

Data sheet

Variable frequency drive MC53

BG13720-xxN



Key Features

- 53 kVA high-frequency drive controller for Control of a sensorless motor
- Output frequency up to 2200 Hz
- Integrated input and output sinusoidal filter
- Active rectifier with an input voltage of 3 x 400 ... 480 V_{AC} ±10 %
- Recuperation during power failure
- Compact design

Data and properties provided in this document comply with the current state of development. Despite careful and accurate review of this document, accuracy of the data provided cannot be guaranteed. Data and specifications are subject to change by MECOS without further notice. Liability for consequential damage resulting from the use of MECOS products is excluded.

Properties

Input

- Active Vienna rectifier
- Input voltage 3 x 400 ... 480 V_{AC} ±10 %
- Mains frequency 50 ... 60 Hz
- Integrated line filter

Output

- Highly efficient 3 level PWM amplifier for the operation of a sensorless motor
- Integrated output sinusoidal filter for reduced motor losses
- Recuperation during power failure
- Short circuit proof

Controller

- Configurable digital I/Os
- USB C service interface for measurements in the controller cycle
- Display with touch screen
- 1 relay output and 1 temperature input
- Slots for up to 5 extension modules

Approbation

- Applicable CE-directives: Directive 2014/35/EU (LVD)
Directive 2014/30/EU (EMC)
Directive 2011/65/EU (RoHS)
- UL-Certification: UL 61800-5-1 / E226179 (model BG13720-03N only)
- SEMI Voltage Sag Immunity Standard

Standards

| | |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EN 61800-2:2016-08 | Adjustable speed electrical power drive systems - Part 2: General requirements - Rating specifications for low voltage adjustable speed a.c. power drive systems |
| EN IEC 61800-3:2019-04 | Adjustable speed electrical power drive systems - Part 3: EMC requirements and specific test methods. |
| EN 61800-5-1:2017-11 UL 61800-5-1:2012 Ed.1 | Adjustable speed electrical power drive systems - Part 5-1: Safety requirements - Electrical, thermal and energy |

Device configurations

Up to 5 different extension modules can be operated in parallel with the MC53. Various industrial buses and a wide range of measured variables are supported. The mikroBUS™ standard serves as the standard.

Technical Specifications

| Environmental conditions | |
|-----------------------------------------------------------------------------|------------------------------------------------------|
| Operating temperature | 0 ... +55 °C |
| Storage temperature | -20 ... +55 °C |
| Maximum installation height | 2000 m above sea level |
| Relative humidity | < 85 % without condensation |
| General Data | |
| Dimensions (L x W x H) | 516 mm x 330 mm x 260 mm |
| Degree of protection | IP20 |
| Weight | 31 kg |
| Supply voltages | 3 x 400 ... 480 V _{AC} ±10 % / 50 ... 60 Hz |
| Overvoltage category Connection | III |
| Pollution degree | 2 |
| Electrical safety | According to the declaration of conformity |
| Functional safety | Must be ensured by external measures |
| UL CCN / File Number | NMMS / E226179 (model BG13720-03N only) |
| Power consumption (depending on machine, cable length and parameterisation) | Typically 58 kW |
| Maximum current consumption | 100 A _{eff} |
| Maximum output frequency | 2200 Hz |
| Cooling | Water cooling and 2 PWM-controlled axial fans |
| Water cooling | |
| Flow temperature water | 10 ... 35 °C |
| Minimum flow | 4 l/min |
| Maximum flow overpressure | 8 bar |

| Power amplifier | |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DC link voltage | $\pm 400 V_{DC}$ |
| DC link capacity | 2520 μF |
| Amplifier type Input | Vienna Rectifier |
| Amplifier type Output | Multilevel module |
| Maximum power output | 53,000 VA |
| Maximum output current | 100 A_{eff} |
| PWM switching frequency | 40 kHz |
| Input filter | Integrated sinusoidal filter |
| Output filter | Integrated sinusoidal filter |
| Interfaces | |
| Digital inputs | 6 isolated inputs with common GND, max. 30 V |
| Digital outputs | 2 isolated outputs with common GND, max. 24 V |
| Isolated power supply | +24 V supply for the digital IO (max. 100 mA including current of the digital outputs), short-circuit proof |
| USB C service interface | Optional MECOS TOOLBOX for inverter required |
| Relay output | 1 relay output (max. 30 V, 1 A) |
| Temperature input | 1 PT1000/PTC input, 2-wire measurement, max 5 mA |
| Status displays | <ul style="list-style-type: none"> TFT colour display with 320 x 240 pixels, backlight and touch screen 3 LEDs for alarm, controller and inverter status |

Connections

Standard Configuration

| | |
|------------------------|--------------------------------------------------------------|
| X2 MECOS Service | USB C socket |
| X3 DIG. I/O & 24V Ext. | 2 x 10-pin plug, Phoenix Contact, MC 1,5/10-G-3,81 (1803358) |
| X4 Motor PTC | 2-pin plug, Phoenix Contact, MSTB 2,5/ 2-G-5,08 (1759017) |
| X5 Mains | 4-pin terminal block, max. 50 mm ² |
| X6 Motor | 4-pin terminal block, max. 50 mm ² |
| X7 DC+/- | 2-pin socket, Phoenix Contact, IPC 5/ 2-GF-7,62 (1708491) |
| Water cooling | 3/8" female thread |

Optional Configuration

| | |
|------------------|------------------------------------------------|
| X1 CAN | 9-pin D-Sub plug |
| X10 EtherCAT IN | 4-pin socket, TE Connectivity, T4145535041-001 |
| X11 EtherCAT OUT | 4-pin socket, TE Connectivity, T4145535041-001 |
| X20 | 15-pin HD D-Sub socket |

Dimensions

All dimensions in mm (± 1 mm)

