

LDD 1800 Datasheet

Direct Drive Housed Motors



Overview

The LiveDrive® LDD direct drive motor is a high torque, compact solution designed for robots and machines in the food, packaging, pharmaceuticals, and electronics industries. Removing the need for gears, belts, or lubrication, our LDD motors simplify the drivetrain, delivering increased performance and lower total cost of ownership. LDD motors 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 18Nm 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	Nm	19.1 - 20.5	35.7 – 37.3	54.4 – 56.0	62.2 – 64.9
Peak Torque	Nm	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		1830A	1830B
Max Continuous Torque*	Nm	20.5	19.1
Continuous Current*	A_{rms}	1.85	3.88
Peak Torque at 20°C	Nm	56	56
Peak Current	A_{rms}	4.9	11.1
Rated Power*	W	716	665
Speed at Rated Power	RPM	466	488
Torque at Rated Power	Nm	14.1	12.5
No-Load Speed	RPM	550	590

Electrical		1830A	1830B
Design Voltage**	VAC	480	230
K_e at 20°C	$V_{rms}/kRPM$	850	380
K_t at 110°C	Nm/A_{rms}	11.1	4.95
K_m at 20°C	Nm/\sqrt{W}	2.08	1.96
K_m at 110°C	Nm/\sqrt{W}	1.41	1.32
Resistance _{L-L} at 20°C	Ω	30.4	6.89
Inductance _{L-L} at 20°C	mH	64.5	13.9

Thermal		1830A	1830B
Aluminum Heat Sink Dimensions	mm	300 x 300 x 12.7	300 x 300 x 12.7
Storage Temp.	°C	0 to 80	0 to 80
Operating Temp.	°C	0 to 40 (no freezing)	0 to 40 (no freezing)
Max Winding Temp.**	°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		1830A	1830B
Outer Diameter*	mm	180	180
Length	mm	106	106
Rotor Inertia (with Brake)	kgm 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		1830A	1830B
Allowable Radial Load	N	±1300	±1300
Allowable Thrust Load	N	+250/-800	+250/-800
Allowable Moment Load	Nm	±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)
HIPERFACE DSL® with Rockwell Automation Digital Nameplate****	-R1	1,048,576 (20 bit)	Rockwell Automation-compatible SpeedTec DIN M23

All models are single-turn absolute encoders.

Brake (Optional)		1830 (All Models)
Brake Holding Torque at 20°C	Nm	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.

****Refer to [Commissioning Rockwell Drives with LDD 1800 Motors](#) for more information.

LDD 1841

Performance		1841A	1841B
Max Continuous Torque*	Nm	35.7	37.3
Continuous Current*	A _{rms}	2.07	4.04
Peak Torque at 20°C	Nm	110	110
Peak Current	A _{rms}	6.2	11.6
Rated Power*	W	990	956
Speed at Rated Power	RPM	305	273
Torque at Rated Power	Nm	29.8	32.1
No-Load Speed	RPM	370	330

Electrical		1841A	1841B
Design Voltage**	VAC	480	230
K _e at 20°C	V _{rms} /kRPM	1,270	680
K _t at 110°C	Nm/A _{rms}	17.3	9.28
K _m at 20°C	Nm/√W	3.20	3.33
K _m at 110°C	Nm/√W	2.25	2.35
Resistance _{L-L} at 20°C	Ω	28.8	7.61
Inductance _{L-L} at 20°C	mH	88.4	20.0

Thermal		1841A	1841B
Aluminum Heat Sink Dimensions	mm	300 x 300 x 12.7	300 x 300 x 12.7
Storage Temp.	°C	0 to 80	0 to 80
Operating Temp.	°C	0 to 40 (no freezing)	0 to 40 (no freezing)
Max Winding Temp.**	°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		1841A	1841B
Outer Diameter*	mm	180	180
Length	mm	131	131
Rotor Inertia (with Brake)	kgm 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		1841A	1841B
Allowable Radial Load	N	±1400	±1400
Allowable Thrust Load	N	+250/-800	+250/-800
Allowable Moment Load	Nm	±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)
HIPERFACE DSL® with Rockwell Automation Digital Nameplate****	-R1	1,048,576 (20 bit)	Rockwell Automation-compatible SpeedTec DIN M23

All models are single-turn absolute encoders.

