ACU-2n/1 Antenna Control Unit

Antenna controller used to monitor and control Orbital Systems antenna systems

The ACU-2 antenna control unit is a flexible antenna controller that manages all aspects of an antenna system equipped with orbital data bus (ODB) technology, including the antenna positioner functions and the antenna RF payload. The ACU-2 is located inside the electrical cabinet and integrates all antenna and positioner functions on the ODB while providing user control access through an Ethernet connection. The ACU-2 uses multiple processors to separate real-time control of the positioner and payload from management of the user control protocols. The ACU-2 has been designed to facilitate customization for complex multi-axis antenna system applications.

Features

The ACU-2 antenna control unit is used for all Orbital Systems antenna positioners equipped with orbital data bus (ODB) technology.

Control Interfaces

- Web interface (HTTP) provides real-time operator control and system status graphical display
- Orbital Advanced Control Protocol (OACP) monitors and controls the system using JSON files
- Simple Network Management Protocol (SNMP) monitors and controls the system
- Pointing Vector Protocol (PVP) a serial protocol used to send a series of pointing vectors aim the antenna
- Location Vector Protocol (LVP) a serial protocol used to send a series of target location vectors to cause the antenna to point to the target
- Legacy serial control protocol (LSCP) enables backward compatibility with existing Orbital Systems antenna positioners that do not support ODB
- Optional custom control interfaces such as VXI-11 or emulation of other common positioner control protocols can be implemented for use with your application

Control Hardware Interfaces

- 100BASE-FX fiber Ethernet, full-duplex, single-mode or multimode with multimode shipped as standard on most systems
- 100BASE-T Ethernet, CAT 5 or better, shielded preferred
- Contains embedded 100BASE-T switch with a spare 100BASE-T port that can be used to multiplex payload data with control data

System Time Options

- Equipped with built-in GPS receiver for accurate time and location
- Supports IEEE1588 in hardware for applications that do not use GPS, the IEEE1588 interfaces to Precision Time Protocol (PTP) in many operating systems

Firmware Upgrades

- All antenna positioner and RF payload control software can be updated remotely
- All system firmware is stored in ACU-2 on a built-in microSD card
- Firmware on the microSD card is modified using FTP with an Orbital Systems provided application
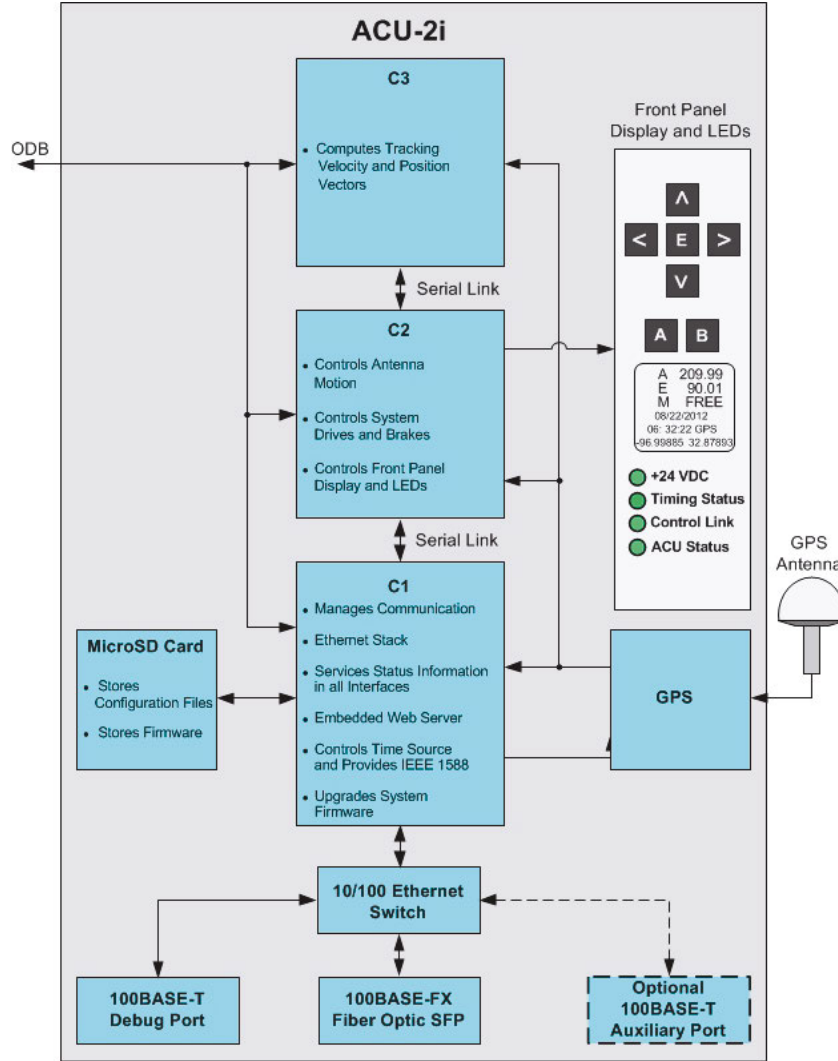
Applications:

The ACU-2 operates in one of the following modes depending upon the application:

- Program Tracking (TLEs)
- Location Tracking
- Pointing Vector Tracking
- TT&C
- Radar

Functional Diagram

ACU-2i

C3
- Computes Tracking Velocity and Position Vectors

ODB

Serial Link

C2
- Controls Antenna Motion
- Controls System Drives and Brakes
- Controls Front Panel Display and LEDs

Serial Link

C1
- Manages Communication
- Ethernet Stack
- Services Status Information in all Interfaces
- Embedded Web Server
- Controls Time Source and Provides IEEE 1588
- Upgrades System Firmware

MicroSD Card
- Stores Configuration Files
- Stores Firmware

Front Panel Display and LEDs

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- +24 VDC
- Timing Status
- Control Link
- ACU Status

GPS Antenna

GPS

10/100 Ethernet Switch

100BASE-T Debug Port

100BASE-FX Fiber Optic SFP

Optional 100BASE-T Auxiliary Port

Ethernet Stack

DHCP	SNMP	OACP	HTTP	Serial Control Protocol
UDP		TCP		
ICMP				
IP				
ARP				
Ethernet				

CPI
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OrbitalSales@cpii.com   ▪   +1.972.915.3669   ▪   www.orbitalsystems.com