

DX B / BT SERIES IRONLESS LINEAR MOTOR



HIGH SPEED

*"zero" cogging with minimal
velocity ripple*

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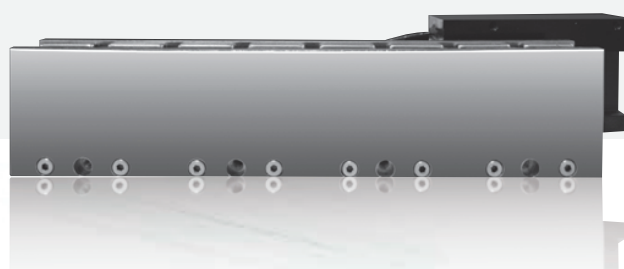


HIGH SPEED

“zero” cogging with minimal velocity ripple

DX B/BT SERIES

IRONLESS LINEAR MOTOR



High Speed Ironless Linear Motors With Minimal Velocity Ripple

DX series' ironless patented overlapping winding formers 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 further improved heat dissipation achieved through optional forced air-cooling methods.

All DX series formers 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 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
- 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



HIGH SPEED

"zero" cogging with minimal velocity ripple

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 07

DX10B 08

DX20B 10

DX30B/BT 12

DX50B/BT 15

DX65B/BT 18

DX90B/BT 22

Cable Option 25

PART NUMBERING SYSTEM

Coil Assembly

DX50B - C4 - P - TM - 2.0 - NC - FC - HC - 00

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

MOTOR COIL SIZE	
C1	
C2	
C3	
C4	
C5	
:	

All models inclusive of built-in hall sensor
(Hall sensor not available for DX10)

CONNECTION TYPE	
S	Series
P	Parallel

THERMAL PROTECTION	
TC*	PT 100 Sensor Available for all DX series
TM**	Thermostat Available for DX30-90B/BT only

CABLE LENGTH***	
0.5	0.5m
1.0	1.0m
2.0	2.0m
3.0	3.0m
4.0	4.0m
5.0	5.0m

* TC – Sensor output to temperature controller
** TM – On/Off switch, triggers at 100°C
*** Minimum Bending Radius - 10 times of cable diameter

DESIGN VERSIONS	
00	Standard
01	Customized Version
:	

HALL SENSOR AND CONNECTOR OPTIONS	
NH	No Hall Cable/ Connector (Only applies to DX10, All other models inclusive hall sensor)
H	Flying Leads (No Connector)
HC	9 pins D Sub Male Connector
CHC	5 pins Circular Quick Lock Male Connector
HCL	9 pins D Sub Male Connector with Line Driver

POWER CABLE OPTIONS	
NF	No Ferrite Core (Flying Leads)
FC	Ferrite Core (Recommended, not applies to DX10)
9NF	No Ferrite Core, D Sub 9 pins Female Connector
CNF	No Ferrite Core, Circular Quick Lock 6 pins Male Connector

COOLING TYPE	
NC	Normal Convection
AC	Air Cooling
WC	Water Cooling

Magnet Track

DX50B - TL300

MOTOR MODEL	
DX10B	DX50B
DX20B	DX65B
DX30B	DX90B

MAGNET TRACK LENGTH*	
TL63 - 63mm*	TL240 - 240mm**
TL84 - 84mm*	TL300 - 300mm**
TL105 - 105mm*	TL360 - 360mm**
TL120 - 120mm**	TL480 - 480mm**
TL180 - 180mm**	TL660 - 660mm**

* Only applicable to DX10 only
** Track length in incremental of 60mm

MAKES A DIFFERENCE

IRONLESS LINEAR MOTOR

DX10B

- Ironless Motor
- Peak force to 63N, Continuous force to 12N
- Ideal for high precision/smooth motion
- Hall sensor not available for DX10



DX B / BT SERIES
IRONLESS LINEAR MOTOR

SPECIFICATION	MODEL				
	DX10B-C1	DX10B-C2	DX10B-C3	DX10B-C4	
Connection Type	S	S	S	S	
Performance	Unit				
Peak Force	N	15.8	31.6	47.5	63.3
Continuous Force @ 120°C*	N	3.2	6.3	9.5	12.7
Peak Power @ 120°C	W	316	631	947	1262
Continuous Power @ 120°C*	W	12.6	25.2	37.9	50.5
Electrical					
Peak Current	A ^{pk}	14.01			
Continuous Current @ 120°C*	A ^{pk}	2.80			
Continuous Stall Current @ 120°C*	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 @ 25°C	ohm	1.6	3.1	4.7	6.2
Coil Resistance L-L @ 120°C*	ohm	2.1	4.3	6.4	8.6
Inductance L-L @ 1kHz	mH	0.11	0.22	0.33	0.44
Motor Constant @ 25°C*	N/√W	1.05	1.48	1.81	2.09
Motor Constant @ 120°C*	N/√W	0.89	1.26	1.54	1.78
Max. Terminal Voltage	V _{dc}	60			
Thermal					
Thermal Resistance @ 120°C*	°C/W	7.53	3.66	2.51	1.88
Max. Coil Temperature	°C	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. $A^{pk} = 1.414 \cdot Arms$; $V^{pk} = 1.414 \cdot V_{rms}$.
2. * Ambient temperature 25°C, heat dissipation by natural convection, without heat sink attached.
3. Specifications tolerance – inductance +/-30%, all others +/-10%.
4. Only available in series winding.
5. Peak force and current - 5% duty ratio and 1 second duration.

