iX-led Edition 2

Circulus T5R ring modules

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Circulus T5R ring modules — replacement for T5 ring lamps

Expansion of the Circulus LED module family – the new Circulus T5R ring lights

The Circulus T5R ring lights expand our successful Circulus LED module family with a versatile and powerful solution for modern lighting concepts. The T5R series was developed as a replacement for conventional T5 ring lamps. They combine the
familiar form factor for easy conversion of existing luminaires with the high efficiency and long service life of modern LED technology. The series is available in diameters of Ø 214 mm, Ø 289 mm, and Ø 363 mm.

Our modules offer a standard color rendering index (CRI) of 80 – ideal for most commercial, industrial, and residential applications. For particularly demanding lighting tasks, such as in retail or museum settings, the modules are also available with CRI 90 in KSF technology upon request.

For maximum flexibility, there are eight different light colors (CCT) to choose from: 2200 K, 2700 K, 3000 K, 3500 K, 4000 K, 5000 K, 5700 K, and 6500 K.

The Circulus T5R ring lights thus open up a wide range of design options – from atmospheric warm-toned lighting to neutral or daylight-like color temperatures.

Your advantages at a glance:

- √ **Easy replacement for T5 ring lamps** – no need for costly conversion of existing luminaires
- √ **High energy efficiency** with minimal maintenance
- √ **Long service life** and stable light over many years
- √ **Wide range of color temperatures** for every application
- √ **Optional CRI 90 version** for the highest light quality requirements

Our iX-led standard modules are available at short notice and are favorable in the overall concept.

Standard does not mean rigid and unchangeable!

Do you need different light colors, different color renderings or minimally shorter/longer versions of the modules? You need the assembly of soldering nuts as spacers or a threaded insert for simplified mounting of the module? No problem. Other terminals or soldered cables are also possible. With the iX-led product family we can adapt and individualize the standard to your needs.

Explore our exclusive module series with more than 1000 lighting possibilities.

LED module with mid-power LEDs for installation in luminaires.

As a replacement for T5 ring lamps in 22 W, 32 W, 40 W, 55 W and 60 W.

Versatile with:

√ LED module in 3 different diameters: Ø 214 mm, Ø 289 mm and Ø 363 mm

√ color rendering: CRI 80 - CRI 90 in KSF technology on request

√ 8 light colors: CCT 2200 K, 2700 K, 3000 K, 3500 K, 4000 K, 5000 K, 5700 K and 6500 K

Excellent color consistency in the module: 3 Step MacAdam LEDs.

Plug-in terminals for easy and quick mounting.

For operation on suitable constant current drivers.

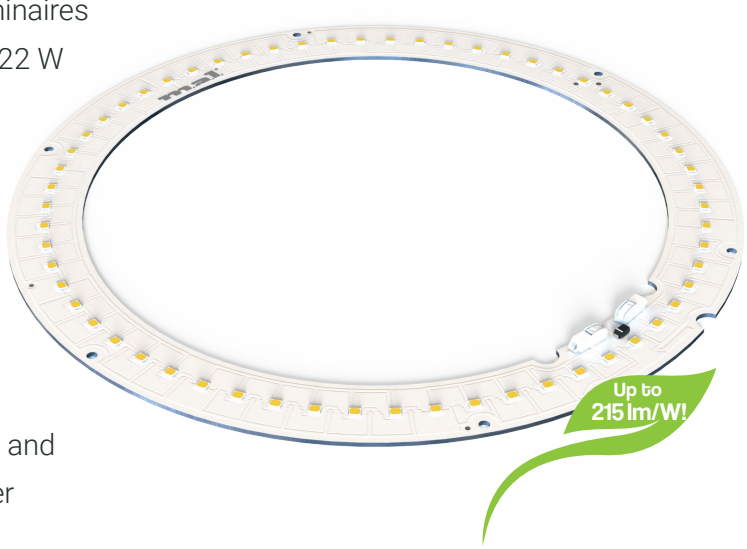
Maximum working voltage	250 V
Ambient temperature	-20…+50 °C
Max. perm. operating temperature (Tc)	80 °C
EPREL database entry	yes
Beam angle	120°
Risk group	RG1

Connections:

Terminals		2
Connection type		rigid / flexible
Conductor cross-section AWG		AWG 18-24
Conductor cross-section	from	0.2 mm²
	to	0.75 mm²
Stripping length		8 - 9 mm

Circulus T5R G1 22 - Replacement for T5 ring lamps

- √ ring-shaped LED module for installation in luminaires
- √ Intended as a replacement for T5R lamp with 22 W
- √ 60 Mid-Power LEDs
- √ pitch distance 11.2 mm
- √ diameter outside 238 mm and inside 190 mm
- √ two connection terminals
- √ rated current 350 mA
- √ maximum operating current 1050 mA
- √ maximum forward voltage 30 V
- √ The 3 ring modules Circulus 214, Circulus 289 and Circulus 363 can be arranged inside each other



Please also refer to the technical data of the Circulus T5R family on page 4.
Further technical data and drawings from page 8.

CRI	CCT	Flux typ.	LPW typ.	Flux typ.	LPW typ.	Flux typ.	LPW typ.	order-nr.	description
		If = 150 mA Tc = 25 °C		If = 350 mA Tc = 25 °C		If = 1.050 mA Tc = 25 °C			
≥80	2200 K	655 lm	170 lm/W	1500 lm	163 lm/W	4212 lm	143 lm/W	7543-21000	Circulus T5R G1 22 822
	2700 K	765 lm	192 lm/W	1751 lm	184 lm/W	4915 lm	162 lm/W	7543-21001	Circulus T5R G1 22 827
	3000 K	815 lm	206 lm/W	1866 lm	197 lm/W	5238 lm	174 lm/W	7543-21002	Circulus T5R G1 22 830
	3500 K	815 lm	206 lm/W	1866 lm	197 lm/W	5238 lm	174 lm/W	7543-21003	Circulus T5R G1 22 835
	4000 K	847 lm	216 lm/W	1939 lm	207 lm/W	5444 lm	182 lm/W	7543-21004	Circulus T5R G1 22 840
	5000 K	847 lm	216 lm/W	1939 lm	207 lm/W	5444 lm	182 lm/W	7543-21005	Circulus T5R G1 22 850
	5700 K	847 lm	216 lm/W	1939 lm	207 lm/W	5444 lm	182 lm/W	7543-21006	Circulus T5R G1 22 857
	6500 K	847 lm	216 lm/W	1939 lm	207 lm/W	5444 lm	182 lm/W	7543-21007	Circulus T5R G1 22 865

Up to 5444 lm!

Circulus T5R G1 32/40/55 - Replacement for T5 ring lamps

- √ ring-shaped LED module for installation in luminaires
- √ Intended as a replacement for T5R lamp with 32/42/55 W
- √ 72 Mid-Power LEDs
- √ pitch distance 12.6 mm
- √ diameter outside 313 mm and inside 265 mm
- √ two connection terminals
- √ rated current 350 mA
- √ maximum operating current 1050 mA
- √ maximum forward voltage 36 V
- √ The 3 ring modules Circulus 214, Circulus 289 and Circulus 363 can be arranged inside each other

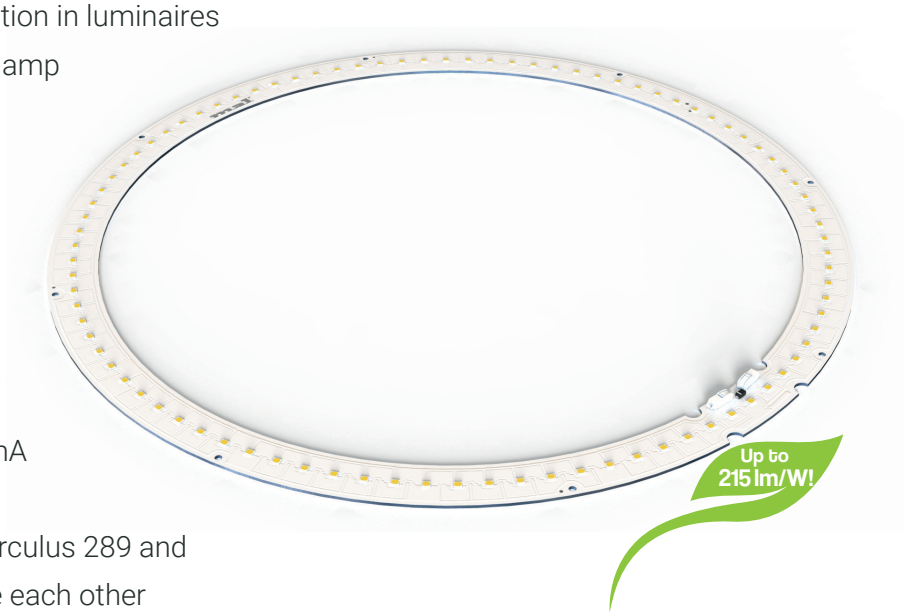
Please also refer to the technical data of the Circulus T5R family on page 4.
Further technical data and drawings from page 8.

