



High Precision

General Purpose

- 3, 5 and 10 Turn Models
- High Resolution
- $\pm 0.25\%$ Standard Linearity
- 100 to 100K Ohm Models

The AL17 / 19 series can serve as a precision controller or as an angle (feedback) sensor. Industry standard dimensions and in production for over 30 years, the AL 17 / 19 series has set the standard for quality and performance.

Electrical Specifications	AL1703(M) AL1903(M)	AL1705(M) AL1905(M)	AL1710(M) AL1910(M)
Resistance Values (ohms)	100 to 50K		10 to 100K
Resistance Tolerance	$\pm 5\%$		
Linearity Tolerance	$\pm 0.25\%$ (0.1% opt.)		
Electrical Angle $+10^\circ$, -0°	1080°	1800°	3600°
End Resistance	< 0.05%		
Insulation Resistance	1000 Mohms at 500 VDC		
Dielectric Strength	1000 VAC, 1 minute		
Noise	<100 ohms E.N.R.		
Power	1.5W		2W
Mechanical Specifications			
Number of Turns	3	5	10
Mechanical Angle $+10^\circ$, -0°	1080°	1800°	3600°
Starting (max.) Torque (Ncm)	1		
Stopper Strength (Ncm)	150		
Vibration	15g, 10Hz to 2,000Hz		
Shock	50g, 11ms		
Max. Axial Play of Shaft (mm)	0.3		
Max. Radial Play of Shaft (mm)	0.1		
Typical Life (# of turns)	300,000	500,000	1 million
Bearing	sleeve (servo mount versions, see HS1710 and HHS1710)		
Environmental Specifications			
Operating Temperature	-55°C to +105°C		
IP Protection Grade	IP40 (IP65 with O-ring, shaft side, type D)		
Standards	MIL-R-19, MIL-R-12934		

Materials	
Housing	Glass reinforced nylon
Bushing	17xx & 19xx: glass reinforced nylon / 17xxM & 19xxM: Metal
Shaft	Stainless steel
Terminals	Gold plated brass

Resolution Chart (%)

Resistance value (ohms)	Resolution (%)			V _{max} across element (V)			I _{max} through element (mA)*			Temperature coefficient of wire (±...ppm/K)
	1710 1910	1705 1905	1703 1903	1710 1910	1705 1905	1703 1903	1710 1910	1705 1905	1703 1903	
10	0.0620	-	-	4.5	-	-	440	-	-	700
20	0.0570	-	-	6.3	-	-	316	-	-	700
50	0.0530	-	-	10	-	-	200	-	-	700
100	0.0476	0.0950	0.1030	14	12	10	140	122	100	80
200	0.0403	0.0800	0.1020	20	17	14	100	86	71	80
500	0.0357	0.0645	0.0850	32	27	22	60	54	44	80
1k	0.0284	0.0526	0.0666	45	39	32	44	38	32	20
2k	0.0199	0.0417	0.0503	63	55	45	31	27	22	20
5k	0.0208	0.0308	0.0385	100	87	70	20	17	14	20
10k	0.0192	0.0250	0.0328	140	120	100	14	12	10	20
20k	0.0128	0.0193	0.0248	200	173	140	10	8	7	20
50k	0.0099	0.0141	0.0206	200	200	200	5	6	4	20
100k	0.0094	-	-	200	-	-	4	-	-	20

* Maximum current through the wiper must not exceed 30mA

Dimensions (mm)

Model	Shaft Dia. d1 (Ø)	Bushing 3/8-32UNEF d2
17xx	6.35	Nylon
17xxM	6.35	Metal
19xx	6	Nylon
19xxM	6	Metal

Options

- Rear shaft extension
- Multiple gangs (up to 10)
- Tighter tolerance
- 1,2,3,4,6,7 & 8 turn version
- Special shaft shapes
- High torque
- Slipping clutch
- Sealed housing
- Shaft o-ring
- Plastic shaft
- Extra tap (10 turn version)
- Special resistance values

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