LED MODULE TRON 24x280

Product description

- Linear LED module designed for tube luminaries
- Excellent efficacy - up 190 lm/W
- Optional - 1 or 2 independent channels
- Designed for both parallel and series connection
- Can be combined with 24x560 modules
- Warranty 5 years

Optical properties

- Colour temperature 2700K, 3000K, 4000K, 5000K, 6500K
- Colour tolerance 3 MacAdam steps
- CRI >80, >90, >95
- Beam characteristic 120°
- Lifetime L70 (30% lumen depreciation) 50.000 hours of operation

Electrical properties

- Current driving 350mA
- Forward voltage 22V

Mechanical properties

- Dimension 24,00 x 280,00 mm
- WAGO 2060 connectors for simple and fast assembly
- Easy instalation using screws

Standards

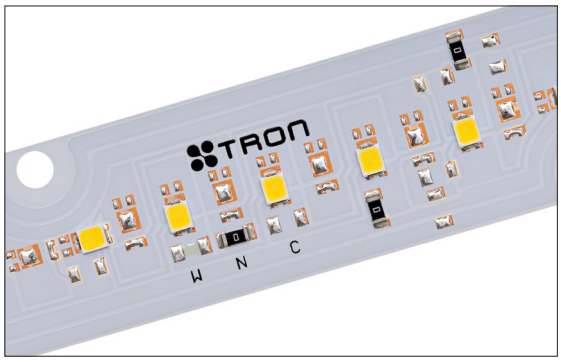
- Zhaga Book 7 standard compatible
- EN 62778:2014
- EN 62031:2008 + A1:2012 + A2:2014
- EN 61340-5-1
- Photobiological risk group RGB0 unlimited

TECHNICAL DATA	
Ambient temperature Ta	-30°C ... +45°C
Max. temperature at Tc point	+80°C
Max. humidity	80%
Lumen maintenance L80	50.000 hours
Power supply	constant current
Max. rated voltage in circuit	60 V
Insulation test voltage	0,5 kV

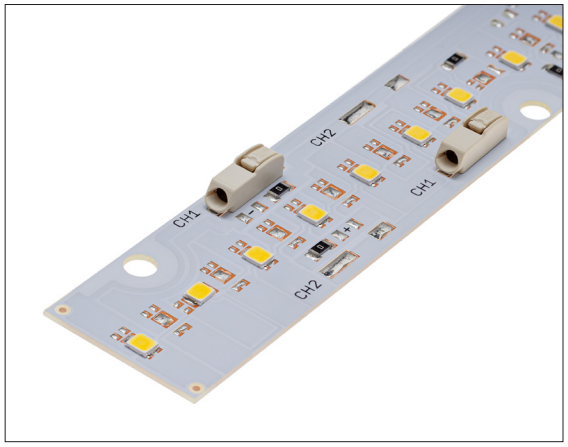
PHOTOMETRIC DATA	
Colour tolerance	3 MacAdam steps
CRI	>80, >90, >95
Photobiological risk group	RGB0 unlimited
Beam characteristic	120°

MECHANICAL DATA	
Dimension	24,00 x 280,00 mm
PCB material	FR4, UL94-V-0
Thickness of PCB	1 mm
Weight	20 g
IP rating	IP00
Wire size (solid core)	0,2 - 0,75 mm ²
Wire strip length	8,0 ± 1 mm

