

Three-phase AC Asynchronous Motors with Integrated Frequency Inverter

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Compact drives

Design series CD...I

Compact drives in explosion-protection rating II 2 G/D EEx de IIC T4 T120 °C IP65 consist of a flameproof ATB motor, type CD ...I, with a frequency inverter attached, also flameproof enclosed, type CEIGL. It is suitable for rotation-speed-controlled applications in explosion-hazard areas of zones 1 and 21.

Frequency range

The certification includes a frequency range from 2 to 100 Hz. Compact drives are therefore suited for use in drive solutions up to 6000 rpm. Above 50 Hz, the drive is designed for operation in the field-shunting range, i.e. with constant power.

Monitoring

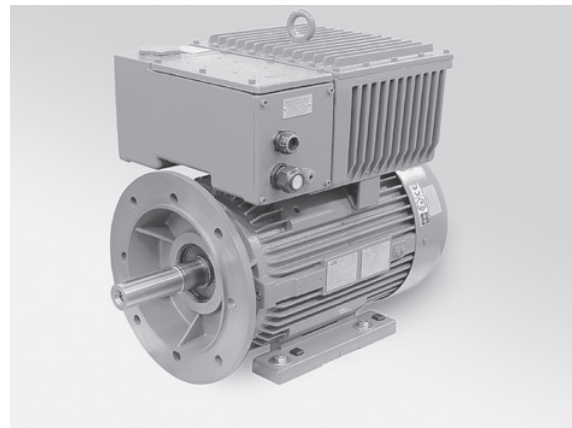
The thermal monitoring of motor and inverter is implemented through PTC thermistor temperature sensors. Optionally a certified thermistor tripping device, as well as an input contactor, are installed in the inverter casing. With this, the compact drive can offer the required switching-technical prerequisites for employment with galvanic separation in the fault case in an explosion-hazardous area, without additional switching devices.

Frequency inverter

A full-value, commercially-available frequency inverter, type 8200vector, from the LENZE company, is used. This operates the motor with field-oriented vector regulation and a clock frequency of 4 kHz. Very good running and regulation characteristics result over the entire rotation speed and torque range. The adaptation of the inverter to the motor with the recording of the motor parameters, as well as the base parameterization of the frequency inverter, is implemented during the final inspection and testing.

Control

The control of the compact drive is implemented, according to specification of the operator, concerning different, exchangeable function modules of the frequency inverter. These function modules are available for bus systems, such as PROFIBUS-DP, interbus, CAN-Bus or as I/O-Module for conventional control over analog set point value and ON/OFF contacts.



Compact Drive Type CD 132 M-4 I

Technical data compact drive

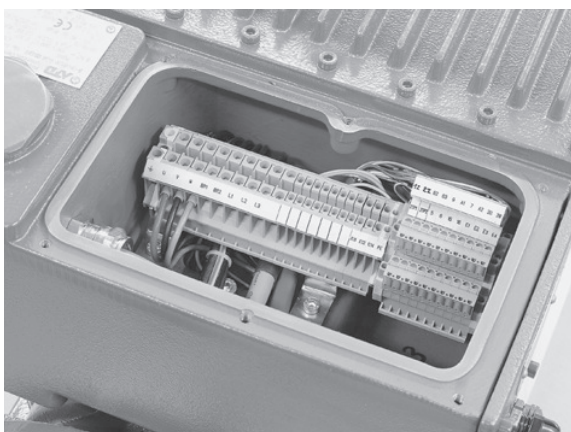
Ignition protection type	Flameproof enclosure II 2 G EEx de IIC T4 II 2 D EEx de IIC T4 IP65 T120 °C
Construction sample certificate Inverter housing	PTB 01 ATEX 1082
Frame sizes	80 to 160
Connection voltage	380 to 500 V \pm 10 %, 50/60 Hz
Load range	0.55 to 11 kW
Maximum current	150 % I_n for 60 s in 10 min
Leakage current to PE (to EN 50178)	> 3,5 mA Fixed installation required, PE double implemented
Output frequency	2 to 50/100 Hz
Frequency resolution absolute	0.02 Hz
Protection insulation of control circuits	Safe isolation PELV to EN 50178
EMC	Maintenance of requirements to EN 61800-3/A11

