LDD 1800 Series Datasheet

Direct Drive Housed Motors

Overview

The LiveDrive LDD actuator is a high torque, compact, direct-drive solution designed for robots and machines in the food, packaging, pharmaceuticals, and electronics industries. Removing the need for gears, belts, or lubrication, LiveDrive® actuators simplify the drivetrain, delivering increased performance and lower total cost of ownership. LiveDrive LDD actuators offer simplicity and improved productivity for high throughput machines.

Features

High Torque Density

High torque density removes the need for gearbox for improved performance and system lifetime

Low Inertia

Low rotor inertia enables faster acceleration and deceleration times for high productivity and safety

Compact

Compact form factor reduces machine footprint and mass

High Precision

Zero backlash; Integrated absolute encoders offer high precision for optimal motion control, supporting BiSS-C®, EnDat 2.2, HIPERFACE®, and HIPERFACE DSL® communication protocols

No Contamination

IP67 housing prevents contamination

Integrated Technology

Temperature sensor helps protect against overheating; optional holding brake supports up to 18N·m holding torque

Specification Summary

LDD 1800 Series		1830	1841	1850	1860
Outer Diameter	mm	180	180	180	180
Length	mm	106	131	157	182
Continuous Torque	N·m	19.1 - 20.5	35.7 – 37.3	54.4 – 56.0	62.2 – 64.9
Peak Torque	N·m	56	110	160	210
No-Load Speed	RPM	550 - 590	330 - 370	290 - 325	307 - 320
Continuous Current	A_{rms}	1.85 - 3.88	2.07 – 4.04	2.70 – 5.23	3.04 – 6.41

Specifications are subject to change.

Specifications

LDD 1830

Performance	Units	1830A	1830B
Continuous Stall Torque	N·m	20.5	19.1
Continuous Current	A_{rms}	1.85	3.88
Peak Torque @ 20°C	N·m	56	56
Peak Current	A_{rms}	4.9	11.1
Rated Power	W	716	665
Rated Speed at Rated Power	RPM	466	488
Rated Torque at Rated Power	N·m	14.1	12.5
No-Load Speed	RPM	550	590

Electrical	Units	1830A	1830B
Design Voltage*	VAC	480	230
K_e at 20°C (±10%)	V_{rms}/kRPM	850	380
K_t loaded at 110°C up to I_{cont}	N·m/A_{rms}	11.1	4.95
K_m at 20°C	N·m/√W	2.08	1.96
K_m at 110°C	N·m/√W	1.41	1.32
$Resistance_{line\text{-}to\text{-}line}$ at 20°C (±10%)	Ω	30.4	6.89
$Inductance_{line\text{-}to\text{-}line}$ at 20°C (±10%)	mH	64.5	13.9

Thermal	Units	1830A	1830B
Aluminum Heat Sink Dimensions	mm	300 x 300 x 12.7	300 x 300 x 12.7
Storage Temperature	°C	0 to 80	0 to 80
Operating Ambient Temperature	°C	0 to 40 (no freezing)	0 to 40 (no freezing)
Maximum Winding Temperature**	°C	110	110

Specifications assume a 90°C temperature rise from 20°C ambient to a maximum winding temperature of 110°C unless otherwise listed.
Specifications are subject to change.
*Motors can be operated at different voltages. Contact an Applications Engineer for inquiries with special voltage requirements.
**Maximum winding temperature is limited by the encoder.

Physical	Units	1830A	1830B
Outer Diameter*	mm	180	180
Length	mm	106	106
Rotor Inertia (with Brake)	$kg \cdot m^2$	0.0058 (0.0069)	0.0058 (0.0069)
Total Mass (with Brake)**	kg	7.4 (8.2)	7.4 (8.2)
Number of Poles		44	44

Mechanical	Units	1830A	1830B
Allowable Radial Load	N	±1300	±1300
Allowable Thrust Load	N	+250/-800	+250/-800
Allowable Moment Load	N·m	±75	±75
Operating Noise	dBa	<65	<65
Protection Class		IP67	IP67

Temperature Sensor	1830 (All Models)
Sensor Type	PT1000 RTD

Absolute Encoder	Model Code	Resolution (CPR)	Connector Interface
BiSS-C®	-B1	2,097,152 (21-bit)	M12
EnDat 2.2	-E1	524,288 (19-bit)	M12
HIPERFACE®	-H1	128 (analog***)	M12
HIPERFACE DSL®	-D1	1,048,576 (20-bit)	M23 one cable technology (OCT)

