

NEW

# Motion Controller

V2.5, 4-Quadrant PWM  
with RS232 or CAN interface

For combination with:  
Brushless DC-Servomotors  
with absolute encoder

## Series MCBL 3003 AES

|                                              |                    | MCBL 3003 P AES |              |
|----------------------------------------------|--------------------|-----------------|--------------|
| Power supply                                 | U <sub>B</sub>     | 12 ... 30       | V DC         |
| PWM switching frequency                      | f <sub>PWM</sub>   | 78,12           | kHz          |
| Efficiency                                   | η                  | 95              | %            |
| Max. continuous output current <sup>1)</sup> | I <sub>dauer</sub> | 3               | A            |
| Max. peak output current                     | I <sub>max</sub>   | 10              | A            |
| Total standby current                        | I <sub>el</sub>    | 0,06            | A            |
| Speed range                                  |                    | 5 ... 30 000    | rpm          |
| Scanning rate                                | N                  | 100             | μs           |
| Encoder resolution with AES encoder          |                    | ≤ 4 096         | inc./rev.    |
| Resolution with external encoder             |                    | ≤ 65 535        | inc./rev.    |
| Input/output (partially free configurable)   |                    | 3               |              |
| Program memory: <sup>2)</sup>                |                    |                 |              |
| – memory size                                |                    | 3,3             | kWord        |
| – Number of instructions                     |                    | ca. 1 000       | instructions |
| Operating temperature range                  |                    | – 40 ... + 85   | °C           |
| Housing material                             |                    | without housing |              |
| Weight                                       |                    | 18              | g            |

<sup>1)</sup> at 22°C ambient temperature

<sup>2)</sup> Only for version with serial interface

| Connection information               |                     |                   |               |           |
|--------------------------------------|---------------------|-------------------|---------------|-----------|
| <b>Connection communication:</b>     |                     |                   |               |           |
| Interface                            |                     | RS232             | CAN           |           |
| Communication profile                |                     | Faulhaber - ASCII | CANopen       |           |
| Max. transfer speed rate RS232       |                     | 115 200           |               | baud      |
| Max. transfer speed rate CAN         |                     |                   | 1             | Mbit/s    |
| <b>Connection 3 "AGND":</b>          |                     |                   |               |           |
| – analog ground                      |                     | analog GND        |               |           |
| – digital input                      | external encoder    | channel B         |               |           |
|                                      | R <sub>In</sub>     | 10                |               | kΩ        |
|                                      | f                   | ≤ 400             |               | kHz       |
| <b>Connection 4 "Fault":</b>         |                     |                   |               |           |
| – digital input                      | R <sub>In</sub>     | 100               |               | kΩ        |
| – digital output (open collector)    | U                   | ≤ U <sub>B</sub>  |               | V         |
|                                      | I                   | ≤ 30              |               | mA        |
|                                      | clear               | switched to GND   |               |           |
|                                      | set                 | high-impedance    |               |           |
| fault output                         | no error            | switched to GND   |               |           |
|                                      | error               | high-impedance    |               |           |
| signal output                        | f                   | ≤ 2               |               | kHz       |
|                                      | resolution          | 1...32            |               | inc./rev. |
| <b>Connection 5 "AnIn":</b>          |                     |                   |               |           |
| – analog input                       | set speed value     | U <sub>In</sub>   | ± 10          | V         |
| – digital input                      | PWM set speed value | f                 | 100 ... 2 000 | Hz        |
|                                      | T                   |                   | 50% ± 0 rpm   |           |
|                                      | external encoder    |                   | channel A     |           |
|                                      | f                   | ≤ 400             |               | kHz       |
| step frequency input                 | f                   | ≤ 400             |               | kHz       |
|                                      | R <sub>In</sub>     | 5                 |               | kΩ        |
| <b>Connection 6 "U<sub>B</sub>":</b> |                     |                   |               |           |
|                                      | U <sub>B</sub>      | 12 ... 30         |               | V DC      |
| <b>Connection 7 "GND":</b>           |                     |                   |               |           |
|                                      |                     | ground            |               |           |
| <b>Connection 8 "3. In":</b>         |                     |                   |               |           |
| – digital input                      | R <sub>In</sub>     | 22                |               | kΩ        |
| – electronic supply voltage          | U <sub>EL</sub>     | 12 ... 30         |               | V DC      |

