



fimotec - fischer
Montagetechnik

Operating Instructions

Frequency converter for three-phase motor

Type ESB-FU

Content

	Page
1. Technical safety information for the user	1
2 General	2
3. Functional description	2
4. Installation	3
5. Technical data	3
6. Internal setting options	3
7. Connections	4-5
8. Overview plan	6
9. Error analysis	6
10. Technical part and programming the converter	V

Technical safety information for the user

This description contains the necessary information for the intended use of the products described therein. This description is directed to technically qualified personnel.

Qualified personnel are persons who are authorized by the one responsible for the safety of the system to carry out their respectively necessary jobs on the system based on their education, experience and training, as well as their knowledge of the standards, regulations, accident prevention regulations and operating conditions, and who can detect and avoid any possible hazards thereby (definition for qualified personnel according to IEC 364).

Hazard information

The following information serves for the personal safety of the operating personnel as well as the safety of the described products and the devices connected to them.



WARNING!

Danger - High voltage.

Non-observance can lead to death or serious bodily injury or material damage.

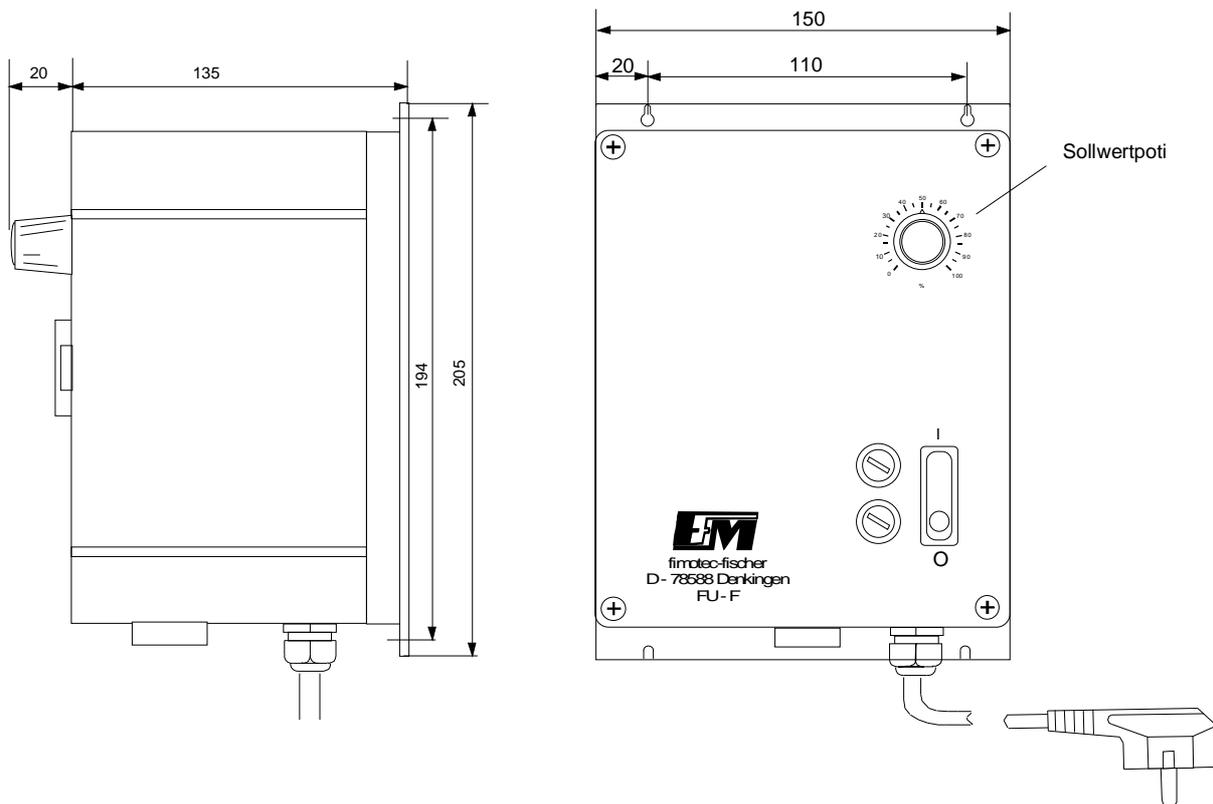
- Disconnect the power supply before installation or deinstallation, as well as when changing a fuse or making structural modifications.
- Observe the valid accident prevention and safety regulations specific to the application.
- Before commissioning, check whether the nominal voltage of the device agrees with the local mains voltage.
- Emergency shut-down equipment must remain in effect in all operating modes. Unlocking the emergency shut-down equipment must not result in an uncontrolled restart.

