

## SAFE ACTIVATION MECHANISM FOR UAV-BASED EXPLOSIVE PAYLOADS IN MILITARY MISSIONS

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This section explores the development of a reliable and safe firing mechanism for explosive payloads deployed by military Unmanned Aerial Vehicles (UAVs). The safe handling and deployment of explosive devices is of paramount importance, both to prevent accidental detonation and to ensure mission success. The proposed firing system integrates advanced safety protocols, whereby the explosive subsystem remains disconnected from any power supply during preparation and mounting. Electrical connections are established only after the UAV is fully assembled and secured for flight. The system is activated remotely through a specialized “arming” command from the control station, at which point it enters standby mode and awaits the final “fire” command. The explosive payload is triggered via an electro-detonator, and the firing circuit includes both electronic hardware and a programmable logic module that ensures accurate and controlled detonation.

Furthermore, the mechanism is designed with a failsafe feature: if the UAV aborts its mission and returns to base, the system automatically disengages from the power source, preventing unintended activation. The integration of intelligent electronics, delayed arming procedures, and automatic deactivation routines ensures both operational effectiveness and personnel safety. This approach supports the broader goal of enhancing the autonomy and tactical applicability of UAV swarms in complex combat scenarios.

### References

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