All models are single-turn absolute encoders

Brake (Optional)	Units	1830 (All Models)
Brake Holding Torque @ 20°C	N·m	18
Brake Voltage	VDC	24

*Refer to interface drawings for all dimensions and tolerances.
**Mass varies slightly by encoder type. Specifications assume configuration with largest mass.
***HIPERFACE® uses a serial interface to read absolute position before switching to sin/cos analog signals for incremental position feedback. Analog signals are interpolated at the drive and therefore, digital resolution is dependent on the drive.

LDD 1841

Performance	Units	1841A	1841B
Continuous Stall Torque	N·m	35.7	37.3
Continuous Current	A_{rms}	2.07	4.04
Peak Torque @ 20°C	N·m	110	110
Peak Current	A_{rms}	6.2	11.6
Rated Power	W	990	956
Rated Speed at Rated Power	RPM	305	273
Rated Torque at Rated Power	N·m	29.8	32.1
No-Load Speed	RPM	370	330

Electrical	Units	1841A	1841B
Design Voltage	VAC	480	230
K_e at 20°C (±10%)	V_{rms}/kRPM	1,270	680
K_t loaded at 110°C up to I_{cont}	N·m/A_{rms}	17.3	9.28
K_m at 20°C	N·m/√W	3.20	3.33
K_m at 110°C	N·m/√W	2.25	2.35
Resistance$_{line\text{-}to\text{-}line}$ at 20°C (±10%)	Ω	28.8	7.61
Inductance$_{line\text{-}to\text{-}line}$ at 20°C (±10%)	mH	88.4	20.0

Thermal	Units	1841A	1841B
Aluminum Heat Sink Dimensions	mm	300 x 300 x 12.7	300 x 300 x 12.7
Storage Temperature	°C	0 to 80	0 to 80
Operating Ambient Temperature	°C	0 to 40 (no freezing)	0 to 40 (no freezing)
Maximum Winding Temperature	°C	110	110

Specifications assume a 90°C temperature rise from 20°C ambient to a maximum winding temperature of 110°C unless otherwise listed.
Specifications are subject to change.
*Motors can be operated at different voltages. Contact an Applications Engineer for inquiries with special voltage requirements.
**Maximum winding temperature is limited by the encoder.

Physical	Units	1841A	1841B
Outer Diameter*	mm	180	180
Length	mm	131	131
Rotor Inertia (with Brake)	$kg \cdot m^2$	0.0092 (0.0104)	0.0092 (0.0104)
Total Mass (with Brake)**	kg	9.8 (10.7)	9.8 (10.7)
Number of Poles		44	44

Mechanical	Units	1841A	1841B
Allowable Radial Load	N	±1400	±1400
Allowable Thrust Load	N	+250/-800	+250/-800
Allowable Moment Load	N·m	±120	±120
Operating Noise	dBa	<65	<65
Protection Class		IP67	IP67

Temperature Sensor	1841 (All Models)
Sensor Type	PT1000 RTD

Absolute Encoder	Model Code	Resolution (CPR)	Connector Interface
BiSS-C®	-B1	2,097,152 (21 bit)	M12
EnDat 2.2	-E1	524,288 (19 bit)	M12
HIPERFACE®	-H1	128 (analog***)	M12
HIPERFACE DSL®	-D1	1,048,576 (20 bit)	M23 one cable technology (OCT)

All models are single-turn absolute encoders

Brake (Optional)	Units	1841 (All Models)
Brake Holding Torque @ 20°C	N·m	18
Brake Voltage	VDC	24

*Refer to interface drawings for all dimensions and tolerances.
**Mass varies slightly by encoder type. Specifications assume configuration with largest mass.
***HIPERFACE® uses a serial interface to read absolute position before switching to sin/cos analog signals for incremental position feedback. Analog signals are interpolated at the drive and therefore, digital resolution is dependent on the drive.