Brake (Optional)		1841 (All Models)
Brake Holding Torque at 20°C	Nm	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.

****Refer to [Commissioning Rockwell Drives with LDD 1800 Motors](#) for more information.

LDD 1850

Performance		1850A	1850B
Max Continuous Torque*	Nm	54.4	56.0
Continuous Current*	A _{rms}	2.70	5.23
Peak Torque at 20°C	Nm	160	160
Peak Current	A _{rms}	8.1	14.4
Rated Power*	W	1,337	1,250
Speed at Rated Power	RPM	267	235
Torque at Rated Power	Nm	45.9	48.8
No-Load Speed	RPM	325	290

Electrical		1850A	1850B
Design Voltage**	VAC	480	230
K _e at 20°C	V _{rms} /kRPM	1,450	770
K _t at 110°C	Nm/A _{rms}	20.2	10.7
K _m at 20°C	Nm/√W	4.06	4.17
K _m at 110°C	Nm/√W	2.92	3.01
Resistance _{L-L} at 20°C	Ω	23.3	6.22
Inductance _{L-L} at 20°C	mH	57.8	16.3

Thermal		1850A	1850B
Aluminum Heat Sink Dimensions	mm	400 x 400 x 12.7	400 x 400 x 12.7
Storage Temp.	°C	0 to 80	0 to 80
Operating Temp.	°C	0 to 40 (no freezing)	0 to 40 (no freezing)
Max Winding Temp.**	°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		1850A	1850B
Outer Diameter*	mm	180	180
Length	mm	157	157
Rotor Inertia (with Brake)	kgm 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		1850A	1850B
Allowable Radial Load	N	±1500	±1500
Allowable Thrust Load	N	+250/-800	+250/-800
Allowable Moment Load	Nm	±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)
HIPERFACE DSL® with Rockwell Automation Digital Nameplate****	-R1	1,048,576 (20 bit)	Rockwell Automation-compatible SpeedTec DIN M23

All models are single-turn absolute encoders.

Brake (Optional)		1850 (All Models)
Brake Holding Torque at 20°C	Nm	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.

****Refer to [Commissioning Rockwell Drives with LDD 1800 Motors](#) for more information.

LDD 1860

Performance		1860A	1860B
Max Continuous Torque*	Nm	64.9	62.2
Continuous Current*	A _{rms}	3.04	6.41
Peak Torque at 20°C	Nm	210	210
Peak Current	A _{rms}	9.6	21.5
Rated Power*	W	1,516	1,495
Speed at Rated Power	RPM	259	271
Torque at Rated Power	Nm	53.7	50.6
No-Load Speed	RPM	307	320

Electrical		1860A	1860B
Design Voltage**	VAC	480	230
K _e at 20°C	V _{rms} /kRPM	1,530	700
K _t at 110°C	Nm/A _{rms}	21.3	9.75
K _m at 20°C	Nm/√W	4.78	4.59
K _m at 110°C	Nm/√W	3.46	3.31
Resistance _{L-L} at 20°C	Ω	18.7	4.24
Inductance _{L-L} at 20°C	mH	46.5	10.4

Thermal		1860A	1860B
Aluminum Heat Sink Dimensions	mm	400 x 400 x 12.7	400 x 400 x 12.7
Storage Temp.	°C	0 to 80	0 to 80
Operating Temp.	°C	0 to 40 (no freezing)	0 to 40 (no freezing)
Max Winding Temp.**	°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		1860A	1860B
Outer Diameter*	mm	180	180
Length	mm	182	182
Rotor Inertia (with Brake)	kgm 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		1860A	1860B
Allowable Radial Load	N	±1650	±1650
Allowable Thrust Load	N	+250/-800	+250/-800
Allowable Moment Load	Nm	±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)
HIPERFACE DSL® with Rockwell Automation Digital Nameplate****	-R1	1,048,576 (20 bit)	Rockwell Automation-compatible SpeedTec DIN M23

All models are single-turn absolute encoders.

