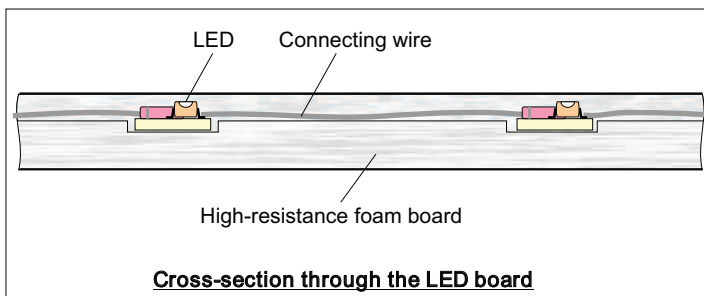


## What is a letter-shaped LED board?

This special type of LED board provides a very compact means of illuminating channel letters. It consists of a letter-shaped high-resistance foam board with milled recesses for the LEDs and connecting wires. For safety reasons all electrical parts are hermetically sealed in a transparent filling compound.



### Base material: High-resistance (HR) foam board

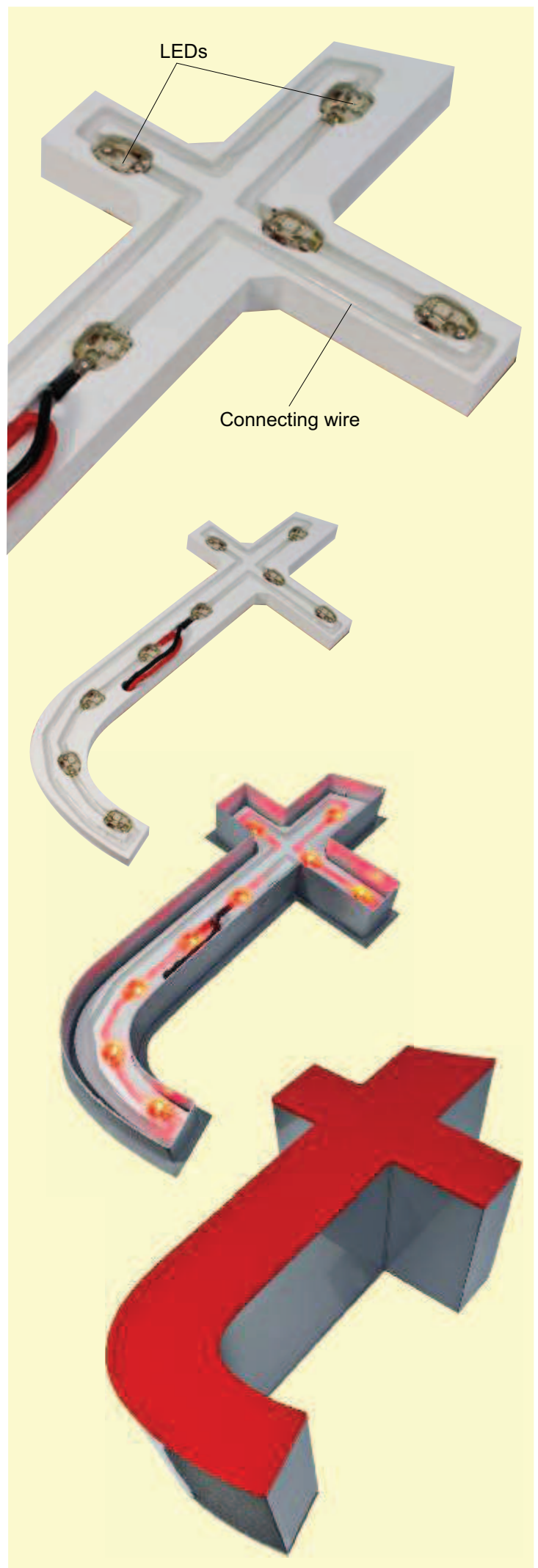
The base material of the LED boards is high-resistance PVC foam (e.g. Kömacell). It has a light foamed core and a hardened surface making it very light and rigid at the same time. The material can be easily machined using simple tools (knife, rasp, drilling machine, etc.). HR foam board is a well-known material in the advertising industry where it has been used successfully in indoor and outdoor installations for years.

### Light source: LEDs

The light is generated by LEDs. We use SMD LEDs with a protective diode mounted on a small circuit board. The same LEDs are also used in our LED Tube™ where they have proved themselves in practice for years. The LEDs are available with two power ratings, i.e. as standard LEDs (0.1 watts) or power LEDs (0.4 watts), in three different shades of white light (warm, daylight, cold) and six other luminous colours.