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Performance	Units	1850A	1850B
Continuous Stall Torque	N·m	54.4	56.0
Continuous Current	A_{rms}	2.70	5.23
Peak Torque @ 20°C	N·m	160	160
Peak Current	A_{rms}	8.1	14.4
Rated Power	W	1,337	1,250
Rated Speed at Rated Power	RPM	267	235
Rated Torque at Rated Power	N·m	45.9	48.8
No-Load Speed	RPM	325	290

Electrical	Units	1850A	1850B
Design Voltage	VAC	480	230
K_e at 20°C (±10%)	V_{rms}/kRPM	1,450	770
K_t loaded at 110°C up to I_{cont}	N·m/A_{rms}	20.2	10.7
K_m at 20°C	N·m/√W	4.06	4.17
K_m at 110°C	N·m/√W	2.92	3.01
Resistance$_{line\text{-}to\text{-}line}$ at 20°C (±10%)	Ω	23.3	6.22
Inductance$_{line\text{-}to\text{-}line}$ at 20°C (±10%)	mH	57.8	16.3

Thermal	Units	1850A	1850B
Aluminum Heat Sink Dimensions	mm	400 x 400 x 12.7	400 x 400 x 12.7
Storage Temperature	°C	0 to 80	0 to 80
Operating Ambient Temperature	°C	0 to 40 (no freezing)	0 to 40 (no freezing)
Maximum Winding Temperature	°C	110	110

Specifications assume a 90°C temperature rise from 20°C ambient to a maximum winding temperature of 110°C unless otherwise listed.
Specifications are subject to change.
*Motors can be operated at different voltages. Contact an Applications Engineer for inquiries with special voltage requirements.
**Maximum winding temperature is limited by the encoder.

Physical	Units	1850A	1850B
Outer Diameter*	mm	180	180
Length	mm	157	157
Rotor Inertia (with Brake)	$kg \cdot m^2$	0.0127 (0.0138)	0.0127 (0.0138)
Total Mass (with Brake)**	kg	12.2 (13.1)	12.2 (13.1)
Number of Poles		44	44

Mechanical	Units	1850A	1850B
Allowable Radial Load	N	±1500	±1500
Allowable Thrust Load	N	+250/-800	+250/-800
Allowable Moment Load	N·m	±160	±160
Operating Noise	dBa	<65	<65
Protection Class		IP67	IP67

Temperature Sensor	1850 (All Models)
Sensor Type	PT1000 RTD

Absolute Encoder	Model Code	Resolution (CPR)	Connector Interface
BiSS-C®	-B1	2,097,152 (21 bit)	M12
EnDat 2.2	-E1	524,288 (19 bit)	M12
HIPERFACE®	-H1	128 (analog***)	M12
HIPERFACE DSL®	-D1	1,048,576 (20 bit)	M23 one cable technology (OCT)

All models are single-turn absolute encoders

Brake (Optional)	Units	1850 (All Models)
Brake Holding Torque @ 20°C	N·m	18
Brake Voltage	VDC	24

*Refer to interface drawings for all dimensions and tolerances.
**Mass varies slightly by encoder type. Specifications assume configuration with largest mass.
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Performance	Units	1860A	1860B
Continuous Stall Torque	N·m	64.9	62.2
Continuous Current	A_{rms}	3.04	6.41
Peak Torque @ 20°C	N·m	210	210
Peak Current	A_{rms}	9.6	21.5
Rated Power	W	1,516	1,495
Rated Speed at Rated Power	RPM	259	271
Rated Torque at Rated Power	N·m	53.7	50.6
No-Load Speed	RPM	307	320

Electrical	Units	1860A	1860B
Design Voltage	VAC	480	230
K_e at 20°C (±10%)	V_{rms}/kRPM	1,530	700
K_t loaded at 110°C up to I_{cont}	N·m/A_{rms}	21.3	9.75
K_m at 20°C	N·m/√W	4.78	4.59
K_m at 110°C	N·m/√W	3.46	3.31
$Resistance_{line\text{-}to\text{-}line}$ at 20°C (±10%)	Ω	18.7	4.24
$Inductance_{line\text{-}to\text{-}line}$ at 20°C (±10%)	mH	46.5	10.4

Thermal	Units	1860A	1860B
Aluminum Heat Sink Dimensions	mm	400 x 400 x 12.7	400 x 400 x 12.7
Storage Temperature	°C	0 to 80	0 to 80
Operating Ambient Temperature	°C	0 to 40 (no freezing)	0 to 40 (no freezing)
Maximum Winding Temperature	°C	110	110

Specifications assume a 90°C temperature rise from 20°C ambient to a maximum winding temperature of 110°C unless otherwise listed.
Specifications are subject to change.
*Motors can be operated at different voltages. Contact an Applications Engineer for inquiries with special voltage requirements.
**Maximum winding temperature is limited by the encoder.

