DX B/BT SERIES

IRONLESS LINEAR MOTOR

HIGHEST SPEED

smooth minimal ripple motion

PBA SYSTEMS

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HIGHEST SPEED
smooth minimal ripple motion

DX B/BT SERIES
IRONLESS LINEAR MOTOR

Highest force in compact size for point-to-point motion systems

DX series' ironless patented overlapping winding forcers provides excellent force density Vs coil size ratio resulting in high force and acceleration generation. DX Coil's overlapping manufacturing technology allows for selection of smaller size motors in comparison against the competition due to its higher force density and improved heat dissipation achieved through optional forced air-cooling methods.

All DX series forces are designed with high flex cables, embedded hall effect sensor and over temperature protection (thermostats or PT100) that makes it the ideal choice for the most demanding applications. The Modular U-channel Magnet tracks are available in 60mm length increments allows for easy assembly of un-restricted stroke length.

- Low speed/torque ripple
- Fast dynamic response
- Zero backlash
- Maintenance free
- High acceleration
- Long strokes without performance loss
- Zero cogging
- Easy assembly over long stroke lengths

Application

- Laser trimming
- Precision positioning stages
- Photonics
- Biotech handlers
- FPD/LCD transfer
- Wire and Die Bonding
- Microscope stages
- Semiconductor machines
- Diamond cutting
- Micro Precise Fabrication
- Precision Stamping

* Technical specifications subject to change without prior notice

HIGHEST SPEED
smooth minimal ripple motion

Model	Peak Force (N)	Continuous Force AC (N)	Peak Current (A^{pk})	Continuous Current AC (A^{pk})	Coil Length (mm)
DX10B	63.3	12.7	14.01	2.8	22-85
DX20B	229	60	21	5.46	61-151
DX30B/BT	724	188	47.25	12.29	61-301
DX50B/BT	1339	348	52.50	13.65	61-361
DX65B/BT	5191	1247	93.75	22.50	121-901
DX90B/BT	5366	1234	67.50	15.53	121-721

PART NUMBERING SYSTEM

Coil Assembly

DX50B - C4 - P - TM - 2.0 - NC - FC - HC

MOTOR MODEL	
DX10B	DX50BT
DX20B	DX65B
DX30B	DX65BT
DX30BT	DX90B
DX50B	DX90BT

MOTOR COIL SIZE
C1
C2
C3
C4
C5
:

CONNECTION TYPE	
S	Series
P	Parallel

THERMAL PROTECTION	
NT	No Sensor (Not recommended)
TC*	PT 100 Sensor Available for all DX series
TM**	Thermostat Available for DX30-90B/BT only

* TC - Sensor output to temperature controller

** TM - On/Off switch, triggers at 100°C

HALL CABLE OPTIONS	
NC	Without Connector (Flying Leads)
HC	With 9 pins D Sub Connector

POWER CABLE OPTIONS	
NF	Without Ferrite Core (Flying Leads)
FC	Ferrite Core (Recommended)
9NF	No FC, D Sub 9 pins Male connector
15NF	No FC, D Sub 15 pins Male connector

COOLING TYPE	
NC	No Cooling (Standard)
AC	Air Cooling
WC	Water Cooling

CABLE LENGTH***	
0.5	0.5m
2.0	2.0m
3.0	3.0m (stock program)
5.0	5.0m

*** Minimum Bending Radius - 10 times of cable diameter

Magnet Track

DX50B - TL300

MOTOR MODEL	
DX10B	DX50BT
DX20B	DX65B
DX30B	DX65BT
DX30BT	DX90B
DX50B	DX90BT

MAGNET TRACK LENGTH*	
TL120 - 120mm	TL480 - 480mm
TL180 - 180mm	TL600 - 600mm
TL240 - 240mm	TL660 - 660mm
TL300 - 300mm	TL900 - 900mm
TL360 - 360mm	

* Track length in incremental of 60mm

DX 10B

- Ironless Motor
- Peak force to 63N, Continuous force to 12N
- Ideal for high precision/smooth motion

DX B / BT SERIES

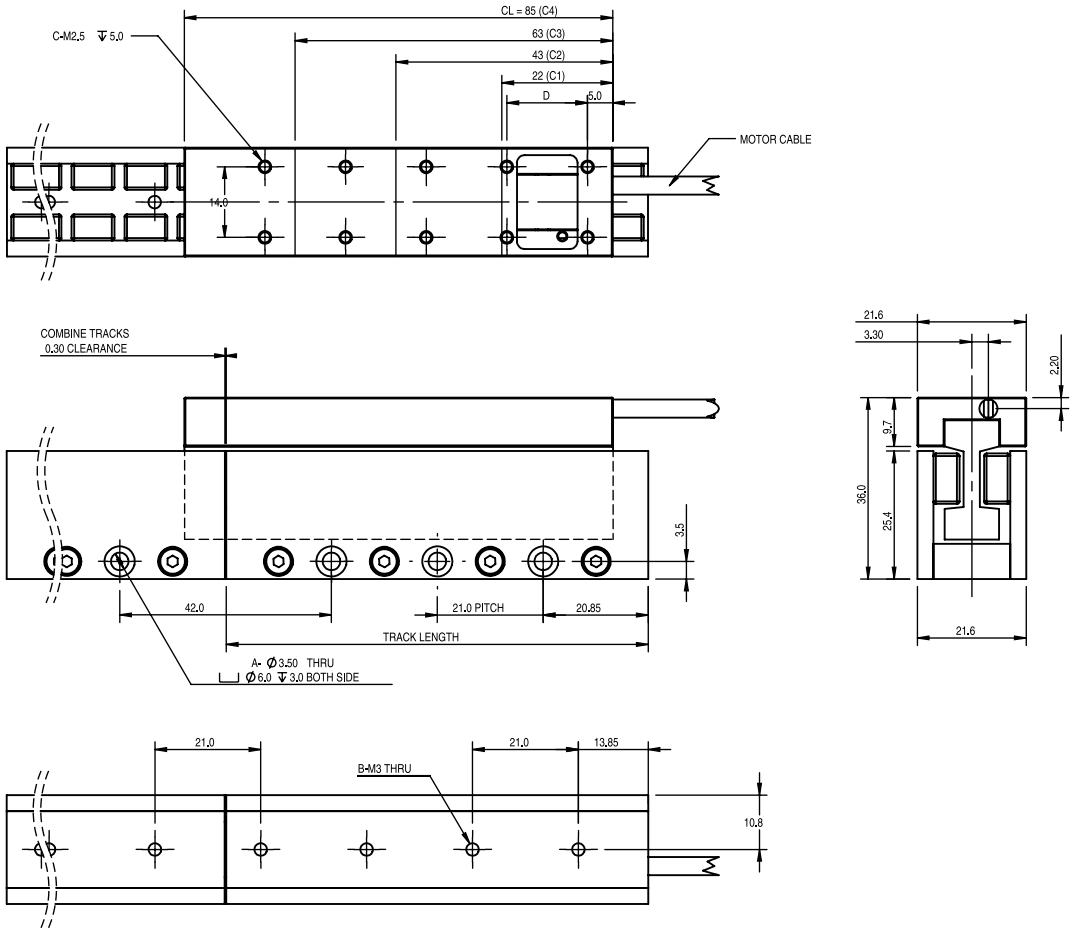
IRONLESS LINEAR MOTOR

SPECIFICATION		MODEL			
		DX10B-C1	DX10B-C2	DX10B-C3	DX10B-C4
Performance	**Unit**				
Peak Force	N	15.8	31.6	47.5	63.3
Continuous Force @ 120ºC*	N	3.2	6.3	9.5	12.7
Peak Power @ 120ºC	W	316	631	947	1262
Continuous Power @ 120ºC*	W	12.6	25.2	37.9	50.5
Electrical					
Peak Current	A^{pk}		14.01		
Continuous Current @ 120ºC*	A^{pk}		2.80		
Continuous Stall Current @ 120ºC*	Arms		1.98		
Force Constant	N/A^{pk}	1.1	2.3	3.4	4.5
Back EMF Constant	$V^{pk}/m/s$	1.3	2.6	3.9	5.2
Coil Resistance L-L @ 25ºC	ohm	1.6	3.1	4.7	6.2
Coil Resistance L-L @ 120ºC*	ohm	2.1	4.3	6.4	8.6
Inductance L-L @ 1kHz	mH	0.11	0.22	0.33	0.44
Motor Constant @ 25ºC*	N/√W	1.05	1.48	1.81	2.09
Motor Constant @ 120ºC*	N/√W	0.89	1.26	1.54	1.78
Max. Terminal Voltage	Vdc		60		
Thermal					
Thermal Resistance @ 120ºC*	ºC/W	7.53	3.77	2.51	1.88
Max. Coil Temperature	ºC		120		
Mechanical					
Coil Weight	kg	0.02	0.04	0.06	0.08
Coil Length	mm	22	43	64	85
Attractive Force	N		0		
Electrical Cycle Length	mm		21		

