

AZ/EL/AZ Positioners - Heavy Duty

AL-4516-1 • AL-4506-1 • AL-4507-1 • AL-4517-1 • AL-4509-1 • AL-4510-1 • AL-4511-1

The MVG-Orbit/FR Legacy Series AZ/EL/AZ Positioners provide accurate, balanced rotation, and controllable velocity. Their rugged yet straight-forward construction ensures maximum reliability and trouble-free operation, yielding the best size and weight/performance ratio.

Typically, the unit includes the body, precise slew bearings, DC motor, gear reducer, encoder/synchro, and limit switch assembly. The turntable surface is designed with a threaded mounting hole pattern for ease of use. A Safe/Operate switch is included to ensure safety.

AL-4507-1



Applications

- General Purpose Positioning Subsystems
- Far-Field & Near-Field Antenna Measurements
- Aircraft Measurements
- Indoor & Outdoor Use

Product Highlights

- Broad Selection - 7 Models
- Vertical Loads Ranging from 30,000 to 50,000 lbs (13,608 to 22,680 kg)
- Turntable Diameters Ranging from 34.3 to 74.0 in (870 to 1,880 mm)
- Excellent Angular Position Accuracy
- Low Backlash Design
- Precision Bearings
- Closed Loop Servo Control
- Industry-Standard Wiring
- Tachometers for Optimum Speed Regulation & Control
- Wide Operating Temperature Range: - 4° F to 140° F (- 20° C to 60° C)
- Fully Enclosed Design of Drive Gear Train & Data Take-Off
- Wide Variety of Available Options

Specifications - Legacy Series AZ/EL/AZ Heavy Duty Positioners

PARAMETER	UNITS	POSITIONER MODEL						
								
		AL-4516-1	AL-4506-1	AL-4507-1	AL-4517-1	AL-4509-1	AL-4510-1	AL-4511-1
Dimensional Drawing Number	DCD	10-2101	10-2047	10-2047	217-0650	16-1958	06-1585	10-2103

OPERATIONAL

Bending Moment	ft-lbs	30,000	35,000	45,000	57700	150,000	300,000	300,000	
	kg-m	4,150	4,840	6,220	7700	20,740	41,480	41,480	
Vertical Load	lbs	30,000	30,000	30,000	33000	40,000	45,000	50,000	
	kg	13,610	13,610	13,610	15000	18,140	20,410	20,680	
Delivered Torque	Upper Azimuth	ft-lbs	2,800	3,000	5,000	10000	30,000	30,000	40,000
		kg-m	390	415	690	1380	4,150	4,150	5,530
	Elevation	ft-lbs	20,000	24,000	30,000	52000	100,000	260,000	260,000
		kg-m	2,765	3,320	4,150	7200	13,830	35,950	35,950
	Lower Azimuth	ft-lbs	6,000	6,000	6,000	10000	30,000	35,000	80,000
		kg-m	830	830	830	1380	4,150	4,840	11,060
Withstand Torque	Upper Azimuth	ft-lbs	4,200	4,200	7,000	12000	35,000	45,000	60,000
		kg-m	580	580	970	1660	4,840	6,220	8,295
	Elevation	ft-lbs	30,000	35,000	45,000	60000	150,000	300,000	300,000
		kg-m	4,150	4,840	6,220	8370	20,740	41,480	41,480
	Lower Azimuth	ft-lbs	14,000	14,000	14,000	14000	45,000	45,000	100,000
		kg-m	1,940	1,940	1,940	1940	6,220	6,220	13,830
Drive Power	Upper Azimuth	hp	3/4	3/4	3/4	1,5	5	5	5
	Elevation	hp	3/4	3/4	3/4	1,5	5	5	5
	Lower Azimuth	hp	3/4	3/4	3/4	1,5	5	5	5
Nominal Speed	Upper Azimuth	rpm	0.5	0.3	0.3	0,2	0.33	0.15	0.2
	Elevation	deg/min	20	20	15	7	25	8	10
	Lower Azimuth	rpm	0.3	0.3	0.3	0,2	0.2	0.15	0.1
Standard Angle Transducer Format			Absolute Encoder	Absolute Encoder	Absolute Encoder	Absolute Encoder	Absolute Encoder	Absolute Encoder	
Standard Accuracy	Upper Azimuth	deg	± 0.03	± 0.03	± 0.03	± 0.03	± 0.02	± 0.03	± 0.02
	Elevation	deg	± 0.04	± 0.04	± 0.04	± 0.04	± 0.02	± 0.03	± 0.03
	Lower Azimuth	deg	± 0.03	± 0.03	± 0.03	± 0.03	± 0.02	± 0.02	± 0.02
Maximum Backlash	Upper Azimuth	deg	0.05	0.05	0.04	0.04	0.04	0.03	0.02
	Elevation	deg	0.03	0.05	0.03	0.03	0.03	0.03	0.02
	Lower Azimuth	deg	0.04	0.05	0.05	0.05	0.03	0.02	0.02
Elevation Limit-to-Limit Travel	deg	+ 92, - 45	+ 92, - 45	+ 92, - 45	+ 92, - 45	+ 92, - 45	+ 92, - 35	+ 95, - 45	