Physical	Units	1860A	1860B
Outer Diameter*	mm	180	180
Length	mm	182	182
Rotor Inertia (with Brake)	$kg \cdot m^2$	0.0161 (0.0173)	0.0161 (0.0173)
Total Mass (with Brake)**	kg	14.5 (15.4)	14.5 (15.4)
Number of Poles		44	44

Mechanical	Units	1860A	1860B
Allowable Radial Load	N	±1650	±1650
Allowable Thrust Load	N	+250/-800	+250/-800
Allowable Moment Load	N·m	±200	±200
Operating Noise	dBa	<65	<65
Protection Class		IP67	IP67

Temperature Sensor	1860 (All Models)
Sensor Type	PT1000 RTD

Absolute Encoder	Model Code	Resolution (CPR)	Connector Interface
BiSS-C®	-B1	2,097,152 (21 bit)	M12
EnDat 2.2	-E1	524,288 (19 bit)	M12
HIPERFACE®	-H1	128 (analog***)	M12
HIPERFACE DSL®	-D1	1,048,576 (20 bit)	M23 one cable technology (OCT)

All models are single-turn absolute encoders

Brake (Optional)	Units	1860 (All Models)
Brake Holding Torque @ 20°C	N·m	18
Brake Voltage	VDC	24

*Refer to interface drawings for all dimensions and tolerances.
**Mass varies slightly by encoder type. Specifications assume configuration with largest mass.
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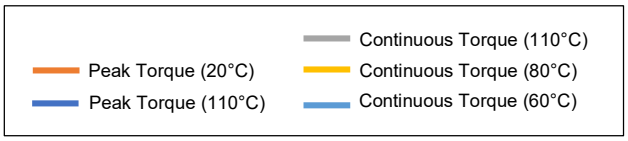
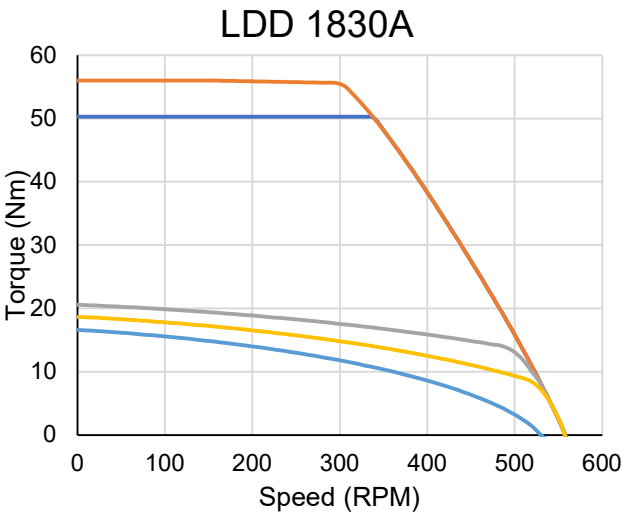
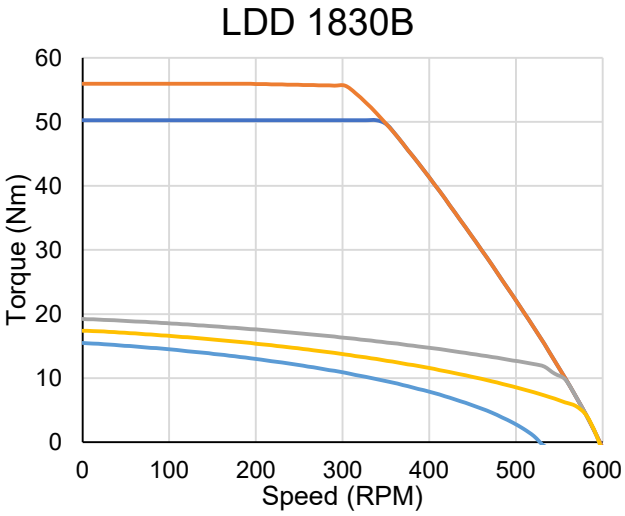
Performance Curves

