

Aerotech

高性能 線性馬達



Aerotech 線性馬達

Aerotech 的U型無刷線性伺服馬達提供高速/高精度之運動特性。適用於機器人，線性致動，精密定位平台，光纖/光電設備對位與定位，工具機，半導體設備，電子製造，視覺系統，與許多工業自動化應用。Aerotech之線性馬達為直接驅動，並提供兩種構型 - U型軌道(U-Channel)與平板式(Flat)線性馬達。

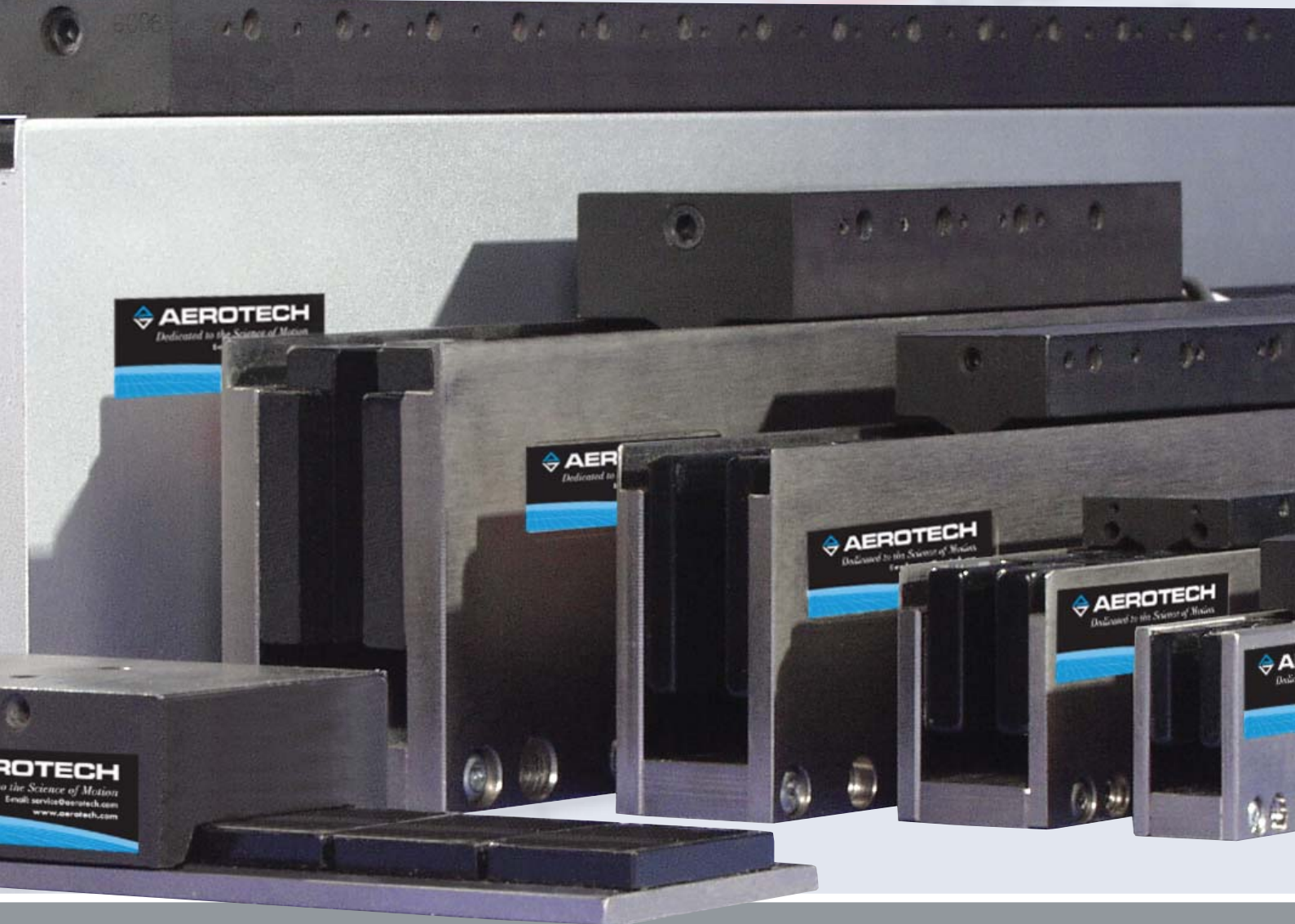
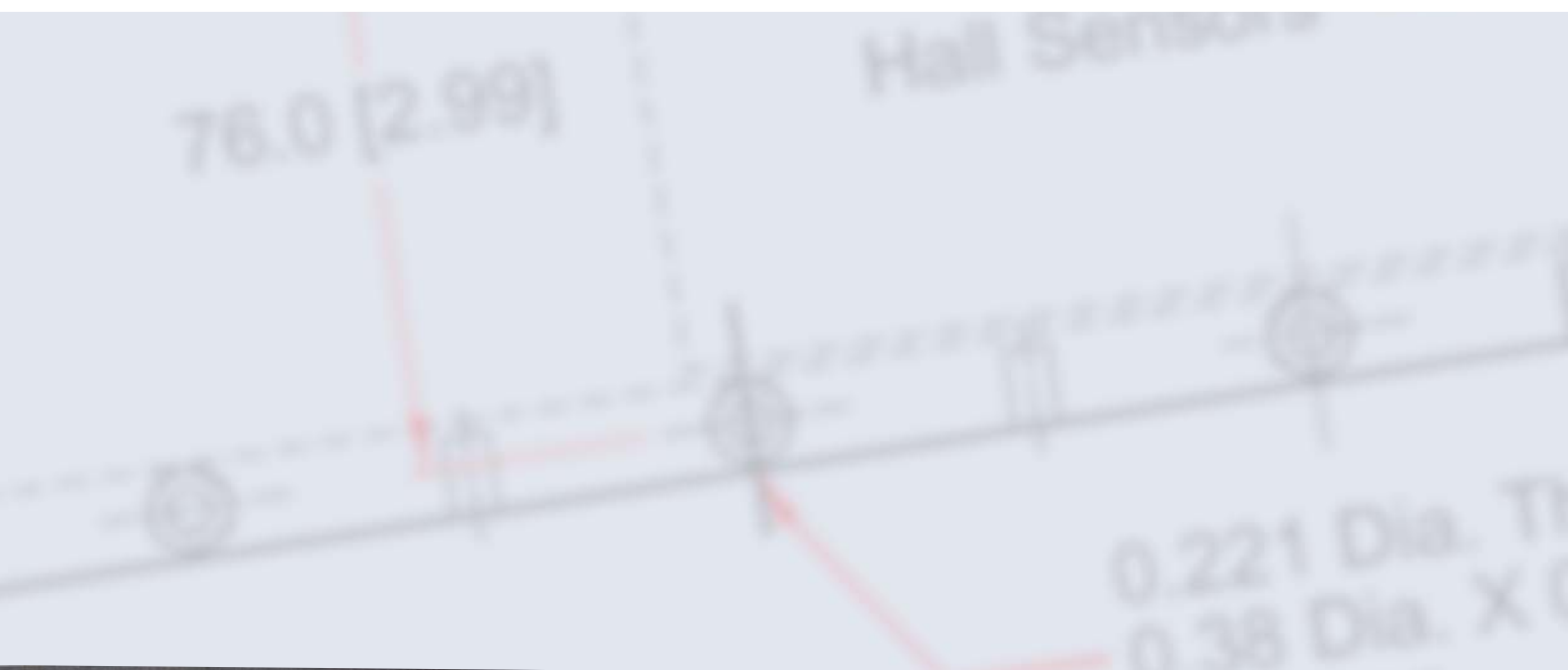
U型軌道設計包含：非接觸式動子線圈(Forcer Coil)，與U型稀土磁軌。此種設計去除了：背隙，纏繞，與其他與滾珠螺桿或齒輪傳動機構可能產生的保養問題。

