

# REPLACEMENT KIT

BREK  
SINGLE (12 LEDs) AND  
DOUBLE (24 LEDs) VERSION



## BREK

### Modular built-in light engines for outdoor applications

Very flexible solutions due to a combination of three different colour temperatures and a wide range of lenses.

### Typical applications

Integration in luminaires

- Street lighting, urban street lighting
- Tunnel lighting
- Flood and area lighting
- Industrial lighting for production halls & warehouses
- Indoor lighting
- Lighting for sports facilities

### Replacement Kit – BREK

- **DEGREE OF PROTECTION: IP67**
- **HIGHLY EFFICIENT: UP TO 147 LM/W**
- **SURGE PROTECTION UP TO 4 KV**
- **WIDE RANGE OF LIGHT DISTRIBUTIONS**
- **ENEC APPROVED**
- **MADE IN ITALY**



## BREK

### Single (12 LEDs) / Double (24 LEDs) Replacement kit for street lighting

#### Technical notes

LED built-in engines for integration into luminaires



Equipped with SMD PCB WU-M-631, optics, silicone gasket, heat sink and connection leads  
Lens material: PMMA (PC on request)

Light distribution: IESNA Type II, Type III, Type V (further LDCs on request)

Degree of protection: IP67 (acc. to IEC 60529)

ESD protection class 2

Surge protection: up to 4 kV

Max. operating temperature at  $t_c$  point: 70 °C

Lumen maintenance: L80/B10; > 54,000 hrs. at max. allowed operation current and 60 °C at  $t_p$  point

Temperature depends on installation situation and has to be checked by the luminaire manufacturer.

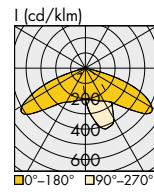
Initial colour accuracy: 5 SDCM

Heat sink material: aluminum

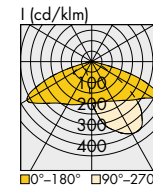
Leads: bi-polar cable, double insulation FEP/PVC, AWG22, lead length: 400 mm, with PG-7 cable gland

Weight: 650 g

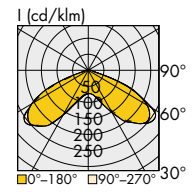
Packaging unit: 8 pcs. (12 LEDs) / 4 pcs. (24 LEDs)



Type II



Type III



Type V

#### Electrical Characteristics

at  $t_p = 60$  °C

Type	No. of LEDs	Voltage DC (V)												Temperature coefficient mV/K
		700 mA			900 mA			1050 mA			1400 mA			
		min.	typ.	max.	min.	typ.	max.	min.	typ.	max.	min.	typ.	max.	
BREK - L1B2x6YZ	12	32.4	34.1	35.7	33	34.7	36.4	33.6	35.3	37.1	34.7	36.5	38.2	-10.3
BREK - L2B2x6YZ*	24	64.8	68.2	71.4	66	69.4	72.8	67.2	70.6	74.2	—	—	—	-10.3

Type	No. of LEDs	Power consumption (W)											
		700 mA			900 mA			1050 mA			1400 mA		
		min.	typ.	max.	min.	typ.	max.	min.	typ.	max.	min.	typ.	max.
BREK - L1B2x6YZ	12	22.7	23.8	25	29.7	31.2	32.8	35.3	37.1	38.9	48.6	51	53.5
BREK - L2B2x6YZ*	24	45.4	47.6	50	59.4	62.5	65.5	70.6	74.2	77.8	—	—	—

Use of external LED constant current driver required. | \* Two separate LED modules: values are calculated for series connection.

#### Maximum Ratings

Exceeding the maximum ratings can lead to destruction of the module.

Type	Operation current mA	Operation temperature range at $t_c$ point		Storage temperature range		Max. allowed repetitive peak current mA
		°C min.	°C max.	°C min.	°C max.	
BREK - L1B2x6YZ	≤ 1400	-30	+70	-40	+80	1800
BREK - L2B2x6YZ	≤ 1050	-30	+70	-40	+80	1800

The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.

