

**POLARIS** 



# 使用前必读

感谢您购买OMG-POLARIS-DR-120AX3车用电子调速器!无刷动力系统功率强大,错误的使用可能造成人身伤害和设备损坏。 强烈建议您在使用设备前仔细阅读本说明书,并严格遵守规定的操作程序。我们不承担因使用本产品而引起的任何责任,包括但 不限于对附带损失或间接损失的赔偿责任;同时,我们不承担因擅自对产品进行修改所引起的任何责任。我们有权在不经通知的 情况下变更产品设计、外观、性能及使用要求。

# 编程项目说明

**1. 运行模式 (Running Mode) :** "正转带刹车"模式下,车辆仅能前进和刹车,但不能倒车,该模式通常用于竞赛;"正反转带刹 车"模式则提供了倒车功能,通常用于训练。

"正反转带刹车"模式采用双击式倒车方式,即油门摇杆在第一次从中点区域推至反向区域时,电机只是刹车 ,不会产生倒车动 作;当油门摇杆快速回到中立点区域并第二次推至反向区域时,如果此时电机已停止,则产生倒车动作,如果电机未停止,则不 会倒车,仍是刹车,需要再次将油门回到中点并推向反向区,此时如果电机已经停止才会倒车,这样做的目的是防止车辆行驶过程 中因多次点刹而造成误倒车。

"直接正反转"模式采用单击式倒车方式,即油门摇杆从中点区域推至反向区域时,电机立即产生倒车动作,该模式一般用于攀 岩车等特种车辆。

2. 拖刹 (Drag Brake) 力度: 拖刹是指当油门摇杆从正向区域转入中点区域内时, 对电机产生一个微量的刹车力, 这样做可以 模拟有刷电机的碳刷对电机转子的阻力,适合减速入弯等场合。(值得注意的是,拖刹会消耗比较多的电量,选择合适的拖刹力

3. 电池低压保护阈值(Low Voltage Cut-Off):这项功能主要是防止锂电池过度放电而造成不可恢复的损坏。电调会时刻监视 电池电压,一旦电压低于设定的阈值,在3秒内动力输出将逐步降为正常功率的30%,此时车手应立即靠边退出比赛,以免阻碍 赛道上的其他车辆或被后面快车撞到,10秒后动力将完全半闭。当进入电压保护后,红色 LED 会以"☆-☆-,☆-☆-,☆-☆-,☆-☆-方式闪烁。您也可以通过 2 合 1专业编程设定盒(选配件),以便适用所有类型电池(镍氢、锂聚合物、锂铁、.....)。使用 stock 级别的电机时,建议此项参数值设置在 3.4V/Cell。

4. 启动加速度(Start Mode / Punch): 可根据个人习惯、场地、轮胎抓地特性等条件,选择从 1 级("非常柔和")到 9 级 ("非常劲暴") 等 9 种启动加速度。本功能可以防止启动时轮胎打滑,并可在竞赛过程中实现弹射追车的效果。此外,使用"7 级" —"9级"模式时,对电池的放电能力要求较高,若电池放电能力较差,不能提供瞬时大电流,则反而会影响启动效果。当启动时出 现停顿或瞬间失去动力时,则可能是电池放电能力不足引起的,这时需要降低启动加速度,或将齿轮减速比增大。

5. 最大刹车力度(Brake Force):本电调提供比例式刹车功能,刹车力度的大小和油门摇杆的位置相关,最大刹车力是指油门摇杆 处于刹车极限位置时所产生的刹车力。请根据车辆的具体情况及个人的使用习惯,选择合适的最大刹车力参数。

6. 最大倒车力度 (Reverse Force):选择不同的参数值可以产生不同的倒车速度(一般情况下推荐使用比较小的倒车速度,以免 因倒车太快而导致失控撞车)。

### 7. 初始刹车力度(Initial Brake Force): 也叫做最小刹车力度,

是指在刹车初始位置作用于电机上的刹车力,在它的作用下可 以达到类似点刹的效果,默认值是等于拖刹力度,以便形成柔 顺的刹车效果







# 产品特点

- 竞赛级电子调试器:内置 10 种常用模式,适合各种竞赛,即选即用。 (可选模式有:A 零进角/Zero Timing 模式 B一般练习模式 C竞赛模式 D越野车/短卡车竞赛模式 E攀爬车模式 F漂移车模式等)。
- 电调参数可导入/导出,更加方便玩家相互交流和借鉴对方的参数设定。
- 采用铝制金属壳,散热性能优异,耐流能力强大,且有多种外壳颜色可选。
- 増加动态 Turbo Timing 和 Boost timing 等技术, Timing 参数可以设定的非常细腻,适应不同车手的需求。 强大的油门和刹车调节功能:以0%为增量的拖刹力度调节、8段刹车力度调节. STOCK版本为64 段增压进角调节、MOD版本为段增压进角调节。
- 多重保护功能:电压过低保护、电机及电调过热保护、油门失控保护。
- ◆ 支持 LCD 参数编程盒