Notes:

1. A^{pk} = 1.414 * Arms; V^{pk} = 1.414 * Vrms.
2. * Ambient temperature 25ºC, natural convection, no heat sink.
3. Specifications tolerance – inductance +/-30%, all others +/-10%.
4. Only available in series winding.

DX 10B



Standard Magnet Track

SIZE	TRACK LENGTH (mm)	WEIGHT (kg)	NUMBER OF MOUNTING HOLE A	NUMBER OF MOUNTING HOLE B
TL 63	62.7	0.15	2	3
TL 84	83.7	0.20	3	4
TL 105	104.7	0.25	4	5

Motor Coil

SIZE	WEIGHT (kg)	NUMBER OF MOUNTING HOLE (TOP MOUNT) C	MOUNTING HOLE PITCH D (mm)
C1	0.02	4	12.0
C2	0.04	6	16.0
C3	0.06	8	16.0
C4	0.08	10	16.0

For COOLING OPTIONS, please ask for detail drawing

DX 20B

- Ironless Motor
- Peak force to 229N, Continuous force to 60N
- Integrated Hall Sensor

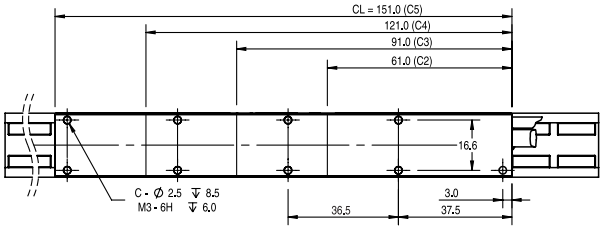
DX B / BT SERIES
IRONLESS LINEAR MOTOR

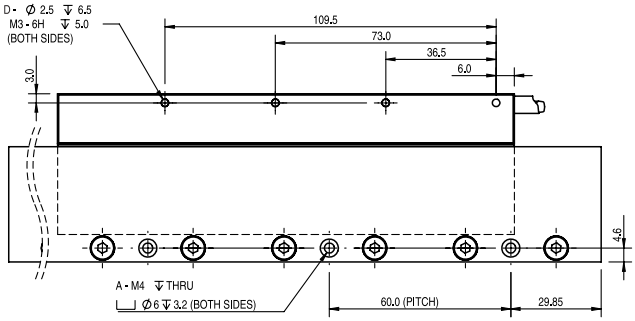
SPECIFICATION		MODEL							
		DX20B-C2		DX20B-C3		DX20B-C4		DX20B-C5	
Connection Type		S	P	S	P	S	P	S	P
Performance	**Unit**								
Peak Force	N	92		137		183		229	
Continuous Force @ 120ºC*	N	18		27		37		46	
Continuous Force AC @ 120ºC^	N	24		36		48		60	
Peak Power @ 120ºC	W	744		1116		1488		1860	
Continuous Power @ 120ºC*	W	30		45		60		74	
Continuous Power AC @ 120ºC^	W	50		75		101		126	
Electrical									
Peak Current	A^{pk}	10.50	21.00	10.50	21.00	10.50	21.00	10.50	21.00
Continuous Current @ 120ºC*	A^{pk}	2.10	4.20	2.10	4.20	2.10	4.20	2.10	4.20
Continuous Current AC @ 120ºC^	A^{pk}	2.73	5.46	2.73	5.46	2.73	5.46	2.73	5.46
Continuous Stall Current @ 120ºC*	Arms	1.40	2.80	1.40	2.80	1.40	2.80	1.40	2.80
Force Constant	N/A^{pk}	8.70	4.40	13.10	6.50	17.40	8.70	21.80	10.9
Back EMF Constant	$V^{pk}/m/s$	10.0	5.0	15	7.50	20.10	10	25.10	12.5
Coil Resistance L-L @ 25ºC	ohm	6.5	1.6	9.8	2.4	13.0	3.3	16.3	4.1
Coil Resistance L-L @ 120ºC*	ohm	9.0	2.2	13.5	3.4	18.0	4.5	22.5	5.6
Inductance L-L @ 1kHz	mH	1.53	0.38	2.30	0.57	3.06	0.77	3.83	0.96
Motor Constant @ 25ºC*	N/√W	3.95		4.84		5.59		6.24	
Motor Constant @ 120ºC*	N/√W	3.36		4.11		4.75		5.31	
Max. Terminal Voltage	Vdc	400							
Thermal									
Thermal Resistance @ 120ºC*	ºC/W	3.19		2.13		1.60		1.28	
Thermal Resistance AC @ 120ºC^	ºC/W	1.89		1.26		0.94		0.76	
Max. Coil Temperature	ºC	120							
Mechanical									
Coil Weight	kg	0.11		0.17		0.23		0.28	
Coil Weight AC^	kg	0.11		0.17		0.23		0.28	
Coil Length	mm	61		91		121		151	
Attractive Force	N	0							
Electrical Cycle Length	mm	30							

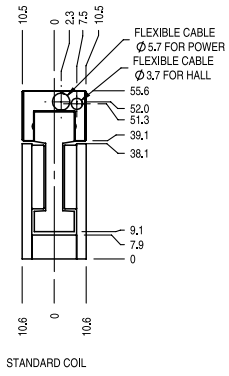
Notes:

1. A^{pk} = 1.414 * Arms; V^{pk} = 1.414 * Vrms.
2. * Ambient temperature 25ºC, natural convection, no heat sink.
3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar.
4. Specifications tolerance – inductance +/-30%, all others +/-10%.

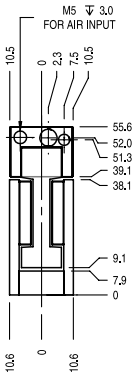
DX 20B



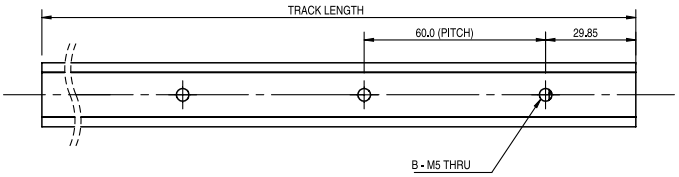




STANDARD COIL



AIR COOLED COIL



Standard Magnet Track

SIZE	TRACK LENGTH (mm)	WEIGHT (kg)	NUMBER OF MOUNTING HOLE A	NUMBER OF MOUNTING HOLE B
TL 120	119.7	0.44	2	2
TL 180	179.7	0.66	3	3
TL 240	239.7	0.88	4	4
TL 300	299.7	1.10	5	5
TL 360	359.7	1.32	6	6
TL 480	479.7	1.76	8	8
TL 660	659.7	2.42	11	11

Motor Coil

SIZE	WEIGHT (kg)	NUMBER OF MOUNTING HOLE (SIDE MOUNT) D	NUMBER OF MOUNTING HOLE (TOP MOUNT) C
C2	0.11	3	2
C3	0.17	5	3
C4	0.23	7	4
C5	0.28	9	5

