LED lighting system for plants

The BINDER LED Plant light module was developed for maximum flexibility of use. It consists of 16 LED light bars that can be positioned individually in a cooling incubator or climate chamber. Each light bar contains three different LED color channels that can be controlled separately: sunlike cool white, sunlike warm white and far red phytochrome control light.



Compatibility with BINDER climate chambers

The LED plant light module (Art. No. 8012-2439) was developed for use in the new generation of BINDER cooling incubators and climate chambers (E7). Installation can be carried out easily on site by the customer. The LED light bar length has been optimized for size models 260, 470 and 720, but can also be used in larger models.

Series	Model	Temperature range	Humidity range
KB	260, 470, 720, 1060	15 … 50°C	unregulated
KB PRO	260, 470, 720, 1060, 1600	-10 … 60°C	unregulated
KBF	260, 470, 720, 1060, 1600	15 … 50°C *	20 … 50 % RH
KBF PRO	260, 470, 720, 1060, 1600	-10 … 60°C *	10 … 90 % RH

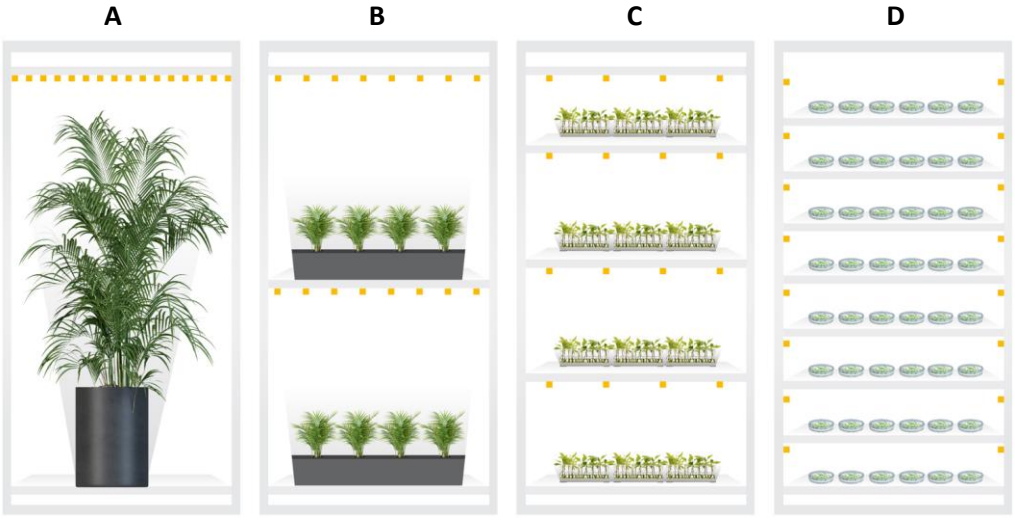
*humidity control switched off

LED plant light module - scope of delivery

- 16 light bars with retaining clips for clipping into standard grid shelves
- Light control box with program controller
- Mains cable
- Supply distribution cable for the LED light bars
- PU tube for ambient air supply
- Operating manual
- Not included: Grid shelves* for holding the light bars

*Standard grids shelves are suitable for attaching the LED light bars. These grids should be ordered as an accessory with the chamber, as the size and number depend on the chamber model and configuration. Although grid shelves may serve as light bar holders and for loading sample material at the same time, this is not recommended. With an additional grid shelf, a distance of approx. 10 cm is achieved between the LED light bars and the sample material, which reduces thermal effects on the samples.

LED light bars - example configurations



A The chamber comes with two grid shelves as standard, no additional shelves are required

B In addition to the two standard grid shelves, one additional shelf set is required, two additional shelf sets are recommended

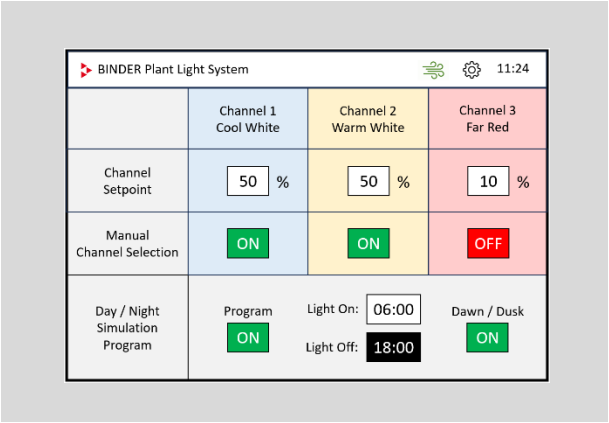
C In addition to the two standard grid shelves, three additional shelf sets are required, six additional shelf sets are recommended

D In addition to the two standard grid shelves, six additional shelf sets are required for samples. The light bars are fixed to the chamber side walls with cable ties.