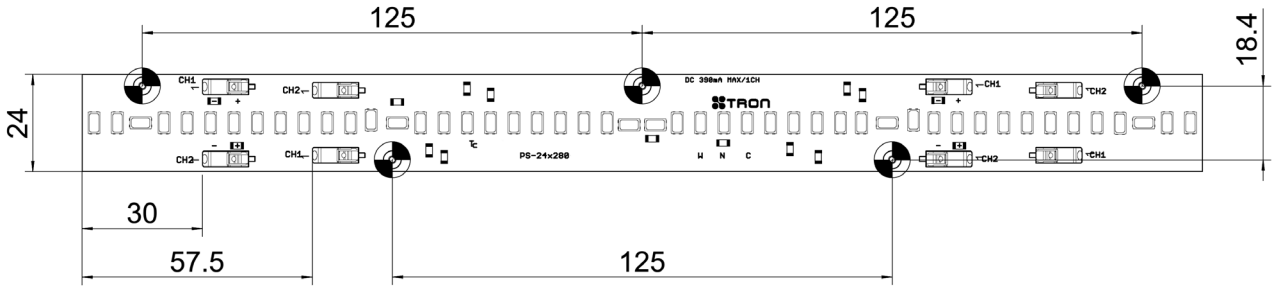
Color temperature marking



Connectors



Dimension



TECHNICAL PARAMETERS - 1 CHANNEL

Type	Order code	Colour (K)	Luminous flux (lm)	Forward current (mA)	Forward voltage (V)	Power consuption (W)	CRI	Efficacy (lm/W)
TRON 24x280-E-827-000-8S3P	30003452	2700	1361	350	22,24	7,8	>80	174,8
TRON 24x280-E-830-000-8S3P	30000608	3000	1399	350	22,24	7,8	>80	179,8
TRON 24x280-E-840-000-8S3P	30000254	4000	1464	350	22,24	7,8	>80	188,1
TRON 24x280-E-850-000-8S3P	30003453	5000	1483	350	22,24	7,8	>80	190,5
TRON 24x280-E-865-000-8S3P	30003454	6500	1464	350	22,24	7,8	>80	188,1
TRON 24x280-E-927-000-8S3P	30003455	2700	1154	350	22,24	7,8	>90	148,3
TRON 24x280-E-930-000-8S3P	30000255	3000	1183	350	22,24	7,8	>90	152,0
TRON 24x280-E-940-000-8S3P	30002723	4000	1238	350	22,24	7,8	>90	159,1
TRON 24x280-E-950-000-8S3P	30003456	5000	1258	350	22,24	7,8	>90	161,6
TRON 24x280-E-965-000-8S3P	30003457	6500	1238	350	22,24	7,8	>90	159,1
TRON 24x280-E-9827-000-8S3P	30003458	2700	(*)	350	(*)	(*)	>95	(*)
TRON 24x280-E-9830-000-8S3P	30001992	3000	(*)	350	(*)	(*)	>95	(*)
TRON 24x280-E-9840-000-8S3P	30001778	4000	(*)	350	(*)	(*)	>95	(*)
TRON 24x280-E-9850-000-8S3P	30003459	5000	(*)	350	(*)	(*)	>95	(*)
TRON 24x280-E-9865-000-8S3P	30002933	6500	(*)	350	(*)	(*)	>93	(*)

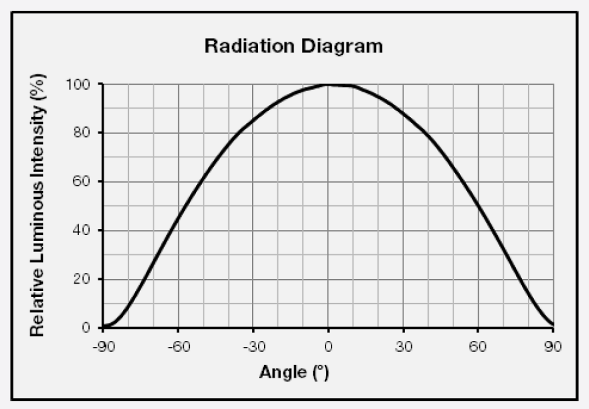
TECHNICAL PARAMETERS - 2 CHANNEL

Type	Order code	Colour (K)	Luminous flux (lm)	Forward current (mA)	Forward voltage (V)	Power consuption (W)	CRI	Efficacy (lm/W)
TRON 24x280-E-827-865-8S3P	30003450	2700	1361	350	22,24	7,8	>80	174,8
		6500	1464	350	22,24	7,8	>80	188,1
TRON 24x280-E-927-965-8S3P	30002609	2700	1154	350	22,24	7,8	>90	148,3
		6500	1238	350	22,24	7,8	>90	159,1
TRON 24x280-E-9827-9865-8S3P	30003451	2700	(*)	350	(*)	(*)	>95	(*)
		6500	(*)	350	(*)	(*)	>93	(*)

