

# ADR-B Series



Direct drive, brushless motor



fully integrated with encoder and bearing



Low cogging torque



Low speed and high speed windings



Precise homing through index pulse



Large center hole

# ADR110-B

## Specifications

ADR110 Specifications		ADR110-B113		ADR110-B136	
Model	Units	S	P	S	P
Table diameter	mm	110		110	
Table height	mm	113		136	
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
Max. cogging torque (peak to peak)	Nm	0.002	0.002	0.005	0.005
Torque constant	Nm/Arms	0.65	0.32	1.40	0.70
Back EMF constant	Vpeak/rpm	0.055	0.028	0.119	0.060
Continuous current	Arms	3.00	6.00	3.00	6.00
Peak current	Arms	9.00	18.00	9.00	18.00
Continuous thermal power	W	28.80	28.80	44.10	43.56
Peak thermal power	W	259.20	259.20	396.90	392.04
Max bus voltage	Vdc	550.0	550.0	550.0	550.0
Resistance <sup>①</sup>	ohms	3.20	0.80	4.90	1.21
Inductance <sup>①</sup>	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	3.2	3.2	4.6	4.6
Rotor Inertia	kg·m <sup>2</sup>	0.000309	0.000309	0.000442	0.000442
Rec. max speed @230V AC <sup>②</sup> (DIGITAL)	rpm	1,200	1,200	1,000	1,200
Rec. max speed @230V AC <sup>②</sup> (SINCOS)	rpm	1,700	2,000	1,000	2,000
AB-3005 optical SINCOS encoder	lines	3,005	3,005	3,005	3,005
DIGITAL Resolution (at 64 X interpolation)	Counts/rev	192,320	192,320	192,320	192,320
SINCOS Resolution (at 512 X interpolation)	Counts/rev	1,538,560	1,538,560	1,538,560	1,538,560
SINCOS Resolution (at 4096 X interpolation)	Counts/rev	12,308,480	12,308,480	12,308,480	12,308,480
Accuracy (based on AB-3005)	arc sec	+/-20	+/-20	+/-20	+/-20
Repeatability (based on AB-3005)	arc sec	+/-2.7	+/-2.7	+/-2.7	+/-2.7
Axial runout	um	15			
Radial runout	um	15			
Max axial load <sup>③</sup>	N	439		439	
Max moment load <sup>③</sup>	Nm	25		25	

① Terminal to terminal, at 25 Deg C.

② Limited by Bus Voltage and Encoder Output Frequency.

③ Please contact our sales representative for inverted mount application

# ADR135-B

## Specifications

ADR135 Specifications		ADR135-B121		ADR135-B148	
Model	Units	S	P	S	P
Table diameter	mm	135		135	
Table height	mm	121		148	
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
Max. cogging torque (peak to peak)	Nm	0.010	0.010	0.022	0.022
Torque constant	Nm/Arms	1.72	0.86	3.66	1.83
Back EMF constant	Vpeak/rpm	0.147	0.074	0.313	0.156
Continuous current	Arms	3.00	6.00	3.00	6.00
Peak current	Arms	9.00	18.00	9.00	18.00
Continuous thermal power	W	59.40	59.40	96.30	97.20
Peak thermal power	W	534.60	534.60	866.70	874.80
Max bus voltage	Vdc	550.0	550.0	550.0	550.0
Resistance <sup>①</sup>	ohms	6.60	1.65	10.70	2.70
Inductance <sup>①</sup>	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	3.9	3.9	5.7	5.7
Rotor Inertia	kg·m <sup>2</sup>	0.000992	0.000992	0.001332	0.001332
Rec. max speed @230V AC <sup>②</sup> (DIGITAL)	rpm	630	1,200	330	745
Rec. max speed @230V AC <sup>②</sup> (SINCOS)	rpm	630	1,350	330	745
AB-4103 optical SINCOS encoder	lines	4,103	4,103	4,103	4,103
DIGITAL Resolution (at 64 X interpolation)	Counts/rev	262,592	262,592	262,592	262,592
SINCOS Resolution (at 512 X interpolation)	Counts/rev	2,100,736	2,100,736	2,100,736	2,100,736
SINCOS Resolution (at 4096 X interpolation)	Counts/rev	16,805,888	16,805,888	16,805,888	16,805,888
Accuracy (based on AB-4103)	arc sec	+/-25	+/-25	+/-25	+/-25
Repeatability (based on AB-4103)	arc sec	+/-2	+/-2	+/-2	+/-2
Axial runout	um	15			
Radial runout	um	15			
Max axial load <sup>③</sup>	N	604		604	
Max moment load <sup>③</sup>	Nm	45		45	

- ① Terminal to terminal, at 25 Deg C.
- ② Limited by Bus Voltage and Encoder Output Frequency.
- ③ Please contact our sales representative for inverted mount application.

