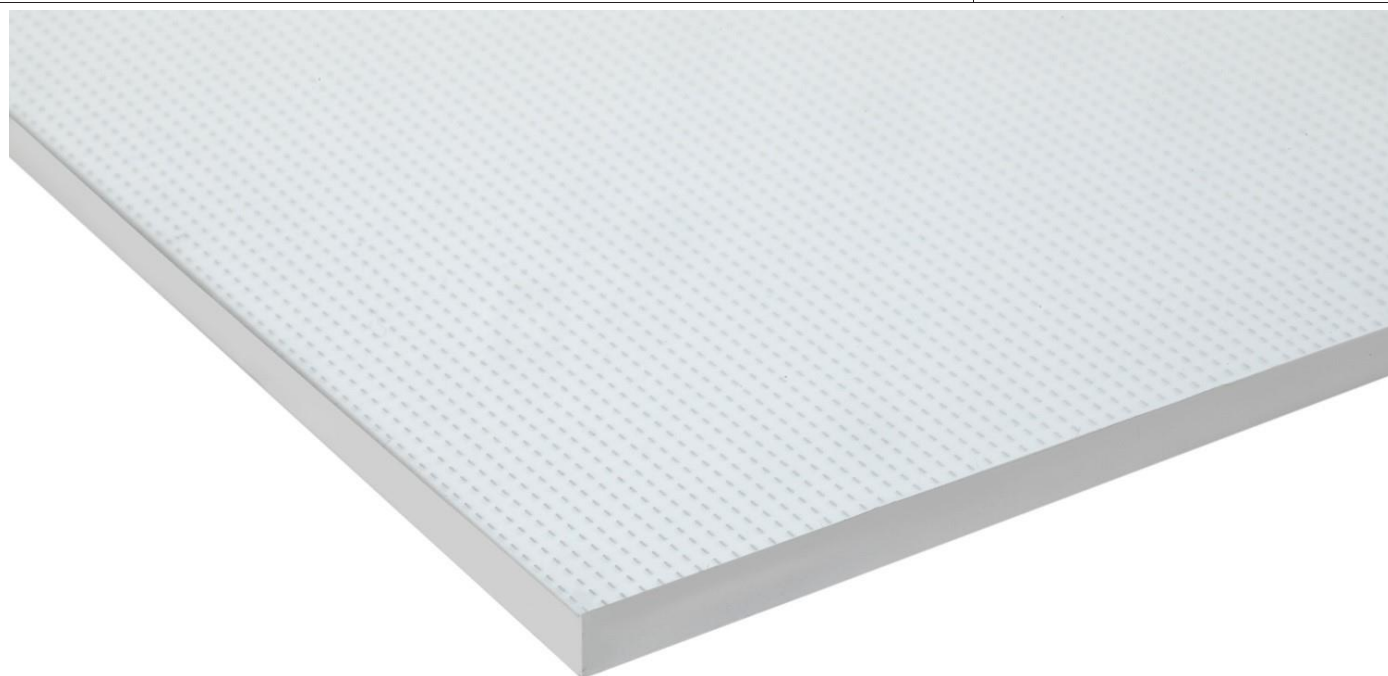


TECHNICAL DATA SHEET

CRYSTAL PANEL LED (CPL)



- 01 / CONFIGURATION OF THE LIGHT**
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01 / CONFIGURATION OF THE LIGHT

a. Illuminated edges:

- depending on the expected light effect and panel size: one (UNO), two (DUO) or four (QUATTRO) illuminated edges.
- UNO backlighting can be implemented up to a maximum length of 1 m. light path

b. Standard colour temperature:

- 3000 K, 4000 K, 5000 K, 6500 K
- Other colour temperature values are available upon the Customer's request.

c. **Standard for 12V installations:** a flexible LED strip with an output power of 17W/running meter, SMD 2835 LEDs, 100 crystals/running meter, and module length of 29.6 mm.

d. **For 24V installations, we are using:** a flexible LED strip with an output power of 21W/running meter, SMD 2835 LEDs, 100 crystals/running meter, and module length of 59.2 mm.

e. **Upon the Customer's request** we can provide strips with other parameters.

02 / ELECTRICAL SPECIFICATIONS

a. Voltage supply:

- Standard: 12V / 24V
- Optional: 5V – to be used with phone charger, battery or power bank, USB port type A (version 2.0 and newer) required.

b. **Power supply type:** we recommend MeanWell impulse power supply.

c. Temperature of panel during work measured on the radiator:

- 38-40 °C - may vary depending on when the product is placed and the method of installation.

d. Current consumption:

- 12V: 1.4A/running meter of LED strip
- 24V: 0.9A/running meter of LED strip
- 5V: 2.5A/running meter of LED strip

e. Power consumption:

- 12V: 17W/running meter of LED strip
- 24V: 21W/running meter of LED strip
- 5V: 12.5W/running meter of LED strip

f. CRI/RA:

- Standard: >85
- Upon the Customer's request: >90 and >97 possible

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g. Controllers:

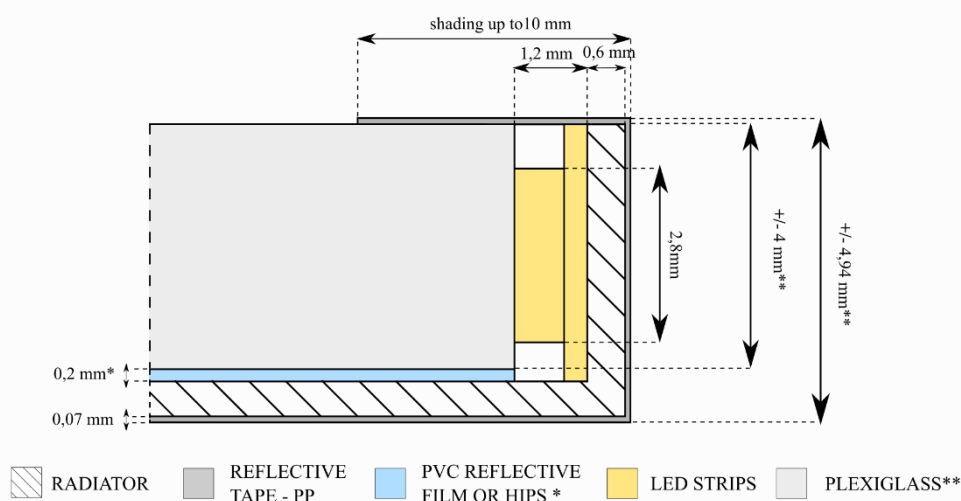
- dimmers, interrupters and other diode controllers suitable for constant voltage supply of 5, 12 and 24V respectively.

03 / TECHNOLOGY, MATERIALS AND DISTANCES

a. Components of CPL

- Engraved PMMA (plexiglass)
- PVC reflective film or HIPS reflective sheet
- Adhesive reflective tape – PP on aluminium base, acrylic adhesive
- Radiator in the form of a thin-walled L-shaped profile made from anodized aluminium
- Flexible, constant voltage LED strip

TECHNICAL CROSS SECTION DIAGRAM CPL



* If HIPS (rigid reflective sheet) plate is used, the specified thickness increases to 1 mm

** Engineering tolerance of plexiglass total 20%

b. Plexiglass thickness:

- Standard: 4 or 6 mm
- Other thickness: upon the Customer's request

c. Applied materials: PMMA, PVC, aluminium, polypropylene, high impact polystyrene (HIPS)

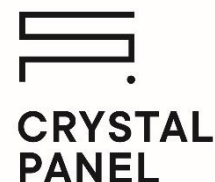
d. Available engraving patterns: dots

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e. Weight:

- Plexiglass 4 mm: from 4,72 kg/m²
- Plexiglass 6 mm: from 7,08 kg/m²
- HIPS 1 mm: od 1,06 kg/m²

f. Possible overall dimensions of the panel:

- Dots: 3000 x 1500 mm
- It is possible to put panels side by side applying appropriate distance from the surface of plexiglass to the light diffusing material (min. 70 mm)

g. LED module length:

- LED 12V: 29.6 mm
- LED 24V: 59.2 mm

h. Length of the illuminated edge:

- In order for the surface to be evenly illuminated, the total length of the illuminated consists of multiplication of the LED module length and the tolerance for making the solder connection (5 mm)

i. The required distance between the panel and the light diffusing material:

- CPM/CPL 4 mm:
 - light path up to 1.2m – diffusing material can be placed directly on the surface
 - more than 1.2m - 5 mm
- CPM/CPL 6 mm: light path up to 1.5m - diffusing material can be placed directly on the surface

j. Available shapes:

- A rectangle or a square are recommended shapes for the panel as they are optimal for the even light diffusion on the surface.
- Other shapes are possible, for example, a circle, a trapezoid or a triangle. Nevertheless, the aforementioned shapes may not guarantee perfect uniformity of the light on surface and/or adequate cooling of the diodes.
- With a shape other than a square or rectangle - no radiator is used for diodes
- With shapes other than a square or rectangle, it is not possible to make the aluminium frame from the profiles available in the Crystal Panel LED offer
- We strongly recommend you to consult the shape impact on the panel's properties directly with our consultant.

k. At the customer's request, we install LED strips in the groove according to the following rules:

- Location: 2 mm from the illuminated edge
- Depth: 4.5 mm
- Width: 3 mm

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l. As a standard, a power cord or cords are routed out of each Crystal Panel product, depending on the design provided by the customer or the need for an additional power supply (conditions specified in the manufacturing standard). **All power cords must be connected directly to a power supply or an installation of a power supply adapted to the project requirements.**

m. Length of the power cord:

- In case of standard orders we use SMYp 2x0.35 cords, 1.5 m long. Other lengths of power cord are available upon request of the Customer and after agreement with the Consultant, considering the voltage drops, and for additional fee.