CRI	CCT	Flux typ.	LPW typ.	Flux typ.	LPW typ.	Flux typ.	LPW typ.	order-nr.	description
		If = 150 mA Tc = 25 °C		If = 350 mA Tc = 25 °C		If = 1.050 mA Tc = 25 °C			
≥80	2200 K	786 lm	170 lm/W	1800 lm	163 lm/W	5054 lm	143 lm/W	7543-21100	Circulus T5R G1 32/40/55 822
	2700 K	918 lm	192 lm/W	2101 lm	184 lm/W	5899 lm	162 lm/W	7543-21101	Circulus T5R G1 32/40/55 827
	3000 K	978 lm	206 lm/W	2239 lm	197 lm/W	6286 lm	174 lm/W	7543-21102	Circulus T5R G1 32/40/55 830
	3500 K	978 lm	206 lm/W	2239 lm	197 lm/W	6286 lm	174 lm/W	7543-21103	Circulus T5R G1 32/40/55 835
	4000 K	1016 lm	216 lm/W	2327 lm	207 lm/W	6532 lm	182 lm/W	7543-21104	Circulus T5R G1 32/40/55 840
	5000 K	1016 lm	216 lm/W	2327 lm	207 lm/W	6532 lm	182 lm/W	7543-21105	Circulus T5R G1 32/40/55 850
	5700 K	1016 lm	216 lm/W	2327 lm	207 lm/W	6532 lm	182 lm/W	7543-21106	Circulus T5R G1 32/40/55 857
	6500 K	1016 lm	216 lm/W	2327 lm	207 lm/W	6532 lm	182 lm/W	7543-21107	Circulus T5R G1 32/40/55 865

Up to 6532 lm!

Circulus T5R G1 60 - Replacement for T5 ring lamps

- √ ring-shaped LED module for installation in luminaires
- √ Intended as a replacement for T5R lamp with 60 W
- √ 90 Mid-Power LEDs
- √ pitch distance 11.9 mm
- √ diameter outside 387 mm and inside 339 mm
- √ two connection terminals
- √ rated current 350 mA
- √ maximum operating current 1050 mA
- √ maximum forward voltage 48 V
- √ The 3 ring modules Circulus 214, Circulus 289 and Circulus 363 can be arranged inside each other



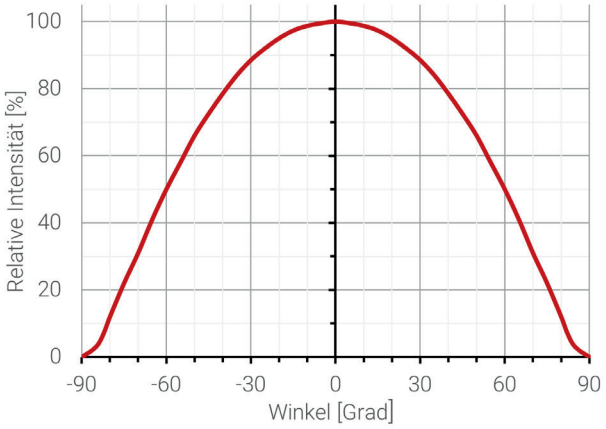
Please also refer to the technical data of the Circulus T5R family on page 4.
Further technical data and drawings from page 8.

CRI	CCT	Flux typ.	LPW typ.	Flux typ.	LPW typ.	Flux typ.	LPW typ.	order-nr.	description
		If = 150 mA Tc = 25 °C		If = 350 mA Tc = 25 °C		If = 1.050 mA Tc = 25 °C			
≥80	2200 K	983 lm	170 lm/W	2250 lm	163 lm/W	6318 lm	143 lm/W	7543-21200	Circulus T5R G1 60 822
	2700 K	1147 lm	192 lm/W	2627 lm	184 lm/W	7373 lm	162 lm/W	7543-21201	Circulus T5R G1 60 827
	3000 K	1222 lm	206 lm/W	2799 lm	197 lm/W	7857 lm	174 lm/W	7543-21202	Circulus T5R G1 60 830
	3500 K	1222 lm	206 lm/W	2799 lm	197 lm/W	7857 lm	174 lm/W	7543-21203	Circulus T5R G1 60 835
	4000 K	1270 lm	216 lm/W	2908 lm	207 lm/W	8165 lm	182 lm/W	7543-21204	Circulus T5R G1 60 840
	5000 K	1270 lm	216 lm/W	2908 lm	207 lm/W	8165 lm	182 lm/W	7543-21205	Circulus T5R G1 60 850
	5700 K	1270 lm	216 lm/W	2908 lm	207 lm/W	8165 lm	182 lm/W	7543-21206	Circulus T5R G1 60 857
	6500 K	1270 lm	216 lm/W	2908 lm	207 lm/W	8165 lm	182 lm/W	7543-21207	Circulus T5R G1 60 865

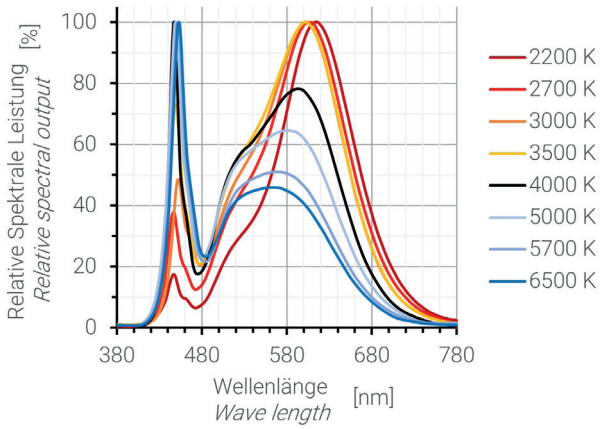
Up to
8165 lm!

Technical data: Circulus T5R G1 - Replacement for T5 ring lamps

Light distribution curve



Spectrum 80



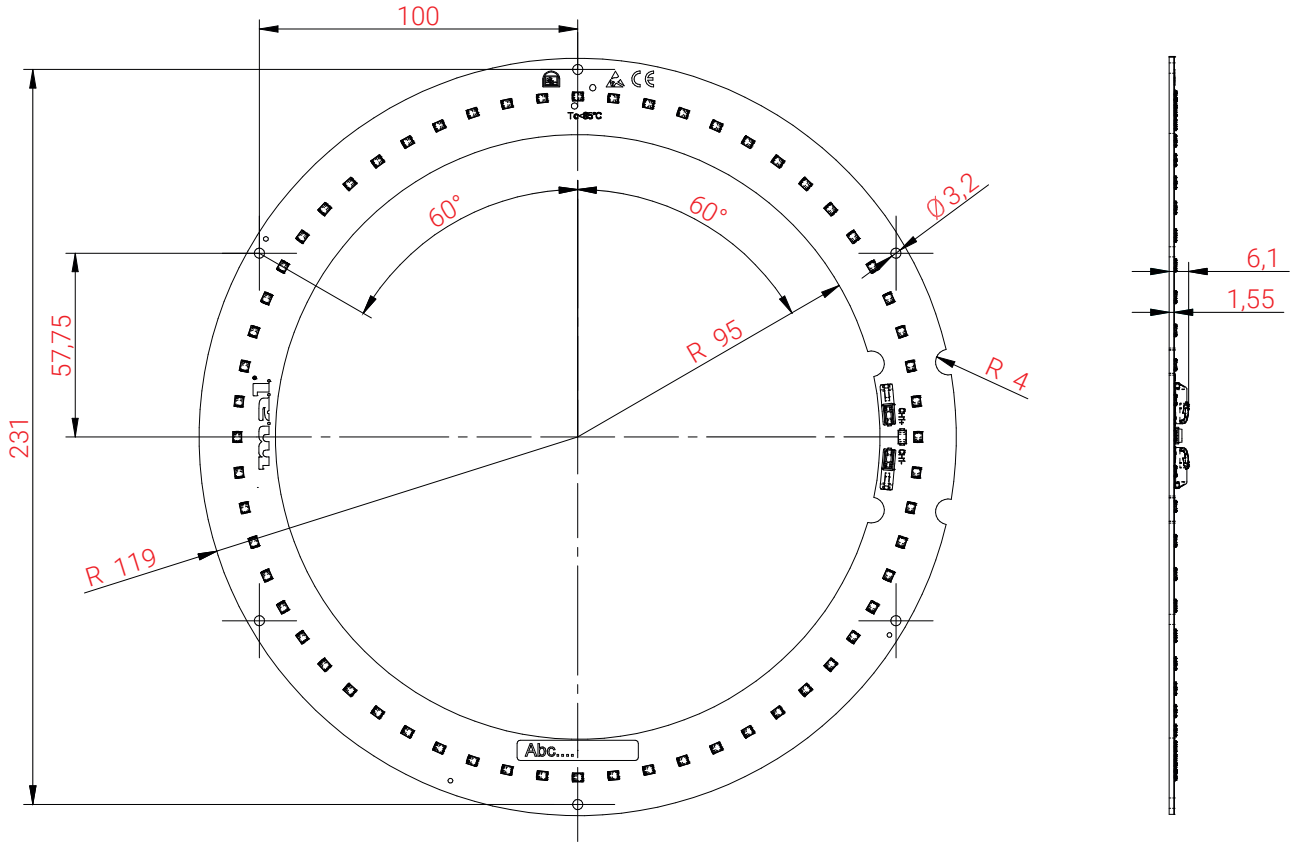
Lifetime of the LEDs used

- The lifetime data is based on TM21 extrapolations of the available LM80 data of the LEDs used. They are to be regarded as purely informative data from which no warranty claim can be derived.