	故障快速	处理
	1、电调无输入电压 2、电调开关损坏	检查电源输入通路是否有焊接不良情况,并重新焊好。
上电后红色 LED 恒亮, 电机无法启动	电调油门线插反或通道插错	将电调的油门排线按正确方向插到接收机的"油门 (Throttle)"通道(通常为 Ch2)。
遥控器正向加大油门, 车子反而倒退	1、电调输出线和电机线连接的线序错误 2、该车架同主流车架的电机转向不一致	1、 如果是无感电机, 将电机三条线中任意两条互换即已 2、如果是有感电机,则无法通过更换线序实现电机反转 电调默认程序无法适配此特殊车架。
电机转动过程中,突然 停转	1、接收机遇到干扰 2、电调进入电池低压保护或温度保护	红灯持续闪烁为电压保护,请更换电池; 绿灯持续闪烁为过热保护,请等电调温度降低后继续使 用;
电机启动时快速加大油 门,电机有卡住或停顿 的现象	1、 电池放电能力不够 2、 电机转速过高,减速比过小 3、 电调启动加速度设置过高	1、 更换放电能力强的电池。 2、 更换为低速电机,或使用更柔和的减速比。 3、 将电调启动加速度(Punch)设置得柔和一些。
油门在中点时,红绿灯同时快速闪烁	接有感电机时,电调检测到霍尔传感器信号有错误,已自动切换至无感模式	1、 查看感应线是否有松动或接触不良。 2、 马达内部的霍尔(HALL)感应器损坏。
电机抖动,无法启动	1、 电调与电机之间接线错误。 2、 电调故障	1、 查看接线是否正确,应确保为 A-A, B-B,C-C。 2、 联系经销商处理维修事宜。

# 产品规格

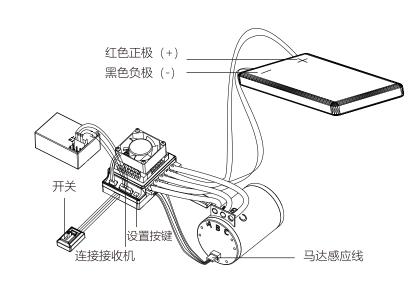
型号:OMG-POLARIS-DR-120AX3 持续电流:120A 峰值电流:760A 支持电机:有感无刷电机 适用车型:1:10漂移车/平跑车/越野 BEC: 6V@5A, 线性稳压模式 风扇工作电压: 5V@0.16A , 最高工作电压 13V , 电调风扇插座未经过稳压 , 为电池输入电压。

尺寸 (含风扇) : 41x39x32mm 重量 (含配件) : 112g

电池节数: 4-9 节镍氢电池, 2-3 节锂电池。

支持无刷马达T 数 2S / ≥3.5T(1/10 平跑车), ≥5.5T(1/10 越野) / 10.5T(1/10 漂移) 3S | ≥5.5T(1/10 房车), | ≥8.5T(1/10 越野) | 15.5T(1/10 漂移)

# 使用步骤



第一步:根据所使用的电机,按相应的图示接线并复查 无误后,进入下一步。

连接有感无刷电机: 当使用有霍尔传感器的无刷电机时, 需要将电机上的传感器引线接到SENSOR 插座, 电调通 过检测 SENSOR 插座的信号自动判别是有感电机还是无

特别提醒: 配合有感无刷电机使用时, 电调输出线 A、B、 C 要分别和电机线 A、B、C 相连,不 得随意调换!

| 警告! 电源正负极绝对不能接反,否则电调瞬间损坏。| 长时间不用时请拔下电池,以免造成意外。

第二步:设定油门行程。

强调: 电调第一次使用或遥控器更改过油门中点、ATV、EPA等参数后,均需重设油门行程,不然可能会导致无法使用或误动作。 下面以 Futaba 遥控器为例,说明油门行程的设定过程。

1电调连接电池后,打开遥控器,将油门通道方向设置 "REV",油门微调设置为"O",油门通道的 EPA/ ATV正反 向均设置为 100%。

#### 请务必关闭遥控器自带的ABS 刹车功能。

2 持续按住开关按键不松开等待几秒钟,直到电调上红色 LED 开始闪烁 (同时马达鸣叫备注 2) , 立即松开按键。 此时进入油门校正模式。备注 2: 马达鸣叫声音可能较小 在这种情况下,需要观察 LED 状态。





电调接通电源 处于关机状态

按住按键,打开电源 开关,直到红灯闪烁

LED \*\*\*

3 此时需要设定三个点:

油门中点、正向最高点和反向最高点。

A-油门摇杆留在中点位置,按一下开关按键,红灯熄灭, 绿灯闪烁 1 次,马达鸣叫"哔"1 声,声音停止。表示已存 储中点位置; B-油门摇杆打到正向最高点,按一下开关 按键,绿灯闪烁 2 次,马达鸣叫"哔-哔-"2 声,表示已存 储油门正向最高点;

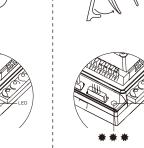
C-油门摇杆打到反向最低点,按一下开关按键,绿灯闪 烁3 次,马达鸣叫"哔-哔-哔-"3 声,表示已存储油门反向 绿色灯闪烁一次