LDD 1830



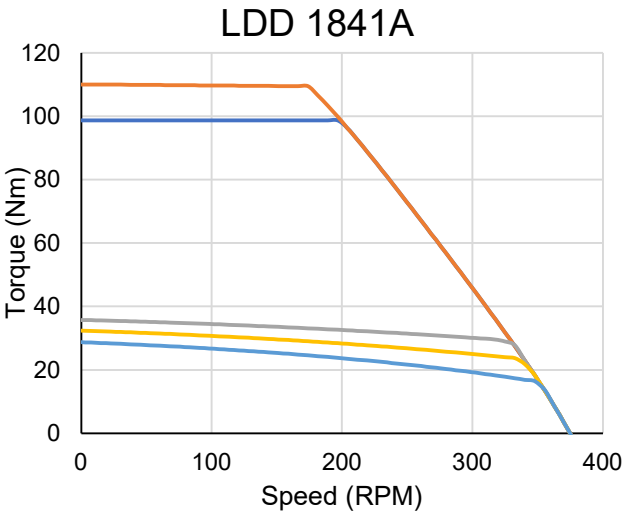


Design Voltage: 480 VAC

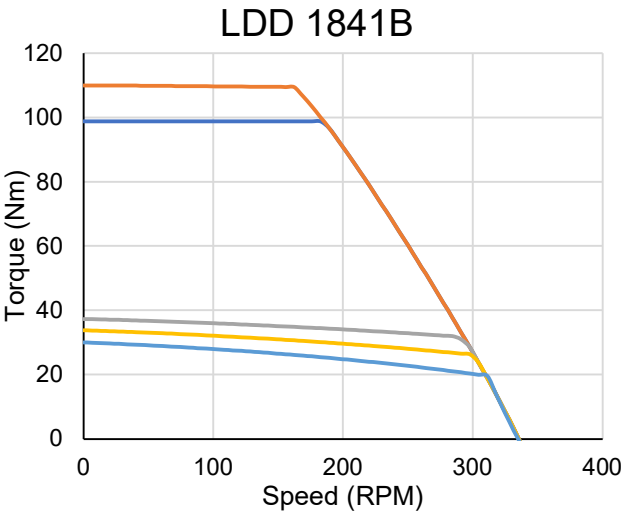


Design Voltage: 230 VAC

LDD 1841



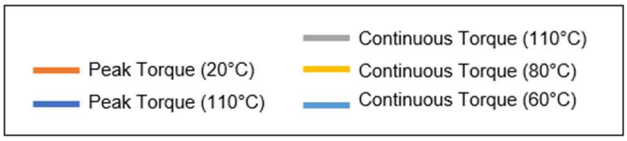
Design Voltage: 480 VAC

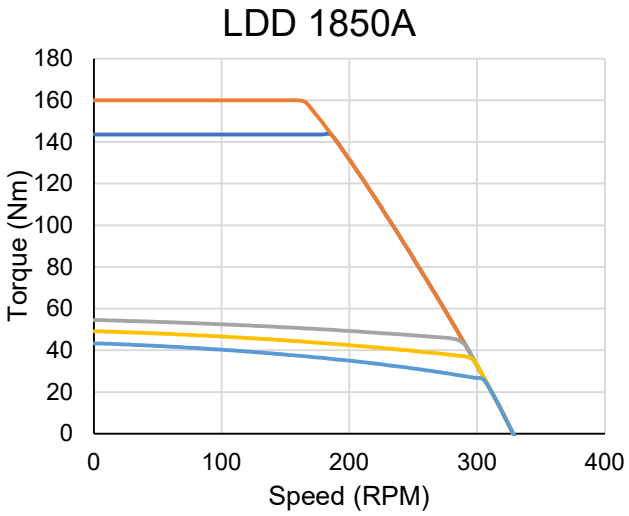


Design Voltage: 230 VAC

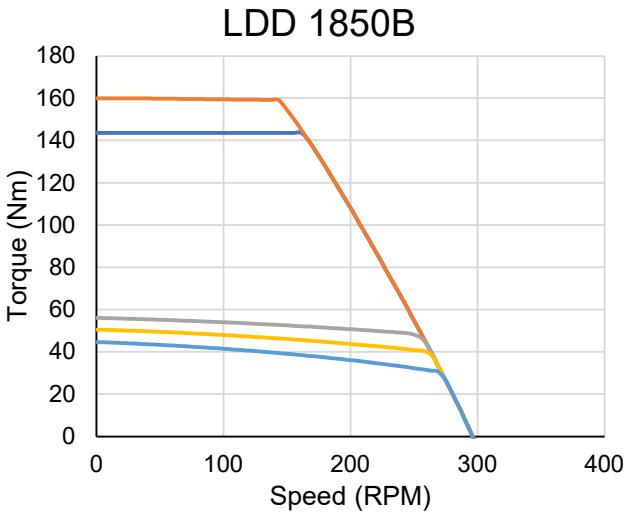
Performance curves assume an ambient temperature of 20°C and heat sink dimensions as stated in Specifications. Temperature rise affects motor performance and is dependent on both the ambient operating temperature and the maximum allowable winding temperature. Contact an Applications Engineer for special thermal or voltage requirements.

