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Computer; 1.10 Attitude Control Subsystem; 1.11 Reaction Control Subsystem; 1.12 Communication Subsystem; 1.13 Thermal Control Subsystem
 1.14 Satellite Deorbiting at End of Life1.15 Possible Mechanical Platform Configurations; Abstract; 2.1 Spacecraft Configuration Handling Concept; 2.2 Spacecraft Telecommand and Telemetry Structure; 2.3 Application Process ID Definitions (APIDs); 2.4 PUS Tailoring Concept; 2.5 Spacecraft Commandability and Observability; 2.6 Spacecraft On-board Time Management; Abstract; 3.1 Onboard Software Architecture; 3.2 OBSW Object Types; 3.3 Observability Functions Provided by the OBSW; 3.4 FLP Software Dynamic Architecture; 3.5 Onboard Software Death Report; Abstract
 4.1 On-Board Data Handling Subsystem4.2 Combined Data and Power Management Infrastructure; 4.3 Data Management; 4.4 System Boot at Launcher Separation; 4.5 OBSW Controlled Functions; 4.6 Core DHS Subsystem Control; Abstract; 5.1 Subsystem Overview; 5.2 Solar Panels; 5.3 Solar Array Deployment Mechanism; 5.4 Battery; 5.5 Power Control and Distribution Unit; 5.6 Power Subsystem Control; Abstract; 6.1 TTC Subsystem Overview; 6.2 Signal Acquisition Procedure; 6.3 TTC Subsystem Control; Abstract; 7.1 Subsystem Overview; 7.2 Mission Objectives and ACS Subsystem Modes; 7.3 Magnetometers 7.4 Sun Sensor Unit7.5 GPS Receiver System; 7.6 Fiberoptic Gyroscopes; 7.7 Star Tracker; 7.8 Reaction Wheels; 7.9 Magnetotorquers; 7.10 Extensions for FLP Generation 2; 7.11 ACS Subsystem Control; Abstract; 8.1 Thermal Subsystem Overview; 8.2 Sensors, Calibration, Limits; 8.3 TCS Subsystem Control; Abstract; 9.1 Aspects of Payload Control and Data Handling; 9.2 Payload Control on the First FLP Based Satellite; 9.3 Payload Control in Network-Centric Architectures; Abstract; 10.1 General Principles; 10.2 Core DHS FDIR; 10.3 Power FDIR; 10.4 Equipment FDIR; 10.5 TTC FDIR; 10.6 ACS FDIR 10.7 TCS FDIR

Sommario/riassunto

This book represents the Flight Operations Manual for a reusable microsatellite platform – the “Future Low-cost Platform” (FLP), developed at the University of Stuttgart, Germany. It provides a basic insight on the onboard software functions, the core data handling system and on the power, communications, attitude control and thermal subsystem of the platform. Onboard failure detection, isolation and recovery functions are treated in detail. The platform is suited for satellites in the 50-150 kg class and is baseline of the microsatellite “Flying Laptop” from the University. The book covers the essential information for ground operators to controls an FLP-based satellite applying international command and control standards (CCSDS and ECSS PUS). Furthermore it provides an overview on the Flight Control Center in Stuttgart and on the link to the German Space Agency DLR Ground Station which is used for early mission phases. Flight procedure and mission planning chapters complement the book. .