

Brief description of automatic control unit KR 4 and KR 7



These control units can be utilized worldwide.

When designing these control units, all regulations known were taken into consideration.

This means that this is the latest control unit generation available.

We have only two types of control units left for all rotor sizes:

KR 4 = 400 Watt

Rotor diameter smaller than 3760

KR 7 = 750 Watt

Rotor diameter larger than 3760

Attention: It is imperative that you read the warnings and safety instructions on the pages 10 - 12, before you take the control units in operation. In this way, you will avoid injuries.

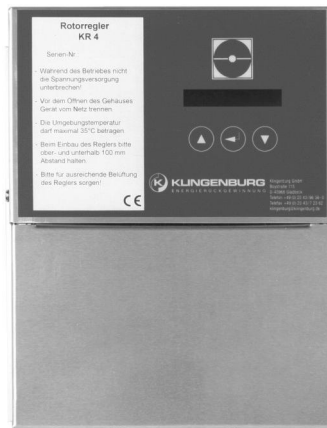
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The functions of the control unit

- Latest processor technology
- CE tested
- Casing IP 54
- Short-circuit resistant output
- EN 55011 tested
- EN 61000-3 tested
- EN 61000-4-2 tested
- EN 61000-4-4 (Burst) tested
- EN 61000-4-5 (Surge) tested
- EN 61800-3 tested
- Each single module is tested



- Detailed error message
- Thermal contact display / PTC resistor, incl. display of function
- Operating report
- Accelerating and decelerating switching
- Menu guided programming
- Clear text display via LCD display
- Three push-button operation
- Extraneous control unit signal processing
- Self-cleaning run

Optional:

- Summer operation including display of function
 - enthalpy comparison
 - temperature comparison
 - temperature switching over
- Supply air temperature control
- Sequence switching including display of function
- Rotor running check including display of function

The control unit is operated by means of only three push-buttons.

The results and inquiries are shown in the display.

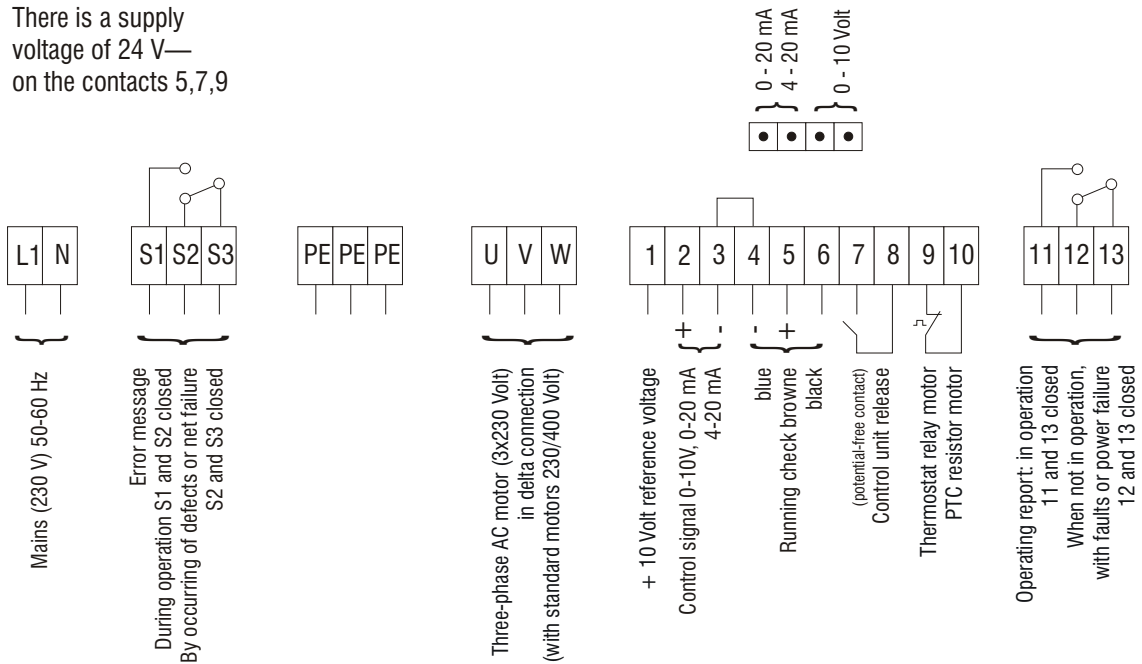
The control unit is immediately ready for operation in its wired condition, after the mains voltage has been switched on.

Defects are shown by the two-digit error code in the two last fields on the display (see page 8).

