

Servo Amplifier

2-Quadrant PWM

For combination with:
SMARTSHELL® Sensorless Brushless DC-Servomotors

Series BLD 4803-SL2P

| | BLD 4803-SL2P | |
|--|----------------|------|
| Power supply | 6 ÷ 48 | V DC |
| Switching frequency | 20 | kHz |
| Continuous output current @ TA = 22°C | 2,5 | A |
| Peak current limit (pulse-by-pulse current limiting) | 5 | A |
| Analog speed command: ¹⁾ | | |
| – Voltage range | 0 ÷ 5 | V DC |
| – Input resistance | 1,5 | kΩ |
| Logic input (internal pull-up) | | |
| Output voltage for external use (max. load 50 mA) | TTL | |
| Speed monitor, digital output (max. load 5 mA) ²⁾ | 5 | V DC |
| | 3,3 | V DC |
| Total standby current at 6V ÷ 48V | 70 ÷ 20 | mA |
| Maximum controllable speed ³⁾ | 40 000 | rpm |
| Minimum controllable speed ⁴⁾ | 1 000 | rpm |
| Temperature range: | | |
| – Operating temperature | 0 ... + 80 | °C |
| – Storage temperature | –20 ... + 80 | °C |
| Dimension and Weight: | | |
| – Dimension (L x W x H) | 45 x 40 x 18,5 | mm |
| – Weight | 24 | g |

¹⁾ Analog speed command may be set by an external potentiometer or an external voltage.

²⁾ Velocity (rpm) = f (Hz) x 60.

³⁾ The maximum controllable speed depends on the power supply, the motor type and the load.

⁴⁾ The minimum controllable speed depends on the motor type and the load.

General description

The BLD 4803-SL2P is a 2-Quadrant PWM (Pulse-Width Modulation) Servo Amplifier suitable for speed control of three-phase sensorless brushless DC-Servomotor, type 1524, 1536, 2232 and 2248. The phase commutation sequence of the brushless DC-Servomotor is automatically made by the Servo Amplifier.

A DSP allows precise speed regulation (regulator type PI).

The analog speed command is a unipolar external signal, from 0 to +5 V, or an external potentiometer, producing a fixed speed proportional to the input voltage.

Three logic inputs activate the following functions:

- **Enable**, a high logic state at this input (internal pull-up resistance) the Servo Amplifier is enabled. If connected to GND the Servo Amplifier is disabled.
- **Brake**, a high logic state (internal pull-up resistance) at this input brake the motor. If connected to GND allows the motor to run.
- **Direction**, a high logic state (internal pull-up resistance) at this input allows the motor to runs in CW direction. If connected to GND the motor runs in CCW direction.

The maximum output power without additional heat sink is 120 W.

Note: The Servo Amplifier is automatically disabled in case motor stalls (either at start or otherwise) or motor drains too much current. To enable, one of the following steps can be taken:

- Connect **“Enable”** to GND to disable the Servo Amplifier and then connect this input to a high logic state to enable the Servo Amplifier.
- Connect **“Brake”** to a high logic state to brake the motor, and then connect this input to GND to release motor.
- Switch the power supply off and then on.

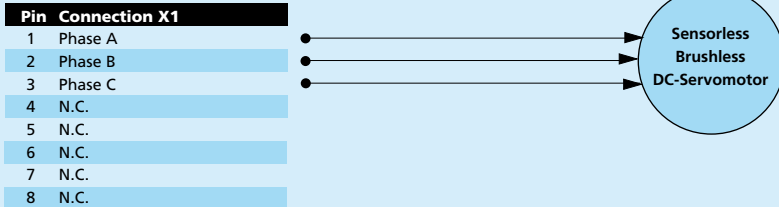
Features:

- Operation from a single supply source
- 2-Quadrant PWM
- High efficiency
- Excellent linearity
- Speed regulator, type PI
- Compact size with SMD-Technology

Ordering information

| Servo Amplifier | Sensorless Brushless DC-Servomotor |
|-----------------|------------------------------------|
| BLD 4803-SL2P | 1524 U ... BSL |
| | 1536 U ... BSL |
| | 2232 S ... BSL |
| | 2248 S ... BSL |

Block diagram of the Servo Amplifier BLD 4803-SL2P for speed control



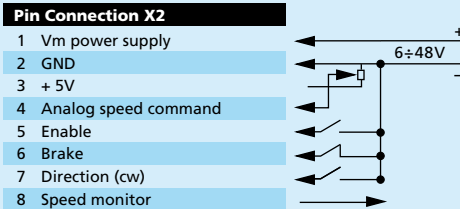
Maximum recommended torque for the motor at start:

$$M = \frac{U_{\text{supply}} \cdot c \cdot \sqrt{6}}{2 \cdot R} \cdot k_M \quad c = 0,22 \text{ (22\%)}$$

- U_{supply} : Servo Amplifier power supply
- c : PWM duty cycle at start run. The reduced c parameter corresponds to the optimum current consumption of the motor, from start run. The value can be changed upon request.
- R : Terminal resistance, phase-phase (refer to motor datasheet point 2)
- k_M : Torque constant (refer to motor datasheet point 12)

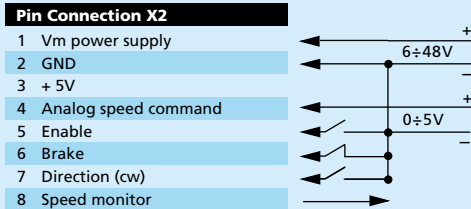
Connection diagram

External potentiometer

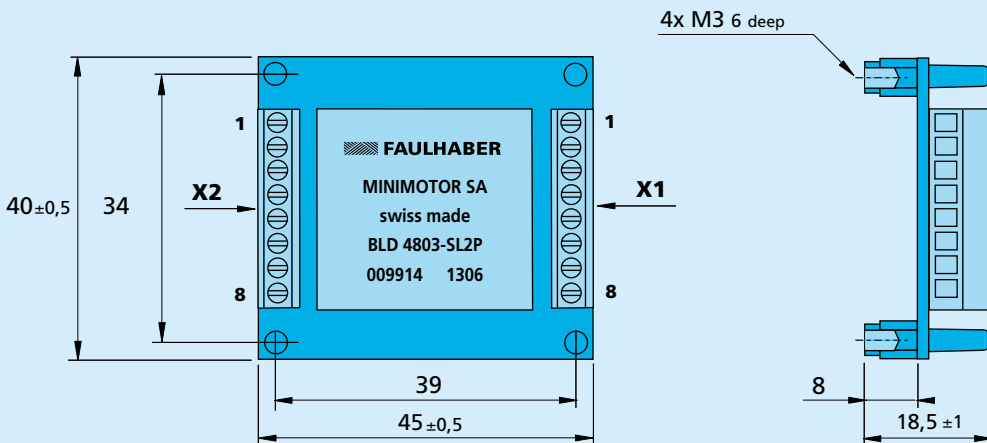


Recommended potentiometer value: 10 kΩ

External voltage



Dimensional drawing and connection information



Connection

| Nr. | Function |
|-----|-------------------------------|
| X1 | Motor |
| X2 | Power supply - signal command |

Specifications subject to change without notice