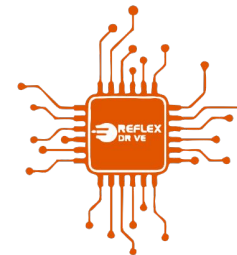
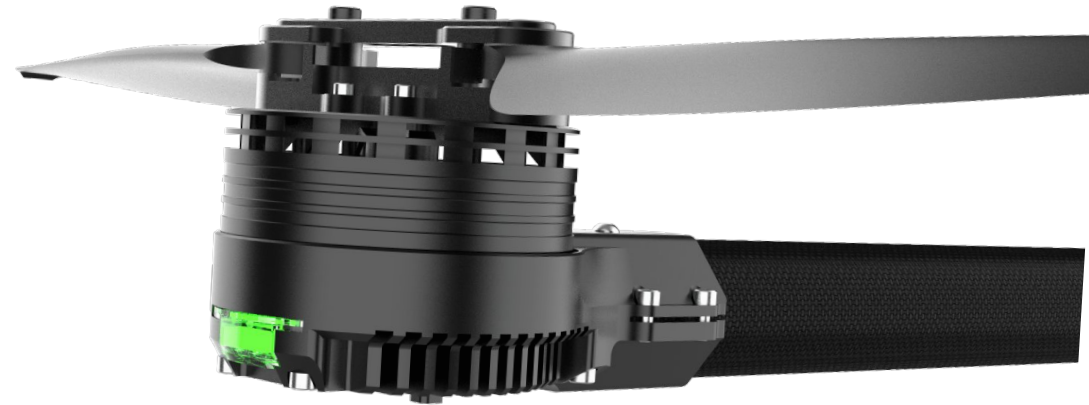
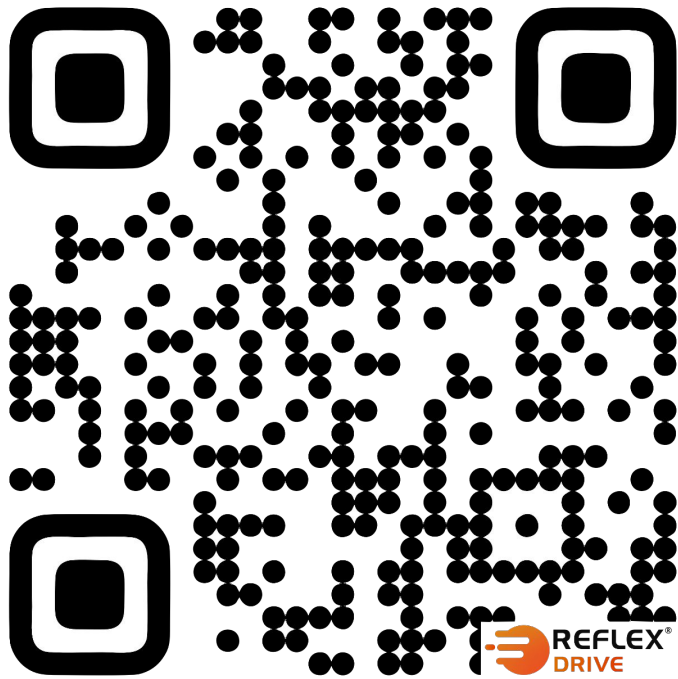