D-油门行程校调完毕,三秒钟后,电机即可正常操作。



摇杆置于中点

绿色灯闪烁两次



绿色灯闪烁三次

摇杆置于正向最高点 : 摇杆置于反向最低点

第三步:接线及基本设置完成,电机可正常运行。开关的使用及行驶过程中指示灯(LED)状态说明。 当油门摇杆处于中点区域时,红色和绿色 LED 均熄灭。

前进和倒车时,红色 LED 恒亮,当油门处于正向(前进)最高点,绿色 LED 也将点亮。

类别	设定项名称	设定值													
	运行模式	正转带	為车,无	倒车	(竞赛梅	莫式)	正规	反转带	刹车	(练>	习模式	()	直接	正反转(	攀爬模式
	拖刹力度	=Drag	g brake		0%	)		10	1%			0%		1	0%
基	低压保护	不任	保护	2.6V/	Cell		2.8V	/Cell		3.	2V/0	Cell	3.4	v/Cell	
基础设置	启动模式(Punch)	1级 2级			3级		4级	55	及	6 4)	及	74,	及	8级	9级
峇	最大刹车力度	0%	12.5	%	25%	3	37.5%	50	)%	62.	5%	75	5%	87.5%	100%
	最大倒车力度		25%			50	%			-	75%			1009	%
	初始刹车力度		0%					20%						40%	
	油门中立点及行程设置		6%					9%						12%	
	Boost Timing进角值	M	OD版本	:0-16 <u>J</u>	度可调,	调整	隆量1度	:		STOC	〈版本	0-64	4 度可	调,调整:	量1度
主	Turbo Slope Rate (度/0.1 秒) 激暴进角打开时间	3		6		12		1	8		24		<u> </u>	即全部释	於
级	过热保护		F.	自用保	护							不保	护		
高级设置	Turbo timing 进角值	M	OD版本	0-20	度可调	,调想	整量1度	F		STOC	K版本	0-4	0 度可	调,调整	量1度
置	Boost 变进角起始转速	1000	)-15000	RPM	(调整量	1000	) RPM)	)			١	MOD	版本:	无	
	Turbo delay 全油门延迟时间(秒)	立即	0.1	0.2	2 0.	3	0.4	0.	5	0.6	0.	7	0.8	0.9	1.0
	Boost 进角加速度		50-750	RPM	 (每档 !	 50RPI	M)				<u>.</u> М(	 DD版	 反本 无	·	•

#### 9.Boost Timing:增压进角。此进角在整个油门行程范围内有效,直接影响弯路和直路的速度。(当设定了此值后,电调在运行 过程中的实际进角是根据转速大小而动态变化的,并非固定的常量。

10.Turbo Delay: 指开启 Turbo 的延迟。只有当全油门持续时间达到预定延时后,Turbo 才会开启。



如客户加载后缀为 stock 的软件(即专门用于 stock 比赛的特殊程序),又使用了通用有感马达,请将 进角设置为 0 度,以免烧坏马达。stock 程序配套的可调0度进角马达才可开启手动调节Boost Timing度数。

Turbo Slope Rate: 激暴进角 (Turbo Timing) 递增率,指每 0.1秒打开的激暴进角 (Turbo Timing) 度数。 此值越大,则 Turbo Timing增速越高,加速越快,当然,马达也会更热。

11.过热保护(Over-Heat Protection):启用该功能后,电调或有感无刷电机温升达到厂方预设特定值时自动关闭输出,而且 绿灯会闪烁,直到温度降低才恢复输出。如果是电机温度保护,绿灯闪烁方式为双闪,即"☆-☆-,☆-☆-,☆-☆-\*;如果 是电调过热保护时,绿灯闪烁方式为单闪:"☆-, ☆-, ☆-"。

(注: 电机温度保护功能仅适用于本厂配套的有感无刷电机,其它厂牌可能因为电机内没有温度传感器而无此功能,或因内置 温度传感器参数不一样而导致保护点不一致,如果电机过早保护,请关闭温度保护功能。)

12.Turbo Timing: 激爆进角。 这个也是进角的大小设置项。但是此进角只在全油门后才开启,使马达在较长的直路赛道上获

**13.Boost 变进角起始转速(Boost Start RPM):**因为 Boost 值是根据转速来动态分配的,当转速低于起始转速时,则 Boost 实际开启值为 0, 在转速处于起始转速和结束转速之间时, Boost 是根据当时转速的大小来动态变化的。 如果设置项 "Boost 随 RPM 变化方式"设置为线性时,则 Boost 值在这段范围内是线性分配的。

例如, 假设 Boost Timing 设置为 5 度,起始转速为10000,则各个转速下的 Boost 进角值如下表所示。如果转速高于 结束转速时,则Boost实际开启值则为 Boost 设置值。stock 版本则是随速度0-64度全范围变化,(所以在stock版本下,普 通马达进角不为0度,手动设置boost timing的话,马达运行进角会超出极限的64度,因此必须遵循第11项警告栏设置)。

	MOD 版本示范表											
转速(RPM)	<10000	10001-11000	11001-12000	12001-13000	13001-14000	14001-15000	>15000					
Boost 实际开启值	0度	1度	2度	3度	4度	5度	5 度					

14.Turbo 全油门延迟时间 (Turbo Delay ): 是指触发 Turbo 所需要的持续全油门时长。当 Turbo 触发方式选为"全油门时间"触发 时,当持续全油门的时间达到此设定值后,才能触发 Turbo 开启。

15.Boost Timing Acceleration:Boost Timing加速度,RPM/ 度。表示马达每增加多少转速,电调就相应增大1 度的Boost Timing。 此值设定得越低 ,则电调的Boost Timing递增速率越快,马达启动越暴,同时马达温度也越高。



警告!开启 Boost 进角和 Turbo 进角能够有效提升马达的输出功率,通常用于竞赛。 请事先仔细查看说明书及参考设定,并在试车时监控马达及电调的温度,调整合适的进角设定及最终齿比,过激的 进角设定及最终齿比会导致电调或马达烧毁。

下表列出一般情况下各种 T 数马达所建议的 Boost 及 Turbo 进角范围。

MOD 版本示范表											
马达⊤数	3.5T/4.0T	4.5/5.5T	6.5T/7.5T	8.5T/9.5T	10.5T/11.5T	≥13.5T					
能开启 Boost 进角最大值	0度	0度	5 度	10 度	16 度	16 度					
能开启 Turbo 进角最大值	5度	10 度	10 度	15 度	20 度	20 度					

