	18	3420
MC 5		22	4220
MC 7		30	5460
MC 9		32	5860

SINGLE LAMP
MÜNCHEN LED

Article number of the lumen package		System power/W	Lamp luminous flux/lm
MC 1		10	1380
MC 3	(≙ 18 W, T8)	13	1740
MC 5		15	2090
MC 7		19	2630
MC 9		20	2800

SINGLE LAMP
BRIG, LUZERN 38 LED

Article number of the lumen package		System power/W	Lamp luminous flux/lm
MC 1		8	1100
MC 3	(≙ 18 W, T8)	10	1500
MC 5		11	1710
MC 7		13	2110
MC 9		16	2520

LUMEN PACKAGES OF LAMPS FOR m1200

SINGLE LAMP
BERN LED*, BITBURG LED, COBURG LED**, ERFURT LED, FULDA LED, GERA LED, JENA LED, ZUG LED, ZUG LED AL

Article number of the lumen package		System power/W	Lamp luminous flux/lm
MC 1		16	2600
MC 3	(≙ 36 W, T8)	20	3420
MC 5		27	4640
MC 7		34	5860
MC 9		36	6270

TWIN LAMP
ERFURT LED, GENF LED

Article number of the lumen package		System power/W	Lamp luminous flux/lm
MC 1		32	5200
MC 3	(≙ 2 x 36 W, T8)	40	6840
MC 5		54	9280
MC 7		68	11720
MC 9		72	12540

SINGLE LAMP
BRÜNN LED, MÜNCHEN LED

Article number of the lumen package		System power/W	Lamp luminous flux/lm
MC 1		19	2770
MC 3	(≙ 36 W, T8)	24	3480
MC 5		31	4540
MC 7		41	5960
MC 9		44	6320

SINGLE LAMP
BRIG, LUZERN 38 LED

Article number of the lumen package		System power/W	Lamp luminous flux/lm
MC 1		13	2190
MC 3	(≙ 36 W, T8)	18	3000
MC 5		20	3410
MC 7		25	4230
MC 9		29	5040

E

LUMEN PACKAGES OF LAMPS FOR m1500

BERN LED*, BITBURG LED, COBURG LED**
ERFURT LED, FULDA LED, GERA LED, JENA LED,
ZUG LED, ZUG LED AL

Article number of the lumen package		System power/W	Lamp luminous flux/lm
MC 1		25	4270
MC 3	(≙ 58 W, T8)	30	5280
MC 5		36	6300
MC 7		42	7320
MC 9		44	7830

ERFURT LED, GENF LED

Article number of the lumen package		System power/W	Lamp luminous flux/lm
MC 1		50	8540
MC 3	(≙ 2 x 58 W, T8)	60	10560
MC 5		72	12600
MC 7		84	14640
MC 9		88	15660

BRÜNN LED, MÜNCHEN LED

Article number of the lumen package		System power/W	Lamp luminous flux/lm
MC 1		29	4350
MC 3	(≙ 58 W, T8)	35	5240
MC 5		44	6570
MC 7		50	7450
MC 9		53	7900

BRIG, LUZERN 38 LED

Article number of the lumen package		System power/W	Lamp luminous flux/lm
MC 1		16	2740
MC 3		22	3760
MC 5		25	4270
MC 7	(≙ 58 W, T8)	30	5290
MC 9		36	6300

NOTE:
NORKA LED products mainly have a service life of **L80 B10 > 60,000 h.**
Divergent service lives are specified separately.

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   * BERN LED: Version m1200 and m1500 are not available with lumen package MC 9.
  ** COBURG LED: plus 2 W system power
       Standard luminous flux, corresponds to the luminous flux of a luminaire with T8 of the same length

E