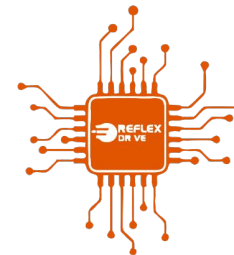
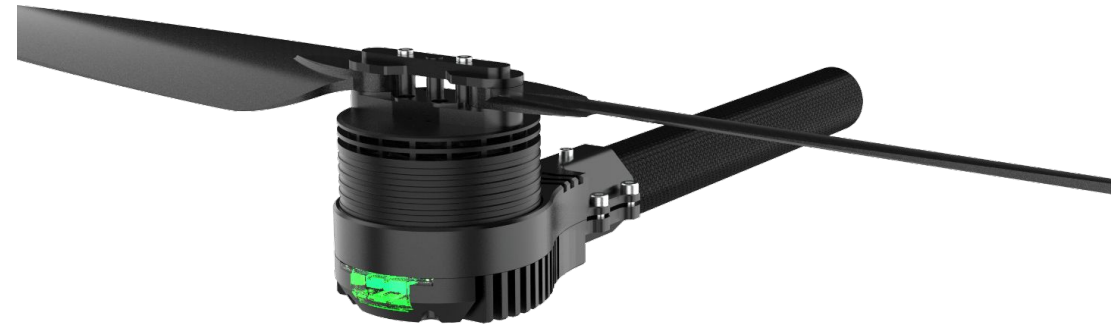
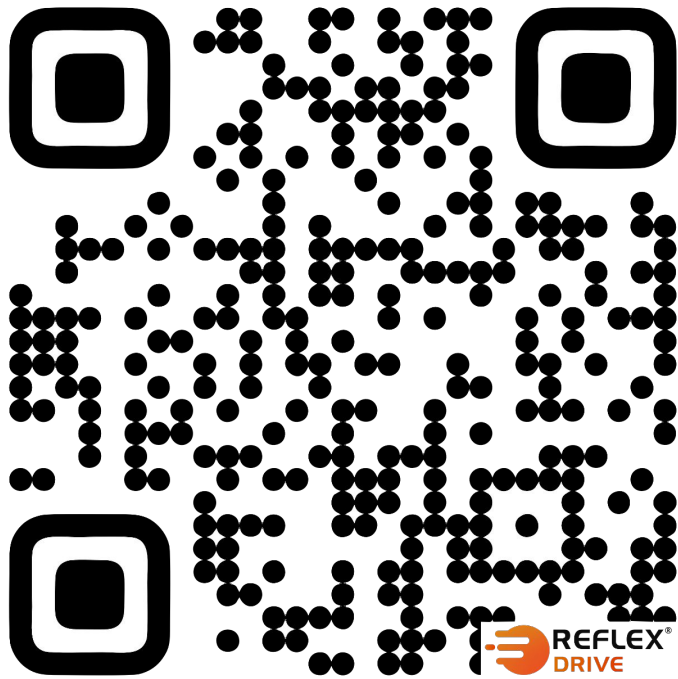




MADE IN INDIA 

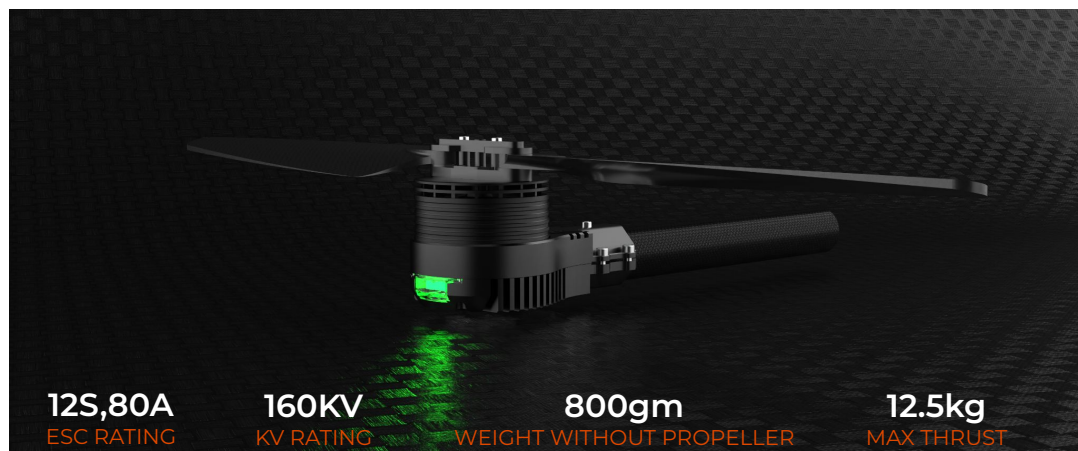
INTEGRATED PROPULSION UNIT R6 IPU_(V4)