### Protective insulation: transparent sealing

The LEDs and all electrical parts are protected against ambient influences by a transparent sealing compound, another proven material which we have been using for years, and which is resistant against seawater, cracking and yellowing.



## **Advantages for sign makers**

### **Simple installation**

The LEDs come pre-installed, correctly spaced and sealed. All that needs to be done is to fix the board in the letter and connect the converter.

### **Time and cost savings**

Eliminating the need to install the LED Tube™, the sign can be completed much faster - an advantage any sign maker will appreciate particularly in the case of small fonts and narrow legs (e.g. profile type 5).

### **Adapted light distribution**

The LEDs can be freely distributed on the board without being tied to any fixed pattern or spacing. In order to achieve a uniform light distribution, a different LED density must be used in narrow and wide legs. By putting the LEDs into the correct position, an optimum illumination of corners and serifs can be achieved.

### **Identical illumination for series production**

If a series of identical signs is to be produced, the sign maker need not worry about the uniformity of the illumination as the number and position of the LEDs on the boards is always identical.

### **No size limit for large letters**

Up to a letter height of 80 to 100 cm (depending on the width of the legs) the LED board can be machined "from a single piece". For larger letters the board is split into two or more segments.

### **Letters with illuminated sides**

Even letters with translucent sides (profiles 8 and 9) can be illuminated uniformly. As the LEDs are recessed in the HR foam board, they are less visible resulting in a distinct bright/dark separation at the sides.

### **Retrofitting older signs**

Older neon signs can be retrofitted with modern LED illumination using the letter-shaped LED boards. For this purpose, the old illumination system must be removed from the letters, and an electronic drawing of the lettering must be available.

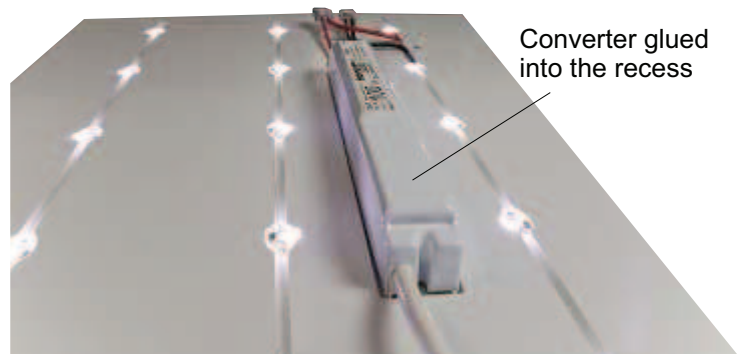
### **Also available with acrylic glass**

Profile 3 letters (with the light shining towards the rear) require transparent rear panels. For this purpose, we offer letter-shaped LED boards made of clear acrylic glass.



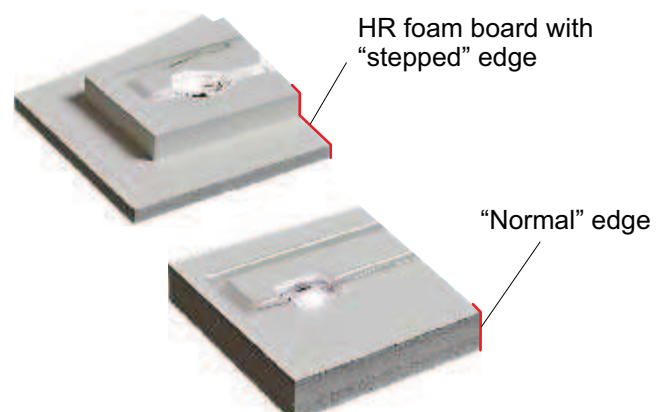
### **Pre-installed converters**

If space allows, the converters can be mounted onto the board as well. To avoid undesirable shadows, the converters are fitted into a 5 mm recess in the board. The LEDs are pre-wired to the converter output so that only the mains cable needs to be connected during installation.



### **Rear panels and recessed edges**

The HR foam boards can also be used as rear panels for channel letters. For this purpose, a surrounding recessed edge can be provided.

