

# ADR Series

## Direct Drive Rotary Motor

**Direct drive, brushless motor fully integrated  
with encoder and bearing**

**Low cogging torque**

**Low speed and high speed windings**

**Precise homing through index pulse**



**Where Precision Matters**



## ADR110 Specifications

Model	Units	ADR110-A75		ADR110-A98	
		S	P	S	P
Table diameter	mm	110		110	
Table height	mm	75		98	
Number of poles		16		16	
Continuous torque	Nm	1.9	1.9	4.2	4.2
Peak torque	Nm	5.8	5.8	12.6	12.6
Torque constant	Nm/A	0.65	0.32	1.40	0.70
Back EMF constant	V/rpm	0.078	0.039	0.169	0.084
Continuous current	A	3.0	6.0	3.0	6.0
Peak current	A	9.0	18.0	9.0	18.0
Resistance	ohms	3.20	0.80	4.90	1.21
Inductance	mH	17.15	4.29	26.26	6.49
Electrical time constant	ms	5.36	5.36	5.36	5.36
Motor constant	Nm/SqRt(W)	0.36	0.36	0.63	0.63
Mass	Kg	3.20	3.20	4.60	4.60
Rotor Inertia	Kgm2	0.0003086	0.0003086	0.0004419	0.0004419
Rec. max speed @230V AC	rpm	3456	7278	1517	3299
MS-12000 optical SINCOS encoder	lines	12,000	12,000	12,000	12,000
MS-12000 optical digital encoder (40X)	Counts/rev	480,000	480,000	480,000	480,000
Accuracy (based on MS-12000, 40X)	arc sec	+/-27	+/-27	+/-27	+/-27
Repeatability (based on MS-12000, 40X)	arc sec	+/-2.7	+/-2.7	+/-2.7	+/-2.7
Radial runout	um	25	25	25	25
Axial runout	um	25	25	25	25
Max axial load	N	700		700	
Max moment load	Nm	20		20	

## ADR135 Specifications

Model	Units	ADR135-A90		ADR135-A115	
		S	P	S	P
Table diameter	mm	135		135	
Table height	mm	90		115	
Number of poles		16		16	
Continuous torque	Nm	5.2	5.2	11.0	11.0
Peak torque	Nm	15.5	15.5	32.9	32.9
Torque constant	Nm/A	1.72	0.86	3.66	1.83
Back EMF constant	V/rpm	0.208	0.104	0.442	0.221
Continuous current	A	3.0	6.0	3.0	6.0
Peak current	A	9.0	18.0	9.0	18.0
Resistance	ohms	6.60	1.65	10.70	2.70
Inductance	mH	45.30	11.20	72.76	18.63
Electrical time constant	ms	6.86	6.79	6.80	6.90
Motor constant	Nm/SqRt(W)	0.67	0.67	1.12	1.11
Mass	Kg	3.90	3.90	5.70	5.70
Rotor Inertia	Kgm <sup>2</sup>	0.000992	0.000992	0.001332	0.001332
Rec. max speed @230V AC	rpm	1157	2599	461	1137
MS-12000 optical SINCOS encoder	lines	12,000	12,000	12,000	12,000
MS-12000 optical digital encoder (40X)	Counts/rev	480,000	480,000	480,000	480,000
Accuracy (based on MS-12000, 40X)	arc sec	+/-27	+/-27	+/-27	+/-27
Repeatability (based on MS-12000, 40X)	arc sec	+/-2.7	+/-2.7	+/-2.7	+/-2.7
Radial runout	um	30	30	30	30
Axial runout	um	30	30	30	30
Max axial load	N	1050		1050	
Max moment load	Nm	35		45	

## ADR175 Specifications

Model	Units	ADR175-A102		ADR175-A138	
		S	P	S	P
Table diameter	mm	175		175	
Table height	mm	102		138	
Number of poles		16		16	
Continuous torque	Nm	15.7	15.7	32.9	32.9
Peak torque	Nm	47.2	47.2	98.6	98.6
Torque constant	Nm/A	3.93	1.97	8.22	4.11
Back EMF constant	V/rpm	0.475	0.238	0.994	0.497
Continuous current	A	4.0	8.0	4.0	8.0
Peak current	A	12.0	24.0	12.0	24.0
Resistance	ohms	5.27	1.30	8.30	2.13
Inductance	mH	45.72	11.27	72.00	18.51
Electrical time constant	ms	8.67	8.67	8.67	8.67
Motor constant	Nm/SqRt(W)	1.71	1.72	2.85	2.81
Mass	Kg	10.0	10.0	11.6	11.6
Rotor Inertia	Kgm <sup>2</sup>	0.005422	0.005422	0.007621	0.007621
Rec. max speed @230V AC	rpm	498	1131	202	501
MS-16384 optical SINCOS encoder	lines	16,384	16,384	16,384	16,384
MS-16384 optical digital encoder (40X)	Counts/rev	655,360	655,360	655,360	655,360
Accuracy (based on MS-16384, 40X)	arc sec	+/-20	+/-20	+/-20	+/-20
Repeatability (based on MS-16384, 40X)	arc sec	+/-2.0	+/-2.0	+/-2.0	+/-2.0
Radial runout	um	35	35	35	35
Axial runout	um	35	35	35	35
Max axial load	N	2310		2310	
Max moment load	Nm	53		63	

