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1100 Iron Core Linear Motor Series Connection Specification

General Motor Specifications	UNITS	Dash #	1	2	3	4	6	8	10	12
Attractive Preload Force using 0.5mm[.02"] clearance gap	N		580	1159	1739	2318	3477	4636	5795	6954
	Lbf		130.3	261	391	521	782	1042	1303	1563
Attractive Preload Force using 1.0mm[.04"] clearance gap	N		493	985	1478	1970	2956	3941	4926	5911
	Lbf		110.7	221	332	443	664	886	1107	1329
Max Operating Temperature	°C		125	125	125	125	125	125	125	125
Maximum Temp. Rise	°C		105	105	105	105	105	105	105	105
Coil Resistance (6 lead @ 25°C)	Ω		1.4	2.8	4.2	5.6	8.4	11.3	14.1	16.9
Coil Resistance (6 lead @ Max. °C)	Ω		2.0	4.0	6.0	8.0	11.9	15.9	19.9	23.9
Inductance @ 1kHz	mH		8.0	15.9	23.9	31.9	47.8	63.8	79.7	95.7
Thermal Resistance (Bracket Top Mount)	°C/W		0.300	0.150	0.100	0.075	0.050	0.038	0.030	0.025
Continuous Power Top Mount (Max. °C)	W		350	700	1050	1400	2100	2800	3500	4200
Continuous Power, top mount to plate**(Max. °C)	W		214	326	410	480	606	721	832	940
Motor Constant	lb _f /sqrt(W)		1.4	2.0	2.5	2.9	3.5	4.1	4.6	5.0
	N/sqrt(W)		6.42	9.08	11.12	12.84	15.73	18.16	20.31	22.25
Peak Power (Max. °C, 10% Duty)	W		3500	7000	10500	14000	21000	28000	35000	42000
Electrical Time Constant (@ 25°C)	ms		5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
Maximum Line to Line Voltage	Vrms		670	670	670	670	670	670	670	670
Coil Weight	Pounds		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Kilograms		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coil length (inside magnet track without HED)	inch		2.41	4.81	7.21	9.61	14.41	19.21	24.01	28.81
HED increases coil length by 1.48 inch (37.6mm)	mm		61.2	122.2	183.1	244.1	366.0	487.9	609.9	731.8
Delta Connected Specifications	UNITS	Dash #	1	2	3	4	6	8	10	12
Force Constant using 0.5mm[.02"] clearance gap	N/A		7.9	15.8	23.7	31.5	47.3	63.1	78.8	94.6
	lb _f /A		1.8	3.5	5.3	7.1	10.6	14.2	17.7	21.3
Force Constant using 1mm[.04"] clearance gap	N/A		7.3	14.5	21.8	29.0	43.5	58.0	72.5	87.0
	lb _f /A		1.6	3.3	4.9	6.5	9.8	13.0	16.3	19.6
Phase Resistance (Δ @ 25°C)	Ω		0.94	1.9	2.8	3.8	5.6	7.5	9.4	11.3
Phase Resistance (Δ @ Max. °C)	Ω		1.33	2.7	4.0	5.3	8.0	10.6	13.3	15.9
Inductance @ 1kHz	mH		5.3	10.6	15.9	21.2	31.9	42.5	53.1	63.7
Continuous Force using 0.5mm[.02"] clearance gap	N		120.1	240.3	360.4	480.6	720.8	961.1	1201.4	1441.7
	lb _f		27.0	54.0	81.0	108.0	162.1	216.1	270.1	324.1
