ARP-50 Azimuth Rotator System:

The ARP-50 is a rugged Azimuth Rotator designed to be operated with the ACU-3D-12R controller. The ACU-3D-12R is a fully digital motion control system that was designed for military operational environments. Very similar units were qualified to MIL-STD-810 for airborne applications and have been successfully deployed. Other versions of the same ACU-3D series controllers by ARA have been qualified and deployed in Shipboard, ground based and airborne applications. The cables required for power and control of the positioner are also rugged units that use military qualified connectors and backshells to ensure long life and reliable operations.

The ARP-50 rotator is suitable for outdoor installations and is capable of supporting up to a 500 lb. vertical load. The bearings and housing are heavy duty components that enable the rotator to support both the large vertical load and very large moment loads, up to 2000 ft lbs.

All of the mechanical components are high quality, precision units that are protected from the environment by the housing. The ARA motion control architecture provides a very robust solution by only placing rugged components in the operational environment. The brushless DC Servomotor used in the ARP-50 has been used in numerous deployed military systems and the position feedback device is very rugged analog resolver very familiar to military designers.

The ACU-3D-12R control unit can be remotely located to facilitate integration with the end user’s system. It features a fully digital motion control architecture that is very accurate, dependable and easily customized for specific applications. The front panel interface provides a simple, intuitive method for commanding the positioner and there is a well defined interface for remote control from the host system along with an optional GUI that runs on a Windows computer that can control the positioner.

ACU-3D-12-R Highlights:

The Controller features an intuitive easy to operate, manual controls via the Front Panel interface. There is a highly refined remote control interface using Serial I/O (RS-232/422/485, Ethernet Optional) that provides the ability to perform any control, setup or monitoring function that is available through the Front Panel. Motion Commands are a common task for this interface but if properly equipped it is capable of controlling RF Front End switches and amplifiers.

The controller is based on a fully digital motion control architecture that very accurately controls the rotator using a combination of custom and COTS motion control components. The digital servo control system architecture has been based around brushless servomotors with resolver motor commutation and separate absolute feedback devices to close the position loops to provide very accurate positioning.

Additionally, the digital architecture provides a very flexible platform that is easily tailored to specific customer requirements. For example, in certain radar applications in addition to the normal serial commands the position data is streamed out of separate parallel ports at a 200 Hz data rate (less than 5msec) for display and calculation purposes.
ARP-50 Specifications:

**RANGE of MOTION**
- Azimuth: Continuous or +/-200°

**DATA TAKEOFF ACCURACY**
- Azimuth: 0.09 degrees

**POSITIONING ACCURACY**
- Azimuth: 0.5 degrees

**PEAK TORQUE**
- Azimuth: 850 ft lbs (1150 Nm)

**CONTINUOUS TORQUE**
- Azimuth: 200 ft lbs (270 Nm)

**VELOCITY:**
- Azimuth: 0.2 - 10 deg/sec @ 24VDC
- 0.2 - 20 deg/sec @ 48VDC

**ACCELERATION:**
- Azimuth: 5 deg/sec² Max

**VOLTAGE INPUT:**
- Controller: 24 – 48 VDC

**CURRENT**
- Controller: 5 Amp Maximum

**WEIGHT:**
- Positioner: 65 lbs (30 kg)
- Controller: 20 lbs (9 kg)

**POSITIONER:**
- Operational Temperature: 0° to 131°F (-18° to 55°C)
- Relative Humidity: 0 to 100%
- Solar Load: 1100W/m²
- Vibration: MIL-STD-810F, Figure 514.5C-3, Composite Wheeled Vibration Exposure
- Shock: 20g’s Vertical Axis