

### Warranty Information

The MVVS Company gives 36-month warranty applying to manufacture and material defects of the electric motors.

Warranty does not apply to:

- Damages due to an accident.
- Damages due to unprofessional handling or disassembling the product.
- Damages due to use of an unbalanced or damaged propeller.
- Damages due to usage of unoriginal spare parts or accessories.
- Damages due to intaking foreign objects or substances, such as water, chemicals, dust, etc.
- Damages due to incorrect use, such as application of incorrect supply voltage.
- Damages due to incorrect assembly (provision of sufficient cooling).

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### Certificate of Warranty

Sell-by date:

Seller:

Buyer's name and address:



**MVVS 2.0/1120 and 2.0/1600**  
**MVVS 2.5/1120, 2.5/1350 and 2.5/1480**

### User's Manual 1.1

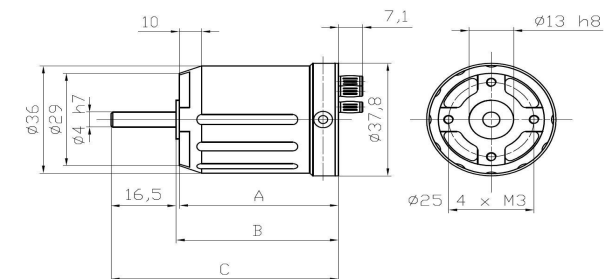
Congratulations on buying the MVVS series 2.0 – 2.5 AC sensor-free electric motor designed for driving aircraft models. Owing to used materials, brand-name unified parts and high production precision this product features high quality, long service life and top performance parameters.

This motor is intended, owing to used conception combining advantages of static motors and those with external rotor, for direct driving the propeller and thus for all types of aircraft models including FUN – FLY. In addition, this conception is extremely suitable for glider models.

### Specification

| RPM / volt                   | 2.0 / 1120  | 2.0 / 1600  | 2.5 / 1120  | 2.5 / 1350  | 2.5 / 1480  |
|------------------------------|-------------|-------------|-------------|-------------|-------------|
| Stator diameter              | 26 mm       | 26 mm       | 26 mm       | 26 mm       | 26 mm       |
| Stator length                | 9 mm        | 9 mm        | 13 mm       | 13 mm       | 13 mm       |
| Shaft diameter               | 4 mm        | 4 mm        | 4 mm        | 4 mm        | 4 mm        |
| Nominal voltage              | 7.2 V       | 7.2 V       | 11 V        | 11 V        | 11 V        |
| Number of poles              | 12          | 12          | 12          | 12          | 12          |
| Working voltage              | 6 – 14 V    | 6 – 12 V    | 8 – 14 V    | 8 – 14 V    | 8 – 12 V    |
| Recommended amperage loading | 6 – 14 A    | 9 – 20 A    | 10 – 20 A   | 12 – 24 A   | 15 – 30 A   |
| Maximum loading              | 20 A / 30 s | 25 A / 30 s | 25 A / 30 s | 30 A / 30 s | 35 A / 30 s |
| Number of cells              | 3 – 4 Li-xx | 2 – 3 Li-xx | 3 – 4 Li-xx | 3 – 4 Li-xx | 3 – 4 Li-xx |
| Weight                       | 87g         | 87g         | 109g        | 109g        | 109g        |

### Dimensioned Sketch



|     |             |             |           |
|-----|-------------|-------------|-----------|
| 2,0 | A = 31,5 mm | B = 32,5 mm | C = 49 mm |
| 2,5 | A = 36,5 mm | B = 37,5 mm | C = 54 mm |

## Area of Application

| Motor      | Model                           | Accumulator / Propeller              |
|------------|---------------------------------|--------------------------------------|
| 2.0 / 1120 | FUN-FLY 0,6 kg                  | 3 Li-xx / APC el. 10 x 5"            |
|            | Acrobat 0,7 kg                  | 4 Li-xx / Aer Glas 8,5 x 5"          |
|            | Training model 1,2 kg           | 3 Li-xx / Aer Glas 9,5 x 6"          |
|            | Glider 1,2 kg                   | 3 Li-xx / Graup CAM 9 x 5"           |
|            | Minihotliner 0,8 kg             | 3 Li-xx / Aer CAM 9 x 5"             |
|            | Double-motor model up to 1,8 kg | 3 Li-xx / Aer Glas 8,5 x 6"          |
| 2.0 / 1600 | FUN-FLY 0,6 kg                  | 2 Li-xx / APC el. 10 x 5"            |
|            | Acrobat 0,7 kg                  | 3 Lixx / Aer Glas 8,5 x 6", APC 8x4" |
|            | Training model 1,2 kg           | 2 Lixx / Aer Glas 9,5 x 6"           |
|            | Glider 1,2 kg                   | 2 Li-xx / Aer. CAM 9,5 x 5"          |
|            | Minihotliner 0,8 kg             | 3 Li-xx / Aer Carb. 7 x 4,5"         |
|            | Double-motor model up to 2,5 kg | 3 Li-xx / Aer Glas 9,5 x 6-7"        |
| 2.5 / 1120 | FUN-FLY 0,85 kg                 | 4 Lixx / APC el. 9 x 4,5"            |
|            | Acrobat 1 kg                    | 4 Lixx / Aer Glas 9,5 x 6"           |
|            | Training model 1,6 kg           | 3 Li-xx / Aer Glas – APC 10 x 7"     |
|            | Glider 1,6 kg                   | 3 Li-xx / Aer CAM 10 x 6-7"          |
|            | Minihotliner 1 kg               | 4 Li-xx / Aer CAM 9,5 x 5"           |
|            | Double-motor model up to 2,5 kg | 3 Li-xx / Aer Glas 9,5 x 6-7"        |
| 2.5 / 1350 | FUN-FLY 0,8 kg                  | 3 Li-xx / APC el. 10 x 5"            |
|            | Acrobat 1 kg                    | 3 Lixx / Aer Glas 9,5 x 6", APC 9x6" |
|            | Training model 1,7 kg           | 3 Lixx / Aer Glas 9,5 x 6", APC 9x6" |
|            | Glider 1,7 kg                   | 3 Li-xx / Graup CAM 9 x 5"           |
|            | Minihotliner 1,1 kg             | 4 Li-xx / Aer CAM 9 x 5"             |
| 2.5 / 1480 | Pylon model                     | 4 Li-xx / APC el. 9 x 4"             |
|            | Acrobat 1,2 kg                  | 3 Lixx / Aer Glas 8,5 x 6"           |
|            | Training model 1,2 kg           | 2 Lixx / Aer Glas 10,5 x 7"          |
|            | Glider 1,2 kg                   | 2 Li-xx / Aer CAM 10 x 6-7"          |
|            | Minihotliner 1,1 kg             | 3 Li-xx / Aer CAM 9 x 5"             |

