

FlyUp ESC-60A 4in1 8S

4-in-1 Electronic Speed Controller — Technical Specification Sheet

// TECHNICAL SPECIFICATIONS

Topology	4-in-1 ESC, 4 independent channels
Processor (per channel)	ARM Cortex-M0 @ 48 MHz (STSPIN32F0A)
Motor Type	Brushless 3-phase (BLDC), sensorless
Continuous Current	60 A per channel
Burst Current (10 s)	80 A per channel
Input Voltage	3S - 8S LiPo (11.1 - 33.6 V)
On-board 3.3 V Rail	600 mA (TPS560430X3F) — internal use only
5 V Output	None — FC must provide its own logic supply
Current Telemetry	Analog 0-3.3 V (INA139, total battery current)
Max. Electrical RPM	240,000 RPM
PWM Frequency	8 kHz - 96 kHz (configurable)
Power Stage IC	STSPIN32F0A — integrated gate driver + MCU (×4)
MOSFETs	24 × HYG009N06NS1C2 (60 V, ≤ 0.9 mΩ, PDFN5×6)
MOS On-resistance	≤ 0.9 mΩ per MOSFET (typ. 0.7 mΩ @ VGS = 10 V)
Idle Current	< 80 mA @ 12 V (board total, 4 channels active)
Protocols	PWM / OneShot / DSHOT150 / DSHOT300 / DSHOT600
Telemetry	UART bidirectional (ESC telemetry) — single shared line
Firmware	AM32 (default) · ESCape32 compatible
Config Interface	ESC Configurator (USB Type-C passthrough or FC passthrough)
Mount	30.5 × 30.5 mm (M3)
Dimensions	≈ 49 × 47 mm
PCB	8-layer, 1 oz outer / 2 oz inner copper, 1.6 mm thickness

Weight	≈ 25 g (without wires)
Op. Temperature	−20 °C to +85 °C
Coating	Polyurethane conformal (IPC-CC-830)

// POWER & PROTECTION

- Over-current: Hardware current limit (RDS(on) sense) + software power cutback
 - Over-temperature: Power reduction at 95 °C · Shutdown at 110 °C (auto-recovery)
 - Low Voltage Cutoff: Configurable per cell, 2.8 V – 3.5 V / cell
 - Signal Loss: Configurable – motor off / active brake / hold last throttle
 - Startup Lock: Arm sequence required – throttle > 5% blocked on boot
 - Reverse Voltage: Protected (TVS diode on VBAT)
 - Desync Protection: Active (DSHOT protocol)
 - Inter-channel Isolation: Each STSPIN32F0A operates independently
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// FIRMWARE

Default Firmware	AM32 v2.18 (open-source)
Alternate	ESCAPE32 (open-source)
Update Method	USB direct · FC passthrough (DSHOT)
Motor Direction	Normal / Reversed (per-channel configurable)
Active Braking	Yes (configurable)
RPM Filter	Yes — bidirectional DSHOT RPM telemetry to FC
Per-channel Tuning	Independent settings per ESC

// COMPATIBLE DEVICES

1. Flight controllers (PWM / DSHOT) – ArduPilot / Betaflight / INAV
 2. FlyUp H743 Max FC (recommended)
 3. Brushless motors 3 – 8S
 4. 5", 6", 7", 8", 10" propeller systems
 5. FPV racing & freestyle quads (heavy / X-Class)
 6. Long-range UAV platforms
 7. Cinematic / cargo / industrial multirotors
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FlyUp ESC-60A 4in1 B Connection Diagram