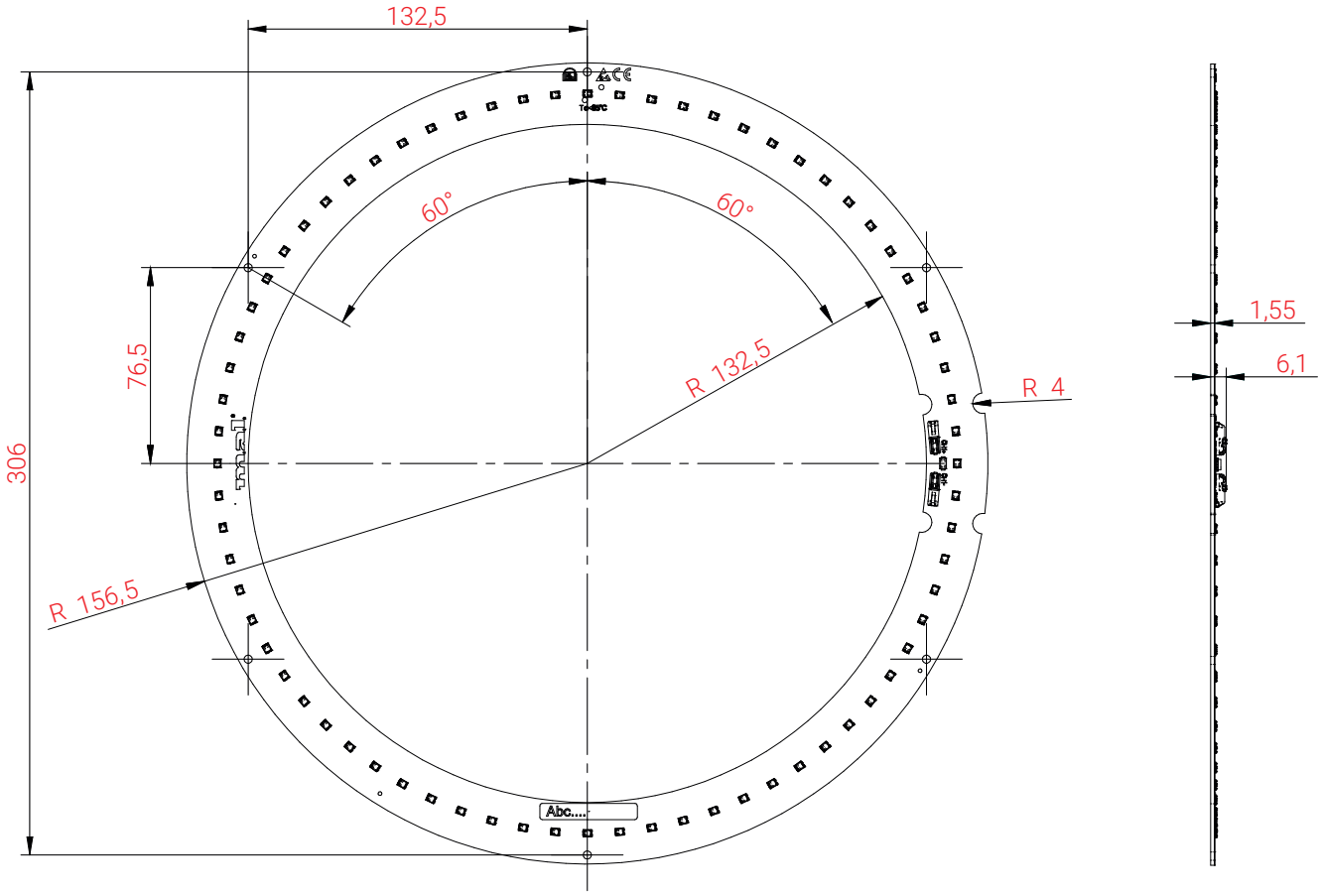
description	If	Tc	L70 B50	L70 B10	L80 B50	L80 B10	L90 B50	L90 B10
Circulus T5R G1 22 8xx	1050 mA		> 102.000 h	> 102.000 h	> 102.000 h	> 102.000 h	> 50.000 h	> 50.000 h
Circulus T5R G1 32/40/55 ...	1050 mA	80 °C	> 102.000 h	> 102.000 h	> 102.000 h	> 102.000 h	> 50.000 h	> 50.000 h
Circulus T5R G1 60 ...	1050 mA		> 102.000 h	> 102.000 h	> 102.000 h	> 102.000 h	> 50.000 h	> 50.000 h