Continuous Force using 1.0mm[.04"] clearance gap	N		110.5	221.1	331.6	442.1	663.2	884.2	1105.3	1326.3
	lb _f		24.8	49.7	74.5	99.4	149.1	198.8	248.5	298.2
Continuous Current	A		15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2
Peak Force* using 0.5mm[.02"] clearance gap	N		166	331	497	662	993	1324	1656	1987
	lb _f		37	74	112	149	223	298	372	447
Peak Force* using 1.0mm[.04"] clearance gap	N		152	305	457	609	914	1218	1523	1828
	lb _f		34	68	103	137	205	274	342	411
Peak Current*	A		21.00	21.00	21.00	21.00	21.00	21.00	21.00	21.00
Continuous Force, aluminum plate heat sink** (see below)	N		100.1	174.8	239.9	300.0	412.6	519.8	624.1	726.8
	lb _f		22.5	39.3	53.9	67.4	92.8	116.9	140.3	163.4
Back EMF Constant using 0.5mm[.02"] clearance gap	V/m/s		7.9	15.8	23.7	31.5	47.3	63.1	78.8	94.6
	V/inch/s		0.2	0.4	0.6	0.8	1.2	1.6	2.0	2.4
WYE connected Specifications	UNITS	Dash #	1	2	3	4	6	8	10	12
Force Constant using 0.5mm[.02"] clearance gap	N/A		13.7	27.3	41.0	54.6	81.9	109.2	136.5	163.9
	lb _f /A		3.1	6.1	9.2	12.3	18.4	24.6	30.7	36.8
	N/A		12.6	25.1	37.7	50.2	75.4	100.5	125.6	150.7
Force Constant using 1.0mm[.04"] clearance gap	lb _f /A		2.8	5.6	8.5	11.3	16.9	22.6	28.2	33.9
Phase Resistance (Y @ 25°C)	Ω		2.82	5.63	8.45	11.27	16.90	22.53	28.16	33.80
Phase Resistance (Y @ Max. °C)	Ω		3.98	7.96	11.94	15.93	23.89	31.85	39.82	47.78
Inductance @ 1kHz	mH		15.9	31.9	47.8	63.8	95.7	127.6	159.5	191.4
Continuous Force using 0.5mm[.02"] clearance gap	N		120.1	240.3	360.4	480.6	720.8	961.1	1201.4	1441.7
	lb _f		27.0	54.0	81.0	108.0	162.1	216.1	270.1	324.1
Continuous Force using 0.5mm[.02"] clearance gap	N		110.5	221.1	331.6	442.1	663.2	884.2	1105.3	1326.3
	lb _f		24.8	49.7	74.5	99.4	149.1	198.8	248.5	298.2
Continuous Current	A		8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80
Peak Force* using 0.5mm[.02"] clearance gap	N		287	574	860	1147	1721	2294	2868	3441
	lb _f		64	129	193	258	387	516	645	774
Peak Force* using 1.0mm[.04"] clearance gap	N		264	528	791	1055	1583	2110	2638	3166
	lb _f		59	119	178	237	356	474	593	712
Peak Current*	A		21.00	21.00	21.00	21.00	21.00	21.00	21.00	21.00
Continuous Force, aluminum plate heat sink** (see below)	N		100.1	174.8	239.9	300.0	412.6	519.8	624.1	726.8
	lb _f		22.5	39.3	53.9	67.4	92.8	116.9	140.3	163.4
Back EMF Constant using 0.5mm[.02"] clearance gap	V/m/s		13.7	27.3	41.0	54.6	81.9	109.2	136.5	163.9
	V/inch/s		0.3	0.7	1.0	1.4	2.1	2.8	3.5	4.2