For COOLING OPTIONS, please ask for detail drawing

DX 30B / BT

- Ironless Motor
- Peak force to 724N, Continuous force to 188N
- Integrated Hall Sensor

DX B / BT SERIES
IRONLESS LINEAR MOTOR

SPECIFICATION		MODEL						
		DX30B-C1		DX30B-C2		DX30BT-C2	DX30B-C3	
Connection Type		S	P	S	P	P	S	P
Performance	**Unit**							
Peak Force	N	145		289			434	
Continuous Force @ 120ºC*	N	29		58			87	
Continuous Force AC @ 120ºC^	N	38		75			113	
Peak Power @ 120ºC	W	695		1390			2086	
Continuous Power @ 120ºC*	W	28		56			83	
Continuous Power AC @ 120ºC^	W	47		94			141	
Electrical								
Peak Current	A^{pk}	11.81	23.63	11.81	23.63	47.25	11.81	23.63
Continuous Current @ 120ºC*	A^{pk}	2.36	4.73	2.36	4.73	9.45	2.36	4.73
Continuous Current AC @ 120ºC^	A^{pk}	3.07	6.14	3.07	6.14	12.29	3.07	6.14
Continuous Stall Current @ 120ºC*	Arms	1.75	3.50	1.75	3.50	7.00	1.75	3.50
Force Constant	N/A^{pk}	12.3	6.1	24.5	12.3	6.1	36.8	18.4
Back EMF Constant	$V^{pk}/m/s$	14.1	7.0	28.2	14.1	7.0	42.3	21.1
Coil Resistance L-L @ 25ºC	ohm	4.8	1.2	9.6	2.4	0.6	14.4	3.6
Coil Resistance L-L @ 120ºC*	ohm	6.6	1.7	13.3	3.3	0.8	19.9	5.0
Inductance L-L @ 1kHz	mH	3.00	0.75	6.00	1.50	0.38	9.00	2.25
Motor Constant @ 25ºC*	N/√W	6.46		9.13			11.18	
Motor Constant @ 120ºC*	N/√W	5.49		7.76			9.51	
Max. Terminal Voltage	Vdc	400						
Thermal								
Thermal Resistance @ 120ºC*	ºC/W	3.42		1.71			1.14	
Thermal Resistance AC @ 120ºC^	ºC/W	2.02		1.01			0.67	
Max. Coil Temperature	ºC	120						
Mechanical								
Coil Weight	kg	0.21		0.41		0.43	0.62	
Coil Weight AC^	kg	0.23		0.46		0.48	0.69	
Coil Length	mm	61		121			181	
Attractive Force	N	0						
Electrical Cycle Length	mm	60						

Notes:

1. A^{pk} = 1.414 * Arms; V^{pk} = 1.414 * Vrms.
2. * Ambient temperature 25ºC, natural convection, no heat sink.
3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar.
4. Specifications tolerance – inductance +/-30%, all others +/-10%.

DX 30B / BT

- Ironless Motor
- Peak force to 724N, Continuous force to 188N
- Integrated Hall Sensor

DX B / BT SERIES

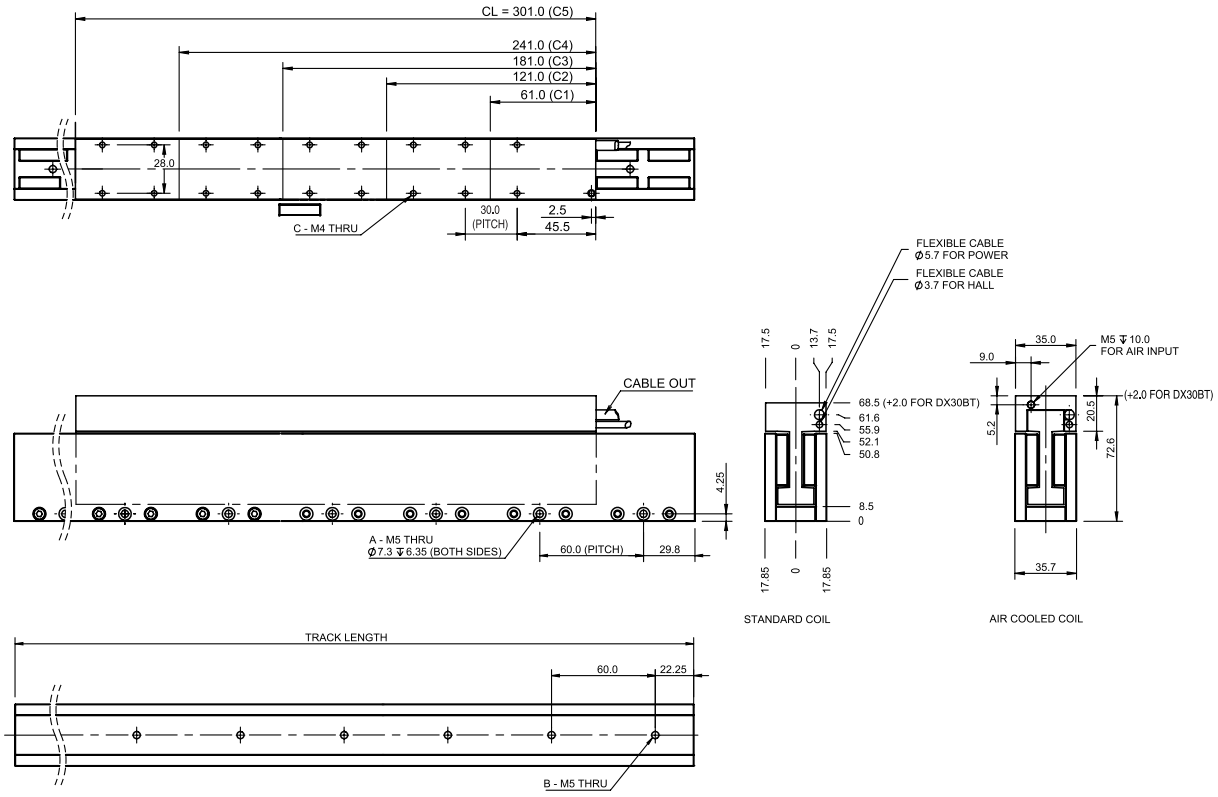
IRONLESS LINEAR MOTOR

SPECIFICATION		MODEL				
		DX30B-C4		DX30BT-C4	DX30B-C5	
Connection Type		S	P	P	S	P
Performance	**Unit**					
Peak Force	N	579			724	
Continuous Force @ 120ºC*	N	116			145	
Continuous Force AC @ 120ºC^	N	150			188	
Peak Power @ 120ºC	W	2781			3476	
Continuous Power @ 120ºC*	W	111			139	
Continuous Power AC @ 120ºC^	W	188			235	
Electrical						
Peak Current	A^{pk}	11.81	23.63	47.25	11.81	23.63
Continuous Current @ 120ºC*	A^{pk}	2.36	4.73	9.45	2.36	4.73
Continuous Current AC @ 120ºC^	A^{pk}	3.07	6.14	12.29	3.07	6.14
Continuous Stall Current @ 120ºC*	Arms	1.75	3.50	7.00	1.75	3.50
Force Constant	N/A^{pk}	49.0	24.5	12.3	61.3	30.6
Back EMF Constant	$V^{pk}/m/s$	56.4	28.2	14.1	70.4	35.2
Coil Resistance L-L @ 25ºC	ohm	19.2	4.8	1.2	24.0	6.0
Coil Resistance L-L @ 120ºC*	ohm	26.6	6.6	1.7	33.2	8.3
Inductance L-L @ 1kHz	mH	12.00	3.00	0.75	15.00	3.75
Motor Constant @ 25ºC*	$N/\sqrt{W}$	12.91			14.44	
Motor Constant @ 120ºC*	$N/\sqrt{W}$	10.98			12.27	
Max. Terminal Voltage	Vdc	400				
Thermal						
Thermal Resistance @ 120ºC*	ºC/W	0.85			0.68	
Thermal Resistance AC @ 120ºC^	ºC/W	0.51			0.40	
Max. Coil Temperature	ºC	120				
Mechanical						
Coil Weight	kg	0.83		0.88	1.04	
Coil Weight AC^	kg	0.93		0.97	1.16	
Coil Length	mm	241			301	
Attractive Force	N	0				
Electrical Cycle Length	mm	60				

Notes:

1. A^{pk} = 1.414 * Arms; V^{pk} = 1.414 * Vrms.
2. * Ambient temperature 25ºC, natural convection, no heat sink.
3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar.
4. Specifications tolerance – inductance +/-30%, all others +/-10%.