Technical drawings: Circulus T5R G1 - Replacement for T5 ring lamps

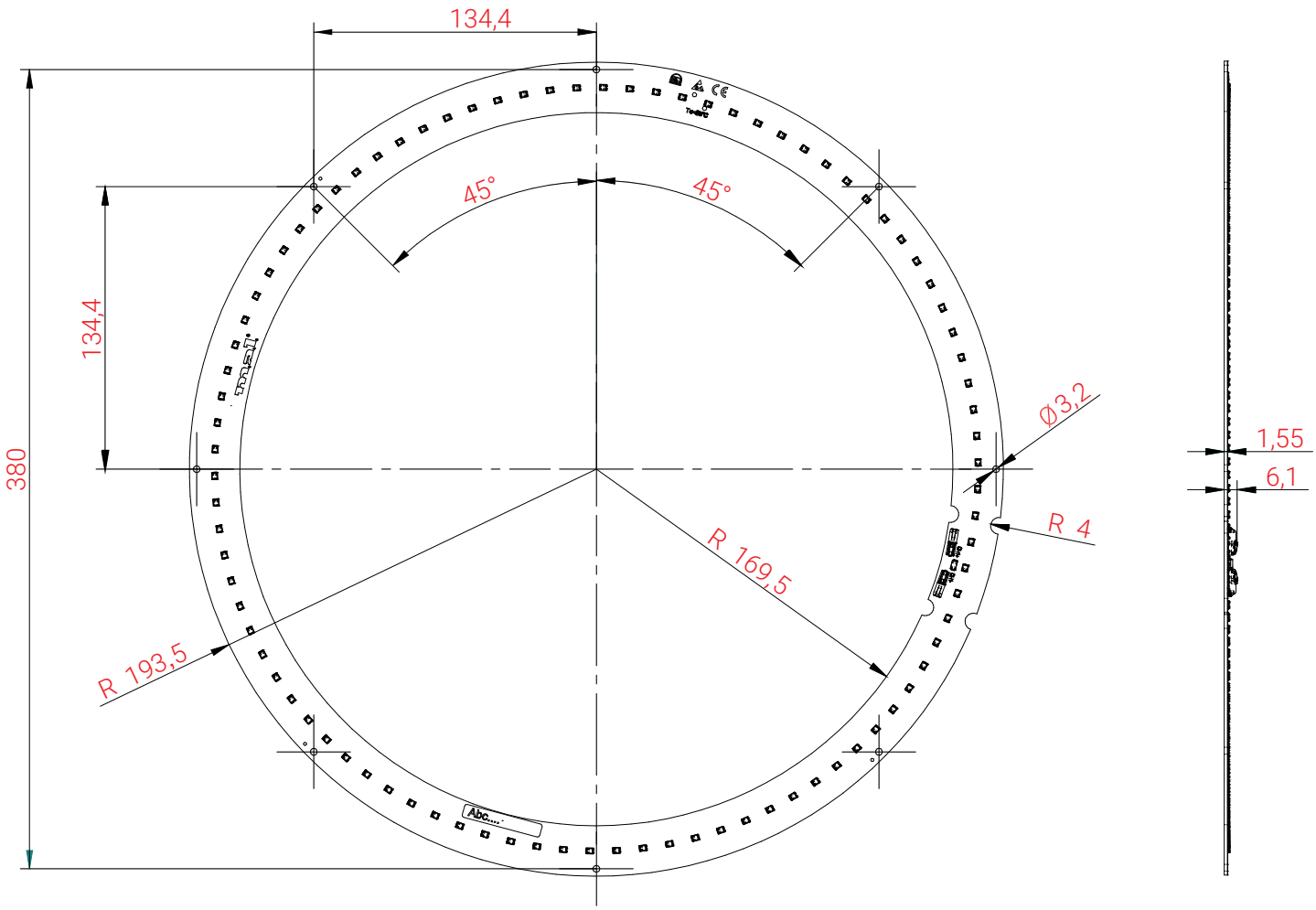
Circulus T5R G1 22

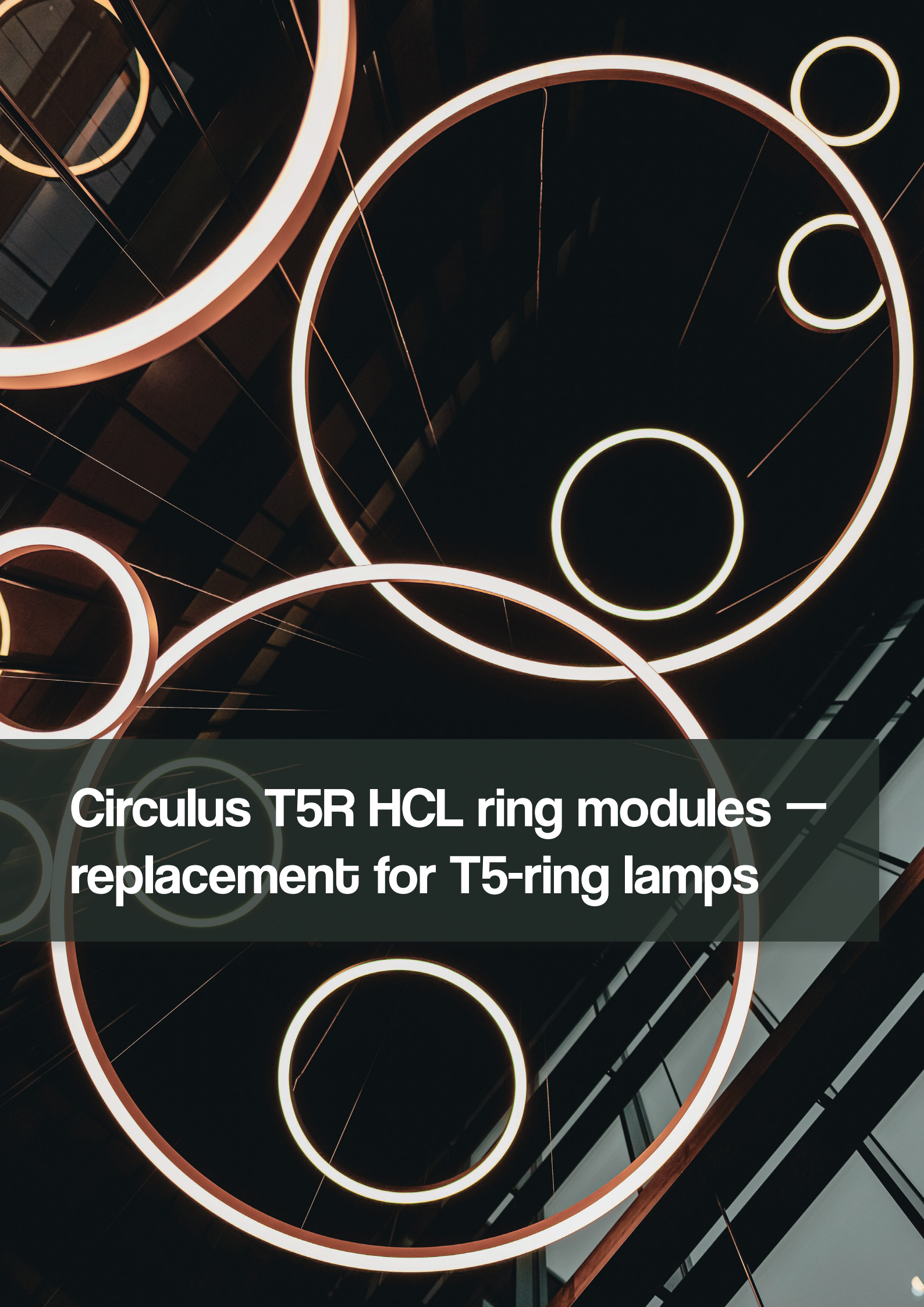


Circulus T5R G1 32/40/55



Circulus T5R G1 60





Circulus T5R HCL ring modules — replacement for T5-ring lamps

T5R ring modules HCL

The Circulus T5R HCL series expands the proven Circulus LED module family with a powerful, tunable white solution for human-centric lighting (HCL). The modules are specially designed for applications where light quality, biological effectiveness, and energy efficiency are paramount.

The Circulus T5R HCL series was designed as a direct replacement for T5 ring lamps.

Available in diameters of 214 mm, 289 mm, and 363 mm, the modules cover a wide range of applications, from workplace and office lighting to education and healthcare areas to retail and hospitality solutions.

Your advantages at glance:

- √ **Fully HCL-compatible** tunable white solution
- √ **Replaceable substitute for T5 ring lamps –** retrofit-capable
- √ **Long service life and stable light** over many years
- √ **High efficiency** with constant color stability
- √ **Optional CRI 90 version** for the highest demands on light quality

Our iX-led standard modules are available at short notice and are favorable in the overall concept.

Standard does not mean rigid and unchangeable!

Do you need different light colors, different color renderings or minimally shorter/longer versions of the modules? You need the assembly of soldering nuts as spacers or a threaded insert for simplified mounting of the module? No problem. Other terminals or soldered cables are also possible. With the **iX-led product family** we can adapt and individualize the standard to your needs.

Explore our exclusive module series with more than 1000 lighting possibilities.

LED module with mid-power LEDs for installation in luminaires.

As a replacement for T5 ring lamps in 22 W, 32 W, 40 W, 55 W and 60 W.

Versatile with:

√ LED module in 3 different diameters: Ø 214 mm, Ø 289 mm and Ø 363 mm

√ rendering: CRI 80 - CRI 90 in KSF technology on request

√ 2 light colors: CCT 2200 K - 6500 K and CCT 2700 K – 6500 K

Excellent color consistency in the module: 3 Step MacAdam LEDs.

Plug-in terminals for easy and quick mounting.

For operation on suitable constant current drivers.

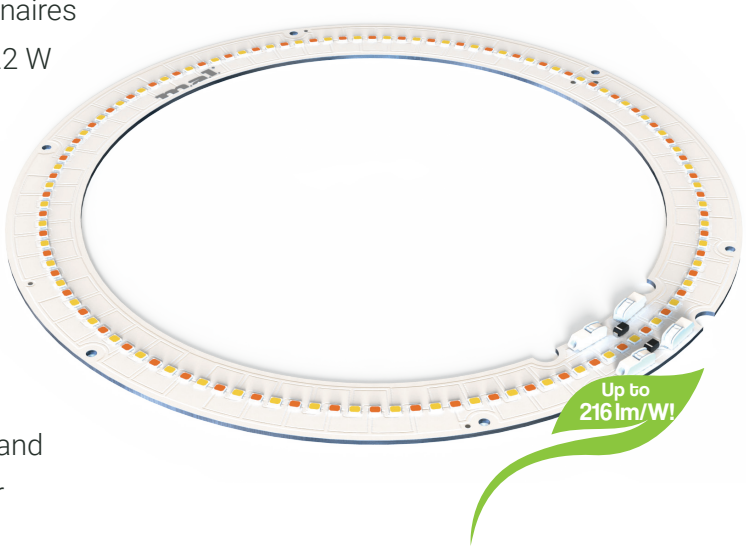
Maximum working voltage	250 V
Ambient temperature	-20…+50 °C
Max. perm. operating temperature (Tc)	80 °C
EPREL database entry	yes
Beam angle	120°
Risk group	RG1

Connections:

Terminals		4
Connection type		rigid / flexible
Conductor cross-section AWG		AWG 18-24
Conductor cross-section	from	0.2 mm²
	to	0.75 mm²
Stripping length		8 - 9 mm

Circulus T5R G1 22 HCL - Replacement for T5 ring lamps

- √ ring-shaped LED module for installation in luminaires
- √ Intended as a replacement for T5R lamp with 22 W
- √ 2x 60 Mid-Power LEDs
- √ pitch distance 11.2 mm
- √ diameter outside 238 mm and inside 190 mm
- √ four connection terminals
- √ rated current 350 mA
- √ maximum operating current 1050 mA
- √ maximum forward voltage 30 V
- √ The 3 ring modules Circulus 214, Circulus 289 and Circulus 363 can be arranged inside each other



