

communications solutions

Positioner Systems

ARA offers a wide variety of positioner systems to support SATCOM and RADAR applications. These positioner systems include an antenna positioner, Antenna Control Unit (ACU), and the required cables which allow the positioner to be controlled and monitored indoors. The positioners operate with third-party antennas. In addition, ARA offers integrated solutions to include the feed, reflector, and positioner for complete turn-key requirements.

The positioners can operate in Azimuth or Azimuth and Elevation axis. These utilize an advanced digital motion control system to provide accurate, smooth, and simultaneous motion on both axes using brushless servomotors with resolvers, optional encoders, high-quality gearing, and precision mechanical components. The azimuth structure of the positioner accommodates slip rings, rotary joints, and waveguides. These positioners have high load capacity and withstand extreme terrain and weather conditions.

The ACU accurately controls the positioner using a combination of custom and Commercial Off the Shelf (COTS) motion control components. It is designed based on a digital servo control system and separate absolute feedback devices for faster and precise positioning. The ACU has many functions and diagnostics available at the front panel interface and the optional remote interface through serial ports (RS-232 or RS-422) or Ethernet (TCP/IPv4). The front panel interface provides a simple, intuitive method for commanding the positioner. The serial ports facilitate integration with other end-user systems. Versions of these controllers have been integrated into several military systems and have been qualified to MIL-STD-810E/F, MIL-STD-461C/E for shipboard, airborne and ground-based applications.



Positioner



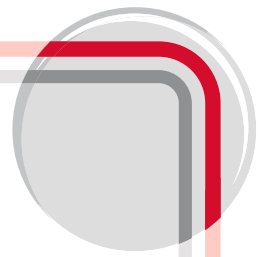
Integrated System

FEATURES

- High-accuracy position control
- Reliable performance in any environment
- High-quality finish for protection from the environment
- Optional remote-control
- Customization available