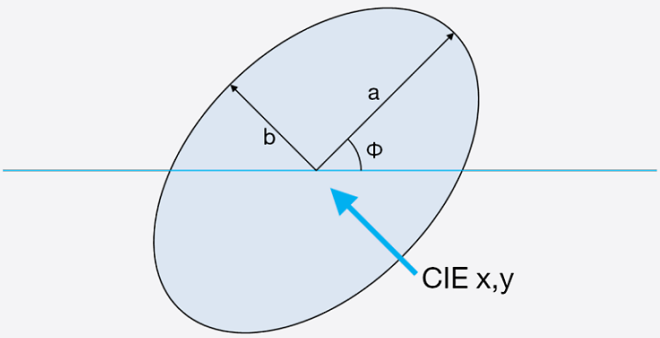
Notes:
Typical values at Tc = 25°C.
Tolerance ±10 %. Measurement uncertainty ±5 %
Special CRI (R9) For Ra 90 is >90.
Power consumption of the whole module can not exceed 20 W.
Variant with 2 channels has max. power consumption 10 W per channel.
(*) - Under development

CHARACTERISTICS

Beam angle characteristics (Ts=25°C)



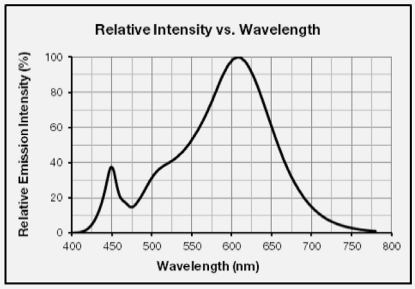
Chromaticity region & coordinates



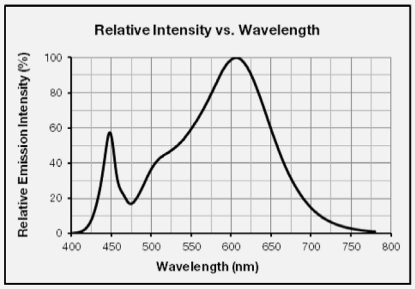
MacAdam	CCT (K)	Center point		Major-axis	Minor-axis	Rotation
		CIE x	CIE y	a	b	Φ
3 step	2700	0.4578	0.4101	0.0081	0.0042	53.70
	3000	0.4338	0.4030	0.0083	0.0041	53.22
	3500	0.4073	0.3917	0.0093	0.0041	54.00
	4000	0.3818	0.3797	0.0094	0.0040	53.72
	5000	0.3447	0.3553	0.0082	0.0035	59.62
	5700	0.3287	0.3417	0.0075	0.0032	59.10
	6500	0.3123	0.3282	0.0067	0.0029	58.57

Spectral characteristics CRI80

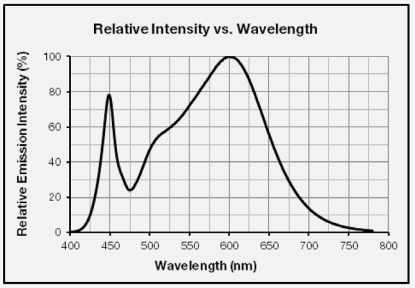
CCT: 2700 K (80 CRI)



