



COMPACT SERIES AZ/EL/AZ

AZ/EL/AZ Positioners

LIGHT DUTY



AL-4555-1 • AL-4557-1 • AL-4580-1 • AL-4581-1 • AL-4582-LP

These 3-axis positioners provide accurate, balanced rotation, and controllable velocity in the positioning of light-duty antennas under test. Their compact and low-profile design optimizes space in test configurations as well as high operational performance, yielding the best size and weight/performance ratio.

Typically, the unit includes the body, precise bearings, DC motor, gear reducer, encoder and limit switch assemblies. The turntable surface is designed with a threaded mounting-hole pattern for ease of use.

APPLICATIONS

- General purpose positioning subsystems
- Far-field & near-field antenna measurements
- Small antenna testing
- Indoor use

PRODUCT HIGHLIGHTS

- Compact, low profile design
- High angular positioning
- Adjustable travel in all axes
- Rotary joint 18/40 GHz (Optional)
- Upper AZ through hole (Optional)
- Vertical loads ranging from 13-1000 lbs (6-2200 kg)
- Turntable diameters ranging from 3.7-12.5 in (95-318 mm)
- Excellent angular position accuracy
- Low backlash design
- Precision bearings
- Closed loop servo control
- Industry-standard wiring
- Encoders for optimum speed regulation & control
- Fully enclosed design of drive gear train & data take-off

Specifications - Compact Series AZ/EL/AZ Light Duty Positioners

PARAMETER		UNITS	POSITIONER MODELS				
			AL-4555-1	AL-4557-1	AL-4580-1	AL-4581-1	AL-4582-LP
Dimensional Drawing Number		DCD	220-1196	220-1207	212-0960	214-0630	221-0999
OPERATIONAL							
Bending moment (max)		kg-m	2	10	35	80	138
		ft-lbs	14.5	72.3	250	580	1000
Vertical load (max)		kg	6	25	60	273	1000
		lbs	13.2	55.1	132	600	2200
Delivered torque	Upper azimuth	kg-m	1	7	12	20	70
		ft-lbs	7.2	50.6	90	150	500
	Elevation	kg-m	1	7	38	60	140
		ft-lbs	7.2	50.6	273	435	1000
	Lower azimuth	kg-m	1	7	12	20	70
		ft-lbs	7.2	50.6	90	150	500
Withstand torque	Upper azimuth	kg-m	3	10	20	30	83
		ft-lbs	21.7	72.3	150	210	600
	Elevation	kg-m	3	10	58	80	166
		ft-lbs	21.7	72.3	420	580	1200
	Lower azimuth	kg-m	3	10	20	30	83
		ft-lbs	21.7	72.3	150	210	600
Drive power	Upper azimuth	hp	1/30	1/20	1/8	1/8	1/3
	Elevation	hp	1/30	1/20	1/8	1/4	1/3
	Lower azimuth	hp	1/30	1/20	1/8	1/8	1/3
Nominal speed	Upper azimuth	rpm	1	0.7	2.4	2.4	1.5
	Elevation	deg/min	360	250	360	360	0.7
	Lower azimuth	rpm	1	0.7	2	2	1.5
Position accuracy Std. encoder / High accuracy encoder ^{1, 2, 3}	Upper azimuth	deg	± 0.04	± 0.04	± 0.04 / ± 0.005	± 0.04 / ± 0.005	± 0.03
	Elevation	deg	± 0.04	± 0.04	± 0.04 / ± 0.005	± 0.04 / ± 0.005	± 0.04
	Lower azimuth	deg	± 0.04	± 0.04	± 0.04 / ± 0.005	± 0.04 / ± 0.005	± 0.03
Maximum backlash	Upper azimuth	deg	0.05	0.05	0.05	0.05	± 0.04
	Elevation	deg	0.05	0.05	0.05	0.05	± 0.03
	Lower azimuth	deg	0.05	0.05	0.05	0.05	± 0.04
Travel ^{1, 2, 3, 4}	Upper azimuth	deg	± 200	± 200	± 200	± 200	± 200
	Elevation	deg	± 92	± 92	± 92	± 92	± 92
	Lower azimuth	deg	± 200	± 92	± 200	± 200	± 200
Counterweight option	kg-m	-	-	-	-	150	
	ft-lbs	-	-	-	-	-	
Balanced EL torque (maximum) ^{2, 5}	ft-lbs	-	-	-	-	1080	
	in	-	-	-	-	2,3	

PHYSICAL

Height at 0° elevation ⁶	mm	317	475	674	715	923.5
	in	12.5	18.7	26.5	28.1	36.3
Weight	kg	16	25	84	130	260
	lbs	35	55	185	286	573
Turntable diameter	mm	95	150	261	318	319.5
	in	3.7	5.9	10.3	12.5	12.5

