

Firefly Alpha

Firefly Alpha (Firefly α) is a two-stage orbital expendable launch vehicle developed by the American aerospace company Firefly Aerospace to cover the commercial small satellitelaunch market. Alpha is intended to provide launch options for both full vehicle and ride share customers.

Alpha's first stage is powered by four Reaver 1 LOX / RP-1 engines, delivering 736.1 kN (165,500 lb f) of thrust. The second stage is powered by one Lightning 1 LOX / RP-1 engine, delivering 70.1 kN (15,800 lb f) of thrust. Lightning 1 was test-run for nearly 5 minutes on March 15, 2018 during a long duration test fire. The engine was fired at Firefly's Test Stand 1 in Briggs, Texas.

Alpha is designed to launch a 1,000 kg payload to a 200 km low Earth orbit, or a 600 kg payload to a 500 km Sun-synchronous orbit, suitable for CubeSats and other small payloads. Primary payloads can be integrated by themselves or with a secondary payload, with capacity for up to 6 CubeSats. This allows Firefly's customers to have a dedicated small-satellite launcher, reducing the issues of ride-sharing payloads and secondary payloads. These smaller satellites can have an orbit that is not determined by a larger payload and can launch on their own schedule instead of waiting on the readiness of all other payloads.

In 2015 NASA's Launch Services Program awarded Firefly Aerospace a \$5.5 million Venture Class Launch Services contract to develop Alpha to enable easier access to the small satellite market.

Firefly Aerospace plans to use a Horizontal Integration Facility (HIF) to integrate payloads.

Alpha is also intended to be a direct American competitor in the small satellite market to India's PSLV, as they believe its ride-share capability in the market threatens US domestic launchers.

The first launch of Alpha is currently planned for mid-June 2021, and Firefly aims to have production capacity to support the launch of two Alpha vehicles per month by the first quarter of 2021.

Height	29 m (95 ft)
Diameter	1.82 m (6 ft 0 in)
Mass	54,000 kg (119,000 lb)
Stages	2



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