



## MEDIUM MBACK+

DIFFUSE AND HOMOGENEOUS BACKLIGHT

▷ QUALITY CONTROL WITH CAMERA

▷ MACHINE VISION SYSTEM

▷ HIGH POWERFUL LED

▷ ULTRA-THIN BORDERS

▷ HOMOGENEOUS LIGHTING SYSTEM

## POWERFUL LARGE BACKLIGHT, HOMOGENEOUS AND EASY TO INCORPORATE



### 3 VERSIONS

Besides the **Standard version**, there are 2 other versions:

#### OVERDRIVE VERSION

Power customisable by the user, overdrive up to **x3**

#### EXPERT VERSION

Light managed by a remote controller overdrive up to **x6**

The Medium MBACK+ is a backlight both powerful and very diffuse, dedicated to many machine vision applications. Thanks to the high powerful LED inside, it creates intense luminous flux, that helps cameras to see the workpieces shapes thanks to the shadow puppet effects. You can even decrease the light power when necessary. The OVERDRIVE version can offer a lighting power far higher and the EXPERT version (with no current control inside) even more. It works in continuous and strobe mode, with very short rising and falling times: 25 µs and 15 µs.

Equipped with very thin edges, the Medium MBACK+ uniformly illuminates from the whole useful surface, included from the edges.

No hot spot to notice ! The connector can be placed on any side of the Medium MBACK+, which can then be set up on any kind of conveyor belts. At the basis of the connector, 2 LED show if the product is powered and if the strobe mode is on. The Medium MBACK+ is perfectly adapted to quality control tasks, such as: presence/absence, edge defects, material lack. It can also be used as a direct diffuse lighting solution, to inspect shiny workpieces.

The Medium MBACK+ is available in various wavelengths, and also in various dimensions. For specific sizes, that don't belong to the standard range, you can call TPL Vision for customized products.

### 3 VERSIONS AVAILABLE

The **STANDARD version** is very easy to use: you don't have to adjust anything, only to plug the light. The STANDARD version works in continuous and strobe mode, with rising and falling times especially short: 25  $\mu$ s and 15  $\mu$ s. The STANDARD version generates a high powerful light, that fits most machine vision applications. Moreover, some LED, close to the connector, show if the light is powered, and if the strobe mode is on, for a better use of the product. Besides the **STANDARD Version**, 2 other versions are available : OVERDRIVE and EXPERT.



#### OVERDRIVE UP TO **x3** WITH CURRENT CONTROL INSIDE

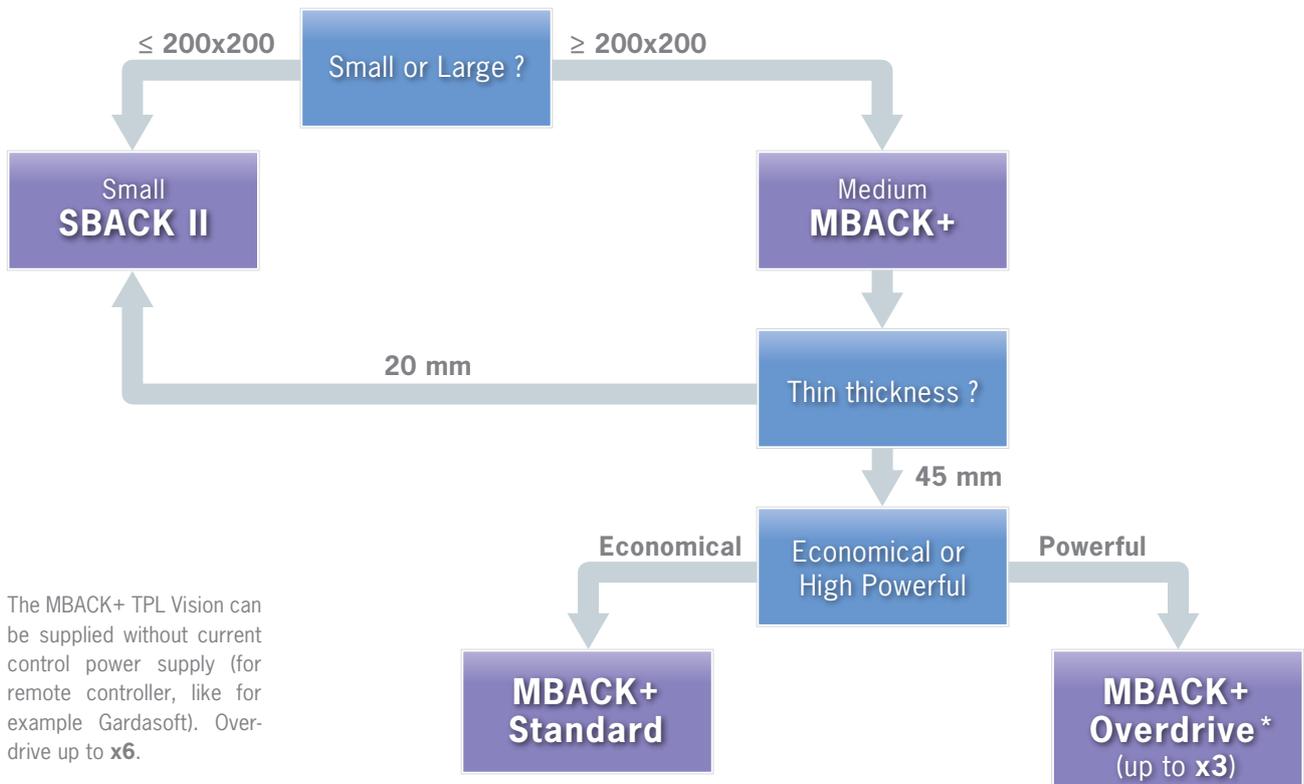
The OVERDRIVE version is just as easy to set and to use as the STANDARD version. Equipped with specific electronics, it gives the opportunity for users to overdrive on their own the lighting power. The OVERDRIVE version is dedicated to specialists who want to customize the luminous flux very precisely, so as to get the most reliable results.