n. Dimensions and thickness tolerance:

- Panel size up to 0.5 m²; \approx - 1 mm from the nominal size
- Panel size above 0.5 m²: \approx -2 mm from the nominal size

o. Thickness tolerance of panel / opal

- +/- 20% (PMMA manufacturing tolerance)

p. Radiator thickness tolerance:

- +/- 10%

04 / INSTRUCTIONS CONCERNING INSTALLATION

a. Recommended method of installation:

- In suitable aluminium frames, for example with a magnetic or snap front
- Directly in a properly shaped piece of furniture or other structure
- Using other support or shaped brackets

b. Non-standard installation method:

- By screws through drilled or laser cut holes (subject to additional charge)
- In wooden frames
- In beam structures (for example, imitation of windows)
- In a free state

c. Thermal expandability of plexiglass: 0,065 mm / m / °C

The aforementioned methods or other non-standard methods of installation have to be determined with our Consultant as they can affect the selection of materials to be used, the production process or the method of securing particular elements of the product.

05 / DURABILITY AND LIMITATIONS OF APPLICATION

a. Expected diode life span:

- Minimum 50.000h (with a proper power supply and at optimum operating temperature)

b. Optimum working temperature range:

- 10-25°C (non-condensing environment)

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c. Protection class: IP40

LED panel cannot be exposed to direct contact with water. Indoor use only.

06 / LIGHT DIFFUSING MATERIALS

a. The panel, as a lighting component, is not intended for direct display. Due to the possibility of scratching the surface, which significantly affects the quality and esthetics of illumination, the panel should always be placed under a suitable light-diffusing material.

b. Material for illumination (image carrier and light diffuser):

- backlit foil
- polyester fabric

c. Opal

- min. 3 mm thickness
- with an appropriate light diffusing index

d. Stone:

- with appropriate thickness and angle of light diffusion
- before finalizing the order, we recommend carrying out a light diffusion test using our sample product or prototype

e. Other materials intended for translucent illumination (we always recommend diffusion test on the sample or prototype before placing the final order)

07 / BEFORE PLACING THE ORDER

a. Measurements:

- During the measurement of a place where the panel is to be installed, please pay attention to angular deviations. Always use the appropriate tolerance for possible thermal expansion of the panel.
- Bear in mind that the outer dimensions of the panel are not the same as the dimensions of the illuminated surface! Your design should include shaded areas (please refer to the CPL Standard of Production).
- Depending on the dimensions of the luminous space, make sure there is proper distance to diffuse the light.
- The thermal expandability of plexiglass should be also taken into consideration when you design the location and size of the fixing holes.

b. Placement of the power supply:

- Find the proper place to install the power supply to provide its proper cooling and availability in case of malfunction.
- The length of the cord between the power supply and the panel should not exceed 2.5 m due to voltage drops. In special cases, when the cord will have to be longer, please contact the Consultant - he will find the right solution in each case!

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08 / INFORMATION CONCERNING THE USAGE AND WARNINGS

a. It is recommended to:

- Transport the panel in the original packaging, possibly in vertical position, carry it like the sheet of glass
- Store and handle in vertical position, avoid placing it on the edge with LED strip or electrical cord
- Remove the protective foil from the panel ONLY during the final stage of installation
- Clean the panel using a window cleaner with low alcohol content (such as Clin Anti-Fog) and with a soft cloth or paper towel
- Protect the edges with LEDs from accidental damage or ripping off the power cord
- Make sure that the power cord of the panel is not connected to 230V

b. It is not allowed to:

- Stick the graphics, adhesive tapes, foils and other materials directly on the panel surface
- Overload the panel structure
- Pull by the cord
- Place the panel into the water
- Bend the panel in a manner not covered by the project. All acceptable bends of the panel are to be discussed with the Consultant in advance.
- mount the panel by gluing its back surface to the surface or wall
- **cut additional supply wires or modify the power supply system in any way without the authorisation of the manufacturer.**

09 / FINAL REMARKS

a. Any modifications made without the written consent of the Producer will void the guarantee.

b. Please note that any changes made to the power supply, incorrect connections, or interference with the product's structure will void the warranty. This is unless the manufacturer has been informed and given consent.

c. The warranty does not apply to small scratches, structural defects, microdamage, or contamination (e.g., adhesive residues of the protective film that cannot be completely removed) occurring on any surface that do not affect the proper diffusing of light through the 3 mm Opal Duo Satin Plexiglas placed on that surface.

d. In special and mutually agreed-upon cases where the panel is intended for direct display (not recommended and at the customer's express request), scratches, structural errors, or other contamination or microdamage that are not clearly visible to the naked eye from a distance of arm's length are not covered by the warranty. However, the need for direct exposure of the panels must be reported at the time of preparing a quotation and when placing an order.

e. In case of any doubts concerning the application of our products, we encourage you to contact Crystal Panel Consultants.

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