

PROVISIONAL RULES of

IFMAR 1/10th ELECTRIC DRIFT WORLD CHAMPIONSHIP

I. Competition rules

1. Chassis

1.1 The car chassis has to be a 1/10th scale touring car or drift car produced by a standard brand. Base chassis must be on the market. Optional parts are allowed. Not allowed are M-chassis or 'little sports' chassis in either short- or long-wheelbase versions.

1.2 Driven wheels must be linked to an independent suspension.

1.3 Drive shafts to the wheels must include joints.

1.4 Two competitors may not share the same chassis.

1.5 The battery must be mounted between the front and rear axle

1.6 Hard antennas (made of carbon, fiberglass rods, steel, etc.) are not allowed.

1.7 Any external device emitting smoke or sounds is not allowed.

1.8 A bumper is not mandatory, but if using one it must be made of plastic and safe towards other competitor cars.

1.9 Drive systems: Only 2wd rear-wheel drive (RWD) is allowed.

1.10 Gyro units: Gyro use allowed.

1.11 Overall length(including the body): Max. 490mm

1.12 Wheelbase: Min. 240mm - Max. 270mm

1.13 Overall width (including the body): Max. 230mm. Any part of the body or chassis must clear the technical scrutineering tools.

1.14 Wing: The maximum height of any part of the wing, spoiler, or side dams is 150mm (measured with the chassis stationary at full weight). Side dams up to 40mm(H) x 40mm(L) on each side are permitted.

1.15 Any modification to create hefty noises will not be allowed. These include- attaching long headed screws to the pinion gear, modifying the spur gear, bending the center shaft, using nylon tie-wraps, or using any resonating apparatus

1.16 Overall weight: Max. 1100g (measured at the rear wheels)

1.17 Car numbers: Car numbers supplied by the event organizer must be fixed to the body and easily visible. One on the front window, one on the right side, and one on the left side, for a total of three car numbers.

2. Body

2.1 Only 1/10th scale body shells modeled after actual full-size vehicles allowed. Body shell must be produced by an R/C car body manufacturer, and be listed under the IFMAR approved body list.

For more details, please refer IFMAR Application and register form for Electric Track bodies.

2.2 Long wheelbase bodies (275mm size) are not permitted.

2.3 Body shells must be painted.

2.4 Front, side, and rear windows shall be clear or transparent, cutting out the windows is allowed excepting the front windshield

2.5 Electrical accessories are allowed.

2.6 Hybrid body shells (piecing together two different body shells) is allowed. However the body shell must be listed under the IFMAR approved body list. An accurate description of the hybrid body shell must be explained when submitting an entry to an event. For example, "Front:XXX(car model) by XXX(manufacturer), Rear:XXX(car model) by XXX(manufacturer)"

2.7 Aero parts may be used as long as the body shell remains within the overall length and width requirements.

IFMAR APPROVED BODIES LIST

No approved bodies at the moment

3. Tires

3.1 Participating competitors who can get one set of tires from organizer (4 tires: 2 front, 2 rear). can Also borrow tires from other drivers.

3.2 Driver can buy one extra set of tires.

3.3 As a basic rule, the rules of the hosting venue will dictate which control tire will be used, with the final selection made by circuit venue and organizer. Control tires for future events held at special temporary circuits will be decided by the organizer.

3.4 Controlled tire must be selected so to enable to complete the entire competition by using 1 set. Fast wearing, very soft, or easy to melt types shall not be selected as controlled tire.

3.5 The tire must be officially sold one.

3.6 Tires are to be included in the entry fee.

3.7 Requests to replace an improperly glued tire will be accepted (but the competitor must pay for the replacement tire).

3.8 Aside from natural wear to the tire, any modification to the tire to alter grip or tire diameter is not allowed.

3.9 The tires must be mounted in the originally intended orientation (mounting in any other way is not allowed).

4.0 The controlled tire to be distributed shall be marked on the tire by printing or pen so that it can be distinguished from the purchased tire.

