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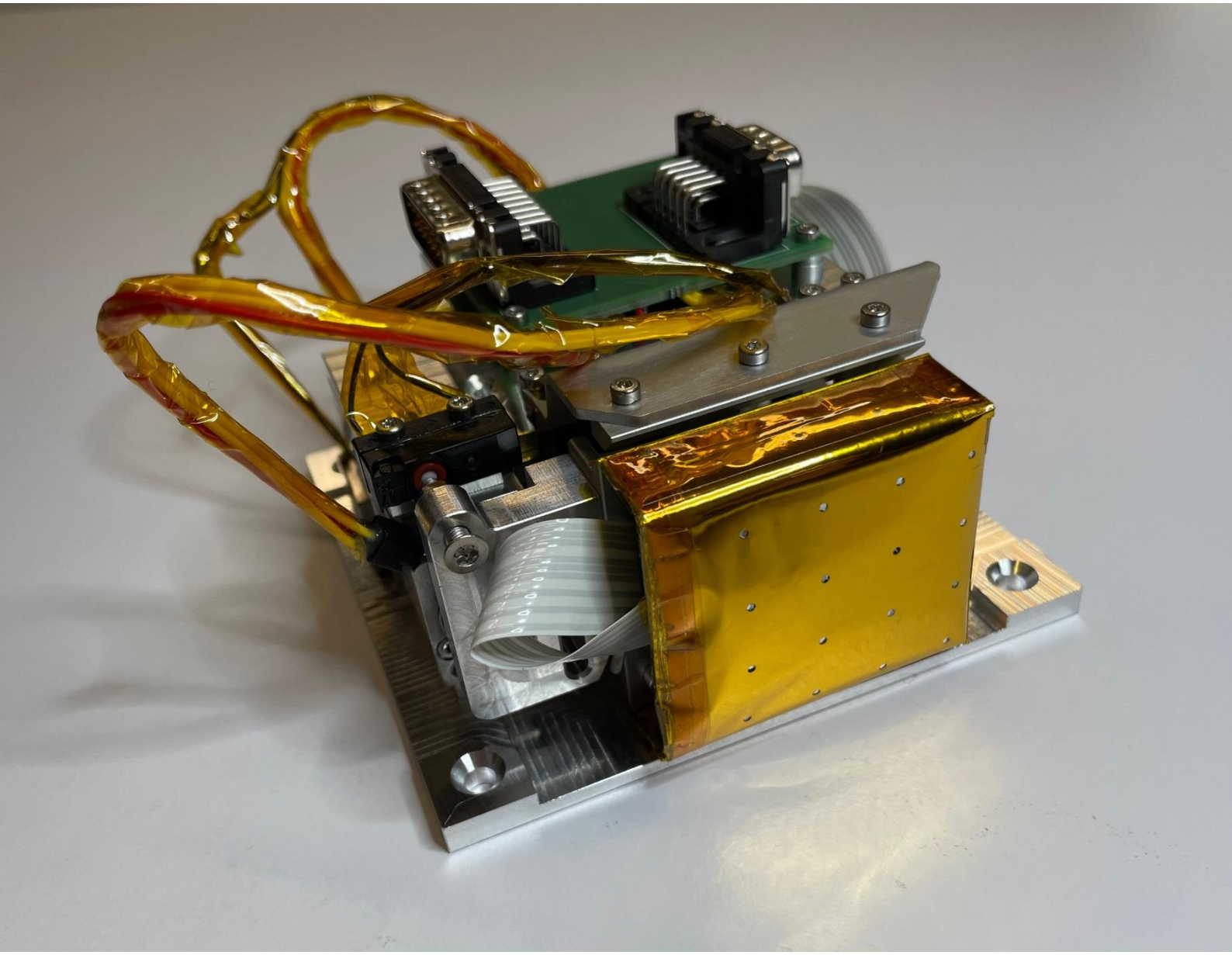

Datasheet

Space Selfie Stick (D3S3)

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Description

The DCUBED Space Selfie Stick (D3S3) is a deployable camera system which deploys a commercial selfie-camera to a distance of >800 mm. It employs a DCUBED Release Nut (nD3RN) as a launch lock, which safely holds the camera module to the D3S3's body until deployment in orbit. When triggered, the boom carrying the camera module is released and extends until its end position. This deployable selfie camera system, is compact, easily resettable, easy to use and readily available.