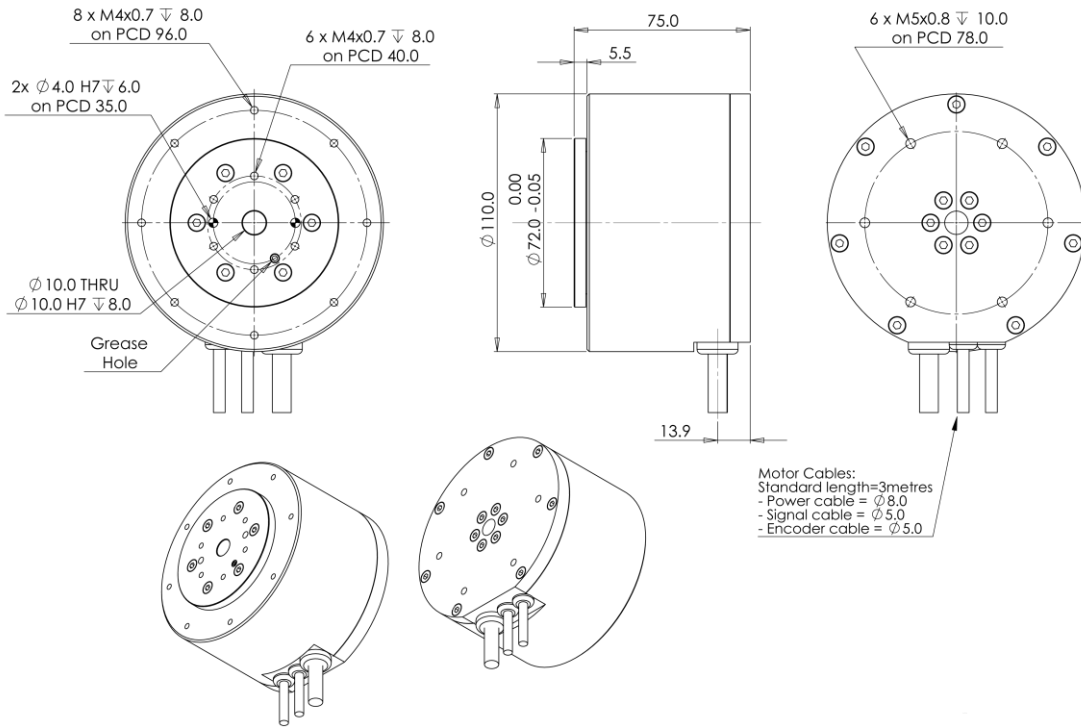
## ADR220 Specifications

Model	Units	ADR220-A120		ADR220-A165	
		S	P	S	P
Table diameter	mm	220		220	
Table height	mm	120		165	
Number of poles		24		24	
Continuous torque	Nm	46.0	46.0	94.9	94.9
Peak torque	Nm	137.9	137.9	284.6	284.6
Torque constant	Nm/A	8.51	2.84	17.57	5.86
Back EMF constant	V/rpm	1.029	0.343	2.125	0.708
Continuous current	A	5.40	16.20	5.40	16.20
Peak current	A	16.20	48.60	16.20	48.60
Resistance	ohms	5.87	0.74	10.32	1.20
Inductance	mH	53.60	6.30	106.70	11.90
Electrical time constant	ms	9.13	8.51	10.34	9.92
Motor constant	Nm/SqRt(W)	3.51	3.30	5.47	5.35
Mass	Kg	15.6	15.6	23.4	23.4
Rotor Inertia	Kgm <sup>2</sup>	0.017858	0.017858	0.025216	0.025216
Rec. max speed @230V AC	rpm	199	770	63	341
MS-16384 optical SINCOS encoder	lines	16,384	16,384	16,384	16,384
MS-16384 optical digital encoder (40X)	Counts/rev	655,360	655,360	655,360	655,360
Accuracy (based on MS-16384, 40X)	arc sec	+/-20	+/-20	+/-20	+/-20
Repeatability (based on MS-16384, 40X)	arc sec	+/-2.0	+/-2.0	+/-2.0	+/-2.0
Radial runout	um	40	40	40	40
Axial runout	um	40	40	40	40
Max axial load	N	2800		2800	
Max moment load	Nm	72		95	

