Brushless Outrunner Electric Motor 2822 Instructions

Covering Models EX2822/1200/26 and EX2822/1400/24

Thank you for purchasing an Airtek Excel brushless outrunner motor. This has been manufactured to the highest standards, and when used within the specifications should provide a long and trouble free service life.

- Always use the correct size propeller for the highest performance. Use of an incorrect size propeller may damage the motor.
- Do not run the motor for more than 60 seconds full power on the ground. The motor unloads and receives maximum cooling during flight.
- Always ensure adequate cooling for your motor, particularly with in cowl installations.
- Always make sure the surrounding area is clear of debris and spectators, and is adequately restrained when powering up. ELECTRIC MOTORS CAN BE DANGEROUS - always handle them with respect.
- The quality of your ESC has a great impact on the performance of your motor. If your motor makes unusual sounds try re-timing your ESC.
- Never guess your set-up - use a Watt Meter, they are relatively inexpensive and you can be sure your motor is running within limits.
- Always use an ESC of at least the minimum Amp rating that is designed for use with a brushless motor. Where weight and space permit consider using an ESC of a higher rating.
- Never shorten the wires or cut off the connectors - de-solder them if required. Running the motor with shorter wires will result in damage.
- When connecting the 3 motor wires to the ESC check for correct rotation of the propeller. If the propeller rotates in the opposite direction to that desired, simply swap any two wires for correct rotation direction.

Mounting your Motor -Exel motors are very flexible when mounting in your model. Please follow the instructions below:

Rear Mounting

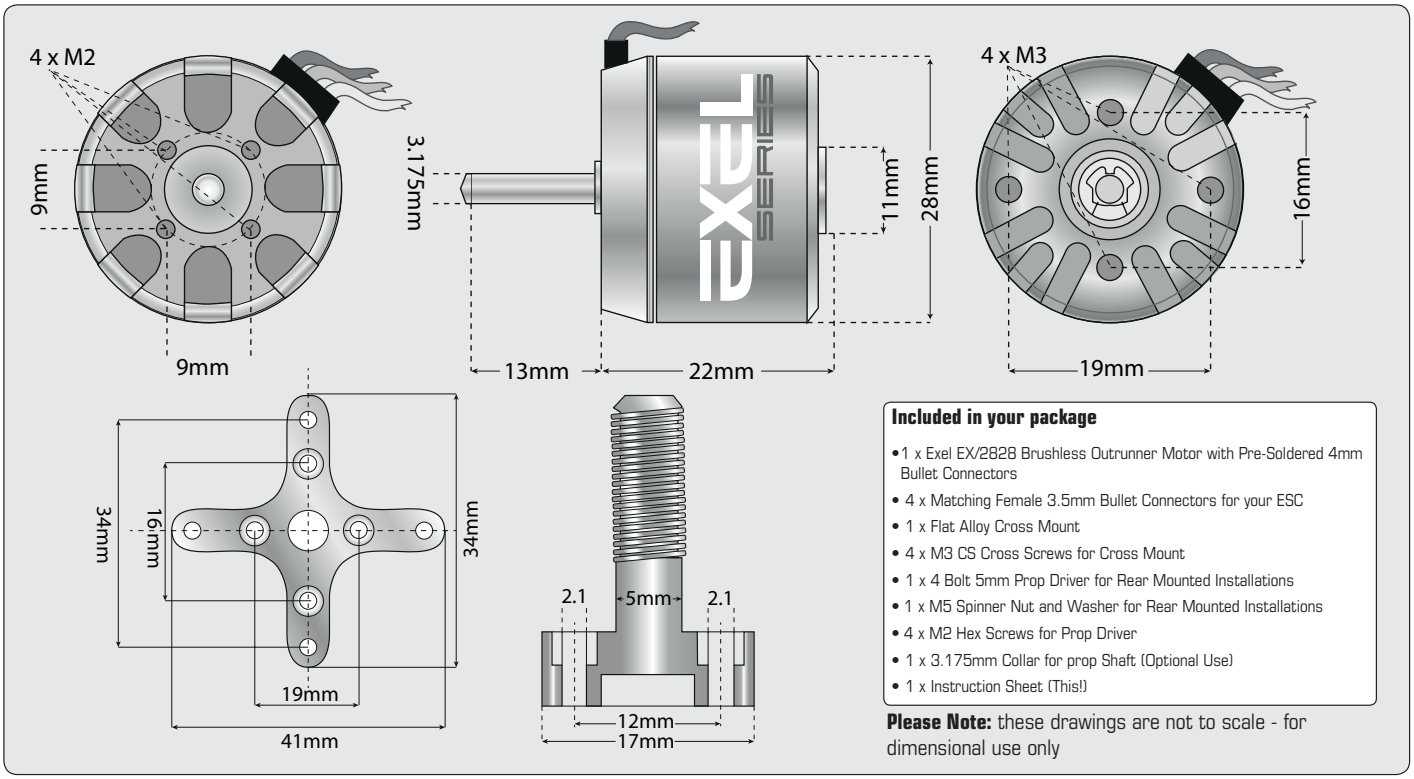
Attach the supplied cross mount to the motor side with the 3.175mm shaft protruding with the supplied 4 x counter sunk M3 cross screws. Then on the other side of the motor attach the 5mm prop driver using the 4 x M2 socket screws. The prop is then attached to the threaded shaft followed by the washer and prop nut. If desired you may use a small amount of blue thread locker on the screws but take great care that no thread locker enters the internal of the motor. The motor can then be attached to the firewall of your model using M3 bolts or similar (not supplied). Please note that in rear mount applications the rearward facing 3.175mm shaft is redundant so a suitable hole will have to be drilled in the firewall to accommodate it, and take care it does not foul any other items in the model.

