



KOSTKA

INTERFACE CONTROL
DOCUMENT

Doc N°: **YSP_KST_ICD_01_00**

Issue: **01_00** Date: **30/06/2026**

Page: **1** of **14**

KOSTKA

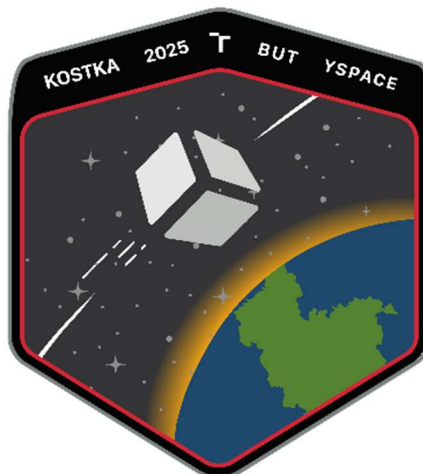
ICD

INTERFACE CONTROL DOCUMENT

Doc. No.: **YSP_KST_ICD_01_00**

Issue: **01_00** Date: **30/06/2026**

AD No: **-** CI: **-**





KOSTKA

INTERFACE CONTROL
DOCUMENT

Doc N°: **YSP_KST_ICD_01_00**

Issue: 01_00 Date: **30/06/2026**

Page: **2** of **14**

Action	Name / Signature	Institute	Date
Prepared by:	Emma Plíhalová	YSpace	30/06/2026
Checked by: (System Engineer)	Šimon Pokorný	YSpace	30/06/2026
Authorized by: (Product Assurance)	Emma Plíhalová	YSpace	30/06/2026
Authorized by: (Team Leader)	Šimon Sloboda	YSpace	30/06/2026



KOSTKA

INTERFACE CONTROL
DOCUMENT

Doc N°: **YSP_KST_ICD_01_00**

Issue: 01_00 Date: **30/06/2026**

Page: **3** of **14**

CHANGE RECORD

<i>ISSUE</i>	<i>DATE</i>	<i>CHANGE AUTORITY</i>	<i>REASON FOR CHANGE AND AFFECTED SECTIONS</i>
01.00	30/06/2026	Emma Plíhalová	First Issue



KOSTKA

INTERFACE CONTROL
DOCUMENT

Doc N°: YSP_KST_ICD_01_00

Issue: 01_00 Date: 30/06/2026

Page: 4 of 14

TABLE OF CONTENT

1	SCOPE OF DOCUMENT	6
2	DOCUMENTS	6
2.1	APPLICABLE DOCUMENTS	6
3	ACRONYMS, ABBREVIATIONS AND DEFINITIONS	7
4	MISSION OVERVIEW	8
4.1	MISSION STATEMENT AND OBJECTIVES	8
4.2	MISSION DATA PRODUCTS	9
4.3	END-DATA USERS	9
4.4	MISSION PHASES	9
5	SUBSYSTEM OVERVIEW	10
6	SPACECRAFT CONFIGURATION	10
7	TUNACAN	12



KOSTKA

INTERFACE CONTROL DOCUMENT

Doc N°: **YSP_KST_ICD_01_00**

Issue: 01_00 Date: **30/06/2026**

Page: **5** of **14**

LIST OF FIGURES

Figure 6-1 High-level breakdown of KOSTKA subsystems.....	10
Figure 7-1 KOSTKA S/C configuration (exploded view)	10
Figure 7-2 Dimensions of the deployed S/C.....	11
Figure 7-3 KOSTKA Coordinate reference frame	12
Figure 8-1 Tunacan antenna	12
Figure 8-2 Wire placement	13

LIST OF TABLES

Table 5-1 Mission objectives	8
Table 5-2 Mission phases overview	9

	KOSTKA	<i>Doc N°:</i> YSP_KST_ICD_01_00
	INTERFACE CONTROL DOCUMENT	<i>Issue:</i> 01_00 <i>Date:</i> 30/06/2026
		<i>Page:</i> 6 <i>of</i> 14

1 SCOPE OF DOCUMENT

This document provides a high-level description of the KOSTKA satellite and its main system-level interfaces. The document describes the mission context, main mission objectives, operational phases, subsystem breakdown, spacecraft (S/C) configuration and the Tunacan antenna system. The purpose of this document is to provide a clear overview of the KOSTKA mission. This public version of the document includes only system-level information.