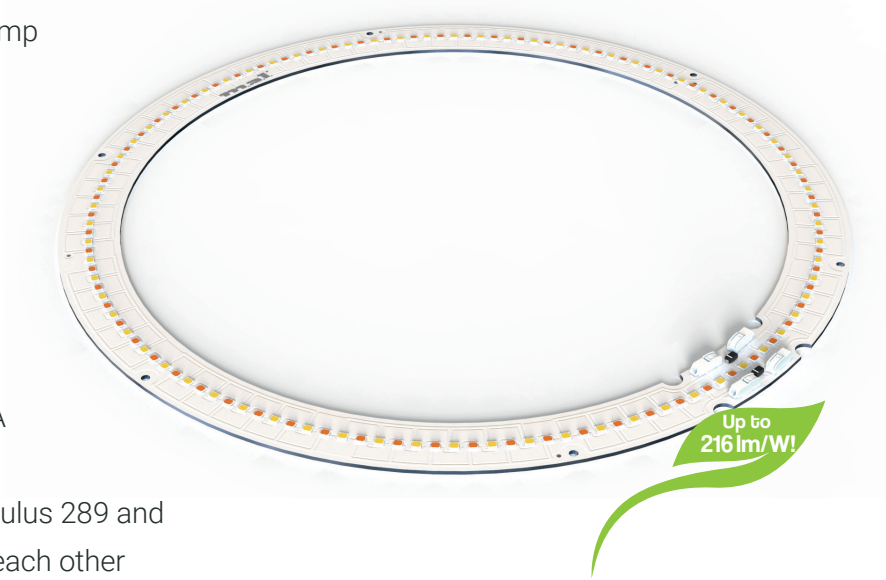
Please also refer to the technical data of the Circulus T5R HCL family on page 14. Further technical data and drawings from page 19.

CRI	CCT	Flux typ.	LPW typ.	Flux typ.	LPW typ.	Flux typ.	LPW typ.	order-nr.	description
		If = 100 mA Tc = 25 °C		If = 350 mA Tc = 25 °C		If = 700 mA Tc = 25 °C			
≥80	2200 K	655 lm	170 lm/W	1500 lm	163 lm/W	4212 lm	143 lm/W	7543-21090	Circulus T5R G1 22 HCL 822-865
	6500 K	847 lm	216 lm/W	1939 lm	207 lm/W	5444 lm	182 lm/W		
	2700 K	765 lm	192 lm/W	1751 lm	184 lm/W	4915 lm	162 lm/W	7543-21091	Circulus T5R G1 22 HCL 827-865
	6500 K	847 lm	216 lm/W	1939 lm	207 lm/W	5444 lm	182 lm/W		

Up to
5444 lm!

Circulus T5R G1 32/40/55 HCL - Replacement for T5 ring lamps

- √ ring-shaped LED module for installation in luminaires
- √ Intended as a replacement for T5R lamp with 32/42/55 W
- √ 2x 72 Mid-Power LEDs
- √ pitch distance 12.6 mm
- √ diameter outside 313 mm and inside 265 mm
- √ four connection terminals
- √ rated current 350 mA
- √ maximum operating current 1050 mA
- √ maximum forward voltage 36 V
- √ The 3 ring modules Circulus 214, Circulus 289 and Circulus 363 can be arranged inside each other



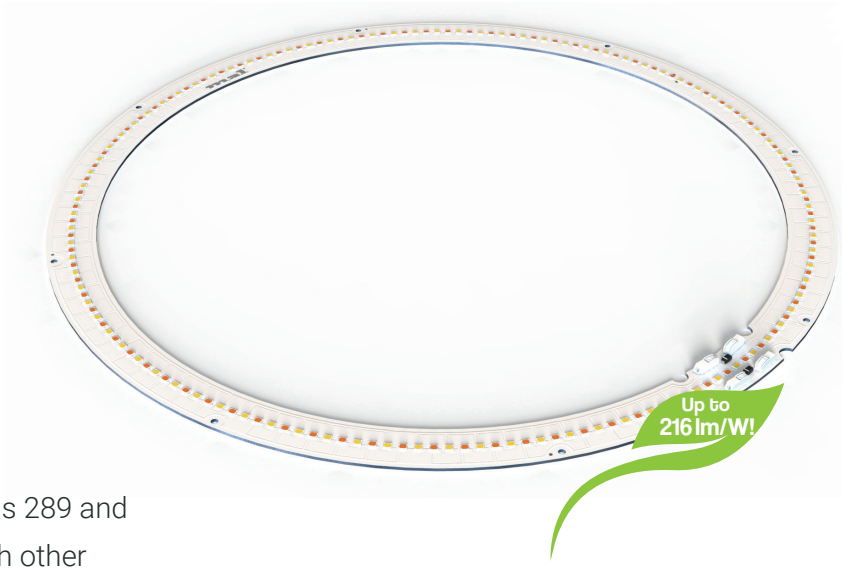
Please also refer to the technical data of the Circulus T5R HCL family on page 14. Further technical data and drawings from page 19.

CRI	CCT	Flux typ.	LPW typ.	Flux typ.	LPW typ.	Flux typ.	LPW typ.	order-nr.	description
		If = 100 mA Tc = 25 °C		If = 350 mA Tc = 25 °C		If = 700 mA Tc = 25 °C			
≥80	2200 K	786 lm	170 lm/W	1800 lm	163 lm/W	5054 lm	143 lm/W	7543-21190	Circulus T5R G1 32/40/55 HCL 822-865
	6500 K	1016 lm	216 lm/W	2327 lm	207 lm/W	6532 lm	182 lm/W		
	2700 K	918 lm	192 lm/W	2101 lm	184 lm/W	5899 lm	162 lm/W	7543-21191	Circulus T5R G1 32/40/55 HCL 827-865
	6500 K	1016 lm	216 lm/W	2327 lm	207 lm/W	6532 lm	182 lm/W		

Up to 6532 lm!

Circulus T5R G1 60 HCL - Replacement for T5 ring lamps

- √ ring-shaped LED module for installation in luminaires
- √ Intended as a replacement for T5R lamp with 60 W
- √ 2x 90 Mid-Power LEDs
- √ pitch distance 11.9 mm
- √ diameter outside 387 mm and inside 339 mm
- √ four connection terminals
- √ rated current 350 mA
- √ maximum operating current 1050 mA
- √ maximum forward voltage 48 V
- √ The 3 ring modules Circulus 214, Circulus 289 and Circulus 363 can be arranged inside each other



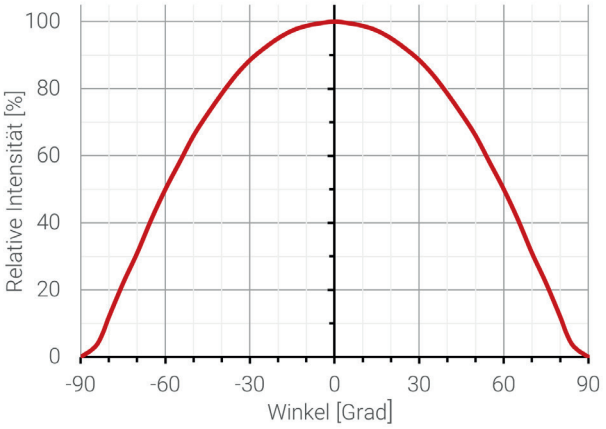
Please also refer to the technical data of the Circulus T5R HCL family on page 14.
Further technical data and drawings from page 19.

CRI	CCT	Flux typ.	LPW typ.	Flux typ.	LPW typ.	Flux typ.	LPW typ.	order-nr.	description
		If = 100 mA Tc = 25 °C		If = 350 mA Tc = 25 °C		If = 700 mA Tc = 25 °C			
≥80	2200 K	983 lm	170 lm/W	2250 lm	163 lm/W	6318 lm	143 lm/W	7543-21290	Circulus T5R G1 60 HCL 822-865
	6500 K	1270 lm	216 lm/W	2908 lm	207 lm/W	8165 lm	182 lm/W		
	2700 K	1147 lm	192 lm/W	2627 lm	184 lm/W	7373 lm	162 lm/W	7543-21291	Circulus T5R G1 60 HCL 827-865
	6500 K	1270 lm	216 lm/W	2908 lm	207 lm/W	8165 lm	182 lm/W		

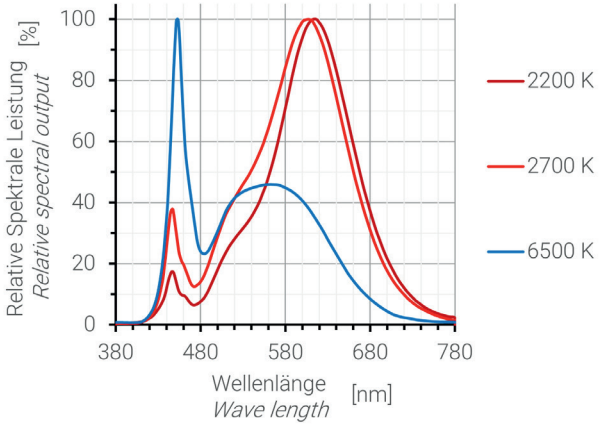
Up to
8165 lm!