## Optical characteristics

at  $t_p = 60\text{ °C}$

Type	Ref. No.	No. of SMDs	Colour	Correlated colour temperature K	Typ. luminous flux* (lm) and efficiency* (lm/W) at						Light distribution	CRI** $R_a$
					700 mA		1050 mA		1400 mA			
					lm	lm/W	lm	lm/W	lm	lm/W		
<b>12 LEDs</b>												
L1B2x6YZ-30K-II	<b>570325</b>	12	warm white	3000	3660	154	5215	141	6690	131	Type II	$\geq 70$
L1B2x6YZ-40K-II	<b>569759</b>	12	neutral white	4000	3845	162	5465	147	7010	137	Type II	$\geq 70$
L1B2x6YZ-50K-II	<b>on request</b>	12	cool white	5000	3845	162	5465	147	7010	137	Type II	$\geq 70$
L1B2x6YZ-30K-III	<b>570836</b>	12	warm white	3000	3740	157	5325	144	6830	134	Type III	$\geq 70$
L1B2x6YZ-40K-III	<b>570838</b>	12	neutral white	4000	3925	165	5585	151	7155	140	Type III	$\geq 70$
L1B2x6YZ-50K-III	<b>on request</b>	12	cool white	5000	3925	165	5585	151	7155	140	Type III	$\geq 70$
L1B2x6YZ-30K-V	<b>570837</b>	12	warm white	3000	3700	155	5270	142	6760	133	Type V	$\geq 70$
L1B2x6YZ-40K-V	<b>570839</b>	12	neutral white	4000	3885	163	5525	149	7080	139	Type V	$\geq 70$
L1B2x6YZ-50K-V	<b>on request</b>	12	cool white	5000	3885	163	5525	149	7080	139	Type V	$\geq 70$

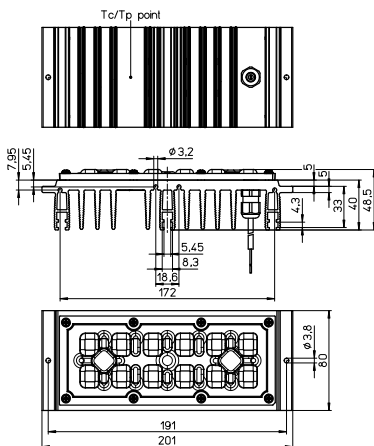
\* Measurement tolerance of luminous flux and efficiency:  $\pm 10\%$  | \*\* Measurement tolerance CRI:  $\pm 2$

Type	Ref. No.	No. of SMDs	Colour	Correlated colour temperature K	Typ. luminous flux* (lm) and efficiency* (lm/W) at						Light distribution	CRI** $R_a$
					700 mA		900 mA		1050 mA			
					lm	lm/W	lm	lm/W	lm	lm/W		
<b>24 LEDs</b>												
L2B2x6YZ-30K-II	<b>570326</b>	24	warm white	3000	7325	154	9130	146	10435	141	Type II	$\geq 70$
L2B2x6YZ-40K-II	<b>570327</b>	24	neutral white	4000	7685	161	9575	153	10935	147	Type II	$\geq 70$
L2B2x6YZ-50K-II	<b>on request</b>	24	cool white	5000	7685	161	9575	153	10935	147	Type II	$\geq 70$
L2B2x6YZ-30K-III	<b>570840</b>	24	warm white	3000	7480	157	9320	149	10655	144	Type III	$\geq 70$
L2B2x6YZ-40K-III	<b>570842</b>	24	neutral white	4000	7845	165	9780	156	11165	150	Type III	$\geq 70$
L2B2x6YZ-50K-III	<b>on request</b>	24	cool white	5000	7845	165	9780	156	11165	150	Type III	$\geq 70$
L2B2x6YZ-30K-V	<b>570841</b>	24	warm white	3000	7400	155	9225	147	10545	142	Type V	$\geq 70$
L2B2x6YZ-40K-V	<b>570843</b>	24	neutral white	4000	7765	163	9675	155	11050	149	Type V	$\geq 70$
L2B2x6YZ-50K-V	<b>on request</b>	24	cool white	5000	7765	163	9675	155	11050	149	Type V	$\geq 70$