DX B / BT

PIX / PIXA

PSM / PSME

CVC

CVCA

RVCA

PDDR

PCA

PWA

PLA

PDAB

PIAB

OCTO

PRG

LINEAR ENCODER

SERVO AMPLIFIER

DX10B

IRONLESS LINEAR MOTOR

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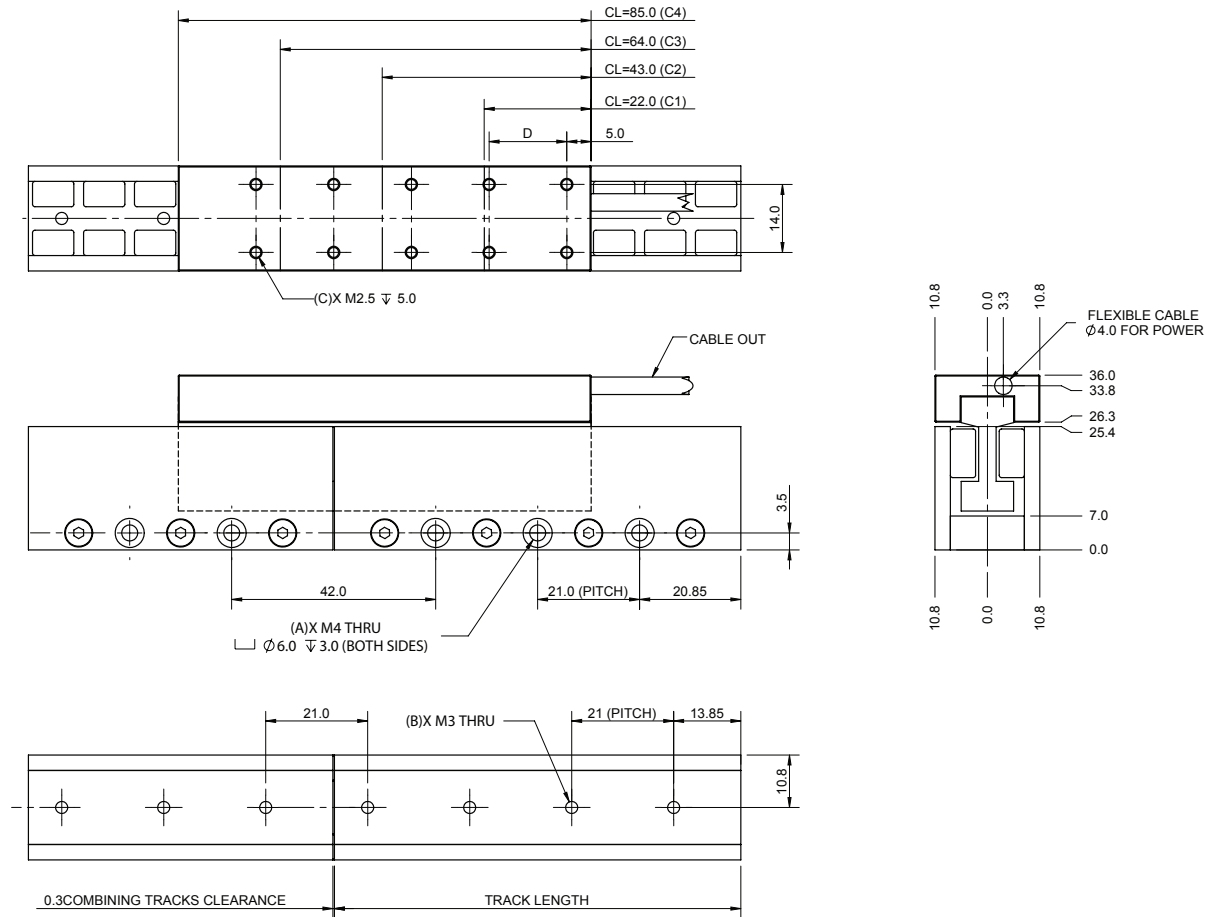
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Standard Magnet Track

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

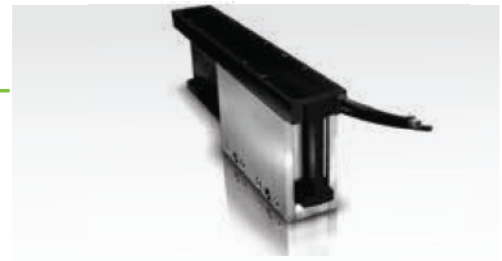
Motor Coil

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

DX20B

- 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 @ 120°C*	N		18		27		37		46	
Continuous Force AC @ 120°C^	N		24		36		48		60	
Peak Power @ 120°C	W		744		1116		1488		1860	
Continuous Power @ 120°C*	W		30		45		60		74	
Continuous Power AC @ 120°C^	W		50		75		101		126	
Electrical										
Peak Current	A ^{pk}		10.50		21.00		10.50		21.00	
Continuous Current @ 120°C*	A ^{pk}		2.10		4.20		2.10		4.20	
Continuous Current AC @ 120°C^	A ^{pk}		2.73		5.46		2.73		5.46	
Continuous Stall Current @ 120°C*	Arms		1.40		2.80		1.40		2.80	
Force Constant	N/A ^{pk}		8.70		4.40		13.10		6.50	
Back EMF Constant	V ^{pk} /m/s		10.0		5.0		15.0		7.50	
Coil Resistance L-L @ 25°C	ohm		6.5		1.6		9.8		2.4	
Coil Resistance L-L @ 120°C*	ohm		9.0		2.2		13.5		3.4	
Inductance L-L @ 1kHz	mH		1.53		0.38		2.30		0.57	
Motor Constant @ 25°C*	N/√W		3.95		4.84		5.59		6.24	
Motor Constant @ 120°C*	N/√W		3.36		4.11		4.75		5.31	
Max. Terminal Voltage	Vdc		400							
Thermal										
Thermal Resistance @ 120°C*	°C/W		3.19		2.13		1.60		1.28	
Thermal Resistance AC @ 120°C^	°C/W		1.89		1.26		0.94		0.76	
Max. Coil Temperature	°C		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 25°C, heat dissipation by natural convection, without heat sink attached.
3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar.
4. Specifications tolerance – inductance +/-30%, all others +/-10%.
5. Peak force and current - 5% duty ratio and 1 second duration.