Technical data: Circulus T5R G1 HCL - Replacement for T5 ring lamps

Light distribution curve



Spectrum 80



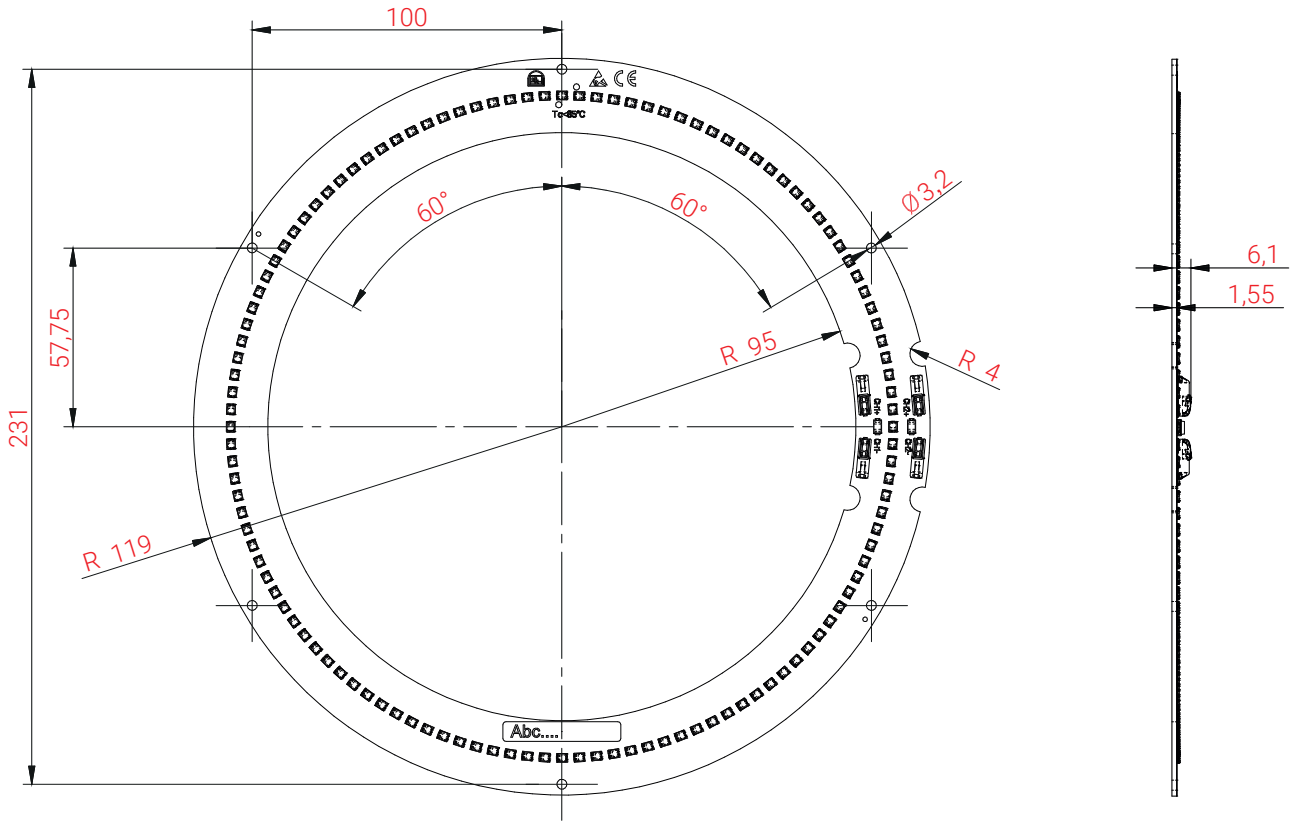
Lifetime of the LEDs used

- The lifetime data is based on TM21 extrapolations of the available LM80 data of the LEDs used. They are to be regarded as purely informative data from which no warranty claim can be derived.

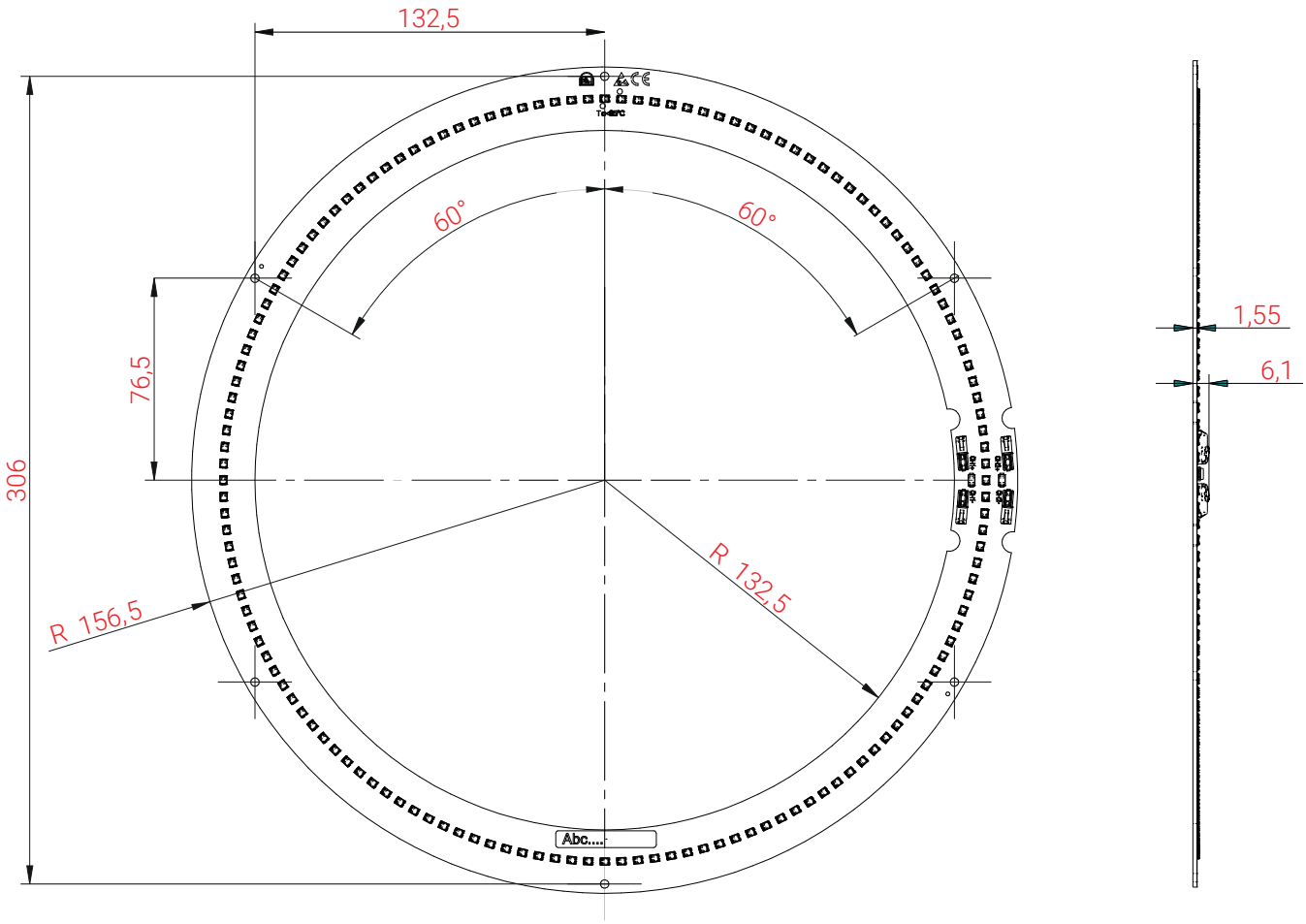
description	If	Tc	L70 B50	L70 B10	L80 B50	L80 B10	L90 B50	L90 B10
Circulus T5R G1 22 HCL ...	1050 mA		> 102.000 h	> 102.000 h	> 102.000 h	> 102.000 h	> 50.000 h	> 50.000 h
Circulus T5R G1 32/40/55 HCL ...	1050 mA	80 °C	> 102.000 h	> 102.000 h	> 102.000 h	> 102.000 h	> 50.000 h	> 50.000 h
Circulus T5R G1 60 HCL ...	1050 mA		> 102.000 h	> 102.000 h	> 102.000 h	> 102.000 h	> 50.000 h	> 50.000 h