ENVIRONMENTAL

Operating temperature	- 4° F to 140° F (- 20° C to 60° C)
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PARAMETER		UNITS	POSITIONER MODELS				
			AL-4555-1	AL-4557-1	AL-4580-1	AL-4581-1	AL-4582-LP

OPTIONS

EN001	Incremental encoder (standard accuracy)		S	S	S	S	Opt
	Accuracy – upper azimuth	deg	± 0.04	± 0.04	± 0.04	± 0.04	± 0.03
	Accuracy – elevation	deg	± 0.04	± 0.04	± 0.04	± 0.05	± 0.04
	Accuracy – lower azimuth	deg	± 0.04	± 0.04	± 0.04	± 0.04	± 0.04
EN002	Absolute encoder (standard accuracy)		-	-	-	-	Opt
	Accuracy – upper azimuth	deg	-	-	-	-	± 0.05
	Accuracy – elevation	deg	-	-	-	-	± 0.05
	Accuracy – lower azimuth	deg	-	-	-	-	± 0.04
EN003	Absolute encoder (standard accuracy)		-	-	-	-	Opt
	Accuracy – upper azimuth	deg	-	-	-	-	± 0.005
	Accuracy – elevation	deg	-	-	-	-	± 0.005
	Accuracy – lower azimuth	deg	-	-	-	-	± 0.04
EN004	Absolute encoder (standard accuracy)		Opt.	Opt.	Opt.	Opt.	Opt
	Accuracy – upper azimuth	deg	NA	± 0.04	± 0.04	± 0.04	± 0.03
	Accuracy – elevation	deg	NA	± 0.04	± 0.04	± 0.04	± 0.04
	Accuracy – lower azimuth	deg	NA	± 0.04	± 0.04	± 0.04	± 0.04
SR	Slip ring ^{3,10}		-	-	SR051U SR101U SR201U	SR051U SR101U SR201U	SR051U SR101U SR201U
RJ	Rotary joint ^{3,10}		RJ18L RJ26L RJ40L RJ50L	RJ18L RJ26L RJ40L RJ50L	RJ18L RJ26L RJ40L RJ50L	RJ18L RJ26L RJ40L RJ50L	RJ12U RJ18L RJ26L RJ40L RJ50L
TH	Central thru-hole inner diameter		S	S	TH002 TH003	TH002 TH003	TH002-U-E
		in	0.75	1.6	1.5	2.5	2.4
		mm	20	40	38	63	60
EX	Internal harnessing		-	-	-	-	EX002
CF	Connector format		-	-	-	-	-
LS	Leveling screw (set)		-	-	-	-	-
ST	Stow lock		-	-	-	-	ST002U ST002E
MM	Mounting thread (MM Std.)		-	-	MM002 MM003	MM002 MM003	MM002
IC	Interlock circuit		-	-	-	-	IC002
WG	Wedge		-	-	-	-	WG001

(-) N/A S Standard Opt Optional

Supplied Accessories

Digital Documentation Set

User manual (installation, setup, operation & maintenance)

Technical Notes

- 1** With direct-drive encoder option implementation, the accuracy will be ± 0.005° and positioner dimensions might change slightly. (Only for AL-4580/1).
- 2** Direct drive high accuracy options are not available for the small models, AL-4555-1 and AL-4557-1 due to size. For required enhanced accuracy contact factory.
- 3** Incremental encoder pour AL-5832-LP
- 4** Pre-adjusted at factory to ± 200° or according to customer order specifications.
- 5** Base riser shall be applied with counter-weight option to avoid collision with the floor (options BR and CW001).
- 6** Height of positioner AL-4555-1 and AL-4557-1 can be reduced to approx. 60 mm when positioners are installed with cables hanging below.
- 7** All accuracy data is based on no-load conditions. Contact MVG-ORBIT/FR for accuracy under load conditions.

- 8** AL-4580-1 & AL-4581-1 are equipped with adjustable limit switches capable of approx. 20° to 400° total travel. When rotary joint and slip ring options are specified, limit switches remain but are electrically disabled. Multi-axis positioners are factory-set at:
 - Azimuth Axis: ± 200°
 - Elevation Axis: ± 92°

- 9** AL-4555 & AL-4557 are equipped with adjustable limit for coarse adjustments only.

- 10** 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 and TH003 are available in lieu of rotary joint and/or slip ring options.

- 11** For slip ring option in AL-4555-1 and AL-4557-1 consult factory. Synchro and direct-drive encoders are not applicable for these models due to their compact size.

- 12** For outdoor applications, contact factory.

- 13** DD Encoder option cannot be combined with TH option

- 14** SR option cannot be combined with TH option

Dimensional drawing - AL-4581-1