Intended use

The devices described here are electrical equipment for use in industrial plants. They are designed for use in (automatic) control engineering.

2 General

The devices described here are frequency converters for controlling the speed of three-phase motors. They work fully digitally, and are based on microprocessor technology. Based on their control characteristics, they are especially suitable for handling engineering, e.g. band drives. The devices are encased in robust aluminium profile housings. The feed line for the motor can be plugged in. A mains switch and the potentiometer for setting the speed are located on the front plate.



3. Functional description

The motor speed is set over the installed potentiometer. The control curve of the voltage set-point can be limited by internal programming so that the complete rotational angle of the set-point potentiometer is made use of. Because it is digital, the device can get by completely without a trimming potentiometer. All settings can be carried out over the internal display and buttons. An exact description of the settable parameters can be found in the second technical part of this description.

A control input allows the device to be switched ON or OFF by another system, which provides a floating contact load (e.g. an SPS). This input has an internal effect on the power semiconductor. If the device should stop, the output is blocked and the set-point is set to zero. When the device is turned on again, it starts smoothly. This input operates as follows: Contact closed = Control on.

4. Installation

To install the device, there are fixing boreholes in the base plate for M4 screws. The device should be installed vertically with the connections toward the bottom. Since heat develops when the device is operating, installation in the immediate vicinity of other heat sources should be avoided in order to prevent overheating. Several devices can be installed directly next to each other, however.

The mounting grooves in the wall of the housing can also be used for fixing; standardized M6 square nuts can be used for this purpose.

5. Technical data

TYPE	ESB-FU
Motor output rating	0.4 KW
Output power	1.0 KVA
Input power rating	1.2 KVA
Connection voltage	230 V, + 6% / - 10%
Output voltage	3 x 220 V
Device's nominal current	2,4a
Output frequency range	0.5...120 Hz
Set-point	0...10 V, DC
System of protection	IP 54
Ambient temperature	0 ... 45 °C
Input fuses	3.15 A middle bracket
Dimensions	150 x 90 x 155 mm
Applied standards	EN 50081-2, EN 50082-2, VDE 0160

6. Internal setting options

!! CAUTION Before opening the device and when working inside the device, pull out the mains plug !!



If internal settings are to be made, the front plate of the device has to be taken off. Four screws have to be removed (each in a corner of the front plate). The front plate can then be removed from the housing.

The internal setting options are explained in detail in the second part starting with page V.

Connection and function of the control input

When using the control input, the blind plug (PG 7) must be replaced by a cable connection PG 7 in the housing. Instead of the bridge on the terminals "PC" (until 08/2000 "SD") and "STR", an external switch contact can be connected (see page 3-5 in the second part of the user manual). For long control cables or for laying them together with other mains cables, a shielded cable should be used. The control input acts as an On/Off switch to the motor. Only the power semiconductors are blocked here, however, without there being a galvanic isolation as with mains switches. For frequent switching, such as cyclic operation, etc. this type of switching is preferable to the mains on-and-off switching.

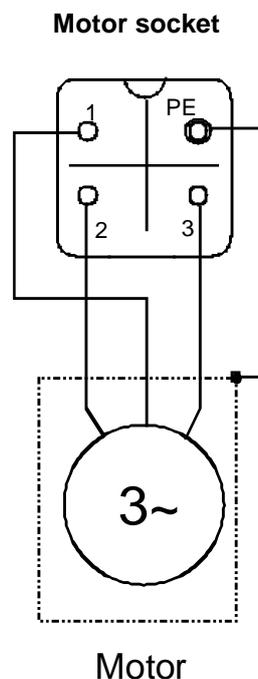
Important !

If the control input is not used, the terminals "PC" (until 08/2000 "SD") and "STF" must be bridged.

