

LDR Datasheet

Direct Drive Housed Motors

ENGINEERING PROTOTYPE



Overview

Building on the superior performance of the LDD and LDX lines, the LiveDrive® LDR series delivers industry leading torque density in a range of sizes. LDR motors are housed with features designed specifically for machine builders to increase throughput, flexibility, and design efficiency.

Features



High Torque Density

High torque density enables direct drive solution for improved performance and system lifetime



Through Hole

Utilize through hole of motor for cable routing



Compact

Compact form factor reduces machine footprint



High Precision

Zero backlash direct drive motor enables high dynamic response



Integrated Technology

Temperature sensor helps protect against overheating; integrated absolute encoder offers high precision for optimal motion control

Specification Summary

LDR		1075	1225	1450	1650
Outer Diameter	mm	101.5	122.0	142.5	163.0
Through Hole Diameter	mm	15.0	25.0	30.0	50.0
Length	mm	165.6	125.6	150.6	162.6
Max. Continuous Torque	Nm	10.3	6.9	18.6	27.8
Peak Torque	Nm	21.1	12.3	46.5	67.4
No-Load Speed	RPM	1017	2211	730	773
Design Voltage		230 VAC			

Preliminary specifications are subject to change.

Specifications

LDR 1075

Performance		1075B
Max Continuous Torque	Nm	10.3
Continuous Current	A_{rms}	3.27
Peak Torque at 20°C	Nm	21.1
Peak Current	A_{rms}	7.04
Rated Power	W	788
Speed at Rated Power	RPM	820
Torque at Rated Power	Nm	9.17
No-Load Speed	RPM	1017
Electrical		1075B
Design Voltage*	VAC	230
K_e at 20°C	$V_{rms}/kRPM$	226
K_t at 110°C	Nm/A_{rms}	3.14
K_m at 20°C	Nm/\sqrt{W}	1.15
K_m at 110°C	Nm/\sqrt{W}	0.83
Resistance _{L-L} at 20°C	Ω	7.09
Inductance _{L-L} at 20°C	mH	27.8
Thermal		1075B
Thermal Resistance	$^{\circ}C/W$	0.585
Aluminum Heat Sink Dimensions	mm	250 x 250 x 6.3
Storage Temp.	$^{\circ}C$	0 to 80
Operating Temp.	$^{\circ}C$	0 to 40
Max Winding Temp.	$^{\circ}C$	110

*Motors can be operated at different voltages. Contact an applications engineer for inquiries with special voltage requirements.

Specifications are preliminary and subject to change.

Specifications assume a 90°C temperature rise from 20°C ambient to a maximum winding temperature of 110°C unless otherwise listed.

All performance and electrical specifications have $\pm 15\%$ tolerance.

Physical**1075B**

Outer Diameter	mm	101.5
Through Hole Diameter	mm	15.0
Length	mm	165.6
Rotor Inertia	kgm ²	0.0004
Total Mass	kg	5.3
Number of Poles		20

Mechanical**1075B**

Allowable Radial Load*	N	±400
Allowable Thrust Load*	N	+250/-175**
Allowable Moment Load*	Nm	±12.5
Operating Noise	dBa	<65
Protection Class		IP54

Temperature Sensor**All Models**

Sensor Type		PT1000 RTD
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Absolute Encoder**All Models**

Encoder Protocol		BiSS-C ®, single-turn
Model Code		-B1
Resolution	Bits (CPR)	18 (262144)
Accuracy	Arcseconds	180

Connector Interfaces**All Models**

Power		M23, 90-degree field rotatable, 9-pin
Encoder		M23, 90-degree field rotatable, 12-pin

*Mechanical loads are to be applied asynchronously, meaning only one load can be applied at a time. For combined mechanical loads, contact an applications engineer.