# ADR175-B

## Specifications

ADR175 Specifications		ADR175-B143		ADR175-B180	
Model	Units	S	P	S	P
Table diameter	mm	175		175	
Table height	mm	143		180	
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
Max. cogging torque (peak to peak)	Nm	0.094	0.094	0.197	0.197
Torque constant	Nm/Arms	3.93	1.97	8.22	4.11
Back EMF constant	Vpeak/rpm	0.336	0.168	0.703	0.351
Continuous current	Arms	4.00	8.00	4.00	8.00
Peak current	Arms	12.00	24.00	12.00	24.00
Continuous thermal power	W	84.37	83.20	132.80	136.64
Peak thermal power	W	759.37	748.80	1195.20	1229.74
Max bus voltage	Vdc	550.0	550.0	550.0	550.0
Resistance <sup>①</sup>	ohms	5.27	1.30	8.30	2.13
Inductance <sup>①</sup>	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	kg·m <sup>2</sup>	0.005422	0.005422	0.007621	0.007621
Rec. max speed @230V AC <sup>②</sup> (DIGITAL)	rpm	400	700	195	470
Rec. max speed @230V AC <sup>②</sup> (SINCOS)	rpm	400	880	195	470
AB-5071 optical SINCOS encoder	lines	5,071	5,071	5,071	5,071
DIGITAL Resolution (at 64 X interpolation)	Counts/rev	324,544	324,544	324,544	324,544
SINCOS Resolution (at 512 X interpolation)	Counts/rev	2,596,352	2,596,352	2,596,352	2,596,352
SINCOS Resolution (at 4096 X interpolation)	Counts/rev	20,770,816	20,770,816	20,770,816	20,770,816
Accuracy (based on AB-5071)	arc sec	+/-25	+/-25	+/-25	+/-25
Repeatability (based on AB-5071)	arc sec	+/-2	+/-2	+/-2	+/-2
Axial runout	um	20			
Radial runout	um	20			
Max axial load <sup>③</sup>	N	1256		1256	
Max moment load <sup>③</sup>	Nm	65		65	

- ① Terminal to terminal, at 25 Deg C.
- ② Limited by Bus Voltage and Encoder Output Frequency.
- ③ Please contact our sales representative for inverted mount application.