Front Mounting using the cross mount for firewall installation

Attach the supplied cross mount to the motor side with the 3.175mm shaft protruding with the supplied 4 x counter sunk M3 cross screws. The motor can then be attached to the firewall of your model using M3 bolts or similar (not supplied). The 3.175mm shaft can then accept a 3.175mm prop adaptor or spinner hub (not supplied) for prop mounting. If desired the supplied 3.175 mm collet with grubscrew can be used on the shaft to adjust the distance of the prop adaptor.

Front Mounting for slim fuselage applications (i.e. glider noses)

The motor can be mounted directly to the front bulkhead by dispensing with the cross mount and mounting the motor directly using the 4 x M3 holes in the front of the motor can. The supplied counter sunk M3 cross screws can be used on bulkheads up the 3mm (1/8). If your bulkhead is thicker than this you may have to substitute your own longer screws. When front mounting in tight installations take care that the 3 motor wires do not come into contact with the rotating motor can and make sure you provide adequate cooling for the motor.



Included in your package

- 1 x Exel EX/2828 Brushless Outrunner Motor with Pre-Soldered 4mm Bullet Connectors
- 4 x Matching Female 3.5mm Bullet Connectors for your ESC
- 1 x Flat Alloy Cross Mount
- 4 x M3 CS Cross Screws for Cross Mount
- 1 x 4 Bolt 5mm Prop Driver for Rear Mounted Installations
- 1 x M5 Spinner Nut and Washer for Rear Mounted Installations
- 4 x M2 Hex Screws for Prop Driver
- 1 x 3.175mm Collar for prop Shaft (Optional Use)
- 1 x Instruction Sheet (This!)

Please Note: these drawings are not to scale - for dimensional use only

For Technical Specs and the correct ESC/Battery/Prop to use with your motor please refer to the motor you have purchased on the chart printed overleaf

We wish you many enjoyable hours of service from your Airtek Exel Motor. For a full range of products to compliment your motor please visit **www.airtekhobbies.com**