LDD 1850



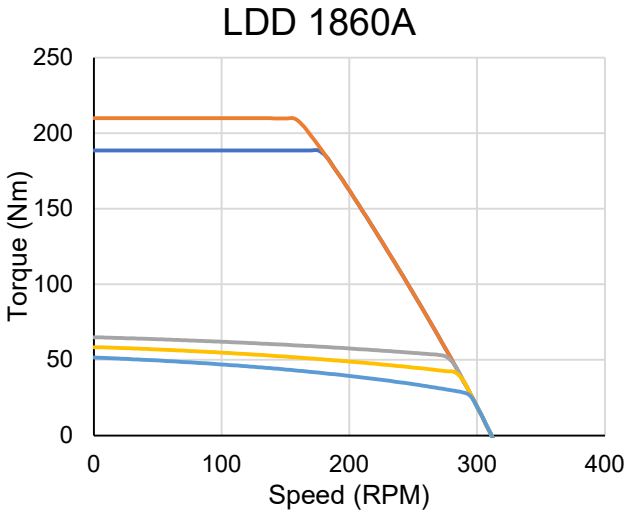


Design Voltage: 480 VAC

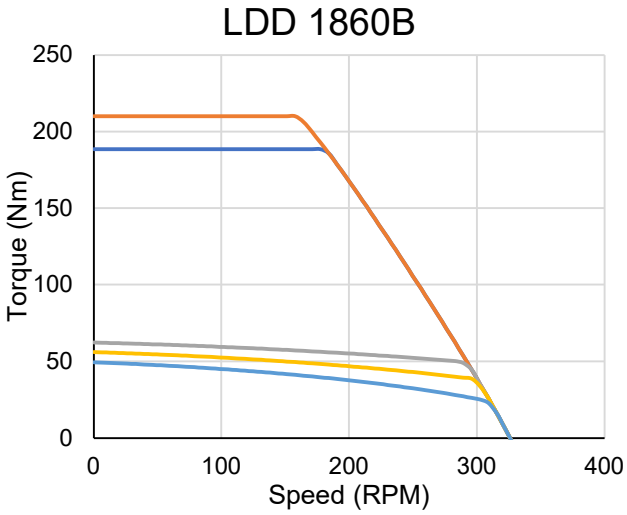


Design Voltage: 230 VAC

LDD 1860



Design Voltage: 480 VAC

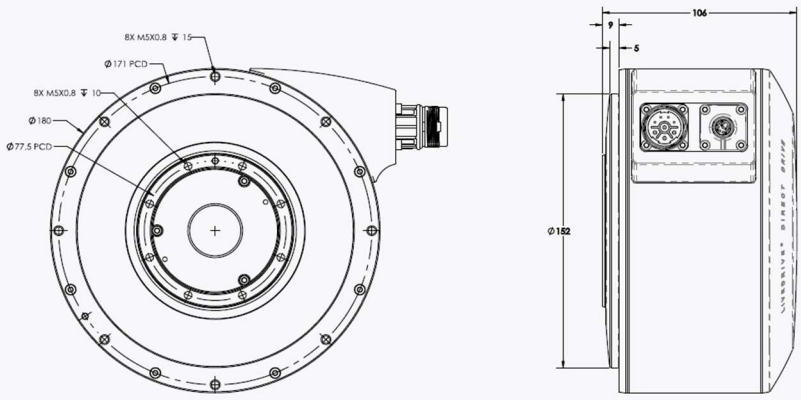


Design Voltage: 230 VAC

Performance curves assume an ambient temperature of 20°C and heat sink dimensions as stated in Specifications. Temperature rise affects motor performance and is dependent on both the ambient operating temperature and the maximum allowable winding temperature. Contact an Applications Engineer for special thermal or voltage requirements.