# ADR220-B

## Specifications

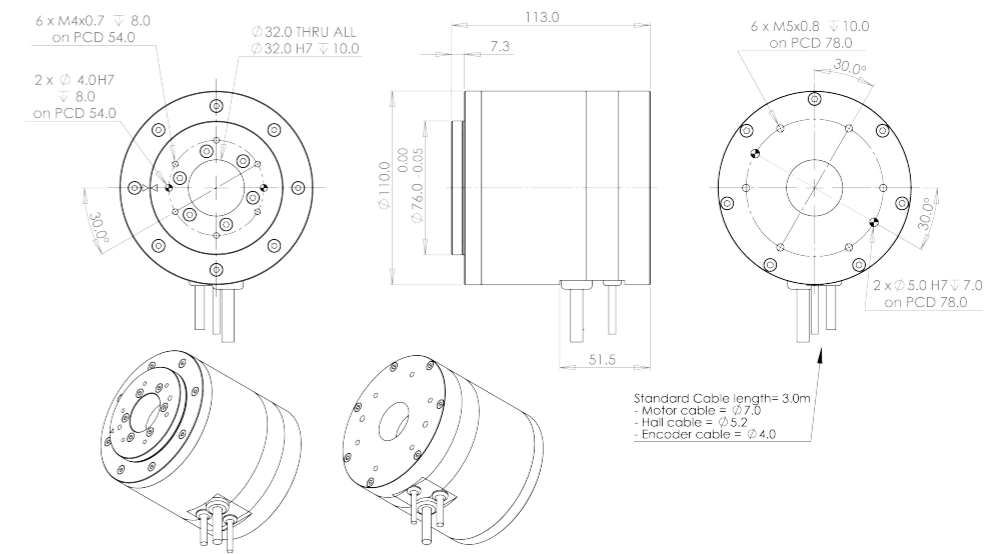
ADR220 Specifications		ADR220-B167		ADR220-B217	
Model	Units	S	P	S	P
Table diameter	mm	220		220	
Table height	mm	167		217	
Number of poles		24		24	
Continuous torque	Nm	46.0	46.0	94.9	94.9
Peak torque	Nm	137.9	137.9	284.6	284.6
Max. cogging torque (peak to peak)	Nm	0.357	0.357	0.736	0.736
Torque constant	Nm/Arms	8.51	2.84	17.57	5.86
Back EMF constant	Vpeak/rpm	0.728	0.243	1.502	0.501
Continuous current	Arms	5.40	16.20	5.40	16.20
Peak current	Arms	16.20	48.60	16.20	48.60
Continuous thermal power	W	171.17	194.21	300.93	314.93
Peak thermal power	W	1540.52	1747.85	2708.38	2834.35
Max bus voltage	Vdc	550.0	550.0	550.0	550.0
Resistance <sup>①</sup>	ohms	5.87	0.74	10.32	1.20
Inductance <sup>①</sup>	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	kg·m <sup>2</sup>	0.017858	0.017858	0.025216	0.025216
Rec. max speed @230V AC <sup>②</sup> (DIGITAL)	rpm	150	540	50	260
Rec. max speed @230V AC <sup>②</sup> (SINCOS)	rpm	150	540	50	260
AB-5071 optical SINCOS encoder	lines	5,071	5,071	5,071	5,071
DIGITAL Resolution (at 64 X interpolation)	Counts/rev	324,544	324,544	324,544	324,544
SINCOS Resolution (at 512 X interpolation)	Counts/rev	2,596,352	2,596,352	2,596,352	2,596,352
SINCOS Resolution (at 4096 X interpolation)	Counts/rev	20,770,816	20,770,816	20,770,816	20,770,816
Accuracy (based on AB-5071)	arc sec	+/-25	+/-25	+/-25	+/-25
Repeatability (based on AB-5071)	arc sec	+/-2	+/-2	+/-2	+/-2
Axial runout	um	25		25	
Radial runout	um	25		25	
Max axial load <sup>③</sup>	N	1669		1669	
Max moment load <sup>③</sup>	Nm	85		85	

- ① Terminal to terminal, at 25 Deg C.
- ② Limited by Bus Voltage and Encoder Output Frequency.
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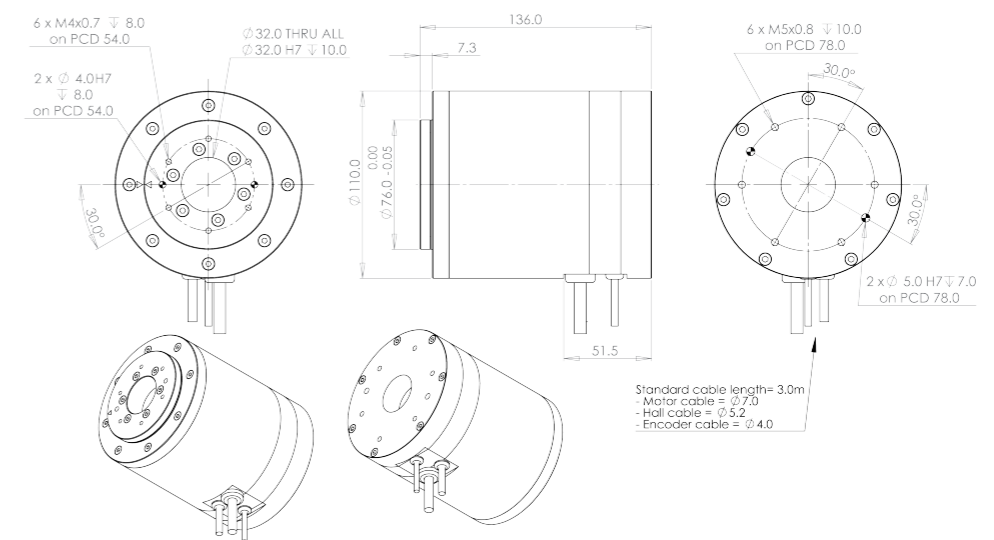
# ADR110-B