* Notes:

Specifications based on heat sink maintained within 10°C of ambient temperature at motor bracket interface.
On time of "Peak Power" (duration) less than 10 seconds.
Back EMF plus IR drop must not exceed "Maximum Terminal Voltage" listed.
Electrical cycle length is 30.5mm
Resistance Specifications do not include the cable resistance.
Cogging force due to magnet saliency is about 70N
Custom cable required for peak current exceeding 52 ampere.
Magnet track maximum environment temperature is 50 Deg. C.
Cable adds 0.0550/m
Shaded Column represents "Special" models.
** Heat Sink is a 0.5 meter wide, 15mm thick aluminum plate, extending 0.25 meter beyond each end of the coil bracket, suspended in 258C free air using 0.5mm (.02") clearance gap.
Magnet Track weight TBD.
Watts with (0.5m wide and .25m longer than coil *15mm thick)



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1100 Iron Core Linear Motor Parallel Connection Specification

General Motor Specifications	UNITS	Dash #	2	4	8	10	12
Attractive Preload Force using 0.5mm[.02"] clearance gap	N		1159	2318	4636	5795	6954
	Lbf		261	521	1042	1303	1563
Attractive Preload Force using 1.0mm[.04"] clearance gap	N		985	1970	3941	4926	5911
	Lbf		221	443	886	1107	1329
Max Operating Temperature	°C		125	125	125	125	125
Maximum Temp. Rise	°C		105	105	105	105	105
Coil Resistance (6 lead @ 25°C)	Ω		1	1	3	4	4
Coil Resistance (6 lead @ Max. °C)	Ω		1	2	4	5	6
Inductance @ 1kHz	mH		4	8	16	20	24
Thermal Resistance (Bracket Top Mount)	°C/W		0.15	0.08	0.04	0.03	0.03
Continuous Power Top Mount (Max. °C)	W		700	1400	2800	3500	4200
Continuous Power, top mount to plate**(Max. °C)	W		326	480	721	832	940
Motor Constant	lb/sqrt(W)		2.0	2.9	4.1	4.6	5.0
	N/sqrt(W)		9.1	12.8	18.2	20.3	22.2
Peak Power (Max. °C, 10% Duty)	W		7000	14000	28000	35000	42000
Electrical Time Constant (@ 25°C)	ms		5.7	5.7	5.7	5.7	5.7
Maximum Line to Line Voltage	Vrms		670	670	670	670	670
Coil Weight	Pounds		0.0	0.0	0.0	0.0	0.0
	Kilograms		0.0	0.0	0.0	0.0	0.0
Coil length (inside magnet track without HED)	inch		4.81	9.61	19.21	24.01	28.81
HED increases coil length by 1.48 inch (37.6mm)	mm		122	244	488	610	732
Delta Connected Specifications	UNITS	Dash #	2	4	8	10	12
Force Constant using 0.5mm[.02"] clearance gap	N/A		7.9	15.8	31.5	39.4	47.3
	lb _f /A		1.8	3.5	7.1	8.9	10.6
Force Constant using 1mm[.04"] clearance gap	N/A		7.3	14.5	29.0	36.3	43.5
	lb _f /A		1.6	3.3	6.5	8.2	9.8
Phase Resistance (Δ @ 25°C)	Ω		0.5	0.9	1.9	2.3	2.8
Phase Resistance (Δ @ Max. °C)	Ω		0.7	1.3	2.7	3.3	4.0
Inductance @ 1kHz	mH		2.7	5.3	10.6	13.3	15.9
Continuous Force using 0.5mm[.02"] clearance gap	N		240.3	480.6	961.1	1201.4	1441.7
	lb _f		54.0	108.0	216.1	270.1	324.1
Continuous Force using 1.0mm[.04"] clearance gap	N		221.1	442.1	884.2	1105.3	1326.3
	lb _f		49.7	99.4	198.8	248.5	298.2
Continuous Current	A		30.48	30.48	30.48	30.48	30.48
Peak Force* using 0.5mm[.02"] clearance gap	N		331	662	1324	1656	1987
	lb _f		74	149	298	372	447
Peak Force* using 1.0mm[.04"] clearance gap	N		305	609	1218	1523	1828
	lb _f		68	137	274	342	411
Peak Current*	A		42.0	42.0	42.0	42.0	42.0
Continuous Force, aluminum plate heat sink** (see below)	N		174.8	300.0	519.8	624.1	726.8
	lb _f		39.3	67.4	116.9	140.3	163.4
Back EMF Constant using 0.5mm[.02"] clearance gap	V/m/s		7.9	15.8	31.5	39.4	47.3
	V/in/s		0.2	0.4	0.8	1.0	1.2
WYE connected Specifications	UNITS	Dash #	2	4	8	10	12
Force Constant using 0.5mm[.02"] clearance gap	N/A		13.7	27.3	54.6	68.3	81.9
	lb _f /A		3.1	6.1	12.3	15.3	18.4
	N/A		12.6	25.1	50.2	62.8	75.4
Force Constant using 1.0mm[.04"] clearance gap	lb _f /A		2.8	5.6	11.3	14.1	16.9
Phase Resistance (Ψ @ 25°C)	Ω		1.4	2.8	5.6	7.0	8.4
Phase Resistance (Ψ @ Max. °C)	Ω		2.0	4.0	8.0	10.0	11.9
Inductance @ 1kHz	mH		8.0	15.9	31.9	39.9	47.8
Continuous Force using 0.5mm[.02"] clearance gap	N		240.3	480.6	961.1	1201.4	1441.7
	lb _f		54.0	108.0	216.1	270.1	324.1
Continuous Force using 0.5mm[.02"] clearance gap	N		221.1	442.1	884.2	1105.3	1326.3
	lb _f		49.7	99.4	198.8	248.5	298.2
Continuous Current	A		17.60	17.60	17.60	17.60	17.60
Peak Force* using 0.5mm[.02"] clearance gap	N		574	1147	2294	2868	3441
	lb _f		129	258	516	645	774
Peak Force* using 1.0mm[.04"] clearance gap	N		528	1055	2110	2638	3166
	lb _f		119	237	474	593	712
Peak Current*	A		42.0	42.0	42.0	42.0	42.0
Continuous Force, aluminum plate heat sink** (see below)	N		174.8	300.0	519.8	624.1	726.8
	lb _f		39.3	67.4	116.9	140.3	163.4
Back EMF Constant using 0.5mm[.02"] clearance gap	V/m/s		13.7	27.3	54.6	68.3	81.9
	V/inch/s		0.3	0.7	1.4	1.7	2.1

