

Channel letters

BACKlight 2G / Protect BL02 BACKlight 2G / Protect BL04

1. Description



Illuminated channel letter

To illuminate channel letters on buildings for interior and exterior applications.

In a channel letter, OSRAM BACKlight BL02 and BACKlight BL04 are used to backlight the acrylic with great homogeneity and without creating shadows. The letters attract a high level of attention thanks to the saturated LED colors and their high brightness.

2. Construction



Data sheet

Note: Please read the product data sheet for BACKlight 2G BL02 or BACKlight 2G BL04 carefully. These data sheets contain important information regarding safety and installation.

You should also read the OPTOTRONIC® "Technical Guide" for installing the electrical equipment, and also data sheets OT 50/220-240/10 (IP20), OT 50/120-277/10 E (IP64), OT 12/220-240/10 LE (IP65) or OT 6/200-240/10 CE (IP65).

Components of the channel letter:

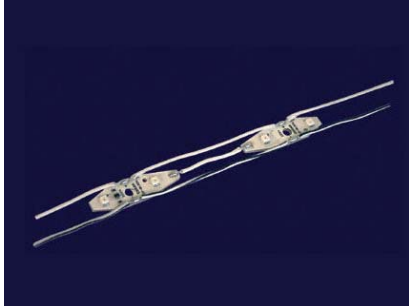


Channel letter structure

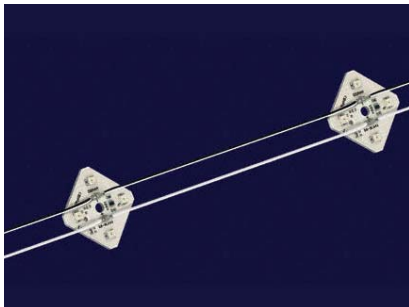
- a) Bottom section of the letter, metal or plastic
- b) Reflector (acrylic) with fixing bracket
- c) Double base made of rigid PVC foam

Note: The double base made of rigid foam is not essential for the construction, but a small spacing away from the acrylic reduces the number of LED modules required. It also prevents possible contact with any water. The letter must also have holes at its lowest point to allow any water to escape.

3. Products



BACKlight BL02S



BACKlight BL04



BACKlight Protect BL02LP

Products and accessories used:

a) Modules / versions

BACKlight 2G BL02S

A chain consists of 60 boards connected with flexible cables. A board contains 2 LEDs. There are 2 LED chains on a reel; this corresponds to one module. The overall length of the chain is $2 \times 4.8 \text{ m} = 9.6 \text{ m}$ at maximum extension. The module can be separated at any point between the individual circuit boards in the case of white, blue and green LEDs, or after every second circuit board in the case of super red, amber, orange and yellow LEDs.

BACKlight 2G BL02L

The long version of BL02 has an overall length of $2 \times 7.2 \text{ m} = 14.4 \text{ m}$ at maximum extension.

BACKlight 2G BL04S

1 chain consists of 30 boards connected with flexible cables. A board contains 4 LEDs. There are 2 LED chains on a reel; this corresponds to one module. The overall length of the chain is $2 \times 2.4 \text{ m} = 4.8 \text{ m}$ at maximum extension. The module can be separated at any point between the individual circuit boards.

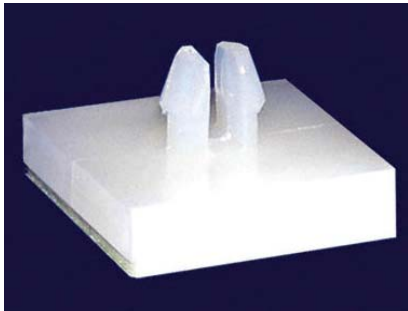
BACKlight 2G BL04L

The long version of BL04 has an overall length of $2 \times 3.6 \text{ m} = 7.2 \text{ m}$ at maximum extension.

BACKlight Protect BL02LP

BACKlight Protect BL04LP

Special encapsulation ensures maximum possible robustness during installation and operation. The boards have IP66 protection and are therefore suitable for permanent use outdoors. BACKlight Protect modules are available exclusively as long BACKlight 2G versions in various selected colors.



BL-T für BL02 and BL04

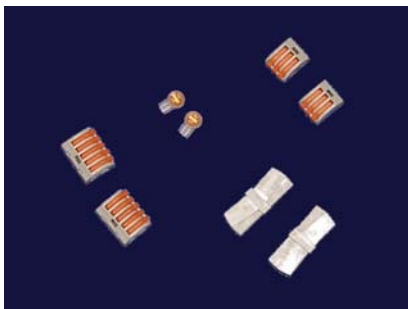
b) Mechanical fixing systems

For ease of installation we offer installation aids BL-T (accessory for BL02 and BL04) and BL-TP (accessory for BL02LP and BL04LP) as snap-in holders with adhesive backing for use on almost all surfaces.