Brake (Optional)		1860 (All Models)
Brake Holding Torque at 20°C	Nm	18
Brake Voltage	VDC	24

*Refer to interface drawings for all dimensions and tolerances.

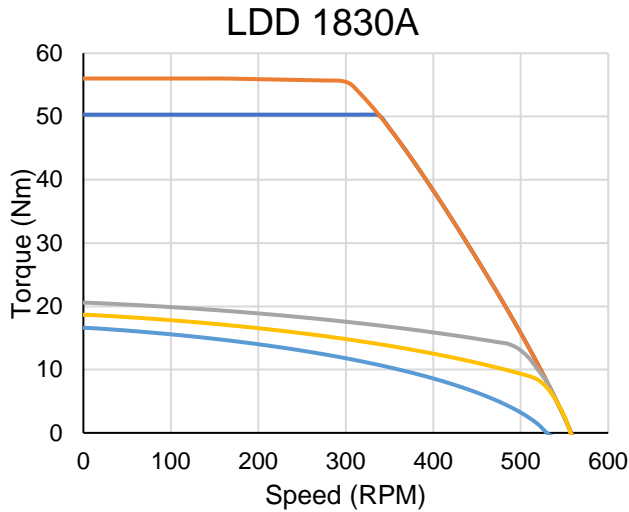
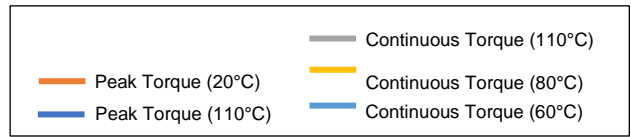
**Mass varies slightly by encoder type. Specifications assume configuration with largest mass.

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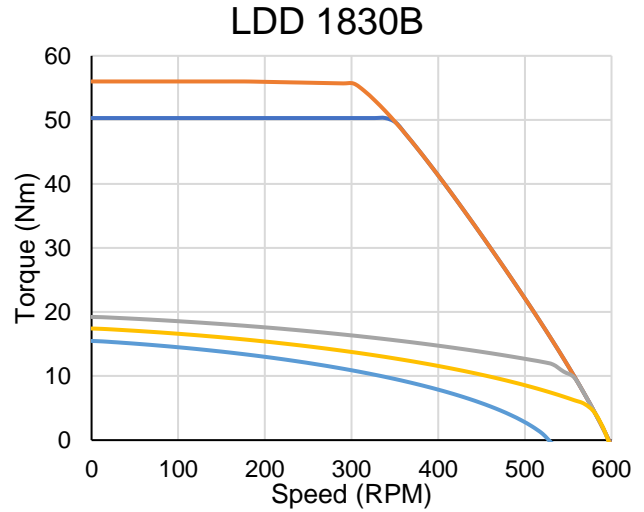
****Refer to [Commissioning Rockwell Drives with LDD 1800 Motors](#) for more information.