因为进角越大,则马达的功率也会相应更大,但是马达的发热量也就越高,如果在较低的转速就开启过多的进角,则会导致 马达发热严重,甚至烧毁马达。所以我们采用了动态进角的方法,在低转速时,开启较小一些的进角,待转速提升后,进角再随 转速的增加而增加。通过调整起始转速及进角加速度 ,就可以 实现马达运行过程中,低转速 对应 低进角,高转速对应高进角 。

# STOCK 版本示范表

表格中进角(度)一栏是指编程参数表第9项 Boost Timing (非机械可调0进角的普通马达必须Boost timing调为0度, 电调会 跟随马达转速自行递增进角。)

### 转速和进角对应关系表

起始转速 进角加速度		起始转速: 进角加速度		起始转速 进角加速度		起始转速 进角加速度	
转速 (RPM)	进角 (度)	转速 (RPM)	进角 (度)	转速 (RPM)	进角 (度)	转速 (RPM)	进角 (度)
<4000	0	<9000	0	8800	24	18600	24
4200	1	9400	1	9000	25	19000	25
4400	2	9800	2	9200	26	19400	26
4600	3	10200	3	9400	27	19800	27
4800	4	10600	4	9600	28	20200	28
5000	5	11000	5	9800	29	20600	29
5200	6	11400	6	10000	30	21000	30
5400	7	11800	7	10200	31	21400	31
5600	8	12200	8	10400	32	21800	32
5800	9	12600	9	10600	33	22200	33
6000	10	13000	10	10800	34	22600	34
6200	11	13400	11	11000	35	23000	35
6400	12	13800	12	11200	36	23400	36
6600	13	14200	13	11400	37	23800	37
6800	14	14600	14	11600	38	24200	38
7000	15	15000	15	11800	39	24600	39
7200	16	15400	16	12000	40	25000	40
7400	17	15800	17	12200	41	25400	41
7600	18	16200	18	12400	42	25800	42
7800	19	16600	19	12600	43	26200	43
8000	20	17000	20	12800	44	26600	44
8200	21	17400	21	13000	45	27000	45
8400	22	17800	22	13200	46	27400	46
8600	23	18200	23	13400	47	27800	47

有一点是需要注意的,假设设置的 Boost 进角没有到最大,比如只设置为 20 度,那么当转速大于 20 度进角所对应的转 速后,则一直还是20度进角。

MOD 版本动力示范表											
Τ数	KV 值	: 参考齿比 (1/10 房车)	参考齿比 (1/10 越野)	; ; ; 主要应用							
3.5T	9100KV	9.0 - 11.0		; : 1/10 房车、越野车公开组							
4.5T	7300KV	8.4 - 10.0		竞赛、日常练习							
5.5T	6000KV	8.0 - 9.4	9.5 - 11.0	; 1/10 房车、 越野车 STO(							
6.5T	5200KV	7.4 - 8.4	9.0 - 11.0	· - 竞 赛、日常练习							
8.5T	4000KV	6.0 - 7.0	8.0 - 9.6								
10.5T	3300KV	5.0 - 6.0	7.0 - 8.5	; ; 广泛应用于 1/10 漂移车、							
13.5T	2500KV	4.0 - 5.0	6.5 - 7.5	F1、M 车等							
17.5T	1900KV	3.8 - 4.5	5.5 - 7.0	1 							
21.5T	1600KV			1/10 攀爬车、F1							

1、 参考齿比:均为 1/10 车模在 2S 锂电下的最终齿比值 (FDR)。

2、 程序使用零进角,未开启 Boost 和 Turbo 进角。当开启 Boost 和 Turbo 进角后,齿比一般需要相应增大。

	STOCK	<b>极</b>	₹		
(28	6 锂电, 马达本体进角	为0-5 度(E	ndbell Timing	) 。	
(非机械可调0进角的普	导通马达必须Boost tir	ming调为0度,	电调会跟随马达	转速自行递增进角。)	)
 1	1	1	- 1	1	

车型	马达	最终齿比	# 9 Boost Timing	# 10	# 11	# 12 Boost Start RPM	#13	# 14
	! ! !	! ! <del> </del>	+			D003t Start Nr IVI 		
	10.5T	6.0-7.5	30°-40°	18°/0.1s	15°-24°	4000	0.5s	350-500
1:10 房车	13.5T	5.0-7.0	34°-50°	18°/0.1s	20°-30°	3000	0.4s	200-300
	17.5T	5.0-7.0	34°-55°	18°/0.1s	20°-30°	3000	0.2s	150-300
1: 10 越野	11.5T	7.5-9.5	12°	6°/0.1s	4°	6000	Off	400-500
(原则上不推 荐越野使用 带turbo程序)	: 13.5T	7.0-9.0	16°	6°/0.1s	8°	5000	Off	200-350
	¦ ¦ 17.5T	7.0-8.5	20°	6°/0.1s	12°	3000	Off	200-350

齿比的大小,要看具体的赛道情况而定。如果赛道直路长,弯道少,则齿比可以小一点,以得到更多的尾速;如果赛道短小, 则齿比应大一些, 以得到更多的加速度, 使出弯速度更快。



**POLARIS** 



## PLEASE READ CAREFULLY BEFORE USING THE MANUAL

Thanks for purchasing our Electronic Speed Controller (ESC). High powered systems for RC models can be very dangerous, so please read this manual carefully. Given that we have no control over the correct use, installation, application, or maintenance of our products, no liability shall be assumed nor accepted for any damages, losses or costs resulting from the use of the product. Any claims arising from the operating, failure or malfunctioning etc. will be denied. We assume no liability for personal injury and/or consequential damages resulting from our product or our workmanship. As far as is legally permitted, the obligation to compensation is limited to the invoice amount of the affected product.