airtek EXEL SERIES Brushless Outrunner Motor Comparison/Specification Chart

			See note 1					See note 2										See note 3					See note 4				See note 5	
Model	Power Watts	kv (rpm/v)	Amps on 2 cell	Amps on 3 cell	Amps on 4 cell	Amps on 5 cell	Amps on 6 cell	Rec ESC on 2 cell	Rec ESC on 3 cell	Rec ESC on 4 cell	Rec ESC on 5 cell	Rec ESC on 6 cell	Resistance m(Ω)	Idle Current	Cells Lipo	Cells Nixxx	Weight (Grams)	Prop 2 cell	Prop 3 cell	Prop 4 cell	Prop 5 cell	Prop 6 cell	Model Weight Trainer/Vintage	Model Weight Sport	Model Weight Aerobatic	Model Weight 3D/Extreme	I.C. Eqv (cu. in.)	Shaft Dia. mm
EX/2822/1200/26	128	1200	19	13	10	N/A	N/A	20A	20A	15A	N/A	N/A	366	0.3	2-4	6-12	38	8x6	8x5	7x5	N/A	N/A	725g	520g	450g	360g	.06-.09	3.175
EX/2822/1400/24	112	1400	17	11	9	N/A	N/A	20A	15A	15A	N/A	N/A	346	0.5	2-4	6-12	38	9x4	8x4	7x4	N/A	N/A	650g	500g	400g	320g	.06-.09	3.175
EX/2826/1000/17	196	1000	28	18	15	N/A	N/A	30A	20A	20A	N/A	N/A	250	0.5	2-4	6-12	51	9x6	9x5	8x5	N/A	N/A	1100g	800g	700g	550g	.09-.15	3.175
EX/2826/1350/11	176	1350	26	17	13	N/A	N/A	30A	20A	20A	N/A	N/A	134	0.7	2.4	6-12	51	8x6	8x5	7x5	N/A	N/A	1000g	750g	650g	500g	.09-.15	3.175
EX/2826/1900/8	144	1900	22	14	11	N/A	N/A	30A	20A	20A	N/A	N/A	65	0.9	2-4	6-12	51	8x5	8x4	7x4	N/A	N/A	850g	600g	550g	450g	.09-.15	3.175
EX/2830/750/14	244	750	37	24	19	N/A	N/A	40A	30A	30A	N/A	N/A	334	0.4	2-4	6-12	62g	11x6	11x5.5	10x6	N/A	N/A	1400g	1000g	850g	690g	.15-.19	3.175
EX/2830/850/13	228	850	34	23	17	N/A	N/A	40A	30A	30A	N/A	N/A	254	0.4	2-4	6-12	62g	11x5.5	10x6	9x6	N/A	N/A	1300g	950g	800g	680g	.15-.19	3.175
EX/2830/1000/11	216	1000	32	22	16	N/A	N/A	40A	30A	30A	N/A	N/A	162	0.6	2-4	6-12	62g	10x6	9x6	9x5	N/A	N/A	1250g	900g	750g	620g	.15-.19	3.175
EX/2830/1300/8	210	1300	32	21	16	N/A	N/A	40A	30A	30A	N/A	N/A	104	1.0	2-4	6-12	62g	11x5	9x5	9x4	N/A	N/A	1200g	850g	720g	600g	.15-.19	3.175
EX/2836/750/11	256	750	39	26	19	N/A	N/A	40A	30A	30A	N/A	N/A	130	0.4A	2-4	6-12	76g	12x7	12x6	11x5.5	N/A	N/A	1450g	1050g	900g	725g	.19-.25	4.0
EX/2836/880/9	244	880	37	24	18	N/A	N/A	40A	30A	30A	N/A	N/A	98	0.6A	2-4	6-12	76g	12x6	11x5.5	10x6	N/A	N/A	1400g	1000g	850g	700g	.19-.25	4.0
EX/2836/1120/7	224	1120	34	23	17	N/A	N/A	40A	30A	30A	N/A	N/A	90	1.3A	2-4	6-12	76g	11x5.5	10x5	9x6	N/A	N/A	1250g	900g	800g	650g	.19-.25	4.0
EX/3536/1100/7	470	1100	70	47	36	N/A	N/A	70A	50A	40A	N/A	N/A	52	1.3A	2-4	6-12	115g	11x6	10x6	9x6	N/A	N/A	2500g	1950g	1650g	1350g	.25-.32	4.0
EX/3536/1400/5	440	1400	66	43	34	N/A	N/A	70A	50A	40A	N/A	N/A	37	1.9A	2-4	6-12	115g	10x6	10x5	9x5	N/A	N/A	2450g	1800g	1500g	1250g	.25-.32	4.0
EX/3536/1700/4	425	1700	64	42	32	N/A	N/A	70A	50A	40A	N/A	N/A	28	2.4A	2-4	6-12	115g	10x5	9x5	8x5	N/A	N/A	2400g	1750g	1450g	1200g	.25-.32	4.0
EX/3542/1000/5	520	1000	77	52	39	N/A	N/A	80A	60A	44A	N/A	N/A	40	1.7A	2-4	6-12	142g	13x8	11x6	11x5.5	N/A	N/A	2950g	2150g	1800g	1500g	.32	4.0
EX/3542/1250/4	500	1250	75	50	37	N/A	N/A	80A	60A	44A	N/A	N/A	30	1.9	2-4	6-12	142g	13x6	11x5.5	10x6	N/A	N/A	2800g	2050g	1750g	1400g	.32	4.0
EX/3542/1450/3	490	1450	74	49	36	N/A	N/A	80A	60A	44A	N/A	N/A	23	2.3	2-4	6-12	142g	13x7	11x5	11x5	N/A	N/A	2750g	2000g	1700g	1350g	.32	4.0
EX/3548/790/5	680	790	N/A	68	51	41	34	N/A	70	60	60	44	48	2.1	3-6	9-18	172g	N/A	14x7	13x7	12x6	12x7	3850g	2800g	2400g	1950g	.40	4.0
EX/3548/900/4	665	900	N/A	66	50	40	33	N/A	70	60	60	44	35	2.9	3-6	9-18	172g	N/A	14x6	13x6	12x5	11x7	3800g	2750g	2300g	1900g	.40	4.0
EX/3548/1100/5	640	1100	N/A	64	48	38	32	N/A	70	60	60	44	25	3.5	3-6	9-18	172g	N/A	13x6	13x5	12x5	11x6	3600g	2650g	2250g	1800g	.40	4.0