DX 30B / BT



Standard Magnet Track

SIZE	TRACK LENGTH (mm)	WEIGHT (kg)	NUMBER OF MOUNTING HOLE A	NUMBER OF MOUNTING HOLE B
TL 120	119.5	1.14	2	2
TL 180	179.5	1.71	3	3
TL 240	239.5	2.28	4	4
TL 300	299.5	2.85	5	5
TL 360	359.5	3.42	6	6
TL 480	479.5	4.56	8	8

DX 30B Motor Coil

SIZE	WEIGHT (kg)	WEIGHT AIR COOL (kg)	NUMBER OF MOUNTING HOLE (TOP MOUNT) C
C1	0.21	0.23	3
C2	0.41	0.46	7
C3	0.62	0.69	11
C4	0.83	0.93	15
C5	1.04	1.16	19

DX 50B / BT

- Ironless Motor
- Peak force to 1339N, Continuous force to 348N
- Integrated Hall Sensor

DX B / BT SERIES
IRONLESS LINEAR MOTOR

SPECIFICATION		MODEL						
		DX50B-C1		DX50B-C2		DX50BT-C2	DX50B-C3	
Connection Type		S	P	S	P	P	S	P
Performance	**Unit**							
Peak Force	N	223		446			669	
Continuous Force @ 120ºC*	N	45		89			134	
Continuous Force AC @ 120ºC^	N	58		116			174	
Peak Power @ 120ºC	W	751		1502			2253	
Continuous Power @ 120ºC*	W	30		60			90	
Continuous Power AC @ 120ºC^	W	51		102			152	
Electrical								
Peak Current	A^{pk}	13.13	26.25	13.13	26.25	52.50	13.13	26.25
Continuous Current @ 120ºC*	A^{pk}	2.63	5.25	2.63	5.25	10.50	2.63	5.25
Continuous Current AC @ 120ºC^	A^{pk}	3.41	6.83	3.41	6.83	13.65	3.41	6.83
Continuous Stall Current @ 120ºC*	Arms	2.10	4.20	2.10	4.20	8.40	2.10	4.20
Force Constant	N/A^{pk}	17.0	8.5	34.0	17.0	8.5	51.0	25.5
Back EMF Constant	V^{pk}/m/s	19.6	9.8	39.1	19.6	9.8	58.7	29.3
Coil Resistance L-L @ 25ºC	ohm	4.2	1.1	8.4	2.1	0.5	12.6	3.2
Coil Resistance L-L @ 120ºC*	ohm	5.8	1.5	11.6	2.9	0.7	17.4	4.4
Inductance L-L @ 1kHz	mH	3.11	0.78	6.22	1.56	0.39	9.33	2.33
Motor Constant @ 25ºC*	N/√W	9.58		13.55			16.59	
Motor Constant @ 120ºC*	N/√W	8.14		11.51			14.10	
Max. Terminal Voltage	Vdc	400						
Thermal								
Thermal Resistance @ 120ºC*	ºC/W	3.16		1.58			1.05	
Thermal Resistance AC @ 120ºC^	ºC/W	1.87		0.94			0.62	
Max. Coil Temperature	ºC	120						
Mechanical								
Coil Weight	kg	0.25		0.52		0.54	0.76	
Coil Weight AC^	kg	0.28		0.57		0.60	0.85	
Coil Length	mm	61		121			181	
Attractive Force	N	0						
Electrical Cycle Length	mm	60						

Notes:

1. A^{pk} = 1.414 * Arms; V^{pk} = 1.414 * Vrms.
2. * Ambient temperature 25ºC, natural convection, no heat sink.
3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar.
4. Specifications tolerance – inductance +/-30%, all others +/-10%.

DX 50B / BT

- Ironless Motor
- Peak force to 1339N, Continuous force to 348N
- Integrated Hall Sensor