EMC

To limit the mains system reactions, the inverter is equipped with a line reactor integrated into the flameproof casing and possesses an EMC filter for grounded mains network. Thus the compact drive fulfills the prerequisites of the specifications of the EMC Directive 89/336/EU, as well as the low-voltage Directive 73/23/EU, i.e. conformity with DIN EN 61800-3/A11 and compliance of the limit value Class A according to DIN EN 55011.

Connections

The connections of the supply voltage and control are implemented in an explosion-protection Ex e terminal housing of the inverter casing. A manual terminal with keyboard and LCD display is available for display of operating data, parameters and diagnostics. This "key pad" is connected to the frequency inverter via a plug in the explosion-protection Ex e terminal compartment. However, it is not explosion-proof and is thus provided for short-term operational startup only.



Integrated frequency inverter

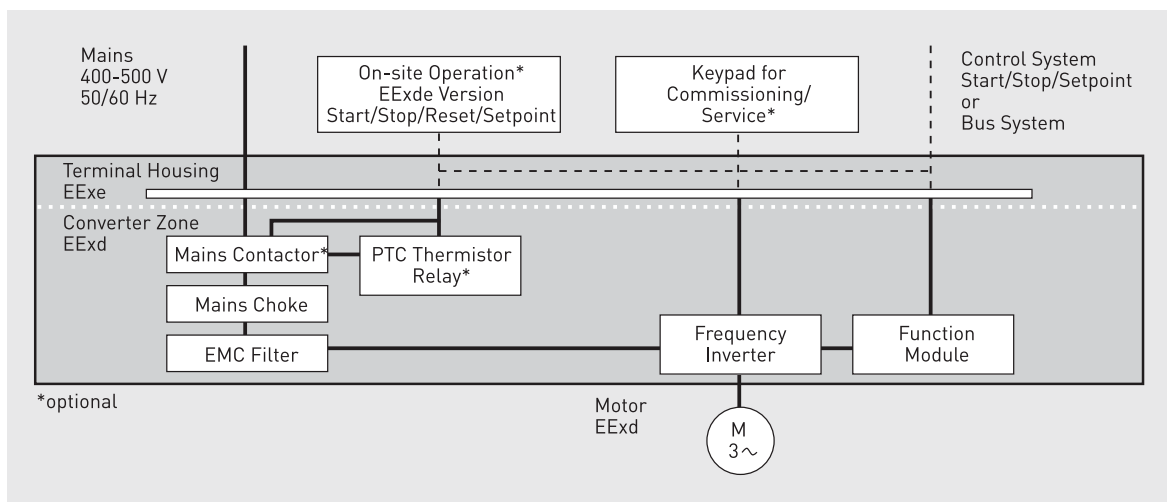
Entries of the mains supply lines with compact drives

Frame size	80	90	100	112	132	160
Thread	2x M25x1,5 1x M16x1,5				1x M32x1,5 1x M25x1,5 1x M16x1,5	
for cable outer Ø mm	8-17 6-11				12-21 8-17 6-11	

Through the compact connection of a motor with frequency inverter, for employment in almost all explosion-hazardous areas, with the following advantages for the user:

- With certification according to ATEX 95, employment is possible in the zones 1 and 21 throughout the whole of Europe – without further national acceptances.
- Simplified planning process
- No additional projecting of control cabinet and switching system
- Cost reduction through short feed to the motor, an implementation with shielded line is not necessary.
- Feed to the compact drive without EMC problems, through the employment of network and EMC filter on the motor.
- Lower number of different part types and thus cost reduction through utilization of an inverter wide-voltage device for 400 V to 500 V mains voltage.
- No version limitation, since an ATB explosion-protection motor Ex d in standard-type implementation is employed.
- The version is possible as a universal chemical-industrial motor.

You can find tables with the operating data on page 87.



Block diagram