4. Wheel

4.1 Only 1/10th size on-road or drift wheels (by any manufacturer) that have a scale look may be used.

4.2 The use of dish wheels designed for touring car racing are not allowed.

5. Battery

5.1 Only 2-cell LiFe(6.6V) and 2-cell LiPO(7.6V) hard-cased batteries by IFMAR allowed. For more details, please refer IFMAR APPROVALS ELECTRIC (Electric Battery & Motor)

5.2 Batteries must be sold as having a nominal voltage of 7.6V or lower.

5.3 Battery packs may not be mounted behind the rear axle.

5.6 Battery packs with bulged or expanded cases will not be permitted for use.

5.7 For safety, the voltage at the end of charging is maximum 8.4 Volt.

IFMAR APPROVED BATTERY LIST

No approved batteries at the moment

6. Motor

6.1 Only 540-size brushless motors by IFMAR allowed.

For more details, please refer IFMAR APPROVALS ELECTRIC (Electric Battery & Motor)

6.2 Only commercially available brushless motors are allowed.(No limit in turns)

IFMAR APPROVED BATTERY LIST

No approved motors at the moment

7. ESC (Speed Controller)

7.1 ESC units by any manufacturer allowed.

7.2 ESC units with reverse functions may be used.

7.3 Adjustments to timing, boost, and turbo settings permitted.

7.4 The use of sound systems is not permitted.

8. Transmitter Frequencies

8.1 Only transmitter frequencies approved by each countries Radio Control Safety Association allowed.

Example : Japan: 2.4GHz, 27MHz, and 40MHz transmitter frequencies allowed.

9. Safety

9.1 Nol cars may endanger fellow competitors or their cars, technical scrutineering staff, track marshalls, and spectators.

9.2 Cars must be assembled so they can be safely handled.

9.3 Cars deemed to be hazardous may not be permitted for use in competition.

10. Competition format

10.1 5 days including the reception day.

On the first day: Registration and technical inspection (Wednesday)

On the second day: Practice (Thursday)

On the third day: Qualifying 'Tanso-Individual run' (Friday), 7 drivers advance to the 'Tsuiso' Final 16.

On the fourth day: Qualifying 'Tanso-Individual run' (Saturday), an additional 7 drivers to the 'Tsuiso' Final 16. Adding to the 7 drivers that already advanced on Saturday, a total of 14 drivers advance to the 'Tsuiso' Final 16.

On the last day of competition (Sunday): The last Qualify 'Tanso run' for all the rest of drivers to spot at Top 15 to 44 drivers for 'Tsuiso' Final B-main and C-main

The drivers who advance to the finals tournament are going to 44 drivers in total.

14 drivers for 'Tsuiso' Final 16, 14 drivers for Tsuiso Final B-Main and 16 drivers for Tsuiso Final C-Main.

The final round starts from C main, the top two goes up to B-main. The top 2 at B-main advance to 'Tsuiso' Final 16.

The 'Tsuiso' Final 16 will be held in a total of 16 drivers, including the top 14 in qualifying 10.2 'Tanso' run judging In 'Tanso' each driver drifts one at a time, judged individually and awarded points.

10.3 'Tsuiso' Final 16

In 'Tsuiso' competition, drivers are paired off against each other in an elimination format.

Each heat comprises of two passes, with each driver taking a turn to lead. Points are awarded to the drivers for each pass based on the chase driver's performance versus the lead driver's performance, to determine who advances.

Passes are continued until one driver in each pairing prevails.

The number of "One mor" time(extra passes) will be situation-determined.

The allowed staging time between the first car and second car lining up to the starting line is 5 minutes. If a driver is not able to line up to the starting line within 5 minutes, he/she will automatically lose.

10.4 The Grand Final 4

4 drivers will advance from the 'Tsuiso' Final 16, to compete in a round-robin format to determine the overall champion.

There will be no limit to the number of "One more" time allowed.

The allowed staging time between the first car and second car lining up to the starting line is 5 minutes. If a driver is not able to line up to the starting line within 5 minutes, he/she will automatically lose.

11. Judging criteria (Tanso - Individual run)

11.1 Drifting technique will be judged based on the following criteria.

11.2 Drift competition defined: Competing against others to see who is best at intentionally generating a sideways movement from a forward moving car, and holding that state in a smooth manner around the designated course.