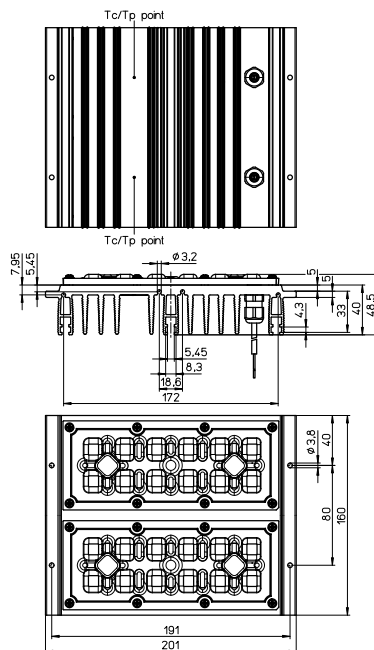
\* Measurement tolerance of luminous flux and efficiency:  $\pm 10\%$  | \*\* Measurement tolerance CRI:  $\pm 2$

## Mechanical measurement

### L1B2x6YZ



### L2B2x6YZ



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## LED drivers

You will find more information about our LED drivers on our website: [www.vossloh-schwabe.com](http://www.vossloh-schwabe.com)

Max. output W	Protection class	Output current DC mA	Output voltage DC V	Mains voltage (V) 50–60 Hz	Ref. No.	Version	Current setting	Dimming	Max. service life hrs.	at t <sub>c</sub> °C	Dimensions (LxWxH) mm	For type	
												L1B2x6YZ mA	L2B2x6YZ mA
<b>Degree of protection: IP20</b>													
40	II	200–1050	15–56	220–240	<b>186876</b>	PrimeLine	NFC/LEDSet	DALI	100,000	68	123.4x79.4x33	1050	—
75	II	200–1050	35–115	220–240	<b>186877</b>	PrimeLine	NFC/LEDSet	DALI	100,000	73	133x76.7x39.5	—	1050
40	II	200–1050	15–56	220–240	<b>186881</b>	PrimeLine	NFC/LEDSet	—	100,000	68	123.4x79.4x33	1050	—
75	II	200–1050	35–115	220–240	<b>186882</b>	PrimeLine	NFC/LEDSet	—	100,000	73	133x76.7x39.5	—	1050
<b>Degree of protection: IP67</b>													
122	I	1050	60–116	220–240	<b>186617</b>	EasyLine	—	—	50,000	65	206x68.6x37	—	1050
100	I	700–1400	72 (60)–144	220–240	<b>186885</b>	ComfortLine	NFC	—	100,000	75	172.6x68.5x38.6	—	800–1050

Please ensure you choose the correct LED driver for the module in question and that the respective output parameters (current, voltage, wattage) are correct.

## Luminaire protection devices – type 2 and 3

You will find more information about our luminaire protection devices on our website: [www.vossloh-schwabe.com](http://www.vossloh-schwabe.com)

### SPC 3/230/10 K/i-IP66

4 leads: stranded conductors, 2.5 mm<sup>2</sup>,

silicone insulation, length: 150 mm

Degree of protection: IP66

Ref. No.: **142748**

### SPC 230/10 K/i

Suitable for luminaires of protection class II

Screw terminals: 0.75–2.5 mm<sup>2</sup>

Degree of protection: IP20

Ref. No.: **142737**



**142748 / 142737**

Type	Ref. No.	Voltage 50/60 Hz V ±10 %	Max. load current (A)	Protection level		IPE μA	Max. impulse voltage U <sub>OC</sub> (V)	Discharge current* (8/20 μs)		Safety fuse max. A	Max. permitted casing temp. °C	Fixation
				L-N (V)	L-PE (V)			I <sub>N</sub> (A)	I <sub>max</sub> (A)			
SPC 3/230/10 K/i/HP66	<b>142748</b>	100–277	16	< 1500	< 1800	1	10000	5000	10000	16	–35 to 80	M8x10
SPC 230/10 K/i	<b>142737</b>	100–277	16	< 1500	–	–	10000	5000	10000	16	–35 to 80	M8x10

\* Discharge current: at 5000 A min. 1.5 strikes; at 10,000 A min. 1 strike

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## Assembly and Safety Information

Installation must be carried out under observation of the relevant regulations and standards. The LED modules are designed for operation within a casing or luminaire. Safety regulations acc. to EN 60598 has to be observed. Installation must be carried out in a voltage-free state (i.e. disconnection from the mains).

