

# XRAY M18 POWER PACK PRO

The M18 Power Pack Pro includes high-quality, easy-to-install electronics that are specially designed for use with the XRAY M18 micro racecar that has the optional XRAY 300 Super Size Conversion Set (#381151). The Power Pack Pro includes: XMC300 micro ESC, 300 Super Size motor with integrated capacitor board, micro servo with metal gears, and a 6-cell micro battery pack containing high-performance 1200NiMH 2/3A cells. (Please note that a receiver and transmitter are not included and are required for car operation.)

## XMC 300 ELECTRONIC SPEED CONTROLLER

The XRAY XMC300 is an ESC (electronic speed controller) that has been specially designed for using up to a 300 Super Size motor on the XRAY M18 micro racecar. Based on SMD technology, the result is a very small high-quality electronic device. This forward-only ESC features proportional throttle/braking and battery elimination circuitry (BEC). An on-board LED indicates the correct connection of ESC with the power supply, and proper operation (forward and brakes).

### XMC300 Technical Data

Input Power:  
4-6 cell battery NiMH or NiCD / 4.8V-7.2V  
Min. Resistance : 0.016  $\Omega$  / 7.5V  
Max. Resistance : 0.018  $\Omega$  / 6V

Continuous Current : max. 18A  
Peak Current : max. 72A / 0.05 sec.  
PWM Frequency : 1750 Hz  
BEC : 5V / 0.5A  
Temperature Range : 0-40 °C / 32-72°F

### Wire Lead Colors:

Brown = ground  
Red = power  
Orange = signal

## 300 SUPER SIZE MOTOR

The 300 Super Size motor provides ultra-high performance when used with the included 6-cell micro battery pack. The motor includes an integrated capacitor board so you do not need to solder any additional capacitors. This motor is designed to fit the optional alu. motor mount (#382021) included with the optional 300 Super Size Conversion Set.

## XMS01MG MICRO SERVO

The high-quality metal-gear micro servo has been specially chosen for the M18 because of its high precision, long life and high quality.

### XMS01MG Technical Data

Speed: 0.12 sec/60° transit  
Torque: 32 oz. in.  
Size: 30 x 12 x 30 mm

Weight: 22 g  
Output gear: Metal

### Wire Lead Colors:

Black = ground  
Red = power  
Yellow = signal

### TIP

For cooler running and longer motor life, use the machined alu motor heatsink  
#382040 - for stock motors  
#382041 - for modified and super size motors



## MICRO BATTERY PACK

The 6-cell micro battery pack is designed to perfectly fit the M18, and is recommended for use only with the 300 Super Size motor and XMC300 ESC. The high-capacity 1200mAh NiMH 2/3A cells give excellent performance.

## BATTERY MAINTENANCE

To achieve maximum performance of the batteries and ensure reliability, please follow these instructions:

### Charging

- We strongly recommend using a high-quality peak-detection charger with automatic shut-off.
- The charger should be specifically designed for charging rechargeable nickel metal hydride (NiMH) cells.
- For initial charging, set the charge current to 120 mA and charge for 14 hrs.
- For rapid charging, set the charge current to 1.2 maps. If rapid charging is done at a higher current, the battery pack may generate too much heat and explode or vent.
- Never leave the battery pack unattended while it is charging.
- If the battery pack becomes too hot (113°F or higher), stop charging immediately.

Slow charge (initial): 120 mAh x 14 hours    Rapid charge: 1.2 maps x 1 hour

### Discharging and Storage

After use, we do not recommend discharging the pack completely, as this will damage the pack. You can safely recharge the pack immediately after use without any performance degradation. If you will be storing the pack for longer than a few days, partially discharging the pack down to approximately 40% capacity.

- ♻️ RECYCLE THE BATTERY PACK!
- 🔥 DO NOT DISPOSE OF IN FIRE!

## WARRANTY

A new, unused battery pack is guaranteed against manufacturer's defects and workmanship. Any damage due to misuse by the user will be repaired at the user's expense. XRAY assumes no liability for damages that arise from use or misuse of the battery pack.