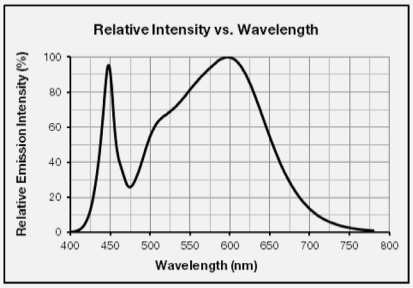
CCT: 3000 K (80 CRI)



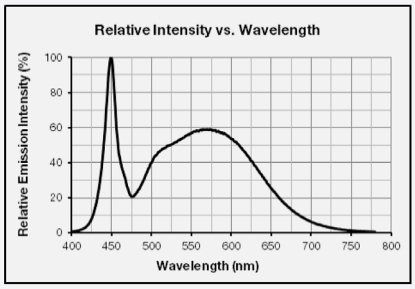
CCT: 3500 K (80 CRI)



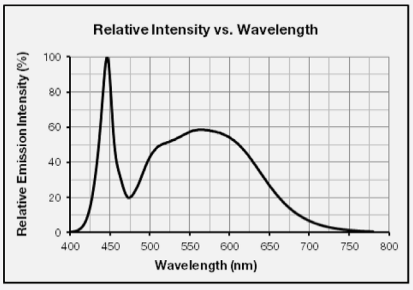
CCT: 4000 K (80 CRI)



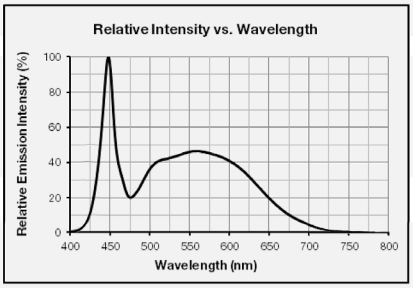
CCT: 5000 K (80 CRI)



CCT: 5700 K (80 CRI)

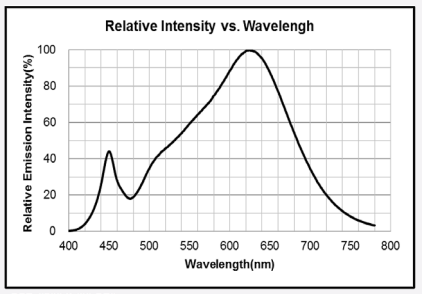


CCT: 6500 K (80 CRI)

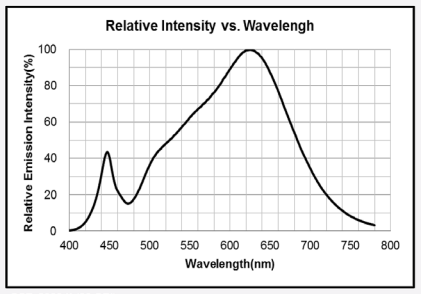


Spectral characteristics CRI90

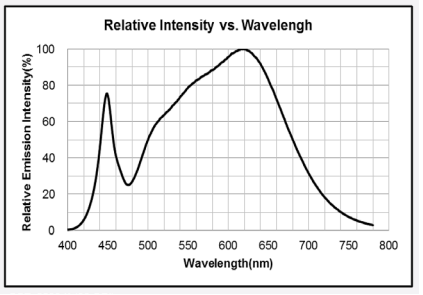
CCT: 2700 K (90 CRI)



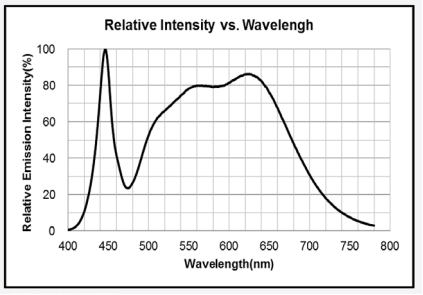
CCT: 3000 K (90 CRI)