FOC
Field oriented control



JSS 55555 Certified



12S,80A
ESC RATING

160KV
KV RATING

800gm
WEIGHT WITHOUT PROPELLER

12.5kg
MAX THRUST

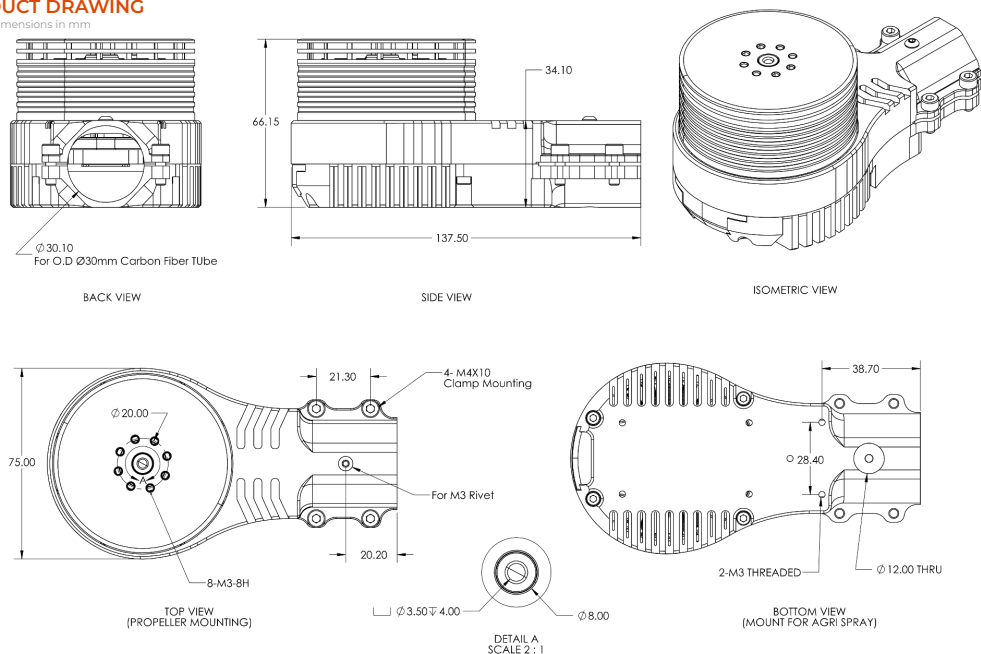
R6 IPU

INTEGRATED PROPULSION UNIT

- R6 IPU is a high-performance Integrated Propulsion Unit (IPU) specifically designed for drone applications.
- This all-in-one solution features a fully enclosed Electronic Speed Controller (ESC), ensuring optimal protection and reliability in demanding environments.
- The R6 IPU combines advanced propulsion technology with robust design, making it ideal for precision surveillance, payload, agriculture, crop monitoring, and spraying tasks.

PRODUCT DRAWING

Note: All dimensions in mm



BASIC PARAMETER

Product name	R6 IPU	ESC	FOC 80A V4
Country of Origin	India	Power Leads (AWG & Length)	12AWG, 200°C & 1 mtr.
Throttle signal frequency	50-450Hz	ESC Signal Control lead	22 AWG, 2-wire JR (W-B)
Weight (without propeller)	800gm	ESC Telemetry lead	22 AWG, 2-wire JR (R-B)
Total weight (incl. propeller)	910gm	Protection/Warning	Overcurrent Protection
Arm tube dia (OD)	30mm		Over temperature Indication
Maximum Thrust	12.5kg		Low Voltage Protection
Recommended take-off weight	3.5-5.5kg/rotor (48V sea level)		Throttle Loss Protection
Max. Power	2400W		Stall Protection
operating Temperature	-20~50°C	MOTOR	RD6218
Compliant	IPC Class 2	Motor KV Rating	160KV
Certification	JSS 55555	Stator Poles / Magnet Poles	24/28
	. Mechanical Shock Test	Motor Dimension	Ø70mm x 38.85mm
	. Random Vibration Test	Recommended Propeller	RD 2480
	. Resonance Search Test	Safe Operating Notes	
	. Sinusoidal Vibration Test	1. Ensure adequate air flow for ESC and motor cooling during continuous high-load operation.	
ESC	FOC 80A V4	2. Actual Performance may vary depending on altitude, ambient temperature, air density, propeller type, air flow conditions, and installation configuration.	
Voltage Range	6S-12S (24V-58V) LiPo	3. Do not exceed rated voltage, current, and throttle limits. Exceeding limits may cause overheating or permanent damage.	
Max. Input Current	80A (180 sec) with airflow	4. It is recommended to maintain a 20-30% safety margin below maximum tested values for reliable long term operation.	
PWM Range	1050-1950us (fixed or can't be programmed)	5. Ensure all electrical connections (battery, motor, and signal wires) are properly secured and insulated. Loose or poor connections may cause voltage fluctuations, overheating, or malfunction of the ESC.	
BEC	No		
PWM Inout Signal	3.3V-5V		
Communication Protocol	PWM, CAN (1Mbps-Fixed)		
Telemetry (over CAN)	Voltage, Current, Temperature, Motor RPM, Fault status		