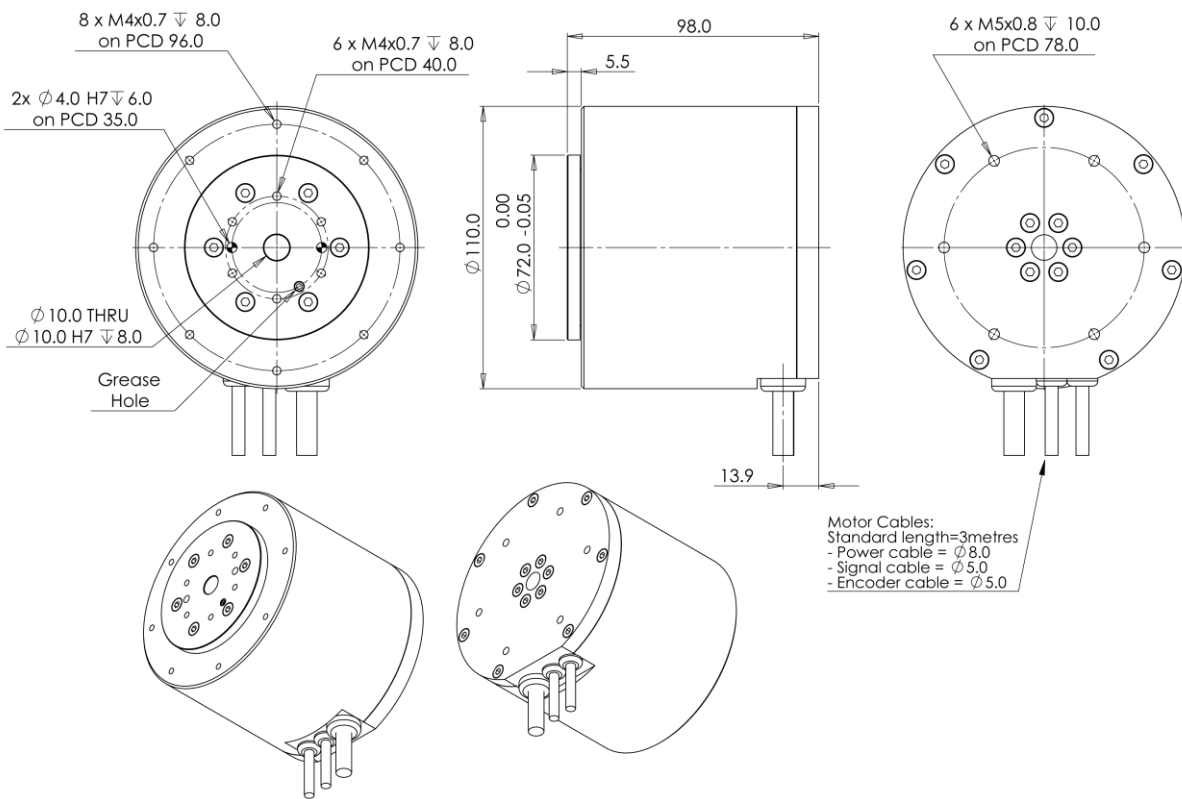
## ADR360 Specifications

Model	Units	ADR360-A150		ADR360-A215	
		S	P	S	P
Table diameter	mm	360		360	
Table height	mm	150		215	
Number of poles		36		36	
Continuous torque	Nm	184.8	184.8	377.9	377.9
Peak torque	Nm	554.5	554.5	1133.8	1133.8
Torque constant	Nm/A	18.48	9.24	37.79	18.90
Back EMF constant	V/rpm	2.235	1.118	4.570	2.285
Continuous current	A	10.00	20.00	10.00	20.00
Peak current	A	30.00	60.00	30.00	60.00
Resistance	ohms	3.05	0.76	5.26	1.25
Inductance	mH	31.70	7.92	54.74	13.00
Electrical time constant	ms	10.40	10.40	10.40	10.40
Motor constant	Nm/SqRt(W)	10.59	10.59	16.47	16.90
Mass	Kg	56.0	56.0	71.0	71.0
Rotor Inertia	Kgm <sup>2</sup>	0.204636	0.204636	0.322304	0.322304
Rec. max speed @230V AC	rpm	93	228	31	98
Rec. max speed @415V AC	rpm	222	484	94	224
MS-23049 optical SINCOS encoder	lines	23,049	23,049	23,049	23,049
MS-23049 optical digital encoder (40X)	Counts/rev	921,960	921,960	921,960	921,960
Accuracy (based on MS-23049, 40X)	arc sec	+/-15	+/-15	+/-15	+/-15
Repeatability (based on MS-23049, 40X)	arc sec	+/-1.5	+/-1.5	+/-1.5	+/-1.5
Radial runout	um	50	50	50	50
Axial runout	um	50	50	50	50
Max axial load	N	11200		11200	
Max moment load	Nm	245		245	