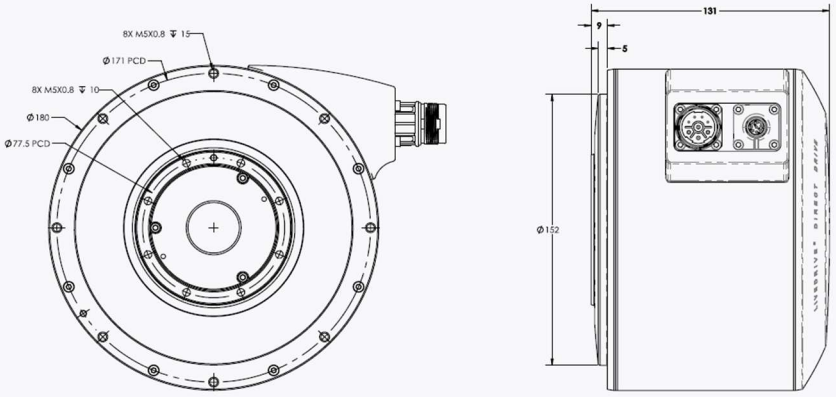
Outline Drawings

LDD 1830



LDD 1830 with M23 and M12 connectors shown. One cable technology (M23 only) on HIPERFACE DSL® models.

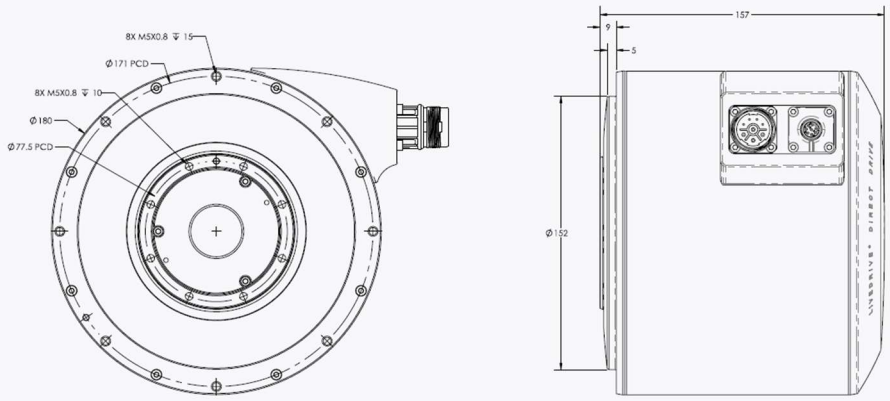
LDD 1841



LDD 1841 with M23 and M12 connectors shown. One cable technology (M23 only) on HIPERFACE DSL® models.

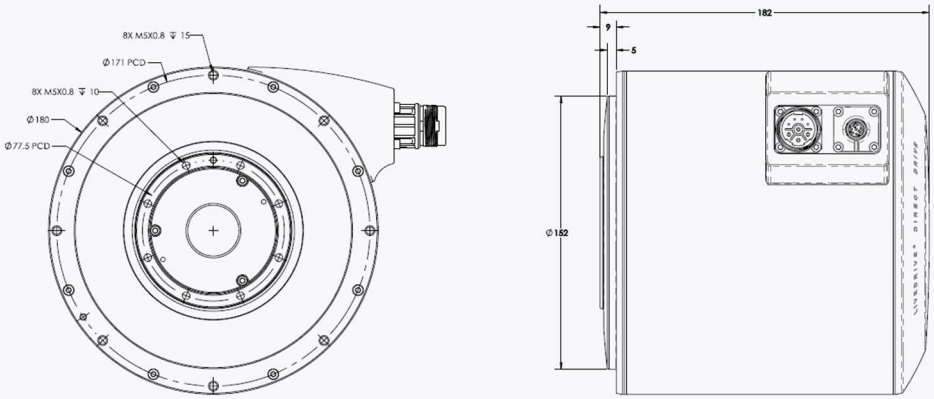
Refer to interface drawings for all dimensions and tolerances.