TEST DATA												
Product	ESC	Throttle %	Servo	Power (W)	Current (A)	RPM	Thrust (g)	Efficiency (g/w)	Heat sink Temperature	Motor coil Temperature		
R6 IPU	FOC 80A_V4	1050		0.0	0.0	0	0	0.00	33.5°C	33.6°C		
		0.0%	1100	0.0	0.0	501	64	0.00	33.7°C	33.4°C		
		6.3%	1150	0.0	0.0	501	68	0.00	33.7°C	33.4°C		
		12.5%	1200	5.3	0.1	621	113	21.32	33.7°C	33.3°C		
		18.8%	1250	10.8	0.2	971	326	30.19	33.7°C	33.1°C		
		25.0%	1300	35.8	0.7	1333	686	19.16	33.7°C	33.1°C		
		31.3%	1350	70.0	1.3	1672	1137	16.24	33.6°C	33.0°C		
Motor	Propeller											
RD 6218	RD 2480	37.5%	1400	120.0	2.3	2021	1692	14.10	33.5°C	33.0°C		
		43.8%	1450	194.0	3.7	2371	2396	12.35	33.5°C	33.0°C		
		50.0%	1500	301.0	5.8	2709	3155	10.48	33.4°C	33.2°C		
		56.3%	1550	429.0	8.3	3058	3964	9.24	33.4°C	33.6°C		
		62.5%	1600	578.0	11.2	3415	4967	8.59	33.3°C	34.1°C		
		68.8%	1650	784.0	15.3	3763	6051	7.72	33.3°C	34.5°C		
		75.0%	1700	1016.0	19.9	4116	7227	7.11	33.4°C	35.6°C		
Power Source	KV	81.3%	1750	1321.0	26.2	4459	8473	6.41	33.5°C	37.8°C		
		87.5%	1800	1657.0	33.0	4817	9775	5.90	33.7°C	38.9°C		
		93.8%	1850	2081.0	41.9	5169	11089	5.33	33.9°C	41.4°C		
		100.0%	1900	2651.0	54.0	5556	12592	4.75	34.1°C	44.3°C		
		1950	2610.0	53.2	5546	12574	4.82	34.7°C	53.0°C			
		AFTER TURN OFF POWER SUPPLY									39°C	85.5°C

The above test has been performed at an altitude of 123 m above from sea level. The ambient temperature was 35°C

DESCRIPTION OF LIGHT COLOR STATUS

Flashing of LED	Indication	Recommended Action
1 short flash	Over-Voltage detected	Change the battery (Ensure voltage is below 63V).
2 short flash	Under-Voltage detected	Replace or change the battery (Ensure voltage is above 18V).
1 long flash	Throttle signal lost	Verify signal wire connection to the flight controller. . Ensure remote controller and flight controller are powered on. . Check the resistance of the black and white wires, if short circuit is found, contact the after-sales support
1 long flash + 1 short flash	Throttle not at to zero position	Occurs during motor rotation. . Inspect aircraft battery and wiring. . Check for any short circuit in the system.
1 long flash + 2 short flash	Mosfet temperature is too high (above 110°C).	Allow the power system cool completely, then restart.
2 long flash + 1 short flash	ESC short-circuit	Inspect motor condition carefully, contact after sales service if issue continuous.
1 long flash + 4 short flash	Stall protection activated	Check motor for foreign objects and remove them before operation.

NOTE: LED color is configurable through CAN as per given list.

 GREEN
  RED
  BLUE
  WHITE
  YELLOW
  Purple
  CYAN
  LED OFF

DESCRIPTION OF WARNING TONE

Trouble	Warning Tone	Possible cause	Solution
ESC can not start the motor	" Beep-beep-beep...." (rapid beeping)	The throttle stick is not at the lowest position or the throttle range setting is too small.	Move the throttle stick to the lowest position or re-calibrate the throttle range
ESC can not start the moto	" Beep....Beep.....Beep...." (2-second interval)	No output signal from the throttle channel of the receiver.	Check whether the transmitter and receiver are properly bound. Also check the throttle wire is correctly connected to the receiver channel.

PROTECTION FUNCTION DESCRIPTION

- Stall Protection: Shuts down output if the motor stalls. After 3 retries, a fault is reported; after 6 trips, output is disabled. Power cycle to restart.
- Overcurrent Protection: Handles currents above 120 A for up to 4 fault cycles. Persistent overcurrent shuts down the output. Power cycle to restore.
- Temperature Warning: Warning is sent via CAN above 110°C. Reduce throttle immediately to prevent damage.
- Low/High Voltage Protection: Active only at startup. During operation, voltage below 20 V or above 67 V may cause malfunction.
- Throttle Signal Loss Protection: Switches to backup throttle if available. Otherwise, uses the last command for up to 2 seconds, then shuts down. Normal operation resumes automatically when the signal returns.

Pinout Diagram

