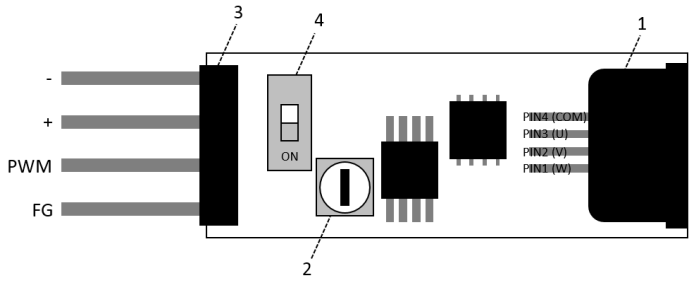
# Datasheet MEZ-1
# 3-Phase, sensorless BLDC Motor Driver

## Features

- Input Voltage Range: 2.0 – 5.5V
- FG Open Drain Output
- PWM Input 15 – 50kHz
- Thermal Shutdown
- Lock Detection
- Manual Speed Control via Potentiometer
- 680mA peak output current
- Chip: Texas Instruments DRV10866

## Description

The MEZ-1 is a 3-phase, sensorless BLDC motor driver with drive current capability up to 680mA peak. It is specially designed for long-life, low noise and robust gas pump applications up to 1.5Nl/min. It generates a square wave signal.

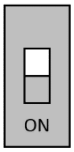



1. Plug for 4-phase flat-flex, ribbon jumper cable
2. Potentiometer (230°)
3. Plug multi-pin connector (male 7.7mm)
4. Dipswitch (1 and 0) factory setting OFF

## Pin & Control Configuration

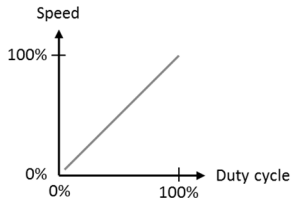
| PIN | | DESCRIPTION |
|---|---|---|
| **NAME** | **NO.** | |
| VCC | + | Input voltage for motor and chip-supply voltage; the internal clamping circuit clamps the $V_{CC}$ voltage. |
| FG | FG | Frequency generator output. |
| GND | - | Ground pin. |
| PWM | PWM | PWM input pin. The PWM input signal is converted to a fixed 156-kHz switching frequency on the MOSFET driver. The PWM input signal resolution is less than 1%. This pin can also control the device and put it in or out of standby mode. After the signal at the PWM stays low (up to 500µs), the device goes into low-power standby mode. The rising edge of the PWM signal wakes up the device and puts it into active mode, where it is ready to start to turn the motor. |
| U | PIN1 | Phase U output. |
| V | PIN2 | Phase V output. |
| W | PIN3 | Phase W output. |
| COM | PIN4 | Motor common terminal input |

## Dipswitch OFF / ON

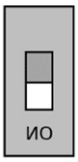



### OFF – PWM-Control

Speed is controlled by PWM input. PWM input works with 15 - 50kHz.
20kHz is recommended.

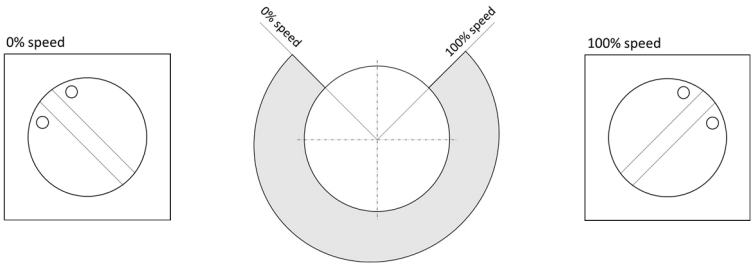



PWM not connected results in 100% speed.
100% speed is dependent on motor and load.
0% (low level) for more than 500µs triggers standby mode.