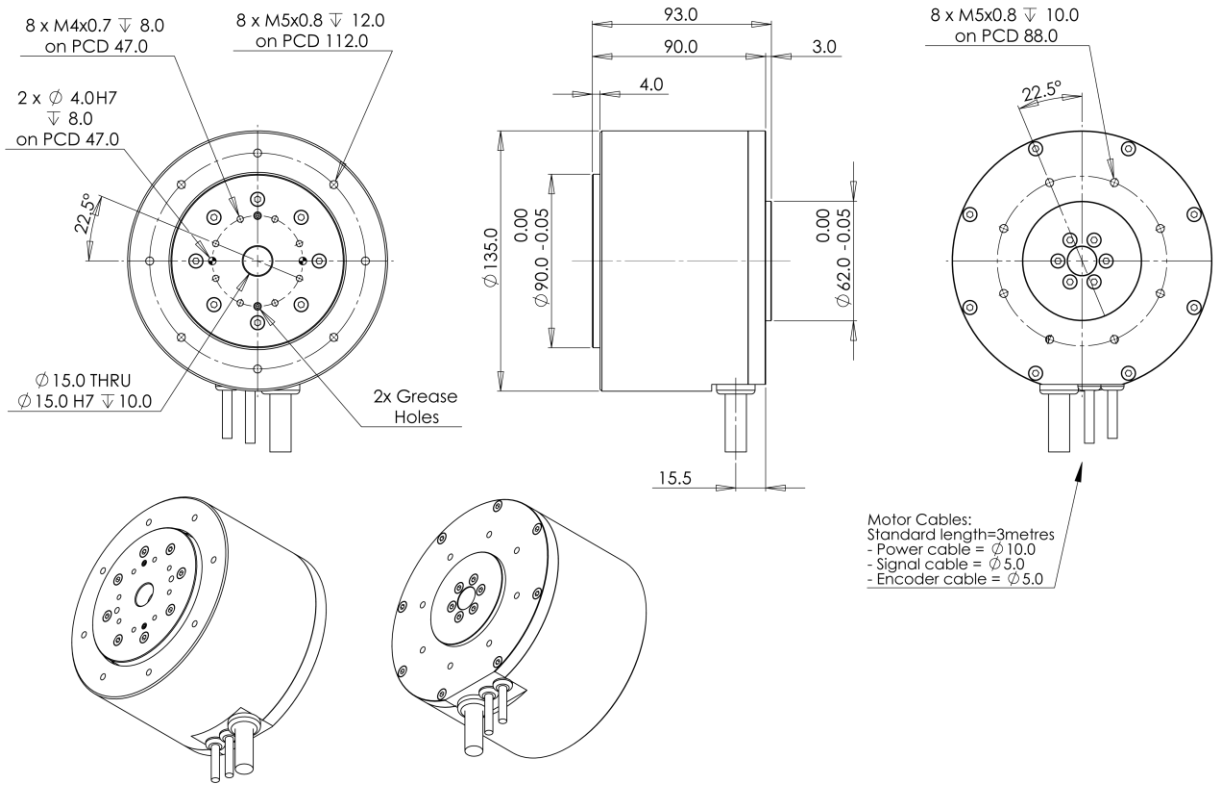
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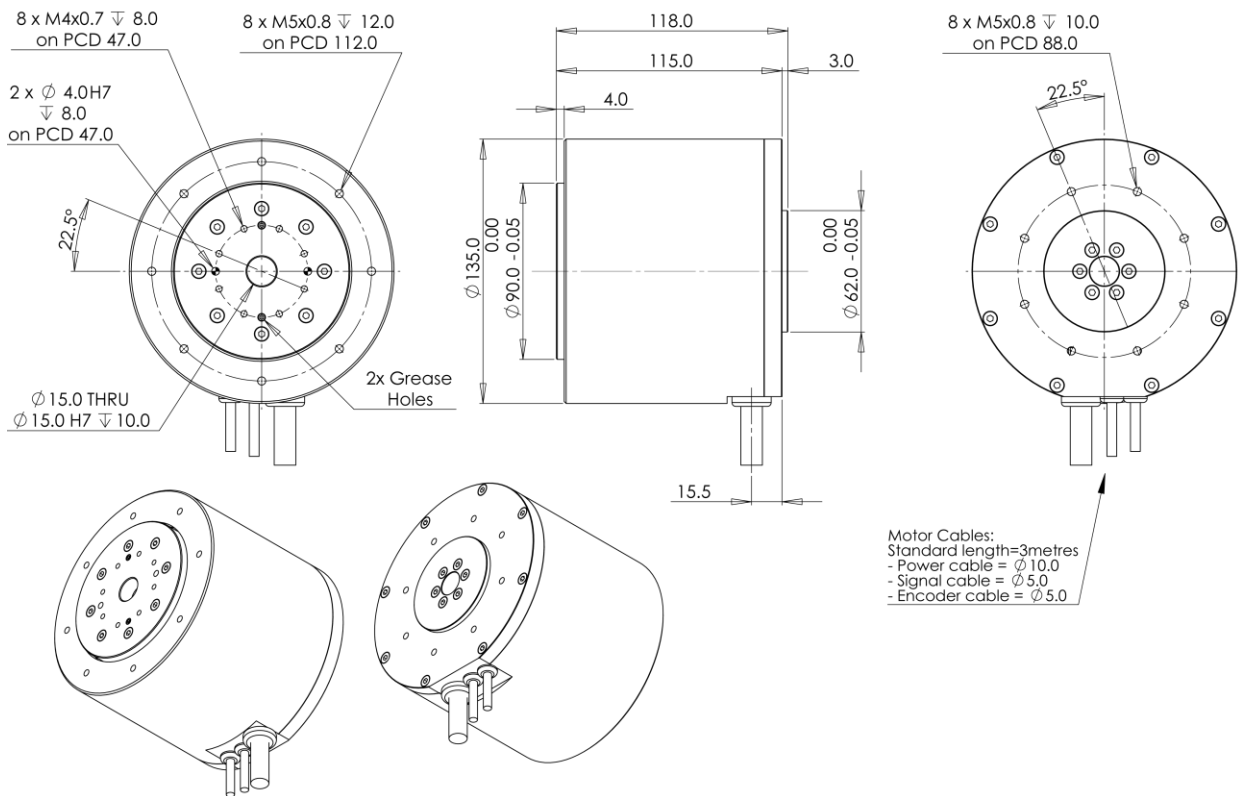
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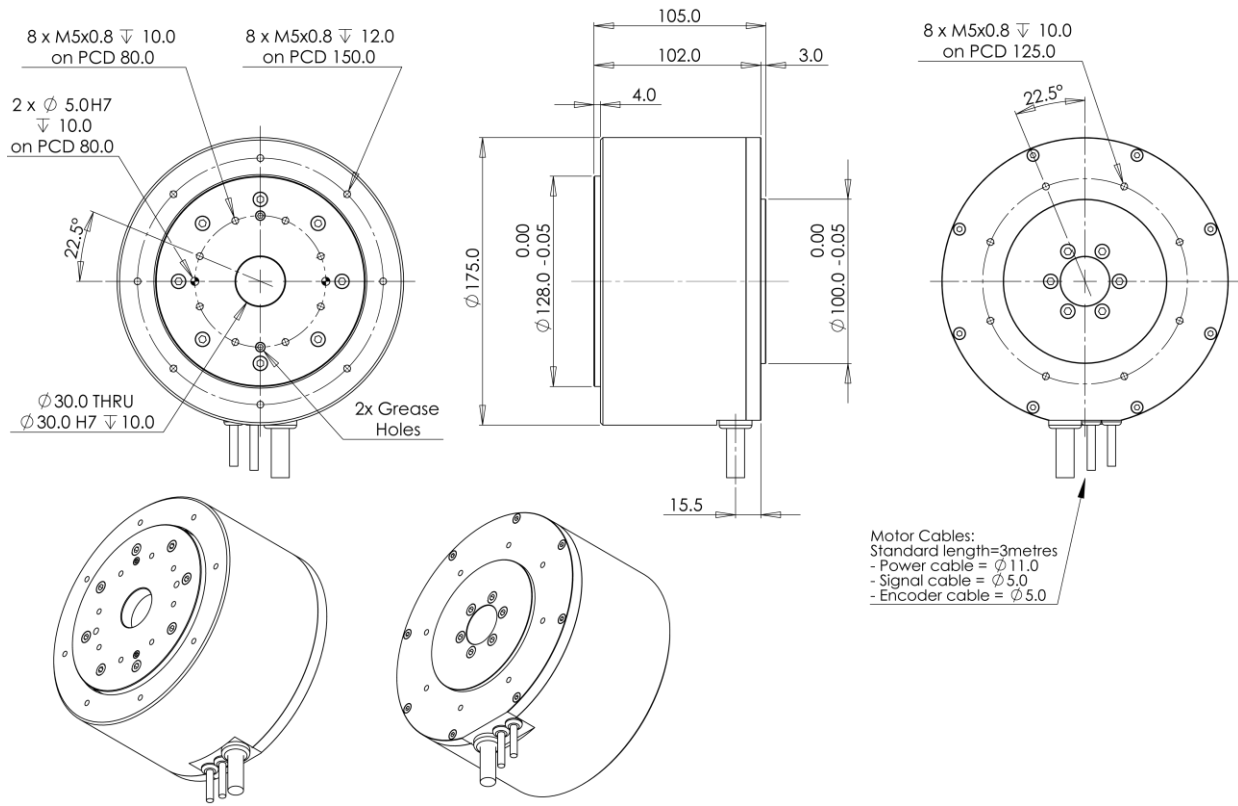
