KURCHS

COMMERCIAL UAV PROPULSION

4720 420KV

Heavy-lift propulsion for 13-18" logistics and emergency-response platforms.

Measured thrust, electrical load and efficiency are presented from the supplied dynamometer files, with the installation data needed for engineering review.

12N14P | 310 g | 14S



MAXIMUM THRUST	PEAK EFFICIENCY	BATTERY CONFIGURATION	MOTOR MASS
7,560 g	**6.82 g/W**	**14S**	**310 g**
100% throttle / 1507	40% throttle	3.00A	Ø55×68.5mm

Values are based on supplied dynamometer files. Aircraft results vary with propeller, battery, ESC and airframe configuration.

PRODUCT SPECIFICATIONS

The essential numbers, in one place.

SELECTED CONFIGURATION

12N14P / 420KV

2 KV profiles available in the supplied data set.



MAXIMUM TEST POWER

3,120 W

Measured test value for this configuration.

MAXIMUM CURRENT

89.23 A

Recorded in the supplied test data.

MOTOR MODEL	Kurchs 4720	CONFIGURATION	12N14P
KV	420KV	BATTERY CONFIGURATION	14S
MAX POWER	3,120 W	MAX CURRENT	89.23A
MOTOR DIMENSIONS	Ø55×68.5mm	WEIGHT	310 g
RECOMMENDED PROPELLER	1507 / 1310	NO-LOAD CURRENT	3.00A
PHASE RESISTANCE	35.2 mOhm	SHAFT	Ø6mm

Basic values use the supplied product specification. Performance data is kept separate and reflects the listed test propeller and throttle range.

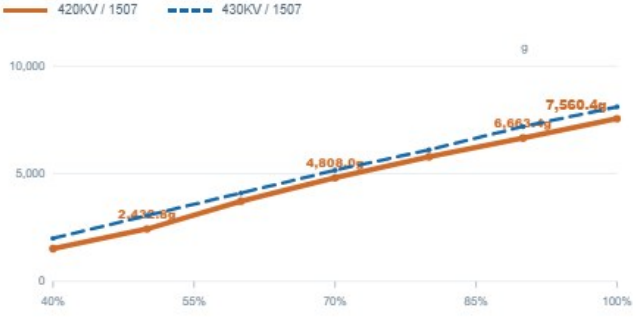
MEASURED PERFORMANCE

Thrust and efficiency across every KV.

COMPARED PROFILES	DATA MODE	THROTTLE RANGE
2	KV	40-100%

Thrust comparison

Each curve uses the test propeller listed in the legend.

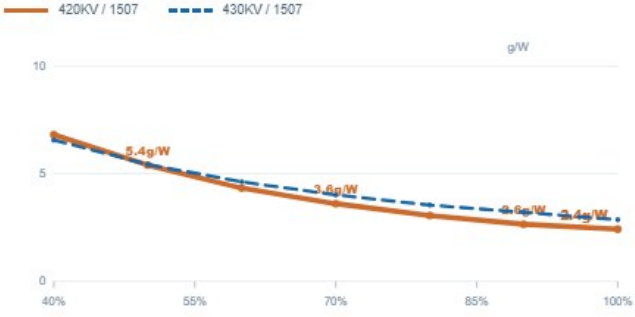


420KV / 1507 max: 7,560.35 g

430KV / 1507 max: 8,111.27 g

Efficiency comparison

Peak values are taken directly from the supplied test rows.

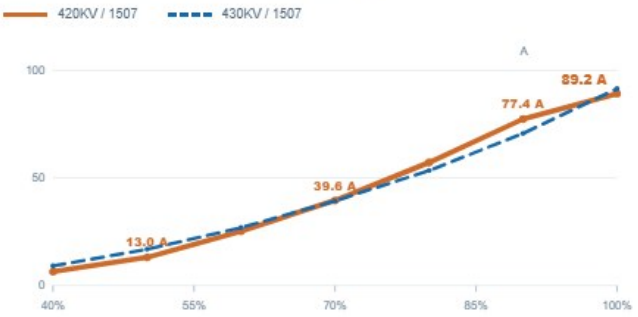


420KV / 1507 peak: 6.82 g/W

430KV / 1507 peak: 6.57 g/W

Current comparison

Measured current draw through the supplied throttle range.

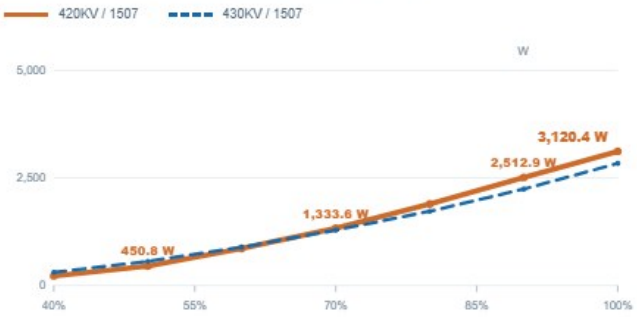


420KV / 1507 max: 89.23 A

430KV / 1507 max: 91.49 A

Power comparison

Measured input power stays aligned with each plotted test point.