Controller functions

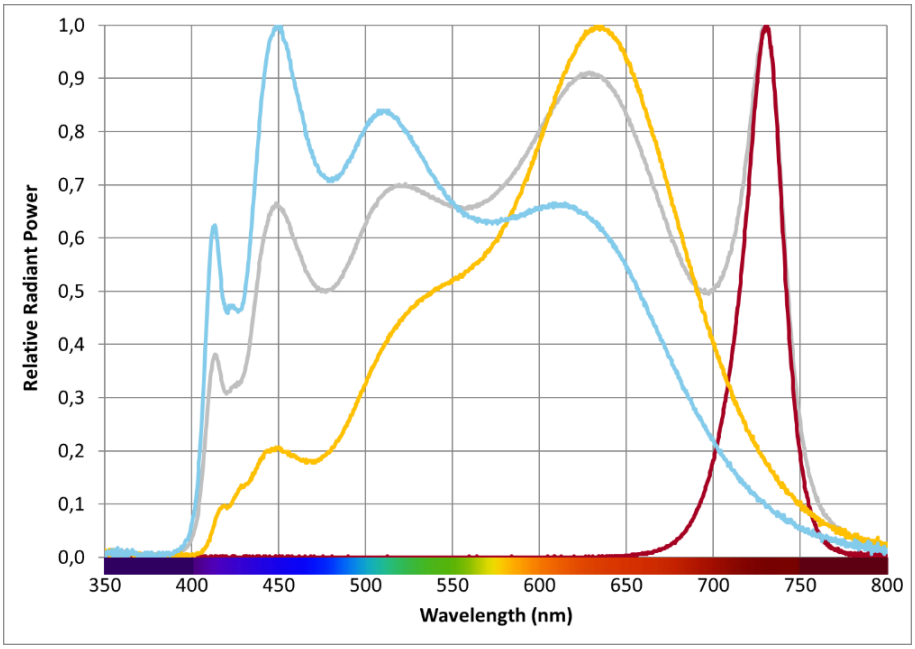
- Independent controller in the supply box
- All three light color channels can be controlled individually
- Light channels can be dimmed individually from 0% to 100%
- Real-time programming (time light on / time light off) cyclic daily
- Real-time programming (time light on / time light off) per weekday individually
- Twilight function (light on / light off runs through a ramp of one hour)
- Ventilation function (0 to 500 L of ambient air per hour)





Light quality emission spectra of the three LED channels

- SunLike Cool white 6.500 K
- SunLike Warm white 2.700 K
- Far red 730 nm
- Warm white + Cool white + Far red



Specifications KB + LED Plant light module

(100 % white light, without Far red, all 16 LED light bars evenly installed on one level)

	KB 260	KB 470	KB 720	KB 1060
Art. No. Climate chamber 230 V	**9020-0473**	**9020-0474**	**9020-0475**	**9020-0476**
Art. No. Climate chamber 120 V	**9020-0501**	**9020-0502**	**9020-0503**	**9020-0504**
Inner volume (L)	262	472	727	1070
Inner width (mm)	656	656	1011	1011
Inner height (mm)	695	1250	1250	1250
Inner depth (mm)	575	575	575	847
Temperature range with light (°C)	15 ... 50	10 ... 50	10 ... 50	10 ... 50
Humidity range with light (% RH)	unregulated	unregulated	unregulated	unregulated
Art. No. LED Plant light module	**8012-2439**	**8012-2439**	**8012-2439**	**8012-2439**
PAR (µmol/m²/s) Ø at 25 cm	1660	1540	1080	880
PAR (µmol/m²/s) Ø at 50 cm	–	990	740	610
PAR (µmol/m²/s) Ø at 75 cm	–	730	560	480
100 % Far red (W/m²) at 25 cm	66	62	43	38
Maximum temperature (°C)	60	60	60	60
Power supply for Light module			120-240 V / 50-60 Hz	

Specifications KB PRO + LED Plant light module

(100 % white light, without Far red, all 16 LED light bars evenly installed on one level)