Revised November 02, 2021

Positioner Systems



1-Axis Positioners

	ARP-90L	ARP-90	ARP-30-200R	ARP-250	ARP-50	ARP-600	
Positioner	Range of Motion	±100°	0 to 90°	Continuous	Continuous	Continuous or ±200°	Continuous
	Position Data Resolution	±0.09°	±0.09°	±0.09°	±0.011°	0.09°	±0.011°
	Positioning Accuracy	±0.5°	±0.2°	±0.3°	±0.1°	±0.5°	±0.1°
	Peak Torque	12 ft.lb (16 Nm)	15 ft.lb (21 Nm)	33 ft.lb (45 Nm)	240 ft.lb (325 Nm)	850 ft.lb (1150 Nm)	2000 ft.lb (2711 Nm)
	Continuous Torque	10 ft.lb (14 Nm)	12 ft.lb (16 Nm)	30 ft.lb (40 Nm)	200 ft.lb (271 Nm)	200 ft.lb (271 Nm)	1650 ft.lb (2238 Nm)
	Vertical Load Capacity	11 lb (4.5 kg)	10 lb (4.5 kg)	30 lb (14 kg)	1000 lb (453 kg)	500 lb (227 kg)	3000 lb (1360 kg)
	Velocity	1 to 20°/s (0.1 to 3.3 rpm)	1 to 10°/s (0.1 to 1.6 rpm)	132 to 1200°/s (22 to 200 rpm)	1 to 120°/s (0.1 to 20 rpm)	0.2 to 10°/s @ 24 VDC (0.03 to 1.6 rpm) ; 0.2 to 20°/s @ 48 VDC (0.03 to 3.3 rpm)	1 to 60°/s (0.1 to 10 rpm)
	Acceleration	1 to 10°/s ²	1 to 10°/s ²	30 to 270°/s ²	1 to 30°/s ²	5°/s ² (Max)	1 to 30°/s ²
	Positioner Input Voltage	DC from controller	DC from controller	DC from controller	DC from controller	DC from controller	DC from controller
	Positioner Weight	15 lb (6.8 kg)	10 lb (4.5 kg)	170 lb (78 kg)	250 lb (114 kg)	65 lb (30 kg)	400 lb (181 kg)
	Positioner Dimensions	6" x 8" x 10" Tall	6" x 8" x 10" Tall	24" x 24" x 14" Tall	24" dia x 35" Tall	15" dia x 13" Tall	36" dia x 38" Tall
	Operating Temp Range	-67 to 131° F (-55 to +55° C)	14 to 122° F (-10 to +50° C)	21 to 131° F (-6 to 55° C)	-40 to 131° F (-40 to 55° C)	0 to 131° F (-18 to 55° C)	-40 to 131° F (-40 to 55° C)
	Relative Humidity	0 to 100%	0 to 100%	0 to 100%	0 to 100%	0 to 100%	0 to 100%
Feedback	-	Resolver with 12-bit converter	-	15-bit or 20-bit Absolute Encoder	-	20-bit Absolute Encoder	
Controller	Model No.	ACU-3F-12-AV	ACU-3F-12	ACU-3F-14-30	ACU-3F-14-CPR	ACU-3F-12R	ACU-3F-14-CPR-3PH-1
	Rack Height	2 U	2 U	2 U	4 U	2 U	4 U
	Weight	12 lb (5.5kg)	12 lb (5.5 kg)	25 lb (12 kg)	40 lb (18 kg)	20 lb (9 kg)	40 lb (18 kg)
	Input Voltage	24 to 28 VDC	120-240V, 50/60 Hz	120-240V, 50/60 Hz	120-240V, 50/60 Hz	24 to 48 VDC	208V, 3 Phase-Wye at 13 Amps max
	Compliance	MIL-STD-810 MIL-STD-461	MIL-STD-810 MIL-STD-461	MIL-STD-810 MIL-STD-461	MIL-STD-810 MIL-STD-461	MIL-STD-810 MIL-STD-461	MIL-STD-810 MIL-STD-461
Features	Front panel input keys LCD screen Joystick Ethernet connectivity	Front panel input keys LCD screen Joystick Ethernet connectivity	Front panel input keys LCD screen Joystick Ethernet connectivity	Front panel input keys LCD screen Joystick Ethernet connectivity	Front panel input keys LCD screen Joystick Ethernet connectivity	Front panel input keys LCD screen Joystick Ethernet connectivity Battery backup*	
Cable	Model No.	Cableset A-90L	Cableset A-90	Cableset A-30R	Cableset-A-250	Cableset A-50	Cableset-A-600
	Length	100 ft (30 m)	100 ft (30 m)	100 ft (30 m)	100 ft (30 m)	100 ft (30 m)	100 ft (30 m)

*Battery backup on ARP-600 allows spin down on power loss.

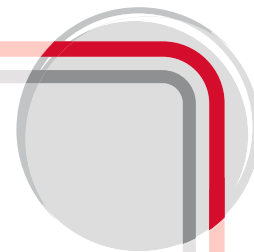
Notes	All controllers mount on a standard 19 inch wide rack.
	ARA's line of single axis positioner units are used to move both small, lightweight items like feeds and very heavy items such as large antenna arrays.
	Precision changes in movements or polarization angle, around a vertical axis, are possible in a continuous rotation format or specific angle command.
	All-weather sealed construction allows placement in harsh environment.
	Dual axis configurations typically add an Elevation component to the capability. EL/AZ models are available for tracking and surveillance applications. Positioners that are designed for dish antennas ranging from 3 ft to 20 ft have been built and used in rugged locations. Continuous rotation models for applications like weather RADAR, are also available with optional slip rings and rotary joints for the specific applications.
	All one-axis positioners come with D38999 Series III military connectors, M85049 military backshells, and 100ft(30m) cable rated for outdoor use.



