

## BRAKING CHOPPER DB 814

### Description



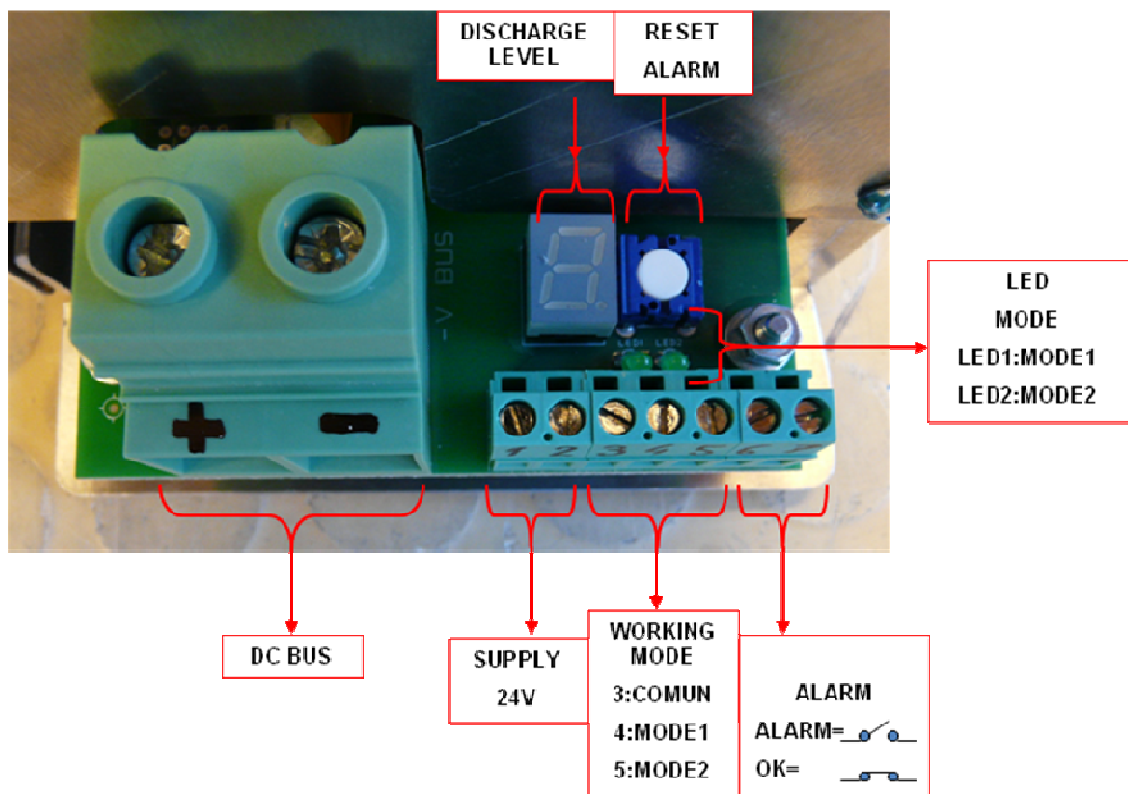
A braking chopper is an electrical switch that limits the DC bus voltage by switching the braking energy to a resistor where the braking energy is converted to heat. Braking choppers are automatically activated when the actual DC bus voltage exceeds a specified level depending on the nominal voltage of the variable-frequency drive

The DB 814 is used for the quick braking of the machine. The energy stored in the motor is discharged through resistors

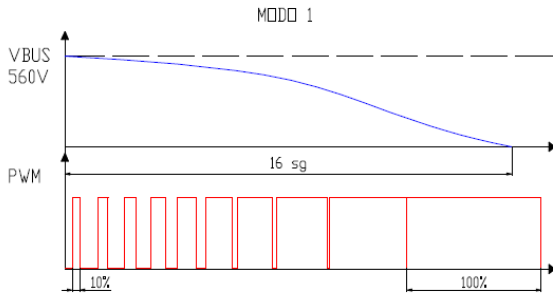
The device is designed to work in 2 modes:

- Mode1: machines where fast braking is not required
- Modo2: machines with fast brake