420KV / 1507 max: 3,120.37 W

430KV / 1507 max: 2,836.98 W

KV SELECTION MATRIX

One platform. 2 working profiles.

420KV

SELECTED

1507

MAX THRUST
7,560 g

PEAK EFFICIENCY
6.82 g/W

MAX CURRENT
89.2 A

TEST PROPELLER
1507

MEASURED RANGE
40%-100%

430KV

1507

MAX THRUST
8,111 g

PEAK EFFICIENCY
6.57 g/W

MAX CURRENT
91.5 A

TEST PROPELLER
1507

MEASURED RANGE
40%-100%

KV / Test	Throttle	Voltage	Current	Thrust	RPM	Power	Efficiency
420KV 1507	50%	34.56 V	13.04 A	2,433 g	4,719	450.77 W	5.40 g/W
	70%	33.71 V	39.56 A	4,808 g	6,633	1,333.60 W	3.61 g/W
	90%	32.48 V	77.37 A	6,663 g	7,801	2,512.88 W	2.65 g/W
	100% - PEAK	34.97 V	89.23 A	7,560 g	8,235	3,120.37 W	2.42 g/W
430KV 1507	50%	33.40 V	16.82 A	3,052 g	6,001	561.79 W	5.43 g/W
	70%	32.71 V	39.31 A	5,165 g	7,974	1,285.83 W	4.02 g/W
	90%	31.72 V	70.67 A	7,193 g	9,486	2,241.75 W	3.21 g/W
	100% - PEAK	31.01 V	91.49 A	8,111 g	10,198	2,836.98 W	2.86 g/W

Representative points: each row is an actual measured point from the supplied test file.

Missing values: blank entries remain blank; no data is interpolated.

ENGINEERING ANSWERS

Designed around real operating conditions.

POWER DEVELOPMENT

89.2 A measured peak

Power draw increases through the measured throttle range. The curve below keeps electrical load visible instead of reducing the product to one maximum figure.



PEAK EFFICIENCY	PEAK POWER
6.82 g/W	3,120 W

01

THERMAL DESIGN

Class H winding supports sustained output.

High slot-fill copper and controlled winding resistance reduce avoidable heat build-up during longer missions.

Peak efficiency: 6.82 g/W at 40%.

02

ROTATING STABILITY

Balanced construction supports smooth RPM.

The rotor assembly and matched bearings are designed to keep rotation stable through changing throttle demand.

Measured range: 40%-100%.

03

CURRENT DELIVERY

Electrical data is shown with the thrust data.

Voltage, current and power remain visible alongside thrust so buyers can check the complete power path.

Maximum recorded current: 89.23 A.

04

EFFICIENCY AT THE PEAK

Maximum output comes with a different efficiency point.

The page separates the highest efficiency point from the highest throttle point instead of presenting only the peak thrust value.

Highest throttle point: 100% · 2.42 g/W.

STRUCTURE AND FIT

Every layer has a functional role.



01 / ROTOR

CNC Rotor Bell and Top Plate

Machined aluminum rotor construction with controlled balance.

02 / STATOR

Stator and Magnets

Class H copper winding paired with high-flux curved magnets.

03 / BASE

Machined Base Flange

Mounting interface for repeatable alignment and installation.