#### OVERDRIVE UP TO **x6** WITH YOUR OWN CONTROLLER

In the EXPERT version, the products do not have any current controller, which is very useful for users who want to work with their own controllers. In strobe mode, they can use the EXPERT lights in overdrive, so as to get a more intense lighting power. The EXPERT version definitely targets machine vision specialists, able to manage a whole vision system.

### HOW TO CHOOSE A BACKLIGHT ?



# TECHNICAL SPECIFICATIONS

	MBACK+		MBACK+ OVERDRIVE		MBACK+ EXPERT	
<b>Electronics</b>						
Power supply	24 VDC ±10%				External current controller (not supplied)	
Functioning mode	Continuous or strobe					
Strobe input	PNP : From 5 to 24V for 100% ON. From 0 to 1V for 100% OFF. NPN : less than 1V for 100% ON. Above 2V for 100% OFF. Max 20V.				N/A	
Overdrive	No		61 KLux (Standard :32 Klux)		According to power supply	
Strobe Conditions (On time, duty cycle)	No restriction		3ms @ 10% at max power		300µs @ 5% at max power	
Dimming	Potentiometer 30-100%				N/A	
Maximum rising time	25 µs				According to power supply	
Maximum falling time	15 µs				According to power supply	
Wiring	Surface ≤ 0,5m <sup>2</sup> : 1 connector M12 T-Power 12A 4 poles <b>or</b> 1 cable 4x1,5 <sup>2</sup>	Surface > 0,5m <sup>2</sup> : 1 connector M12 T-Power 12A 4 poles <b>and</b> 1 cable 4x1,5 <sup>2</sup>	Surface ≤ 0,25m <sup>2</sup> : 1 connector M12 T-Power 12A 4 poles <b>or</b> 1 cable 4x1,5 <sup>2</sup>	0,25m <sup>2</sup> < Surface < 0,88m <sup>2</sup> : 1 connector M12 T-Power 12A 4 poles <b>and</b> 1 cable 4x1,5 <sup>2</sup>	Surface ≤ 0,25m <sup>2</sup> : 1 cable 4x1,5 <sup>2</sup>	0,25m <sup>2</sup> < Surface < 0,5m <sup>2</sup> : 2 cables 4x1,5 <sup>2</sup>
Power supply cable(s) max length	Wire M12 : 10m (not supplied) ; Cable : 10m				10m	10m
Max consumption	1,32W par 25cm <sup>2</sup> in peak and on average		3W/25cm <sup>2</sup> in peak max 0,43W/25cm <sup>2</sup> max on average (3ms@10%)		7,8W/25cm <sup>2</sup> in peak max 0,54W/25cm <sup>2</sup> max on average (300µs@5%)	
<b>Optics</b>						
Colour	White, Red, Green, Blue, Infrared					
<b>Mechanics</b>						
Thickness	45mm					
Surface	Mini 200x200mm – Max surface 0,88m <sup>2</sup> Max length 1,9m – Max perimeter 4,5m	Mini 200x200mm – Max surface 0,88m <sup>2</sup> Max length 1,9m - Max perimeter 4,5m	Mini 200x200mm – Max surface 0,88m <sup>2</sup> Max length 1,9m - Max perimeter 4,5m	Mini 200x200mm – Max surface 0,5m <sup>2</sup> Max length 1,9m - Max perimeter 4,5m		
Weight	23.2 Kg/m <sup>2</sup> ±15%					
Body materials	Aluminum and loaded ABS					
Diffuser	White PMMA					
Fixing	4 M4 nuts (supplied) to insert in the groove or 4 M3x20 screws (not supplied)					
<b>Environment</b>						
Operating temperature	-10° to +40°C / 80% of humidity without condensation / No thermal shock (max temperature variation: 10°C in 24h)					
Storage temperature	-20° to +60°C / 80% of humidity without condensation / No thermal shock (max temperature variation: 10°C in 24h)					
IP protection	IP 40					
Labels	RoHS-CE-WEEE					

## LIGHTING POWER

MBACK+	MBACK+ OVERDRIVE
32 KLux	61 KLux

Lighting power measured on the diffusing plate – White LED colour.