PHYSICAL

Height at 0° Elevation	in	60	72	72	72	99	129	151
	mm	1,473	1,830	1,830	1,830	2,510	3,277	3,841
Weight	lbs	4,500	5,350	5,450	6,400	25,300	46,500	50,000
	kg	2,041	2,430	2,480	2,900	11,476	21,092	22,680
Turntable Diameter	in	34.3	34.3	34.3	34.3	48.0	74.0	74.0
	mm	870	870	870	871	1,219	1,880	1,880
Lower Azimuth Moment Bearing Capacity (Static)	ft-lbs	75,000	75,000	75,000	75,000	800,000	800,000	800,000
	kg-m	10,369	10,369	10,369	10,369	110,604	110,604	110,604

ENVIRONMENTAL

Operating Temperature	- 4° F to 140° F (- 20° C to 60° C)
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PARAMETER	UNITS	POSITIONER MODEL							
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OPTIONS

EN001	Incremental Encoder (Standard Accuracy)		Opt	Opt	Opt	Opt	Opt	Opt	Opt	
	Accuracy – Upper Azimuth	deg	± 0.03	± 0.03	± 0.03	± 0.03	± 0.02	± 0.03	± 0.02	
	Accuracy – Elevation	deg	± 0.04	± 0.04	± 0.04	± 0.04	± 0.02	± 0.03	± 0.03	
	Accuracy – Lower Azimuth	deg	± 0.03	± 0.03	± 0.03	± 0.03	± 0.02	± 0.02	± 0.02	
EN002	Direct Incremental Encoder (High Accuracy)		Opt	Opt	Opt	Opt	Opt	Opt	Opt	
	Accuracy – Upper Azimuth	deg	± 0.005	± 0.005	± 0.005	± 0.005	± 0.005	± 0.005	± 0.005	
	Accuracy – Elevation	deg	± 0.005	± 0.005	± 0.005	± 0.005	± 0.005	± 0.005	± 0.005	
	Accuracy – Lower Azimuth	deg	± 0.005	± 0.005	± 0.005	± 0.005	± 0.005	± 0.005	± 0.005	
EN003	Direct Absolute Encoder (High Accuracy)		Opt	Opt	Opt	Opt	Opt	Opt	Opt	
	Accuracy – Upper Azimuth	deg	± 0.005	± 0.005	± 0.005	± 0.005	± 0.005	± 0.005	± 0.005	
	Accuracy – Elevation	deg	± 0.005	± 0.005	± 0.005	± 0.005	± 0.005	± 0.005	± 0.005	
	Accuracy – Lower Azimuth	deg	± 0.005	± 0.005	± 0.005	± 0.005	± 0.005	± 0.005	± 0.005	
SR	Slip Ring ³		SR101U SR201U SR402U SR402L SR502L	SR101U SR201U SR402U SR402L SR502L	SR101U SR201U SR402U SR402L SR502L	SR101U SR201U SR402U SR402L SR502L	SR051U SR101U SR201U SR301U SR402U SR512L SR812L	SR051U SR101U SR201U SR301U SR402U SR512L SR812L	SR051U SR101U SR201U SR301U SR402U SR512L SR812L	
			RJ12U RJ18U RJ26U RJ40U RJ50U RJ12L RJ18L RJ26L RJ40L RJ50L	RJ12U RJ18U RJ26U RJ40U RJ50U RJ12L RJ18L RJ26L RJ40L RJ50L	RJ12U RJ18U RJ26U RJ40U RJ50U RJ12L RJ18L RJ26L RJ40L RJ50L	RJ12U RJ18U RJ26U RJ40U RJ50U RJ12L RJ18L RJ26L RJ40L RJ50L	RJ12U RJ18U RJ26U RJ40U RJ50U RJ12L RJ18L RJ26L RJ40L RJ50L	RJ12U RJ18U RJ26U RJ40U RJ50U RJ12L RJ18L RJ26L RJ40L RJ50L	RJ12U RJ18U RJ26U RJ40U RJ50U RJ12L RJ18L RJ26L RJ40L RJ50L	
			TH002-HDU TH003-HDL	TH002-HDU TH003-HDL	TH002-HDU TH003-HDL	TH002-HDU TH003-HDL	TH002-HDU TH003-HDL	TH002-HDU TH003-HDL	TH002-HDU TH003-HDL	TH002-HDU TH003-HDL
		in	6.5	6.5	6.5	6.5	8.0	8.0	8.0	
		mm	165	165	165	165	203	203	203	
		EX	Internal Harnessing		EX002	EX002	EX002	EX002	EX002	EX002
CF	Connector Format		-	-	-	-	-	-	-	
LS	Leveling Screw (set)		LS002-10	LS002-10	LS002-10	LS002-10	LS002-5	LS002-12	LS002-24	
ST	Stow Lock		ST002U ST002E ST002L	ST002U ST002E ST002L	ST002U ST002E ST002L	ST002U ST002E ST002L	ST002U ST002E ST002L	ST002U ST002E ST002L	ST002U ST002E ST002L	
			MM002	MM002	MM002	MM002	MM002	MM002	MM002	
		IC	Interlock Circuit		IC002	IC002	IC002	IC002	IC002	IC002