11.3 Driving line: A smooth and curved driving line through the designated clipping points or clipping zones is desired. The areas of the car to be driven through the clipping points or zones will be instructed, and points will be awarded accordingly for getting as near as possible to the clipping points or zones. Points will be subtracted for ragged unsmooth driving lines.

11.4 Drift angle: The angle between the longitudinal axis of the car and the driving line is the drift angle. Holding a stable, consistent angle while cornering is desired. And while a large drift angle is good, if the angle is too big or a correction is made to lessen the angle, points will be subtracted. A large drift angle resulting from a half-spin will not score well.

11.5 Angle change: The quickness, precision, timing, and stability when initiating a drift or making directional changes will be judged. The following types of driving will not score well - drift initiation followed by a late directional change, inability to set an angle or lack of angle upon drift initiation or directional change.

11.6 Speed: Blipping the throttle or lack of throttle will result in lower scores. A noticeable decrease in speed will also result in lower scores.

11.7 Competitors may only start when their name is called by the announcer. Driving before the start signal is not allowed. No competitor may interfere with the run of another car during the judging process. The competitor must wait quietly and keep their car stationary.

11.8 Each competitor may earn a maximum of 100 points for an 'Tanso'-Individual run..

11.9 Judging will be based on a computerized system utilizing cameras or infrared lasers to measure 'speed', 'angle', 'distance', 'line', as well as 'angular velocity' from the barriers to calculate a point score. Judges and Organizer will select the suitable judging element in accordance with the track layout and surface condition.

Recommended measurement system is YDS (Yokomo Drift Scoring System), but possible to select another measurement system if it is more suitable.

11.10 Judges will award additional point scores and add them to the score from the computer system to calculate the total point score.

11.11 Depending on the situation, the computer score may be weighed more to eliminate any uncertainties. Furthermore, the ratio of the computer score and judge score will be set to rely on the computer score as much as possible to ensure fairness.

11.12 About the judging Winners and losers at a Drift competition are determined by judges scoring rather than time. By adopting a computerized camera measuring system for the judging, a highly fair competition is possible. As far as the judging which cannot be

measured by a computer, five human judges will perform the judging and the scores of the five judges will be further measured by cutting the top and the bottom scores out, then the remaining 3 scores are averaged to be able to prevent from any unfair results. Reasoning behind this proposal of five human judges is since IFMAR consists of 4 regions, there will be one from each representing region and the fifth judge will be a representative of the host country holding event. Fairness is the key for judging at all times and we believe this is the best way to do so.

11.13 Details of the judging criteria shall be explained during the driver's meeting at each competition. For example, judges will award a maximum of 20 possible points consisting of 5 points from four criteria, "line", "angle", "technique", and "pylon".

11.14 Points will be subtracted for being too far inside or too far outside the clipping point. However instances such as the front wheels riding over the corner curbing may not pose a problem. Instances such as these will explained accordingly, and during the meeting.

11.15 'Tanso'-Individual run judging will take the average score of the best two runs out of three to five possible runs (to be determined based on the number of participants).

11.16 Judging for the Repechage will only count one score.

11.17 Any competitor who fails to show up in time for their start will forfeit their run and not be scored. However if advanced notice is given and the organizer is able to reschedule the heat, the competitor may be moved to a different heat. But for Tandem runs(tsuiso), the 5 minute rule shall apply.

11.18 Approaching the judging staff while they are judging is prohibited, and will result in a penalty. Problems or issues related to the running of the heat are an exception.

11.19 Once a competitor is on the driving rostrum, they may not return to the pit area. However if the competitor is carrying their own tools or parts to make an adjustment or repair, they may do so near the close vicinity of the rostrum.

11.20 Any competitor taking their car back to the pit area after technical inspection must go through technical inspection again prior to running in their heat.

11.21 Any competitor on the rostrum not driving shall wait and stand behind competitors driving on the track. All each other to choose their driving spot freely.

