

BLUE SHOCK RACE ELECTRIC POWER UNIT TECHNICAL REGULATIONS FOR 2024

1. GENERAL REGULATIONS

- 1.1 Technical regulations have been developed following the international kart commission CIK-FIA kart technical regulations, adapting them to WKA competition.
- 1.2 Electric kart is a kart with drive only provided by an electric motor, and the only power storage type for kart drive is a battery.
- 1.3 Chassis according to CIK-FIA Karting Technical Regulations According to each class (detailed in paragraph 4)
- 1.4 Age restrictions: According to each class (detailed in paragraph 4).
- 1.5 Kart minimum weight with driver: According to each class (detailed in paragraph 4)
- 1.6 It is only allowed to move forward with the motor drive. Driving backwards is forbidden using the motor.
- 1.7 All power units must be sealed before entering the race. If the seal is broken, the driver or team must report to the organizers to have the seal replaced before the race. Failure to comply, including racing without a seal or with a broken seal, may result in disqualification.

2. ELECTRIC DRIVE SYSTEM

- 2.1 Electric drive system power may not exceed power limit at the battery output. According to each class (detailed in paragraph 4).
- 2.2 Electric drive system power circuit must have a safety switch and/or a contactor for the positive power cable able of disconnecting the loaded contacts at the system's maximum voltage and maximum output current.
- 2.3 Components used in electric karts must bear the CE marking or an equivalent US certification. In case of absence thereof, they must have origin documentation with technical specifications that the Technical Commission can acquaint itself with and evaluate compliance of a component.
- 2.5 During the racing, it is only allowed to use natural air flow cooling.
- 2.7 The temperature of electric motor, controller and battery body 5 minutes before the competition race must be at least -10°C ambient temperature. (For example, if the ambient temperature is 25°C, the temperature of the motor, controller and battery body may not be lower than +15°C.). Temperature is measured before the start of each race in a specified area using a WKA approved device. Ambient temperature will be specified at the entrance to the pre-start area and updated during the competition.
- 2.8 The racing kart must be equipped with an electric motor.
- 2.9 It is allowed to use motors intended for use with liquid cooling, but liquid inflow and outflow canals must be closed and may not be connected to any heat exchanger or a device providing cooling.
- 2.10 It is forbidden for teams to modify the electric motor.
- 2.11 Maximum allowed kart battery voltage is set according to each class (detailed in paragraph 4)
- 2.12 Battery maximum discharge power may not exceed power limit According to each class (detailed in paragraph 4). Maximum current must be restricted by the motor controller settings according to the battery nominal voltage. The maximum allowed discharge current for battery is set according to each class (detailed in paragraph 4).
- 2.13 When using a battery, maximum discharge current in torque map must be calculated according to the formula: $P_{max} / V_{nom} = I_{max}$. (E. g., $6000[W] / 48[V] = 125[A]$).
- 2.14 Electric karts may only be equipped with Li-Ion batteries with cells made based on any Li-Ion chemical compound. It is strictly forbidden to use batteries with any other chemical compounds.
- 2.15 Kart battery or battery cell units must be equipped with BMS (Battery Management System) and at least one fuse at the battery output.
- 2.16 It is forbidden to install more than one battery pack on the kart at any time.
- 2.17 Battery cells must be mounted in a closed, mechanically durable, and fire-safe case. It must ensure battery protection against impacts against collisions and the influence of humidity.

- 2.18 All components must be attached to the kart frame, so they cannot be detached from the kart frame in case of a crash.
- 2.19 All electrical components must be IP65 approved.
- 2.20 If requested, the team must provide members of the Technical Commission access to verify the power limiting parameters at any moment.
- 2.21 If the technical commission establishes that the kart control unit software settings allow to exceed the allowed power according to each class (detailed in paragraph 4), the competition participant's race results are cancelled.

3. SAFETY REGULATIONS

- 3.1 All wire insulation must be intact.
- 3.2 All contacts that are not factory-insulated (e. g., places of wire fastening to motor) must be covered with covers made of a non-conducting material.
- 3.3 Insulating rubber sleeves (pictured) must be used for wire ends without insulation (with wire shoes) fastened to motor, controller, and other equipment, covering the uninsulated part of the connection.
- 3.4 If an accident takes place during the competition and any electric devices are damaged, the kart may only return to the competition after verification by the technical commission and receipt of a permission.
- 3.5 Each team participating in the electric kart class must be equipped with at least one 5 Lbs CO2 fire extinguisher.
- 3.6 Each team must have a fireproof blanket (1x1 m or bigger) used in case of an accident.

4. CLASS REGULATIONS

Class	X2	X3	X4	X5
Age	5-10	10-15	14+	15+
Maximum battery voltage nominal/maximal (V)	48V/55V	96V/110V	96V/110V	96V/110V
Maximum power (kW)	6kW	15kW	25kW	33kW
Kart minimum weight with driver (Lbs)	240 Lbs	330 Lbs	365 Lbs	375 Lbs
Maximum discharge current (A)	155A* / 125A**	190A*/156.25A**	285A*/260.5A**	360A*/343.75A**
Power limit at the battery output (kW)	6kW	15kW	25kW	33kW
Chassis CIK-FIA Karting	Group 3 (Mini)	Group 2 (OK-J)	Group 2 (OK)	Group 1 (KZ)

* Limited by software

** Limited by torque map