



# SPACEMANIC

INNOVATIVE  
NANOSAT  
COMPANY

Headquartered:  
Bratislava, Slovakia  
Branch: Brno, Czechia  
Focus: CubeSat  
Since: 2014

## Space is our playground

### From the first Slovak satellite to high energy astrophysics

- In 2017 first Slovak satellite skCUBE was launched into space. Thanks to this experience where the all components were developed in-house and worked for the whole duration of the operations, on the basis of this successful mission a spin-off company Spacemanic was established.
- After gaining expertise the company decided to start new more challenging projects. Establishing cooperation with a team of astrophysicists gave us an opportunity to start working on cubesat missions for gamma-ray burst monitoring in two ongoing projects.
- First one being a 1U precursor mission by the name of GRBAAlpha which won the 2<sup>nd</sup> place in a competition for a free launch organized by IAF and GK Launch Services in 2019. This project is a joint endeavour by Slovak, Hungarian, Czech and Japanese universities, organisations, and private companies.
- Second project in actual development is a 3U satellite called VZLUSAT2. This mission will utilise a GRB detection instrument developed in collaboration with scientist from various countries. Spacemanic supplies crucial components and secures the launch services for this mission.

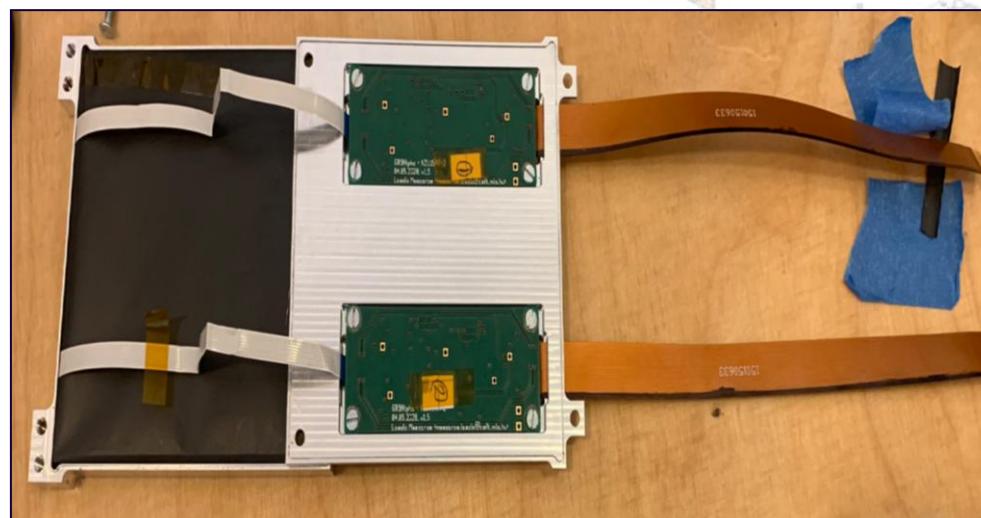


Fig. GRB payload prototype

### GRBAAlpha

- Scientific project
- Involved universities and R&D institutions from Slovakia, Czech Rep., Hungary and Japan
- Gamma-Ray Burst detector on 1U
- Spacemanic modular and plug and play platform – OBC/GNSS Module/Transceivers/ADCS/Structure
- Launch Q4 2020

### VZLUSAT2

- Launch campaign management
- Spacemanic products - GNSS Module Celeste & Solar panels
- Launch Q4 2020

### GRB payload IOD Mission

- GRBAAlpha and VZLUSAT2 will be the IOD missions which will verify a technology for future fleet of nanosatellites to perform an all-sky monitoring and timing based localisation of gamma-ray transients.
- The fleet of at least nine 3U cubesats shall be equipped with large and thin CsI(Tl) scintillator based soft gamma-ray detectors read out by multi-pixel photon counters. For bright short gamma-ray bursts (GRBs), by cross-correlating their light curves, the fleet shall be able to determine the time difference of the arriving GRB signal between the satellites and thus determine the source position with an accuracy of  $\sim 10$ . This requirement demands precise time synchronization and accurate time stamping of the detected gamma-ray photons, which will be achieved by using on-board GPS receivers.
- Rapid follow up observations at other wavelengths require the capability for fast, nearly simultaneous downlink of data using a global inter-satellite communication network. In terms of all-sky coverage, the proposed fleet will outperform all GRB monitoring missions.

## CONTACT

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