#### PRODUCT FEATURES

—Exclusive for top competitions: Built-in 10 common modes, suitable for all competitions, off-the-shelf. (Such as: zero timing/Zero Timing mode, general practice mode, competition mode, off-road vehicle/short truck competition mode, climbing car mode, drift car mode, etc.). The setting parameters of the ESC can be imported and exported, which is convenient for the drivers to communicate with each other and learn from each other's settings.

—Electronic key switches is long life, high reliability, simpler wiring, and saves frame space

—It has world-leading technologies such as dynamic Turbo Timing and Boost timing, and the settable timing specifications are very detail, adapting to the different demands of different drivers.

—The top cover is aluminum metal, which has excellent heat dissipation performance, strong current resistance, and a variety of cover color for choose.

—Powerful throttle and brake adjustment functions: Drag brake force adjustment in 0% increments, 8-stage brake force adjustment, STOCK VERSION:64-stage booster timing adjustment.

MODEL VERSION:16-stage booster timing adjustment,.

—Multiple protection functions: low voltage protection, motor and ESC overheat protection, and throttle out of control protection.

—It supports two programming methods: LCD parameter programming box

	FAULT HANDLES	
FAULT PHENOMENON	REASON MAY CAUSED	SOLUTION
The indicator light does not light up , themotor can't start, and the fan does not run	The ESC has no input voltage.     The ESC switch is damaged	Check the power input path if in good welding conditions, and re-soldering
Red LED light when motor connect to the power, the motor can't be started	The throttle cable of the ESC is plugged in the wrong way or the channel is plugged in the wrong way.	Plug the throttle cable into the "Throttle" channel (usually CH2) of the receiver in the correct direction.
The remote control increases the throttle in the forward direction, but the car reverses.	1.The ESC output cable and the motor cable connection is wrong.      2.The motor steering of the frame is inconsistent with that of the mainstream frame	I. If it is a sensorless motor, just interchange any two of the three wires in the motor.  20If it is a sensored motor0it can't be reversed by changing the wire sequence, and the default program of the ESC can't be adapted to this special frame.
Suddenly stop when motor running	The receiver is interference with other signal     The ESC enters the battery low voltage protection or temperature     protection	The red LED flashes continuously for voltage protection, please replace the battery:  The green LED flashes continuously for overheating protection, please wait for the ESC cool down and continue using it:
The motor is stuck or stopped when it is started and the throttle is increased quickly	Insufficient battery discharge capacity     The motor speed is too high and the reduction ratio is too small.     The setting of ESC start acceleration is too high	Replace the battery with strong discharge capacity.     Replace with a low-speed motor, or use a softer reduction rat     Set the ESC start acceleration (Punch) to be softer.
The red & green LED flash rapidly at the same time when throttle at neutral position	When sensored motor is connected, the ESC detects an error in the hall sensor signal and has automatically switched to the sensorless mode	Check whether the induction wire is loose or has poor contact.     The Hall sensor inside the motor is damaged.
Motor shake and can't be started	1. The wiring between the ESC and the motor is wrong. 2. ESC failure	1. Check whether the wiring is correct, make sure it is A-A, B-B, C-C. 2. Contact the agent to deal with maintenance matters.

#### **SPECIFICATIONS**

Model: OMG-POLARIS-DR-120AX3 Cont./ Burst Current: 120A/760A

Motor Type Supported:Sensored and Sensorless Brushless Motors

Cars Applicable:1/10,1/12 Onroad & Offroad cars; 1/8,1/10 rock crawlers Resistance: 0.0003 ohm (single arm) BEC output: 6V@5A, Linear regulator mode

Fan:5V@0.16A , Max.: 13V Bottom size:41x39x32mm

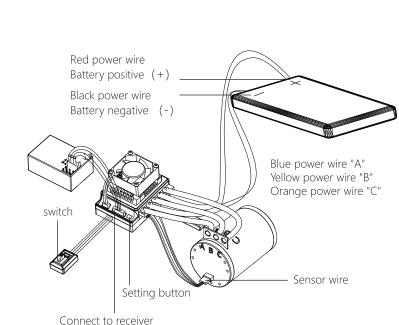
Weight:112g (excl. wires. including fan)

Battery cell qty: 4-9S NI-MH battery, 2-3S lithium battery

Brushless Motor Limit  $2S \mid \geq 3.5T(1/10 \text{ Touring Car}) \mid \geq 5.5T(1/10 \text{ Buggy}) \mid 10.5T(1/10 \text{ Drift Car})$  $3S \mid \geq 5.5T(1/10 \text{ Touring Car}) \mid \geq 8.5T(1/10 \text{ Buggy}) \mid 15.5T(1/10 \text{ Drift Car})$ 

#### FIRST USE OF A NEW ESC

Step 1: According to the motor used, connect according to the following pictures and check if there is no error, then go to the next step.



Sensored brushless motor wiring: When using brushless motor with Hall Sensor, it is necessary to connect the sensor cable to the "SENSOR" socket on the ESC. The ESC can automatically identify the motor type (sensored or sensorless) by detecting the signal coming from the SENSOR socket.

'ARNING! For sensored brushless motor, the #A, #B, #C

ires of the ESC MUST be connected with the motor wire #A, #B, #C respectively. Do not change the wires sequence! Sensorless brushless motor wiring: When using brushless motor without Hall Sensor, the #A, #B, #C wires of the ESC can be connected with the motor wires freely (without any order). If the motor runs in the opposite direction, please

Warning! The positive and negative poles of the power supply must not be reversed, otherwise the ESC will be damaged instantly. Please unplug the battery when not in use for a long time to avoid accidents.