*** Notes:**

Specifications based on heat sink maintained within 10°C of ambient temperature at motor bracket interface.

On time of "Peak Power" (duration) less than 10 seconds.

Back EMF plus IR drop must not exceed "Maximum Terminal Voltage" listed.

Electrical cycle length is 30.5mm. Skewed Track Cogging force estimated at 45N.

Resistance Specifications do not include the cable resistance.

Cogging force due to magnet saliency is about 45N

Custom cable required for peak current exceeding 52 ampere.

Magnet track maximum environment temperature is 50 Deg. C.

Cable adds 0.055Ω/m

Shaded Column represents "Special" models.

** Heat Sink is a 0.5 meter wide, 15mm thick aluminum plate, extending 0.25 meter beyond each end of the coil bracket, suspended in 25°C free air using 0.5mm (.02") clearance gap.

Magnet Track weight is 3.9kg/m (2.6 pounds/foot).



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I100 Iron Core Linear Motor Double Parallel Connection Specification					
General Motor Specifications	UNITS	Dash #	4	8	10 12
Attractive Preload Force using 0.5mm[.02"] clearance gap	N		2318	4636	5795 6954
	Lbf		521	1042	1303 1563
Attractive Preload Force using 1.0mm[.04"] clearance gap	N		985	1970	2463 2956
	Lbf		221	443	554 664
Max Operating Temperature	°C		125	125	125 125
Maximum Temp. Rise	°C		105	105	105 105
Coil Resistance (6 lead @ 25°C)	Ω		0.35	0.70	0.56 1.06
Coil Resistance (6 lead @ Max. °C)	Ω		0.50	1.00	0.80 1.49
Inductance @ 1kHz	mH		2	4	3 6
Thermal Resistance (Bracket Top Mount)	°C/W		0.08	0.04	3.19 0.03
Continuous Power Top Mount (Max. °C)	W		1400	2800	3500 4200
Continuous Power, top mount to plate**(Max. °C)	W		480	961	1201 1441
Motor Constant	lb/sqrt(W)		2.9	4.1	4.6 5.0
	N/sqrt(W)		12.8	18.2	20.3 22.2
Peak Power (Max. °C, 10% Duty)	W		14000	28000	35000 42000
Electrical Time Constant (@ 25°C)	ms		5.7	5.7	5.7 5.7
Maximum Line to Line Voltage	Vrms		670	670	670 670
Coil Weight	Pounds		0.0	0.0	0.0 0.0
	Kilograms		0.0	0.0	0.0 0.0
Coil length (inside magnet track without HED)	inch		9.61	19.21	24.01 28.81
HED increases coil length by 1.48 inch (37.6mm)	mm		244	488	610 732
Delta Connected Specifications	UNITS	Dash #	4	8	10 12
Force Constant using 0.5mm[.02"] clearance gap	N/A		7.9	15.8	15.8 23.7
	lb _f /A		1.8	3.5	3.5 5.3
Force Constant using 1mm[.04"] clearance gap	N/A		7.3	14.5	14.5 21.8
	lb _f /A		1.6	3.3	3.3 4.9
Phase Resistance (Δ @ 25°C)	Ω		0.2	0.5	0.4 0.7
Phase Resistance (Δ @ Max. °C)	Ω		0.3	0.7	0.5 1.0
Inductance @ 1kHz	mH		1.3	2.7	2.1 4.0
Continuous Force using 0.5mm[.02"] clearance gap	N		480.6	961.1	1201.4 1441.7