2 DOCUMENTS

2.1 APPLICABLE DOCUMENTS

AD	Document title	Reference	Issue / Rev.	Date
[AD01]	KOSTKA General Template	YSP_KST_GENERAL_TEMPLATE_2025-09-03_v01_03	1	03/09/2025



KOSTKA

INTERFACE CONTROL
DOCUMENT

Doc N°: **YSP_KST_ICD_01_00**

Issue: 01_00 Date: **30/06/2026**

Page: **7** of **14**

3 ACRONYMS, ABBREVIATIONS AND DEFINITIONS

SSO	Sun-Synchronous Orbit
S/C	Spacecraft
PO	Primary objective
SO	Secondary objective
LEOP	Launch and Early Operations Phase



KOSTKA

INTERFACE CONTROL DOCUMENT

Doc N°: YSP_KST_ICD_01_00

Issue: 01_00 Date: 30/06/2026

Page: 8 of 14

4 MISSION OVERVIEW

4.1 MISSION STATEMENT AND OBJECTIVES

The KOSTKA mission aims to verify the feasibility of relaying data from a planned remote research station located on Nelson Island in Antarctica. The mission's Sun-synchronous orbit (SSO), with an altitude in the range of 500 – 600 km, provides periodic coverage of the target area and enables repeated communication opportunities. The relay concept is based on an in-house developed experimental receiver operating in the UHF band. The primary objective is to enable the reception and transfer of basic meteorological data, including temperature, wind speed and humidity, as well as compressed images from the remote research station.

The mission objectives are divided into one primary objective (PO), which drives the core mission requirements, and three secondary objectives (SO), which while shaping the mission outcomes, do not dictate the overall mission design. The overview of mission objectives can be seen in Table 4-1.

Table 4-1 Mission objectives

ID	Objective	Description
PO1	Test of the experimental receiver	Demonstrate the capability of the S/C to receive data from the meteorological station on Nelson Island using the experimental receiver. The received data
SO1	Provide a flight heritage for in-house developed components	Validate selected in-house developed components, including the OBC and Antenna System, in the space environment and support their future use in student or commercial missions.
SO2	Capture photos of the Earth	Use the on-board camera module to capture images of Earth for outreach, promotion and public engagement. Selected images may be transmitted via UHF amateur radio frequencies.
SO3	Provide an educational platform for BUT students and public enthusiasts	Use the mission as a practical learning platform for S/C development, operations, data processing and public engagement with space technologies.



KOSTKA

INTERFACE CONTROL DOCUMENT

Doc N°: YSP_KST_ICD_01_00

Issue: 01_00 Date: 30/06/2026

Page: 9 of 14

4.2 MISSION DATA PRODUCTS

KOSTKA will generate performance data related to the functionality of the developed experimental receiver and environmental data collected by the S/C from the meteorological station, which will be used to analyse environmental conditions on Nelson Island.

4.3 END-DATA USERS

The end-data users for mission KOSTKA includes students and academics from STEM disciplines, primarily at BUT, while also extending to other universities across the Czech Republic. The mission will contribute to building a foundation for future student satellite projects, covering not only technical development, but also aspects related to sponsorship, organisation and project management.

4.4 MISSION PHASES

Mission will consist of 3 phases: Launch and Early Operations Phase (LEOP) and Commissioning Phase, Nominal Operations Phase, and Extended Life Phase. An overview of mission phases is shown in Table:

Table 4-2 Mission phases overview

Phase	Time frame	Main purpose	Key activities
LEOP and Commissioning	T0 – T0 +1M	Initial activation and verification of S/C functionality	<ul style="list-style-type: none">- Stabilisation using passive magnetic control- Sequential subsystem activation- Antenna deployment- Beacon transmission to the GS- Telemetry analysis- Subsystem checks
NOMINAL	T0 + 1M – T0 + 12M	Execution of the primary mission objective	<ul style="list-style-type: none">- Collection of meteorological data- Testing of the experimental receiver- Establishment of a stable communication link- Transmission of measured data
Extended life	T0 + 13M – T0 + N/A	Educational and outreach activities	<ul style="list-style-type: none">- Operational training- Data analysis- Testing of additional system functions- Access to mission images- Public communication activities- Preparation for deorbiting