DX20B

IRONLESS LINEAR MOTOR

DX B / BT

PIX / PIXA

PSM / PSME

CVC

CVCA

RVCA

PDDR

PCA

PWA

PLA

PDAB

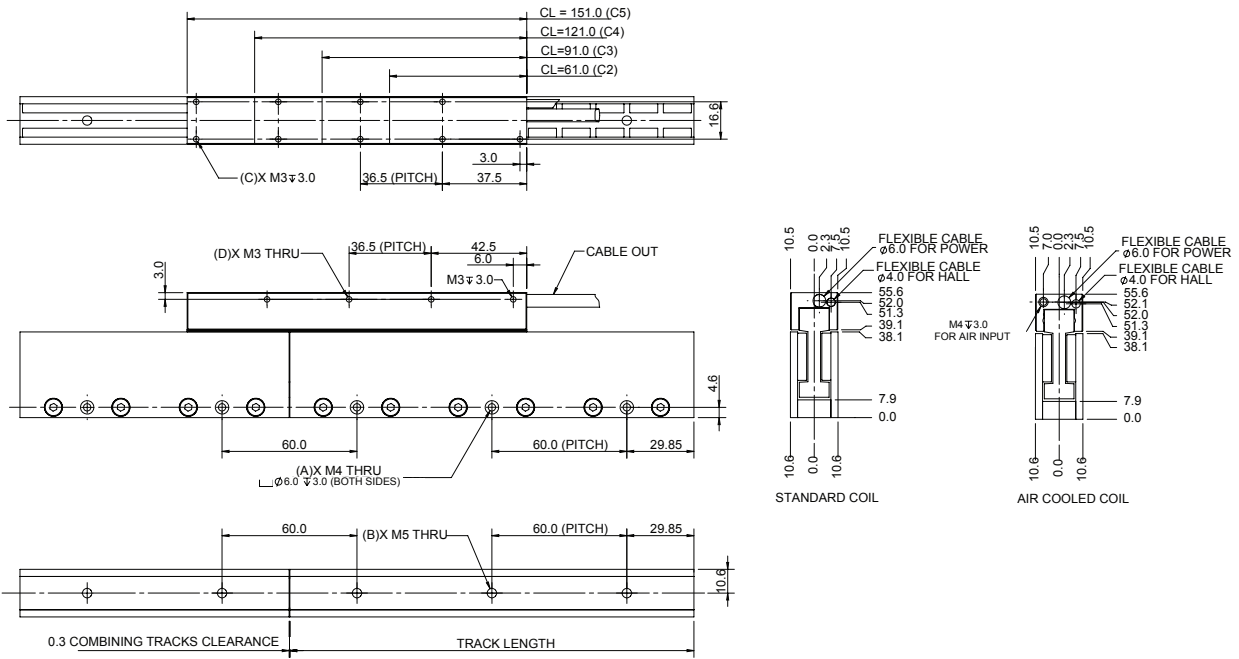
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LINEAR ENCODER

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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 (TOP MOUNT) C	NUMBER OF MOUNTING HOLE (SIDE MOUNT) D
C2	0.11	3	1
C3	0.17	5	2
C4	0.23	7	3
C5	0.28	9	3

For COOLING OPTIONS, please ask for detail drawing

DX30B / 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 @ 120°C*	N	29			58			87	
Continuous Force AC @ 120°C^	N	38			75			113	
Peak Power @ 120°C	W	695			1390			2086	
Continuous Power @ 120°C*	W	28			56			83	
Continuous Power AC @ 120°C^	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 @ 120°C*	A ^{pk}	2.36	4.73	2.36	4.73	9.45	2.36	4.73	
Continuous Current AC @ 120°C^	A ^{pk}	3.07	6.14	3.07	6.14	12.29	3.07	6.14	
Continuous Stall Current @ 120°C*	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 @ 25°C	ohm	4.8	1.2	9.6	2.4	0.6	14.4	3.6	
Coil Resistance L-L @ 120°C*	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 @ 25°C*	N/W	6.46			9.13		11.18		
Motor Constant @ 120°C*	N/W	5.49			7.76		9.51		
Max. Terminal Voltage	Vdc				400				
Thermal									
Thermal Resistance @ 120°C*	°C/W	3.42			1.71		1.14		
Thermal Resistance AC @ 120°C^	°C/W	2.02			1.01		0.67		
Max. Coil Temperature	°C				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. $A^{pk} = 1.414 \cdot A_{rms}$; $V^{pk} = 1.414 \cdot V_{rms}$.
2. * Ambient temperature 25°C, heat dissipation by natural convection, without heat sink attached.
3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar.
4. Specifications tolerance – inductance +/-30%, all others +/-10%.
5. Peak force and current - 5% duty ratio and 1 second duration.

MAKES A DIFFERENCE

DX30B / BT

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



DX B / BT SERIES
IRONLESS LINEAR MOTOR

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LINEAR ENCODER

SERVO AMPLIFIER

SPECIFICATION		MODEL					
		DX30B-C4		DX30BT-C4		DX30B-C5	
Connection Type		S	P	P	S	P	
Performance	Unit						
Peak Force	N	579		724			
Continuous Force @ 120°C*	N	116		145			
Continuous Force AC @ 120°C^	N	150		188			
Peak Power @ 120°C	W	2781		3476			
Continuous Power @ 120°C*	W	111		139			
Continuous Power AC @ 120°C^	W	188		235			
Electrical							
Peak Current	A ^{pk}	11.81	23.63	47.25	11.81	23.63	
Continuous Current @ 120°C*	A ^{pk}	2.36	4.73	9.45	2.36	4.73	
Continuous Current AC @ 120°C^	A ^{pk}	3.07	6.14	12.29	3.07	6.14	
Continuous Stall Current @ 120°C*	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 @ 25°C	ohm	19.2	4.8	1.2	24.0	6.0	
Coil Resistance L-L @ 120°C*	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 @ 25°C*	N/√W	12.91			14.44		
Motor Constant @ 120°C*	N/√W	10.98			12.27		
Max. Terminal Voltage	Vdc	400					
Thermal							
Thermal Resistance @ 120°C*	°C/W	0.85		0.68			
Thermal Resistance AC @ 120°C^	°C/W	0.51		0.40			
Max. Coil Temperature	°C	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 25°C, heat dissipation by natural convection, without heat sink attached.
3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar.
4. Specifications tolerance – inductance +/-30%, all others +/-10%.
5. Peak force and current - 5% duty ratio and 1 second duration.

DX30B / BT

IRONLESS LINEAR MOTOR

DX B / BT

PIX / PIXA

PSM / PSME

CVC

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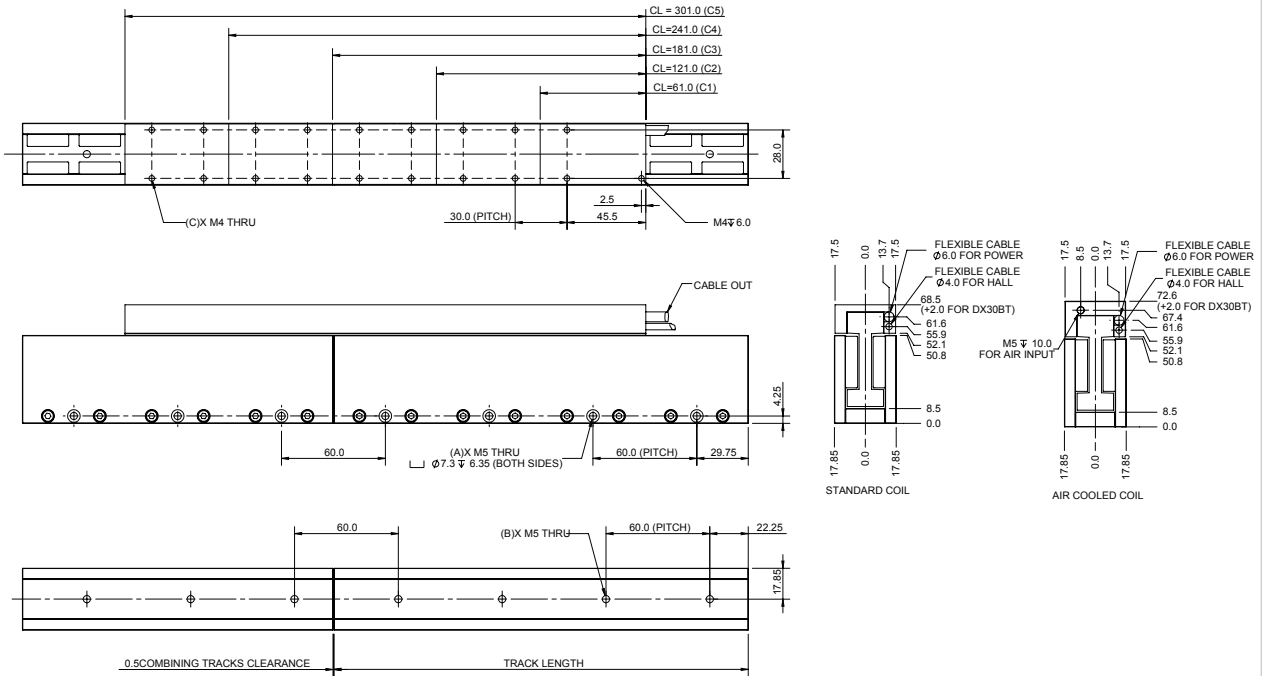
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LINEAR ENCODER

