Frequency inverters

3~ Fcontrol, universal device with display (2nd edition)

The Fcontrol frequency inverters offer special benefits. Fcontrol have an integrated all-pole active sine filter which ensures a sinusoidal output voltage which is comparable with the normal supply network. This means that the frequency inverters enable reliable, requirement-based, energy-saving control of asynchronous motors (external rotor motors, IEC standard motors) without needing to consider measures that must be observed with standard frequency inverters.

Advantages provided by Fcontrol frequency inverters are:
- Operation without shielded motor cables
- The cable length is not limited by the Fcontrol
- Operation without electromagnetic motor noises (ideal for noise-sensitive areas)
- No danger for motors (these need not be frequency inverter compatible) because they are supplied by sinusoidal voltage according to the line voltage.

Especially in systems in which motors or fans are operated parallel to a frequency inverter, the advantages are particularly valuable. Parallel connected motors often mean long cable lengths, this is no problem with the Fcontrol and unshielded cables can also be used.

The Fcontrol universal devices are especially suitable for the following applications: refrigeration, air-conditioning, agriculture, general airing and venting tasks, clean-room application.
For typical applications in the named areas, fast commissioning by selecting pre-programmed operating modes is possible.

Frequency inverters of the 2nd edition enable modern operation by capacitive keys.
This means that no mechanical key is pressed but the operation is capacitive by touching the key surface. In addition there is a directly selectable On/Off key and two keys the functions of which depend on where you currently are in the menu (softkeys). A commissioning wizard and help texts are available for commissioning.
There is a 2nd control circuit in the device and the possibility of retrofitting a clock module as a timer.

Input for sensors or speed settings through

0-10V — Setting of the desired speed through device or by external default, e.g. 0…10 V

0-30 0-50 bar — Connecting pressure sensors (refrigeration), e.g. type MBG.. sensors, measuring range 0...30 bar, 0...50 bar

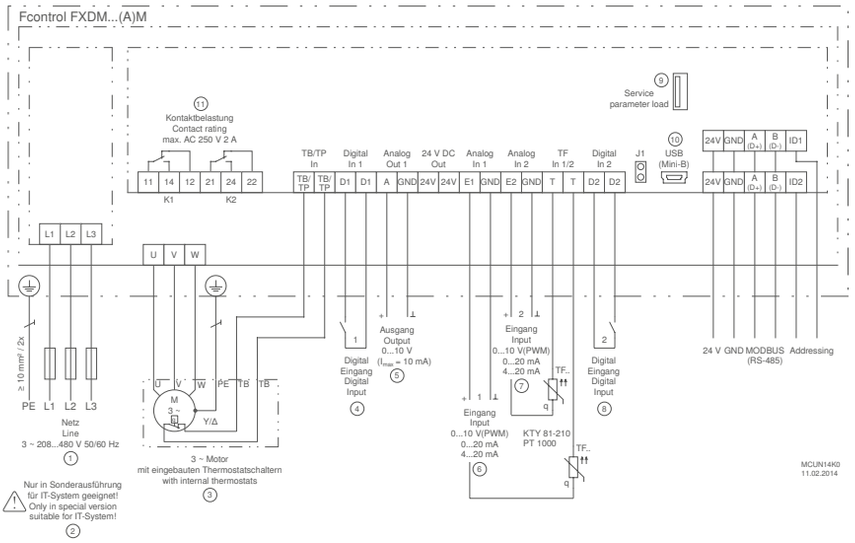
°C — Connection of thermistors, e. g. sensors type TF.. e. g. active sensor type MTG..

