



ALTUS X60 Duo

The ALTUS Duo is the world’s safest and most powerful co-axial UAV propulsion system, designed specifically for 30kg octocopters with 12S batteries and 28” or 30” propellers. Designed with IP-55 rating, 1000h lifetime and the ability to land the drone safely in the unlikely event of motor failure, even at an ambient temperature of 40 degrees Celsius and 42V, ALTUS Duo is the natural choice for safety critical missions.

The propulsion system consists of Alva’s FiberPrinted™ X60 motors, VESC based Alva ESCs and propellers developed in conjunction with Mejzlik Propellers s.r.o.

ALTUS X60 Duo



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System data			
MTOW – Octocopter	30 kg	Dependent on configuration & safety-factor	
Continuous thrust	12.2 kg	At 20°C & 44VDC (30")	
Peak thrust	19.2 kg	At 20°C & VDC (30")	
Thrust ratio	2.56	At 30kg MTOW	
Throttle input	UAVCAN, PPM		
Telemetry output	UAVCAN	RPM, Temp, Voltage, Current, Error msg	
Motor	2 x X60-Kv120		
Propeller	2 x Alva-Mejzlik 30"		
ESC	2 x Alva ESC-12S		FOC commutation
Nominal voltage*	44.4 V (12S)		Also available as 16S
Drone Arm Diameter	Round: 30 mm, 40mm Octagonal: 25x38mm(RJX)		
System mass	30mm: 1376g	40mm: 1396g	25x38mm: 1358g
P/N	30mm: 105292-03	40mm: 105292-04	25x38mm: 105292-02

System performance		
Hover thrust	7.5 kg	7.4 g/W
Continuous thrust	12.2 kg	5.5 g/W
Peak thrust	19.2 kg	4.0 g/W
<i>At 40°C & 44VDC, higher thrust levels can be reached with lower ambient temperature and higher voltage.</i>		

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Motor data		
Motor	X60-Kv120	
Ambient operating temp	Min: -15°C Max: +40°C	Dependent on configuration & safety-factor
IP rating	IP-55	Protected against dust and rain.
Design Life	1000h	
Winding connection	Wye	
Stator/Rotor Poles	34	
Voltage Constant*	8.02 V/kRPM	Peak line-line back-EMF
Speed Constant(Kv)*	124.7 rpm/V	
Torque Constant*	93.2 mNm/A _{RMS}	Sinusoidal current (FOC drive)
No-load speed	5536 RPM	
No-load current	542.5 mA _{RMS}	Sinusoidal current (FOC drive)
Line-to-line Inductance	9.05 µH	
Line-to-line Resistance*	154.2 mΩ	
P/N	104306	

**Provided values are based on simulation, under assumption of 20 C magnet and winding temperature. Actual values depend on operating conditions and load cycle.*

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ALTUS X60 Duo - 28"							
X60-Kv120		Alva-Mejzlik 28"			Co-axial		
@44.4VDC & 20°C							
Duty cycle (%)	Thrust (g)	Torque (Nm)	Speed (RPM)	Battery current (A)	Power (W)	Efficiency (g/W)	
40	3706	0.7	2019	8.4	374	9.9	Continuous
45	4604	0.9	2239	11.5	509	9.0	
50	5601	1.1	2459	15.2	677	8.3	
55	6670	1.3	2672	19.7	876	7.6	
60	7789	1.5	2875	24.9	1106	7.0	
65	8952	1.8	3071	30.8	1370	6.5	
70	10143	2.0	3257	37.5	1667	6.1	
75	11324	2.2	3428	44.9	1995	5.7	
80	12468	2.4	3584	52.9	2349	5.3	
85	13562	2.6	3726	61.5	2731	5.0	
90	14562	2.8	3846	70.6	3134	4.6	
95	15626	3.0	3985	80.3	3565	4.4	
100	16638	3.2	4114	89.1	3954	4.2	

Co-axial performance is highly dependent on setup and operation conditions, data provided should only be used as reference values

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ALTUS X60 Duo – 30"

X60-Kv120	Alva-Mejzlik 30"	Co-axial
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@44.4VDC & 20°C

Duty cycle (%)	Thrust (g)	Torque (Nm)	Speed (RPM)	Battery current (A)	Power (W)	Efficiency (g/W)	
40	4266	0.86	1981	9.8	437	9.8	Continuous
45	5249	1.06	2193	13.3	592	8.9	
50	6328	1.28	2404	17.6	783	8.1	
55	7455	1.51	2604	22.6	1004	7.4	
60	8633	1.75	2797	28.4	1262	6.8	
65	9823	1.98	2976	34.9	1551	6.3	
70	11010	2.22	3145	42.1	1871	5.9	
75	12158	2.44	3296	50.0	2221	5.5	
80	13228	2.64	3430	58.4	2591	5.1	Transient
85	14198	2.82	3544	67.1	2980	4.8	
90	15271	3.05	3682	76.8	3410	4.5	
95	16548	3.32	3838	87.7	3893	4.3	
100	17625	3.53	3957	97.1	4313	4.1	

