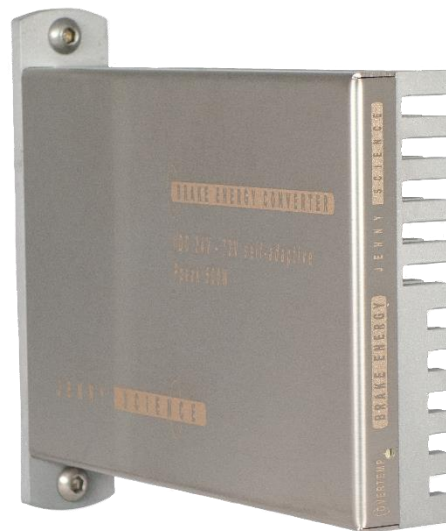


## Manual Brake Energy Converter

Version 0.6

Edition March 2021



### General

The Brake Energy Converter (BEC) is a hardware device to convert Back Electromagnetic Force (Back-EMF) energy into heat during motor deceleration. An internal voltage sense circuit ensures that the output voltage does not increase about 10 percent over the input voltage. With this device, XENAX® servo controllers are protected against overvoltage in high-speed applications. The protection only occurs on the PW lines. No protection on LG lines.

For UL-conformity, the XENAX® servo controllers need to be used with the BEC to guarantee voltage levels during dynamic braking within DVC A Levels.

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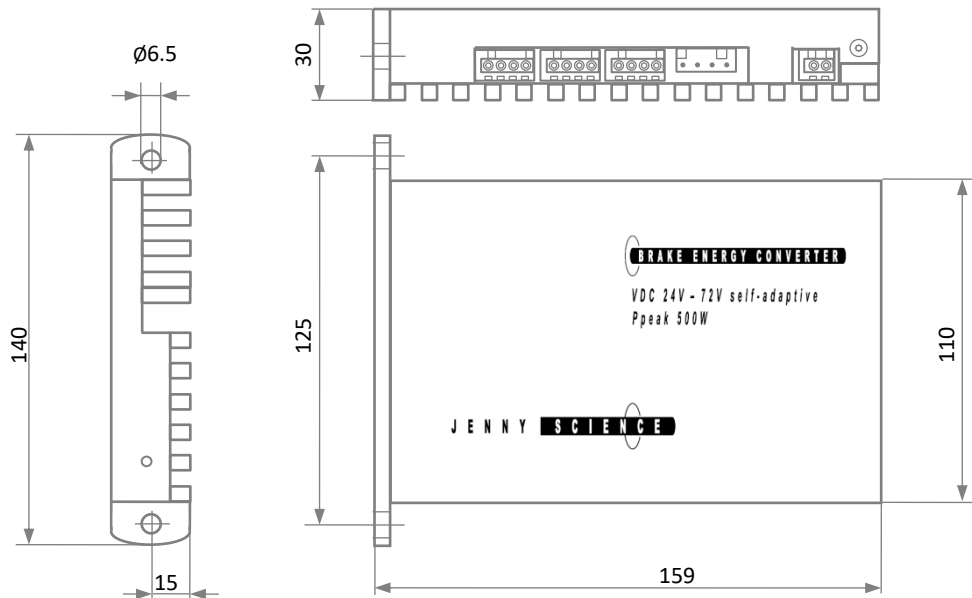
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## 1 Characteristics Brake Energy Converter

### 1.1 Electronics

Description	Data	
Input (PW & LG)	PW	24-75 VDC Nominal current 0-8 A Peak current 18 A
	LG	24VDC Nominal current 0.05 A + 0.3 A per connected XENAX® Peak current 0.05 A + 1.3 A per connected XENAX®
Output (Out1 - 3)	PW	24-75 VDC Nominal current 0-8 A Peak current 18 A
	LG	24 VDC Nominal current 0.3 A Peak current 1.3 A
Output digital	1 x 24V, 100mA Source (Overtemperature > 70°C or Power Input (PW) low)	
Output LED	Overtemperature > 70°C LED On	
Max. power dissipated	500W	