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Positioner Systems



2-Axis Positioners					
	AEC-60D	EAR-125	AEP-300*	EAR-250-SYS**	
Positioner	Vertical Load Capacity	50 lb (23kg)	200 lb (90 kg)	300 lb (136 kg)	300 lb (136 kg)
	Range of Motion				
	Azimuth Axis	±200°	Continuous	Continuous	Continuous
	Elevation Axis	-20° to +90°	-5° to 185°	-95 to +95°	-5° to +185°
	Position Data Resolution				
	Azimuth Axis	0.011°	±0.011°	±0.011°	±0.011°
	Elevation Axis	0.011°	±0.011°	±0.011°	±0.011°
	Positioning Accuracy				
	Azimuth Axis	±0.1°	±0.1°	±0.2°	±0.1°
	Elevation Axis	±0.1°	±0.1°	±0.2°	±0.1°
	Continuous Torque				
	Azimuth Axis	125 ft.lb	200 ft.lb	350 ft.lb	350 ft.lb
	Elevation Axis	125 ft.lb	350 ft.lb	1200 ft.lb	325 ft.lb
	Velocity				
	Azimuth Axis	0.5 to 40°/s	1 to 360°/s	1 to 20°/s	1 to 60°/s
	Elevation Axis	0.5 to 40°/s	1 to 60°/s	1 to 10°/s	1 to 40°/s
Acceleration					
Azimuth Axis	25°/s ²	60°/s ²	20°/s ²	1 to 30°/s ²	
Elevation Axis	25°/s ²	60°/s ²	10°/s ²	1 to 30°/s ²	
Input Voltage	DC from Controller	DC from Controller	DC from Controller	DC from Controller	
Weight	125 lb (57 kg)	420 lb (191 kg)	220 lb (99 kg)	800 lb (362 kg)	
Dimensions (WxDxH)	24" x 16" x 26"	30.34" x 22.75" x 52.50"	36" x 20" x 20"	36" x 24" x 90"	
Operational Temperature	0 to 122° F (-18 to 50°C)	-20 to 131° F (-28 to 55° C)	-20 to 131° F (-28 to 55° C)	-50 to 155° F (-45 to 68° C)	
Relative Humidity	0 to 100%	0 to 100%	0 to 100%	0 to 100%	
Encoders	15-bit Absolute	15-bit Absolute	15-bit Absolute	15-bit Absolute	
Controller	Model No.	ACU-3F-24-CCPR	ACU-3F-24-CCPR	ACU-3F-24-CCPR	ACU-3D-24-CC-IA
	Weight	25 lb (11.5 kg)	45 lb (21 kg)	30 lb (13 kg)	25 lb (11 kg)
	Dimensions	19" W x 24" D	19" W x 24" D	19" W x 24" D	19" W x 24" D
	Rack Height	4 U	4 U	4 U	4 U
	Input Voltage	120-240V ac, 50/60 Hz	120-240V ac, 50/60 Hz	120-240V ac, 50/60 Hz	120-240V ac, 50/60 Hz
	Compliance	MIL-STD-810 MIL-STD-461	MIL-STD-810 MIL-STD-461	MIL-STD-810 MIL-STD-461	MIL-STD-810 MIL-STD-461
	Features	Front panel input keys LCD screen Joystick Ethernet connectivity	Front panel input keys LCD screen Joystick Ethernet connectivity	Front panel input keys LCD screen Joystick Ethernet connectivity	Manual key pad access only. No remote access.
Cable	Model No.	Cableset-60D	Cableset-125	Cableset-300	Cableset-250
	Length	100 ft (30 m)	100 ft (30 m)	100 ft (30 m)	100 ft (30 m)

*This AZ over EL configuration is typically used on Antenna Test Ranges.

**This configuration includes optional audio and visual motion warning devices and high power coaxial rotary joints.

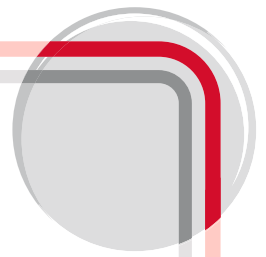
Notes	All two-axis positioners come with D38999 Series III military connectors and M85049 military backshells rated for outdoor use.
	All controllers mount on a standard 19 in (48 cm) wide rack.
	All controllers except EAR-250-SYS have Ethernet connectivity and a programmable positions movement.
	All cable set comes with AC power cable, control cable, and feedback cable.
	Standard cable set length is 30 m. Custom lengths are available.