Performance Curves

LDD 1830

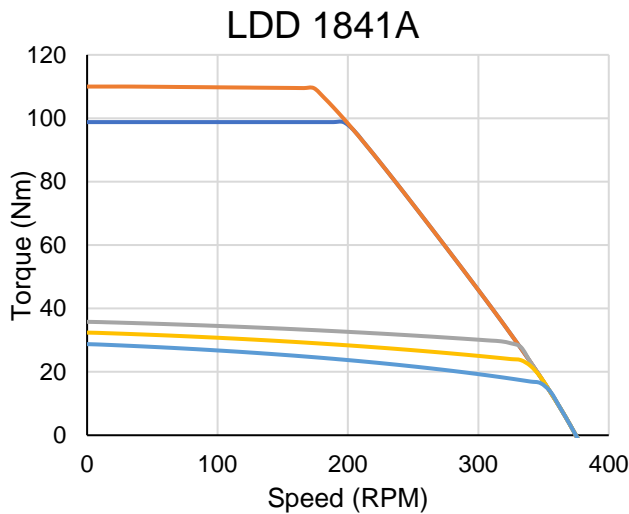


Design Voltage: 480 VAC

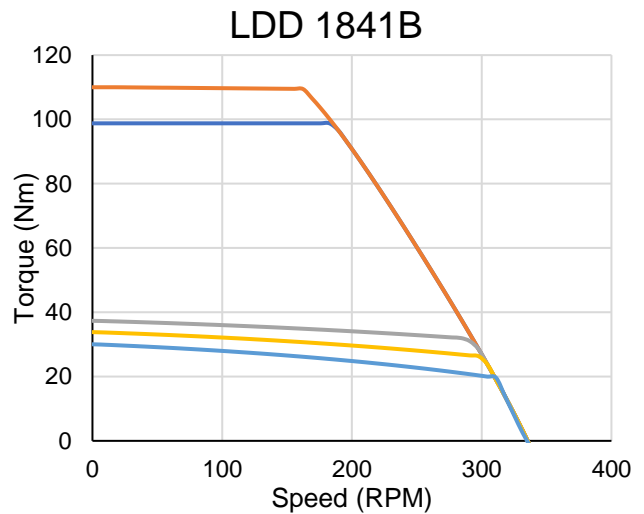


Design Voltage: 230 VAC

LDD 1841



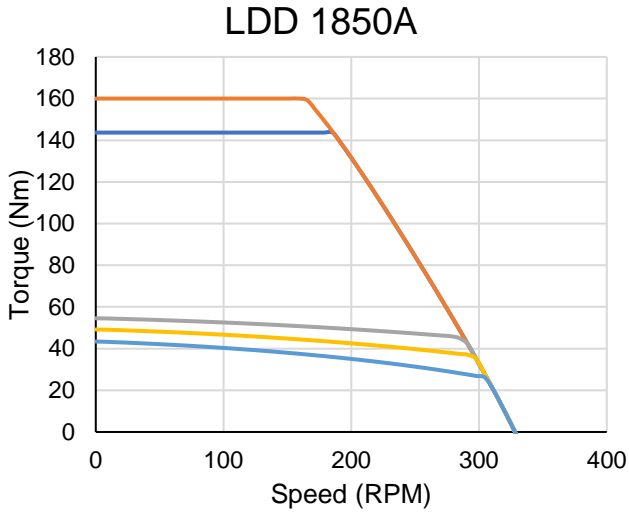
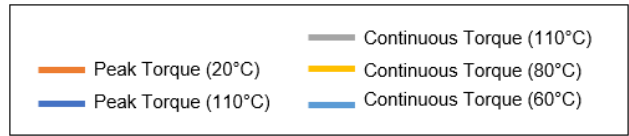
Design Voltage: 480 VAC



