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# Drive Circuit

# Type BLD 453

**Speed control amplifier for Brushless DC-Servomotors**

**Type 2444 BL1**
**Type 2444 BL2**

| Drive Circuit | Type BLD 453 | | | |
|---|---|---|---|---|
| | Min. | Typical | Max. | Units |
| Stabilized motor supply requirement | | | | |
| – Motor power supply $V_m$ | 12 | – | 45 | V DC |
| – Peak output current | – | – | 3 | A |
| – Continuous output current [1] | – | – | 3 | A |
| – Current limit | – | – | 3 | A |
| Stabilized driver power supply requirements | | | | |
| – Logic supply 12 V DC | 10 | 12 | 12.5 | V DC |
| – Max. current (logic circuit) at 12 V | – | 50 | 100 | mA |
| Analog input command [2] | 0 | 5 | 7 | V |
| Speed range with motor type | | | | |
| – 2444 S BL1 [3] | 800 - 5 000 | | 1 000 - 20 000 | rpm |
| – 2444 S BL2 [3] | 800 - 11 000 | | 1 000 - 42 000 | rpm |
| Direction of rotation | | reversible | | |
| Amplifier type | | PWM | | |
| Output stage | | MOSFET | | |
| Switching frequency | | 25 | | kHz |
| Temperature range | | | | |
| – Operating temperature range | 0 | | + 70 | °C |
| – Storage temperature | – 20 | | + 80 | °C |
| Weight | | 75 | | g |

[1] a heat sink is required
[2] analog input voltage may be set either by an external potentiometer or external voltage
[3] motor without load

## General description

**The BLD 453 is a speed control servo-amplifier** suitable for the three-phase brushless DC-Servomotor, type 2444. The switching sequence of the phases of the brushless DC-Servomotors is automatically made by the servo-amplifier BLD 453. A specially designed Frequency-Voltage converter allow precise velocity regulations without the need of a magnetic or optical encoder.

The analog input command is a unipolar signal 0... 5 V DC producing a fixed speed proportional to the input voltage. The BLD 453 includes protective features consisting of undervoltage lockout and cycle by cycle current limiting.

## Features

**Analog input command**
The speed of the motor is controlled by the input voltage level. The input level is adjusted either with a 5 kΩ potentiometer or via an independent external voltage source.

**Enable input** (TTL compatible)
A logic low level disables the motor.

**Brake input** (TTL compatible)
A logic high level brakes the motor (dynamic brake).

**Direction input** (TTL compatible)
The direction of rotation is changed using either a high or low input signal. When a high input signal is given, the motor runs in a CW direction. When a low input command is given, the motor runs in a CCW direction.

**Fault output**
The open collector output goes active (i.e. low GND) when one or more of the following conditions occur: invalid sensor input code, enable input logic 0, overcurrent limit exceeded, undervoltage lockout.
A red LED is included near the collector J2 as a visual fault indication. An external relay can be used for remote indication (sink current max. 8 mA).