## Dimensions

### ADR110-B113



### ADR110-B136



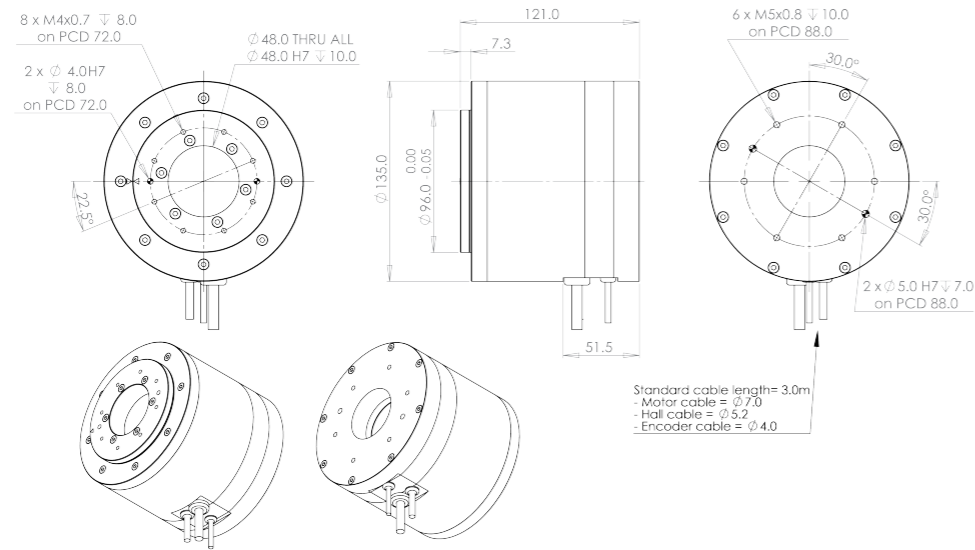
# ADR135-B

Dimensions

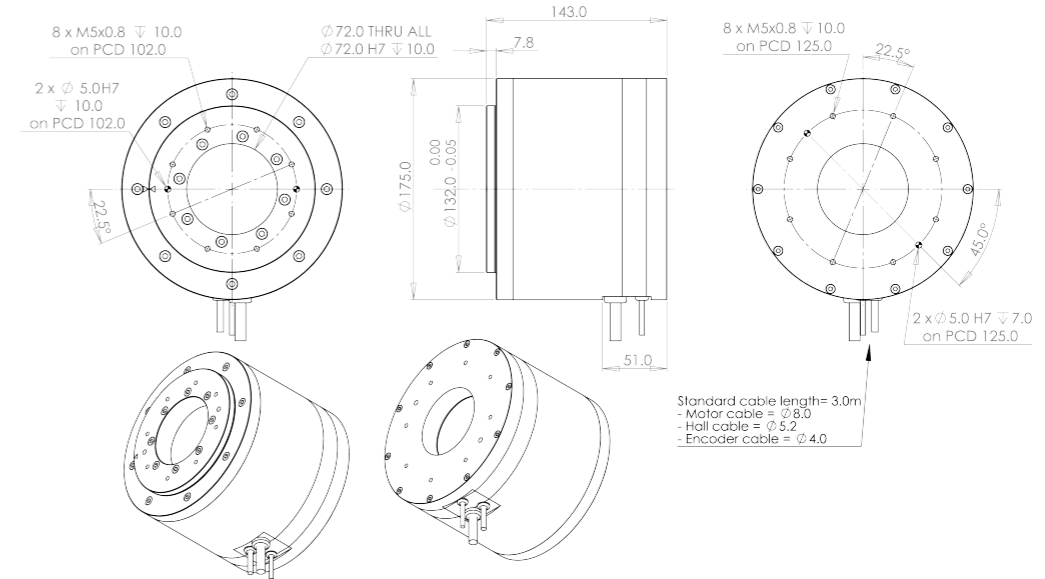
# ADR175-B

Dimensions