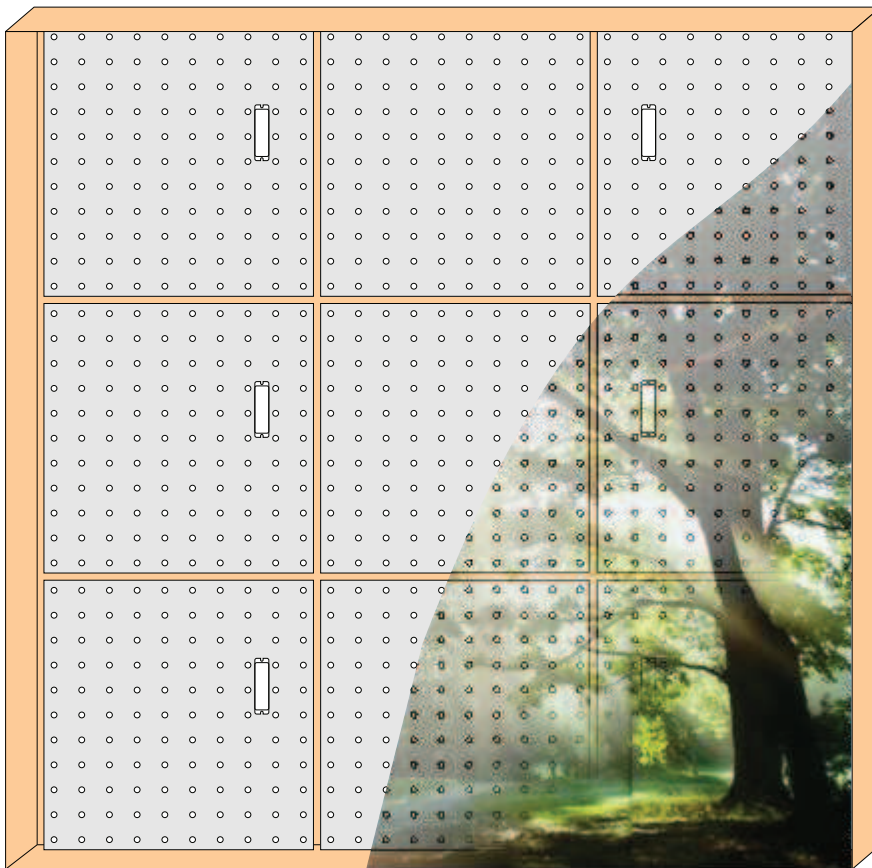


## Backlighting LED boards

Our HR foam-based LED boards are not only suitable for illuminating channel letters, but can also be used for backlighting large digital prints or banners, wall or ceiling elements, bars, counters, showcases, etc.

This offers the following advantages over a conventional illumination using fluorescent lamps:

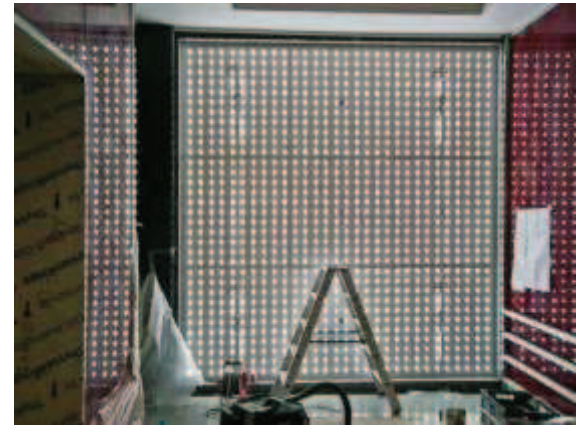
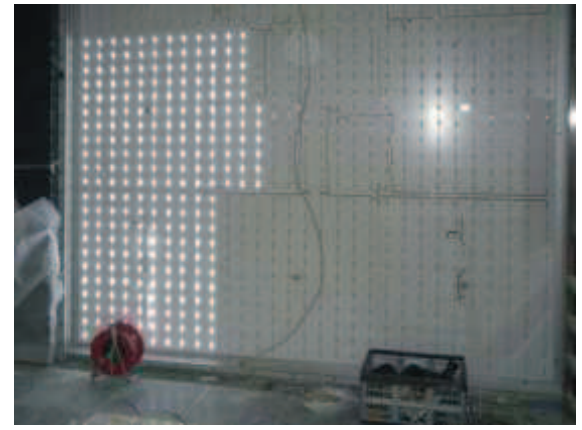
- longer lifetime of the LEDs
- lower power consumption
- considerably lower service requirements
- lower overall depth
- uniform light distribution
- size and shape independent of fluorescent lamp dimensions



The pictures on this page show a 3 x 3 m large illuminated box with a depth of only 10 cm.

There are nine HR foam boards of 1 sqm each mounted on the rear panel of the box.

Each of the nine boards is equipped with 110 power LEDs (0.4 W) at a spacing of 90 mm. The converter (type C100/990) is dimmable and supplies 275 LEDs (i.e. 2.5 boards).