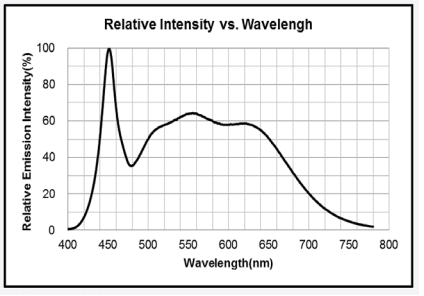
CCT: 3500 K (90 CRI)



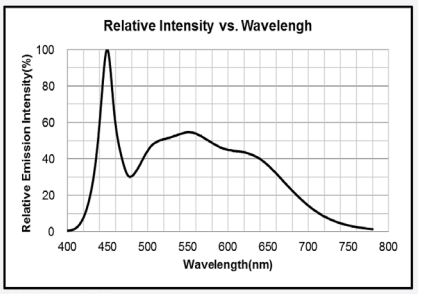
CCT: 4000 K (90 CRI)



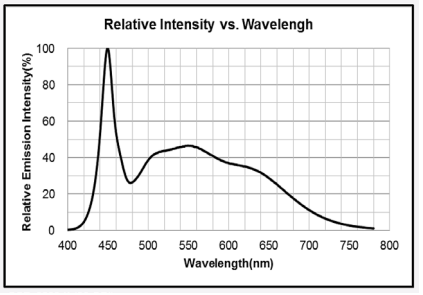
CCT: 5000 K (90 CRI)



CCT: 5700 K (90 CRI)



CCT: 6500 K (90 CRI)



OTHERS

Dimensions

Conformity & Standards Photobiological safety of lamps and lamp systems ČSN EN 62778:2014.
LED modules for general lighting - safety specifications ČSN EN 62031:2008 + A1:2012 + A2:2014 Compliant with relevant EU directives, CE marked, ROHS/REACH compliant.

Connections

LED MODUL are basic isolated up to 250 V (if mounted with M4 screws (maximal diameter head 7,3 mm) in combination with insulating plastic washers or plastic screws or plastic clip) against ground and can be mounted directly on earthed metal parts of the luminaire. At voltages > 60 V an additional protection against direct touch (test finger) to the light emitting side of the module has to be guaranteed.

Mounting instruction

Max. torque for fixing: 0,5Nm.
In order not to damage the modules only use rounded head screws.

- while handling the modules avoid mechanical stress or pressure applied to light emitting surface
- avoid dropping of the LED modules
- bending of the modules is not allowed
- avoid touching the light emitting surface
- mechanical modifications (drilling, milling, sawing and breaking of the module) are not permitted

Storage conditions

Unused LED modules are recommended to be stored carefully in an original sealed ESD package preventing moisture, pollutants or ESD to cause damage to the module. Storage temperature range -20…+80 °C

ESD precautions at luminaire assembly site

The LEDs are sensitive to the electrostatic discharge (ESD) and surge current. If voltage exceeding the absolute maximum rating is applied to LEDs, it may cause damage or even destruction to LED devices.

- EN 61340-5-1: Protection of electronic devices from electrostatic phenomena – General Requirements describes procedures for protection for damage caused by electrostatic discharge while handling electronic devices, following list lists basic protective measures described in the standard
- ESD protection measures in handling and assembling LED modules
- Personnel grounding via wrist band / footwear
- ESD protective clothing / shoes
- Handle LED modules only in ESD protected areas and workplaces

Chemical considerations

Chemical substances may cause damage the LED module by causing discoloration, loss of luminous flux or total failure of the module.
Avoid materials and substances containing:

- VOCs - Volatile Organic Compounds that may occur in adhesives, or sealings. Verify that the materials used in the luminaires are not causing VOCs
- Halogen compounds
- Chlorine
- Acetates
- Sulphuric compounds

Maximum Tc temperature

Reliable operation is only guaranteed if the maximum tc point temperature is not exceeded under the conditions of use. Lifetime is only guaranteed if the maximum tc point temperature specified for lifetime is not exceeded under the conditions of use.

SAFETY

Never look directly into an operational LED module without suitable protective eye wear!