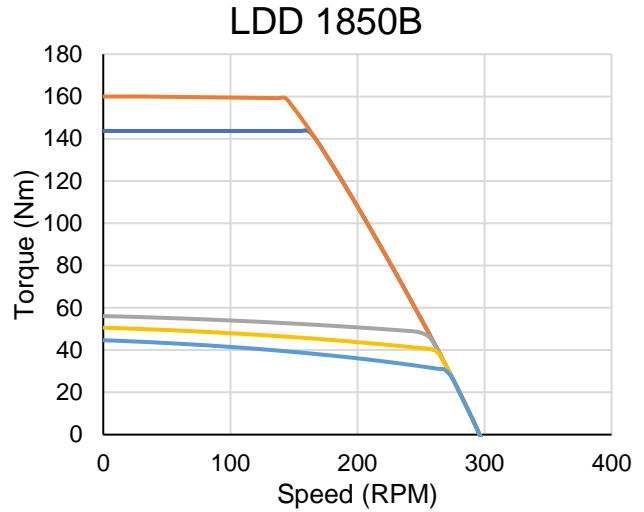
Design Voltage: 230 VAC

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

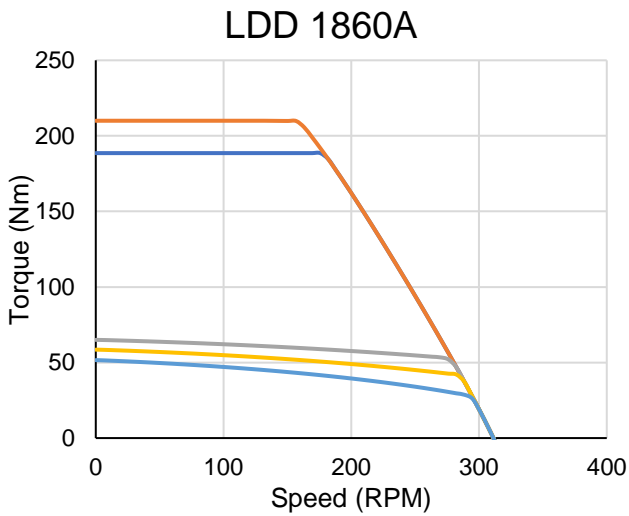


Design Voltage: 480 VAC

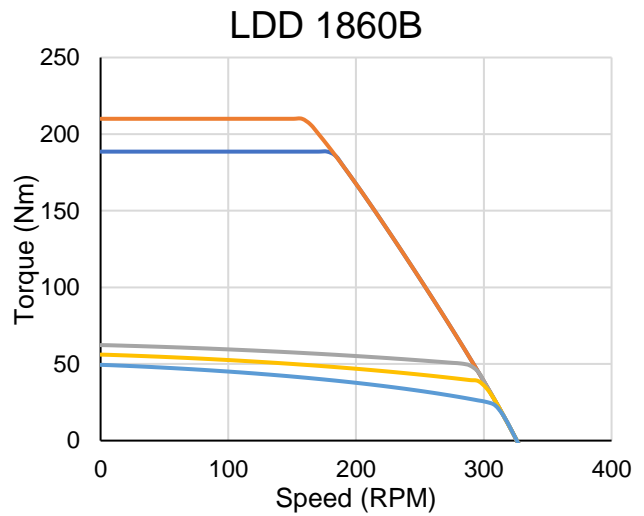


Design Voltage: 230 VAC

LDD 1860



Design Voltage: 480 VAC

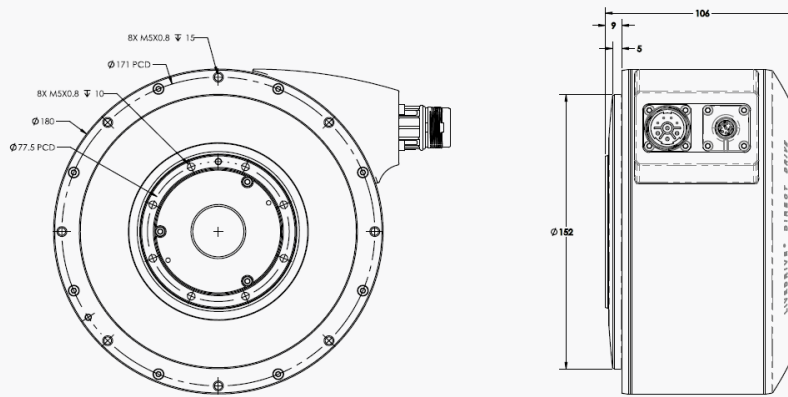


Design Voltage: 230 VAC

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.

