AZ/EL/AZ Positioners - Light Duty

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

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.

AL-4581-1

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 13-600 lbs (6-270 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

mvg Microwave Vision Group

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
Dimensional Drawing Number		DCD	220-1196	220-1207	212-0960	214-0630
OPERATIONAL						
Bending moment (max)		kg-m	2	10	35	80
		ft-lbs	14.5	72.3	250	580
Vertical load (max)		kg	6	25	60	273
		lbs	13.2	55.1	132	600
Delivered torque	Upper azimuth	kg-m	1	7	12	20
		ft-lbs	7.2	50.6	90	150
	Elevation	kg-m	1	7	38	60
		ft-lbs	7.2	50.6	273	435
	Lower azimuth	kg-m	1	7	12	20
		ft-lbs	7.2	50.6	90	150
Withstand torque	Upper azimuth	kg-m	3	10	20	30
		ft-lbs	21.7	72.3	150	210
	Elevation	kg-m	3	10	58	80
		ft-lbs	21.7	72.3	420	580
	Lower azimuth	kg-m	3	10	20	30
		ft-lbs	21.7	72.3	150	210
Drive power	Upper azimuth	hp	1/30	1/20	1/8	1/8
	Elevation	hp	1/30	1/20	1/8	1/4
	Lower azimuth	hp	1/30	1/20	1/8	1/8
Nominal speed	Upper azimuth	rpm	1	0.7	2.4	2.4
	Elevation	deg/min	360	250	360	360
	Lower azimuth	rpm	1	0.7	2.4	2.4
Position accuracy Std. encoder / High accuracy encoder[1, 2]	Upper azimuth	deg	± 0.04	± 0.04	± 0.04 / ± 0.005	± 0.04 / ± 0.005
	Elevation	deg	± 0.04	± 0.04	± 0.04 / ± 0.005	± 0.04 / ± 0.005
	Lower azimuth	deg	± 0.04	± 0.04	± 0.04 / ± 0.005	± 0.04 / ± 0.005
Maximum backlash	Upper azimuth	deg	0.05	0.05	0.05	0.05
	Elevation	deg	0.05	0.05	0.05	0.05
	Lower azimuth	deg	0.05	0.05	0.05	0.05
Travel[1, 2,3]	Upper azimuth	deg	± 200	± 200	± 200	± 200
	Elevation	deg	± 92	± 92	± 92	± 92
	Lower azimuth	deg	± 200	± 92	± 200	± 200
PHYSICAL						
Height at 0º elevation[4]		mm	317	475	674	715
		in	12.5	18.7	26.5	28.1
Weight		kg	16	25	84	130
		lbs	35	55	185	286
Turntable diameter		mm	95	150	261	318
		in	3.7	5.9	10.3	12.5
ENVIRONMENTAL						
Operating temperature		- 4° F to 140° F (- 20° C to 60° C)				

PARAMETER		UNITS	POSITIONER MODELS			
			AL-4555-1	AL-4557-1	AL-4580-1	AL-4581-1
OPTIONS						
EN001	**Incremental encoder (standard accuracy)**		S	S	S	S
	Accuracy – upper azimuth	**deg**	± 0.04	± 0.04	± 0.04	± 0.04
	Accuracy – elevation	**deg**	± 0.04	± 0.04	± 0.04	± 0.05
	Accuracy – lower azimuth	**deg**	± 0.04	± 0.04	± 0.04	± 0.04
EN004	**Absolute encoder (standard accuracy)**		Opt.	Opt.	Opt.	Opt.
	Accuracy – upper azimuth	**deg**	NA	± 0.04	± 0.04	± 0.04
	Accuracy – elevation	**deg**	NA	± 0.04	± 0.04	± 0.04
	Accuracy – lower azimuth	**deg**	NA	± 0.04	± 0.04	± 0.04
SR	**Slip ring[3]**		-	-	SR051U SR101U SR201U	SR051U SR101U SR201U
RJ	**Rotary joint[3]**		RJ18L RJ26L RJ40L RJ50L	RJ18L RJ26L RJ40L RJ50L	RJ18L RJ26L RJ40L RJ50L	RJ18L RJ26L RJ40L RJ50L
TH	**Central thru-hole inner diameter**		S	S	TH002 TH003	TH002 TH003
		in	0.75	1.6	1.5	2.5
		mm	20	40	38	63
EX	**Internal harnessing**		-	-	-	-
CF	**Connector format**		-	-	-	-
LS	**Leveling screw (set)**		-	-	-	-
ST	**Stow lock**		-	-	-	-
MM	**Mounting thread (MM Std.)**		-	-	MM002 MM003	MM002 MM003
IC	**Interlock circuit**		-	-	-	-

(-) 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 Pre-adjusted at factory to ± 200° or according to customer order specifications.