7. Control unit connection

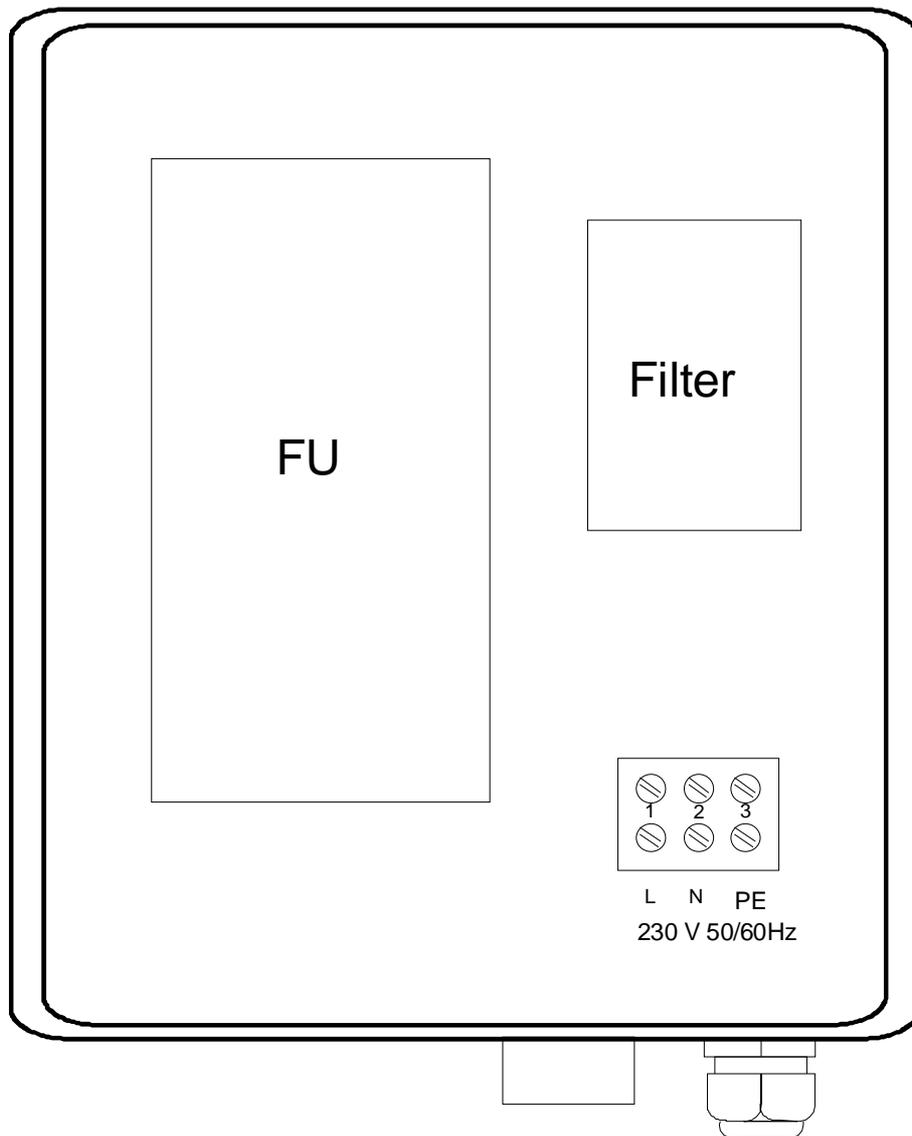
The devices have a mains cable with a shockproof plug and a socket for the output to the motor. When connecting the output cable, due to EMC reasons it must be made sure that a shielded cable is used, and that a contact spring is used in the cable connection to ground the braided shield of the cable to the housing. In addition to these measures, the shield of the output cable should be attached to Terminal 4, so that there is a perfect electric ground connection.