SERVO AMPLIFIER



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	2
C2	0.41	0.46	6
C3	0.62	0.69	10
C4	0.83	0.93	14
C5	1.04	1.16	18

DX 30BT Motor Coil

SIZE	WEIGHT (kg)	WEIGHT AIR COOL (kg)	NUMBER OF MOUNTING HOLE (TOP MOUNT) C
C2	0.43	0.48	2
C4	0.88	0.97	14

MAKES A DIFFERENCE

DX50B / BT

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



DX B / BT SERIES
IRONLESS LINEAR MOTOR

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DX B / BT

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LINEAR ENCODER

SERVO AMPLIFIER

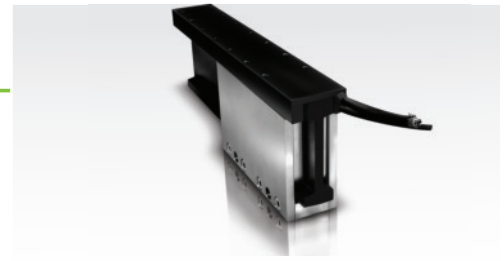
SPECIFICATION		MODEL							
		DX50B-C1		DX50B-C2		DX50BT-C2		DX50B-C3	
Connection Type		S	P	S	P	P	S	P	
Performance	Unit								
Peak Force	N	223		446		669			
Continuous Force @ 120°C*	N	45		89		134			
Continuous Force AC @ 120°C^	N	58		116		174			
Peak Power @ 120°C	W	751		1502		2253			
Continuous Power @ 120°C*	W	30		60		90			
Continuous Power AC @ 120°C^	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 @ 120°C*	A ^{pk}	2.63	5.25	2.63	5.25	10.50	2.63	5.25	
Continuous Current AC @ 120°C^	A ^{pk}	3.41	6.83	3.41	6.83	13.65	3.41	6.83	
Continuous Stall Current @ 120°C*	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 @ 25°C	ohm	4.2	1.1	8.4	2.1	0.5	12.6	3.2	
Coil Resistance L-L @ 120°C*	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 @ 25°C*	N\W	9.58		13.55		16.59			
Motor Constant @ 120°C*	N\W	8.14		11.51		14.10			
Max. Terminal Voltage	Vdc	400							
Thermal									
Thermal Resistance @ 120°C*	°C/W	3.16		1.58		1.05			
Thermal Resistance AC @ 120°C^	°C/W	1.87		0.94		0.62			
Max. Coil Temperature	°C	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 25°C, heat dissipation by natural convection, without heat sink attached.
3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar.
4. Specifications tolerance – inductance +/-30%, all others +/-10%.
5. Peak force and current - 5% duty ratio and 1 second duration.

DX50B / 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		DX50BT-C8									
Connection Type	S	P	P	S	P	P	P	P	P									
Performance	Unit																	
Peak Force	N		893		1116		1339		1785									
Continuous Force @ 120°C*	N		179		223		268		357									
Continuous Force AC @ 120°C^	N		232		290		348		464									
Peak Power @ 120°C	W		3004		3755		4506		6008									
Continuous Power @ 120°C*	W		120		150		180		240									
Continuous Power AC @ 120°C^	W		203		254		305		406									
Electrical																		
Peak Current	A ^{pk}		13.13		26.25		52.50		13.13		26.25		52.50					
Continuous Current @ 120°C*	A ^{pk}		2.63		5.25		10.50		2.63		5.25		10.50					
Continuous Current AC @ 120°C^	A ^{pk}		3.41		6.83		13.65		3.41		6.83		13.65					
Continuous Stall Current @ 120°C*	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		34.0			
Back EMF Constant	V ^{pk} /m/s		78.2		39.1		19.6		97.8		48.9		29.3		39.1			
Coil Resistance L-L @ 25°C	ohm		16.8		4.2		1.1		21.0		5.3		1.6		2.1			
Coil Resistance L-L @ 120°C*	ohm		23.2		5.8		1.5		29.1		7.3		2.2		2.9			
Inductance L-L @ 1kHz	mH		12.44		3.11		0.78		15.55		3.89		1.17		1.56			
Motor Constant @ 25°C*	N/W		19.16				21.42				23.46				27.09			
Motor Constant @ 120°C*	N/W		16.28				18.21				19.94				23.03			
Max. Terminal Voltage	Vdc		400															
Thermal																		
Thermal Resistance @ 120°C*	°C/W		0.79				0.63				0.53				0.40			
Thermal Resistance AC @ 120°C^	°C/W		0.47				0.37				0.31				0.23			
Max. Coil Temperature	°C		120															
Mechanical																		
Coil Weight	kg		1.07		1.05		1.25		1.58		2.14							
Coil Weight AC^	kg		1.19		1.17		1.40		1.75		2.37							
Coil Length	mm		241				301				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 25°C, heat dissipation by natural convection, without heat sink attached.
3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar.
4. Specifications tolerance – inductance +/-30%, all others +/-10%.
5. Peak force and current - 5% duty ratio and 1 second duration.