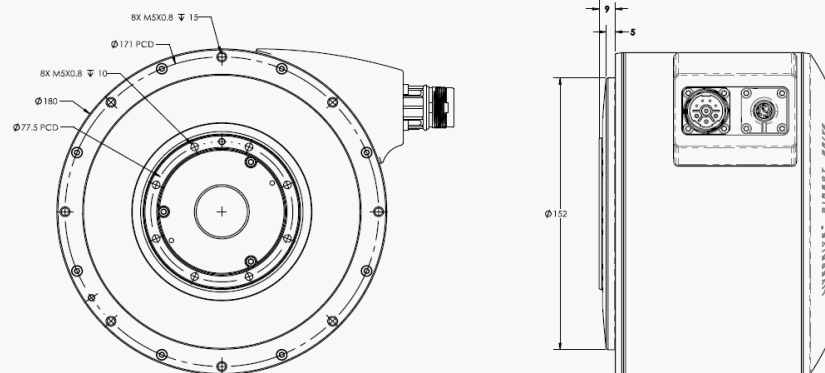
Outline Drawings

LDD 1830



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

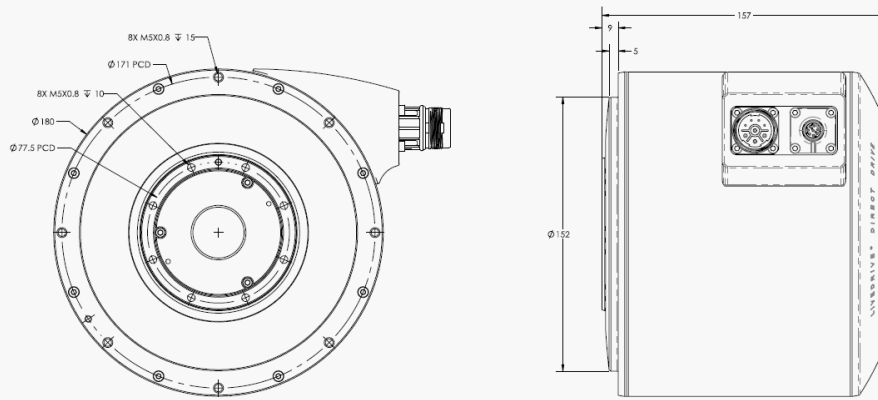
LDD 1841



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

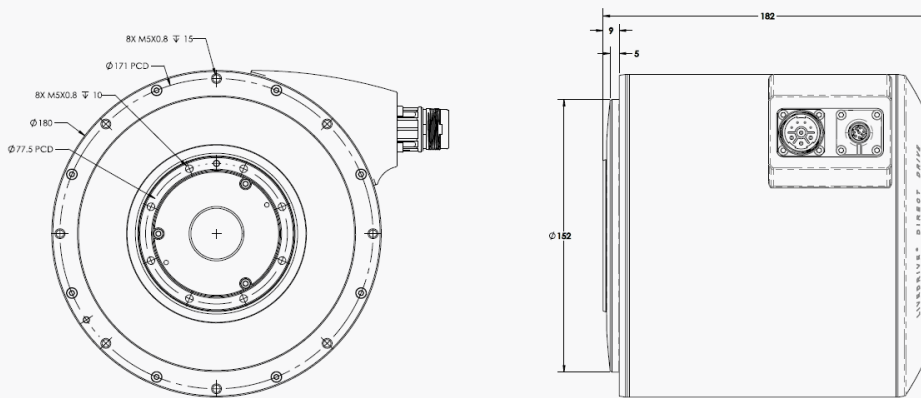
Refer to interface drawings for all dimensions and tolerances.