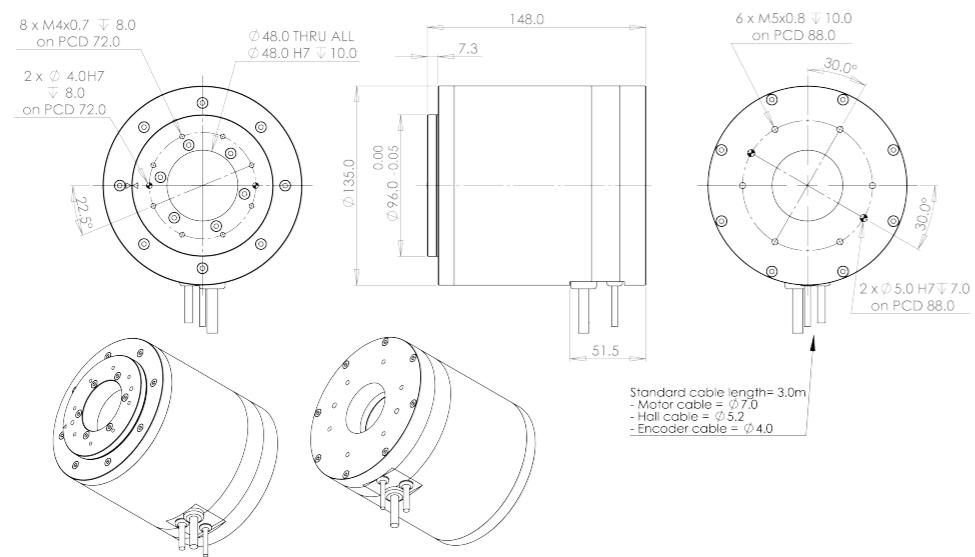
## ADR135-B121



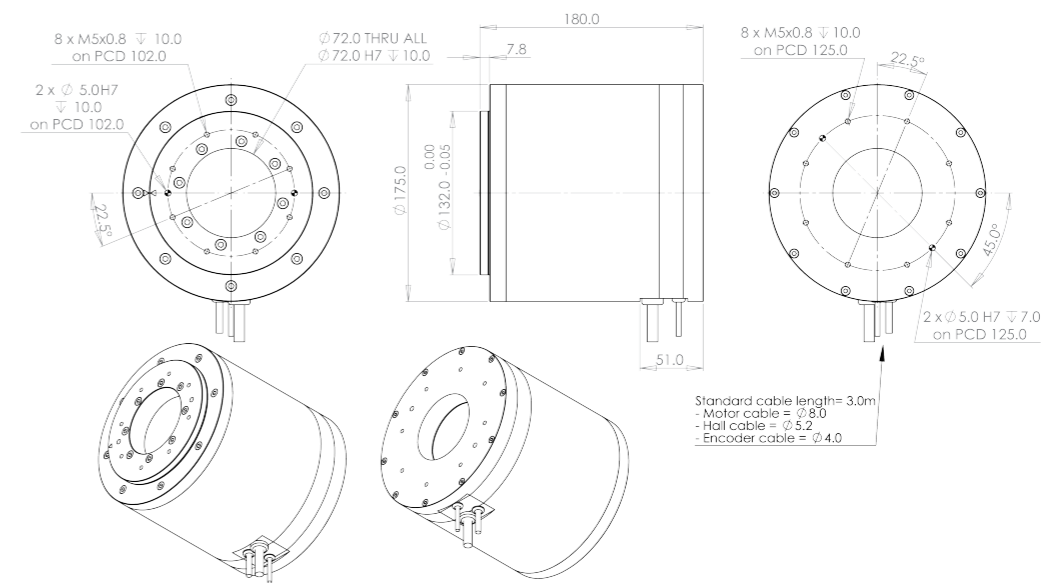
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## ADR135-B148