DX50B / BT

IRONLESS LINEAR MOTOR

DX B / BT

PIX / PIXA

PSM / PSME

CVC

CVCA

RVCA

PDDR

PCA

PWA

PLA

PDAB

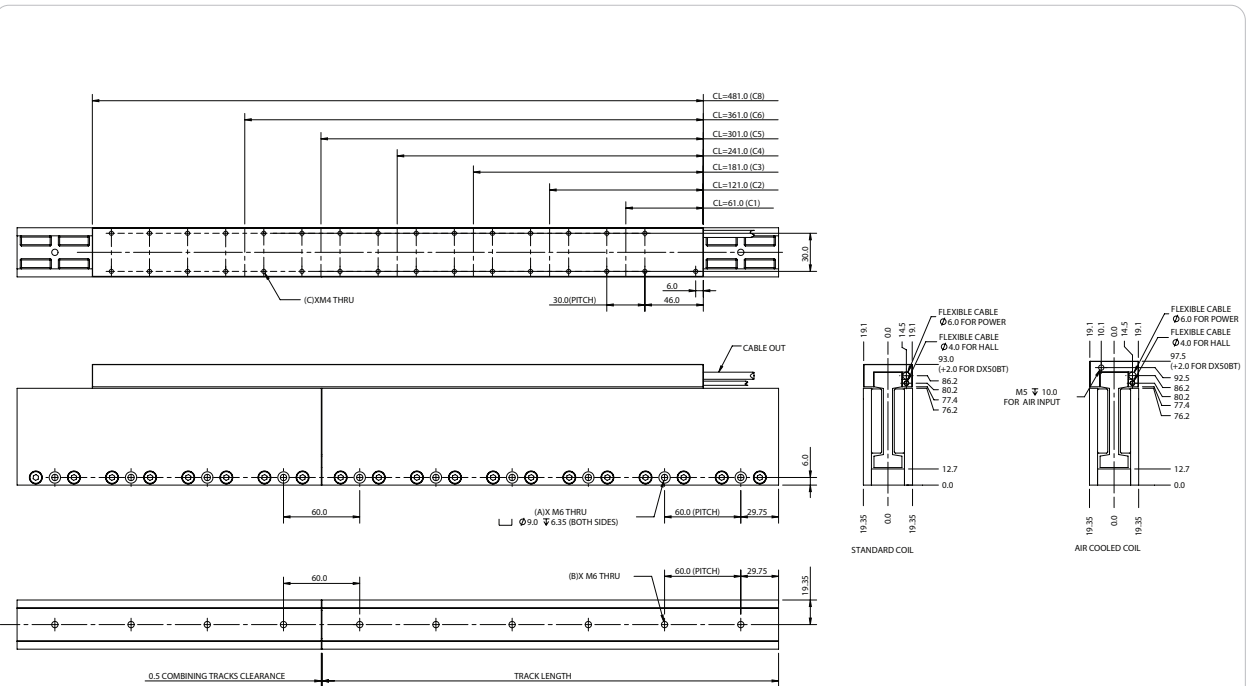
PIAB

OCTO

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LINEAR ENCODER

SERVO AMPLIFIER



Standard Magnet Track

SIZE	TRACK LENGTH (mm)	WEIGHT (kg)	NUMBER OF MOUNTING HOLE A	NUMBER OF MOUNTING HOLE B
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

DX 50BT Motor Coil

SIZE	WEIGHT (kg)	WEIGHT AIR COOL (kg)	NUMBER OF MOUNTING HOLE (TOP MOUNT) C
C2	0.54	0.60	7
C4	1.05	1.17	15
C6	1.58	1.75	23
C8	2.14	2.37	31

DX65B / 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 @ 120°C*	N	138	208	277	346				
Continuous Force AC @ 120°C^	N	173	260	346	415				
Peak Power @ 120°C	W	1951	2927	3902	4878				
Continuous Power @ 120°C*	W	78	117	156	195				
Continuous Power AC @ 120°C^	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 @ 120°C*	A ^{pk}	3.13	6.25	3.13	6.25	3.13	6.25	3.13	6.25
Continuous Current AC @ 120°C^	A ^{pk}	3.91	7.81	3.91	7.81	3.91	7.81	3.75	7.50
Continuous Stall Current @ 120°C*	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 @ 25°C	ohm	7.7	1.9	11.6	2.9	15.4	3.9	19.3	4.8
Coil Resistance L-L @ 120°C*	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 @ 25°C*	N\W	18.4	22.6	26.1	29.1				
Motor Constant @ 120°C*	N\W	15.7	19.2	22.2	24.8				
Max. Terminal Voltage	Vdc	600							
Thermal									
Thermal Resistance @ 120°C*	°C/W	1.22	0.81	0.61	0.49				
Thermal Resistance AC @ 120°C^	°C/W	0.78	0.52	0.39	0.34				
Max. Coil Temperature	°C	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 25°C, heat dissipation by natural convection, without heat sink attached.
3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar.
4. Specifications tolerance – inductance +/-30%, all others +/-10%.
5. Peak force and current - 5% duty ratio and 1 second duration.

DX65B / BT

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



DX B / BT SERIES
IRONLESS LINEAR MOTOR

IRONLESS LINEAR MOTOR

DX B / BT

PIX / PIXA

PSM / PSME

CVC

CVCA

RVCA

PDDR

PCA

PWA

PLA

PDAB

PIAB

OCTO

PRG

LINEAR ENCODER

SERVO AMPLIFIER

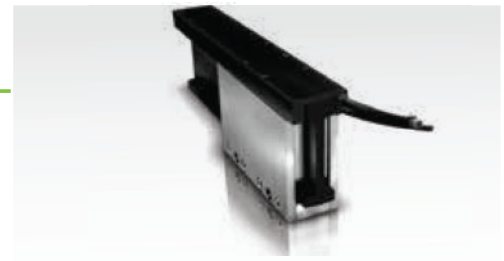
SPECIFICATION		MODEL							
		DX65B-C6		DX65BT-C6		DX65B-C8		DX65BT-C8	
Connection Type		S	P	P	S	P	P		
Performance	Unit								
Peak Force	N	2077			2769				
Continuous Force @ 120°C*	N	415			554				
Continuous Force AC @ 120°C^	N	498							
Peak Power @ 120°C	W	5854			7805				
Continuous Power @ 120°C*	W	234			312				
Continuous Power AC @ 120°C^	W	337							
Electrical									
Peak Current	A ^{pk}	15.63	31.25	62.5	15.63	31.25	62.50		
Continuous Current @ 120°C*	A ^{pk}	3.13	6.25	12.5	3.13	6.25	12.50		
Continuous Current AC @ 120°C^	A ^{pk}	3.75	7.50	15.00					
Continuous Stall Current @ 120°C*	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 @ 25°C	ohm	23.1	5.8	1.4	30.8	7.7	1.9		
Coil Resistance L-L @ 120°C*	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 @ 25°C*	N/√W	31.9			36.9				
Motor Constant @ 120°C*	N/√W	27.1			31.3				
Max. Terminal Voltage	Vdc	600							
Thermal									
Thermal Resistance @ 120°C*	°C/W	0.41			0.30				
Thermal Resistance AC @ 120°C^	°C/W	0.28							
Max. Coil Temperature	°C	120							
Mechanical									
Coil Weight	kg	3.13		3.23		4.36		4.43	
Coil Weight AC^	kg	3.37		3.47					
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 25°C, heat dissipation by natural convection, without heat sink attached.
3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar.
4. Specifications tolerance – inductance +/-30%, all others +/-10%.
5. Peak force and current - 5% duty ratio and 1 second duration.

