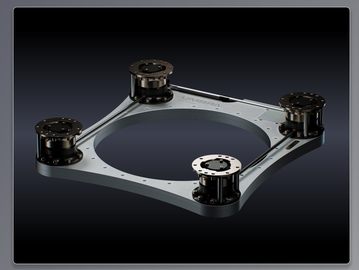
SYNCRELEASE 4

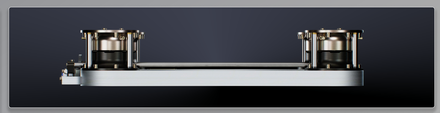
UMBRA

THE UMBRA SYNCHRONIZED RELEASE MECHANISM 4 is a spacecraft separation system designed for precise and controlled deployment from a launch vehicle. The Umbra SyncRelease 4 is engineered for small satellites to ensure low-shock, debris-free separation. Optimized for SpaceX Falcon 9 Rideshare missions, Umbra SyncRelease 4 presents a reliable integration for its associated payload and surrounding mission assets. This lightweight, all-inclusive solution simplifies spacecraft deployment while maintaining the reliability required for extreme launch environments.

RAPID START-UP

SYNC RELEASE





GENERAL SPECIFICATIONS

MAX DIMENSIONS	17.700 in x 19.680 in x 3.480 in
MASS	**Lower/Launch Vehicle Side:** 5.48 kg **Upper/Flyaway Vehicle Side:** 0.92 kg
BUS VOLTAGE RANGE	24 - 32 V
BUS VOLTAGE NOMINAL	28 V
PEAK POWER	< 4.5 W
AVERAGE POWER	3W @ 24V
ELECTRICAL INTERFACE	9-Socket D-Sub Connector
INTENDED SPACE ENVIRONMENT	Separation occurring within 4 hours of launch
HERITAGE	Protoflight planned Q3 2026
DESIGN LIFE	1 Launch, plus > 5 I&T actuation cycles
PRODUCTION	Assembled and tested in the USA

ENVIRONMENTAL SPECIFICATIONS

RANDOM VIBE	Qualified to 14.16 G_{rms} profile enveloping GEVS, Falcon 9, SpaceX Rideshare, and Electron levels
SHOCK	Qualified to 2,000g peak profile
OPERATING TEMPERATURE	-30°C to 70°C
SURVIVAL TEMPERATURE	-40°C to 80°C
QUASI-STATIC LOAD	Qualified to 12.5g axial and 16.88g lateral sine bursts

CONFIGURATIONS

TYPE	DESCRIPTION & DETAILS	SPACE READY	TYPICAL LEAD TIME	COST
EDU	Suitable for test fits and Hardware-in-the-Loop testbeds	No	< 6 Weeks	CONTACT
FLIGHT	Flight Hardware with Acceptance Testing	Yes	< 16 Weeks	CONTACT
CUSTOM	Umbra Space Systems offers custom configurations tailored for your spacecraft mass properties. Please contact.	Inquire	Inquire	CONTACT

FEATURES

DEBRIS-FREE DEPLOYMENT | EASY INTEGRATION

The mechanism ensures a simple & synchronized deployment, generating minimal foreign object debris (FOD). Unlike traditional pyrotechnic systems, the Umbra SyncRelease 4 is easily resettable, speeding up integration testing and launch site integration.

LOW-SHOCK SEPARATION | PROTECT PAYLOAD

Engineered for low-shock separation, the Umbra SyncRelease 4 minimizes the loads on your spacecraft during deployment. This design protects sensitive instruments and components, ensuring their operational integrity after launch.

VALIDATED | MISSION-READY RELIABILITY

Umbra continuously seeks to expand the envelope of spacecraft mass properties validated for Umbra SyncRelease 4 customers. The Umbra SyncRelease 4 provides simple actuation you can trust. The inherent reliability of the design minimizes mission risk and ensures dependable separation in real-world space environments.

TAILORED DEPLOYMENT | CUSTOMIZABLE

Offering customization for CG offset, Umbra engineers will work to tailor the deployment parameters to your specific spacecraft and mission needs. This flexibility ensures optimal separation conditions for a wide range of small satellite platforms.

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