TPL VISION
Active LED solutions

HPBACK EXTERNAL CONTROL

USER GUIDE

PREAMBLE

This notice includes all the advice and warnings that enables a correct set up and a safe use of the product. TPL Vision can not be responsible for the bad use of the notice. If so, TPL Vision will cancel the guarantee's effects.

DO NOT CONNECT TO 24VDC.
YOU NEED A CONTROL CURRENT DRIVE !

UNPACKING

Products are packed in our factory, using suitable materials for a safe transport through the usual means of transportation, in France and internationally. However, a damaged package must be reported to the carrier on delivery. Hand-written reservations must be indicated on the delivery order. Moreover, please send a letter or an email to TPL Vision as soon as possible (up to 24 hours after the delivery). If the transportation damage has not been stipulated on the delivery order and reported to TPL Vision in time, the package will not be taken back nor exchanged. To open the package, do not use any cutting blade to avoid damaging the product(s). Please use the delivered accessories, if needed (do not use any other products or equivalents to replace the delivered accessories).

RISK CLASS

The EN-62471 norm about lighting fluxes enables the classification of led lightings in 4 distinct groups, according to their hazardousness degree. Please find below an indicative table, recapitulating the classes of risk for our standard products.

Colour	Class	Risk
White WHI, Red 630 nm	0	none
IR 850 nm	1	low

In all cases, TPL Vision recommends the use of **the protection glasses** that are listed in its catalog.

For more information about photobiological risks, do not hesitate to contact us.

TPL Vision can provide guidance notes about the **nominal distance to minimize eye risks**.

BEWARE to the infrared light, invisible to the eyes. To know if the light is on, please use a camera.

NOTE Optical Safety Risk Assessments have been carried out assuming safe operation of the device within the defined thermal limits described in this document. As this is an unrestricted device, any operation beyond the limits defined in this document are at the users risk.

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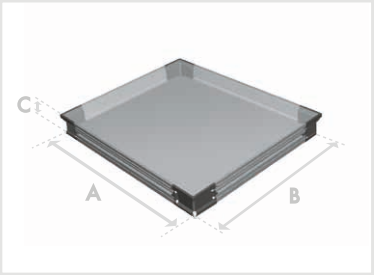
DIMENSIONS

Length x Width (mm)	Height (mm)
A x B	C
Min : 200x200 ; Max: 300x300 or 400x200	45

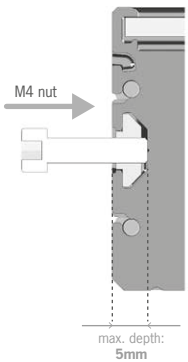


- **Useful surface:** A x B
- **Max. useful surface:** 0.09 m²
- **Max. useful perimeter:** 1.2 m
- **Total surface:** (A + (4mm x 2)) x (B + (4mm x 2))
  (connector excluded)

FIXING

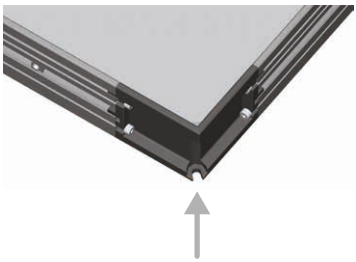
During the set up, the light has to be switched off and unplugged. Please use the fixing groove or holes designed for that purpose. We recommend the using of nuts (supplied) in the groove or M4 screws (not supplied) with a tightening torque from 0.5 to 1.5 Nm. We also recommend the use of a threadlocker (not supplied) to avoid any risk of loosening.

FIXING ON THE LENGTH (groove)



(4 M4 nuts – supplied)

FIXING ON THE CORNER



(CHC screw M4x20 – not supplied)

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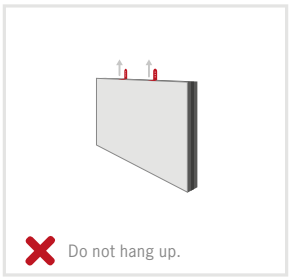
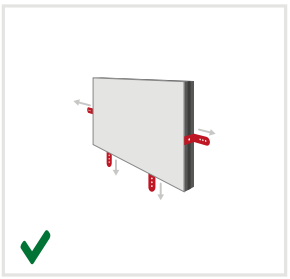
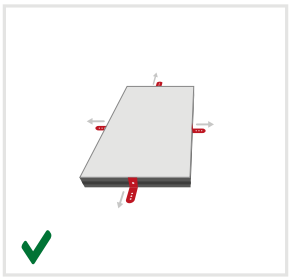
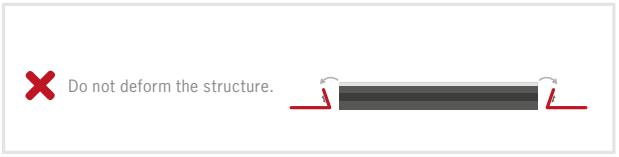
BE CAREFUL WHEN USING ANGLE BRACKETS.