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2-Axis Positioners (Heavy Duty)					
	EAR-600C	EAR-1200	EAR-1010	EAP-1600	
Positioner	Vertical Load Capacity	1100 lb (498 kg)	2300 lb (1043 kg)	5000 lb (2268 kg)	1600 lb (725 kg)
	Range of Motion				
	Azimuth Axis	Continuous	Continuous	Continuous	-200° to +200°
	Elevation Axis	-5° to +185°	-5° to +185°	-5° to +185°	-10° to 190°
	Position Data Resolution				
	Azimuth Axis	±0.011°	±0.011°	±0.011°	±0.0003°
	Elevation Axis	±0.011°	±0.011°	±0.011°	±0.0003°
	Positioning Accuracy				
	Azimuth Axis	±0.1°	±0.07°	±0.1°	±0.05°
	Elevation Axis	±0.1°	±0.07°	±0.1°	±0.05°
	Continuous Torque				
	Azimuth Axis	1600 ft.lb	2300 ft.lb	4500 ft.lb	15000 ft.lb
	Elevation Axis	1600 ft.lb	2300 ft.lb	3600 ft.lb	15000 ft.lb
	Velocity				
	Azimuth Axis	1 to 60°/s	1 to 36°/s	1 to 27°/s	.02 to 30°/s
	Elevation Axis	1 to 60°/s	1 to 15°/s	1 to 21°/s	.02 to 30°/s
Acceleration					
Azimuth Axis	30°/s ²	6°/s ²	6°/s ²	6°/s ²	
Elevation Axis	30°/s ²	6°/s ²	6°/s ²	6°/s ²	
Input Voltage	DC from Controller	DC from Controller	DC from Controller	208 V AC/3PH/60A	
Weight	1300 lb (589kg)	4000 lb (1814 kg)	1250 lb (567 kg)	12000 lb (5443 kg)	
Dimensions (WxDxH)	48" x 34" x 111.88"	48" x 34" x 111.88"	34" x 48" x 111.88"	60" x 80" x 160"	
Operational Temperature	-40 to 131° F (-40 to 55° C)	-40 to 131° F (-40 to 55° C)	0 to 131° F (-18 to 55° C)	0 to 108° F (-18 to 42° C)	
Relative Humidity	0 to 100%	0 to 100%	0 to 100%	0 to 100%	
Encoders	15-bit Absolute	15-bit Absolute	15-bit Absolute	20-bit Absolute	
Controller	Model No.	ACU-3F-24-CCPR	ACU-3F-24-CCPR	ACU-3F-24-CC	ACU-3F-E
	Weight	45 lb(21 kg)	40 lb (18 kg)	45 lb (21 kg)	25 lb (11 kg)
	Dimensions	19" W x 24" D	19" W x 24" D	19" W x 24" D	19" W x 24" D
	Rack Height	4 U	4 U	4 U	4 U
	Input Voltage	208-240V ac, single phase	208-240V ac, single phase	208-240V ac, single phase	120-240V ac, 50/60 Hz
	Compliance	MIL-STD-810 MIL-STD-461	MIL-STD-810 MIL-STD-461	MIL-STD-810 MIL-STD-461	MIL-STD-810 MIL-STD-461
	Features	Front panel input keys LCD screen Joystick Ethernet connectivity	Front panel input keys LCD screen Joystick Ethernet connectivity	Front panel input keys LCD screen Joystick Ethernet connectivity	Front panel input keys LCD screen Joystick Ethernet connectivity
Cable	Model No.	Cablesset-600	Cablesset-1200	Cablesset-1010	Cablesset-1600
	Length	100 ft (30 m)	100 ft (30 m)	100 ft (30 m)	100 ft (30 m)

Notes	All two-axis positioners come with D38999 Series III military connectors and M85049 military backshells rated for outdoor use.
	All controllers mount on a standard 19 in (48 cm) wide rack.
	All controllers except EAR-250-SYS have Ethernet connectivity and a programmable positions movement.
	All cable set comes with AC power cable, control cable, and feedback cable.
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