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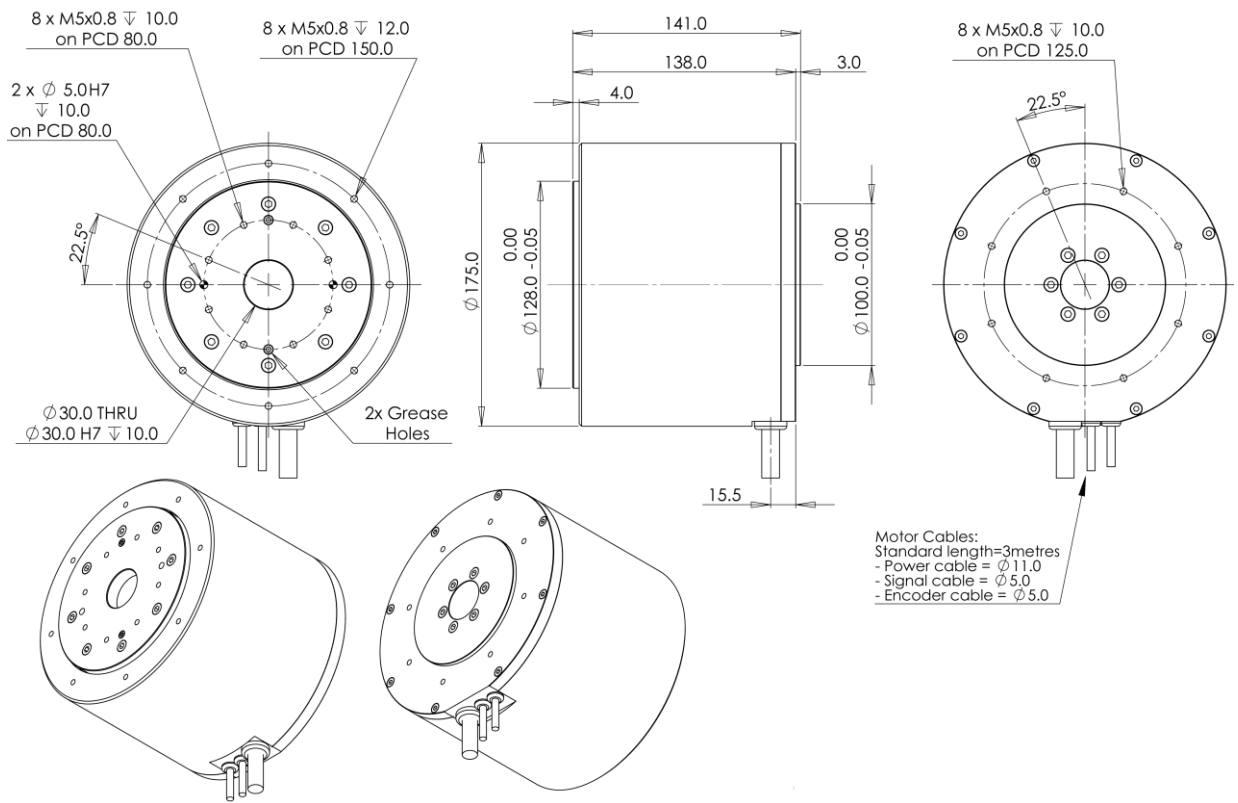
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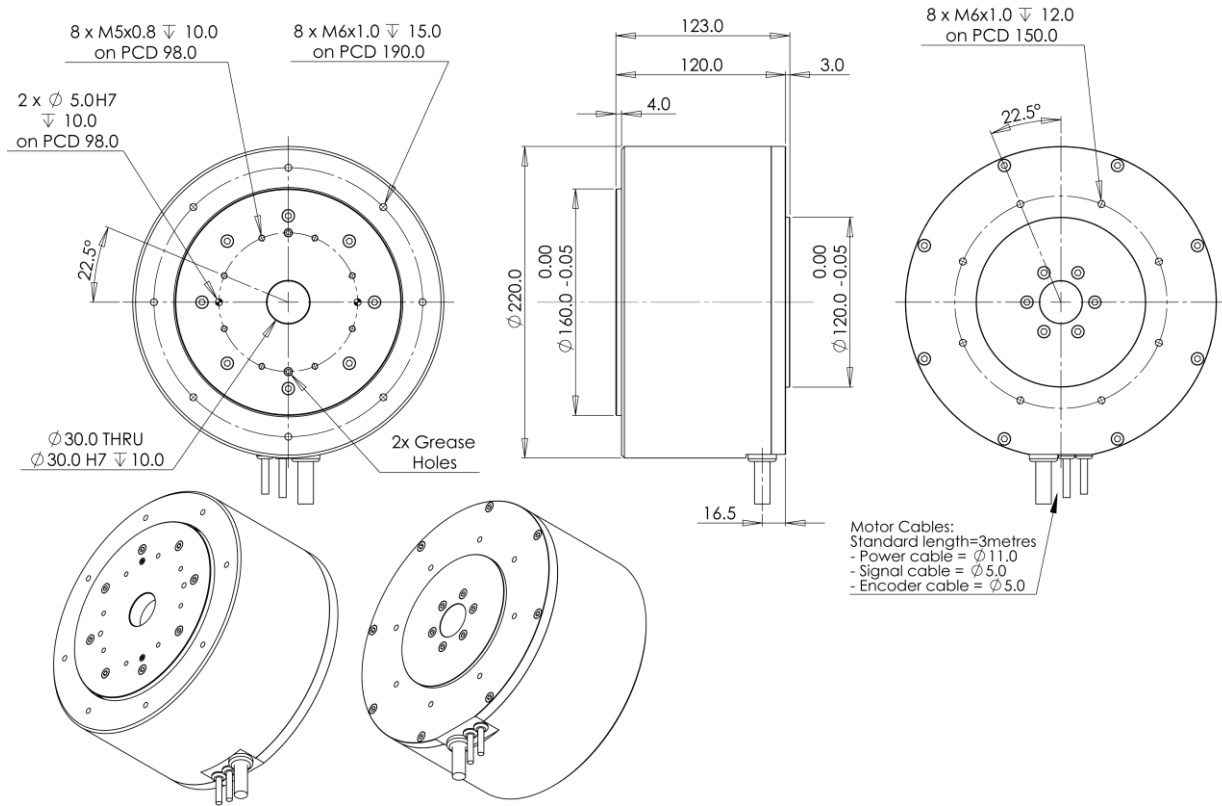
### ADR175-A102