LDD 1850



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

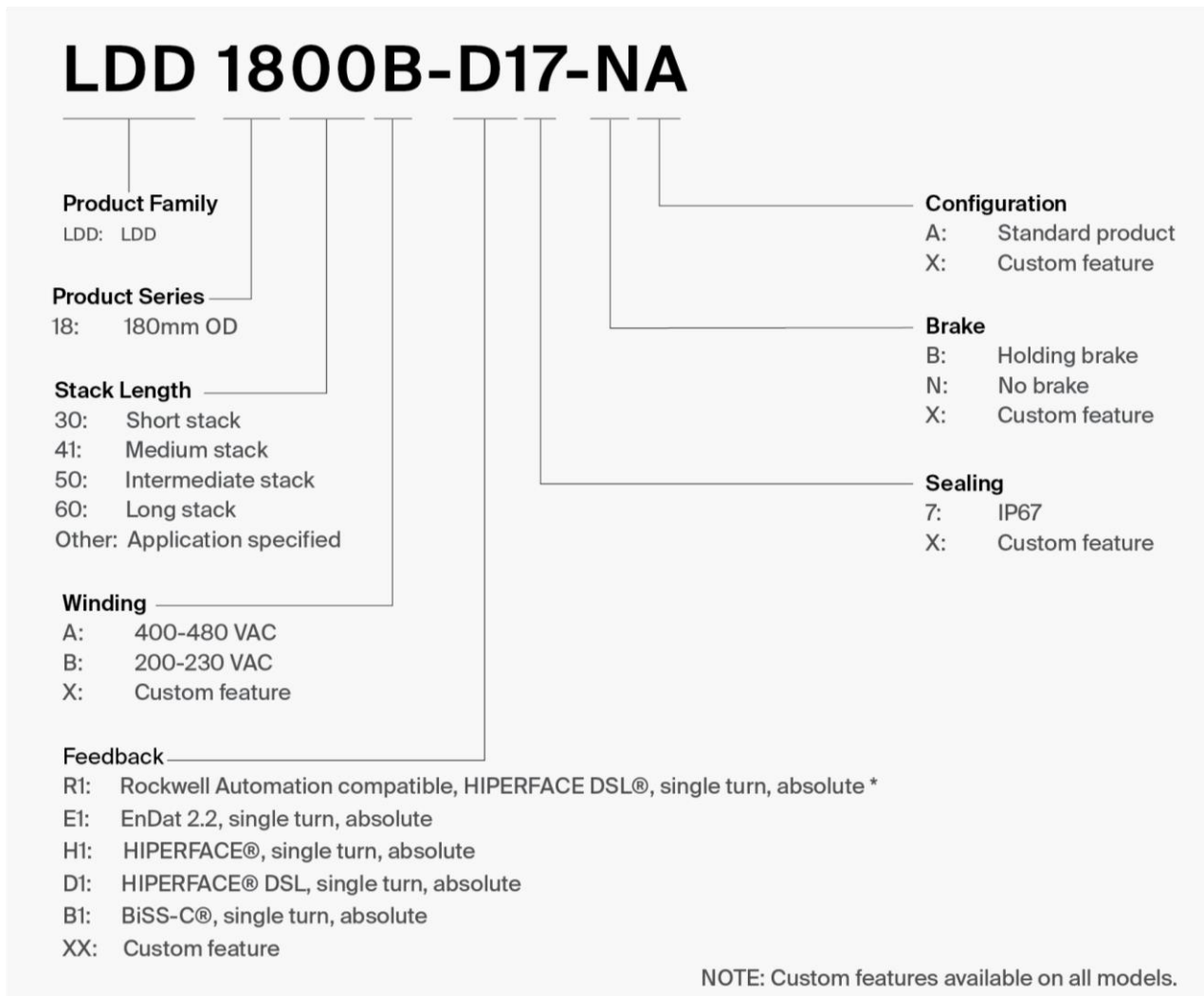
LDD 1860



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



*Rockwell Automation compatible LDD motor models (LDD 18XX-R17-XX) incorporate technology that is licensed from Rockwell Automation Technologies, Inc.

Contact a Genesis Motion Solutions representative for customization options.