4 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.

5 All accuracy data is based on no-load conditions. Contact MVG-ORBIT/FR for accuracy under load conditions.

6 AL-4580-1 & AL-4581-1 are equipped with adjustable limit switches capable of approx. 20º to 400º 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: ± 200º
- Elevation Axis: ± 92º

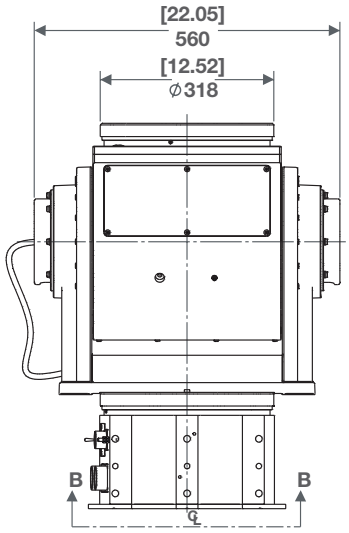
7 AL-4555 & AL-4557 are equipped with adjustable limit for coarse adjustments only.

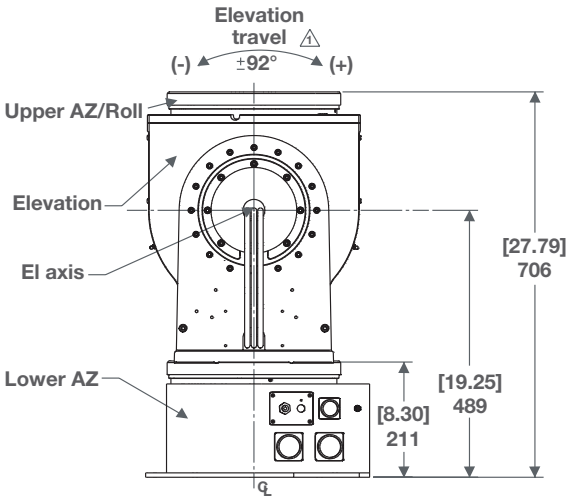
8 Slip ring & rotary joint option notes:
- Certain slip ring options may require an extension cap that protrudes above the turntable surface. Positioner height may increase. Consult MVG-ORBIT/FR.
- Slip ring contacts for customer use are provided with dedicated connectors.
- When rotary joint and/or 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.

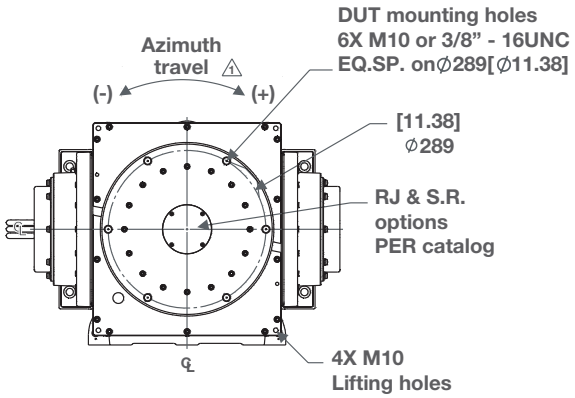
9 For slip ring option in AL-4555-1 and AL-4557-1 consult factory. Synchro and direct-drive encoders are not applicable for these models due to their compact size.

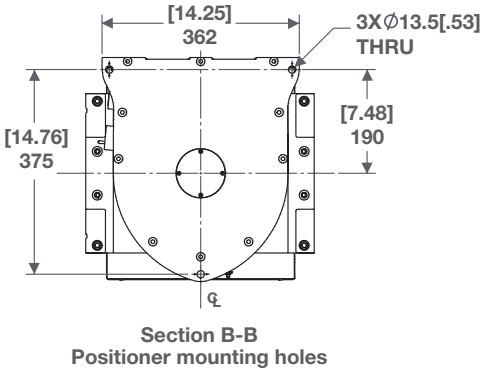
10 For outdoor applications, contact factory.

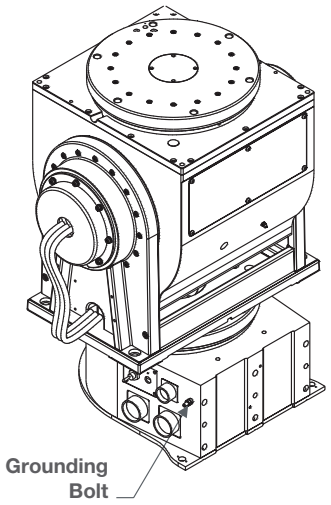
Dimensional drawing - AL-4581-1











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