Specifications	Space Selfie Stick (D3S3)
Body Size (L x W x H)	98 x 57 x 98 mm (Standard Interface)
Mass	<0.5 kg
Operating Temperature Range	-30°C to +80°C
Stowed Survival Temp. Range	-40°C to +75°C
Deployed Survival Temp. Range	-40°C to +105°C
Deployable Boom length	>800 mm (two-sided deployment possible)
Camera angle	Standard: 2.8 mm focal length, 145° FoV
Camera resolution	3288 x 2512 px, 8 MP
Camera communication	USB 2.0
Payload	Commercial selfie camera
Resettability	Yes
Redundancy	Redundancy on the HDRM activation lines
Activation Sensors	Yes, as part of the HDRM

Interfaces

Mechanical Interfaces

The standard mechanical mounting configuration for the D3S3 is comprised of four countersunk M4 through holes located in the corner of the casing as shown in Figure 1.

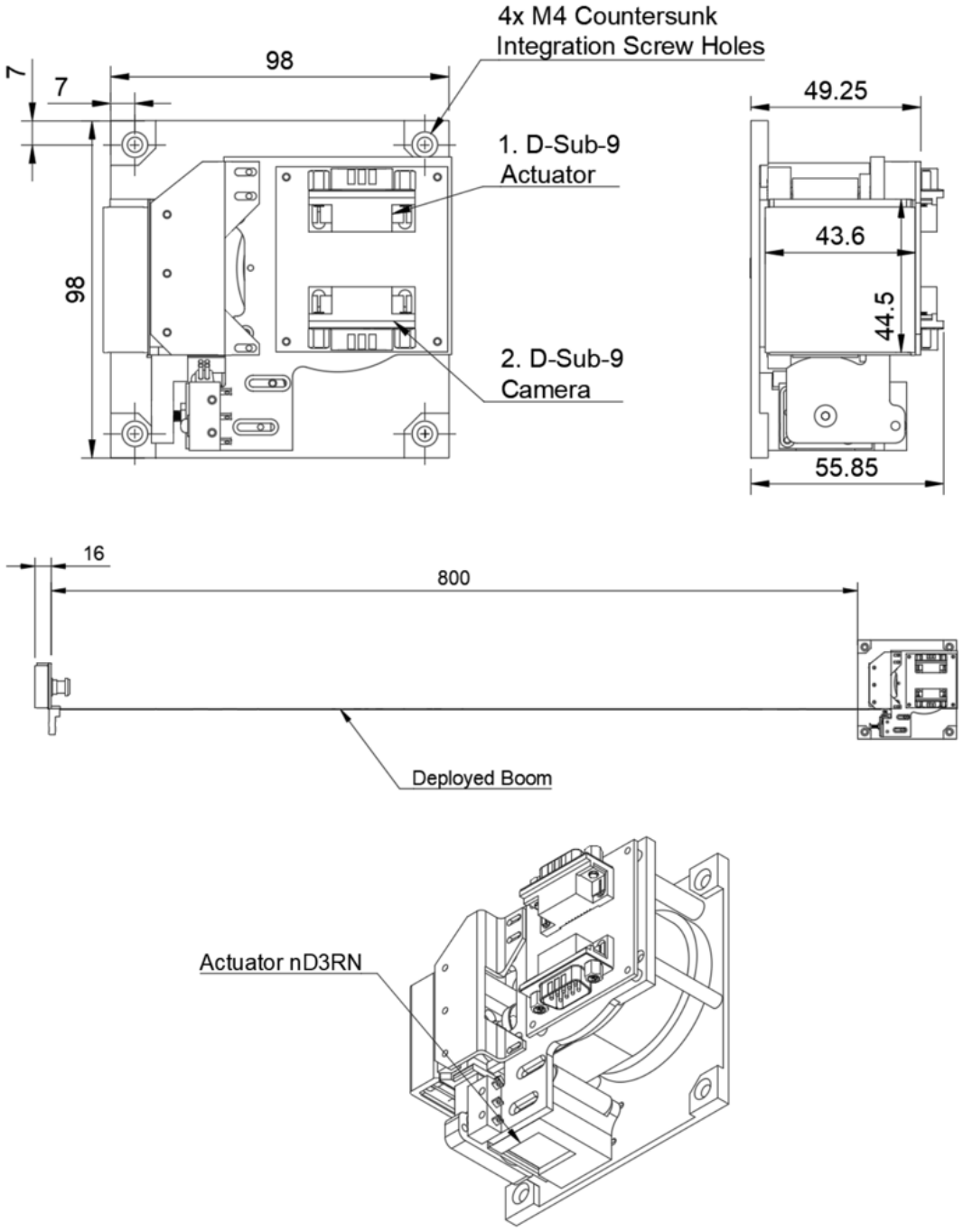

Figure 1: Dimensions and standard mechanical interfaces.

Besides the standard four point mount, interface customization is possible to achieve any custom interface mounting.

Mechanical Properties

The D3S3 has the following mechanical properties:

Property	Stowed	Deployed
Outer dimensions (L x W x H)	98 x 57 x 98 mm	850 x 57 x 98 mm
Deployed length Length [mm]	-	800 mm (one-sided deployment) 1600 mm (two-sided deployment)
Material	Housing: Aluminum	Boom: Stainless Steel (optional in CFRP or GFRP)
Acceptable loading moment [Nm]	-	>0.4 Nm
Eigenfrequency	>1kHz (TBC)	0.75Hz (TBC)

During deployment, the boom requires a stay-out-zone of at least 850 x 100 x 100 mm to make sure it does not collide with any part of the satellite.

Electrical Interfaces

Regarding the electrical interfaces, the release actuator and the camera are separated (with interface options either via a PCB, connectors, or open leads). A stand-alone version of the DCUBED Space Selfie Stick is currently under development.

Release Actuation

