Hilger u. Kern Industrieelektronik

instruction manual electronic brake units
frenomat® , frenostat® for AC - motors   (version : 05/2013)

Utilisation

frenomat and frenostat brake units are designed for the power brake of standard 3 phase AC- motors. A rugged current converter produces a powerful brake torque with a magnetic field inside the 3-phase AC - motor. The brake sequence is automatically initiated after a motor stop command and is finished after the standstill of the motor rotation. The standstill is detected by the internal electronics.

Safety precautions

Limits in purpose: This brake unit is used for braking 3 phase induction motors in general industrials use.

- **DANGER   ! PC-board and all terminals are under high voltage !**
- **Do not connect earth or a PLC-voltage at this terminals ! Earth may only be connected at the earth screw !**
- Electrical construction work must be done by a qualified expert.
- Do mount cooling rips vertically.
- Long leads should be avoided, especially between terminal 8 and the choke.
- Use ohmmeters or multimeters for testing.
- Do not use a test lamp, a high voltage generator or electric bell
- Gound must be connected securely with a ground wire
- Wiring must be done after installation only when power is off

Before you switch on power make sure following points :

1. power must be only connected with terminal **a** and **8** (Choke). Any other power connection will distroy the brake unit !
2. The power supply voltage must not exceed the marked value on the cover label.
3. Make sure that there is no short circuit in the wiring and that ground is connected to ground terminals only. There is no short circuit protection in the unit !

Selection of fuses
All types of brake units have to be externally provided with 2 branch circuit protection fuses in lead of the choke and terminal **8** and **a.**
Fuse size : **150 % of the rated motor current**
The 2 amp fuse must be provided in terminal n1

Selection of brake contactor
Use the same size as for the motor contactor. The ON and OFF switching of the brake contactor operates without any current-load ! This is why an AC contactor is sufficiant .

Selection of wires
For the wiring use the same size of wires as you have provided for the motor power and the motor control circuit.

First set in operation :
Currentfree operation
Remove motor fuses. Adjust time potentiometer at its maximum (clockwise) and current potentiometer at its minimum (Counter – clw)

Switchlock check
Check if there is no possibilty that brake contactor and motor contactor could be activated at the same time . Observe the function of the LED's on the PC board beside the time potentiometer (frenomat has no LED's !) :

- LED „P"   = Power
- LED „M"   = Motorcontactor is ON
- LED „B"   = Brake contactor is ON

Motorcontactor K1	ON: LED „M" on	OFF: LED „M" off
Brakecontactor K2	OFF: LED „B" off	K1 not activated K2 + LED „B" on
Locking check	K 2 manually on: K1 drops off	K1 manually on: K2 drops off

Brake current adjustment

Install motor fuses and adjust time potentiometer „T" clockwise at 1/4.
When the motor is warm activate the brake and turn the current potentiometer „I" slowly clockwise; observe the amount of current at the bar-graph-display. One bar-line lights for 10 % of the max. device current. The maximum value should be adjusted to 3 times of the nominal motor current.

There is no bar-graph display at frenomat 2 . In this case apply a DC-ampmeter at terminal b and observe the current while you turn the current potentiometer clockwise . The current of type frenomat may not exceed 30 A !

During brake operation the states „brake on" B and „stoppage detector" S are indicated by the LED's B and S. (frenomat has no LED's) .
When the motorspeed has reduced at 10 % of nominal speed, LED „S" is off and an internal time process is started. The manually adjusted time will be added.
LED „O" Overflow is flashing when the heatsink of the brake unit has become too hot because of a too large number of brakings within a short time. As long as it is overheated, motorstarting is locked. (frenomat has no LED „O" Overload;)

Basic circuit for frenomat and frenostat wiring