- Mains frequency: 0 Hz
- LED built-in modules must not be subjected to any undue mechanical stress, e. g.:
  - handle LED modules carefully
  - avoid shear and compressive forces onto the optics during handling and installation
  - avoid vibrations of more than 2 kHz, 40 G
  - do not carry or move the LED engines by using the wires
- When installing/screwing the module into a luminaire, please ensure that the cables are not squeezed between luminaire and LED engine.
- The LED engine must not be used in hermetically sealed casings.
- Safe operation only possible by the use of external constant current sources ( $I_{max}$ , see table "Electrical Characteristics").
- Operation is dependent on constant current drivers that should provide the following protective measures:
  - short-circuit protection
  - overload protection
  - overheating protection
- Please ensure the correct polarity of the leads prior to commissioning. Reversed polarity can destroy the modules.
- The maximum output of the power supply must be observed.
- For optimal load of used constant current driver the modules can only be connected in series. The quantity of LED modules is limited by the sum of forward voltage and the capacity of used constant current driver. Safety regulations acc. to EN 60598 has to be observed if the sum of forward voltage exceed the permitted touchable value.
- A parallel connection of the LED engines is not allowed.
- The clearance and creepage distances of LED engines are designed for working voltages up to 450 V DC (basic insulation) acc. to EN 62031/EN 60598. This value is designed between live parts and accessible metal parts.
- For insulation class II a LED driver with double or reinforced insulation between LV supply and secondary circuit shall be used when the LED module is integrated in a containing product where accessible metal parts are connected to an equipotential bond (acc. to EN 60598-1, Annex X).
- If a system consists of multiple LED engines BREK connected to a single driver, only one module will be monitored by the NTC. That means that one module is in "master" mode operated and the rest are operated in "slave" mode.
- Please ensure standard ESD (electrostatic discharge) protection measures are employed when handling and installing LED modules. Electrostatic discharge can damage LEDs.
- To ensure problem-free operation, the specified maximum temperature at the  $t_c$  and  $t_p$  point (see "Operating Life") must be observed (measured in accordance with EN 60598-1). To satisfy this point, it is necessary to put measures in place to ensure any heat is dissipated from the LED engine to the environment.

- To ensure good thermal behaviour take care about "general safety and installation instructions".
- Operating LED modules in the presence of certain chemical substances or in chemically enriched (aggressive) environments can impair module functionality or even cause total module failure. Detailed information can be found in our "Chemical Incompatibility" PDF on our website [www.vossloh-schwabe.com](http://www.vossloh-schwabe.com)
- The photobiological safety of the LED modules must be classified into risk groups.

Assessment in acc. with IEC/TR 62471-2:

- L1B2x6YZ general lighting exempt group (dRG0 = 2.62 m)
- L2B2x6YZ general lighting exempt group (dRG0 = 3.16 m)

Assessment in acc. with IEC/TR 62778:

- L1B2x6YZ general lighting

Given a clearance of more than  $d_{thr} > 2.85$  m, within which the lighting intensity limit of  $E_{thr} = 911$  lx is attained, the classification goes down to Risk Group 1.



## Applied Standards

EN 62031

LED modules for general lighting – Safety specifications

EN 62471-2

Photobiological safety of lamps and lamp systems

EN 62778

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## General information

Performance acc. to IEC 62717: L70/B50  $t_p = 60\text{ °C} \rightarrow 100,000\text{ hrs.}$

## Packaging unit

Type	Packaging unit pcs.	Box dimensions (LxWxH) mm	Weight single (g)	Gross weight packaging unit (g)
L1B2x6YZ	8	340x260x130	680	6200
L2B2x6YZ	4	340x260x130	1360	6200

## General safety and installation instructions

- These instructions must be carefully read before installing and commissioning the system, as this is the only way to ensure safe and correct handling.
- VS product may only be installed and commissioned by authorised and fully qualified staff.
- No object can be placed in contact with heat sink: thermal management might be compromised.
- An external constant-current driver is required.
- Before any work is carried out on the equipment, it must be disconnected from the mains.
- All valid safety and accident-prevention regulations must be observed.
- The products should never be inexpertly opened. Repairs may only be undertaken by the manufacturer.

## Product Guarantee

- 5 years
- The conditions for the Product Guarantee of the Vossloh-Schwabe Group shall apply as published on our homepage ([www.vossloh-schwabe.com](http://www.vossloh-schwabe.com)). We will be happy to send you these conditions upon request.

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