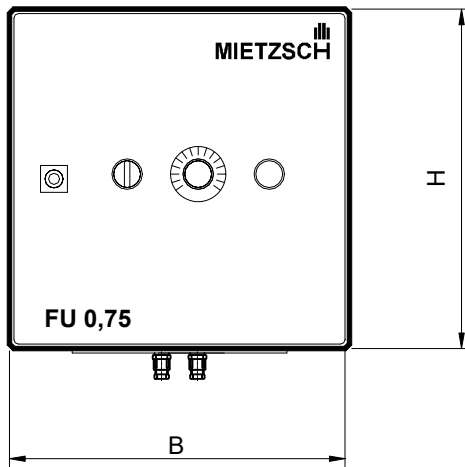


Frequency inverters FU 0,25 ... 15,0 EX for motors in flameproof enclosure Ex db eb



The frequency inverter series FU 0.25 ... 15.0 EX offered by us is a compact solution for control and regulation of explosion-proof fans with three-phase squirrel-cage motors of type Ex db eb (flameproof enclosure).

Adjustment of volumetric flow of a ventilation plant as a function of fan speed has the following advantages:

- High energetic efficiency because the overall efficiency remains almost constant in spite of changed frequency
- Minimized noise because the inverter hardly produces background noise
- Low wear (no belt drive, smooth start)
- Comfortable operation, little maintenance
- Universal application in complex control and regulation systems by 0 ... 10 V input

For inverter operation of explosion-proof fans it should be considered that motors with increased safety **Ex eb** are **not permitted** for inverter regime.

Motors with flameproof enclosure Ex db eb can be operated in combination with special thermal winding protection (special fan design TS). In cases of impermissible motor temperatures the inverter and motor have to be disconnected from the mains galvanically. This is the only way to maintain explosion protection in inverter regime.

Inverter designs FU 0.25 ... 15.0 EX have a special trigger device for this necessary disconnection from the mains.

Note: The actual inverter switchbox is not explosion-proof.

Due to the mains filter remaining interferences are less than the limit values specified in EU regulations (CE-EMVG) so that even sensitive electronic devices are not impaired in their function.

Components and operating elements have been arranged in a robust steel cabinet. The manufacturer set the inverter to the data of the fan to be controlled. This means that operation is possible with the switching elements on the casing front only.

Other functions can be programmed directly on the inverter. Essential features of fan regime are:

Indication of operational data (current and frequency, speed-up and slow-down time, maximum and minimum frequency, frequency jumps (for gating resonances e.g. with spring insulators), current limit, direction of rotation, clock frequency.

Technical data

inverter type	power kW	voltage V	dimensions B x H x T	degree of protection	weight kg
FU 0.25 EX	0.25	input: 1 ~ 230 V/50 Hz output: 3 ~ 0 ... 230 V 0 ... 50 Hz	380 x 380 x 210 mm	IP 54	13
FU 0.37 EX	0.37		380 x 380 x 210 mm	IP 54	13
FU 0.55 EX	0.55		380 x 380 x 210 mm	IP 54	13
FU 0.75 EX	0.75		500 x 500 x 210 mm	IP 54	21
FU 1.10 EX	1.10		500 x 500 x 210 mm	IP 54	21
FU 1.50 EX	1.50		500 x 500 x 300 mm	IP 54	24
FU 2.20 EX	2.20		500 x 500 x 300 mm	IP 54	24
FU 3.00 EX	3.00	input: 3 ~ 400 V/50 Hz output: 3 ~ 0 ... 400 V	600 x 600 x 350 mm	IP 54	39
FU 4.00 EX	4.00		600 x 600 x 350 mm	IP 54	39
FU 5.50 EX	5.50		600 x 760 x 350 mm	IP 43	55
FU 7.50 EX	7.50		600 x 760 x 350 mm	IP 43	55
FU 11 EX	11		800 x 1000 x 300 mm	IP 43	72
FU 15 EX	15		800 x 1000 x 300 mm	IP 43	72

output frequency
operating elements

0 ... 50 (60) Hz
main switch, start/stop switch, potentiometer, error message, reset
in case of option with step switch: main switch, error message, reset,
external step switch as accessories

motor protection
housing
cable inlets

trigger for thermal winding protection TS with mains disconnection
steel, powder-coated
from below (from above on request)

1) Connecting motor, starting and troubles



All operations with the fan and inverter must not be performed but by instructed and reliable persons. Valid standards and regulations have to be considered.

Operations on electrical equipment (motors, control and regulation devices etc.) have to be done by qualified personnel only (see DIN VDE 0105 or IEC 364).

Items to be considered in particular (see also product manual of inverter):

- Any measure in the switchbox requires the inverter supply side to be released.
- The mains supply line fuse must have delayed action.
- The **motor connection** line has to be **shielded** and must not be longer than 20 m. The shield has to be connected to PE over a wide range, Control lines have to be laid separately.
- Connect motor as specified in table below (see also connection example).
- Fundamental reprogramming is permissible after consultation with the MIETZSCH company only. Damages resulting from faulty programming and faulty operation are not covered by our warranty.

The fan cabinet is brought into service in the following steps:

Mains and motor connections, connection of PTC resistors of motor to inverter (terminals 10, 11)

Master switch ON

START/STOP switch to position START

Check direction of fan rotation by brief activation.

Set speed rate (frequency) in combination with ventilation regulation.

After starting check current take-up by the motor. Current can be read on the inverter as function d02.

Change two connections of the motor supply line if the direction of rotation is wrong in spite of correct wiring of the motor with the switchbox.

Every error message requires the fan to be checked. If the error cannot be eliminated by pressing the Error/reset key, it has to be supposed that the thermal motor protection has responded. This can be detected after the control cabinet has been opened by the red LED on trigger device. The error is acknowledged by the Reset key.

If the error cannot be eliminated permanently, the entire plant has to be checked in consideration of error messages on the inverter display.

Check control fuse F 1 in case of functional disorder without optical signal.

Motor connection

inverter type	power kW	input V	output V	motor voltage V	type of motor connection
FU 0.25 ... 2.2	0.25 ... 2.2	1 ~ 230	3 ~ 230 V	3 ~ 230/400 3 ~ 400/690	delta not possible
FU 3.0 ... 15	3.0 ... 15	3 ~ 400 V	3 ~ 400 V	3 ~ 230/400 3 ~ 400/690	star delta

Note: Fans with attached repair switch require the type of motor connection to be checked. If needed, change connection to motor terminals.

The standard equipment of roof fans of type **VRV** comprises a repair switch. The motor of special design **DD** is wired internally in delta connection and thus prepared for FU regime.

Connection example for FU 0.25 ... 2.2, motor voltage 230/400 V, anticlockwise rotation