	KB PRO 260	KB PRO 470	KB PRO 720	KB PRO 1060	KB PRO 1600
Art. No. Clim. chamber 208-240 V	**9020-0434**	**9020-0435**	**9020-0436**	**9020-0437**	**9020-0438**
Inner volume (L)	262	472	727	1070	1610
Inner width (mm)	656	656	1011	1011	1521
Inner height (mm)	695	1250	1250	1250	1250
Inner depth (mm)	575	575	575	847	847
Temperature range with light (°C)	-10… 60	-10… 60	-10… 60	-10… 60	-10… 60
Humidity range with light (% RH)	unregulated	unregulated	unregulated	unregulated	unregulated
Art. No. LED Plant light module	**8012-2439**	**8012-2439**	**8012-2439**	**8012-2439**	**8012-2439**
PAR (µmol/m²/s) Ø at 25 cm	1660	1540	1080	880	640
PAR (µmol/m²/s) Ø at 50 cm	–	990	740	610	470
PAR (µmol/m²/s) Ø at 75 cm	–	730	560	480	380
100 % Far red (W/m²) at 25 cm	66	62	43	38	28
Maximum temperature (°C)	60	60	60	60	60
Power supply for Light module			120-240 V / 50-60 Hz		

Specifications KBF + LED Plant light module

(100 % white light, without Far red, all 16 LED light bars evenly installed on one level)

	KBF 260	KBF 470	KBF 720	KBF 1060	KBF 1600
Art. No. Climate chamber 230 V	**9020-0479**	**9020-0480**	**9020-0481**	**9020-0482**	**9020-0483**
Art. No. Climate chamber 120 V	**9020-0495**	**9020-0496**	**9020-0497**	**9020-0498**	**9020-0499**
Inner volume (L)	262	472	727	1070	1610
Inner width (mm)	656	656	1011	1011	1521
Inner height (mm)	695	1250	1250	1250	1250
Inner depth (mm)	575	575	575	847	847
Temperature range with light (°C)*	15 ... 50	10 ... 50	10 ... 50	10 ... 50	10 ... 50
Humidity range with light (% RH)	20 ... 50	20 ... 50	20 ... 50	20 ... 50	20 ... 50
Art. No. LED Plant light module	8012-2439	8012-2439	8012-2439	8012-2439	8012-2439
PAR (µmol/m²/s) Ø at 25 cm	1660	1540	1080	880	640
PAR (µmol/m²/s) Ø at 50 cm	–	990	740	610	470
PAR (µmol/m²/s) Ø at 75 cm	–	730	560	480	380
100 % Far red (W/m²) at 25 cm	66	62	43	38	28
Maximum temperature (°C)	60	60	60	60	60
Power supply for Light module			120-240 V / 50-60 Hz		

Specifications KBF PRO + LED Plant light module

(100 % white light, without Far red, all 16 LED light bars evenly installed on one level)

	KBF PRO 260	**KBF PRO 470**	**KBF PRO 720**	**KBF PRO 1060**	**KBF PRO 1600**
Art. No. Clim. chamber 208-240 V	**9020-0440**	**9020-0441**	**9020-0442**	**9020-0443**	**9020-0444**
Inner volume (L)	262	472	727	1070	1610
Inner width (mm)	656	656	1011	1011	1521
Inner height (mm)	695	1250	1250	1250	1250
Inner depth (mm)	575	575	575	847	847
Temperature range with light (°C)*	-10... 60	-10... 60	-10... 60	-10... 60	-10... 60
Humidity range with light (% RH)	10 ... 90	10 ... 90	10 ... 90	10 ... 90	10 ... 90
Art. No. LED Plant light module	**8012-2439**	**8012-2439**	**8012-2439**	**8012-2439**	**8012-2439**
PAR (µmol/m²/s) Ø at 25 cm	1660	1540	1080	880	640
PAR (µmol/m²/s) Ø at 50 cm	–	990	740	610	470
PAR (µmol/m²/s) Ø at 75 cm	–	730	560	480	380
100 % Far red (W/m²) at 25 cm	66	62	43	38	28
Maximum temperature (°C)	60	60	60	60	60
Power supply for Light module			120-240 V / 50-60 Hz		

When the 16 light bars are distributed across several levels, the light values are reduced accordingly:

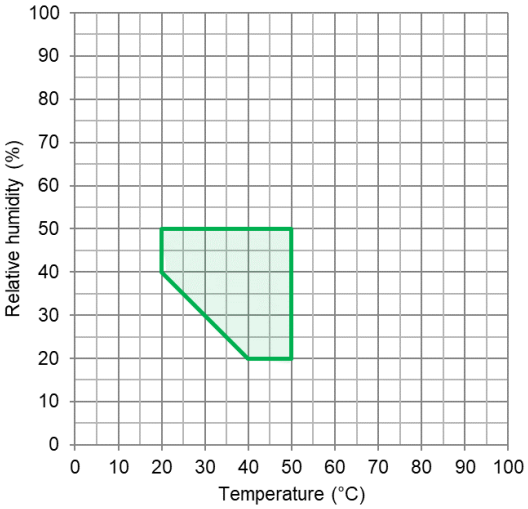
- to approx. 50 % for 2 levels (2 x 8 light bars)
- to approx. 25 % for 4 levels (4 x 4 light bars)

The equipment of a PRO chamber with two LED light modules can be requested via BINDER Customized Solutions.

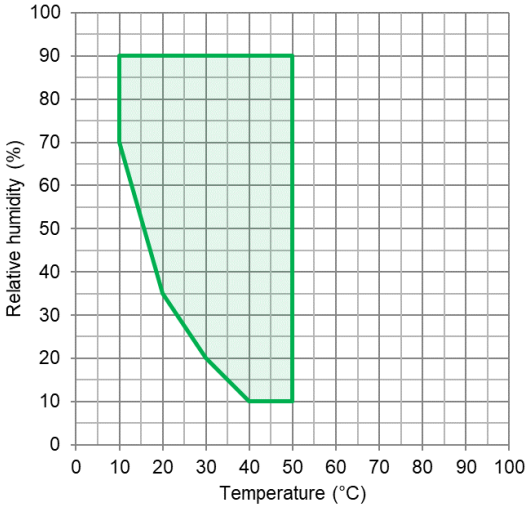
*humidity control switched off

Climate diagrams

KBF 720 with 100% LED plant light

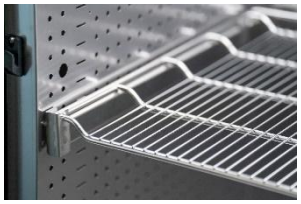


KBF PRO 720 with 100% LED plant light



Recommended BINDER accessories

- Grid shelf sets with telescopic rails
  - Sizes 260/470 8012-2384
  - Size 720 8012-2385
  - Size 1060 8012-2386
  - Size 1600 8012-2387



- Grid shelf sets with U-rails
  (recommended for mounting the light bars)
  - Sizes 260/470 8012-2390
  - Size 720 8012-2391
  - Size 1060 8012-2392
  - Size 1600 8012-2393



- BINDER PureAqua (desalination system)
  - System 8012-0759
  - Replacement cartridge 8012-0165



- Water supply set (canister solution)
  - KBF 8012-2592
  - KBF PRO 8012-2592

The water supply system consists of a 20 L freshwater canister with level sensor, a water pump with magnetic holder for fresh water and a 20 L waste water canister



- CO_2 control module 0…1 Vol.% CO_2
  - KB PRO 8012-2140
  - KBF 8012-2140
  - KBF PRO 8012-2140



Useful BINDER options

- Swivel castors, levelable
  - KB 8012-2541
  - KB PRO 8012-2542
  - KBF 8012-2543
  - KBF PRO 8012-2544



Levelling castors are recommended for installation sites with uneven floors. This option cannot be retrofitted on site.

- Object temperature controller sensor
  - KB 8012-2549
  - KB PRO 8012-2553
  - KBF 8012-2591
  - KBF PRO 8012-2554

BINDER cooling incubators and climate chambers regulate the temperature of the supply air. Additional heat input (e.g. lighting equipment) increases the temperature in the interior slightly (by approx. 1 to 3°C). This can be compensated for by manually setting the setpoint 1 to 3°C lower or by using the “object temperature controller sensor” option. This regulates the indoor temperature precisely to the measuring point of the flexible controller sensor in the usable space. This option is particularly recommended for light/dark cycles.

Service for the installation of the BINDER LED Plant light module on site

Art. No.	Designation	Description
DL10-0150	Installation LED plant light module	Installation of the BINDER LED plant light module, mounting the supply box, mounting the LED light bars on demand, laying the cables and fresh air hose, sealing the access port, function check