## IMPORTANT WARNINGS

- This battery pack is exclusive for M18. Do not use it for any other purposes.
- Never disassemble the battery pack or peel away the cover.
- Keep the battery pack away from water.  
Do not touch the battery pack with wet hands or objects.
- Do not subject the battery pack to strong impacts and short circuits.
- Keep the battery pack away from fire and flammable objects.
- Disconnect the battery pack when it is not in use.
- Do not put metal objects in the battery pack connector or touch the terminals in the connector.
- Do not throw away the battery pack when you no longer need it.  
Bring it to the shop you bought it at, or to a shop offering battery recycling service.
- If leaked battery acid gets in your eyes or on your skin, flush thoroughly with clean water and consult with a doctor immediately.

### TIP

For charging use the #389130 charging cable

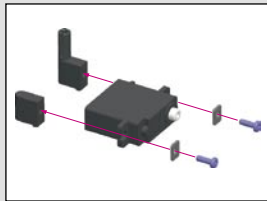


## INSTALLATION INSTRUCTIONS

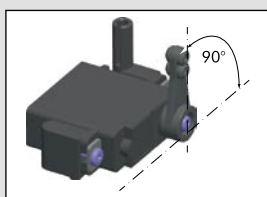
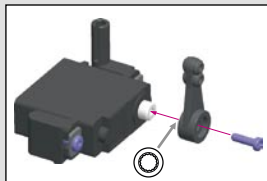
These instructions describe how to install the Power Pack Pro in the M18. Note that the Power Pack Pro is designed to be installed on an M18 with the 300 Super Size Conversion Set #381151

### Micro Servo Installation

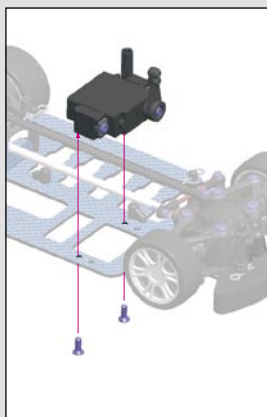
1. Attach the servo to the servo mounts.



2. Before installing the servo horn, connect all the electronics, then turn on your transmitter and the car electronics. This resets the servo to neutral. Install servo horn "X" as shown, using the screw included with the servo.

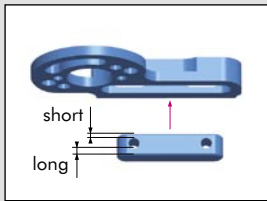


3. Attach the servo mounts to the M18 chassis.

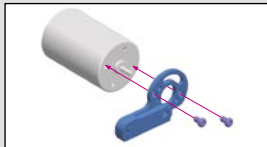


### Motor Installation

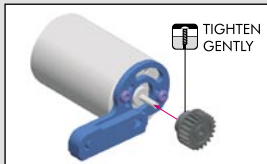
1. Assemble alu motor mount as shown.



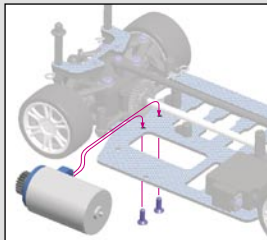
2. Attach the motor to the alu. motor holder with the screws provided.



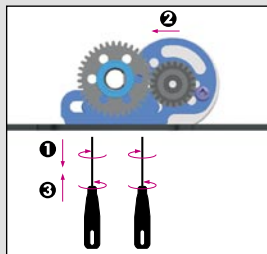
3. Push the pinion onto the motor output shaft, and gently tighten the setscrew.



4. Attach the motor mount to the M18 graphite chassis, and adjust the gear mesh.

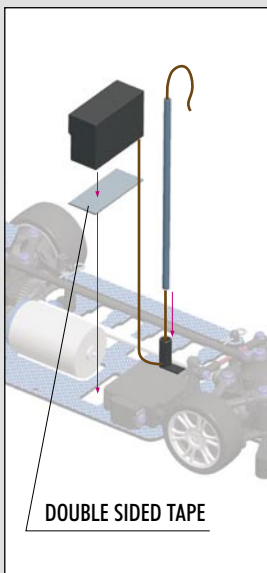


5. Gently tighten the motor mount screws.



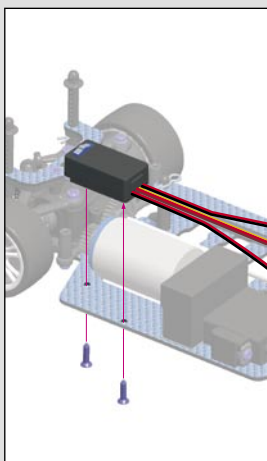
### Receiver Installation

Install a receiver (not included) into the M18.