### 1.2 Dimensions



Dirt resistance	IP 20
Weight	780g

## 2 Hardware and Installation

### 2.1 Environmental Conditions

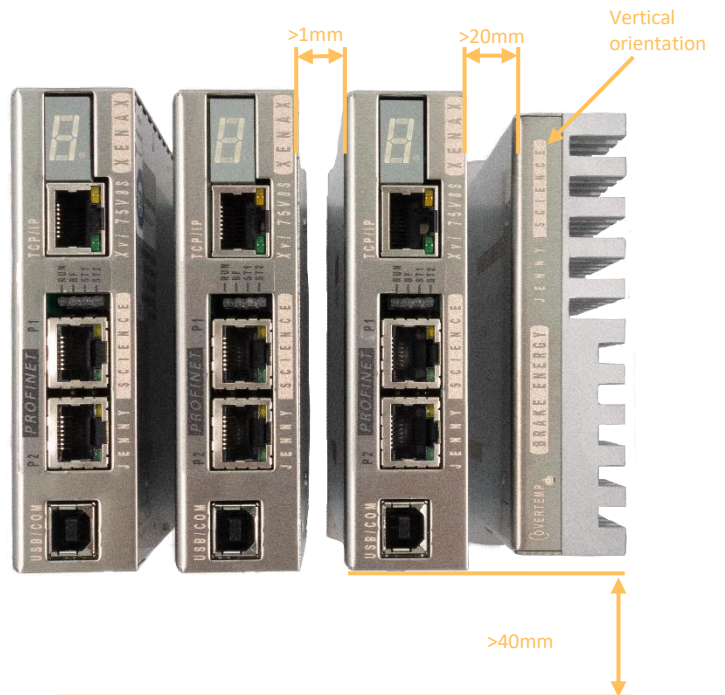
Storage and transport	No outdoor storage. Warehouses have to be well ventilated and dry. Temperature from -25°C up to +55°C
Temperature while operating	5°C - 45°C environment, after 45°C performance reduction
Humidity while operating	10-90% non-condensing
Air conditioning	No external air conditioning needed; integrated heat sink.
MTBF	> 120'000h for housing internal temperature of < 45°C

### 2.1 Assembly and Installation

Assembly with two screws on an electrically conductive rear wall e.g. the back wall of a switch cabinet.

For a series mounting the distance between the devices XENAX® to Brake Energy Converter® has to be at least 20mm. From XENAX® to XENAX® the distance has to be at least 1mm for the XENAX Xvi 75V8S and 10mm for the Xvi 75V8 / Xvi 48V8. The distance to the floor has to be at least 40mm.

We recommend mounting the devices in vertical orientation to ensure a good cooling air circulation.