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Terminals at the control units KR 4 / KR 7

There is a supply voltage of 24 V—
on the contacts 5,7,9

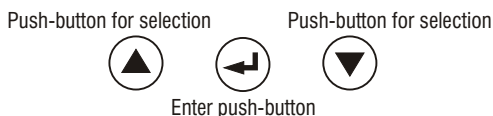


Technical Data

Type	KR 4	KR 7
Performance	0,4 kW	0,75 kW
Fuse (internal)	6.3 A slow fuse (5 x 20 mm)	10 A slow fuse (5 x 20 mm)
Mains voltage	220 - 240 V 50 - 60 Hz 1~	
Weight	3200 g	3500 g
Ambient temperature	from - 10°C to + 40°C - With temperatures below 0°C it is necessary to switch on the machine's mains voltage without running the motor so that the regulator can warm up.	
Temperature setting area (only KR 4 Z/KR 7 Z)	Ingoing air temperature regulation 10°C to 40°C / summer shift 18°C to 42°C - other setting ranges have to be ordered separately.	
Type of protection	IP 54	
Starting frequency	0 - 120 Hz (works set-up 80 Hz)	
Frequency resolution	0,08 Hz	
Control Unit signals	0 - 10 V, 0 - 20 mA, 4 - 20 mA	
Interference signal relay	potential-free change-over contact, capacity 250 V AC, 1 A	
Connecting line for motor	On principle, the supply line must be shielded; at lengths above 50 m, chokes should be provided. Please inquire!	
Measurements	l=265 mm, b=232 mm, h=128 mm	

Putting into operation of control units KR 4/KR 7

The control unit KR is completely operated through just three push-buttons. The selection is effected by means on the left-hand or right-hand push-button. The center push-button serves for "Enter". Programming will start when all three push-buttons are pressed simultaneously.



Putting into operation

After connecting the mains current, the display shows e.g. the following picture:

S F : 0 H Z I F : 0 H Z

If, however, one of the following displays is shown,

H A R D W A R E E R R : E X X

C O N T R . B L O C K E D I

M O T O R T E M P I

checking must be carried out according to the message that is shown in the display.

Start with the simultaneous pressing of all three push-buttons. After approx. five seconds the following message is displayed:

M O T O R S T O P I

After that, the display reads as follows:

P L E A S E W A I T I

The control unit leads you through the menu points, after the motor has stopped.

Leading through the menu points

You have the option to select the English or German language. Other menu languages can be arranged by request. A change is made by actuating the selection push-buttons.

G E R M A N

E N G L I S H

Confirm selection by depressing the "Enter" push-button.

Then, the following display is shown:

M A N U A L O P E R A T I O N

E X T E R N A L D R I V E

As before, you select by means of the selection push-buttons and confirm by depressing the "Enter" push-button.

Corresponding to your selection, the control unit leads you now through the series of inquiries "Manual operation" or "External operation", as described in the following.

Manual operation

The display shows:

M A N . F R E Q U : 0 0 H Z

By depressing the selection push-button, a frequency can be determined, which immediately starts after the programming and start order (over the "Enter" push button).

External operation

After having determined "External operation", the following display is shown:

S T A R T P O I N T : 5 %

The start point can be set in the range 0-40% and relates to the control signal. 10% means that the control unit responds first to a signal of 1 Volt. Thus noise voltages are repressed which can cause a unintentional run of the rotor.

M A X . F R E Q U : H Z

In this menu item, the maximum final frequency which the regulator starts up with a full control signal (10 Volt) is adjustable in the range of 50 - 120 Hz. At maximum frequency the rotor should turn at about 10 revs/min. The maximum rotational frequency adjusts itself according to the design of the drive unit.

Attention! All Klingenburg motors are suitable for frequencies up to 120 Hz.

Then appears the following Display:

C L E A N I N G O N

C L E A N I N G O F F

In case "Cleaning on" is selected, the value is pre-set to 20 minutes.

It is absolutely necessary to secure that the control unit release during the whole operation time of the ventilation system is staid and the drive only happend over the control signal respectively the keyboard. The cleaning takes care that the rotor moves regularly by half a rotation, if longer than 20 min. no demand requested over the control signal (0,0 V) respectively the keyboard.

manual operation: H F : 0 0 H Z

External drive: S F : 0 0 H Z

A continous operation as "creep run" between 0-1V cannot be realized.

The cleaning-interval can be prepared for 40,60,80 and 100 min. over the selection push-buttons.

C L E A N . I N T . 4 0 M I N

Confirm selection by depressing the "Enter" push-button.

Error codes

In addition to the run control error, the control unit will recognize 7 different types of trouble.

These defects are shown by the two-digit error code in the two last fields on the display:

H A R D W A R E E R R : E X X

- 01: Excess current (motor/rotor blocked;
Short circuit between U, V, W)
- 05: Overload (control unit/motor overloaded)
- 09: Mains undervoltage
- 14: Earth fault
- 15: Excessive voltage in network
- 21: Excessive temperature at the power output stage,
ambient temperature too high; control unit overloaded
- 99: Software error

The control unit is again ready for operation as soon as the trouble has been acknowledged by interruption of the mains voltage or by simultaneous pushing of the three push-buttons.