5 SUBSYSTEM OVERVIEW

KOSTKA is divided into several main subsystems, each responsible for a specific function required for S/C operation and mission execution. The subsystem breakdown provides a high-level view of the spacecraft architecture and helps identify the main functional responsibilities within the system. The

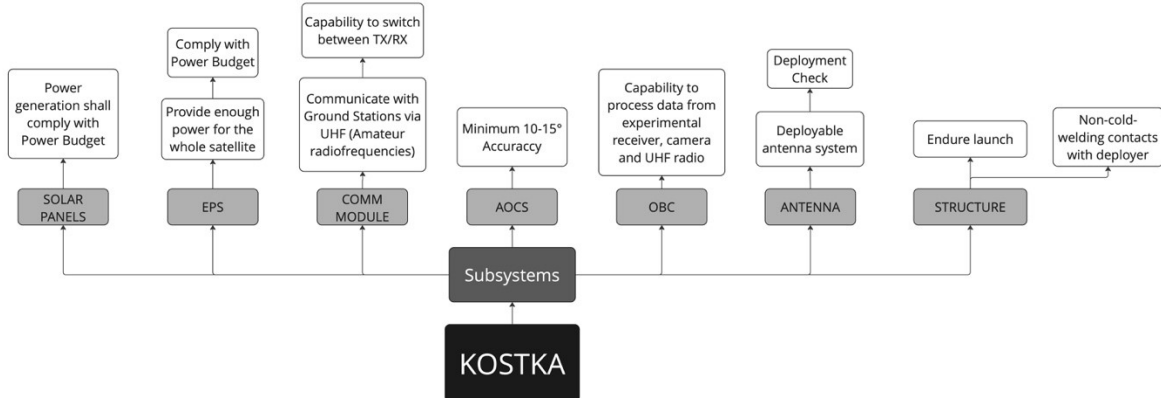


Figure 5-1 High-level breakdown of KOSTKA subsystems

6 SPACECRAFT CONFIGURATION

The KOSTKA spacecraft follows a 1U configuration. The spacecraft configuration is presented through an exploded view of the complete satellite assembly. Figure 6-1 shows the overall S/C configuration, identifying the main structural elements, avionics units, communication hardware, solar panels, antennas, and the location of the payload within the platform.

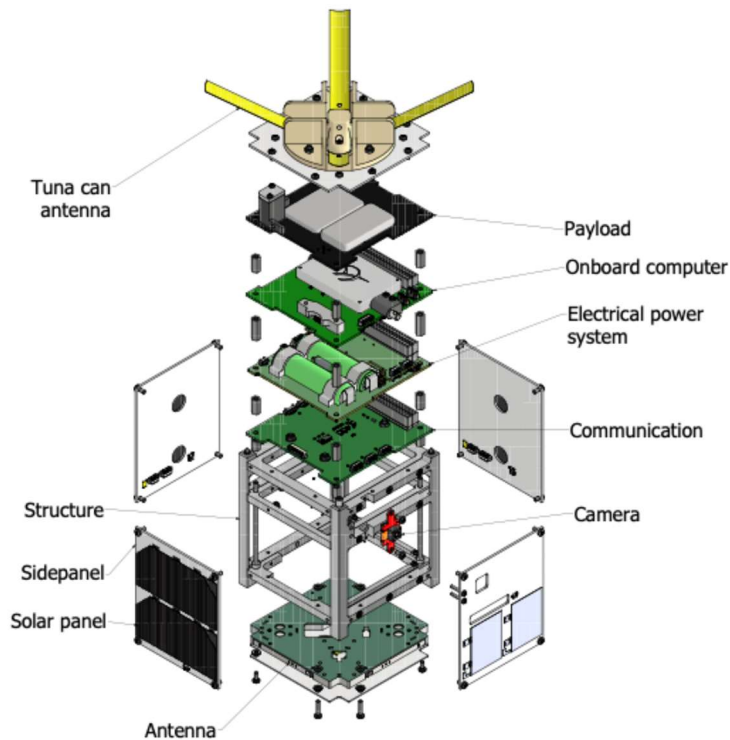


Figure 6-1 KOSTKA S/C configuration (exploded view)



KOSTKA

INTERFACE CONTROL DOCUMENT

Doc N°: YSP_KST_ICD_01_00

Issue: 01_00 Date: 30/06/2026

Page: 11 of 14

The spacecraft is assessed in both stowed and deployed configurations. In the stowed configuration, the satellite complies with the deployer envelope requirements, whereas in the deployed configuration, the antennas are released to their operational positions, defining the in-orbit geometric envelope of the spacecraft. Figure 6-2 shows the external spacecraft dimensions in the deployed configuration.