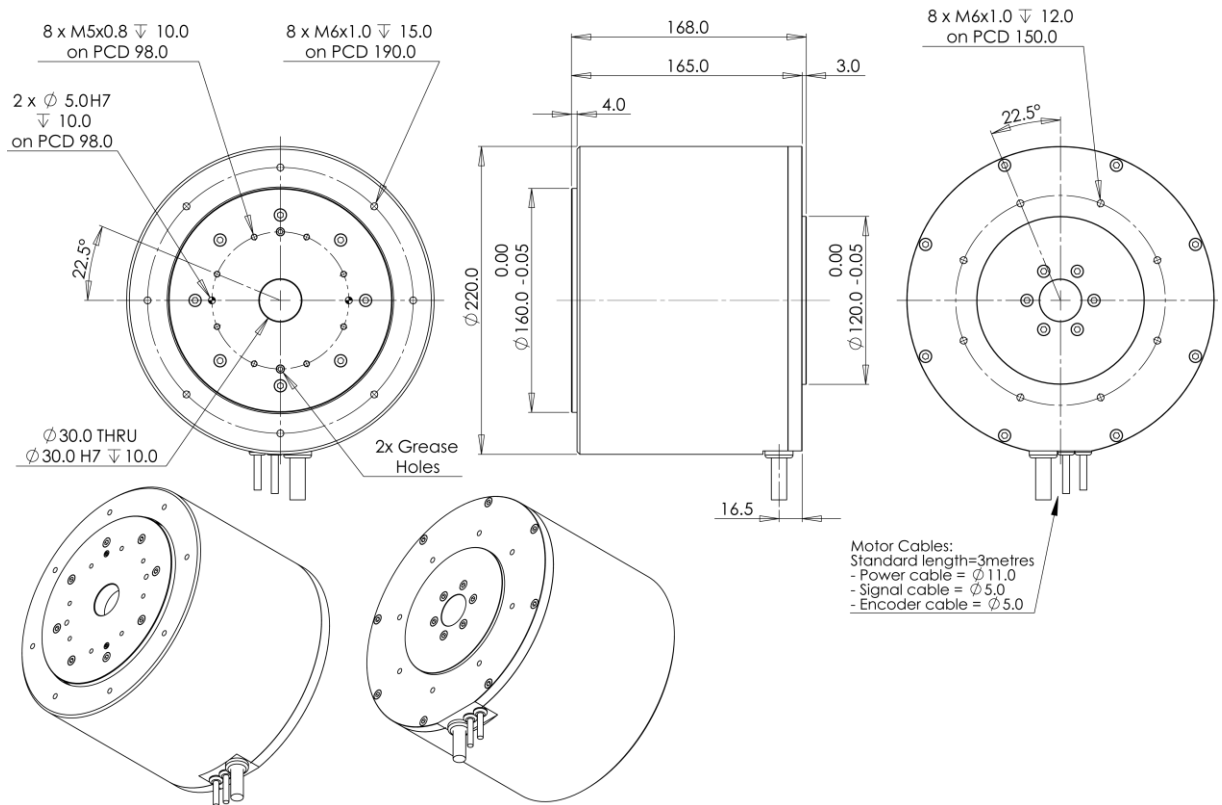
### ADR175-A138



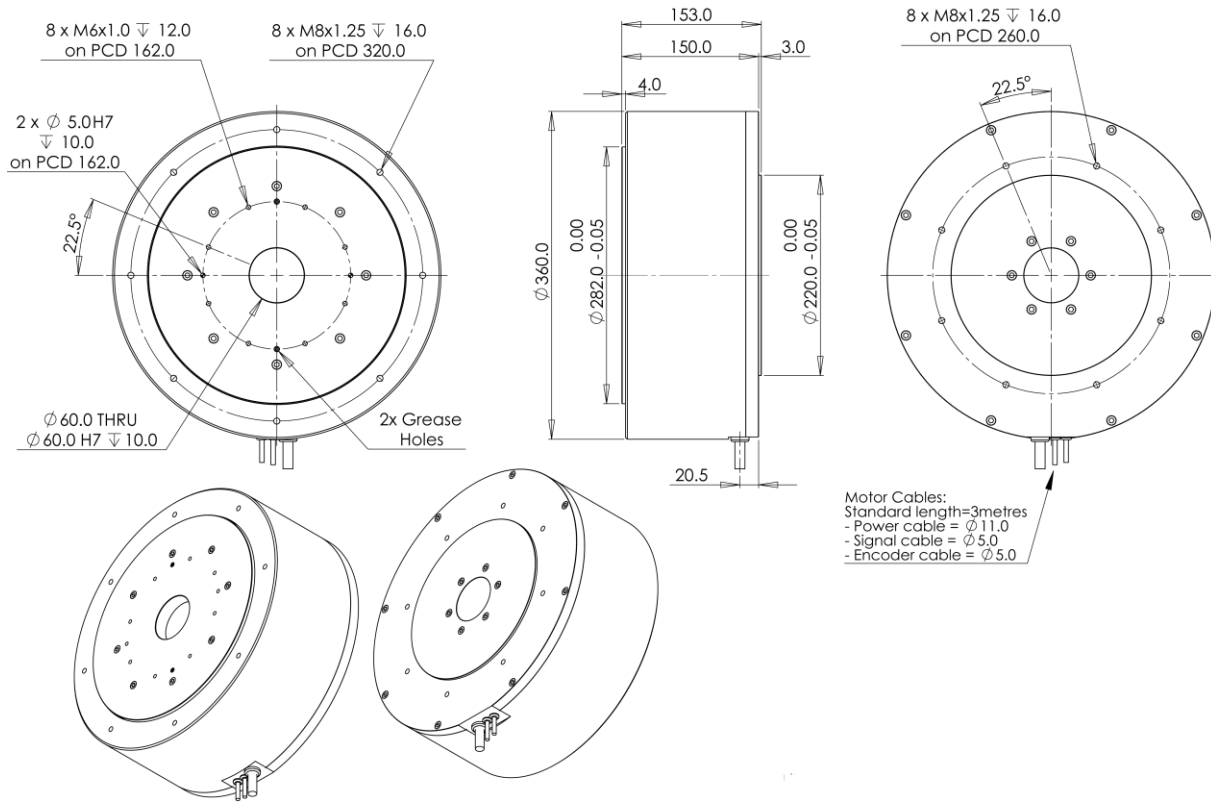
## ADR220-A120



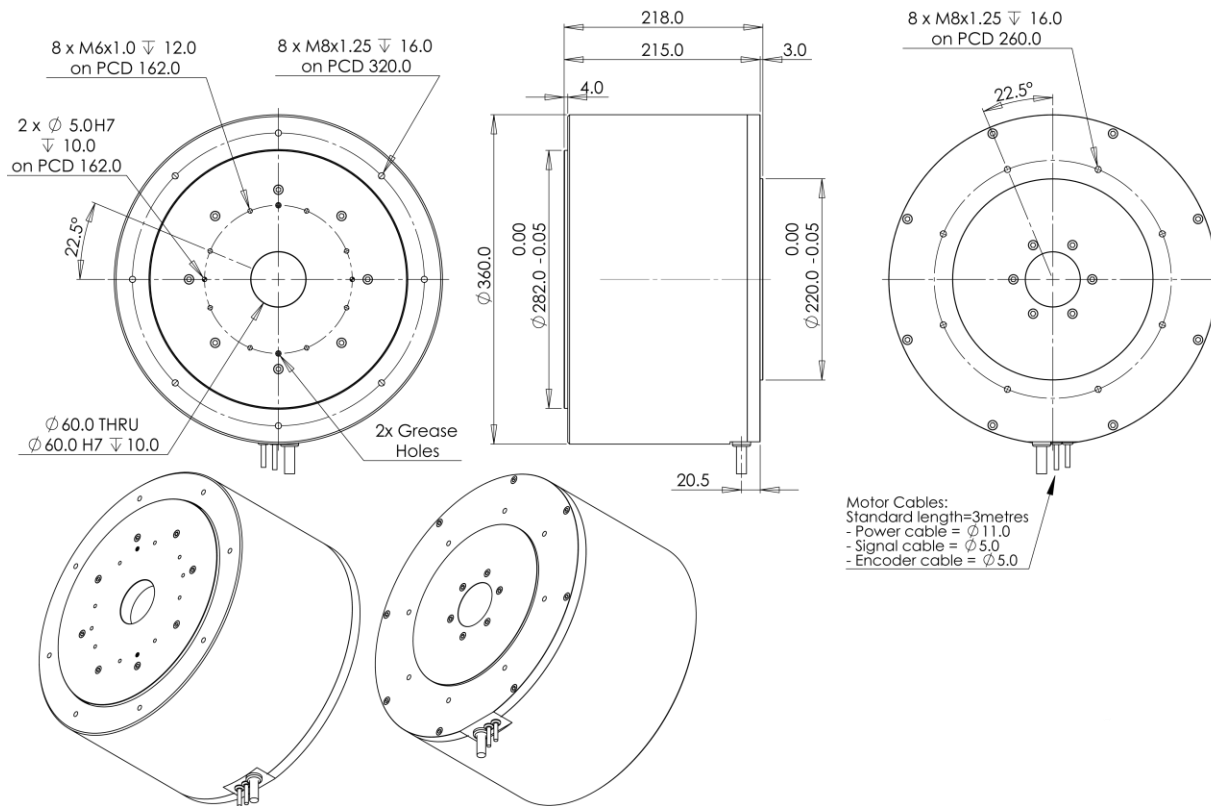
## ADR220-A165



### ADR360-A150



### ADR360-A215



## Part Numbering

Motor	Model	Winding	Thermal Sensor	Cable Length	Encoder Option	Interpolation Option
ADR110	A75/A98	S/P	J/K	3.0	MS-12000	SINCOS/40X

Motor	Model	Winding	Thermal Sensor	Cable Length	Encoder Option	Interpolation Option
ADR135	A90/A115	S/P	J/K	3.0	MS-12000	SINCOS/40X

Motor	Model	Winding	Thermal Sensor	Cable Length	Encoder Option	Interpolation Option
ADR175	A102/A138	S/P	J/K	3.0	MS-16384	SINCOS/40X

Motor	Model	Winding	Thermal Sensor	Cable Length	Encoder Option	Interpolation Option
ADR220	A120/A165	S/P	J/K	3.0	MS-16384	SINCOS/40X

Motor	Model	Winding	Thermal Sensor	Cable Length	Encoder Option	Interpolation Option
ADR360	A150/A215	S/P	J/K	3.0	MS-23049	SINCOS/40X