### Connections

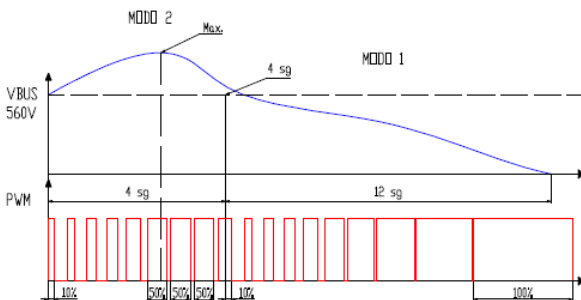


## Operation modes



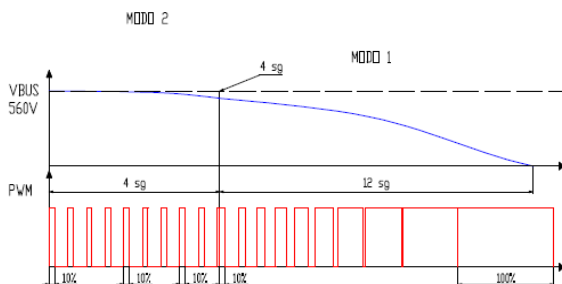
### **MODE1** External discharge without delay

- Connect terminal 3 with terminal 4
- When this signal is activated the braking chopper discharge, starting the PWM from 10% and gradually increasing it up to 100% of the discharge. This makes the current more constant throughout the complete process.
- The discharge time increases as a function of elapsed time (0 to 16 sec), so the discharge current is more or less uniform. A lower voltage DC, greater conduction period, reaching 100% when the voltage is almost zero.



### **MODE2** External discharge with delay

- Connect terminal 3 with terminal 5
- Factory delay 4 seg
- When this signal is activated the voltage value is stored. (Example = 650V)
- The PWM starts at 10%, half measures are performing, if these exceed the maximum starting value (hysteresis preset at 50V), it will increase the PWM (can reach up to 100%). PWM increases are performed in percentages of 4% (Factory default); but could be modified under internal switch
- If the voltage stops rising, the PWM stops open
- If the starting reference value falls (example 650V), the PWM down to 10%



- The object of this mode is to ensure that the bus voltage does not rise excessively, but not down before the end of the first half. So engines, especially asynchronous, have magnetizing voltage to perform optimal braking.
- After 4 seconds (set as braking time) starts to discharge progressively in a similar mode 1 up to 100%
- In this mode, from the end of the first half, the display will show the digit of the final percentage PWM reached. (1 = 10%, 2 = 20%, 9 = 90%).
- The number will remain on display until the new discharge unless there was an alarm that overrides by having preference.
- The display only lights up when an alarm occurs (being letters) or in this mode to indicate the % discharge reached (display 1 to 9)

## Hardware alarms Display

- **P** Internal power supply +15V failure
- **U** Supply voltage (24Vdc) less than 18V
- **E** High PTC temperature on discharge resistance or PTC cut
- **Wach-dog** The point of the display should be always blinking

## Software alarms Display

Alarms that can be given in both modes:

- **A** There is an order of discharge and no voltage. Malfunction or improper maneuver.
- **L** After performing the 2nd discharge, bus voltage has not dropped half of its initial value. System failure

Alarms that are only given in mode 2:

- **C** During this first time has been measured 800V or more

### Notes:

The alarm indicated as "**A**" is automatically deleted after 10 sec.  
(If the unit has been less than 20 seconds between discharges, at the time of receiving the discharge command, bus is not checked for generating alarm "A").

Alarms referred as "**P**" or "**U**", once are activated preventing that the discharger could attend discharge orders.

Once the "**E**" alarm occurs only allows 10 seconds to continue discharging. It is activated when the PTC reaches 127 ° C.

The other alarms as "**C**" and "**L**" are indicated but allow the discharge again.

Any of these alarms will drop the relay giving notice that the operation is not correct.

Whenever there is an alarm, it will remain stored until RESET.

Hardware alarms only disappear when the cause that generates it normalizes.

For software alarms, the RESET is performed with the switch located next to the digit or when the power is turned off.