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DATASAT - ADA GROUND STATION NETWORK AUTOMATIC DIRECTIONAL ANTENNA FOR
SPACE COMMUNICATION WITH LOW POLAR ORBITING SATELLITES

Abstract

This article presents DATASAT, which is a standardized Ground Stations network meant to automatically perform satellite telemetry, tracking and command (TTC). DATASAT's operational unit is the ADA (Automatic Directional Antenna), which has been designed and developed for this purpose. Every ADA is an automatic steering antenna system capable of point its antennas to a certain position (azimuth and elevation), following a trajectory, in order to capture or send signals to the object, a satellite or a probe, for example. The software part of DATASAT is called ADASERVER, which is responsible for controlling the functions of pointing, starting and ending the recording of the signal received by the antennas, storing and sending the signals received to a database. This solution aims to be an open-source hardware and software development with partnership with Public and Private Institutions, so they can use ADA and DATASAT for teaching and research without charge. More technical information, its elements, design, assembly and dimensions are further described. This solution success lies in the simplicity of its operation, which allows satellite tracking automatically at low cost as well as optimization of signal capture, encryption, data compression and storage data, allowing integration with client systems, remote control, providing technology and know-how to support different research or commercial projects that require a Ground Stations Network. Keywords: ground station, antenna, network, telemetry, tracking