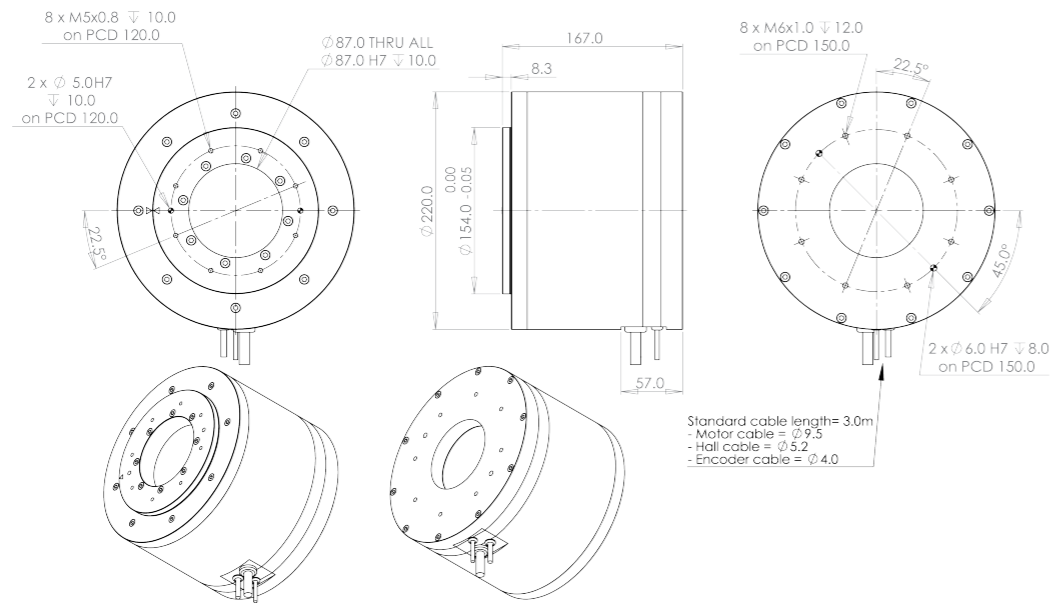
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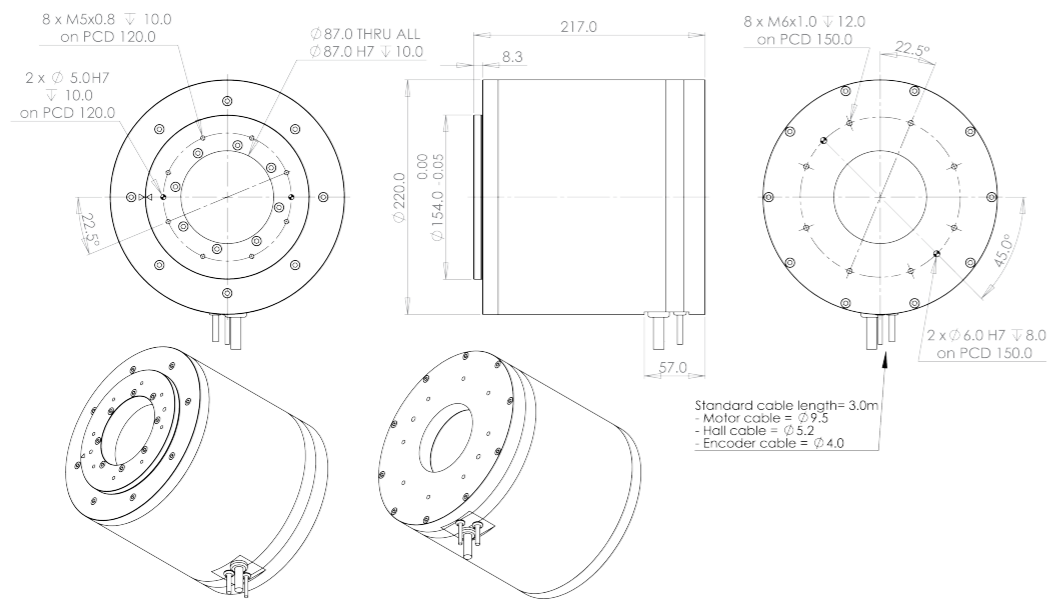
# ADR220-B

## Dimensions

### ADR220-B167



### ADR220-B217



# ADR-B

## Part Numbering

### ADR135-B121-S-J-3.0-AB-4130-SINCOS-P15

<b>Motor</b> ADR110/135 175/220	<b>Runout</b> P15/P5 P20/P25
<b>Model</b> B121/B136,B121/B148 B143/B180,B167/B217	<b>Interpolation Option</b> SINCOS/64X
<b>Winding</b> S / P	<b>Encoder Option</b> AB-3005 AB-4103 AB-5071 AB-5071
<b>Thermal sensor</b> J = Thermostat (standard) K = PT100 (RTD)	<b>Cable length</b> 3.0

P25 = Axial Runout 25um, Radial Runout is 25um  
 P20 = Axial Runout 20um, Radial Runout is 20um  
 P15 = Axial Runout 15um, Radial Runout is 15um