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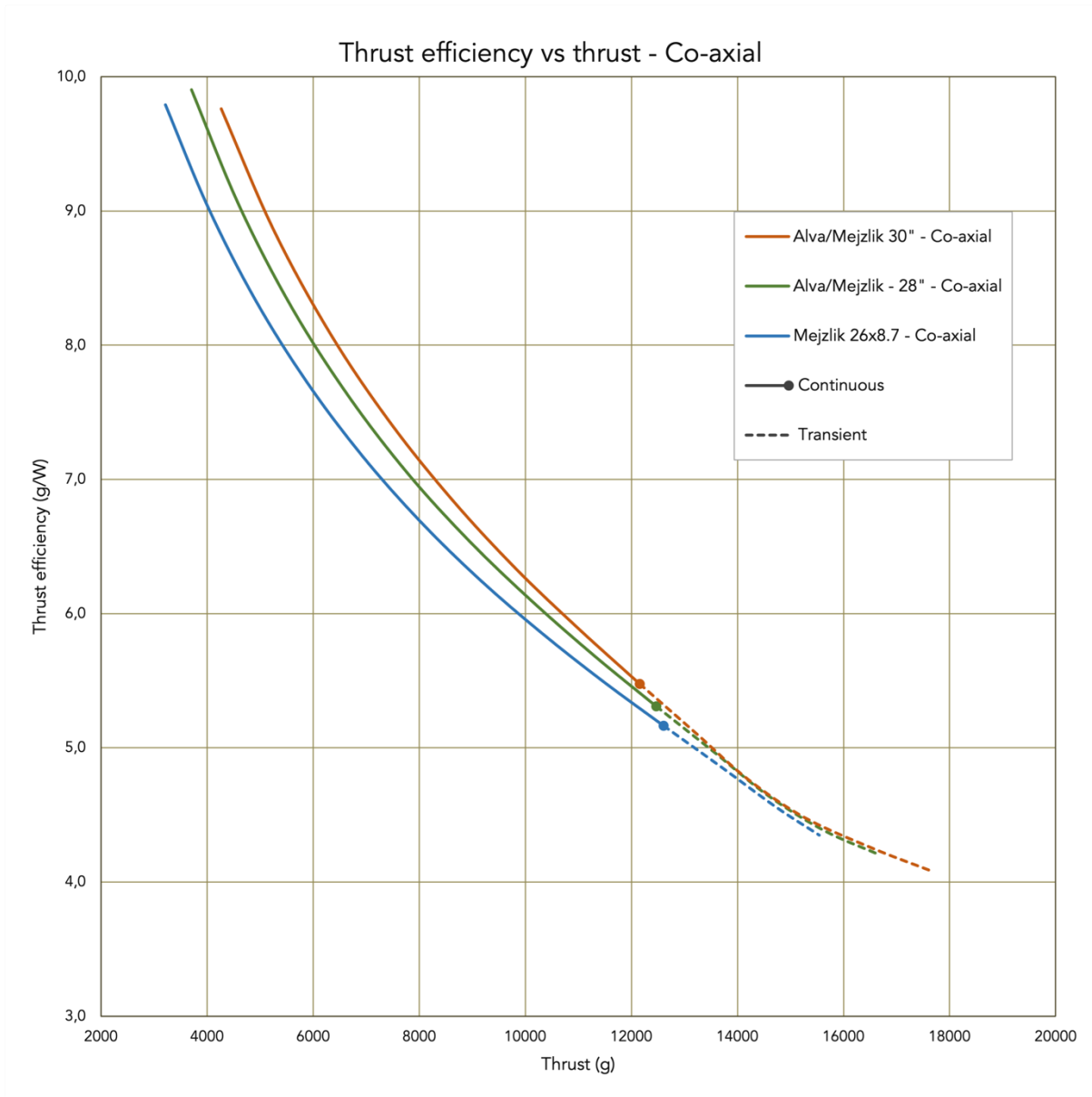
Alternative propeller configuration

X60-Kv120	Mejzlik 26x8.7	Co-axial
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@44.4VDC & 20°C

Duty cycle (%)	Thrust (g)	Torque (Nm)	Speed (RPM)	Battery current (A)	Power (W)	Efficiency (g/W)	
40	3214	0.63	2048	7.4	328	9.8	Continuous
45	4017	0.78	2276	10.0	445	9.0	
50	4914	0.95	2503	13.3	590	8.3	
55	5885	1.13	2726	17.2	762	7.7	
60	6924	1.33	2943	21.7	965	7.2	
65	8009	1.53	3151	27.0	1197	6.7	
70	9139	1.74	3353	32.9	1461	6.3	
75	10302	1.96	3546	39.6	1759	5.9	
80	11462	2.17	3725	47.0	2085	5.5	Transient
85	12609	2.38	3893	55.0	2442	5.2	
90	13710	2.58	4043	63.6	2826	4.9	
95	14722	2.76	4174	72.7	3229	4.6	
100	15540	2.91	4282	80.5	3574	4.3	

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