### 3 UL Ratings / Conditions

#### 3.1 Brake Energy Converter

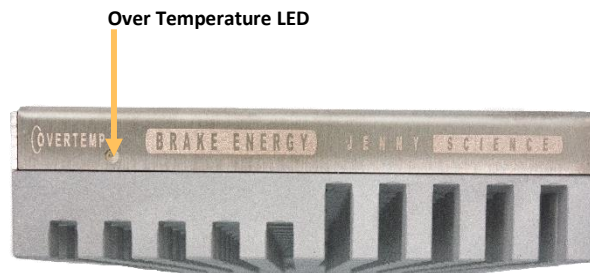
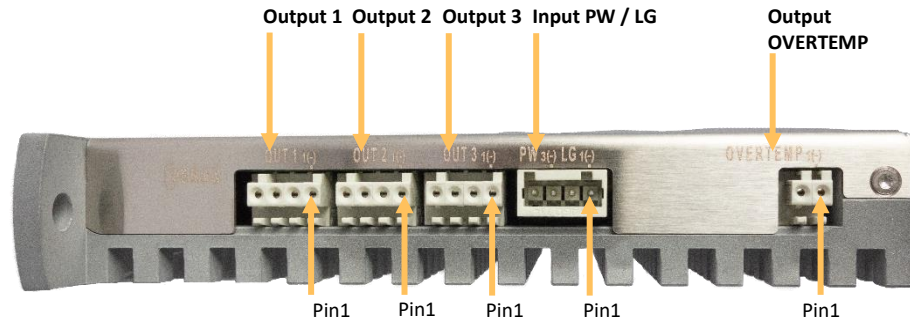
Description	Data									
Input (PW & LG) / Output (Out1 – 3)	<table border="0"> <tr> <td>PW</td> <td>24 – 36 VDC</td> <td>max. 6.93 A</td> </tr> <tr> <td>LG</td> <td>24 VDC</td> <td>3 x 0.3 A</td> </tr> <tr> <td></td> <td></td> <td>3 x 1.3 A</td> </tr> </table>	PW	24 – 36 VDC	max. 6.93 A	LG	24 VDC	3 x 0.3 A			3 x 1.3 A
PW	24 – 36 VDC	max. 6.93 A								
LG	24 VDC	3 x 0.3 A								
		3 x 1.3 A								
Power Supply	<p>These products are intended for operation within circuits not connected directly to the supply mains (galvanically isolated from the supply).</p> <p>The XENAX® Servocontroller/s need to be used with the Brake Energy Converter to stay within the 36 DVC A Limits</p> <p>Integral solid state short circuit protection does not provide branch circuit protection. Branch circuit protection must be provided in accordance with the National Electrical Code and any additional local codes.</p> <p><b>For Canada (ENG):</b> Integral solid state short circuit protection does not provide branch circuit protection. Branch circuit protection must be provided in accordance with the Canadian Electrical Code, Part I.</p> <p><b>For Canada (F):</b> Des protections intégrées, à relais statique, contre les court circuits, ne protègent pas contre les circuits de dérivation. Une protection contre les circuits de dérivation doit être fournie conformément au code canadien de l'électricité, Partie I.</p>									
Maximum Surrounding Air Temperature	+ 45°C									
Temperature Wago Connectors	-60 °C ... 100 °C									
UL File No.	E477533, <a href="#">Link to file UL</a> , <a href="#">Link to file ULC</a>									

#### 3.2 XENAX® Servocontroller

Description	Data
Motor Overload Protection for motors other than the LINAX® / ELAX® Linear Motors	External or Remote Motor Overload Protection and overtemperature Sensing need to be provided.
Motor Overload Protection for the LINAX® / ELAX® Linear Motors	<p>The proper connection and the rating of the load imposed by the equipment on the protector contacts.</p> <p>Power output: 0-25.5 VAC, 3 phase, 5.7 A, 18 A peak</p>

## 4 Electrical Connections

### Brake Energy Converter



### 4.1 Plug Arrangement

Description	Plug Type
Output 1 POWER / LOGIK	4 pole connector Wago, pitch 3,5mm
Output 2 POWER / LOGIK	Wago Art. Nr. 734-534
Output 3 POWER / LOGIK	Use for cable: Wago Art. Nr. 734-304
Input POWER / LOGIK	4 pole plug Wago, pitch 3,5mm
	Wago Art. Nr. 734-164
	Use for cable: Wago Art. Nr. 734-104
Output OVERTEMP	2 pole connector Wago, pitch 3,5mm
	Wago Art. Nr. 734-532
	Use for cable: Wago Art. Nr. 734-302

## 4.2 Plug Pin Configuration

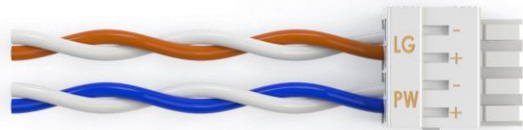
### 4.2.1 Input Logic and Power Supply

Wago 4 pole plug		
1	0, GND	Adapter logic (LG)
2	24V DC	
3	0, GND	Adapter power (PW)
4	24-75V DC	

Important: The 0 volt connection of the logic supply (pin 1) and the 0 volt connection of the power supply (pin 3) have to be connected to the ground/chassis star point of the switch cabinet.

**Note:**

In case of emission sensitivity it is recommended to twist the supply cable for logic and power.