To release the boom, a current must be applied across one of the redundant actuation lines of the HDRM. The actuation lines are color-coded as red (secondary) and yellow (primary) wire pairs (red-red, yellow-yellow). The actuation lines behave like a simple resistor (see the table below), with no specific polarity. The black wires are for the actuation sensor, which produces a binary telemetry signal following actuation. (i.e. open/closed circuit).

Electrical Details	
Activation Leads	2 (1 Primary Pair, 1 Redundant Pair)
Material	Silver-plated Copper, PTFE
Wire Gauge	24 AWG

Actuation Current	1.6 to 2 A (DC)	
Resistance (Ω)	0.9 ± 0.2 Ω	
Time to Trigger (at 2 A)	0°C	2 sec
	20°C	1.3 sec
	60°C	0.5 sec

Camera

A commercial selfie camera with the following parameters is offered as the baseline option for the DCUBED Space Selfie Stick, as seen in Figure 2.

Figure 2: The Space Selfie Stick in its deployed configuration.

Specifications	
Resolution	8 MP, 3288 x 2512
Camera Lens	145°, 2.8 mm Focal Length, 1.8f Aperture
Operation Temperature Range	-30 to +85 °C
Survival Temperature Range	-40 to +105 °C
Data Transmission	USB 2.0
Video Resolution and Framerate	MJPG: 3264 x 2448: 15fps; 1920 x 1080: 25fps; YUY2: 3264 x 2448: 2fps; 1920 x 1080: 3fps; 800 x 600: 15fps;
Power Demand	1 to 3W

It should be noted however, that based on the customers' mission objective, alternative camera options (lower/higher resolution) can be explored and iterated with the DCUBED product team.

Loads

The D3S3 is designed to survive the following mechanical loads.

Details	Load Level	Note
Random Vibration (X, Y, Z)	20 GRMS (PSD)	
Sinusoidal Vibration (X, Y, Z)	5 - 16 Hz: 0.5-12 g 16 - 20 Hz: 12-20 g 20 - 140 Hz: 20 g	
Shock (X, Y, Z)	100 Hz: TBD 1000 Hz-10000 Hz: TBD	SRS

Disclaimer

Please note, this is **not** the user manual. The more elaborate, user manual will be made available by DCUBED upon placement of an order.

Contact us,
we'd love to hear from you!

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