(-) N/A Opt Optional

Supplied Accessories

Digital Documentation Set

User Manual (Installation, Setup, Operation & Maintenance)

Technical Notes

- 1** All accuracy data is based on no-load conditions.
Contact MVG-ORBIT/FR for accuracy under load conditions
- 2** All models are equipped with adjustable limit switches capable of approx 20° to 900° total travel in AZ axis. When rotary joint and slip ring options are specified, limit switches remain but are electrically disabled. Limit switches are factory-set at:
- Upper Azimuth Axis: 400° (± 200°)
 - Elevation Axis: 137° (- 45 to + 92°)
(- 35 to + 92 ° for AL4509)
 - Lower Azimuth Axis: 400° (± 200°)
- 3** Slip Ring & Rotary Joint Option Notes:
- Certain slip ring options may require an extension cap that protrudes above the turntable surface. Positioner height may increase. Consult MVG-ORBIT/FR
 - Slip ring contacts for customer use are provided with dedicated connectors
 - When rotary joint and/or slip ring options are specified, no central thru-hole is available to the user. Option TH002-HDU and TH003-HDL are available for upper and lower AZ in lieu of rotary joint and/or slip ring options

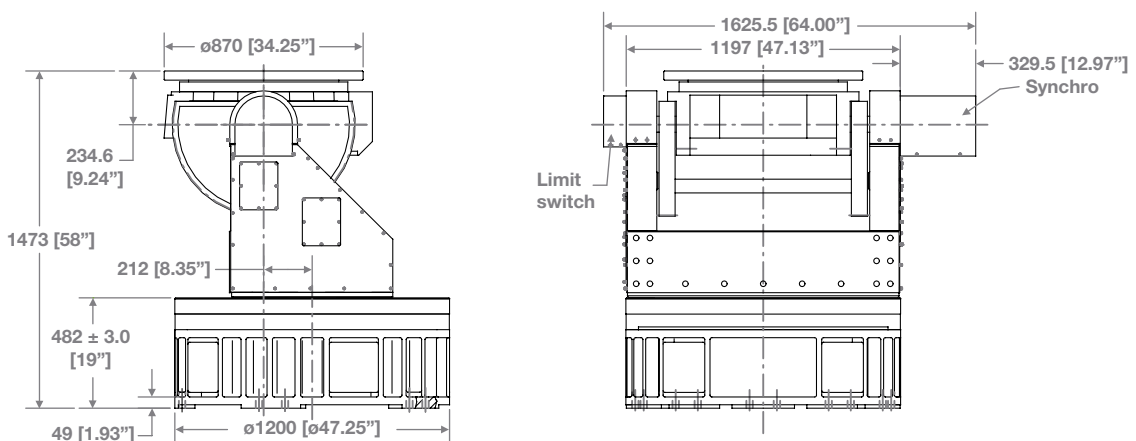
AL-4507-1



AL-4510-1



Dimensional drawing - AL-4506-1 & 4507-1*



* Example drawing for general reference, please consult MVG-Orbit/FR for ICD.



Contact your local sales representative for more information

salesteam@mvg-world.com

www.mvg-world.com/positioners