04 / BEARING

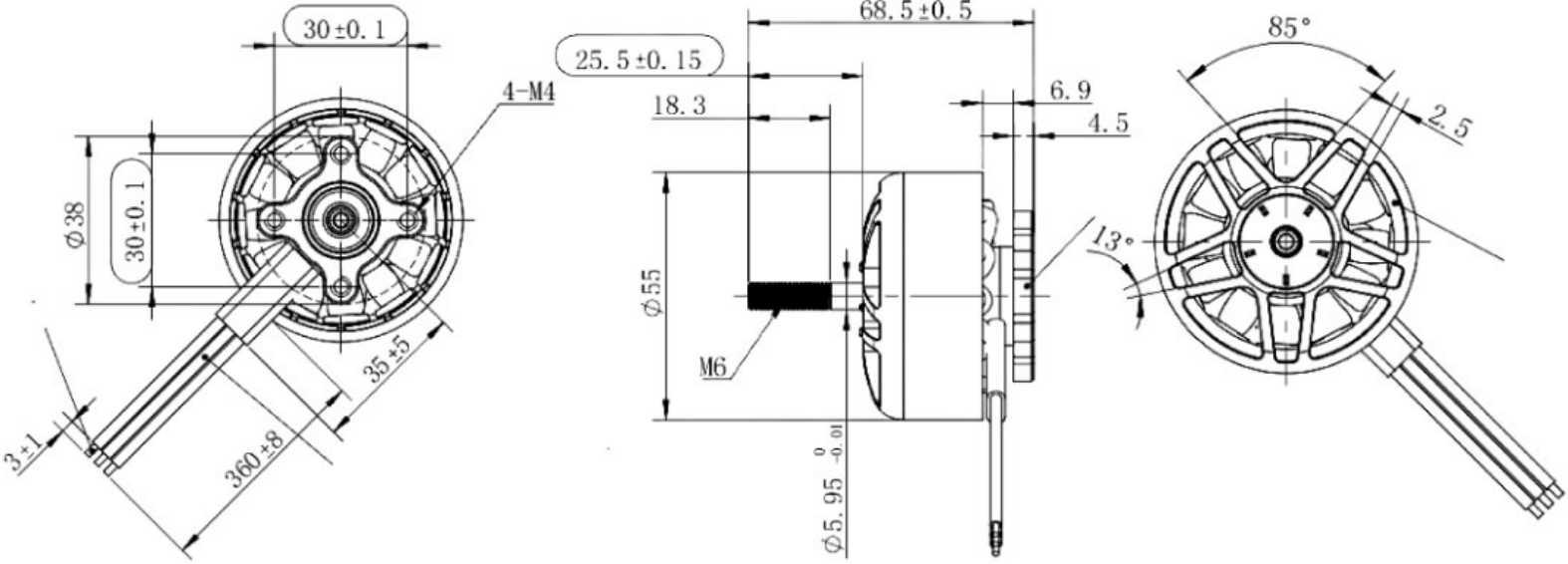
Precision Bearing Stack

Low-friction bearing support for stable shaft rotation.

05 / FASTENER

High-Strength Fastener

Reliable clamping for the rotating assembly.



BODY SIZE	WEIGHT	MOUNT
Ø55×68.5mm	**310 g**	**See dimensional drawing**

COMPONENT CLOSE-UPS

The motor is the sum of its interfaces.



01 / WINDING

Class H Copper Stator

High slot-fill winding for stable electrical and thermal behavior.



02 / STRUCTURE

CNC Rotor Bell

Machined aluminum structure with balance control.



03 / MAGNETISM

Curved Rotor Magnets

High-flux magnets support torque and magnetic efficiency.



04 / ROTATION

Precision Bearings

Low-friction support for smooth high-speed rotation.



05 / INSTALLATION

CNC Base Flange

Stable mounting geometry for repeatable airframe installation.



06 / FASTENING

High-Strength Fastener

Reliable clamping for rotor-stack alignment.



COMPANY PROFILE

Who We Are

Kurchs is a professional manufacturer of drone brushless motors, integrating R&D, precision machining, assembly and testing. Focused on the power motor industry, we continuously improve product quality with a full in-house production chain from component machining to finished motor delivery.

Our factory covers brushless motor production, CNC machining, wire harness and injection molding, supporting stable supply for global commercial and industrial UAV customers.

R&D & Design | Precision Machining | Assembly & Testing | OEM / ODM

OEM / ODM CUSTOMIZATION

Adapt the platform to your airframe.

Available engineering scope

Motor configuration	12N14P / 420KV selected configuration.
Propeller pairing	1507 / 1310
Mounting	Review the supplied dimensional drawing for interface details.
Electrical system	14S · 3.00A
Engineering files	Dyno report and STEP / IGES files available on request.

5-stage engineering workflow

01 Requirements confirmation
Airframe, propeller, voltage and target thrust are defined.

02 Drawing and materials
Mechanical interface and material requirements are reviewed.

03 Sample making
Evaluation samples are prepared for fit and performance testing.

04 Dyno verification
Thrust, current, RPM, power and efficiency are checked.

05 Batch production
Approved specifications move into scheduled production.

QUALIFICATION AND DELIVERY

Compliance and shipping without guesswork.



CE / EMC



CE / LVD



RoHS

Certificate documents are available for destination-specific compliance review.



Air Freight and Express

Prototype and urgent-order delivery via international express or air freight.



Ocean Freight

FCL or LCL planning for volume production orders.



Land and Railway

Cross-border multimodal delivery where the route is available.

SOURCING QUESTIONS

The final checks before sampling.

Which propeller and battery should I pair with 420KV?

The tested setup uses 1507 / 1310 with 14S. Final choice depends on airframe weight, target thrust and flight time.

Are other KV versions shown?

430KV

What data is shown for this model?

The table lists measured voltage, current, thrust, RPM, power, efficiency and temperature where the supplied data records those fields.

What is the test range?

The selected configuration is plotted from 40% to 100% throttle. No missing points are interpolated or invented.

What sample and engineering files are available?

Evaluation samples are planned at 5-7 business days. Dyno data and STEP / IGES files are available within 24 hours after confirmation.

What is the OEM / ODM MOQ?

Evaluation samples are available from 1-4 units. Custom OEM / ODM production starts at 50 units.