**Thrust load sign convention: + into the motor. – away from the motor.

LDR 1225**Performance****1225B**

Max Continuous Torque	Nm	6.92
Continuous Current	A_{rms}	5.10
Peak Torque at 20°C	Nm	12.3
Peak Current	A_{rms}	9.21
Rated Power	W	954
Speed at Rated Power	RPM	1868
Torque at Rated Power	Nm	4.88
No-Load Speed	RPM	2211

Electrical**1225B**

Design Voltage*	VAC	230
K_e at 20°C	$V_{rms}/kRPM$	104
K_t at 110°C	Nm/A_{rms}	1.35
K_m at 20°C	Nm/\sqrt{W}	0.84
K_m at 110°C	Nm/\sqrt{W}	0.57
Resistance _{L-L} at 20°C	Ω	2.83
Inductance _{L-L} at 20°C	mH	preliminary

Thermal**1225B**

Thermal Resistance	$^{\circ}C/W$	0.602
Aluminum Heat Sink Dimensions	mm	300 x 300 x 12.7
Storage Temp.	$^{\circ}C$	0 to 80
Operating Temp.	$^{\circ}C$	0 to 40
Max Winding Temp.	$^{\circ}C$	110

*Motors can be operated at different voltages. Contact an applications engineer for inquiries with special voltage requirements.

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Physical**1225B**

Outer Diameter	mm	122.0
Through Hole Diameter	mm	25.0
Length	mm	125.6
Rotor Inertia	kgm ²	0.0006
Total Mass	kg	4.6
Number of Poles		26

Mechanical**1225B**

Allowable Radial Load*	N	±400
Allowable Thrust Load*	N	+300/-250**
Allowable Moment Load*	Nm	±10
Operating Noise	dBa	<65
Protection Class		IP54

Temperature Sensor**All Models**

Sensor Type	PT1000 RTD
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Absolute Encoder**All Models**

Encoder Protocol	BiSS-C ®, single-turn	
Model Code	-B1	
Resolution	Bits (CPR)	18 (262144)
Accuracy	Arcseconds	180

Connector Interfaces**All Models**

Power	M23, 90-degree field rotatable, 9-pin
Encoder	M23, 90-degree field rotatable, 12-pin

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**Thrust load sign convention: + into the motor. – away from the motor.

LDR 1450**Performance****1450B**

Max Continuous Torque	Nm	18.6
Continuous Current	A_{rms}	4.32
Peak Torque at 20°C	Nm	46.5
Peak Current	A_{rms}	11.6
Rated Power	W	946
Speed at Rated Power	RPM	603
Torque at Rated Power	Nm	15.0
No-Load Speed	RPM	730

Electrical**1450B**

Design Voltage*	VAC	230
K_e at 20°C	$V_{rms}/kRPM$	315
K_t at 110°C	Nm/A_{rms}	4.31
K_m at 20°C	Nm/\sqrt{W}	1.82
K_m at 110°C	Nm/\sqrt{W}	1.30
Resistance _{L-L} at 20°C	Ω	5.45
Inductance _{L-L} at 20°C	mH	preliminary

Thermal**1450B**

Thermal Resistance	$^{\circ}C/W$	0.435
Aluminum Heat Sink Dimensions	mm	300 x 300 x 12.7
Storage Temp.	$^{\circ}C$	0 to 80
Operating Temp.	$^{\circ}C$	0 to 40
Max Winding Temp.	$^{\circ}C$	110

*Motors can be operated at different voltages. Contact an applications engineer for inquiries with special voltage requirements.

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Physical**1450B**

Outer Diameter	mm	142.5
Through Hole Diameter	mm	30.0
Length	mm	150.6
Rotor Inertia	kgm ²	0.0028
Total Mass	kg	8.1
Number of Poles		32

Mechanical**1450B**

Allowable Radial Load*	N	±1400
Allowable Thrust Load*	N	+600/-350**
Allowable Moment Load*	Nm	±45
Operating Noise	dBa	<65
Protection Class		IP54

Temperature Sensor**All Models**

Sensor Type	PT1000 RTD
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Absolute Encoder**All Models**

Encoder Protocol	BiSS-C ®, single-turn	
Model Code	-B1	
Resolution	Bits (CPR)	18 (262144)
Accuracy	Arcseconds	180

Connector Interfaces**All Models**

Power	M23, 90-degree field rotatable, 9-pin
Encoder	M23, 90-degree field rotatable, 12-pin

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**Thrust load sign convention: + into the motor. – away from the motor.