**J- Thermostat**

**K- PT100 (RTD)**

**Example: ADR175-A138-S-J-3.0-MS-16384-40X**

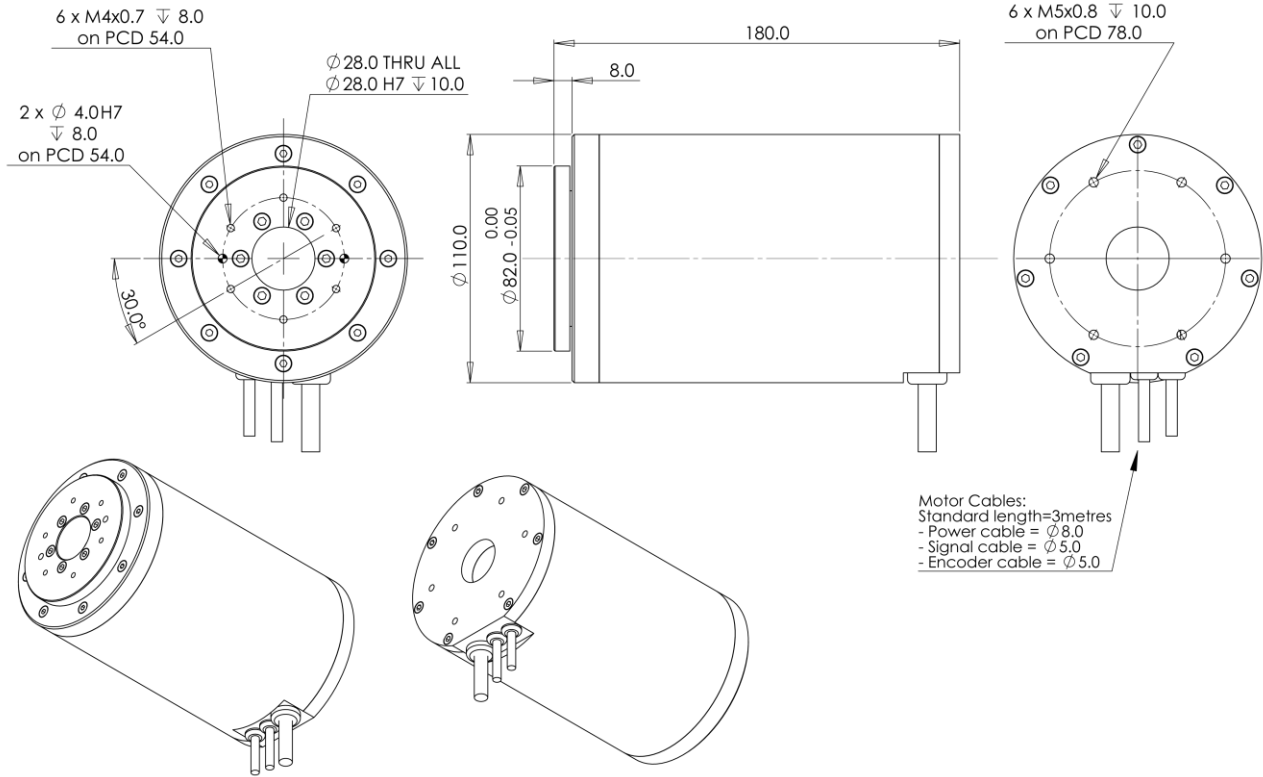
## ADR110-B180 Specifications

		ADR110-B180	
Model	Units	S	P
Table diameter	mm	110	
Table height	mm	180	
Number of poles		16	
Continuous torque	Nm	8.9	8.9
Peak torque	Nm	26.6	26.6
Torque constant	Nm/A	2.96	1.48
Back EMF constant	V/rpm	0.358	0.179
Continuous current	A	3.0	6.0
Peak current	A	9.0	18.0
Resistance	ohms	9.70	2.43
Inductance	mH	52.00	13.00
Electrical Time Constant	ms	5.36	5.36
Motor constant	Nm/SqRt(W)	0.95	0.95
Mass	Kg	6.0	6.0
Rotor Inertia	Kgm <sup>2</sup>	0.000851	0.000851
Rec. max speed @230V AC	rpm	594	1432
MS-12000 optical SINCOS encoder	lines	12,000	12,000
MS-12000 optical digital encoder (40X)	Counts/rev	480,000	480,000
Accuracy (based on MS-12000, 40X)	arc sec	+/-27	+/-27
Repeatability (based on MS-12000, 40X)	arc sec	+/-2.7	+/-2.7
Radial runout	um	25	25
Axial runout	um	25	25

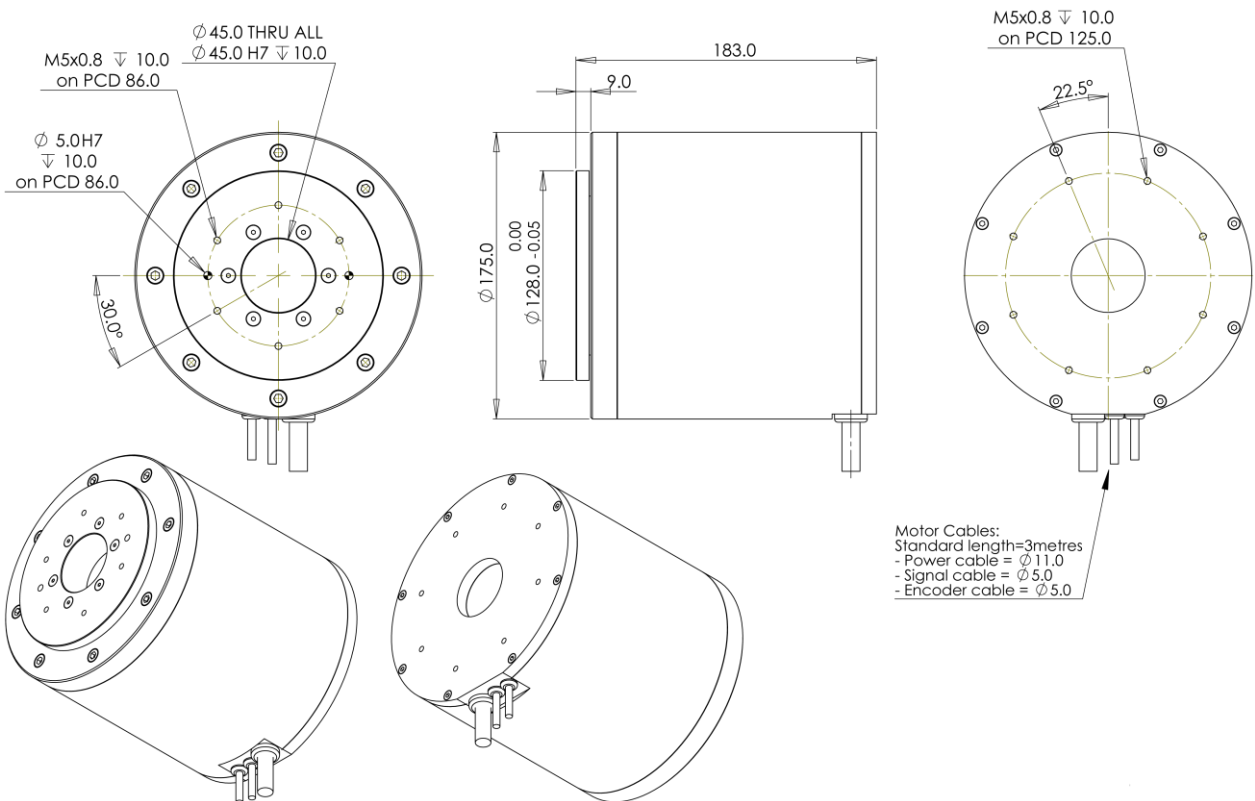
**ADR175-B183 Specifications**

		ADR175-B183	
Model	Units	S	P
Table diameter	mm	175	
Table height	mm	183	
Number of poles		16	
Continuous torque	Nm	29.9	29.9
Peak torque	Nm	89.8	89.8
Torque constant	Nm/A	7.49	3.74
Back EMF constant	V/rpm	0.905	0.453
Continuous current	A	4.0	8.0
Peak current	A	12.0	24.0
Resistance	ohms	8.20	2.05
Inductance	mH	74.50	18.63
Electrical Time Constant	ms	9.09	9.09
Motor constant	Nm/SqRt(W)	2.61	2.61
Mass	Kg	13.8	13.8
Rotor Inertia	Kgm <sup>2</sup>	0.007562	0.007562
Rec. max speed @230V AC	rpm	223	554
MS-16384 optical SINCOS encoder	lines	16,384	16,384
MS-16384 optical digital encoder (40X)	Counts/rev	655,360	655,360
Accuracy (based on MS-16384, 40X)	arc sec	+/-20	+/-20
Repeatability (based on MS-16384, 40X)	arc sec	+/-2.0	+/-2.0
Radial runout	um	35	35
Axial runout	um	35	35

### ADR110-B180



### ADR175-B183



## **Part Numbering**

Motor	Model	Winding	Thermal Sensor	Cable Length	Encoder Option	Interpolation Option
ADR110	B180	S/P	J/K	3.0	MS-12000	SINCOS/40X

Motor	Model	Winding	Thermal Sensor	Cable Length	Encoder Option	Interpolation Option
ADR175	B183	S/P	J/K	3.0	MS-16384	SINCOS/40X

**J- Thermostat**

**K- PT100 (RTD)**

**Example: ADR175-B138-S-J-3.0-MS-16384-40X**