11.22 Any competitor interfering with the driving of another competitor will be disqualified.

11.23 With ranking, we select the highest score among multiple runs. In the case of tie, the second highest score is compared. If it is still the tie, the third score will be compared. Even if you compare everything, if the points are the same, the driver who made a high score first will be the winner

12. Judging criteria (Tsuiso - Tandem run)

12.1 The same criteria for individual runs will be applied to judge the leading car.

12.2 Judging criteria for the follow car include: distance gained on the leading car, angle, angle change, speed, driving line, and overall impression compared to the leading car.

12.3 Closing in on the inside of the leading car while drifting is desired.

12.4 Staying with the leading car closely or closing in and backing off are also techniques that judges may award scores.

12.5 If the leading car is determined to have adjusted their speed to block the driving line or acceleration of the follow car while getting up to speed, a scoring advantage will be given to the follow car.

12.6 If the leading car does not leave any space for the follow car and follows closely the inside driving line, or closes the door on a follow car already on the inside, the leading car will be penalized and the scoring advantage will go to the follow car.

12.7 Overtaking is not allowed.

12.8 Light contact is not a problem, but pushing the other car into a spin, understeer, or off of the track will result in the scoring advantage going to the competitor receiving the contact.

12.9 Should the leading car suddenly slow down or block the driving line and cause the follow car to crash into it, the scoring advantage will be given to the follow car.

12.10 Judging will be handled by the judges. Each judge will clearly indicate their winning or losing decision.

12.11 One more time runs will be done accordingly. However an unlimited number of One more time runs will be allowed for the Grand Final 4.

12.12 How to select the winner for Tsuiso Finals (Tandem)

13. Strictly Prohibited

13.1 Any verbal abuse towards a fellow competitor, or actions obstructing the run of a fellow competitor is strictly prohibited.

13.2 Any verbal abuse toward a competition judge is strictly prohibited.

13.3 Any action obstructing the progress of the competition is strictly prohibited.

13.4 Consumption of any alcohol drink within the event venue during competition is strictly prohibited. 13.5 Alcohol drinks may not be consumed at event venues where it is prohibited.

13.6 Smoking is only allowed in smoking permitted areas if available.

13.7 Participating competitors found in violation of the rules may be penalized by having all results nullified, and/or expelled from competition.

Causes for rejudging

Due to a problem with the scoring system.

Due to problems with the track.

Based on approval by the organizer.

14. Technical Inspection

14.1 Prior to each run, competitors must pass technical inspection.

14.2 Only cars that have passed inspection by the technical staff will be allowed on the circuit.

14.3 Technical inspection will generally be performed prior to the run, but technical staff may conduct inspections at any time throughout the duration of the competition.

14.4 Should a competitor be found with a technical infraction during the competition, all results prior to the infraction for that competitor will be nullified.

15. Protest

15.1 Should a participating competitor feel that he/she was judged unfairly, the following method may be used to file a protest.

15.2 The protest must be submitted within 30 minutes of the occurrence causing the protest, with an written explanation for the protest, along with a protest filing fee.

Example: U.S.A: \$50, EURO:€50, Japan: JPY5,000

15.3 If the protest is accepted, the protest filing fee will be returned to the protesting competitor.

16. Track

The venue must be indoor location prevent from raining. A place where the sun light does not hit the surface is preferable. There must be only a little changes in sun light during the time at the event. We recommend carpeted road surface.

More information:

Masami Hirosaka

Email: hirosaka226@yahoo.co.jp

II. IFMAR APPROVALS ELECTRIC (Electric Battery & Motor)

BATTERIES

1 APPROVAL PROCEDURE BATTERIES

From 2012, IFMAR only approves Lithium based Batteries.

1.1 Lithium based (LiPo/LiFe) cells and batteries must be submitted for IFMAR Approval.

The original manufacturer or their agents may request approval.

Manufacturers must submit batteries direct to the section chairman, the name and address of which will be supplied, on request, by IFMAR.

Manufacturers will be responsible to pre-pay all fees for the approval.