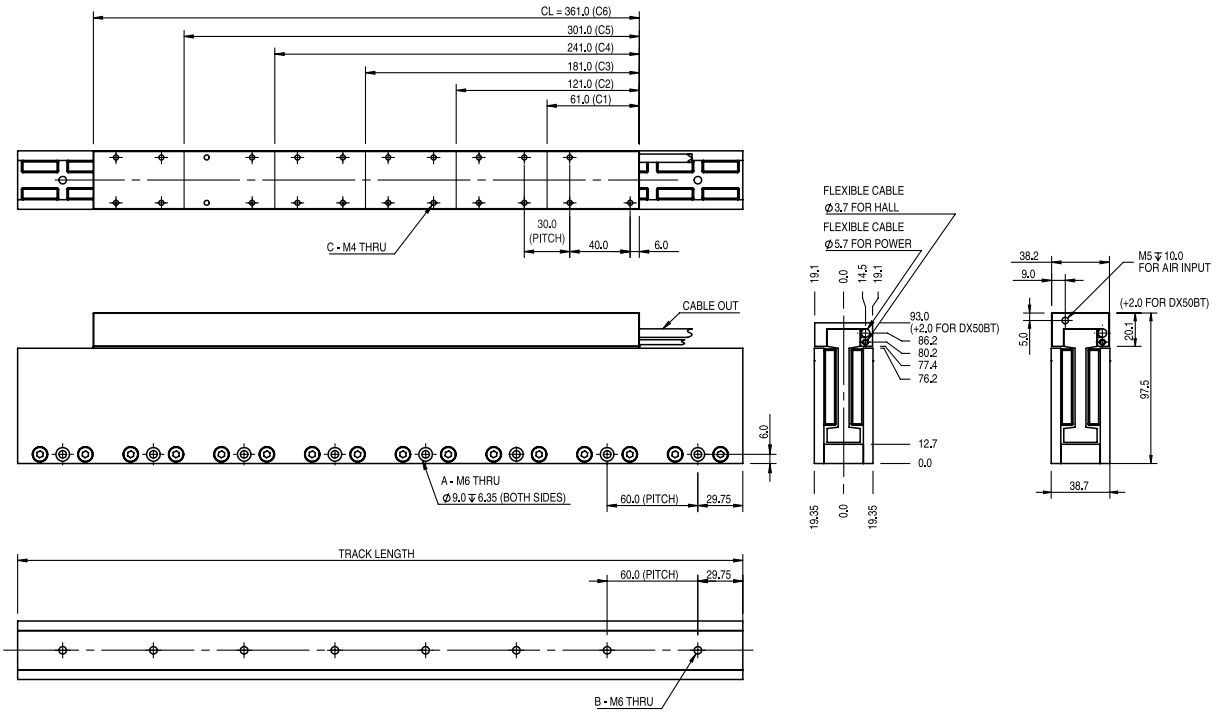
DX B / BT SERIES
IRONLESS LINEAR MOTOR

SPECIFICATION		MODEL					
		DX50B-C4		DX50BT-C4	DX50B-C5		DX50BT-C6
Connection Type		S	P	P	S	P	P
Performance	**Unit**						
Peak Force	N	893			1116		1339
Continuous Force @ 120ºC*	N	179			223		268
Continuous Force AC @ 120ºC^	N	232			290		348
Peak Power @ 120ºC	W	3004			3755		4506
Continuous Power @ 120ºC*	W	120			150		180
Continuous Power AC @ 120ºC^	W	203			254		305
Electrical							
Peak Current	A^{pk}	13.13	26.25	52.50	13.13	26.25	52.50
Continuous Current @ 120ºC*	A^{pk}	2.63	5.25	10.50	2.63	5.25	10.50
Continuous Current AC @ 120ºC^	A^{pk}	3.41	6.83	13.65	3.41	6.83	13.65
Continuous Stall Current @ 120ºC*	Arms	2.10	4.20	8.40	2.10	4.20	8.40
Force Constant	N/A^{pk}	68.0	34.0	17.0	85.0	42.5	25.5
Back EMF Constant	$V^{pk}/m/s$	78.2	39.1	19.6	97.8	48.9	29.3
Coil Resistance L-L @ 25ºC	ohm	16.8	4.2	1.1	21.0	5.3	1.6
Coil Resistance L-L @ 120ºC*	ohm	23.2	5.8	1.5	29.1	7.3	2.2
Inductance L-L @ 1kHz	mH	12.44	3.11	0.78	15.55	3.89	1.17
Motor Constant @ 25ºC*	N/√W	19.16			21.42		23.46
Motor Constant @ 120ºC*	N/√W	16.28			18.21		19.94
Max. Terminal Voltage	Vdc	400					
Thermal							
Thermal Resistance @ 120ºC*	ºC/W	0.79			0.63		0.53
Thermal Resistance AC @ 120ºC^	ºC/W	0.47			0.37		0.31
Max. Coil Temperature	ºC	120					
Mechanical							
Coil Weight	kg	1.07		1.05	1.25		1.58
Coil Weight AC^	kg	1.19		1.17	1.40		1.75
Coil Length	mm	241			301		361
Attractive Force	N	0					
Electrical Cycle Length	mm	60					

Notes:

1. A^{pk} = 1.414 * Arms; V^{pk} = 1.414 * Vrms.
2. * Ambient temperature 25ºC, natural convection, no heat sink.
3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar.
4. Specifications tolerance – inductance +/-30%, all others +/-10%.

DX 50B / BT



Standard Magnet Track

SIZE	TRACK LENGTH (mm)	WEIGHT (kg)	NUMBER OF MOUNTING HOLE A (ea)	NUMBER OF MOUNTING HOLE B (ea)
TL 120	119.5	1.73	2	2
TL 180	179.5	2.60	3	3
TL 240	239.5	3.46	4	4
TL 300	299.5	4.33	5	5
TL 360	359.5	5.20	6	6
TL 480	479.5	6.92	10	10

DX 50B Motor Coil

SIZE	WEIGHT (kg)	WEIGHT AIR COOL (kg)	NUMBER OF MOUNTING HOLE (TOP MOUNT) C
C1	0.25	0.28	3
C2	0.52	0.57	7
C3	0.76	0.85	11
C4	1.07	1.19	15
C5	1.25	1.40	19
C6	1.58	1.75	23

* Technical specifications subject to change without prior notice

DX 65B / BT

- Ironless Motor
- Peak force to 5191N, Continuous force to 1038N
- Integrated Hall Sensor

DX B / BT SERIES
IRONLESS LINEAR MOTOR

SPECIFICATION		MODEL							
		DX65B-C2		DX65B-C3		DX65B-C4		DX65B-C5	
Connection Type		S	P	S	P	S	P	S	P
Performance	**Unit**								
Peak Force	N	692		1038		1384		1730	
Continuous Force @ 120ºC*	N	138		208		277		346	
Continuous Force AC @ 120ºC^	N	173		260		346		415	
Peak Power @ 120ºC	W	1951		2927		3902		4878	
Continuous Power @ 120ºC*	W	78		117		156		195	
Continuous Power AC @ 120ºC^	W	122		183		244		281	
Electrical									
Peak Current	A^{pk}	15.63	31.25	15.63	31.25	15.63	31.25	15.63	31.25
Continuous Current @ 120ºC*	A^{pk}	3.13	6.25	3.13	6.25	3.13	6.25	3.13	6.25
Continuous Current AC @ 120ºC^	A^{pk}	3.91	7.81	3.91	7.81	3.91	7.81	3.75	7.50
Continuous Stall Current @ 120ºC*	Arms	2.50	5.00	2.50	5.00	2.50	5.00	2.50	5.00
Force Constant	N/A^{pk}	44.3	22.2	66.5	33.2	88.6	44.3	110.8	55.4
Back EMF Constant	$V^{pk}/m/s$	50.9	25.5	76.4	38.2	101.9	50.9	127.4	63.7
Coil Resistance L-L @ 25ºC	ohm	7.7	1.9	11.6	2.9	15.4	3.9	19.3	4.8
Coil Resistance L-L @ 120ºC*	ohm	10.7	2.7	16.0	4.0	21.3	5.3	26.6	6.7
Inductance L-L @ 1kHz	mH	9.11	2.28	13.67	3.42	18.22	4.56	22.78	5.69
Motor Constant @ 25ºC*	N/√W	18.4		22.6		26.1		29.1	
Motor Constant @ 120ºC*	N/√W	15.7		19.2		22.2		24.8	
Max. Terminal Voltage	Vdc	600							
Thermal									
Thermal Resistance @ 120ºC*	ºC/W	1.22		0.81		0.61		0.49	
Thermal Resistance AC @ 120ºC^	ºC/W	0.78		0.52		0.39		0.34	
Max. Coil Temperature	ºC	120							
Mechanical									
Coil Weight	kg	1.05		1.57		2.09		2.61	
Coil Weight AC^	kg	1.13		1.69		2.25		2.81	
Coil Length	mm	121		181		241		301	
Attractive Force	N	0							
Electrical Cycle Length	mm	60							

Notes:

1. A^{pk} = 1.414 * Arms; V^{pk} = 1.414 * Vrms.
2. * Ambient temperature 25ºC, natural convection, no heat sink.
3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar.
4. Specifications tolerance – inductance +/-30%, all others +/-10%.

DX 65B / BT

- Ironless Motor
- Peak force to 5191N, Continuous force to 1038N
- Integrated Hall Sensor

DX B / BT SERIES
IRONLESS LINEAR MOTOR

SPECIFICATION		MODEL					
		DX65B-C6		DX65BT-C6	DX65B-C8		DX65BT-C8
Connection Type		S	P	P	S	P	P
Performance	**Unit**						
Peak Force	N	2077			2769		
Continuous Force @ 120ºC*	N	415			554		
Continuous Force AC @ 120ºC^	N	498			665		
Peak Power @ 120ºC	W	5854			7805		
Continuous Power @ 120ºC*	W	234			312		
Continuous Power AC @ 120ºC^	W	337			450		
Electrical							
Peak Current	A^{pk}	15.63	31.25	62.5	15.63	31.25	62.50
Continuous Current @ 120ºC*	A^{pk}	3.13	6.25	12.5	3.13	6.25	12.50
Continuous Current AC @ 120ºC^	A^{pk}	3.75	7.50	15.00	3.75	7.50	15.00
Continuous Stall Current @ 120ºC*	Arms	2.50	5.00	10.00	2.50	5.00	10.00
Force Constant	N/A^{pk}	132.9	66.5	33.2	177.2	88.6	44.3
Back EMF Constant	$V^{pk}/m/s$	152.8	76.4	38.2	203.8	101.9	50.9
Coil Resistance L-L @ 25ºC	ohm	23.1	5.8	1.4	30.8	7.7	1.9
Coil Resistance L-L @ 120ºC*	ohm	32.0	8.0	2.0	42.6	10.7	2.7
Inductance L-L @ 1kHz	mH	27.33	6.83	1.71	36.44	9.11	2.28
Motor Constant @ 25ºC*	$N/\sqrt{W}$	31.9			36.9		
Motor Constant @ 120ºC*	$N/\sqrt{W}$	27.1			31.3		
Max. Terminal Voltage	Vdc	600					
Thermal							
Thermal Resistance @ 120ºC*	ºC/W	0.41			0.30		
Thermal Resistance AC @ 120ºC^	ºC/W	0.28			0.21		
Max. Coil Temperature	ºC	120					
Mechanical							
Coil Weight	kg	3.13		3.23	4.36		4.43
Coil Weight AC^	kg	3.37		3.47	4.69		4.76
Coil Length	mm	361			481		
Attractive Force	N	0					
Electrical Cycle Length	mm	60					

Notes:

1. A^{pk} = 1.414 * Arms; V^{pk} = 1.414 * Vrms.
2. * Ambient temperature 25ºC, natural convection, no heat sink.
3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar.
4. Specifications tolerance – inductance +/-30%, all others +/-10%.