LDR 1650**Performance****1650B**

Max Continuous Torque	Nm	27.8
Continuous Current	A_{rms}	6.47
Peak Torque at 20°C	Nm	67.4
Peak Current	A_{rms}	16.6
Rated Power	W	1098
Speed at Rated Power	RPM	579
Torque at Rated Power	Nm	18.1
No-Load Speed	RPM	773

Electrical**1650B**

Design Voltage*	VAC	230
K_e at 20°C	$V_{rms}/kRPM$	298
K_t at 110°C	Nm/A_{rms}	4.30
K_m at 20°C	Nm/\sqrt{W}	2.47
K_m at 110°C	Nm/\sqrt{W}	1.90
Resistance _{L-L} at 20°C	Ω	2.65
Inductance _{L-L} at 20°C	mH	preliminary

Thermal**1650B**

Thermal Resistance	$^{\circ}C/W$	0.400
Aluminum Heat Sink Dimensions	mm	300 x 300 x 12.7
Storage Temp.	$^{\circ}C$	0 to 80
Operating Temp.	$^{\circ}C$	0 to 40
Max Winding Temp.	$^{\circ}C$	110

*Motors can be operated at different voltages. Contact an applications engineer for inquiries with special voltage requirements.

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All performance and electrical specifications have $\pm 15\%$ tolerance.

Physical**1650B**

Outer Diameter	mm	163.0
Through Hole Diameter	mm	50.0
Length	mm	162.6
Rotor Inertia	kgm ²	0.0061
Total Mass	kg	10.6
Number of Poles		38

Mechanical**1650B**

Allowable Radial Load*	N	±850
Allowable Thrust Load*	N	+600/-400**
Allowable Moment Load*	Nm	±32.5
Operating Noise	dBa	<65
Protection Class		IP54

Temperature Sensor**All Models**

Sensor Type	PT1000 RTD
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Absolute Encoder**All Models**

Encoder Protocol	BiSS-C ®, single-turn	
Model Code	-B1	
Resolution	Bits (CPR)	18 (262144)
Accuracy	Arcseconds	180

Connector Interfaces**All Models**

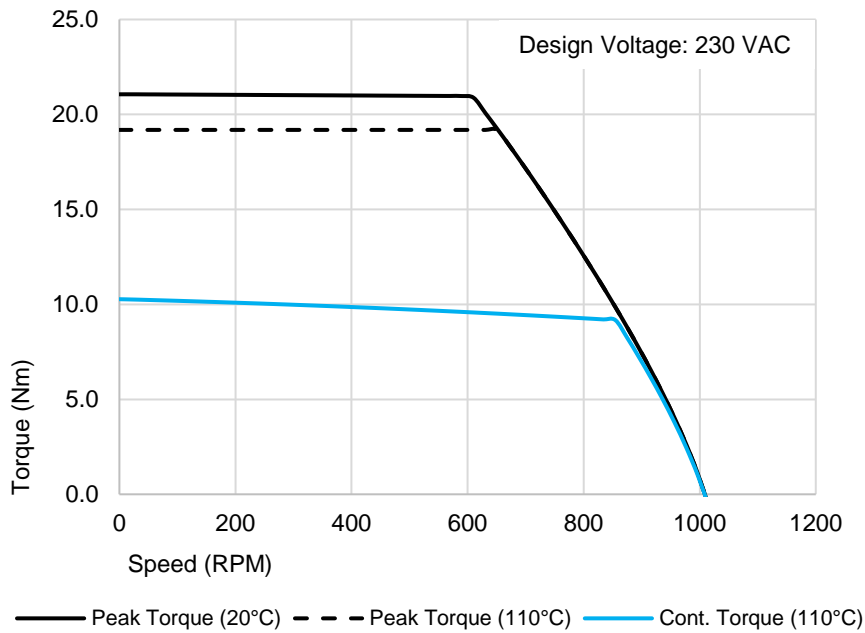
Power	M23, 90-degree field rotatable, 9-pin
Encoder	M23, 90-degree field rotatable, 12-pin

*Mechanical loads are to be applied asynchronously, meaning only one load can be applied at a time. For combined mechanical loads, contact an applications engineer.