The deadline date for submitting new batteries (cells) to be approved for the next World Championship is eight (8) months prior to the date of the Opening Ceremony of the World Championship. Previously approved batteries remain on the approved products list for their lifespan, or until IFMAR deem they are no longer applicable. *(note: the period may be moved when required)*

The applications for approval must be submitted to IFMAR together with:

- The appropriate approval form (available on request as from 10 months before a WC)
- Four (4) samples of the product that will be used as a future comparing reference for the product to be approved.
- Proof of pre-payment of the approval fee
- A written technical specification including exact dimensions (mm) and weights (gr.) with associated tolerances from the original cell or battery manufacturer for comparative verification. The specification must also include:
 - Maximum charging parameters (Amps, Voltage, C rating).
 - Case material, case thickness and case sealing process.
 - Lithium based batteries must be covered by their safety test certification in accordance with UN Manual of Test and Criteria ST/SG/AC.10/11/Rev.5, Part 3, Sub- Section 38.3, Tests T1 to T8. Copy to be supplied with approval documentation.
- A list of telephone numbers, email-addresses and postal addresses of retail suppliers, shops in each continent from whom the cells can be purchased must be provided. One sample at random can be tested and 3 samples will be kept by the Section Chairman at the disposal for the appropriate IFMAR Electric Section representatives for at least until one month after the first event they were approved for. If the product meets the technical specifications it will be added to the new approved product list which will be published two (2) months before the first concerned event, provided it passes eventual availability checks by the block representatives. These random checks may be done until seventy (70) days before the start of the first concerned event. To this effect a provisional list of submitted products together with the provided addresses will be sent to the four blocs five (5) months before the event.

2. BATTERIES TECHNICAL SPECIFICATION

Lithium Based (LiPo/LiFe) Batteries:

2.1 Lithium Based (LiPo/LiFe) battery packs must have a hard, protective case that completely envelopes the cell(s). The case should be made from ABS or a similar material. The two halves of the case must be factory sealed in a way that any attempt to open the case will destroy the case. The only opening in the case that is allowed is for the exit of wires or pin type connectors. The outline shape of the battery hard case must be 'cuboid' (six flat surfaces with all angles 90 deg.), edges and corners can be radiused and a 'step' or 'recesses' are allowed in the area of tube connectors in the interest of safety to prevent any short circuit. (Existing IFMAR approved batteries retain approval).

2.2 2S Battery: - Maximum external case sizes, including any manufacturer incorporated plugs or connections are:

- **Length: 139.0 mm.**
- **Width: 47.0 mm. (The max. width includes any side exit. wires).**
- **Height: 25.1 mm. (Chassis location features additional to this dimension are allowed). Saddle-Pack cells are allowed, but must comply with the above width and height. Furthermore they must not exceed a combined length of 139.0mm max. when placed end to end.**

2.3 1S Battery: - Maximum external case sizes, including any manufacturer incorporated plugs or connections are:

- **Length: 93.0 mm.**
- **Width: 47.0 mm. (Side exit wires are allowed outside this dimension).**
- **Height: 18.5 mm. (Chassis location features additional to this dimension are allowed)**

Saddle-pack cells are not allowed.

2.4 Individual cells used in the construction of the battery pack shall be rated at:- LiPo a nominal voltage of no more than 3.8 Volts, LiFe a nominal voltage of no more than 3.3 volts. Individual cells may be wired in parallel. For 2S packs: the maximum "In Series" is two, to give a pack voltage of maximum 7.6V nominal for Lipo packs, or maximum 6.6V nominal for LiFe packs. For 1S packs: the maximum "In Series" is one to give a pack voltage of maximum 3.8V nominal for Lipo packs, or maximum 3.3V nominal for LiFe packs **The maximum charging cut-off voltage remains at 4.20V. per cell.**

2.5 The battery pack shall have leads extending from the case for the positive and negative electrical connections using wire of adequate size to handle discharge rates acceptable to racing applications. Alternatively, 'Female connection tubes' to connect the power wires are allowed but the metal tubes must be well enough below the surface of the moulded case so to avoid short circuit if the pack is placed on a conductive surface. Any type of connection adaptors that are conductive and protrude above the level of the plastic case must be removed before the battery is removed from the car. The connection points shall be clearly marked positive and negative.