DX 65B / BT

- Ironless Motor
- Peak force to 5191N, Continuous force to 1247N
- Integrated Hall Sensor

DX B / BT SERIES

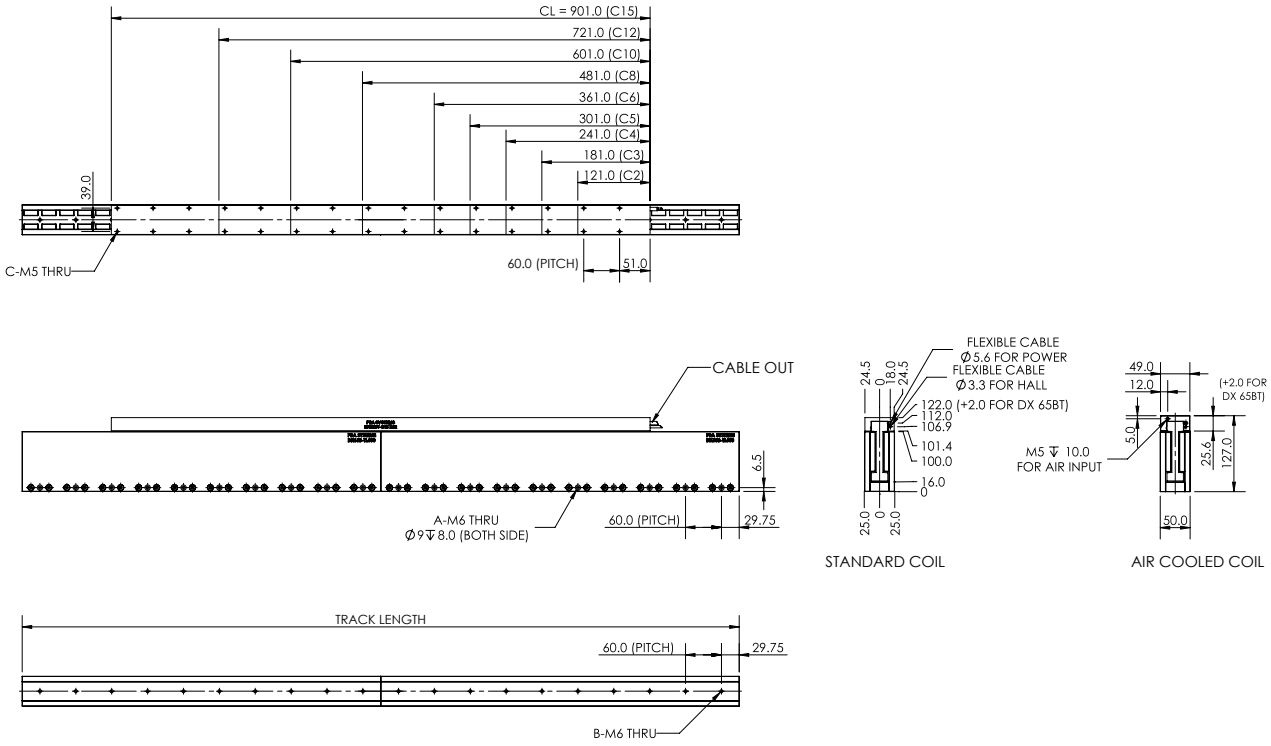
IRONLESS LINEAR MOTOR

SPECIFICATION		MODEL								
		DX65B-C10		DX65BT-C10	DX65BT-C12		DX65BT-C15			
Connection Type		S	P	P	S	P	P			
Performance	**Unit**									
Peak Force	N	3461			4153		5191			
Continuous Force @ 120ºC*	N	692			831		1038			
Continuous Force AC @ 120ºC^	N	831			249		1247			
Peak Power @ 120ºC	W	9756			11707		14634			
Continuous Power @ 120ºC*	W	390			468		585			
Continuous Power AC @ 120ºC^	W	562			42		841			
Electrical										
Peak Current	A^{pk}	15.63	31.25	62.50	62.50		93.75			
Continuous Current @ 120ºC*	A^{pk}	3.13	6.25	12.5	12.50		18.75			
Continuous Current AC @ 120ºC^	A^{pk}	3.75	7.50	15.00	3.75		22.50			
Continuous Stall Current @ 120ºC*	Arms	2.50	5.00	10			15.00			
Force Constant	N/A^{pk}	221.5	110.8	55.4	66.5		55.4			
Back EMF Constant	$V^{pk}/m/s$	254.7	127.4	63.7	76.4		63.7			
Coil Resistance L-L @ 25ºC	ohm	38.5	9.6	2.4	2.9		1.6			
Coil Resistance L-L @ 120ºC*	ohm	53.3	13.3	3.3	4.0		2.2			
Inductance L-L @ 1kHz	mH	45.55	11.39	2.85	3.42		1.90			
Motor Constant @ 25ºC*	N/√W	41.2			45.2		50.50			
Motor Constant @ 120ºC*	N/√W	35.0			38.4		42.90			
Max. Terminal Voltage	Vdc	600								
Thermal										
Thermal Resistance @ 120ºC*	ºC/W	0.24			0.20		0.16			
Thermal Resistance AC @ 120ºC^	ºC/W	0.17			2.26		0.11			
Max. Coil Temperature	ºC	120								
Mechanical										
Coil Weight	kg	5.45		5.54	6.64		8.55			
Coil Weight AC^	kg	5.86		5.95	7.14		9.16			
Coil Length	mm	601			721		901			
Attractive Force	N	0								
Electrical Cycle Length	mm	60								

Notes:

1. A^{pk} = 1.414 * Arms; V^{pk} = 1.414 * Vrms.
2. * Ambient temperature 25ºC, natural convection, no heat sink.
3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar.
4. Specifications tolerance – inductance +/-30%, all others +/-10%.

DX 65B / BT



Standard Magnet Track

SIZE	TRACK LENGTH (mm)	WEIGHT (kg)	NUMBER OF MOUNTING HOLE A	NUMBER OF MOUNTING HOLE B
TL 180	179.5	4.50	3	3
TL 240	239.5	6.00	4	4
TL 300	299.5	7.50	5	5
TL 360	359.5	9.00	6	6
TL 600	599.5	15.00	10	10
TL 900	899.5	22.50	15	15

DX 65B Motor Coil

SIZE	WEIGHT (kg)	WEIGHT AIR COOL (kg)	NUMBER OF MOUNTING HOLE (TOP MOUNT) C
C2	1.05	1.13	4
C3	1.57	1.69	6
C4	2.09	2.25	8
C5	2.61	2.81	10
C6	3.13	3.37	12
C8	4.36	4.69	16
C10	5.45	5.86	20
C12	6.64	7.14	24
C15	8.55	9.16	30

DX 90B / BT

- Ironless Motor
- Peak force to 5366N, Continuous force to 1234N
- Integrated Hall Sensor