Hold the switch button until

the red LED starts to fiash

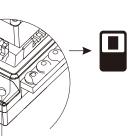
Step 2:Note: The throttle range must be reset the first time the ESC is used or the remote control has changed the throttle midpoint, ATV, EPA and other parameters. Otherwise, it may become unusable or malfunction. Take an example as following to show the process of setting the throttle range:

1 Put the battery into the ESC, turn on the remote controller, set the throttle channel direction to "REV", the throttle fine adjustment to "0", and the EPA / ATV forward and reverse of the throttle channel to 100%. Be sure to turn off the ABS brake function that comes with the remote control.

2 Hold the switch button until the red LED on the ESC starts to flash (motor beeps, Note 2), then release the button immediately.

Note 2: The motor beep sound may be small, in this case, just

watching the LED status.



swap any two wire connections.

Connect the battery to ESC,off state

throttle position and full brake throttle position A Keep the throttle stick at the neutral position, press the switch

3 Set the 3 points as follow: Throttle stick at neutral position, full

button, the red light goes out, the green LED flashes once, and the motor beeps once, indicating that the neutral position has been stored;

B Move the throttle stick to the full throttle position, press the switch button once, the green LED flashes twice, and the motor sounds "BeepBeep" twice, indicating that the full throttle has

C Move the throttle stick to the full brake throttle position, press theswitch button, the green LED flashes 3 times, and the motor beeps 3 times "beep-beep-beep-", indicating that the full brake

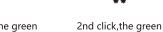
throttle position has been stored;

D Finally wait 3 seconds, the motor can be operated normally.



LED flashes once

neutral position





LED flashes twice

Throttle stick at full

LED flashes thrice

Step 3: The motor is running normally after wiring and basic settings are completed. The use of the switch and the description of the status of the indicator light (LED) during driving: When the throttle stick is in the midpoint position, both the red and green LEDs are off. When forwarding and reversing, the red LED is always on, and when the throttle is at the highest point in the forward direction (forward), the green LED will also be on.

Items	Name of Items						S	et Value	<b>)</b>					
	Running Mode		DRWARD, ompetitio				FOR	ORWARD/BRAKE/REVERSE (Practice Mode)				FORWARD/REVERSE (Crawler Mode)		
	Drag Brake Strength	=Drag	brake		0%			10%	10%			% 10		
Ge	Low-voltage Protection	No pr	otection		2.6V/C	Cell		2.8V/C	ell	3.2\	//Cell	3.4	IV/Cell	
General Setting	Punch Mode	Level1	Level2	Lev	vel3	Level	4	Level5	Leve	vel6 Level7		Level8	Level9	
Set	Max. Brake Force	0%	12.5%	2	5%	37.5%	6	50%	62.	5%	75%	87.5%	100%	
ting	Max. Reverse Force	2	25% 50%						75%			100%		
-	Initial Brake force		0%					20%				40%	6	
	Neutral throttle point and stroke setting		6%					9%				12%	)	
	Boost Timing	MOD	MOD Version: 0-16° adjustable, 1°/time Stock Version:0-64° adjustable, 1°/time									1 °/time		
D	Turbo Slope Rate	3		5	1	2		18		24		Release	all	
Advanced	Overheat Protection		P	otectio	on					No	prote	ction		
nced	Turbo timing	MOD V	ersion: 0-	20° adj	justable	, 1°/	time	S	tock V	ersion: 0	-40° ac	justable,	1°/time	
Setting	Boost Act RPM	1000	-15000 R	PM ( 10	000 RPN	//tim	e)			No M	OD vei	rsion		
ing	Full Throttle Delay	Instant	0.1	0.2	0.3	0	.4	0.5	0.6	0.7	0.0	0.9	1.0	
-	Boost Timing Act		50-750R	PM (50	ORPM/ti	me)	50-750RPM (50RPM/time) No MOD versic							

### IIEMS NOIE

1. Running Mode: "Forward Only with Brake" Mode, The car will only go forward and have brakes, but reverse is disabled. This mode is suitable for competition purposes. "Forward / Reverse with Brake "Mode – This provides a reverse function, which is suitable for practice. The reverse function is engaged by a Double click method., On the first application of backwards throttle, brakes are applied. On returning to the neutral point, and then applying the backwards throttle for a second time, the reverse function will be engaged. However, if at this time the motor is still moving forward (i.e in a double braking action from high speed ), the ESC will not go into reverse. The motor must be at 0 rpm to engage reverse. This is a protection function for the drivetrain of the vehicle. "Forward / Reverse" Mode– When moving from the forward zone to the backward zone , the ESC will engage reverse immediately. This mode is intended for rock crawling applications, where

2. Drag Brake Strength: Drag brake refers to the generation of a small amount of braking force on the motor when the throttle stick is turned from the forward area to the neutral area. This can simulate the resistance of the brushed motor's carbon brush to the motor rotor, suitable for slowing down into corners, etc. occasion. (It is worth noting that the drag brake will consume more power, just choose the

3. Low Voltage Cut-Off: This setting defines the low voltage cutoff for use with LiPo batteries, preventing over discharging. The ESC will always monitor the battery voltage. Once the voltage is lower than the set threshold, the power output will gradually drop to 30% of the normal power within 3 seconds. At this time, the driver should pull over and withdraw from the race immediately to avoid obstructing other vehicles or other vehicles on the track. After being hit by an express car behind, the power will be completely shut off after 10 seconds. When entering the voltage protection, the red LED will flash like "☆ - ☆ - ☆ - ☆ - ☆ - ☆ - ". You can use 2 in 1 professional programming box (optional) to apply all types of batteries ( Ni-MH, Li-Po, Li-Fe, ... ). It is recommended to set this parameter value at 3.4V/Cell when using stock-level motors.