## RELATED PRODUCTS

M12 female T-POWER 4 pins cable	
	
<b>2 meters</b>	Ref: C-M12-4P-T-2M
<b>5 meters</b>	Ref: C-M12-4P-T-5M
<b>10 meters</b>	Ref: C-M12-4P-T-10M

Safety glasses

Ref: EYE-PROTECT



# HOW TO BUILD YOUR REFERENCE

MBACK	VERSION	L LENGTH (CM)	W WIDTH (CM)	COLOUR
	STANDARD	20	20	WHI
	O OVERDRIVE	30	30	630
	E EXPERT	40	40	525
		50	50	470
		60	60	850
		70	70	
		80	80	
		90	90	
		100		
		110		
		120		
		130		
		140		
		150		
		160		
		170		
		180		
		190		

The first figure shall always be the biggest one.

WIRING 1		WIRING 2	
TYPE 1	POSITION	TYPE 2	POSITION
M CONNECTOR M12*	1	A CABLE 2.5 m	1
A CABLE 2.5 m	2	B CABLE 5 m	2
B CABLE 5 m	3	C CABLE 10 m	3
C CABLE 10 m	4		4
			5
			6
			7
			8

\*T-Power M12 connector for STANDARD and OVERDRIVE versions only

The position of wiring 2 must be different from the position of wiring 1.

WIRING CHOICE		
STANDARD	OVERDRIVE	EXPERT
<b>SURFACE ≤ 0.5M<sup>2</sup></b> 1 wiring	<b>SURFACE ≤ 0.25M<sup>2</sup></b> 1 wiring	<b>SURFACE ≤ 0.25M<sup>2</sup></b> 1 wiring
Connector M12 T-Power OR Cable 2.50m OR 5m OR 10m	Connector M12 T-Power OR Cable 2.50m OR 5m OR 10m	Cable 2.50m OR 5m OR 10m
<b>SURFACE &gt; 0.5M<sup>2</sup></b> 2 wirings	<b>0.25M<sup>2</sup> &lt; S. &lt; 0.88M<sup>2</sup></b> 2 wirings	<b>0.25M<sup>2</sup> &lt; S. &lt; 0.5M<sup>2</sup></b> 2 wirings
Connector M12 T-Power + Cable 2.50m OR 5m OR 10m	Connector M12 T-Power + Cable 2.50m OR 5m OR 10m	Cable 2.50m OR 5m OR 10m + Cable 2.50m OR 5m OR 10m

POSITION CHOICE	
1 WIRING	2 WIRINGS
<p>Diffuser side overview</p>	<p>Diffuser side overview</p>
<b>REFERENCE EXAMPLES:</b> MBACK+ STANDARD 30x20 cm White LED Connector M12 T-Power position n°4: ➔ <b>MBACK-3020-WHI-M4</b> MBACK+ OVERDRIVE 80x50 cm Red LED Connector M12 T-Power position n°1 Cable 2.50 meters position n°5: ➔ <b>MBACK-O-8050-630-M1A5</b> MBACK+ EXPERT 60x60 cm Blue LED Cable 10 meters position n°2 Cable 5 meters position n°8: ➔ <b>MBACK-E-6060-470-C2B8</b>	

## TPL VISION IS EXTREMELY CAREFUL ABOUT BIN SORTING IN THE SELECTION OF LEDS FOR THEIR PRODUCTS.

The human eye is particularly sensitive to color variations. Two products of the same color may appear different in the eyes of the user. However, **the maximum variation of the wavelength DOES NOT EXCEED 10 NM.**

Here are the following bandpass camera filters we recommend:

- White LEDs: no filter required
- Infrared LEDs: LP 830 (<http://midopt.com/filters/lp830/>)
- Red LEDs: BP 635 (<http://midopt.com/filters/bp635/>)
- Cyan LEDs: BP 505 (<http://midopt.com/filters/bp505/>)

We advise using bandpass filters from MidOpt: [www.midopt.com](http://www.midopt.com)

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### Other available documents :

- PDF, DWG, DXF, IGS, STEP & X\_Y DRAWINGS
- USER'S GUIDE

Medium MBACK+