2.6 The case must have the original suppliers label intact, clearly stating: the name of the

manufacturer/importer, the part number of the pack, the rated nominal voltage, the chemistry (LiPo/LiFe), the pack capacity in Wh. and the C- rating of the pack. Saddle pack batteries that are 'hard wired' together can state the nominal voltage of the combined pair of batteries, BUT individual saddle pack batteries (not hard wired together) MUST state the correct nominal voltage of the individual battery on the labels. The Brand name/logo label shall be easily readable Batteries might be tested to verify the integrity claimed on the label.

2.7 Weight of any battery is limited to +/- 4% on manufacturers' specified weight. Batteries to comply with the weights specified on the IFMAR approval list.

3. BATTERIES RACE PROCEDURE

3.1 IFMAR shall produce an Approved Product List which lists all the batteries/cells eligible for that year's IFMAR W.C. events. This Approved Product List shall be distributed to all competitors in the race acknowledgement package no later than two (2) months prior to the WC event.

3.2 All batteries/cells must comply with the published data contained in the current IFMAR Approved Battery List.

3.3 Modification to the original battery case by removal of material or any modification that could be deemed to affect safety is not allowed.

3.4 All batteries must be submitted to Technical Inspection for checking and marking prior to being used during Controlled Practice, Qualifying and Finals. Batteries not compliant with dimensional rules or weights will not be accepted. This may be completed at any time during the event. Cells which do not bear the Organizers mark may not be used for Controlled Practice, Qualifying or Finals.

3.5 The Organizer and IFMAR Officials may check the legality of a competitor's batteries/cells at any time during the WC event.

3.6 A weight scale will be available at all times during the event for competitors to carry out weight checks on batteries/cells.

3.7 Cells may not be charged or changed during the race.

3.8 1/10th. Off-Road cars will be driven by only 2S LiPo/LiFe batteries with a maximum nominal voltage of 7.6V (LiFe 6,6V) 1/10th. Touring Cars and F1 **and Drift** will be driven by only 2S LiPo/LiFe batteries with a maximum nominal voltage of 7.6V (LiFe 6,6V) 1/12th. Cars will be driven only by 1S LiPo/LiFe batteries with a maximum nominal voltage of 3.8V (LiFe 3.3V), with maximum battery size of:- 93.0mm x 47.0mm x 18.5mm.

3.9 All LiPo/LiFe packs must be charged with a LiPo/LiFe-capable charger using the industry standard CC/CV. (Constant Current/Constant Voltage) charge profile.

3.10 Any competitor found to be charging Lithium based cells using a charger that is not specifically designed for LiPo/LiFe cells or using a charge profile other than the industry standard CC/CV, will be disqualified from the event.

3.11 LiPo/LiFe drive batteries MUST be charged in a closed 'LiPo sack' at all times. LiPo sack is defined as a receptacle designed for the purpose of charging LiPo/LiFe batteries and of a suitable construction as to contain a LiPo/LiFe fire. Any competitor found to be

contravening this ruling will be disqualified from the event.

3.12 2S LiPo/LiFe batteries may be charged to a maximum of 8.40v (LiPo) resp. 7.40v (LiFe).

1S LiPo/LiFe batteries may be charged to a maximum of 4.20v (LiPo) resp. 3.70v (LiFe).
Overcharging is a safety hazard and will not be tolerated.

3.13 Any competitor found to have charged LiPo/LiFe batteries to above the voltages detailed in rule 3.12 may be disqualified from the event.

3.14 The use of any additional heating of any type to heat a LiPo/LiFe Battery is not allowed. The use of any cooling devices or “freeze” sprays of any type to cool a LiPo/LiFe battery is not allowed.

3.15 Additional battery packs :

1/12th. Cars are allowed to use an additional pack to power the receiver and/or servo.

1/10th. Off-Road Cars and Drift Cars are allowed to use an additional pack to power the receiver and/or servo.