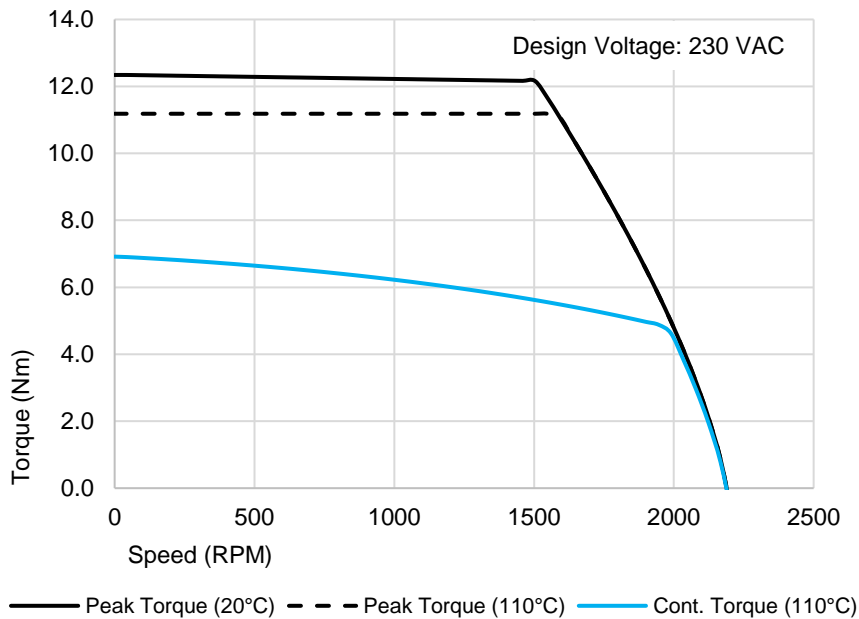
**Thrust load sign convention: + into the motor. – away from the motor.

