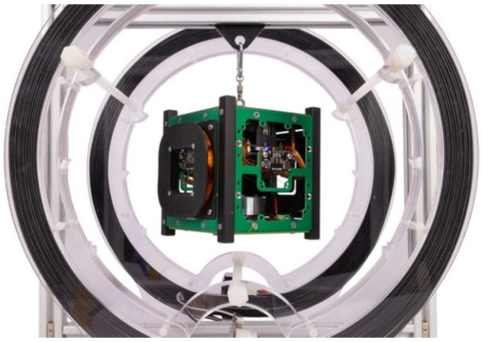
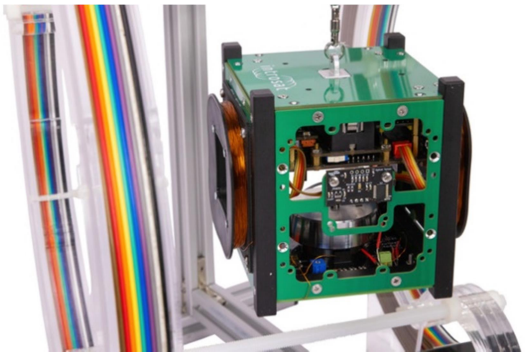
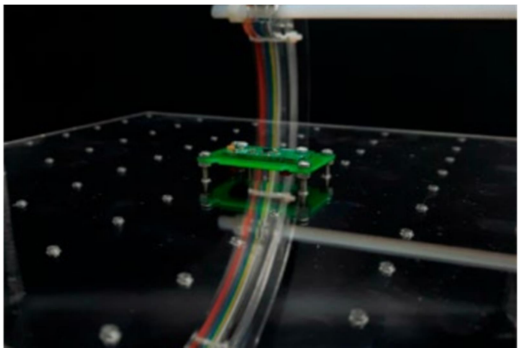
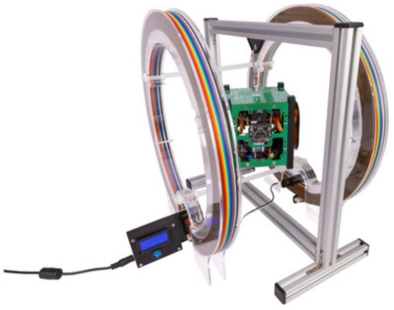
# Introsat Educational Kit. Magnetism

Extension of the constructor Introsat™ by topic groups "Executive devices" and "Magnetism ".



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It is used to conduct in-depth classes on the actuators of spacecraft based on interaction with the Earth's magnetic field, and to prepare for competitions.

The kits allow you to assemble compact desktop test stands in a magnetic field based on Helmholtz rings and supplement the functional models of CubeSat satellites with magnetic orientation coils.

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

- Assembling the stand for creating a magnetic field;
- Calculation of electromagnetic actuators on board satellites;
- Programming the satellite control system to operate in a magnetic field;
- Solving problems of satellite orientation and stabilization in a magnetic field.
- Allows you to prepare for the "Satellite Systems" profile of the National Technological Olympiad".

The recommended age of students is 14-18 years old. To work requires a PC or laptop.

**Education Experience:**

- ✓ Assembling a stand for creating a magnetic field,
- ✓ Calculating electromagnetic actuators on board satellites,
- ✓ Programming a satellite control system for functioning in a magnetic field (including the B-dot algorithm),
- ✓ Solving problems of satellite orientation and stabilization in a magnetic field.

**Engineering Skills:**

- ➢ Programming;
- ➢ Electrical Engineering

**Hardware and Materials**:

- A kit for assembling a magnetic field control stand based on Helmholtz rings (structural materials, connecting elements, a cable for creating Helmholtz rings, a control unit),
- a kit for assembling magnetic coils (structural materials, copper wire)



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## Electronic Modules Features

Space unit type: CubeSat microsatellite (on-board magnetic coils), test stand for orientation in the Earth's magnetic field

Central Control Unit Type Compatible with: Introsat, Arduino, STM32

Voltage: 220V (stand), 5V (coils)

Power Connectors: PLS, JST

Battery type: You are using a battery from the base kit or satellite power kit

Data interfaces: I2C (main), GPIO

Data connectors: MicroMatch 4F, PLS

Wireless interfaces: n/a

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