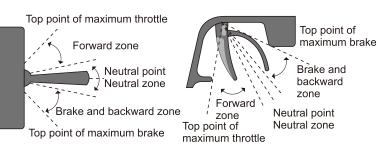
4. Start Mode / Punch: According to personal habits, grounds, tire grip characteristics and other conditions, you can choose from 9 starting accelerations from level 1 ("very soft") to level 9 ("very aggressive"). This function can prevent the tire from slipping when starting, and can achieve the effect of ejecting and chasing the car during the competition. In addition, when using the "Level 7"-"Level 9" mode, the discharge capacity of the battery is required. If the battery discharge capacity is poor and cannot provide instantaneous high current, it will affect the startup effect. A pause or instantaneous loss of power during startup, it may be caused by insufficient battery discharge capacity. At this time, it is necessary to reduce the startup acceleration or increase the gear reduction ratio.

5. Brake F+orce: The ESC provides a proportional braking function. The braking force is related to the position of the throttle stick. The maximum braking force refers to the braking force generated when the throttle stick is in the braking limit position. Please select the appropriate maximum braking force parameters according to the specific conditions of the vehicle and personal usage habits.

6. (Reverse Force): Choosing different parameter values can produce different reversing speeds (in general, it is recommended to use a lower reversing speed to avoid running out of control due to reversing too fast).

7. Initial Brake Force: Also called the minimum braking force, it refers to the braking force acting on the motor at the initial position of the brake Under its action, it can achieve an effect similar

to a point brake. The default value is equal to the drag brakbrake effect.drag brake force to form a soft brake effect. 8. Neutral Range: The throttle neutral point area is as shown in the figure on the right, please adjust it according to your personal habits.



9.Boost Timing: This timing is effective in the entire throttle range and directly affects the speed of curved roads and straight roads. (When this value is set, the actual timing of the ESC during operation changes dynamically according to the speed, not a fixed constant.

the customer loads the software with the suffix of stock (A special program used only for stock competitions), and uses a general sensored motor, please set the Boost Timing to 0 degrees to avoid burning the motor. Manually adjustment degree of Boost Timing can be turned on by the 0-degree timing motor which is matched with the stock program.

Turbo Slope Rate: Turbo Timing Rate refers to the degree of Turbo Timing that is turned on every 0.1 second. The larger the value is, the higher the Turbo Timing growth rate will be, and the faster the acceleration will be. Of course, the motor will be hotter. 10. Turbo Delay: Delay of turbo staring. Turbo will be started only when the full throttle duration reaches the predetermined

11. Over-Heat Protection: After this function is enabled, the output will be automatically turned off when the temperature rise of the ESC or the sensored brushless motor reaches a specific value preset by the factory, and the green LED will flash, the output will not be restored until the temperature reduction.If it is motor temperature protection, the green flashing mode is double flashing, namely "& - & - , & - & - , & - & - , \* - - \* - "; if it is ESC overheating protection, the green LED flashes in a single flash: " $\Leftrightarrow$  - ,  $\Leftrightarrow$  - ,  $\Leftrightarrow$  - . (Note: The motor temperature protection function is only applicable to the inductive brushless motors of our factory. Other brands may not have this function because there is no temperature sensor in the motor, or the protection points are inconsistent due to the different built-in temperature sensor parameters. If motor premature protection, please turn off the temperature protection function.)

12. Turbo Timing: This is also the size setting item of the timing. However, this timing is only activated after full throttle started, allowing the motor to achieve faster speeds on long straight tracks.

13. Boost Start RPM: Because the Boost value is dynamically allocated according to the speed, the actual opening value of Boost is when the speed is lower than the start speed, When the speed is between the start speed and the end speed, Boost changes dynamically according to the current speed. If the setting item " Boost varies with RPM " is set to linear, the Boost value is distributed linearly within this range. For example, assuming

that Boost Timing is set to 5 degrees and the starting speed is 10000,the Boost timing values are shown in the table below.If the speed is nigher than the end speed, the actual start value of Boost is the Boost setting value. The stock 0-version changes with the full range of speed 0-64 degrees, 64 (so in the stock version, the timing of ordinary motors is not 0 degrees. If you manually set the boost timing, the motor timing will exceed the limit of 64 degrees. Therefore, you must follow the warning setting showed above).

	MOD Version Demo.											
RPM	<10000	13001-14000	14001-15000	>15000								
oost actual value	0deg.	1deg.	2deg.	3deg.	4deg.	5deg.	5deg.					

14. Full Throttle Delay: It refers to the required time for full throttle to trigger Turbo. When the Turbo trigger mode is selected as "full throttle time" trigger, the turbo can be triggered only after the duration of full throttle reaches this set value.

15. Boost Timing Acceleration: Boost Timing, RPM. Indicates how much speed the motor increases, the ESC will increase by 1 degree Boost Timing accordingly. The lower the value is set, the faster the Boost Timing increment rate of the ESC, the more violent the motor starts, and the higher the temperature of the motor.



Turning on Boost timing and Turbo timing can effectively increase the output power of the motor, which is usually used in competitions. Please check the manual and reference settings carefully in advance, and monitor the temperature of the motor and ESC during the test run, and adjust the appropriate timing setting and final gear ratio. Excessive timing setting and final gear ratio will cause the ESC or motor burn. The following table lists the recommended Boost and Turbo timing ranges for various motor turns.