DX65B / 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	P	P	
Performance	Unit					
Peak Force	N	3461		4153	5191	
Continuous Force @ 120°C*	N	692		831	1038	
Continuous Force AC @ 120°C^	N					
Peak Power @ 120°C	W	9756		11707	14634	
Continuous Power @ 120°C*	W	390		468	585	
Continuous Power AC @ 120°C^	W					
Electrical						
Peak Current	A ^{pk}	15.63	31.25	62.50	62.50	93.75
Continuous Current @ 120°C*	A ^{pk}	3.13	6.25	12.5	12.50	18.75
Continuous Current AC @ 120°C^	A ^{pk}					
Continuous Stall Current @ 120°C*	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 @ 25°C	ohm	38.5	9.6	2.4	2.9	1.6
Coil Resistance L-L @ 120°C*	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 @ 25°C*	N/√W	41.2		45.2		50.5
Motor Constant @ 120°C*	N/√W	35.0		38.4		42.9
Max. Terminal Voltage	Vdc	600				
Thermal						
Thermal Resistance @ 120°C*	°C/W	0.24		0.20	0.16	
Thermal Resistance AC @ 120°C^	°C/W					
Max. Coil Temperature	°C	120				
Mechanical						
Coil Weight	kg	5.45	5.54	6.64	8.55	
Coil Weight AC^	kg					
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 25°C, heat dissipation by natural convection, without heat sink attached.
3. Specifications tolerance – inductance +/-30%, all others +/-10%.
4. Peak force and current - 5% duty ratio and 1 second duration.

DX B / BT

PIX / PIXA

PSM / PSME

CVC

CVCA

RVCA

PDDR

PCA

PWA

PLA

PDAB

PIAB

OCTO

PRG

LINEAR ENCODER

SERVO AMPLIFIER

DX65B / BT

IRONLESS LINEAR MOTOR

DX B / BT

PX / PIXA

PSM / PSME

CVC

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PDAB

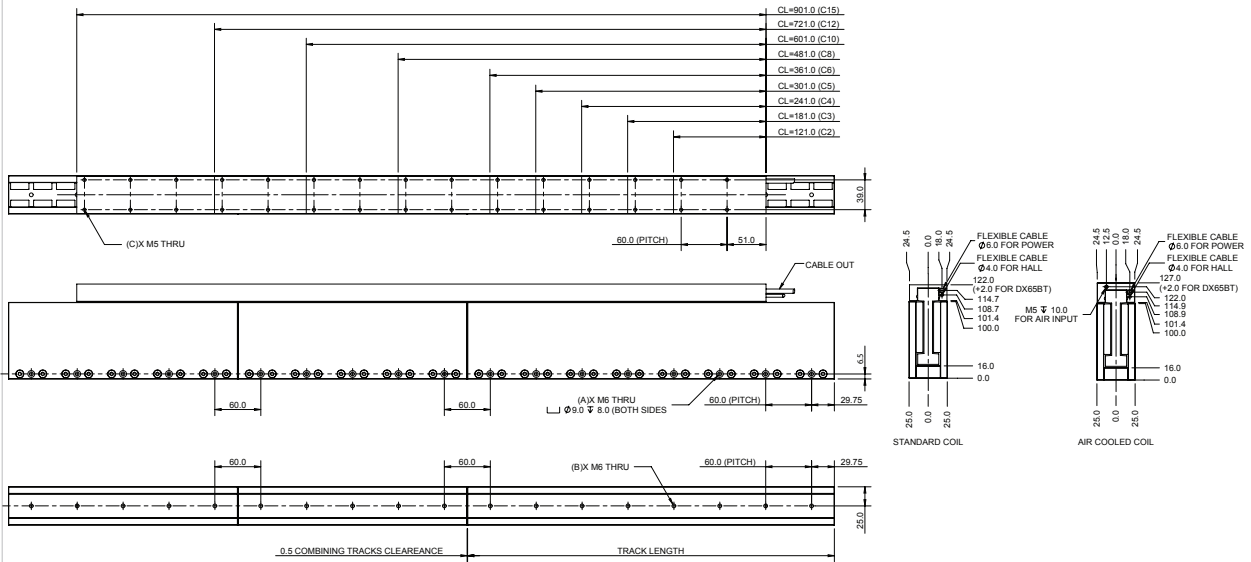
PIAB

OCTO

PRG

LINEAR ENCODER

SERVO AMPLIFIER



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 480	479.5	12.00	8	8

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	-	16
C10	5.45	-	20

DX 65BT Motor Coil

SIZE	WEIGHT (kg)	WEIGHT AIR COOL (kg)	NUMBER OF MOUNTING HOLE (TOP MOUNT) C
C6	3.23	3.47	12
C8	4.43	-	16
C10	5.54	-	20
C12	6.64	-	24
C15	8.55	-	30

DX90B / 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 @ 120°C*	N	179		268		358		537			
Continuous Force AC @ 120°C^	N	215		322		429		617			
Peak Power @ 120°C	W	2217		3325		4433		6650			
Continuous Power @ 120°C*	W	89		133		177		266			
Continuous Power AC @ 120°C^	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 @ 120°C*	A ^{pk}	3.38	6.75	3.38	6.75	3.38	6.75	3.38	6.75	13.50	
Continuous Current AC @ 120°C^	A ^{pk}	4.05	8.10	4.05	8.10	4.05	8.10	3.88	7.76	15.53	
Continuous Stall Current @ 120°C*	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 @ 25°C	ohm	7.5	1.9	11.3	2.8	15.0	3.8	22.5	5.6	1.4	
Coil Resistance L-L @ 120°C*	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 @ 25°C*	N/√W	22.3		27.4		31.6		38.7			
Motor Constant @ 120°C*	N/√W	19.0		23.3		26.9		32.9			
Max. Terminal Voltage	Vdc	600									
Thermal											
Thermal Resistance @ 120°C*	°C/W	1.07		0.71		0.54		0.36			
Thermal Resistance AC @ 120°C^	°C/W	0.74		0.50		0.37		0.27			
Max. Coil Temperature	°C	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 25°C, heat dissipation by natural convection, without heat sink attached.
3. ^ Air cool (AC), 6mm/4mm (OD/ID) 2m long air hose, pressure >2bar.
4. Specifications tolerance – inductance +/-30%, all others +/-10%.
5. Peak force and current - 5% duty ratio and 1 second duration.