Snap-in spacers for screwing in or gluing, e.g. from Richco (www.richco-int.com)

M4 screws for BACKlight 2G or M3 screws for BACKlight Protect

Note: If screws are used for installation, plastic washers should be inserted between the screw head and the circuit board to prevent mechanical damage to the conductor paths.



Electrical connection terminals

c) Electrical connection terminals

- Standard terminals
e.g. from WAGO (243-214 or 224-201)
- Moisture-protected terminals
e.g. from 3M (Scotchlok™ single-wire connector UY2)

Note: Do not solder or unsolder any cables. Use only terminals to connect the LED modules since otherwise the protective coating may be damaged or destroyed.



OPTOTRONIC® 6 W
OT 6/200-240/10 CE (IP65)

d) Power supplies

- OT 6/200-240/10 CE
- OT 12/220-240/10 LE
- OT 50/230-240/10
- OT 50/120-277/10 E



OPTOTRONIC® 12 W
OT 12/220-240/10 (outdoor IP 65)

OT 6 is suitable for small letters and small light boxes. It has IP65 protection and thanks to its height of 22.3 mm it can be easily installed in false floors or small boxes.

Optotronic® OT 12 is very compact, which makes it ideal for installation between the LED rows as it does not create any shadows. $\frac{1}{4}$ of a complete BL02 or BL04 module can be operated with one OT 12.



OPTOTRONIC® 50 W
OT 50/230-240/10 (indoor)

Optotronic® OT 50 is available in a version for outdoor applications (OT 50/120-277/10E) and in a version for indoor applications (OT 50/230-240/10). A complete BL02 or BL04 module can be operated with mid-feed with one OT 50 or OT 50 E. OT 50/230-240/10 is screwed to the fixed to the base material after the cover caps have been removed.

The devices feature the following safety functions:

- Open-circuit protection
- Short-circuit protection
- Overtemperature protection
- Overload protection

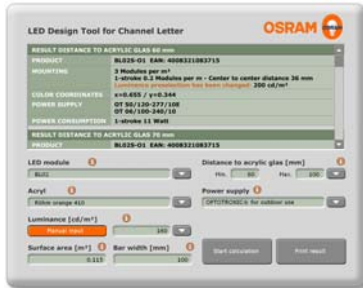


OPTOTRONIC 50 W
OT 50/120-277/10 E (outdoor IP64)

The devices operate on a SELV basis. The primary and secondary sides are electrically isolated. All the contacts on the secondary side can be touched without danger.

Note: Only the OT 50/120-277/10 E device can be connected in parallel on the secondary side.

4. Design



To achieve homogeneity in all applications, OSRAM's **LEDdeSIGNer** LED program is useful for calculating the number of modules required and the correct spacing between the individual circuit boards. The program can be downloaded free of charge from our website at www.osram.de and is constantly being updated.

The distance between the LED module and the acrylic must be large enough so that it is impossible to see individual LED light points but small enough to avoid loss of light due to reflection.

The minimum distance between the LED modules and the reflector is around 50 mm depending on the acrylic used. The optimum distance between the LED modules and the acrylic is approx. 70 to 120 mm.

5. Initial assembly

Version a

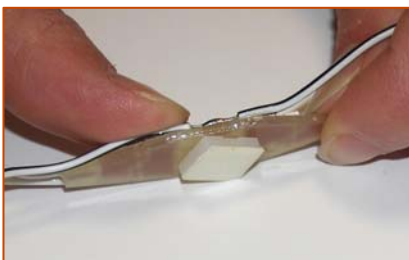
Fitting the LED modules with the aid of BL-T (P)



Fitting BL-T (P)

Step 1

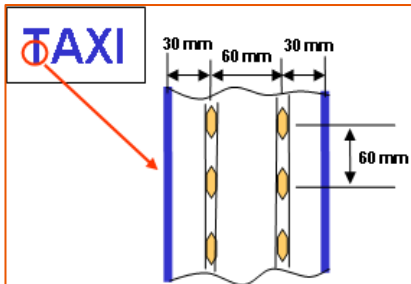
Clip adhesive pad BL-T (P) into the appropriate hole in the center of the circuit board. At least every second board should be provided with an adhesive pad.



Pressing down BL-T (P)

Step 2

Remove the protective foil from the bottom of the pad and press the pad gently down in the appropriate place.