### ESC Installation

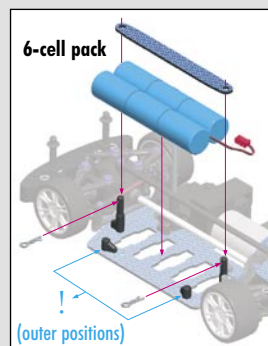
Use the two provided screws (or double-sided tape) to attach the ESC to the chassis beside the motor.



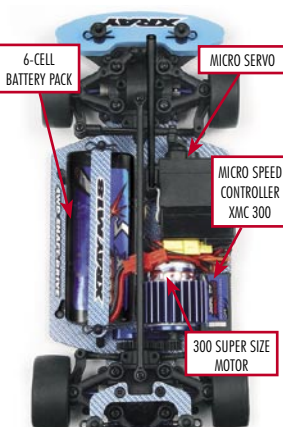
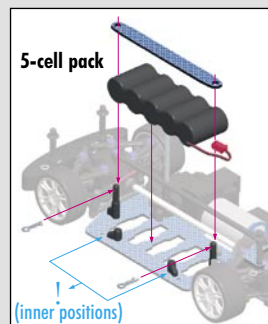
### Battery Pack Installation

Install the battery pack into the M18.

When using a 6-cell pack, note the orientation of the side holders (outer positions).



When using a 5-cell pack, note the orientation of the side holders (inner positions).



TRANSMITTER ADJUSTMENTS

Throttle Adjustment	Setting	Steering Adjustment	Setting
High EPA (full throttle)	Maximum	Steering reversing	Reverse
Low EPA (full brake)	Maximum	Steering trim	Adjust until front wheels point forward.
Exponential	Zero (neutral)	Steering EPA	Adjust steering EPA until wheels reach full lock positions (L&R), then reduce EPA settings slightly.
Throttle reversing	Either 'Normal' or 'Reverse'		
Throttle trim	Middle (neutral)		
Trigger throw	50% throttle : 50% brake		

SPEED CONTROLLER LED INDICATION

Neutral	steady light
Partial Throttle	double-flash (repeats)
Full Throttle	steady light
Brake	flash (repeats)

CONNECTING THE ELECTRONICS

Connect the electronics using the method described. Make sure you have a matching set of frequency crystals in your transmitter and receiver, and that the M18 battery pack is charged. Before you turn on the electronics in the car, turn on your transmitter. Before you turn off your transmitter, turn off the electronics in the car.

1. Connect the 2-wire yellow ESC connector to the motor.
2. Plug the 3-wire servo connector into the receiver (typically, CH1).
3. Plug the 3-wire ESC connector into the receiver (typically, CH2).
4. Turn on the transmitter. Make sure the throttle is in the neutral position.
5. Connect the 2-wire red ESC connector to the battery.
6. Turn the ESC power switch to the “ON” position. The ESC’s onboard LED indicates when the ESC is on.
7. Set the motor neutral position using the transmitter throttle sub-trims if necessary.
8. Attach the steering rod to the servo arm. Use lower hole on the servo arm.
9. Test that the steering and throttle work properly. Refer to the Speed Controller LED Indication section for more information.

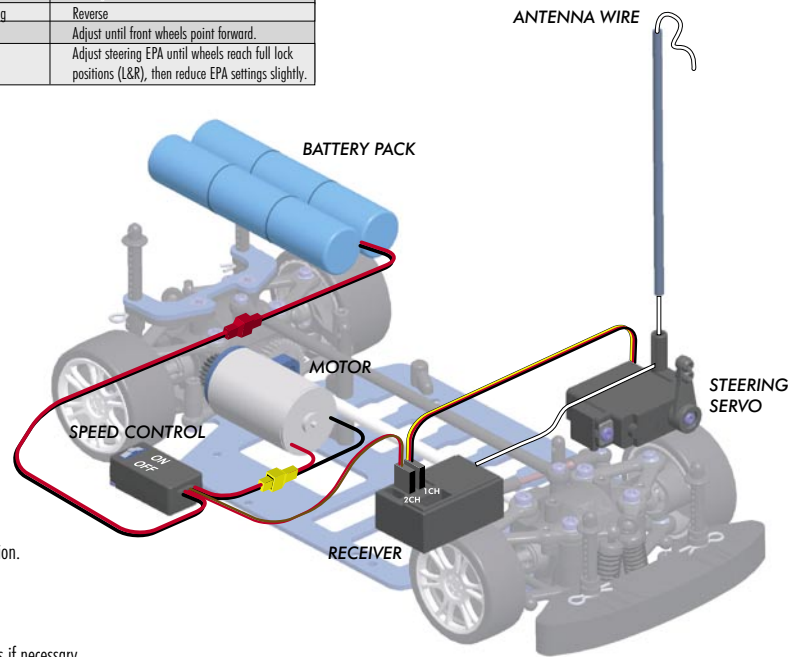
After completing this installation, the car is ready to run!