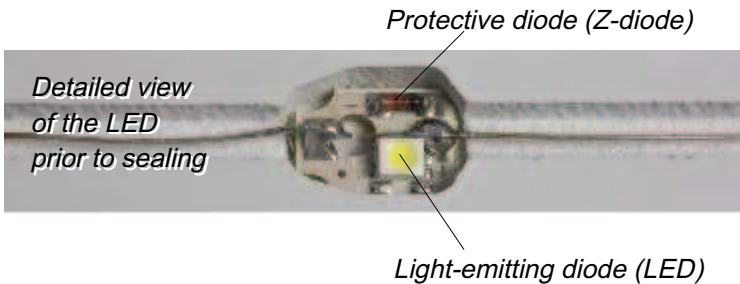
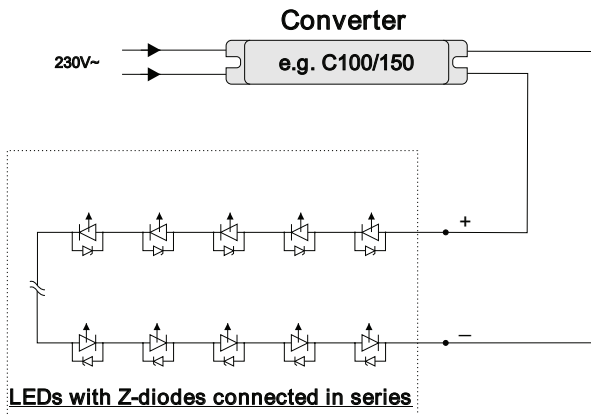
The power consumption of the LEDs for the entire light box is 435 W.

With fluorescent lamps (20 lamps with 58 W each), the power consumption would be 1160 W.

Hence, the power consumption with LEDs is less than 40% compared to fluorescent lamps.

## Series connection of LEDs

The LEDs in the letter-shaped board are generally connected in series, a proven practice which has been used in our LED Tube™ and in the illuminated sign industry for many years.



## Converters

The variety of different letter types and sizes requires different converters. For smaller signs with a letter height of below 20 cm the converter must be installed outside the letter due to the restricted space. In the case of larger letters, the converter can be pre-installed on the board, however in some cases it may be advantageous for reasons of cost and serviceability to have the converter installed externally. Whatever your choice, we offer a large number of suitable converters.

For further information please contact us.



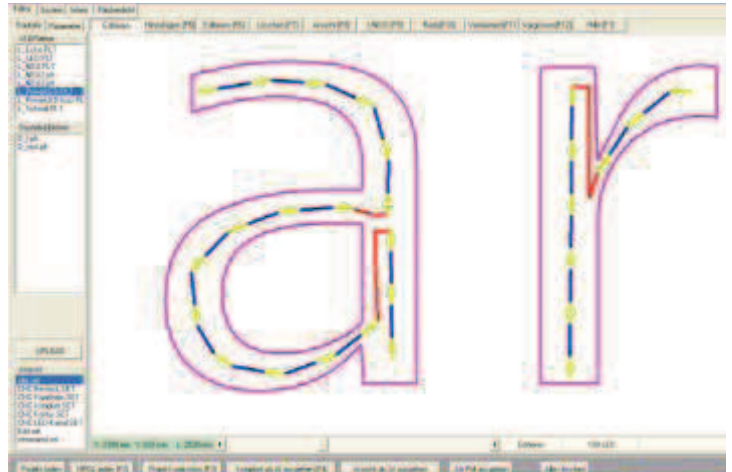
All converters are completely sealed (IP 67)

## Enquiry, quotation, order

We require the following information to prepare a quotation:

- a vector drawing of the sign (ESP, AI, CDR or comparable)
- the profile type/type of sign (illuminated front or rear, illuminated sides)
- the overall depth
- the desired light colour

Based on this information we can calculate the required LED layout using our dedicated "LEDchar" software.



Screenshot of the LEDchar design software

The software is used to determine the position of the LEDs within the letters, e.g. with a spacing of 4 cm. If the letters have arms and legs of different widths, the LED spacing can be adapted accordingly. At problematic spots such as serifs, the position of individual LEDs can be changed in order to achieve a highly uniform illumination. Finally, cut-outs or recesses can be added if necessary.

After the LED layout has been calculated, the converters are chosen and the quotation is prepared. Together with the free quotation the customer will receive a detailed drawing and a list of the LEDs and converters required.

If an order is placed, the correctness of the drawing will be checked before the production starts. Usually, the finished boards can be delivered within a week.