### 4.2.2 Output 1 – 3

Wago 4 pole connector		
1	0, GND	Adapter logic (LG)
2	24V DC	
3	0, GND	Adapter power (PW)
4	24-75V DC	

### 4.2.3 Output OVERTEMP

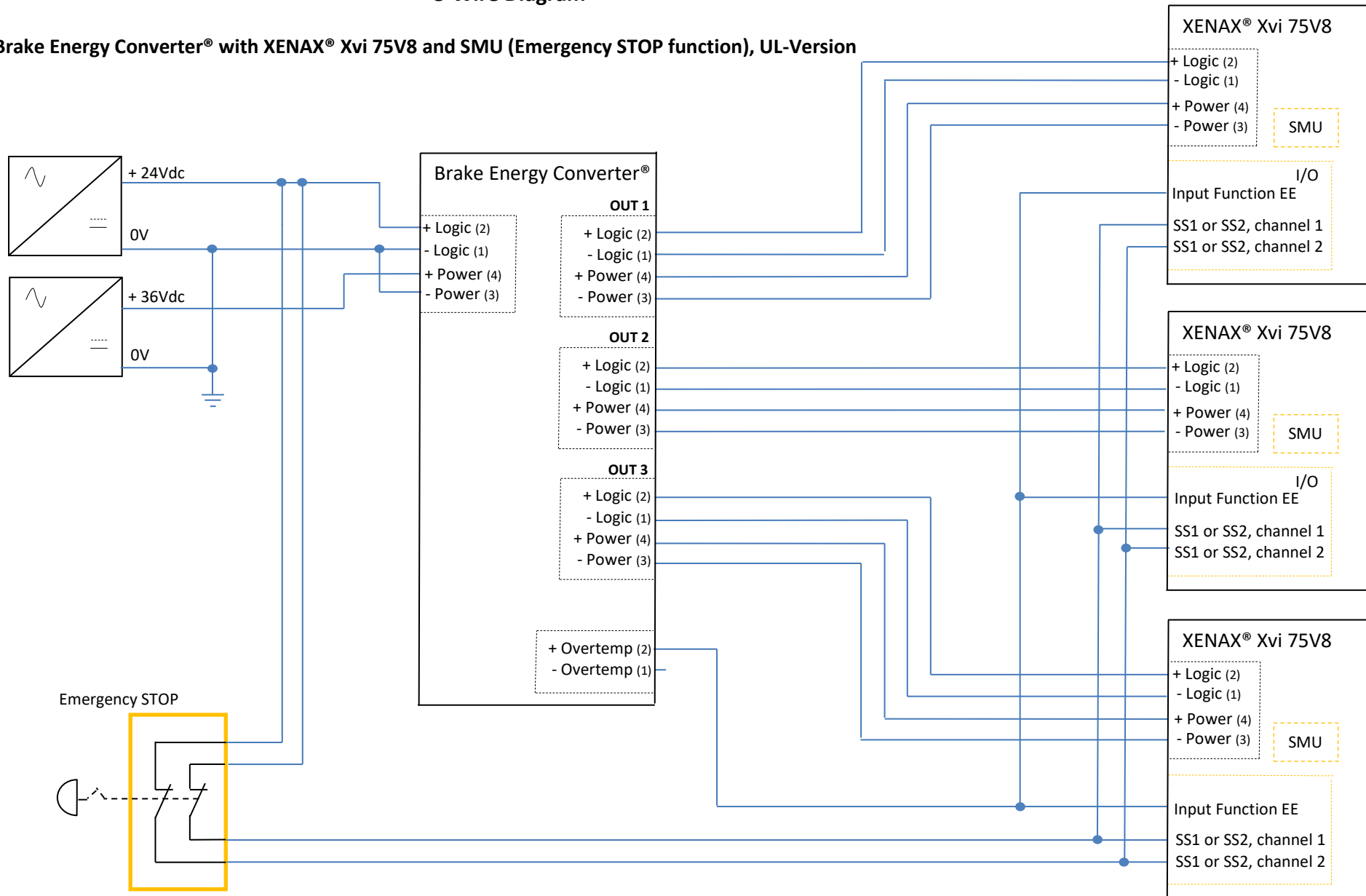
Overtemperature > 70°C or  
Power Input (PW) low

Wago 2 pole connector		
1	0, GND	Adapter OVERTEMP
2	24V DC	

Temperature observation only recommended in very dynamic applications with 3 LINAX® Lxs 800F60 and longer.

5 Wire Diagram

Brake Energy Converter® with XENAX® Xvi 75V8 and SMU (Emergency STOP function), UL-Version





## Notes

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