DX B / BT SERIES
IRONLESS LINEAR MOTOR

SPECIFICATION		MODEL								
		DX90B-C2		DX90B-C3		DX90B-C4		DX90B-C6		DX90BT-C6
Connection Type		S	P	S	P	S	P	S	P	P
Performance	**Unit**									
Peak Force	N	894		1342		1789		2683		
Continuous Force @ 120ºC*	N	179		268		358		537		
Continuous Force AC @ 120ºC^	N	215		322		429		617		
Peak Power @ 120ºC	W	2217		3325		4433		6650		
Continuous Power @ 120ºC*	W	89		133		177		266		
Continuous Power AC @ 120ºC^	W	128		192		255		352		
Electrical										
Peak Current	A^{pk}	16.88	33.75	16.88	33.75	16.88	33.75	16.88	33.75	67.50
Continuous Current @ 120ºC*	A^{pk}	3.38	6.75	3.38	6.75	3.38	6.75	3.38	6.75	13.50
Continuous Current AC @ 120ºC^	A^{pk}	4.05	8.10	4.05	8.10	4.05	8.10	3.88	7.76	15.53
Continuous Stall Current @ 120ºC*	Arms	2.70	5.40	2.70	5.40	2.70	5.40	2.70	5.40	10.80
Force Constant	N/A^{pk}	53.0	26.5	79.5	39.8	106.0	53.0	159.0	79.5	39.8
Back EMF Constant	$V^{pk}/m/s$	61.0	30.5	91.4	45.7	121.9	61.0	182.9	91.4	45.7
Coil Resistance L-L @ 25ºC	ohm	7.5	1.9	11.3	2.8	15.0	3.8	22.5	5.6	1.4
Coil Resistance L-L @ 120ºC*	ohm	10.4	2.6	15.6	3.9	20.8	5.2	31.1	7.8	1.9
Inductance L-L @ 1kHz	mH	8.51	2.13	12.77	3.19	17.03	4.26	25.54	6.39	1.60
Motor Constant @ 25ºC*	N/√W	22.3		27.4		31.6		38.7		
Motor Constant @ 120ºC*	N/√W	19.0		23.3		26.9		32.9		
Max. Terminal Voltage	Vdc	600								
Thermal										
Thermal Resistance @ 120ºC*	ºC/W	1.07		0.71		0.54		0.36		
Thermal Resistance AC @ 120ºC^	ºC/W	0.74		0.50		0.37		0.27		
Max. Coil Temperature	ºC	120								
Mechanical										
Coil Weight	kg	1.30		1.95		2.56		3.90		4.00
Coil Weight AC^	kg	1.39		2.08		2.74		4.16		4.27
Coil Length	mm	121		181		241		361		
Attractive Force	N	0								
Electrical Cycle Length	mm	60								

Notes:

1. A^{pk} = 1.414 * Arms; V^{pk} = 1.414 * Vrms.
2. * Ambient temperature 25ºC, natural convection, no heat sink.
3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar.
4. Specifications tolerance – inductance +/-30%, all others +/-10%.

DX 90B / BT

- Ironless Motor
- Peak force to 5366N, Continuous force to 1234N
- Integrated Hall Sensor

DX B / BT SERIES

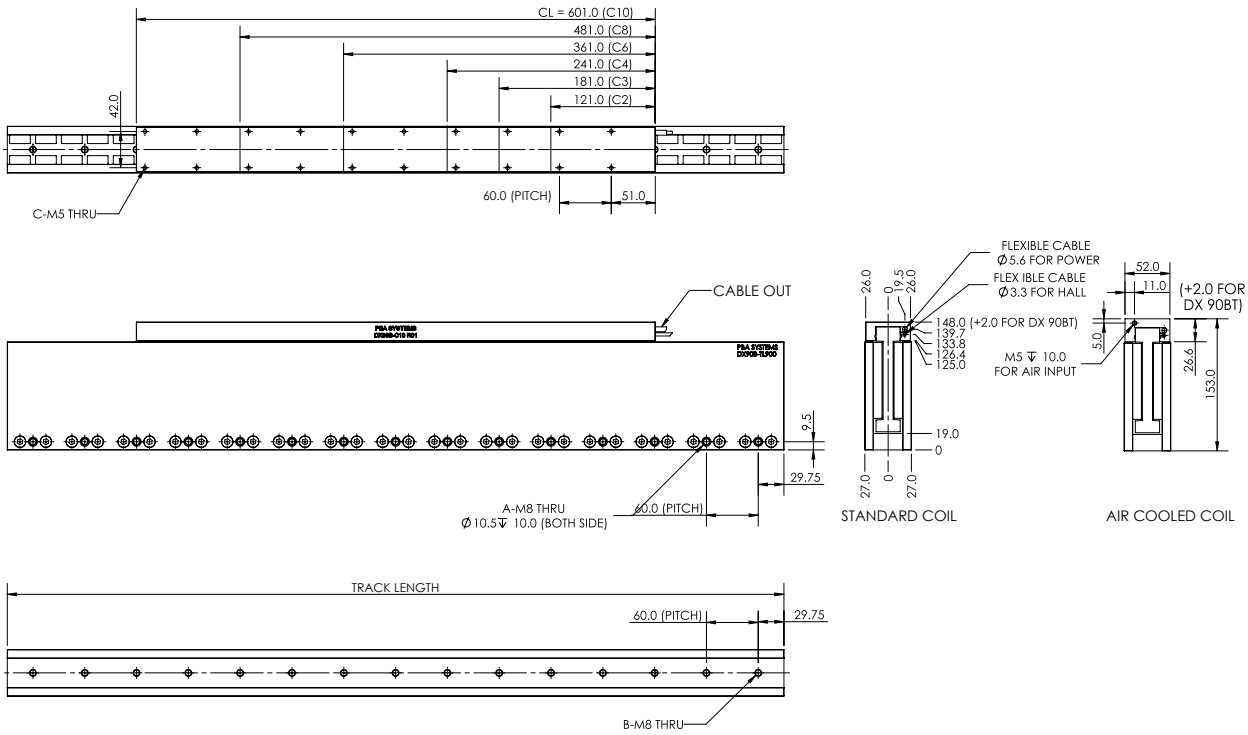
IRONLESS LINEAR MOTOR

SPECIFICATION		MODEL						
		DX90B-C8		DX90BT-C8	DX90B-C10		DX90BT-C10	DX90BT-C12
Connection Type		S	P	P	S	P	P	P
Performance	**Unit**							
Peak Force	N	3578			4472			5366
Continuous Force @ 120ºC*	N	716			894			1073
Continuous Force AC @ 120ºC^	N	823			1029			1234
Peak Power @ 120ºC	W	8867			11084			13300
Continuous Power @ 120ºC*	W	355			443			532
Continuous Power AC @ 120ºC^	W	469			586			700
Electrical								
Peak Current	A^{pk}	16.88	33.75	67.50	16.88	33.75	67.50	
Continuous Current @ 120ºC*	A^{pk}	3.38	6.75	13.50	3.38	6.75	13.50	
Continuous Current AC @ 120ºC^	A^{pk}	3.88	7.76	15.53	3.88	7.76	15.53	
Continuous Stall Current @ 120ºC*	Arms	2.70	5.40	10.80	2.70	5.40	10.80	
Force Constant	N/A^{pk}	212.0	106	53.0	265.0	132.5	66.3	79.5
Back EMF Constant	$V^{pk}/m/s$	243.8	121.9	61.0	304.8	152.4	76.2	91.4
Coil Resistance L-L @ 25ºC	ohm	30.0	7.5	1.9	37.5	9.4	2.3	2.8
Coil Resistance L-L @ 120ºC*	ohm	41.5	10.4	2.6	51.9	13.0	3.2	3.9
Inductance L-L @ 1kHz	mH	34.06	8.51	2.13	42.57	10.64	2.66	3.19
Motor Constant @ 25ºC*	$N/\sqrt{W}$	44.7			50.0			54.7
Motor Constant @ 120ºC*	$N/\sqrt{W}$	38.0			42.5			46.5
Max. Terminal Voltage	Vdc	600						
Thermal								
Thermal Resistance @ 120ºC*	ºC/W	0.27			0.21			0.18
Thermal Resistance AC @ 120ºC^	ºC/W	0.20			0.16			0.14
Max. Coil Temperature	ºC	120						
Mechanical								
Coil Weight	kg	5.17		5.31	6.46		6.63	7.96
Coil Weight AC^	kg	5.52		5.66	6.90		7.07	8.48
Coil Length	mm	481			601			721
Attractive Force	N	0						
Electrical Cycle Length	mm	60						

Notes:

1. A^{pk} = 1.414 * Arms; V^{pk} = 1.414 * Vrms.
2. * Ambient temperature 25ºC, natural convection, no heat sink.
3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar.
4. Specifications tolerance – inductance +/-30%, all others +/-10%.