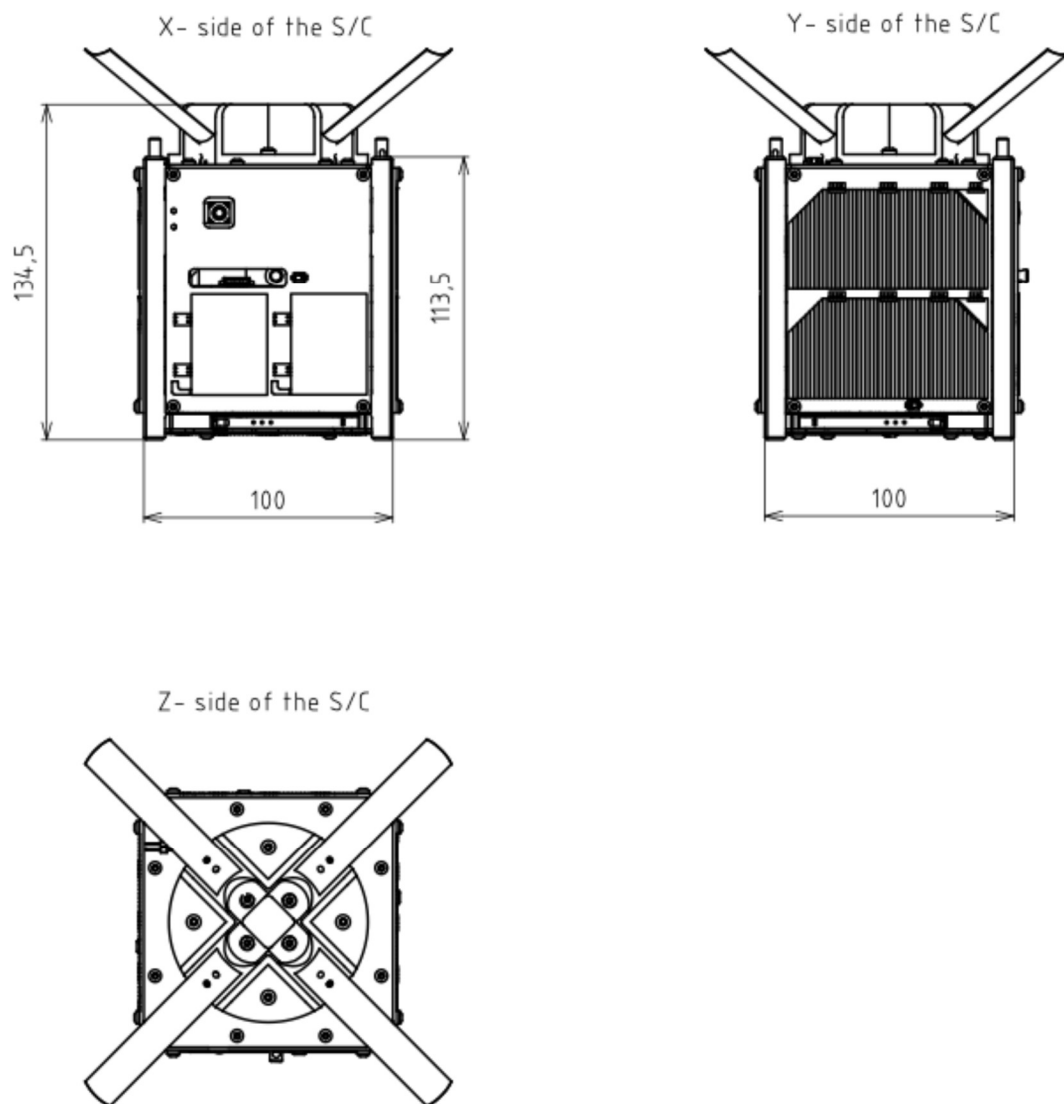


Figure 6-2 Dimensions of the deployed S/C

The spacecraft coordinate reference frame is defined as a body-fixed orthogonal frame centred within the satellite structure and aligned with the main geometrical axes of the platform. The positive Z-axis points along the longitudinal axis of the S/C toward the top panel, while the negative Z-axis points toward the bottom of the structure. The X and Y axes define the lateral directions of the S/C and are assigned according to the configuration shown in Figure 6-3.