	lb _f		108.0	216.1	270.1 324.1
Continuous Force using 1.0mm[.04"] clearance gap	N		442.1	884.2	1105.3 1326.3
	lb _f		99.4	198.8	248.5 298.2
Continuous Current	A		61.0	61.0	76.2 61.0
Peak Force* using 0.5mm[.02"] clearance gap	N		662	1324	1656 1987
	lb _f		149	298	372 447
Peak Force* using 1.0mm[.04"] clearance gap	N		609	1218	1523 1828
	lb _f		137	274	342 411
Peak Current*	A		84.0	84.0	105.0 84.0
Continuous Force, aluminum plate heat sink** (see below)	N		300.0	600.0	750.0 900.0
	lb _f		67.4	134.9	168.6 202.3
Back EMF Constant using 0.5mm[.02"] clearance gap	V/m/s		7.9	15.8	15.8 23.7
	V/in/s		0.2	0.4	0.4 0.6
WYE connected Specifications	UNITS	Dash #	4	8	10 12
Force Constant using 0.5mm[.02"] clearance gap	N/A		13.7	27.3	27.3 41.0
	lb _f /A		3.1	6.1	6.1 9.2
Force Constant using 1.0mm[.04"] clearance gap	N/A		12.6	25.1	25.1 37.7
	lb _f /A		2.8	5.6	5.6 8.5
Phase Resistance (Y @ 25°C)	Ω		0.7	1.4	1.1 2.1
Phase Resistance (Y @ Max. °C)	Ω		1.0	2.0	1.6 3.0
Inductance @ 1kHz	mH		4.0	8.0	6.4 12.0
Continuous Force using 0.5mm[.02"] clearance gap	N		480.6	961.1	1201.4 1441.7
	lb _f		108.0	216.1	270.1 324.1
Continuous Force using 0.5mm[.02"] clearance gap	N		442.1	884.2	1105.3 1326.3
	lb _f		99.4	198.8	248.5 298.2
Continuous Current	A		35.19	35.19	43.99 35.19
Peak Force* using 0.5mm[.02"] clearance gap	N		1619	3239	2868 4858
	lb _f		364	728	645 1092
Peak Force* using 1.0mm[.04"] clearance gap	N		1490	2980	2638 4470
	lb _f		335	670	593 1005
Peak Current*	A		118.6	118.6	105.0 118.6
Continuous Force, aluminum plate heat sink** (see below)	N		300.0	600.0	750.0 900.0
	lb _f		67.4	134.9	168.6 202.3
Back EMF Constant using 0.5mm[.02"] clearance gap	V/m/s		13.7	27.3	27.3 41.0
	V/inch/s		0.3	0.7	0.7 1.0
* Notes: Specifications based on heat sink maintained within 10°C of ambient temperature at motor bracket interface. On time of "Peak Power" (duration) less than 10 seconds. Back EMF plus IR drop must not exceed "Maximum Terminal Voltage" listed. Electrical cycle length is mm. Skewed Track Cogging force estimated at 45N. Resistance Specifications do not include the cable resistance. Cogging force due to magnet saliency is about 45N Custom cable required for peak current exceeding 52 ampere. Magnet track maximum environment temperature is 50 Deg. C. Cable adds 0.055Ω/m Shaded Column represents "Special" models. ** Heat Sink is a 0.5 meter wide, 15mm thick aluminum plate, extending 0.25 meter beyond each end of the coil bracket, suspended in 25°C free air using 0.5mm (.02") clearance gap. Magnet Track weight is 3.9kg/m (2.6 pounds/foot).					