## Safety Instructions

- 1) Use the motor for designed purposes only.
- 2) When operating models, follow regulations and laws effective in your country.
- 3) The manufacturer is not responsible for possible damages caused by operation of models and devices driven by the MVVS motors.
- 4) Use only original spare parts.
- 5) Never interfere into the motor structure.
- 6) Before every flight check tightness of the propeller screw or chuck. If the propeller cone is used, check its fixation as well. When mounting the cone, always follow appropriate instructions.
- 7) Check attachment to the motor bed regularly. Never start up loosened motor!
- 8) Use well balanced propellers only! Immediately replace damaged propellers or propellers that touched the ground!
- 9) Never stand so that parts of your body are in the plane with the rotating propeller. Apply the same principle for bystanders.
- 10) Never wear loose drifty clothing (tie, scarf, etc) when operating the model.
- 11) Never try to stop the motor with any part of your body.
- 12) Before starting the motor secure the model from setting in motion.
- 13) Keep all small objects in the safe distance from the running motor and never throw any objects into it.
- 14) When operating the motor, pay attention to keep possible bystanders, especially children, at least 10 m away.

- 15) Never rectify the axis bent during an accident but provide its replacement. Do not start the motor immediately after an accident but check it first. The contaminated motor should be delivered to the manufacturer for repair.

## Motor Installation into a model

Drill a central hole 13mm in diameter and other holes for motor screws according to the sketch into the motor bulkhead in the model nose, unless already provided by the manufacturer. In addition, drill at least 4 holes at least 8 mm in diameter for cooling air supply, so that to be positioned directly opposite to inlets in the face of the installed motor. Use at least 2 screws M3 for fixation, so that they penetrate min. 5mm and max. 7mm into the motor. In case shorter screws are used, there is a danger of thread extraction. If longer screws are used, there is a danger of motor seizure or mechanical damage. When only two screws are used, they should be located symmetrically to the motor axis. For motors designed to be driven by a combustion engine use the bed for rear assembly supplied as special accessories. Never forget about holes for cooling air outlet, which is the necessary condition for correct cooling function!

The rear motor cover is equipped with three connectors 3.5mm in diameter for connecting the motor to the controller. In case the used controller is fitted with connectors of different diameters, or its female connectors do not adhere firmly to the motor connectors, replace them with those supplied as motor accessories. Use of incorrect connectors may cause damage to the motor and controller. Replace any two supply cables if the motor rotates in the opposite direction.

Use high-quality chuck adapters of 4mm inside diameter for gripping the propeller. If an unsuitable or poor-quality adapter is used, the rotating propeller may slip off and cause serious injury.

## Drive Optimisation

By means of correct choice especially of propeller, accumulator and controller parameters it is possible to change driving unit properties within wide range and thus flight behaviour and attained flight time. Use data mentioned in tables as guidance for your decision-making. In case other propeller is used than that mentioned it is necessary to check max. current using a clip-on ammeter. Use the controller that will supply current values mentioned in specifications with reserve. We recommend use of the 22 – 44 A controller (depends on the motor type). The regulator advance should be set to 20-25° or higher and frequency to 8 kHz. As to supply accumulators do not exceed max. discharging currents because there is a danger of destruction.

Do not overload the motor unnecessarily because there is a danger of damage or deterioration of performance parameters. If the motor operates within the range recommended in technical specifications, its lifetime is limited by mechanical endurance only.

Suitable combinations of propellers and supply sources – see the table “Area of application”

## Motor Maintenance

AC electric motors are not maintenance-demanding. The same applies to MVVS motors as well, as maintenance only involves keeping the motor in dry and clean condition. If no accident happens, motor service life is only limited by lifetime of bearings in hundreds of hours, depending on flying style and loading. Wear of bearings shows by increased noise and radial allowance. Every accident may decrease bearing lifetime significantly. We recommend entrusting the manufacturer with replacement of bearings.

If you decide to replace parts by yourselves, then always use original parts and MVVS tools only.

Note: Screws used for motor installation can be loosened using the Torx 9 spanner. Screws on the crankshaft should be heated first to approx. 100 °C to disengage locking glue. Cover screws are treated with special paste against seizure. Never wipe off this material to make possible next disassembly.