Performance Curves

LDR 1075B

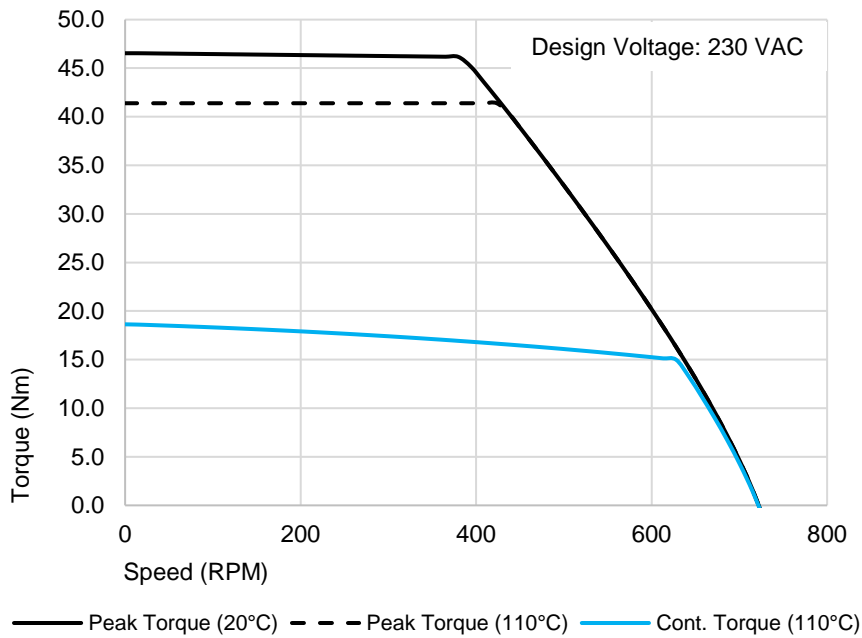


LDR 1225B

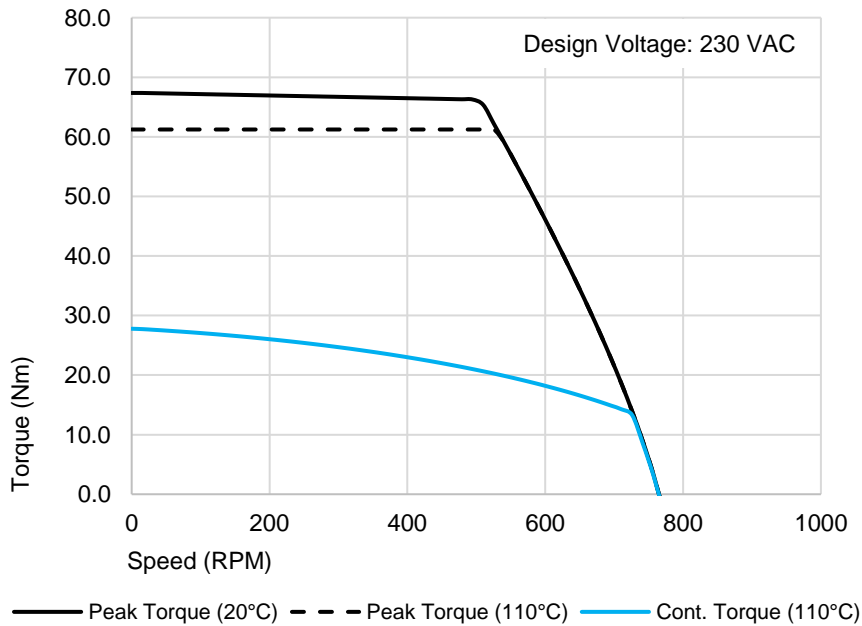


Performance curves assume a 90°C temperature rise from 20°C ambient to a maximum winding temperature of 110°C and 230 VAC winding voltage with motor mounted to aluminum heat sink (dimensions as listed in thermal specifications).

LDR 1450B

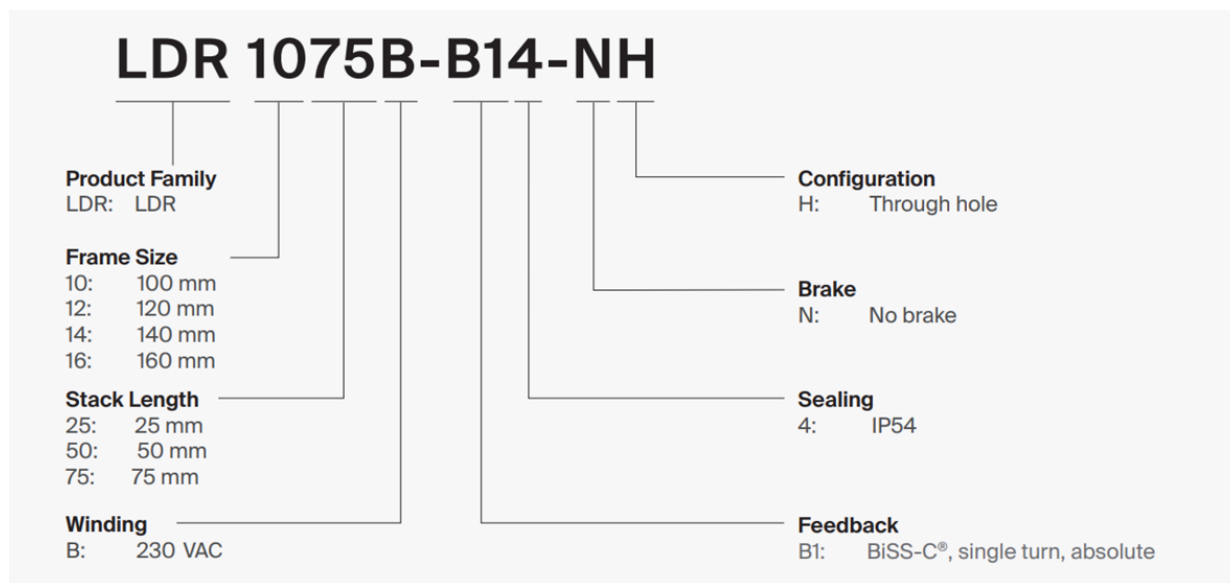


LDR 1650B



Performance curves assume a 90°C temperature rise from 20°C ambient to a maximum winding temperature of 110°C and 230 VAC winding voltage with motor mounted to aluminum heat sink (dimensions as listed in thermal specifications).

Ordering Codes



Contact a Genesis Motion Solutions representative for customization options.

Refer to interface drawings for specific dimensions and tolerances.