1/10th. Touring Cars are not allowed an additional pack to power the receiver and/or servo. Other than any battery in the electronic timing device (transponder), the above are the only additional batteries that are allowed and under no circumstances are they allowed to supply any power to the drive motor. Homologation fee is

III. IFMAR APPROVALS ELECTRIC (Electric Battery & Motor)

MOTORS

4 APPROVAL PROCEDURE MOTORS

IFMAR only approve '05' size Brushless Motors. Only IFMAR approved motors may be used. Approved motors and optional rotors must meet the following specifications and be commercially available four (4) months prior to the World Championship. Availability requirements must be met at the time of submittal. The deadline date for submitting new motors to be approved for the next World Championship is four (4) months prior to the date of the Opening Ceremony of the World Championship. Previously approved motors remain on the approved products list for their lifespan, or until IFMAR deem they are no longer applicable.

4.1 Manufacturers must submit motors direct to a testing laboratory, the name and address of which will be supplied, on request, by the IFMAR Electric Section Chairman.

Manufacturers will be responsible to pre-pay all fees for examination. Upon receipt of laboratory confirmation to the IFMAR Electric Section Chairman that the product meets all specifications and the Chairman is satisfied that all IFMAR availability requirements have been met, the motor will be included on the approved products list for use at W.C. events.

4.2 An approved products list of motors and any optional parts or optional rotors approved for use

at the World Championships will be posted on the IFMAR website and Organizer's website (if available) four (4) months prior to the event and the list shall be included in the race acknowledgement package sent to each competitor no later than two (2) months prior to the event.

For Spec. Classes of motors:- Only one (1) Optional Rotor will be approved and allowed

4.3 A minimum of two hundred (200) brushless motors must be available at the time of submittal. A minimum of three hundred (300) brushless motors must have been sold to at least three (3) distributors or hobby shops or OEM's on different continents at the time of approval. The manufacturer has to provide addresses of hobby shops or the like, that any driver who wishes to obtain these motors at the time of the approval can do so. IFMAR retains the right to check availability.

5. BRUSHLESS MOTORS TECHNICAL SPECIFICATIONS.

5.1 General definition of a Brushless Motor:

a) For MODIFIED motors: sensed or sensorless motors are allowed. For 'SPEC' Class motors: only sensed motors are allowed.

b) The motor has to be rebuildable. Ball bearings are allowed. c) When the motor is sensed:

It must use a six position JST ZH connector model number ZHR-6 or equivalent connector with 6 JST part number SZH-002T-P0.5 26-28 awg contacts or equivalent.

Wire sequence must be as follows:

Pin #1 - Black wire ground potential

Pin #2 - Orange wire phase C Pin #3 - White wire phase B Pin #4 - Green wire phase A

Pin #5 - Blue wire temp control, 10 k Thermistor referenced to ground potential

Pin #6 - Red wire + 5.0 volts d.c. +/- 10%.

Compatible speed control must use the 6 position JST header part number X-6B-ZR-SMX-TF (where the X denotes the style of the header), or equivalent. The power connector has to be clearly marked A, B, C.

A for phase A B for phase B C for phase C

05` Size MODIFIED Brushless Motor Specifications and Dimensions:

5.2 Can Assembly (not including rotor shaft):

a) Overall maximum/minimum diameter is 36.02mm./34.00mm., measured at whatever point yields the maximum/minimum dimension, excluding solder tabs or lead wires.

b) Overall maximum/minimum length is 53.00mm/50.00mm., measured from the mounting face of the motor to the furthest most point of the end bell/plate, not including solder tabs, lead wires or original manufacturer's logo or name.

c) Motor mounting holes must be on 25.00/25.40mm centers.

d) If the stator cannot be easily removed from the assembled motor for technical verification of sizes or construction, then the Can/Sleeve must have:

Minimum two pairs Slots or holes (**each exposing 3mm of stator ends minimum**), in

line with the centre-line of the stator, that will allow measurement of the stator length.

☐☐ Slots or holes to allow visual appraisal of the laminates used in the stator.

