

OPERATING INSTRUCTION SINGLE QUADRANT SPEED CONTROLLER BGE3004

1) General description:

The BGE3004 is a single quadrant controller designed for 3-phase electronically commutated (brushless) DC-motor types BG40x25, BG40x50 and BG62x30.

The controller is designed for supply voltages between 11V and 44VDC with a maximum 5% ripple.

The motors speed is regulated with a pulse width modulation (PWM) drive stage. The motor speed can be adjusted with the potentiometer located on the upper side of the controller. This potentiometer is protected with a blind plug and can be adjusted with a small screwdriver (2,0...2,3 mm head width). When shipped, the speed is set to maximum.

As standard, the controller has inputs for start/stop (stop = dynamic braking / start = max. possible acceleration) and direction cw or ccw.

If required, the BGE3004 can be delivered with an additional lead for external speed control via a 0 to 10V analogue signal. This allows the motors speed to be adjusted between 500 rpm and 5000 rpm. Lower speeds down to approximately 200 rpm are possible but at reduced precision.

Please be aware that 5000rpm motor speed can only be reached if the supply voltage is approx. 1,5 times the voltage (winding spec.) stated on the motor label (max. allowed supply 44V DC).

Various safety precautions guarantee high operational security. These include thermal protection that shuts down the power stage if the heat sink temperature exceeds 105°C and polarity protection in case of incorrect wiring.

Note: This controller is also available directly mounted on top of the BG40x25 and BG40x50. These motors are called the BG40x25E and BG40x50E.

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2. Specification:

Operating voltage:	+ 12 V ... + 40 VDC
Maximum ripple	5 %
Minimum permissible voltage	+ 11, 2 VDC
Maximum permissible voltage	+ 44 VDC
Low voltage shut down	> 10,5 V
Current:	
Maximum permissible continuous current	4 A
Maximum permissible peak current	34 A (for 1 second!)
Operating conditions:	
Ambient temperature:	- 10 °C ... + 40 °C
Free air circulation	
Protection class	IP 40
Dimensions:	
Length x width x high	69 x 40 x 19,5mm
Weight	85g
Leads	DC-supply (red & black): type AWG22, Signal (green & yellow): type AWG28, all approx. 300 (+/-30) mm long.
Controller connector	Phönix, part. No: IC2,5/8-ST-5,08
Motor connector	Phönix, part. No: MSTB 2,5/8-ST-BD:1-8
Protection:	
Voltage	Low voltage power stage shut down between 9 V and 10,5 V High voltage power stage shut down at 50 V. Warning: An AC supply voltage will destroy the controller!
Thermal:	Measured at the controller's heat sink. Power stage shut down between 105°C and 115°C, 110 °C typical. Restart between 100°C and 110 °C, 105 °C typical.
Stall:	The controller and motor are constantly protected during stall for supply currents up to a 24 A.
CE-conformity:	Yes

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Installation instructions:

For lead lengths in excess of 2m the DC-supply and signal leads must be shielded separately. Other leads that emit interference should also be separated. Motor and speed reference ground (0V) should be commoned as close to the motor as possible. This will minimise any errors that could occur through voltage drop on the analogue speed input. For 12VDC-supplies and leads in excess of 2m, increase the cross sectional area to minimise voltage losses (e.g. 1mm² for 2m and 2mm² for 4m).

EMC:

The BG40E control has been designed to accept a DC-supply voltage with a maximum ripple of 5%. The power supply is required to operate within its intended electromagnetic environment and to accept or emit RF disturbances within certain defined constraints (**see CE-declaration of conformity**). In general no additional components are necessary as the power supplies usually comply with all requirements. However, components such as electrolyte capacitors (e.g. 220 µF), line filters (2x50µH and 2µF) or suppresser diodes (1500W – 3000W) can help.

3. Connections on standard version:

Red lead:	+12V ...+40VDC supply for motor and control.
Black lead:	0V (Ground)
Green lead:	start/stop – input: start between 3,5V...44V stop between 0V...1,2V, the control signal “stop” via short-circuit braking.
Yellow lead:	Reversing input: full speed reversing is possible. Clockwise rotation (cw) between 3,5V...44V. Counter clockwise rotation (ccw) between 0V...1,2V.
<u>Optional:</u>	
Brown lead:	Not supplied on standard version but is available as a special for external speed control 0V...+10V.

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Speed Controller BGE 3004

Speed Controller for BG40x25 and BG40x50 with mounting flange, for mounting on metal surface .

2 Hallsensor signals are possible to be picked up on the connector if a high impedance input is secured.