**Connection information**
**Connection 9-11 „DATA,  $\overline{CS}$ , CLK “:**

|                 |           |          |   |
|-----------------|-----------|----------|---|
| DATA            | $U_{in}$  | $\leq 5$ | V |
| $\overline{CS}$ | $U_{out}$ | 0 ... 5  | V |
| CLK             | $U_{out}$ | 0 ... 5  |   |

**Connection 12 “ $U_{cc}$ ”:**

Output voltage for external use <sup>1)</sup>

|           |   |      |
|-----------|---|------|
| $U_{out}$ | 5 | V DC |
|-----------|---|------|

|              |           |           |    |
|--------------|-----------|-----------|----|
| Load current | $I_{out}$ | $\leq 60$ | mA |
|--------------|-----------|-----------|----|

**Connection 13 “SGND”:**

Signal GND

Signal ground

**Connection 14-16 „Motor A, B, C”:**

|                  |         |         |  |
|------------------|---------|---------|--|
| Motor connection | Motor A | Phase A |  |
|                  | Motor B | Phase B |  |
|                  | Motor C | Phase C |  |

|                         |           |       |   |
|-------------------------|-----------|-------|---|
| PWM switching frequency | $f_{PWM}$ | 78,12 | V |
|-------------------------|-----------|-------|---|

<sup>1)</sup> E.g. encoder

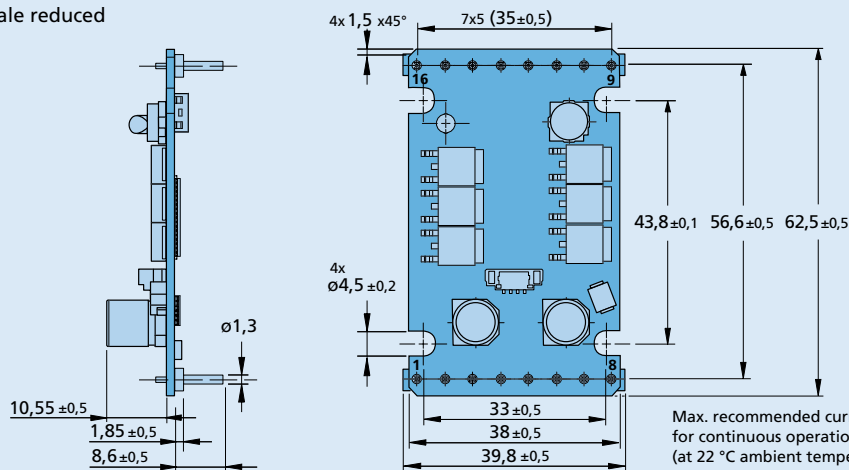
The signal level (PLC or TTL) of the digital inputs can be set over the interface (see operating instruction manual).

Standard (PLC): Low 0...7V / High 12,5V... $U_B$ , TTL: Low 0...0,5V / High 3,5V... $U_B$ 
**Options**

- Separate power supply (Option no.: 3085)

**Full product description**

- Example:

**MCBL 3003 P AES RS (RS232)**
**MCBL 3003 P AES CF (CANopen with Faulhaber CAN)**
**Dimensional drawing and connection information for MCBL 3003 P AES**
 Scale reduced

**Connection**

| Pin | Function        |
|-----|-----------------|
| 1   | TxD / CAN_H     |
| 2   | RxD / CAN_L     |
| 3   | AGND            |
| 4   | Fault           |
| 5   | AnIn            |
| 6   | $U_B$           |
| 7   | GND             |
| 8   | 3. In           |
| 9   | DATA            |
| 10  | $\overline{CS}$ |
| 11  | CLK             |
| 12  | $U_{cc}$        |
| 13  | SGND            |
| 14  | Motor A         |
| 15  | Motor B         |
| 16  | Motor C         |

Max. recommended current  
for continuous operation: 3A  
(at 22 °C ambient temperature)  
**CAUTION:** Thermal shutdown is  
NOT guaranteed!