The specifications above are supplied in good faith. As with all electric systems there are multiple combinations of Motor/ESC/Props and Batteries available, the change and variation of any of these (even the same size/specification from different manufacturers) will have an effect on the parameters/performance you can expect. We STRONGLY recommend the use of a wattmeter. These relatively inexpensive devices will not only bring some science into your hobby, allowing you to optimise your set up for better performance and duration, but will check if you are running within the limits of your equipment. Your first fried motor or burnt ESC will pay for a wattmeter! If you don't use a wattmeter always check the temperature of your Motor/ESC after a run. Warm is OK - hot is NOT!

Note 1: AMPS quoted are the maximum continuous AMPS on the appropriate cell count (voltage). These are calculated based on a battery under load losing around 1v per cell. Although these can be exceeded by a small amount for a short burst we recommend you aim for a figure below this. As the chart shows the lower the voltage applied the higher the AMPS with the consequent need for a stronger ESC, and Vise- Versa with higher voltages.

Note 2: Recommended ESCs shown are based on you keeping within the operating parameters and specifications. Where space and weight permit consider using an ESC with a higher rating than recommended (i.e. where a 30A is shown fit a 40A) to give plenty of leeway.

Note 3: Props are shown as a guidance/starting point. The prop is the single most important variable on your brushless system. The loading on your motor, and parameters such as AMP draw are (in broad terms) determined by the prop. A higher Kv motor will spin a smaller prop at higher revs, and a lower Kv motor will spin a larger (and generally more efficient) prop at lower revs. Props from different manufacturers with the same size can give very different readings (which can easily be determined by the use of a wattmeter), so experiment to find the best combination for your model. As a very general rule of thumb where the specified prop is, for instance, an 11x5 and you wish to swing a 10" diameter but want to retain the approximate same load on your motor you would compensate for the loss of diameter with an increase in pitch, so from 11" to 10", and 5" to 6" i.e. your 11x5" would be substituted by a 10" x 6". With folding props allow for the diameter of spinner used. An increase in spinner diameter effectively means an increase in prop diameter which must be factored in when choosing a prop size. Always remember, less cells =larger prop, more cells=smaller prop.

Note 4 : A very common question asked about brushless motors is what weight of model they will power. Again, there are so many variables with model design that a definitive answer can't always be given. We have provided 4 broad categories of models and quoted an approximate average weight of model the motor, when propped correctly, will fly well. As we said this is a generalisation but will assist when choosing an appropriate motor for your model.

Note 5 : Electric motors and i.c. engines are two completely different forms of propulsion and as such direct comparisons are often not the most appropriate way of selecting a motor. However we appreciate that brushless motor sizes are very confusing for those coming over from i.c. powered models so have included this information to give you a general approximation. Electric motors are much more flexible than i.c. engines, being able to utilise a broader range of props. It is possible to choose a motor that turns a same size prop at the same revs as an i.c. engine, but you will get a much better performance if you utilise the flexibility of brushless motors correctly.