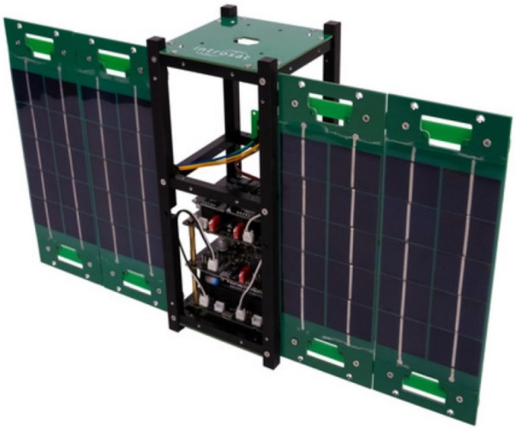
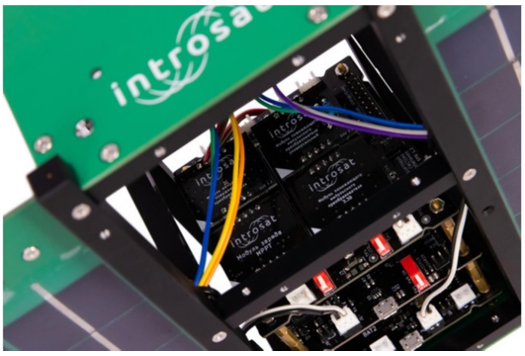
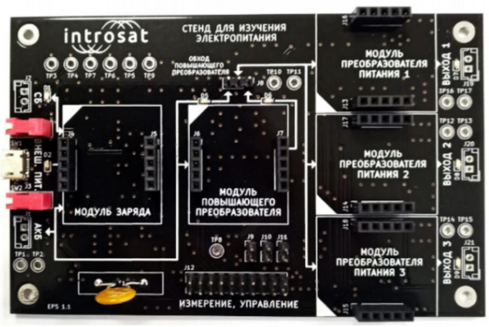
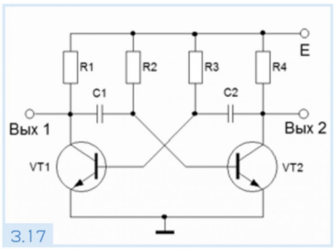
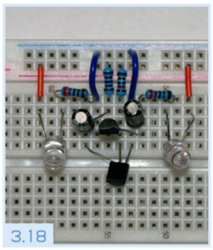
Introsat Educational Kit - Satellite Power Extension











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Constructor extension **Introsat™**, expands the topic group "**Satellite Power**". competitions.

The kits allow you to assemble a multifunctional power supply system for satellite models of the modern CubeSat format, they have an open architecture. The components included in this extension allow you to flexibly manage power and create educational projects with equipment that needs the energy supply of which is beyond the capabilities of the basic set. It is used to conduct classes on the basics of satellite engineering and preparation for the competition.

Module equipment contains components for preliminary workshops, training stand / control system with plug-in transducers power supplies of various types, operating solar panels for CubeSat 2U devices and connectors for various connection schemes, its own battery pack, a controlled module for simulating solar power during orbital motion.

The content of the course and the complete set of the basic set allow you to conduct practical and theoretical classes, including:

- Studying the principles of operation of capacitors, diodes, transistors, voltage converters and calculation of electronic circuits in spacecraft;
- Spacecraft power system design;
- Carrying out calculations of the energy balance of a satellite in orbit;
- Assembly of power boards to distribute electricity from solar panels to batteries and payload;

Allows you to prepare for the "Satellite Systems" profile of the National Technological Olympiad" and the competitions of the "Applied Space Systems" series of the "Planet Duty Officer" program.

The recommended age of students is **14-18 years old**. Up to **3-4 students** can work with one set. To work **requires a PC or laptop**.

Education Experience:

- ✓ Electricity, Principles of circuit engineering,
- ✓ Voltage converters,
- ✓ Power supply system assembly,
- ✓ Solar batteries and their connection diagrams,
- ✓ Spacecraft energy balance

Engineering Skills:

- ➢ Electrical engineering,
- ➢ Circuit engineering (electronic board design),
- ➢ Energy balance calculation

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Hardware and Materials:

- Built-in power control board,
- Battery pack,
- Charge control module,
- Linear regulator module,
- 3.3 V step-down switching converter module,
- 5V step-up switching converter module,
- Universal converter module,
- Connectors for solar panels,
- Module for simulating work from solar panels in orbit with functions of simulating the power of a solar battery,
- corresponding to work in near-Earth space (1400 W / m2), taking into account the angle of incidence of rays from the light source and determining the cyclogram of the power system from solar batteries according to a given algorithm,
- Additional components for introductory workshops

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