

MINISTART Phase Controller BI 9220

Translation
of the original instructions



Your Advantages:

- Compact design
- Easy operating
- Easy fault diagnostics

Features:

- Phase controller for resistive and motor load
- For permanent Power up to 2.2 kW
- LED indication
- **Component optionally in 2 versions:**
 - BI 9220.01: For 1-phase operation**
 - BI 9220.03: For 3-phase operation**
- Width: 68 mm

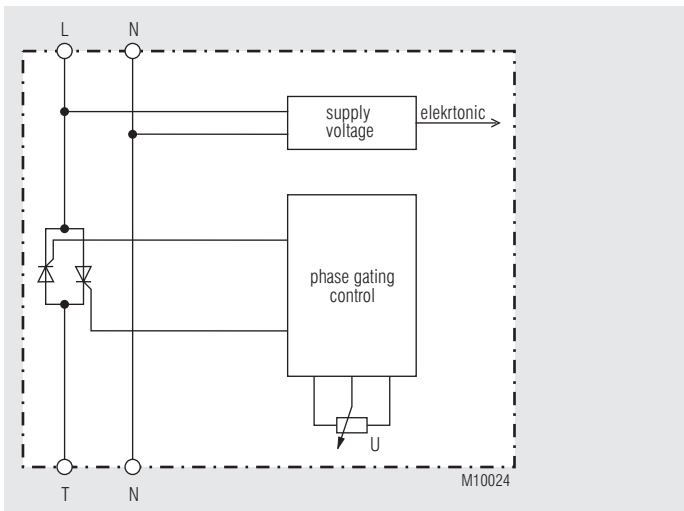
Product Description

The Phase controller of the MINISTART-family are robust devices for voltage control by phase chopping. The voltage control is adjustable on potentiometer.

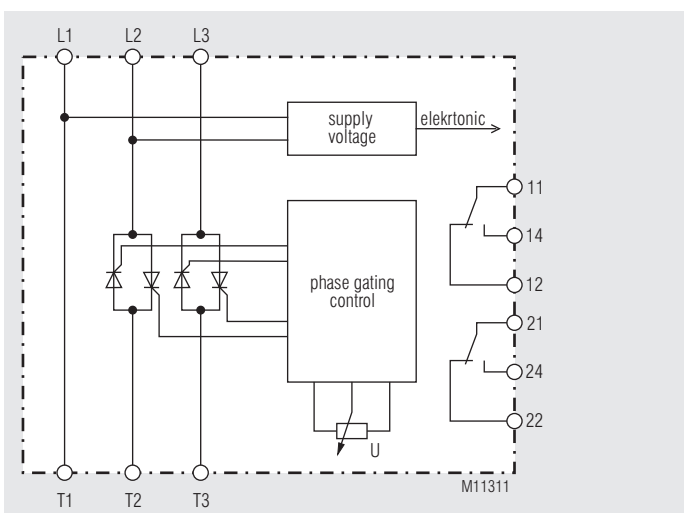
Application

- Resistive loads
- Infrared heating
- Fan
- Volume compressor

Block Diagrams



BI 9220.01



BI 9220.03/800

Indication

LED green: Supply voltage is present
LED yellow: Fault indication by flashing code

Variant /800:

LED yellow Relay 1: Continuous light: when contact 11-12-14 switched on
LED yellow Relay 2: Continuous light: when contact 21-22-24 switched on
Fault indication by flashing code

Flashing code:

- 1*): Power semiconductors overheated
- 4*): Phase L3 is Not present
- 5*): Phase reversal
- 6*): Mains frequency is out of range (± 3 Hz)

1 ... 6*) Number of flashing pulses in short sequence



Safety notes

It is recommended that the softstart is protected by superfast semiconductorfuses rated as per the current rating of the softstart or motor. However, standard line and motor protection is acceptable, but for high starting frequencies motor winding temperature monitoring is recommended. The Phase controller must not be operated with a capacitive load, such as reactive power compensation, at the output.

According to EMC or machine directive phase controllers are not complete devices but components. Only by integrating into the construction of the user the function is fixed. The conformity of the construction of the user to the valid legal standards is in the liability of the user.

Operation is forbidden until the conformity of the end product with the directives 2006/42/EG (machine directive), 2006/95 EG (Low voltage directive) and 2004/108/EG (EMC directive) is proven.

Technical Data

Motor voltage

BI 9220.01: AC 230 V ±10 %
 BI 9220.03: 3 AC 400 V ±10 %

Nominal frequency: 50 / 60 Hz auto adjusting

Nominal load P_N: 1.5 kW at AC 230 V
 2.2 kW at AC 400 V

Min power: Approx. 0.1 P_N

I²t power semiconductors: 1800 A²s

Setting range output current

BI 9220.01: AC 25 ... 220 V

BI 9220.03: AC 150 ... 390 V

Consumption: 3,6 VA

Monitoring Output (only at variant /800)

Contacts: 2 x 1 changeover contacts

Thermal continuous current I_{th}: 4 A

Switching capacity

to AC 15

NO contact: 3 A / 230 V IEC/EN 60947-5-1

NC contact: 1 A / 230 V IEC/EN 60947-5-1

Electrical life:

to AC 15 at 3 A, AC 230 V: 2 x 10⁵ switching cycles

Short circuit strength

max. fuse rating: 4 A gG / gL IEC/EN 60947-5-1

Monitoring relay (contacts 11-12-14 / 21-22-24)

The relays are energized during normal operation (see Indication)