### ON – Potentiometer-Control

Best manipulated by slit slot screw driver
Potentiometer with mechanical stop:

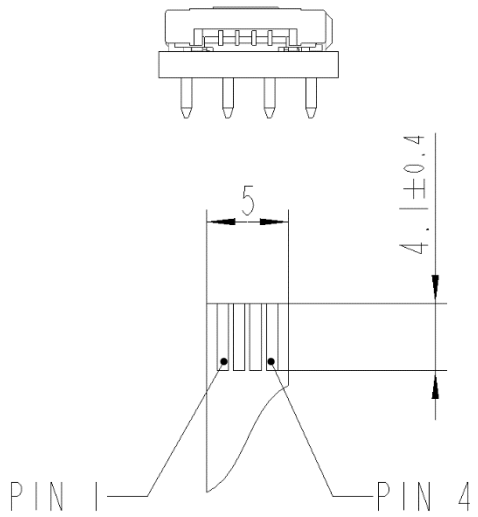



## Electric Specification

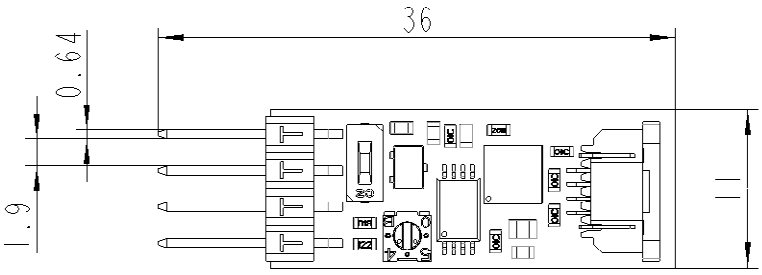
| PARAMETER | | TEST COND. | MIN | NORM | MAX | UNIT |
|---|---|---|---|---|---|---|
| **SUPPLY VOLTAGE** | | | | | | |
| $V_{CC}$ | Supply Voltage | | 2 | 3.3 | 5.5 | V |
| **SUPPLY CURRENT** | | | | | | |
| $I_{Vcc\text{-}Standby}$ | Standby current | $V_{cc}$ = 3.3V | | | 2 | mA |
| | Current limit | | 680 | 800 | 920 | mA |
| **PWM** | | | | | | |
| $V_{PWM\text{-}IH}$ | High-level input voltage | | $V_{cc}$-0.3 | | $V_{cc}$+0.3 | V |
| $V_{PWM\text{-}IL}$ | Low-level input voltage | $V_{cc} \geq 4.5V$ | | | 0.8 | V |
| $F_{PWM}$ | PWM input frequency | | 15 | | 50 | kHz |
| $I_{PWM\text{-}Source}$ | | Active mode, $V_{CC}$ = 5V | | 100 | | µA |
| $T_{STBY}$ | | PWM = 0 | | 500 | | µs |
| **TEMPERATUR** | | | | | | |
| $T_J$ | Oper. junction temp. | | -40 | | 125 | °C |
| **FG** | | | | | | |
| $V_{FG\text{-}OH}$ | High-level | | $V_{CC}$ -0.3 | $V_{CC}$ | $V_{CC}$ +0.3 | V |
| $V_{FG\text{-}OL}$ | Low-level | | | | 0.3 | |
| $I_{FG\text{-}Sink}$ | FS pin sink current | $V_{FG}$ = 0.3V | 5 | | | mA |

## Mechanical Specification

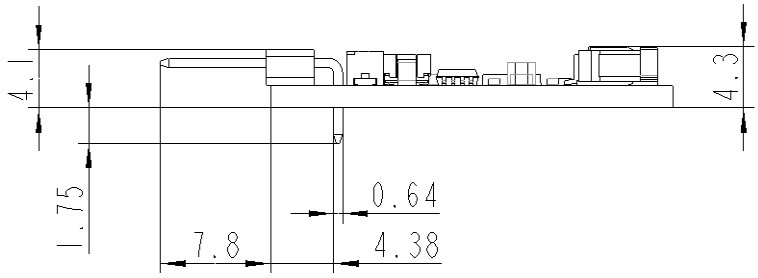
Motor plug:




Device plug:




MEZ-1:




Norms

- Compliant with 2011/65/EU (RoHS2)
- No EMC compliance tested and therefore provided