Note: Symmetrical spacing between the LED boards and the module rows produces the best homogeneity. Where possible, there should be a half-board spacing between the LED module and the letter walls.

Version b



Fitting the BACKlight with screws

Fitting the LED modules with M4 screws

Step 1

Pre-drill holes in the double base. Or use a power screwdriver to screw down the modules directly without pre-drilling.

Step 2

Screw down at least every second board hand-tight. Note that BACKlight 2G modules have a plastic washer between the screw head and the surface of the board to prevent possible damage to the conductor paths.

Note: All BACKlight 2G modules are covered at the factory with a highly effective protective coating. This protects the LED module from moisture and condensation. Under no circumstances may the modules be operated either submerged in water or under running water.



6. Pre-installation



Electrical connection of the modules



Connection to OT 50/120-277/10E



Channel letter casing

Step 3

Terminals are used to provide electrical connection of the open cable ends. The LED chains may only be shortened by separating the connecting cables between the boards. Safe operation is guaranteed only if the modules are connected in parallel. In the case of mid-feed, a maximum of two BACKlight chains can be connected in parallel and operated on an OT 50.

Connect the positive pole (white cable) of the first chain and the positive pole of the second chain to the positive pole on the secondary side of the control gear. Then connect the two negative poles (black/white cable) to the negative pole of the control gear.

If the letter contains more than two chains a new power supply may be inserted or star points may be formed.

Note: BACKlight modules must not be connected in series.

Step 4

The complete letter is electrically wired in accordance with Step 3. All the BACKlight chains are connected as units of two (maximum of 2 BACKlight chains to be connected in parallel) to the star points. Connection to the supply cables of the power supply unit(s) also takes place at the star points.



7. Final assembly

Version a



Einschrauben der Distanzstücke



OT 50 im Buchstaben installiert



Elektrische Installation

Fitting the control gear under the double base or externally

Step 5

Drill holes for threaded rods in the empty bottom section of the letter. Then insert the rods and secure them at the front and back with nuts.

Step 6

Nuts with washers are attached at the top end of the threaded rods. The threaded rods with the washers are used as spacers and as a support for the double based equipped with the LED modules.

Note: Secure the threaded rods with the nuts so that there is no free play at all.

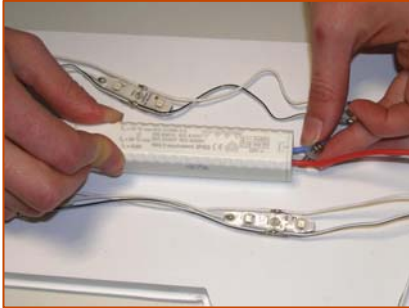
Step 7

Screw the power supply unit in the letter. The fixing holes on OT 50/230-240/10 are located under the caps.

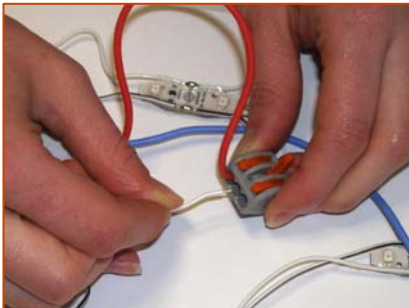
Connect the power supply unit on the secondary side to the LED modules and on the primary side to the ac power cable.

Note: All electrical wiring and appropriate fusing must comply with the latest installation guidelines.

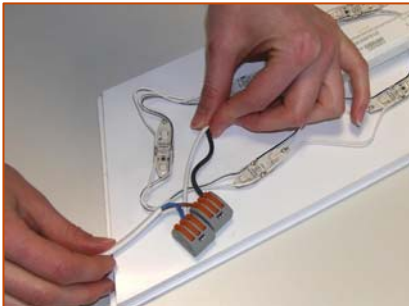
Version b



Installation OT 12



Electrical connection



Electrical wiring

Fitting the control gear in the letter

For low-profile letters in particular that do not have a double base or for lettering where external fitting of the control gear is not possible we recommend using OT 12 in the letter.

Note: To fit the control gear in the letter there must be a gap of at least 25 mm between the LED module rows.

Step 5

To achieve illumination that is as homogeneous as possible it is best to fit the control gear between the LED rows and not between the module wall and the LED row. Screw the power supply unit in the letter. Fixing holes are provided at both ends of OT 12.

Step 6

Connect the power supply unit on the secondary side to the LED modules and on the primary side to the ac power cable.

Note: All electrical wiring and appropriate fusing must comply with the latest installation guidelines.

8. Further Information

www.osram.com/led-systems

Further information in the internet :
Data sheets, brochures, eulumdat files