MADE IN INDIA 

## INTEGRATED PROPULSION UNIT R8 IPU



**FOC**  
Field oriented control



JSS 55555 Certified



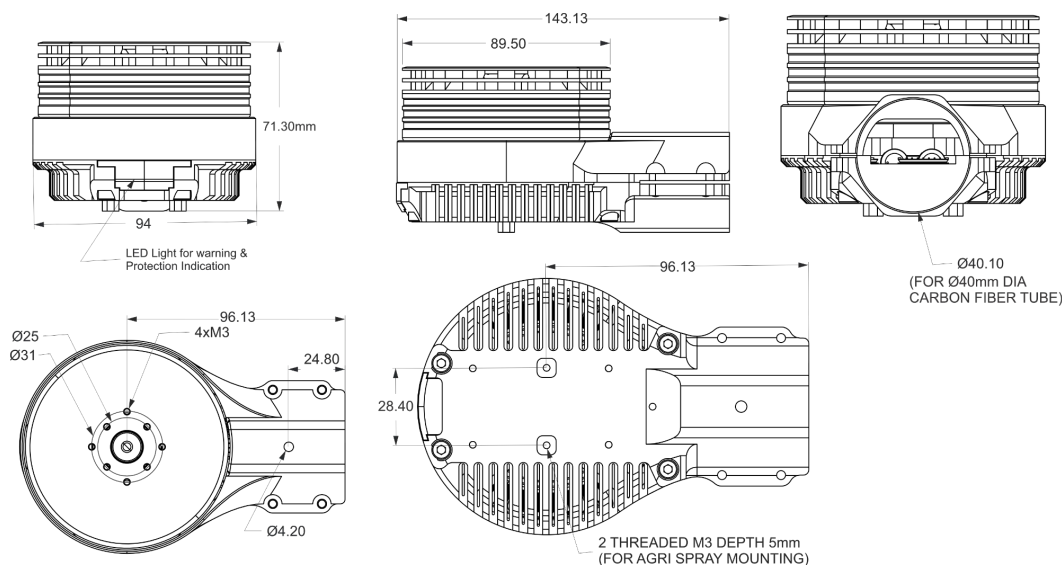
## R8 IPU

INTEGRATED PROPULSION UNIT

- R8 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 R8 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                  |                                                        | R8 IPU | ESC                                                                                                                                                                                                          | FOC 80A V4.2                |
|-------------------------------|--------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| 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)    | 920 gm                                                 |        | ESC Telemetry lead                                                                                                                                                                                           | 22 AWG, 2-wire JR (R-B)     |
| Total weight (incl.propeller) | 1200 gm                                                |        | Protection/Warning                                                                                                                                                                                           | Overcurrent Protection      |
| Arm tube dia (OD)             | 40 mm                                                  |        |                                                                                                                                                                                                              | Over temperature Indication |
| Maximum Thrust                | 14 kg                                                  |        |                                                                                                                                                                                                              | Low Voltage Protection      |
| Recommended take-off weight   | 5.0-7.0kg/rotor (48V sea level)                        |        |                                                                                                                                                                                                              | Throttle Loss Protection    |
| Max. Power                    | 2400W                                                  |        |                                                                                                                                                                                                              | Stall Protection            |
| operating Temperature         | -20~50°C                                               |        | MOTOR                                                                                                                                                                                                        | RD 8015                     |
| Compliant                     | IPC Class 2                                            |        | Motor KV Rating                                                                                                                                                                                              | 115KV                       |
| Certification                 | JSS 55555                                              |        | Stator Poles / Magnet Poles                                                                                                                                                                                  | 36/42                       |
|                               | . Mechanical Shock Test                                |        | Motor Dimension                                                                                                                                                                                              | Ø89.50mm x 38.55mm          |
|                               | . Random Vibration Test                                |        | Recommended Propeller                                                                                                                                                                                        | HW 3011(NEW)                |
|                               | . 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                                           |        | 2.Actual Performance may vary depending on altitude, ambient temperature , air density, propeller type, air flow conditions, and installation configuration.                                                 |                             |
| Voltage Range                 | 6S-14S (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                                               |        |                                                                                                                                                                                                              |                             |
| 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) | Temperature Heat Sink | Temperature Motor Coil |
| R8 IPU                      | FOC 80A_V4.2 |            | 1050  | 0.00      | 0.00        | 0    | 0         | 0.00             | 32.40                 | 33.3°C                 |
|                             |              | 0.00       | 1100  | 7.70      | 0.14        | 498  | 163       | 21.17            | 32.40°C               | 33.3°C                 |
|                             |              | 6.30       | 1150  | 7.80      | 0.15        | 498  | 166       | 21.28            | 32.40°C               | 33.3°C                 |
|                             |              | 12.50      | 1200  | 9.50      | 0.18        | 576  | 219       | 23.05            | 32.40°C               | 33.3°C                 |
|                             |              | 18.80      | 1250  | 22.90     | 0.44        | 810  | 478       | 20.87            | 32.50°C               | 33.4°C                 |
|                             |              | 25.00      | 1300  | 46.70     | 0.89        | 1050 | 838       | 17.94            | 32.50°C               | 33.5°C                 |
| Motor                       | Propeller    | 31.30      | 1350  | 80.80     | 1.55        | 1284 | 1348      | 16.68            | 32.60°C               | 33.5°C                 |
| RD 8015                     | HW 3011(NEW) | 37.50      | 1400  | 129.70    | 2.49        | 1530 | 1963      | 15.13            | 32.60°C               | 33.7°C                 |
|                             |              | 43.80      | 1450  | 196.00    | 3.77        | 1752 | 2702      | 13.79            | 32.70°C               | 34.0°C                 |
|                             |              | 50.00      | 1500  | 206.00    | 5.53        | 1992 | 3485      | 16.92            | 32.80°C               | 34.5°C                 |
|                             |              | 56.30      | 1550  | 392.00    | 7.60        | 2232 | 4426      | 11.29            | 32.80°C               | 35.0°C                 |
|                             |              | 62.50      | 1600  | 533.00    | 10.37       | 2460 | 5447      | 10.22            | 32.90°C               | 35.6°C                 |
| Power Source                | KV           | 68.80      | 1650  | 727.00    | 14.19       | 2700 | 6648      | 9.14             | 32.90°C               | 36.4°C                 |
| 48V-DC Supply               | 115KV        | 75.00      | 1700  | 926.00    | 18.16       | 2934 | 7707      | 8.32             | 33.0°C                | 37.6°C                 |
|                             |              | 81.30      | 1750  | 1177.00   | 23.34       | 3124 | 9127      | 7.75             | 33.20°C               | 39.2°C                 |
|                             |              | 87.50      | 1800  | 1481.00   | 29.46       | 3414 | 10595     | 7.15             | 33.40°C               | 40.5°C                 |
|                             |              | 93.80      | 1500  | 1857.00   | 37.16       | 3642 | 12147     | 6.54             | 33.60°C               | 43.7°C                 |
|                             |              | 100.00     | 1900  | 2343.00   | 47.53       | 3872 | 13934     | 5.95             | 33.70°C               | 47.1°C                 |
|                             |              |            | 1950  | 2408.00   | 48.99       | 3912 | 14203     | 5.90             | 33.90°C               | 53.0°C                 |
| AFTER TURN OFF POWER SUPPLY |              |            |       |           |             |      |           |                  | 41°C                  | 66.7°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.<br>. Ensure remote controller and flight controller are powered on.<br>. 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.<br>. Inspect aircraft battery and wiring.<br>. 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 motor | “ 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. |

## Pinout Diagram