DX90B / BT

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



DX B / BT SERIES
IRONLESS LINEAR MOTOR

IRONLESS LINEAR MOTOR

DX B / BT

PIX / PIXA

PSM / PSME

CVC

CVCA

RVCA

PDDR

PCA

PWA

PLA

PDAB

PIAB

OCTO

PRG

LINEAR ENCODER

SERVO AMPLIFIER

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 @ 120°C*	N	716			894			1073	
Continuous Force AC @ 120°C^	N								
Peak Power @ 120°C	W	8867			11084			13300	
Continuous Power @ 120°C*	W	355			443			532	
Continuous Power AC @ 120°C^	W								
Electrical									
Peak Current	A ^{pk}	16.88	33.75	67.50	16.88	33.75	67.50		
Continuous Current @ 120°C*	A ^{pk}	3.38	6.75	13.50	3.38	6.75	13.50		
Continuous Current AC @ 120°C^	A ^{pk}								
Continuous Stall Current @ 120°C*	Arms	2.70	5.40	10.80	2.70	5.40	10.80		
Force Constant	N/A ^{pk}	212.0	106.0	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 @ 25°C	ohm	30.0	7.5	1.9	37.5	9.4	2.3	2.8	
Coil Resistance L-L @ 120°C*	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 @ 25°C*	N\W	44.7			50.0			54.7	
Motor Constant @ 120°C*	N\W	38.0			42.5			46.5	
Max. Terminal Voltage	Vdc	600							
Thermal									
Thermal Resistance @ 120°C*	°C/W	0.27			0.21			0.18	
Thermal Resistance AC @ 120°C^	°C/W								
Max. Coil Temperature	°C	120							
Mechanical									
Coil Weight	kg	5.17		5.31	6.46		6.63	7.96	
Coil Weight AC^	kg								
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 25°C, heat dissipation by natural convection, without heat sink attached.
3. Specifications tolerance – inductance +/-30%, all others +/-10%.
4. Peak force and current - 5% duty ratio and 1 second duration.

DX90B / BT

IRONLESS LINEAR MOTOR

DX B / BT

PIX / PIXA

PSM / PSME

CVC

CVCA

RVCA

PDDR

PCA

PWA

PLA

PDAB

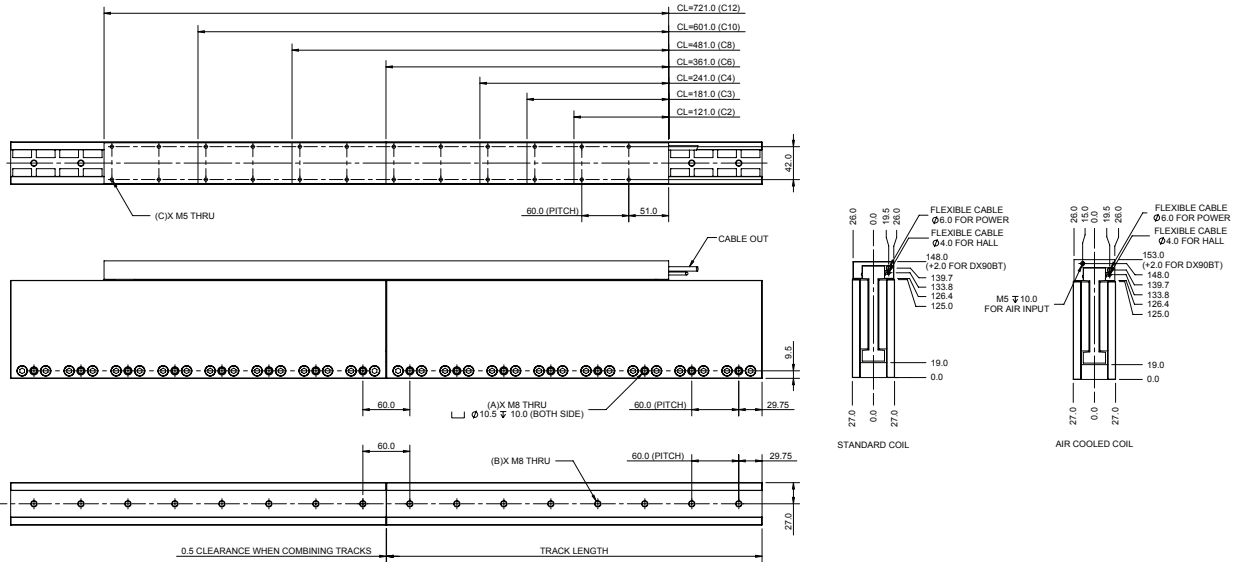
PIAB

OCTO

PRG

LINEAR ENCODER

SERVO AMPLIFIER



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 480	479.5	16.80	8	8

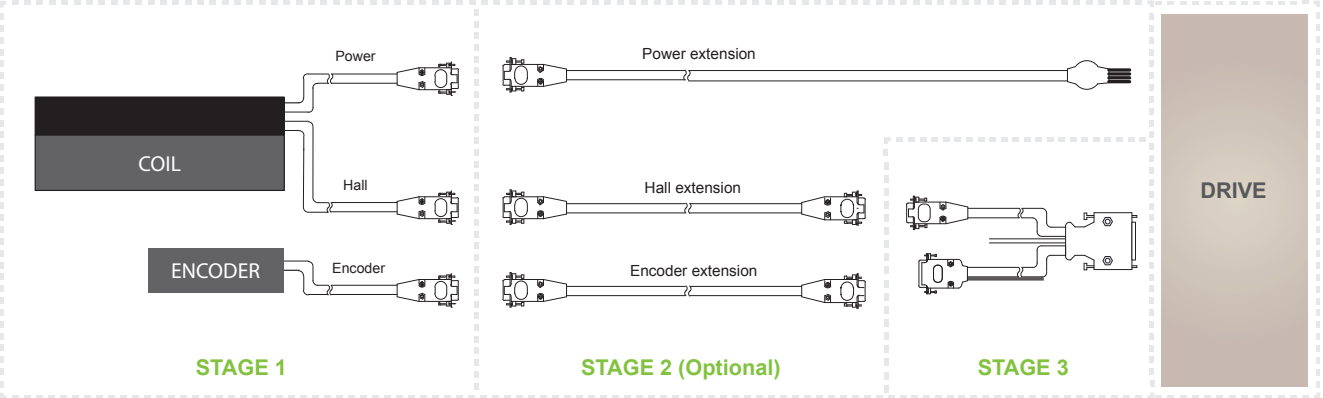
DX 90B Motor Coil

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	-	16
C10	6.46	-	20

DX 90BT Motor Coil

SIZE	WEIGHT (kg)	WEIGHT AIR COOL (kg)	NUMBER OF MOUNTING HOLE (TOP MOUNT) C
C6	4.00	4.27	12
C8	5.31	-	16
C10	6.63	-	20
C12	7.96	-	24