WARNING!

If you decide to use connectors other than the ones supplied with the ESC, when connecting the battery pack pay close attention to the polarity of the wires (red wire = “+”, black wire = “-”). Reversing the polarity of the wires may destroy the ESC!!

XMC300 ESC WARRANTY

The XMC300 ESC has a 2-year limited warranty against manufacturer’s defects and workmanship. The ESC may not be opened, or exposed to heat sources or water. The XMC300 ESC is designed for use with a micro stock motor, micro mod motor, or 300 Super Size motor only. Do not use the XMC300 with any other motors, as this will damage the ESC and void the warranty. To make any warranty claims regarding the XMC300 ESC, you must have your receipt of purchase, and contact your local XRAY dealer.



SERVO TROUBLESHOOTING

Servo makes a grinding noise or acts erratic	<ul style="list-style-type: none"><li>■ Remove the servo from the car.</li><li>■ Open the case and remove the gears. Examine them for broken teeth. If broken, replace with a new gear set.</li></ul>
Servo jitters	<ul style="list-style-type: none"><li>■ Remove the servo from the car.</li><li>■ Open the case and remove the gears.</li><li>■ Spray a zero-residue electrical cleaner into and around the potentiometer and work it in.</li><li>■ After the cleaner has dried, re-install the gears and close the case.</li><li>■ Possible damaged receiver/transmitter crystal.</li></ul>
Servo doesn’t center properly	<ul style="list-style-type: none"><li>■ Disconnect the steering rod from the left front steeringblock. Steer left and right with the transmitter several times. If the servo arm does not return to the same neutral position each time, the servo may be damaged.</li><li>■ Remove the servo from the car. Open the case and check for proper gear alignment. Next check the case top for wear. If wear is evident, replace the case.</li></ul>
Servo is locked in place	<ul style="list-style-type: none"><li>■ Remove the servo from the car.</li><li>■ Open the case and check for proper gear alignment. If gears are damaged, replace the gear set.</li><li>■ Check the case top for wear. If wear is evident, replace the case.</li></ul>
Servo hums	<ul style="list-style-type: none"><li>■ This is normal if the servo is trying to hold position against the force of a load.</li><li>■ If the servo hums when no load is applied, try loosening the servo case screws 1/4 to 1/2 turn.</li></ul>
Servo gets hot	<ul style="list-style-type: none"><li>■ Check the servo wiring, it should match the receiver being used.</li><li>■ If the wiring is okay, the servo motor may be stalled due to a failed gear train. Remove the servo from the car, open the case and inspect for any damage.</li></ul>
Wheels turn in opposite direction to setting input	<ul style="list-style-type: none"><li>■ Change the servo reversing setting, and then re-adjust the steering subtrim and EPA settings.</li></ul>