5.3 Stator:

a) The **Stator** must be continuous. The laminations have to be one after the other without anything in between.

b) **Stator** length minimum is 19.30mm, maximum is 21.00mm. **measured across the metal surfaces of the laminates and not including any coatings. The faces of the end laminates of the stator must be free of any coatings or moldings for 1mm from the outer circumference to allow direct measurement across the metal faces of the stator ends (to be applied to any new motor range submitted from 01.01.18). The outer circumference edges of the end laminates must be complete with no material removed, to allow accurate measurement**

c) The thickness of the **Stator** laminations is 0.35+/-0.05mm.

d) All laminations must be of the same material.

e) Inside diameter of Stator must accept 'plug' gauges of 12.5 mm minimum, 16.0 mm maximum.

5.4 Winding:

a) Delta and Y wound stators are permitted. **As for drifting, only Y wound is avail.**

b) **Only circular (round) pure copper wire permitted. No turn limit.**

5.5 Rotor:

a) Output shaft diameter must be 3.175mm (where pinion gear locates). b) Only one piece, two pole Neodymium or Ferrite magnetic rotors are permitted. c) Magnet minimum length 23.00mm, maximum 27.00mm (not including non-magnetic balancing parts).

d) Magnet minimum diameter 12.00mm, maximum 15.50mm. e). **for drift category, minimum diameter 12.00mm, maximum 13.01mm.** The rotor will be identified with the manufacturers name or logo and the unique part number of the rotor.

5.6 All motors must have the original manufacturer's logo or name molded or etched into the end bell/plate.

5.7 No hybrid (mixing of parts from approved brushless motors) allowed.

5.8 No modifications, design changes or removal of materials are allowed to any approved motor. Only 'optional' parts or rotors detailed on the IFMAR approved list are allowed.

Any changes or modifications will require the motor to be re-submitted for approval.

Homologation fee is

IFMAR APPROVALS (BODIES)

BODIES

Any manufacture, or distributor, who wishes to have a body shell approved to be used IFMAR competition must Complete the attached application form and send it with 2 samples of the Shell, along with minimum two pictures of the original 1/1 car body to the IFMAR Body Homologation Officer according to the time schedule below. All character lines and other elements must be moulded in to the model; all wings custom designed for the actual body shell must also be included.

A minimum of two pictures/photographs of the original 1/1 car body must be submitted with the application. These must show views from the: -Front, and Side. Additional pictures of a Side – Angle taken from a front and rear corner will be helpful.

The time schedule for IFMAR Body approval is as follows and these are deadlines. So the sooner the better.

- The Application form with two samples and required pictures must be received by IFMAR by 30th of January latest.
- IFMAR will send an invoice
- Body Shells received after 30th January will not be approved for use during the immediate following season. Please also remember to mark the parcel as "SAMPLE", all costs involved with this procedure must be paid by the manufacturer
- Body Shells will be checked and verified between 1st December to 28th February.
- If approved, the IFMAR approval number will be sent to the manufacturer by 28th of February latest
- A sample of the approved body with the IFMAR approval number embossed according to the rules must be sent to the IFMAR Homologation Officer for record purposes at the earliest possible date after approval.
- IFMAR will publish a list of approved body shells 1st March.

Each homologated body must have a unique IFMAR number, even if the same type of body shell is already approved for a different manufacturer. The IFMAR number must be set in an area immediately adjacent to the cockpit, preferably in front of the windscreen, by Drift cars to the right upper edge of the windscreen when looking at the car from above into driving direction.

Body homologation number must be visible at time of technical inspection. To prevent other manufactures from copying bodies, it is advised also to emboss the manufacturer's logo near to the IFMAR number on the windscreen. The manufacturer has to retain the example body during the homologation period of five years. If the Homologation Officer suspects that a body has been modified post-homologation he may anonymously purchase an example of the body for checking. If he finds that the body has been modified it will be immediately removed from the approved lists.

The homologation will remain legal for a period of 5 years from the date shown. However if the model is amended/ changed then it will need to be re- submitted for approval. After 5 years a body will disappear from the list unless the manufacturer asked for a license for another period of 5 years. The fee for an extra period is 40% of the normal homologation fee.

Homologation fee is