Technical drawings: Circulus T5R G1 HCL - Replacement for T5 ring lamps

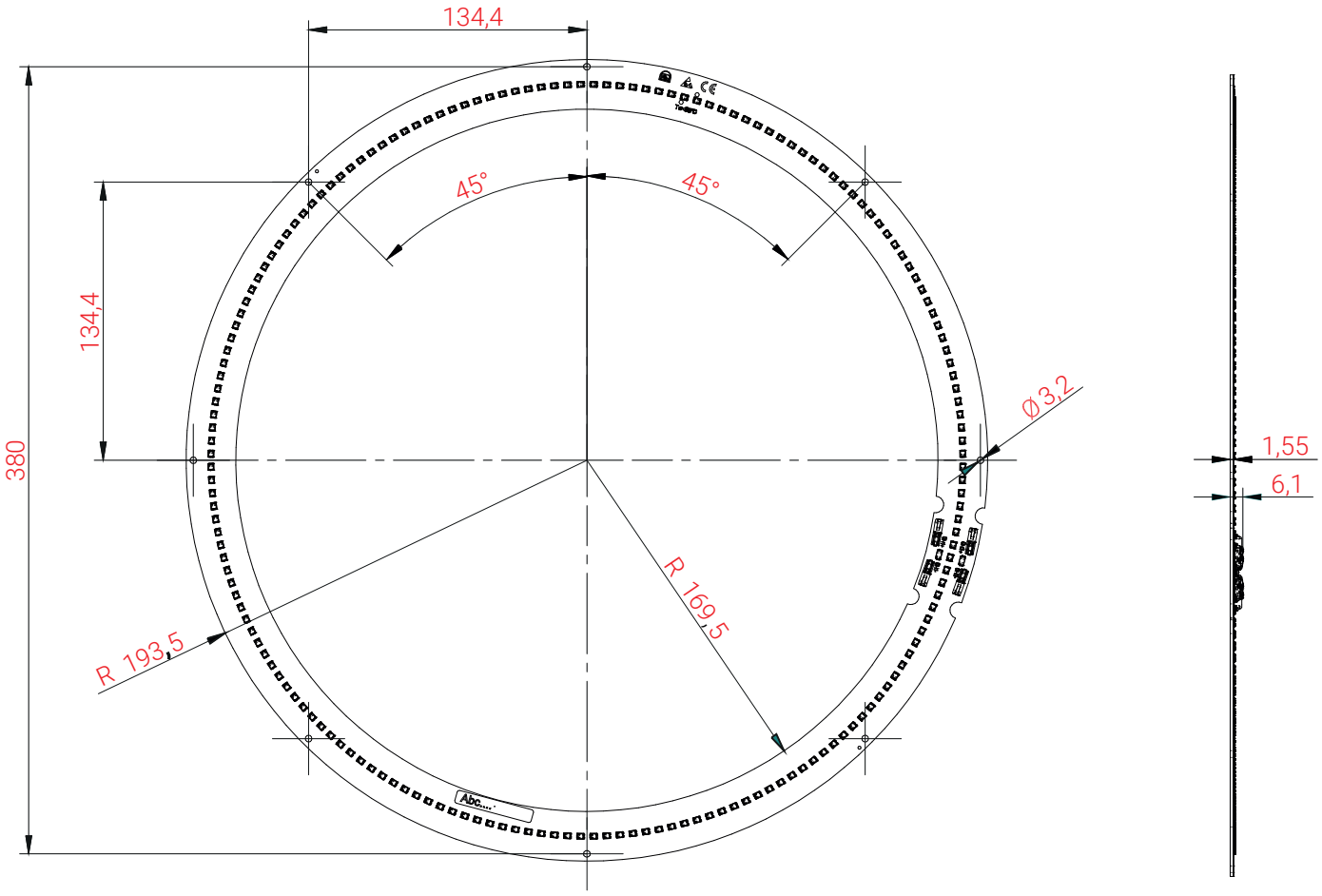
Circulus T5R G1 22 HCL

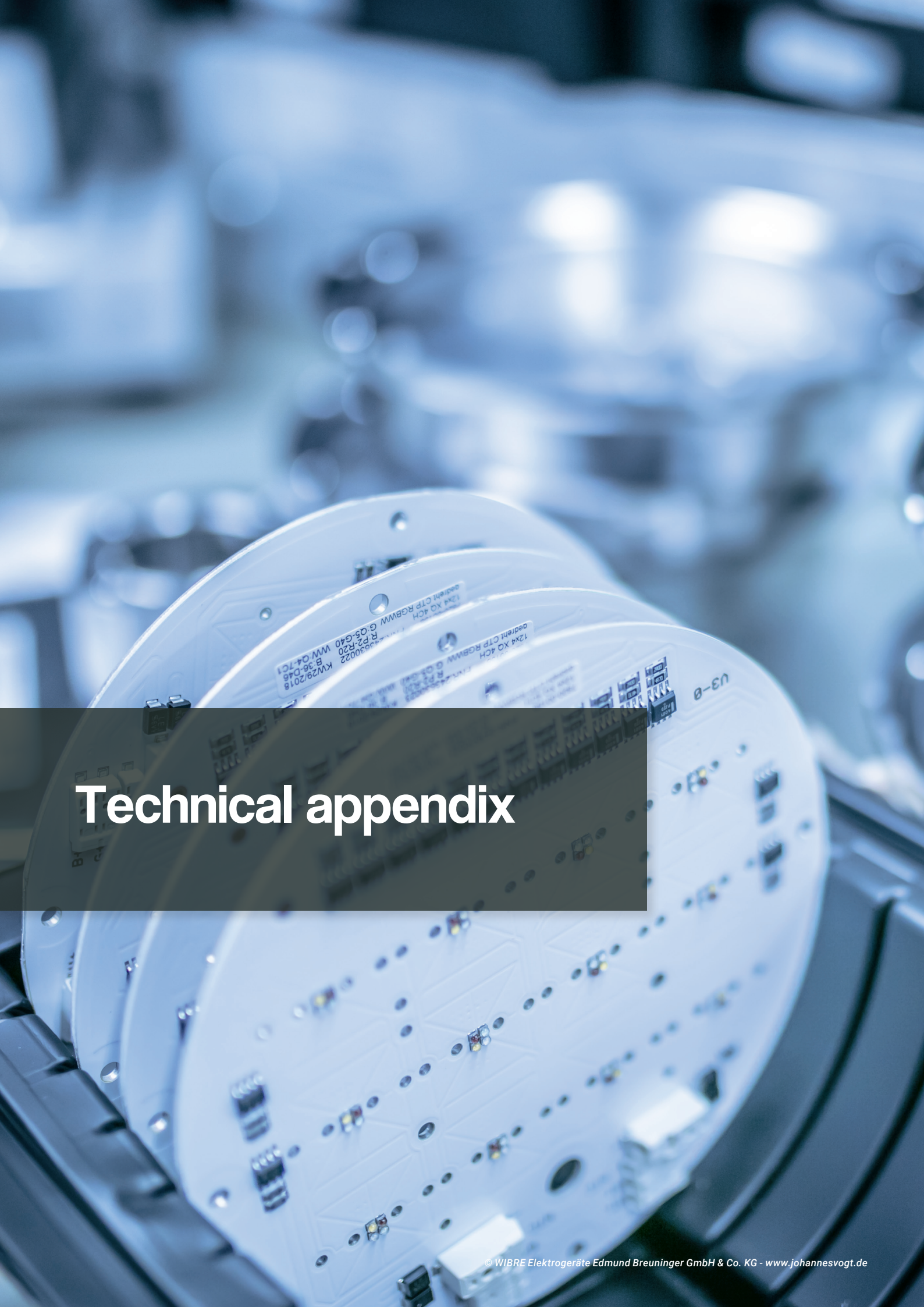


Circulus T5R G1 32/40/55 HCL



Circulus T5R G1 60 HCL





Technical appendix

Sorry, there is not always enough space for all the values... You need more data? We will gladly provide you with our data sheets.

For quick solutions: On this way you can calculate more data by yourself:

Power input LED-Modul Pmod [W]:

$$Pmod\ [W] = \frac{Flux\ [lm]}{LPW\ [lm/W]}$$

Forward voltage Vf [V]:

$$Vf\ [V] = \frac{Flux\ [lm]}{LPW\ [lm/W]} * \frac{1000}{If\ [mA]}$$

Agenda:

CCT	Color temperature, the color of light. Unit Kelvin (K) Example: 2700 K
CRI	Designates the color rendering index Ra. The value range is 0 to 100. Sunlight has CRI 100. A good color rendering is achieved with CRI 80, a very good color rendering is CRI 90. Some LEDs can even achieve a color rendering of CRI 95.
Flux	Luminous flux. Unit lumen (lm)
If	(Forward) current. Unit ampere (A). We express this value in milliamperes (mA).
Vf	Forward voltage. Unit Volt (V)
Pmod	Power consumption of the LED module. Unit Watt (W).
LPW	Abbreviation for lumens per watt. It is also called efficiency or luminous efficacy. Unit lumens per watt (lm/W).

The specified maximum operating currents are informative and must be verified in the application and luminaire by measuring the temperature at the Tc point.

Service life specifications

! The service life specifications are defined via statistical values and calculations.

! The luminous flux of LEDs decreases over time. The L70 value indicates the point in time at which the luminous flux has reduced to 70% of the initial luminous flux. L80 and L90 define the 80% and 90% values respectively.