LDD 1850



LDD 1850 with M23 and M12 connectors shown. One cable technology (M23 only) on HIPERFACE DSL® models.

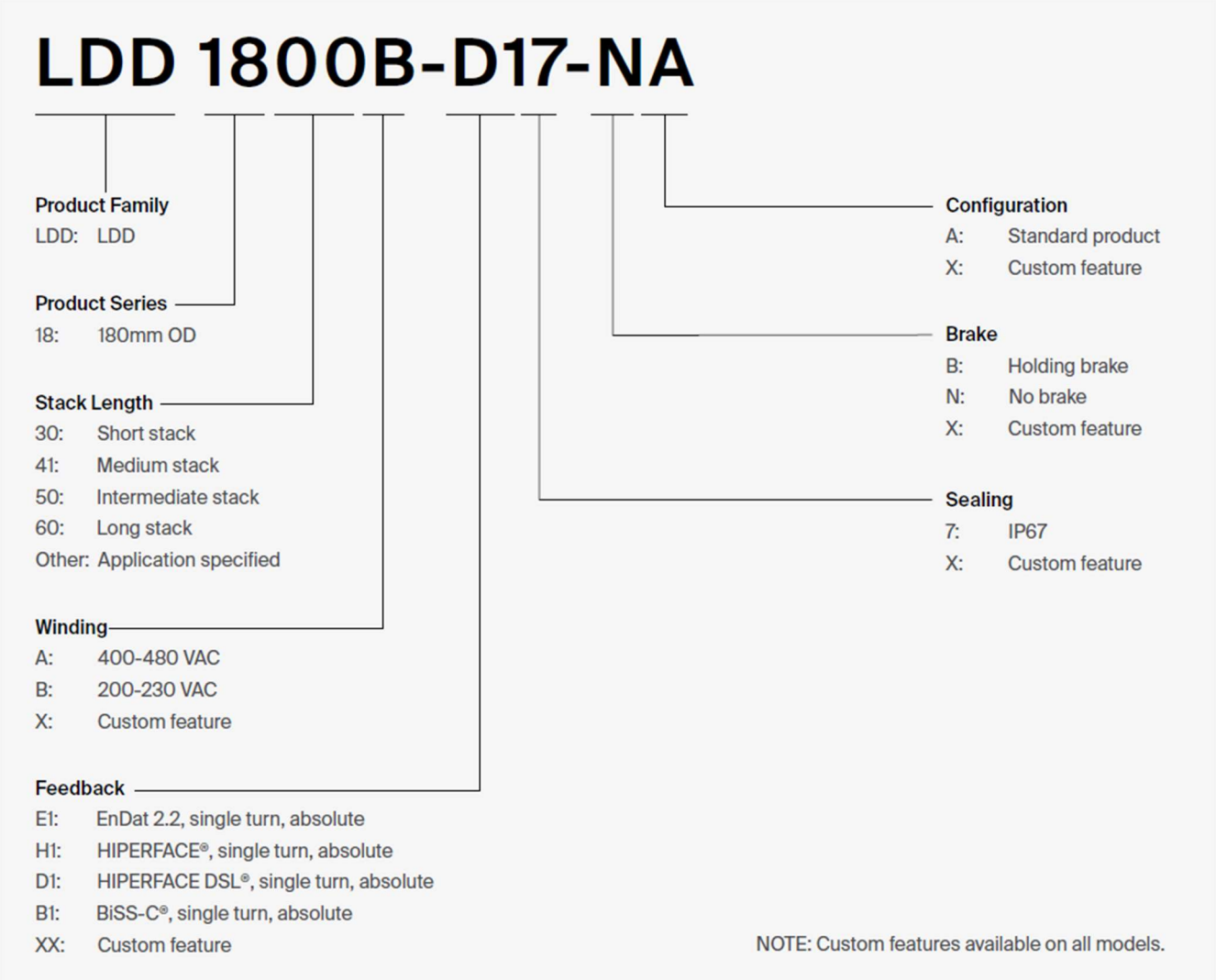
LDD 1860



LDD 1860 with M23 and M12 connectors shown. One cable technology (M23 only) on HIPERFACE DSL® models.

Refer to interface drawings for all dimensions and tolerances.

Ordering Guide



Contact a Genesis Motion Solutions representative for customization options.