DX 90B / BT



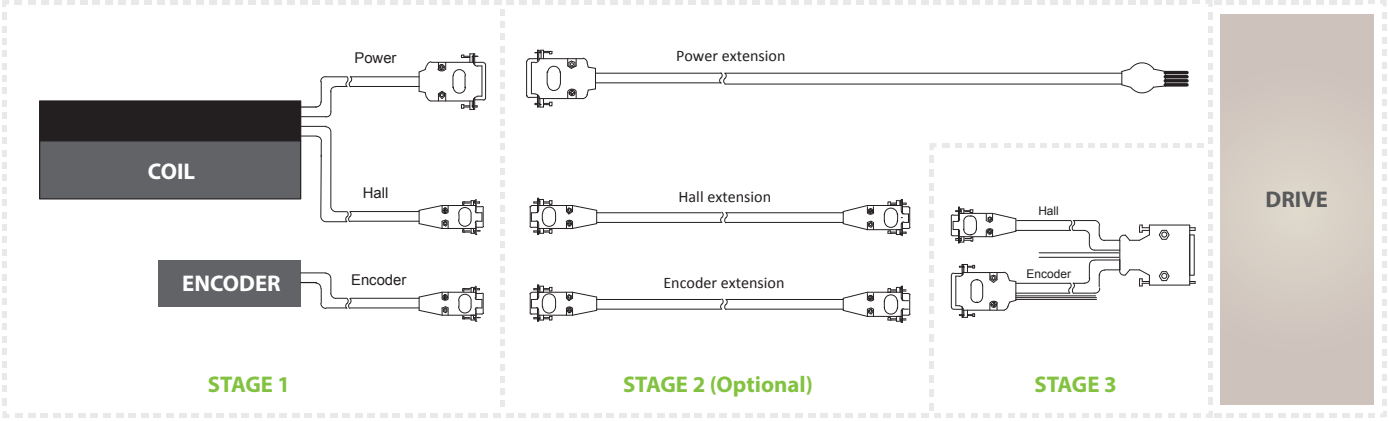
Standard Magnet Track

SIZE	TRACK LENGTH (mm)	WEIGHT (kg)	NUMBER OF MOUNTING HOLE A	NUMBER OF MOUNTING HOLE B
TL 240	239.5	8.50	4	4
TL 300	299.5	10.50	5	5
TL 360	359.5	12.50	6	6
TL 600	599.5	21.00	10	10
TL 900	899.5	31.50	15	15

DX 90B Motor Coil

SIZE	WEIGHT (kg)	WEIGHT AIR COOL (kg)	NUMBER OF MOUNTING HOLE (TOP MOUNT) C
C2	1.30	1.39	4
C3	1.95	2.08	6
C4	2.56	2.74	8
C6	3.90	4.16	12
C8	5.17	5.52	16
C10	6.46	6.90	20

CABLE OPTION

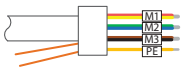


STAGE 1 — POWER AND HALL CABLE OPTION

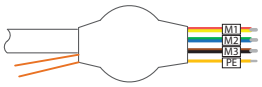
DX50B-C4-P-TM-2.0-NC-FC-NC

POWER CABLE OPTIONS

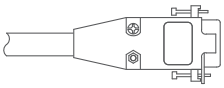
NF



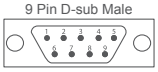
FC



9NF

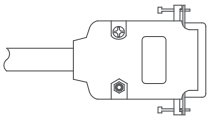


9 Pin D-sub Male

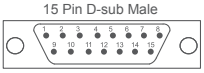


P1	M1	Pink
P2	M1	Yellow
P3	M3	Black
P4	M3	Brown
P5	M2	Blue
P6	M2	Green
P7	Temp sensor 1	Orange/Black
P8	Temp sensor 2	Orange
P9	PE	Yellow
Case	Shield	Shield

15NF



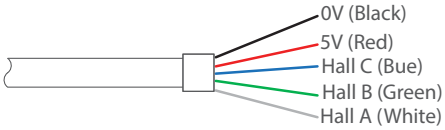
15 Pin D-sub Male



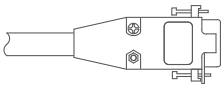
P1	M1	Pink
P2	M1	Yellow
P3	M3	Black
P4	M3	Brown
P5	M2	Blue
P6	M2	Green
P7	Temp sensor 1	Orange/Black
P8	Temp sensor 2	Orange
P9	PE	Yellow
P10	N.C.	-
P11	N.C.	-
P12	N.C.	-
P13	N.C.	-
P14	N.C.	-
P15	Shield	-
Case	Shield	Shield

HALL CABLE OPTIONS

NC



HC



9 Pin D-sub Male

P1	Hall A	White
P2	Hall B	Green
P3	Hall C	Blue
P4	5V	Red
P5	0V	Black

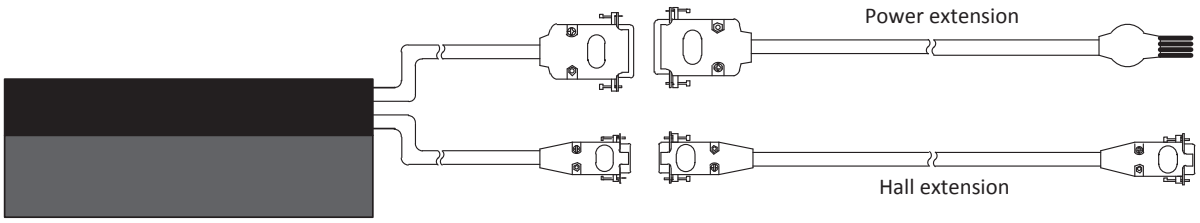
The temperature in which the thermostat is active is shown as below:

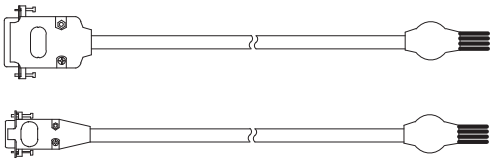
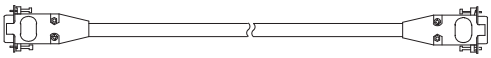
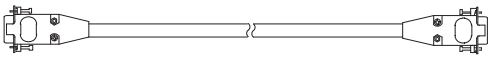
MODEL	THERMAL DEVICE TYPE	THERMOSTAT (NC) OPENS AT
DX 10B	PT100	See Note 1
DX 20B	PT100	See Note 1
DX 30B	Thermostat	100°C
DX 50B	Thermostat	100°C
DX 65B	Thermostat	100°C
DX 90B	Thermostat	100°C

- Programmable on temperature controller or analog inputs on motion controller.
- Recommended to set cutoff temperature to 120°C (max) to prevent coil damage.
- User has to ensure that the thermal protection devices are wired to appropriate electronics to ensure that the motor power cutoff is active when temperature reaches its allowable limit.

STAGE 2 — DX B SERIES EXTENSION CABLE

Connection example: DX☐B-☐-☐-☐-☐-15NF-HC



Extension Cable		Part Number
Power Extension Cable		CBL_EXT_PWR_DX_REV01_X.X
		CBL_EXT_PWR_DX_C1_REV00_X.X
Hall Sensor Extension Cable		CBL_EXT_HALL_DX_REV01_X.X
Encoder Extension Cable		CBL_EXT_REN00_REV03_X.X
		CBL_EXT_REN00A_REV03_X.X
		CBL_EXT_REN01_REV02_X.X
		CBL_EXT_REN01B_REV02_X.X
		CBL_EXT_REN05_REV00_X.X

CABLE	
00	RGH41 Digital
00A	RGH41 Analog
01	RH200 Digital
01B	RH200 Analog
05	ATOM Interface Ri Digital

CABLE LENGTH (X.X)	
0.5	0.5 meter (standard)
1.0	1.0 meter
2.0	2.0 meter
3.0	3.0 meter