	MOD Version Demo.										
Motor Turns	3.5T/4.0T	4.5/5.5T	6.5T/7.5T	8.5T/9.5T	10.5T/11.5T	≥13.5T					
Max. Boost Timing	0 deg.	0 deg.	5 deg.	10 deg.	16 deg.	16 deg.					
Max. Turbo Timing	5 deg.	10 deg.	10 deg.	15 deg.	20 deg.	20 deg.					

Because the greater the timing, the greater the power of the motor, but the higher the heat generation of the motor. If you turn on too much timing at a lower speed, the motor will heat up severely and even burn the motor. Therefore, we adopted a dynamic timing method. At low speeds, a smaller timing is turned on. After the speed is increased, the timing will increase with the increase of the speed. By adjusting the initial speed and the acceleration of the timing, it can be realized that during the motor operation, the low speed corresponds to the low timing, and the high speed corresponds to the high timing.

### **STOCK Version Demo.**

The Timing(degree) in the table refers to item 9 in the programming parameter table. ( Normal motors with non-mechanically adjustable 0 timing must have Boost timing set to 0 degrees, and the ESC will automatically increase the timing following the motor speed.)

Correspondence table of speed and timing

Initial RPM=4000 Timing=200/deg.		Dino2 Initial RPM=9000 Timing=200/deg.		DiffO <sup>1</sup> Initial RPM=4000 Timing=200/deg.		Difflo 2 Initial RPM=9000 Timing=200/deg.		
RPM	The Timing(deg.)	RPM	The Timing(deg.)	RPM	The Timing(deg.)	RPM	The Timing(deg.)	
<4000	0	<9000	0	8800	24	18600	24	
4200	1	9400	1	9000	25	19000	25	
4400	2	9800	2	9200	26	19400	26	
4600	3	10200	3	9400	27	19800	27	
4800	4	10600	4	9600	28	20200	28	
5000	5	11000	5	9800	29	20600	29	
5200	6	11400	6	10000	30	21000	30	
5400	7	11800	7	10200	31	21400	31	
5600	8	12200	8	10400	32	21800	32	
5800	9	12600	9	10600	33	22200	33	
6000	10	13000	10	10800	34	22600	34	
6200	11	13400	11	11000	35	23000	35	
6400	12	13800	12	11200	36	23400	36	
6600	13	14200	13	11400	37	23800	37	
6800	14	14600	14	11600	38	24200	38	
7000	15	15000	15	11800	39	24600	39	
7200	16	15400	16	12000	40	25000	40	
7400	17	15800	17	12200	41	25400	41	
7600	18	16200	18	12400	42	25800	42	
7800	19	16600	19	12600	43	26200	43	
8000	20	17000	20	12800	44	26600	44	
8200	21	17400	21	13000	45	27000	45	
8400	22	17800	22	13200	46	27400	46	
8600	23	18200	23	13400	47	27800	47	

Please Note: For example, it is only set to 20 degrees if the set Boost timing is not the maximum, then when the speed is greater than the speed corresponding to the 20 degrees timing, the timing is still 20 degrees.

MOD Version Power Demo.							
Turns	KV	FDR (1/10 Touring)	FDR (1/10 Off-road)	Application			
3.5T	9100KV	9.0 - 11.0		1/10 Touring Competition			
4.5T	7300KV	8.4 - 10.0	<u> </u>	Daily Practice			
5.5T	6000KV	8.0 - 9.4	9.5 - 11.0	1/10 Touring 、Off-road			
6.5T	5200KV	7.4 - 8.4	9.0 - 11.0	Competition、Daily Practice			
8.5T	4000KV	6.0 - 7.0	8.0 - 9.6	1			
10.5T	3300KV	5.0 - 6.0	7.0 - 8.5	1/10 Touring、			
11.5T	3000KV	4.5 - 5.5	6.5 - 8.0	Off-road STOCK Competition、			
13.5T	2500KV	4.0 - 5.0	6.5 - 7.5	Daily Practice			
17.5T	1900KV	3.8 - 4.5	5.5 - 7.0				
21.5T	1600KV			Also apply to 1/10 Drift car、 F1、 M car etc.			

1. Reference FDR: Both are the final gear ratio (FDR) of 1/10 car model under 2S lithium battery.

2. The program uses zero timing, and Boost and Turbo timing are not turned on. When the Boost and Turbo timing are turned on, the gear ratio generally needs to be increased accordingly.

### STOCK Version Power Demo

(2S Lipo , Motor Timing is 0 - 5 Deg. ( Endbell Timing ) ( Normal motors with non-mechanically adjustable 0 timing must have Boost timing set to 0 degrees, and the ESC will automatically increase

the timing following the motor speed. )

Car Type	Motor Turns	FDR	# 9	# 10	# 11	# 12	# 13	# 14
			Boost Timing	Turbo Ramp	Turbo Timing	Boost Start RPM	Turbo Delay	Timing AC
	11.5T	6.0-7.0	34°-42°	18°/0.1s	16°-26°	4000	0.4s	300-450
1:10 Touring	13.5T	5.0-7.0	34°-50°	18°/0.1s	20°-30°	3000	0.4s	200-300
	17.5T	5.0-7.0	34°-55°	18°/0.1s	20°-30°	3000	0.2s	150-300
1: 10 off-road	11.5T	7.5-9.5	12°	6°/0.1s	4°	6000	Off	400-500
(turbo is not recommended for off-road	13.5T	7.0-9.0	16°	6°/0.1s	8°	5000	Off	200-350
use)	17.5T	7.0-8.5	20°	6°/0.1s	12°	3000	Off	200-350

The size of the gear ratio depends on the specific track conditions. If the track is long straight and there are few corners, the gear ratio can be smaller to get more tail speed; if the track is short, the gear ratio should be larger to get more acceleration and make the cornering speed faster