Motor plug:	Socket	(Article CONTACT) H-A3 MAG No.: 10.4225 + socket H-A 3 BS No.: 10.4210
	Counterplug	(Article CONTACT) H-A 3 Mts11 No.: 10.4275 + socket H-A 3 SS No.: 10.4200
	EMC contact spring PG 11	No.: 75 000 200



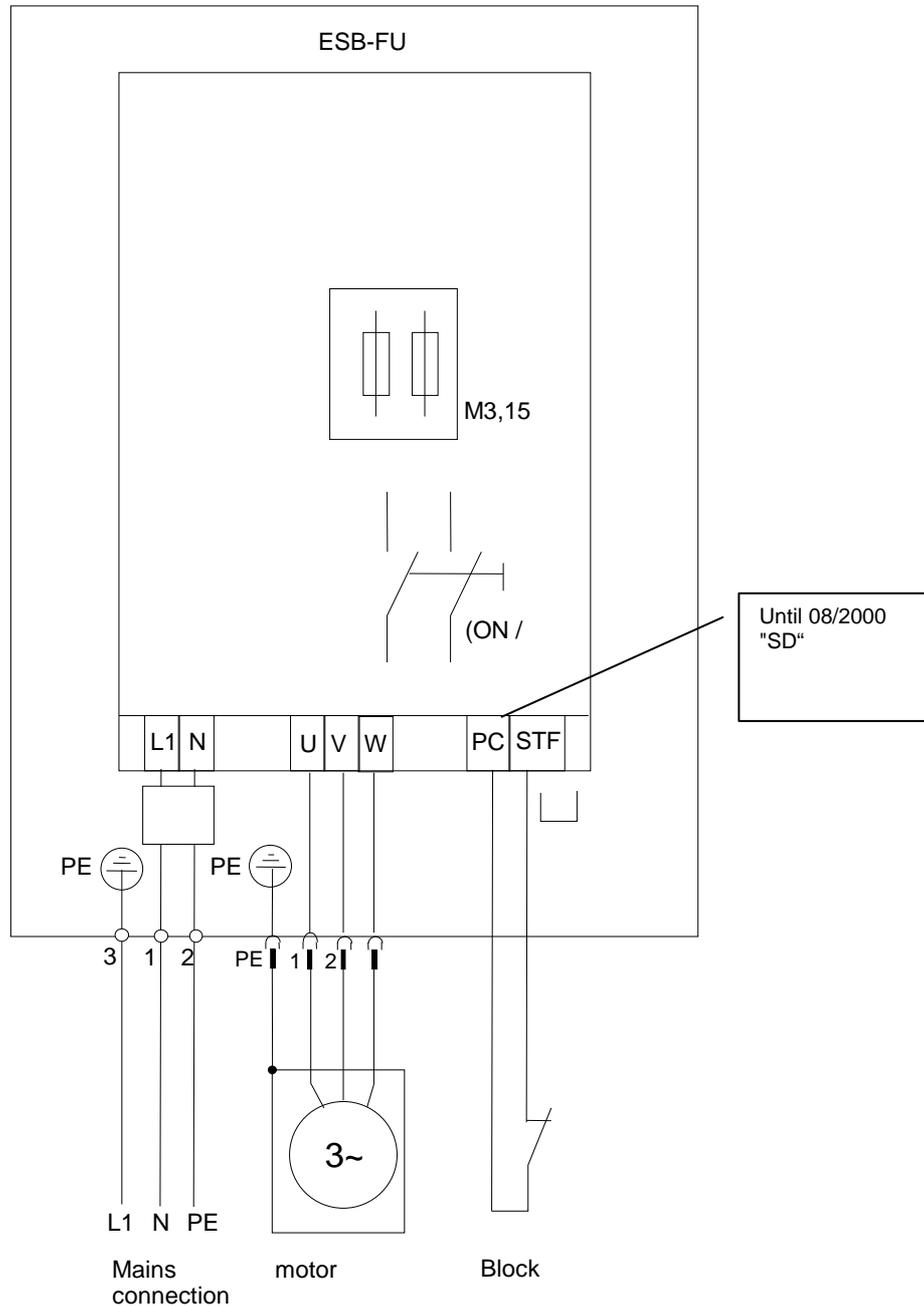
Before putting the motor into operation, the local conditions are to be checked:

- Magnitude of mains voltage
- Power rating of the motor



8. Overview plan

internal components



9. Error analysis

Device doesn't work:

- Check the mains voltage, and, if necessary, check the pre-fuse and replace.
- Check the fuses in the device and replace, if necessary.
- Control input set correctly? (If this input is not used, a bridge must be set between the terminals "PC" (until 08/2000 "SD") and "SDF".