! The B value, usually B10 or B50, defines how many LEDs fall below the L value. L80B10 thus means that 10% of the LEDs have fallen below and 90% above the 80% value of the initial luminous flux.

! L80B10 50.000h defines e.g. with it:
After 50,000h, 90% of the LEDs produce more than 80% of the initial luminous flux.

General mounting and securing instructions

Handling of the LED modules

! iX-led LED modules are sensitive electronic components that can be damaged or destroyed by improper handling!

! The modules may only be mounted in an electrostatic protected area (EPA). Dissipative tools and bases must be used for mounting. The grounding of persons must be ensured by means of suitable ESD footwear, as well as standard-compliant ESD flooring and/or standard-compliant grounding by means of a wrist strap.

! LED modules may only be touched at the edges of the circuit board. Do not touch the surface of the circuit board.

! The LEDs themselves must never be touched with pointed objects or fingers, as this may destroy or damage the silicone and alter the light image.

! If necessary, cleaning may only be carried out with pure isopropyl alcohol/isopropanol (IPA).

! If possible, the modules should not come into contact with chemicals during storage, operation or installation, as this can lead to destruction or massive reduction in luminous flux. This applies in particular, but not exclusively, to:

- Cyanoacrylate adhesives ("super glue")
- Solvents containing acetone and solvents in general
- Various, unsuitable cleaners, such as petroleum ether, glass cleaner, etc.
- Products containing sulfur (this may include cardboard boxes)
- All substances from which volatile organic compounds (VOC) may be emitted.

! Any modification of the modules that has not been approved by **m.a.l.** is not permitted.

! If possible, the modules are to be stored only in the sealed original packaging. If this is not possible, it must at least be ensured that the modules are packaged in an ESD-compliant manner and are protected from dust and moisture.

! Direct storage in cardboard boxes without additional outer packaging can lead to damage to the LEDs, depending on the LED installed.

Mounting of LED modules

! Use a suitable heat-conducting material to ensure good heat transfer between the LED module and the heat sink.

! Mounting must only be carried out using suitable screws or other fastening elements.

! When selecting screws and other fastening elements, it must be ensured that the air and creepage distances of the the screw heads or other conductive elements do not fall below clearance and creepage distances.
In case of doubt, plastic washers with suitable dimensions or plastic screws must be used.

! As an alternative or in addition to a screw connection, the assembly can be carried out with suitable thermally conductive adhesive tapes. In this case, it is essential to check the material compatibility!

! Any mechanical stress on the module must be avoided, as this can lead to damage or destruction.

! Sufficient heat dissipation must be ensured by the luminaire design and correct mounting. The maximum temperature at the Tc point must not be exceeded during operation. For this purpose, measurements must be carried out with the complete luminaire and the permissible operating temperature range of the finished luminaire must be determined accordingly.

Connection of LED modules

! All LED modules listed in this catalog are intended for connection to a constant current LED driver. Safe operation can only be ensured with an LED driver that complies with all relevant regulations. Operation with constant voltage LED drivers is not permitted and can lead to the destruction of the LED module.

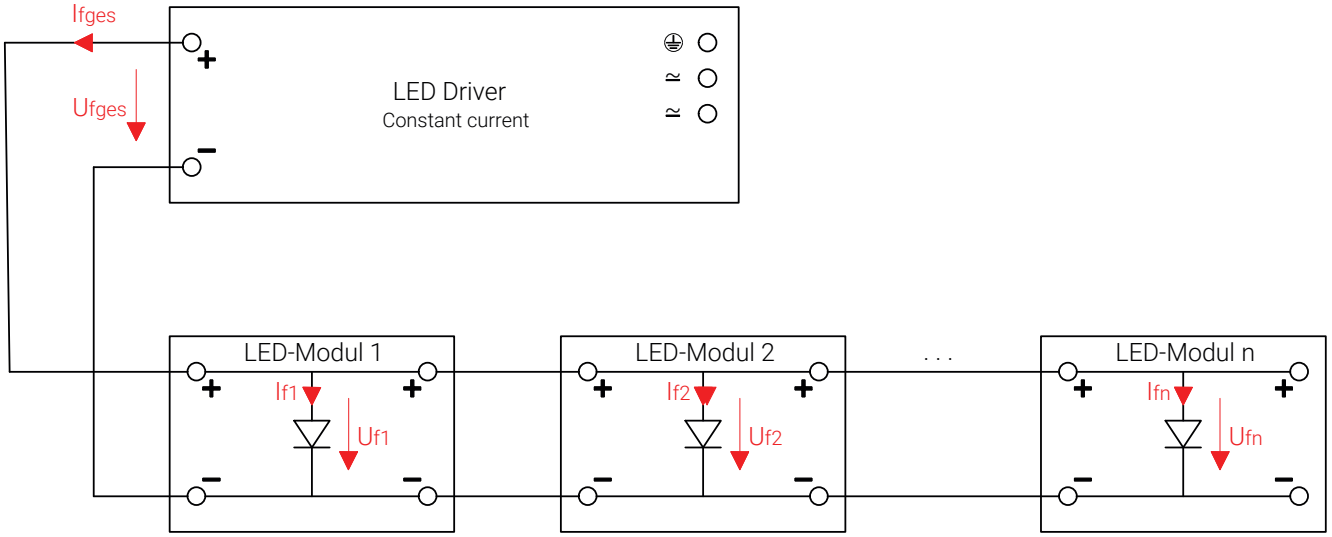
! Please refer to the data sheet of your LED driver and check if the current and voltage range fits to the LED modules.

! Reversing the polarity of the LED module (swapping plus and minus) can damage the LED module.

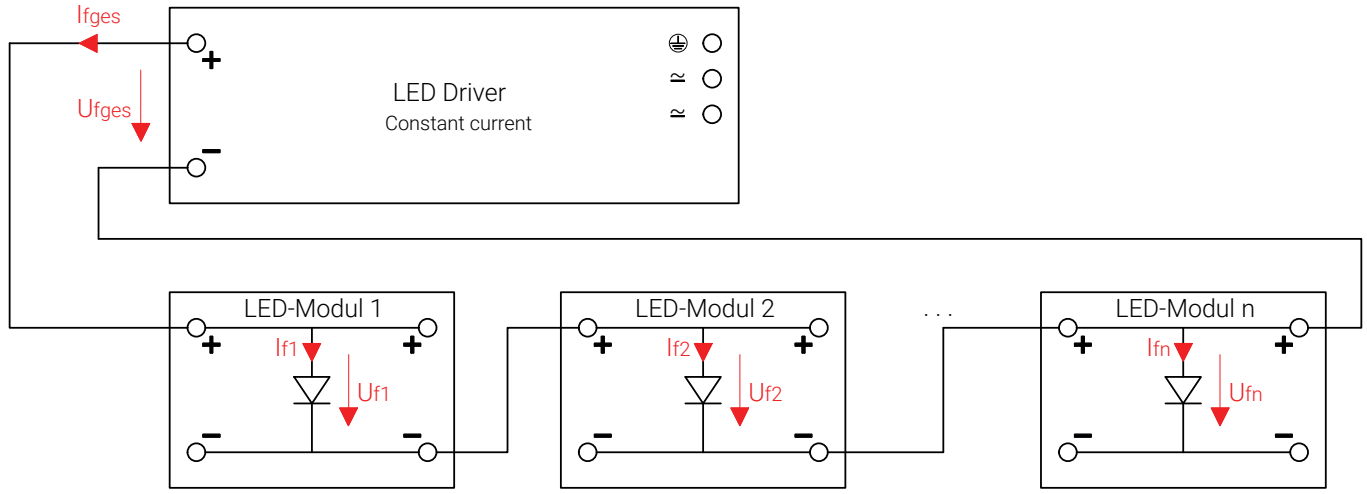
! Multiple LED modules can be connected in series or parallel. The following must be observed:

- Parallel connection:
  A parallel connection of the modules is not recommended, because due to manufacturing tolerances and different thermal loads different module currents and thus differences in brightness up to overload of modules can occur. Exceptions are modules of the Opticus Daisy T series. In the event of a fault such as an electrical interruption to a module, there is a higher current to the remaining modules. This leads to a reduction in lifetime up to failure.
- Series connection:
  In a series connection, the forward voltages of the individual modules add up. Please consider the necessary measures in your luminaire design if they leave the SELV range. If the resulting voltage is >60 V, the modules must be installed isolated and protected against accidental contact.
- The maximum working voltage of the insulation (see data sheets) must never be exceeded even by series connection.

Parallel connection



Series connection



! In any case, compliance with the applicable standards and regulations must be ensured.

! Before connecting the modules, the operating device must be disconnected from the mains.

! Connecting modules under voltage will destroy the modules.

Privacy policy

! You can find our current privacy policy at: **www.mal-effekt.de/datenschutz.html**

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Technical data available for download

The data shown are excerpts. The complete data sheets are available on our website **www.mal-effekt.de**.

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