△Pa — Connecting differential pressure sensors (air conditioning), e.g. type MPG.. sensors, measuring range 0...6000 Pa, acquisition of volume flows up to 65000 m³/h

m / s — Connecting air velocity sensors, e.g. type MAL.. sensors, measuring range 0...1 m/s, 0...10 m/s

CO_2 % °C — Connecting additional sensors, e.g. combination sensors, CO_2, sensor signal 0...10 V / 0...20 mA / 4...20 mA

Connection diagram



① Mains 3~ 208...480 V 50/60 Hz
② Only suitable for IT system in special version!
③ 3~ motor with built-in thermostats
④ Digital input D1 for potential-free contact
⑤ Output 0...10 V (Imax = 10 mA)
⑥ Input 0...10 V
⑦ Input 0...10 V
⑧ Digital input D2 for potential-free contact
⑨ Parameter interface, only for manufacturer's service purposes!
⑩ USB interface for communication
⑪ Contact load max. 2A / 250 V AC

Interference emission according to EN 61000-6-3 (domestic)
Interference immunity according to EN 61000-6-2 (industrial)

Equipment/properties

Integrated all-pole effective sine filter
Phase to phase and phase to PE conductor. Thus sinusoidal output voltage. Frequency inverter typical measures such as shielded motor cables are not necessary.

LC multifunction display with clear text display:
Different menu languages are selectable

Simple commissioning by operating modes:
Typical operating modes, e.g. for air-conditioning, refrigeration or ventilation technology can be selected.

Activation of a 2nd control circuit in the selected operating mode:
By assignment of the sensor function input 2 (E2) for the 2nd control circuit.

Simple programmability:
Typical settings can be made easily: e.g. setting of a minimum speed, limitation of the maximum speed, inversions and limits. Setting, e.g. for 2-step mode

2 analog inputs for sensors or setting signals:
Analog input E1 and E2: Setting by operating modes or manually programmable, e.g. 0-10 V, 0-20 mA, 4-20 mA
Analog input E2: programmable, e.g. comparison with sensor 1, difference to sensor 1, average value formation, setpoint setting, setpoint adaptation (e.g. outside temperature-dependent), activation of 2nd control circuit.

2 digital inputs D1 and D2:
Programmable, e.g. enable, switch over setpoint 1 or 2, switch over control or manual mode, switch over E1 or E2, control function reversal, output limitation, display of external fault, reset, direction of rotation reversal

1 analog output A1:
Setting by operating modes or manually programmable, e.g. output signal proportional to modulation, output signal proportional to input signal, invertible, 10 V constant voltage, group control, activation as output for 2nd control circuit

Setting by operating modes or manually programmable, e.g. operating indication, fault indication, limits, external fault at digital input, activation of external devices, e.g. heating, shutters, group control fans, etc.

Integrated motor protection function:
Connection possibility of PTC thermistors or alternatively thermostats (TB or TP).

Interface RS485 for MODBUS RTU:
Integration into bus system, addressing of the device manually or automatically possible.

Interface USB:
For software update, communication with PC, etc.

Set protection / memory for settings:
Activation of set protection against unauthorised access, restoration of made settings

Event memory:
Querying of occurred events, operating times etc.

Optional equipment

Add-on modules for frequency inverters
- IO add-on module type Z-module, Article No. **380052**
  If the integrated inputs and outputs are not sufficient, other inputs and outputs can be created with the Z-Modul-B. These are also programmable:
  - 1 analog input
  - 1 analog output
  - 3 digital inputs
  - 2 digital outputs (relays)
- Clock module Z-Modul-RTC, Article No. **380056**, for retrofitting real-time clock and timer function. The switching clock can be assigned the same functions are the digital inputs (D1 and D2).

Fcontrol, universal controller with display, 2nd edition
3~ 208...480V 50/60Hz

Type	Article no.	Rated voltage	Rated current	Rated temperature	Max. line fuse	Max. heat dissipation	Maximum ambient temperature	Protection class	Weight	Dimensions (W x H x D)
		V	A	°C	A	W	°C		kg	mm
FXDM25AM	308289	400	25	55	35	550	55	IP54	21.50	279 x 405 x 260
FXDM32AM	308283		32	50	35	700	55		23.10	279 x 405 x 260

Devices with a rated temperature below 55 °C can be used up to 55 °C with a reduction in performance.

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