Attention!

Because of an integrated restart modus in the software, the controller is not on failure immediately in case of over-undervoltage and over current, but tries to restart within 10 min.

If the reset starts within the 10 min, the controller keeps on operating as regular.

If the KR4/7 can not reset because of permanent failure, after 10 min it will be noticed at the failure exit and the failure will be shown on the controller display.



Caution

This function causes the restart of the controller and thus the activating of the motor after expiry of the waiting time- if the run is still requested.

Please make sure that in case of restarting nobody will be in danger.

Seite 9

Safety and warning instructions

Please read the product manual carefully and observe all safety and warning instructions before the installation and putting into operation of the frequency transformer. Keep this product manual always at your finger tips in the vicinity of the frequency transformer.

Definition of the instructions:

Warning!

In the case of non-observance of these instructions, death, severe injuries or considerable damage may occur.

Attention!

In the case of non-observance of these instructions, slight injuries or damage may be incurred.

General

During operation it must be guaranteed that the supply voltage is permanently requested.

Warning!

- This frequency transformer generates dangerous electric voltages and controls rotating components that may become dangerous. In the case of nonobservance of the instructions in this manual, death, severe injuries or considerable damage may be incurred.
- The installation, putting into operation and maintenance of these drives is permitted to be undertaken only by technically versatile persons who are completely familiar with the mode of operation of the equipment and of the machine.
- The devices are equipped with intermediate circuit capacitors which have dangerously high voltage rates even after having been disconnected from the mains. You must wait at least 15 minutes after having disconnected the voltage before you can open the device and start working. It is important to note that no live components are contacted.
- The earthing safety measures serve only the protection of the frequency transformer and not for the protection of persons.
Three-phase frequency transformers are - according to VDE 0160 - not allowed to be connected with current-operated earth-leakage circuit breakers because in the case

of a possible direct current component (direct current load) in the case of trouble the sensitivity of the current-operated earth-leakage circuit breaker is reduced. As a protective measure, the regulations of VDE 0160 are to be observed.

Warning!

Ground the frequency transformer at the connection provided for this purpose.

Warning!

- Do not come into contact with your hands or any objects with any components within the enclosure when the device is connected to the mains or if the intermediate circuit is still not discharged. Do not work at the wires and do not check any signals as long as the device is connected to the mains.
- Be particularly careful when the automatic restarting device is activated. Install on the mains side a switching element which is inactivated in the case of a mains failure and which can be switched on when voltage becomes available again only by manual operation, in order to prevent injuries through uncontrolled restarting of the frequency transformer after a mains failure. Ground the frequency transformer at the corresponding connection.

Warning!

- Make sure that the input voltage complies with the voltage stated on the type plate of the machine. Influences of the environment, such as high temperatures, air humidity are to be avoided in the same way as dust, soil and aggressive gases.
- The place of installation should be a well ventilated location not exposed to direct sun rays. Install the device at a vertical, fire-resistant wall which does not transmit any vibrations. Do not connect any mains voltage to the terminals U/T1, V/T2, W/T3.
- Please contact the manufacturers of the motors or machines when standard motors with frequencies > 60 Hz are to be operated.
- All frequency transformers are tested regarding voltage resistance and insulation resistance measurements. Insulation resistance measurements are allowed to be carried out, e.g. in the scope of inspections, only between the power terminals and the ground. Do not carry out any insulation resistance measurements at the control terminals.
- During the operation of the controller it must be guaranteed that the mains voltage is permanently connected.

Regulating orders and operation signals (e.g. start/stop) should only be realized via the control terminals or the control panel and not by switching the mains or motor contactor. Do not install any capacities or excess voltage distribution-type arresters into the motor input lines.

Attention!

- In order to safeguard safe and reliable functioning of your Klingenburg frequency transformer, all applicable safety regulations, e.g. accident prevention regulations, VDE regulations, etc. must be strictly observed. Since these conditions may contain different details in the German-speaking area, the user must observe the editions valid in his case. Klingenburg GmbH cannot release the user from the duty to follow exactly the latest safety regulations applicable in his case.
- The technical data and descriptions in this operation manual have been compiled according to our best knowledge.
- Product improvements are introduced all the time - Klingenburg GmbH reserves the right, for this reason, to carry out such alterations without prior notification.
- The instructions in this operation manual have been compiled with great care. Should, in spite of every thing, defects or damage be incurred through the utilization of these instructions, then Klingenburg GmbH cannot be held responsible for any damage of this type.