ESC TROUBLESHOOTING

Car does not react to signals from transmitter	<ul style="list-style-type: none"><li>■ Switch on transmitter and ESC.</li><li>■ Check if all connectors (motor, battery, ESC) are properly connected.</li><li>■ Check if batteries are charged.</li><li>■ Check if ESC and servo connectors are plugged into proper receiver channels, and wire color sequences are correct.</li></ul>
Steering works but motor does not run	<ul style="list-style-type: none"><li>■ Check motor wiring connections.</li><li>■ Check if ESC is plugged into throttle receiver channel. Check throttle channel operation with a servo. Check wiring color sequence of receive signal harness.</li></ul>
Car goes forward, but does not brake	<ul style="list-style-type: none"><li>■ Turn transmitter on. Turn off ESC. Set throttle trim on transmitter to maximum position. Turn on ESC again.</li></ul>
Car goes forward, but brakes when trigger goes to neutral	<ul style="list-style-type: none"><li>■ Turn transmitter on. Turn off ESC then turn it on again (reset); the ESC will find its neutral position. Make sure when you turn on the ESC that the transmitter throttle is in the neutral position.</li><li>■ Check if front and rear diffs are both inserted in the diff housings correctly.</li></ul>
Brake activates when applying forward throttle at transmitter	<ul style="list-style-type: none"><li>■ On the transmitter, switch the servo reverse setting for the ESC.</li></ul>
Motor runs slowly/slow acceleration	<ul style="list-style-type: none"><li>■ Check wiring connections.</li><li>■ Possible bad motor or battery. Replace and check again.</li><li>■ Incorrect transmitter adjustment. Refer to ‘Transmitter Adjustments’ section.</li></ul>
Motor runs backwards	<ul style="list-style-type: none"><li>■ Motor wired backwards. Check wiring and reverse.</li><li>■ Turn transmitter throttle reversing to the opposite setting</li></ul>
Receiver glitches/throttle stutters	<ul style="list-style-type: none"><li>■ Receiver or antenna may be too close to ESC, power wires, battery, or motor.</li><li>■ Possible damaged receiver/transmitter crystal.</li><li>■ Check wiring connections.</li><li>■ Motor brushes may be worn. Replace motor if necessary.</li><li>■ Possible excessive motor current. Use smaller pinion gear.</li><li>■ Re-adjust transmitter throttle settings (subtrim, neutral position, EPA).</li></ul>

MOTOR MAINTENANCE	
■ XRAY 300 Super Size motor is a high-performance, sealed, non-rebuildable motor.	■ Do not attempt to open the motor; this will render the motor inoperable.
■ Keep the motor clean from debris by brushing it off or using compressed air.	■ Motor performance will stay high for a long time. However, when performance drops significantly, replace the motor.

IMPORTANT INFORMATION	<ul style="list-style-type: none"><li>■ Use only polarized connectors for ESC connections.</li><li>■ Do not reverse the polarity of the ESC connections.</li></ul>
■ This product is not suitable for children except under the direct supervision of an adult.	■ If a fault should occur, this could cause a fire in the model and threaten anything in the vicinity.
■ Never leave your model unattended with the battery connected.	■ Do not allow any metal part to short circuit the batteries, ESC, or other electrical/electronic device on the model.
■ Be sure that your operating frequency is clear before turning on or running your model, and never share the same frequency with somebody else at the same time. Ensure that others are aware of the operating frequency you are using and when you are using it.	■ The ESC is designed exclusively for use in battery-operated radio-controlled models. No other usage is permissible.
■ Always turn on your transmitter before you turn on the ESC or connect the battery pack. Always turn off the ESC or disconnect the battery pack before turning off your transmitter.	■ Like all electronic components, the ESC must not be exposed to water or fire.
■ Immediately after using your model, do NOT touch the model’s electronic equipment, as they may be hot.	■ Do not stall the motor. The ESC will fail within seconds if power is applied to the motor when the car cannot move.
■ When you connect the battery and turn on the electronics, make sure your car is physically prevented from moving or getting away from you and causing damage. Technical faults of mechanical or electrical nature may cause the motor to burst into life unexpectedly, which can cause serious damage or injury.	■ Regularly check the charger for potential hazards such as damage to the cable, plug, casing or other defects. Ensure that any damage is rectified before using the charger again.
■ All cables and connectors must be effectively insulated. Short circuits can ruin your ESC, servo, or battery pack.	■ When the motor is connected to the ESC, do not connect a separate battery to the motor to run it. This will damage the ESC and invalidate the warranty.
	■ Use a recommended charger to charge the battery pack. Follow the instructions carefully.
	■ Overcharging, incorrect charging, or using inferior chargers can cause the battery pack to become dangerously hot or damaged.

Take adequate safety precautions prior to connecting the electronics and operating your model. You are solely responsible for the correct installation, connection, maintenance, and safe operation of the electronics and your model. Disregarding any of these warnings may lead to accidents, personal injury, or property damage.

XRAY MODEL RACING CARS assumes no responsibility for any liability, injury, or damage that may arise from the use or misuse of this product during installation, assembly, or operation.