CABLE OPTION



STAGE 1 POWER AND HALL CABLE OPTION

DX50B-C4-P-TM-2.0-NC-FC-HC-00

POWER CABLE OPTIONS																															
NF	<table border="1"> <tr><th colspan="2">DX10</th><th>All DX except DX10</th></tr> <tr><td>M1</td><td>White</td><td>Grey</td></tr> <tr><td>M2</td><td>Green</td><td>Brown</td></tr> <tr><td>M3</td><td>Blue</td><td>Black</td></tr> <tr><td>PE</td><td>Shield</td><td>Yellow</td></tr> <tr><td>Temp sensor 1</td><td>Red</td><td>Black</td></tr> <tr><td>Temp sensor 2</td><td>Black</td><td>Orange</td></tr> </table>	DX10		All DX except DX10	M1	White	Grey	M2	Green	Brown	M3	Blue	Black	PE	Shield	Yellow	Temp sensor 1	Red	Black	Temp sensor 2	Black	Orange									
DX10		All DX except DX10																													
M1	White	Grey																													
M2	Green	Brown																													
M3	Blue	Black																													
PE	Shield	Yellow																													
Temp sensor 1	Red	Black																													
Temp sensor 2	Black	Orange																													
FC	<table border="1"> <tr><th colspan="2">DX10</th><th>All DX except DX10</th></tr> <tr><td>P1</td><td>M1</td><td>White</td></tr> <tr><td>P2</td><td>M2</td><td>Green</td></tr> <tr><td>P3</td><td>M3</td><td>Blue</td></tr> <tr><td>P4</td><td>TS1</td><td>Red</td></tr> <tr><td>P5</td><td>TS2</td><td>Black</td></tr> <tr><td>P6</td><td>-</td><td>M2</td></tr> <tr><td>P7</td><td>-</td><td>TS1</td></tr> <tr><td>P8</td><td>-</td><td>TS2</td></tr> <tr><td>P9</td><td>-</td><td>PE</td></tr> </table>	DX10		All DX except DX10	P1	M1	White	P2	M2	Green	P3	M3	Blue	P4	TS1	Red	P5	TS2	Black	P6	-	M2	P7	-	TS1	P8	-	TS2	P9	-	PE
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HALL SENSOR OPTIONS																	
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P6	Hall C-																
P7	5V																
P8	0V																

Notes: All connectors shown are front view

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

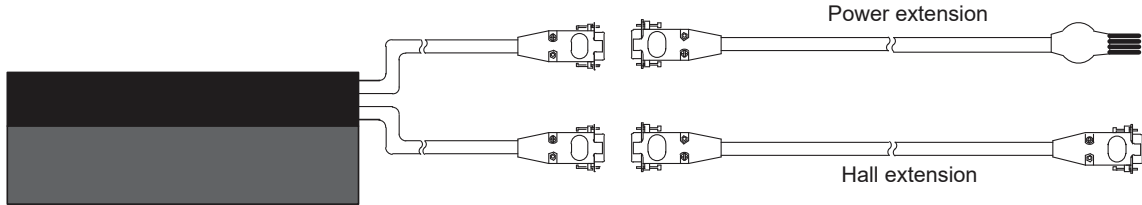
MODEL	THERMAL DEVICE TYPE	THERMOSTAT (NC) OPENS AT
DX10B	PT100	See Note 1
DX20B	PT100	See Note 1
DX30B	Thermostat	100°C
DX50B	Thermostat	100°C
DX65B	Thermostat	100°C
DX90B	Thermostat	100°C

- Programmable on temperature controller or analog inputs on motion controller.
- Recommended to set cut-off temperature to 100°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-□-□-□-□-□-9NF-HC-00



	Extension Cable	Part Number																								
Power Extension Cable		CBL_EXT_PWR_DX_X.X																								
		CBL_EXT_PWR_DX_CC_X.X																								
		CBL_EXT_PWR_DX10_X.X																								
		CBL_EXT_PWR_DX10_CC_X.X																								
Hall Sensor Extension Cable		CBL_EXT_HALL_DX_X.X																								
		CBL_EXT_HALL_DX_CC_X.X																								
		CBL_EXT_HALL_DIF_X.X																								
Encoder Extension Cable		CBL_EXT_REN00_X.X																								
		CBL_EXT_REN00A_X.X																								
	<table border="1"> <thead> <tr> <th>CABLE</th> <th>CABLE LENGTH (X.X)</th> </tr> </thead> <tbody> <tr> <td>00</td> <td>RGH41 Digital</td> </tr> <tr> <td>00A</td> <td>RGH41 Analog</td> </tr> <tr> <td>01</td> <td>RH200 Digital</td> </tr> <tr> <td>01B</td> <td>RH200 Analog</td> </tr> <tr> <td>05</td> <td>ATOM Ri Interface Digital</td> </tr> <tr> <td>05A</td> <td>ATOM Ri Interface Analog</td> </tr> </tbody> </table>	CABLE	CABLE LENGTH (X.X)	00	RGH41 Digital	00A	RGH41 Analog	01	RH200 Digital	01B	RH200 Analog	05	ATOM Ri Interface Digital	05A	ATOM Ri Interface Analog	<table border="1"> <thead> <tr> <th>CABLE LENGTH (X.X)</th> <th></th> </tr> </thead> <tbody> <tr> <td>0.5</td> <td>0.5 meter</td> </tr> <tr> <td>1.0</td> <td>1.0 meter</td> </tr> <tr> <td>2.0</td> <td>2.0 meter</td> </tr> <tr> <td>3.0</td> <td>3.0 meter (standard)</td> </tr> </tbody> </table>	CABLE LENGTH (X.X)		0.5	0.5 meter	1.0	1.0 meter	2.0	2.0 meter	3.0	3.0 meter (standard)
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	CBL_EXT_REN01_X.X																									
	CBL_EXT_REN01B_X.X																									
	CBL_EXT_REN05_X.X																									
	CBL_EXT_REN05A_X.X																									

Notes: 1. X.X is the length of the cable in meters 2. For customized cable length, contact PBA