(TPL Vision reference: TPL-MOUNT-HPB-SQUARE1)



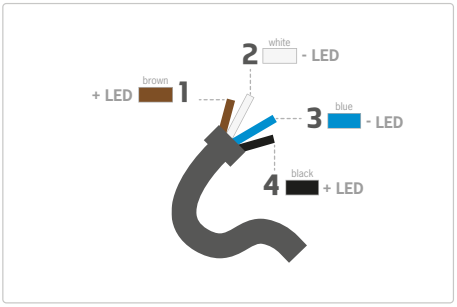


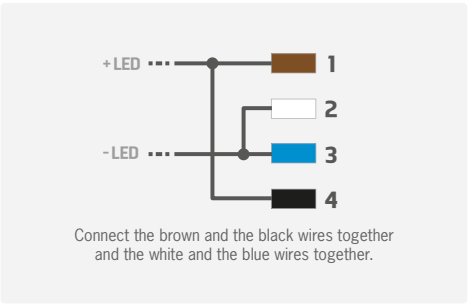




CONNECTION

Cable 4 wires





Connect the brown and the black wires together
and the white and the blue wires together.

Voltage drop for Cable 10 meters:	0,6V @ 5A	1,2V @ 10A	1,8V @ 15A	2,3V @ 20A	2,9V @ 25A	Max: 25A/cable

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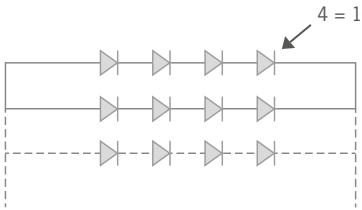
LED CONNECTION IN THE PRODUCT



The LED are connected in series, by row of 4. All rows of 4 LED are then connected in parallel.

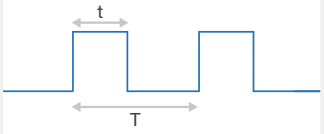
LED FEATURES

Max admissible current: 2.5A ; t < 100µs ; D = 0.005 (0.5%).
Max admissible current in continuous mode: 350mA.

Voltage at the LED terminals according to current and colours :

	Red	Infrared	White
Current «I» /LED	**Voltage «Vf» (±20%)/LED**	**Voltage «Vf» (±20%)/LED**	**Voltage «Vf» (±20%)/LED**
CW up to 350 mA	2.15	2.85	3.0
Limit: 2500 mA	3.73	3.7	4.45

Current «I» /Led	Max Duty cycle «D»	Max pulse width «t»
Up to 350mA	N/A	CW
500mA	50%	10s
800mA	30%	1s
1A	10%	10ms
1.5A	5%	1ms
2A	2%	500µs
2.5A	0.50%	100µs



$$D \text{ (duty cycle)} = \frac{t \text{ (time)}}{T \text{ (period)}}$$

Min current: 100mA. **LED rising time:** 200 nano seconds (0.2µs).
Required voltage at the product entry (cable port of entry): Vf x 4 + 2.5VDC.

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EXAMPLE OF CURRENT CONTROL DIMENSIONING

Product dimension: 200 x 200 = 0.04m².
LED number: (1 LED = 25 cm²) **:** 0.04 x 100² ÷ 25 = **16 LED**.
Number of rows of 4 LED: 16 ÷ 4 = **4 rows**.

Max admissible current: 4 rows x 2.5A/row = **10A in total**

OPERATING CONDITIONS

-10° to +40°C / 80% of humidity without condensation.
No thermal shock (max temperature variation: 10°C in 24h). Not for outdoor use.

USER SECURITY

Please respect the power supply voltages and the connection terminals.
Do not modify or dismantle all or part of the product.
Do not connect or clean when power is on.
Do not watch the lighting source directly, and follow the advice below :

- If the workstation enables it, interpose a filter that will stop the lighting radiation under fixed or adjustable frame between the source and the operator.
- When these measures cannot be implemented, supply the operators with glasses (class 4) available for sale at TPL Vision.
- Forbid or limit the direct access to the lighting source (exposure into the radiation axis).
- Establish a security perimeter so as to prevent the operators from approaching the lighting source beyond the recommendations of the manufacturer, where eye irritation is concerned.
- Ensure that the chosen means properly reduce the exposure level (e.g. features of screens or glasses to be chosen, according to the wavelengths that the operators are exposed to).

WARRANTY: for products supplied without an embedded current control drive, the 3-year warranty covers manufacturing defects only. Damage resulting from operation outside the product datasheet specifications (incl. overcurrent, incorrect voltage, or reverse polarity) is excluded. Compliance with datasheet electrical specifications is the customer's responsibility.

EQUIPMENT MAINTENANCE

CLEANING (when the product is switched off)

Please use a soft and dry cloth. Do not use any abrasive material.
Do not use any cleaning solvent or aggressive chemical product.
TPL Vision recommends to use isopropyl alcohol.

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TPL VISION
Active LED solutions

Brenchley House, School Road
Charing, Kent TN27 0JW
United Kingdom

+44 (0)1738 310 392 | contact@tpl-vision.co.uk