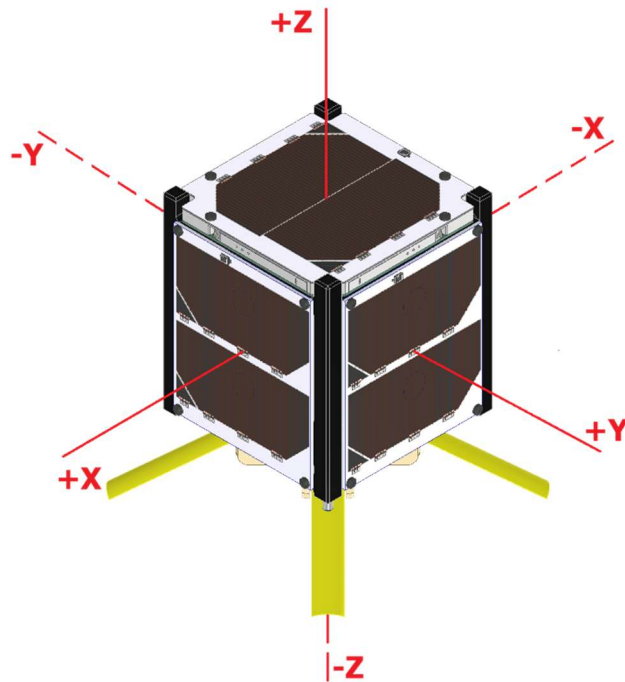


Figure 6-3 KOSTKA Coordinate reference frame

7 TUNACAN

The Tunacan antenna system is located along the Z-axis and consists of four rolled tape-measure antennas arranged evenly in a circular configuration. The antennas are held in place by a central block and supported by an outer frame to improve structural stiffness. Each antenna is restrained by a wire during launch. Once in orbit, the wire is burned through by resistors, releasing the stored tension and deploying the antenna.

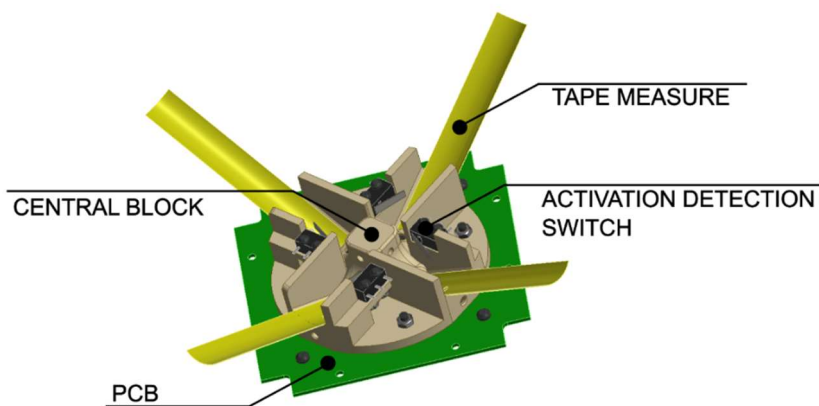


Figure 7-1 Tunacan antenna



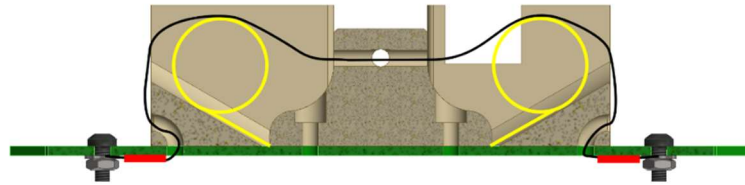
KOSTKA

INTERFACE CONTROL DOCUMENT

Doc N°: YSP_KST_ICD_01_00

Issue: 01_00 Date: 30/06/2026

Page: 13 of 14



- TAPE MEASURE
- WIRE
- BURN RESISTOR

Figure 7-2 Wire placement



KOSTKA

INTERFACE CONTROL
DOCUMENT

Doc N°: **YSP_KST_ICD_01_00**

Issue: 01_00 Date: **30/06/2026**

Page: **14** of **14**

END OF DOCUMENT