General Data

Nominal operating mode: Continuous operation

Temperature range: 0 ... + 60 °C

Storage temperature: - 25 ... + 75 °C

Clearance and creepage distance

rated impulse voltage /

Pollution degree: 4 kV / 3 IEC 60664-1

EMC

Electrostatic discharge (ESD): 8 kV (air) IEC/EN 61000-4-2

HF irradiation: 10 V/m IEC/EN 61000-4-3

Fast transients: 2 kV IEC/EN 61000-4-4

Surge voltage between

wires for power supply: 1 kV IEC/EN 61000-4-5

between wire and ground: 2 kV IEC/EN 61000-4-5

HF-wire guided: 10 V IEC/EN 61000-4-6

Degree of protection:

Enclosure: IP 40 IEC/EN 60529

Terminals: IP 20 IEC/EN 60529

Housing:

Thermoplastic with V0 behaviour according to UL subject 94

Cibration resistance:

Amplitude 0.35 mm frequency 10 ... 55 Hz, IEC/EN 60068-2-6

Climate resistance: 0 / 055 / 04 IEC/EN 60068-1

Terminal designation:

EN 50005

Wire connection

Load terminals: 1 x 10 mm² solid or
 1 x 6 mm² stranded wire with sleeve
 DIN 46228-1/-2/-3/-4

Wire fixing:

Load terminals: Plus-minus terminal screws M4
 box terminals with wire protection

Fixing torque: 1.2 Nm

Mounting: DIN-rail IEC/EN 60715

Weight:

780 g

Dimensions

Width x height x depth: 68 x 85 x 120 mm

Standard types

BI 9220.01 AC 230 V 1.5 kW

Article number: 0059669

BI 9220.03 3 AC 400 V 2.2 kW

Article number: 0059668

Variant

BI9220.03/800: 2 monitoring contacts for error

Set-up Procedure

1. Wiring of the component according to connection example
2. Adjust required output voltage by turning potentiometer „U“

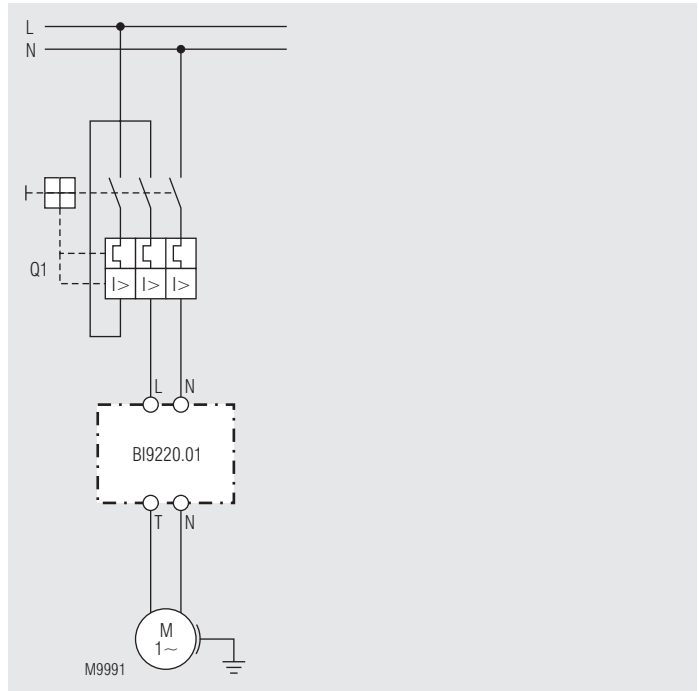
Safety remarks

- Never clear a fault while the component is connected to voltage
- The user must ensure that the device and the necessary components are mounted and connected according to the locally applicable regulations and technical standards.

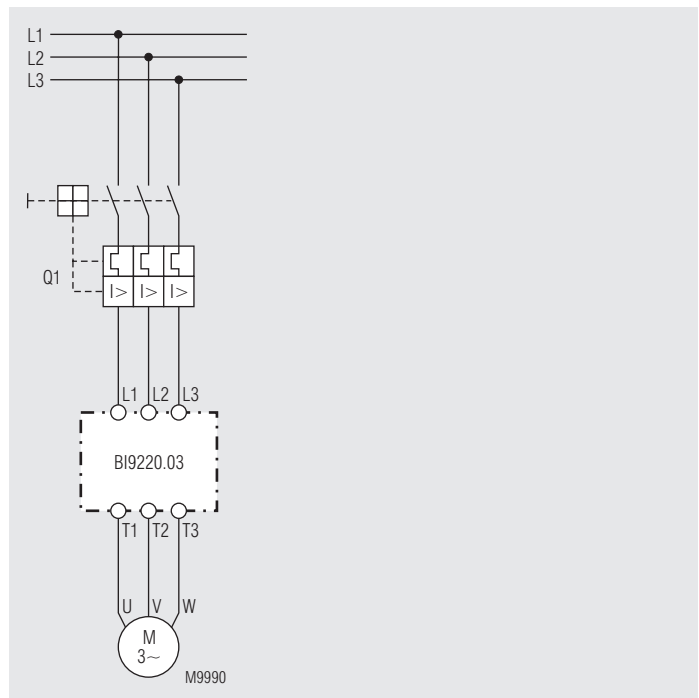
Attention: This device can be started by potential-free contact, while connected directly to the mains without contactor (see application example). Please note, that the load is not physically separated from the mains. Because of this the load **must** be disconnected from the mains via the corresponding manual motor starter.



Connection Example



BI 9220.01



BI 9220.03