平板式線性馬達包含：薄型，低成本之動子與稀土磁板。Aerotech之平板線性馬達包含無鐵心版本，可達到無頓轉(cogging)之極端平滑運動，同時維持緊密之速度與位置控制；與有鐵心版本，可達到更高的單位體積之出力。這種平板式定子磁板可適用於上述兩種動子。

非接觸式動子與定子可提供一種：完全不需保養的運動系統。Aerotech生產非常完整的線性馬達產品線，可提供您使用於各種工業自動化應用。

	Continuous Force (No Air) N (lb)	Continuous Force (20 psi) N (lb)	Peak Force N (lb)
BLMUC-79	18.3 (4.1)	31.4 (7.0)	125.4 (28.2)
BLMUC-95	23.0 (5.2)	40.5 (9.1)	161.9 (36.4)
BLMUC-111	30.6 (6.9)	46.9 (10.5)	187.6 (42.2)
BLMUC-143	39.8 (9.0)	58.0 (13.0)	231.8 (52.1)
BLMC-92	39.0 (8.8)	65.9 (14.8)	263.7 (59.3)
BLMC-142	68.2 (15.3)	105.5 (23.7)	422.1 (94.9)
BLMC-192	93.6 (21.0)	135.7 (30.5)	542.8 (122.0)
BLMC-267	108.3 (24.4)	161.4 (36.3)	645.6 (145.2)
BLM-142	110.5 (24.8)	173.2 (38.9)	692.7 (155.7)
BLM-203	153.3 (34.5)	251.6 (56.6)	1006.4 (226.3)
BLM-264	197.2 (44.3)	301.7 (67.8)	1206.6 (271.3)
BLM-325	230.7 (51.9)	332.2 (74.7)	1328.6 (298.7)
BLM-386	257.3 (57.8)	397.6 (89.4)	1590.4 (357.5)
BLMH-142	150.0 (33.7)	270.7 (60.9)	1082.7 (243.4)
BLMH-202	194.2 (43.7)	351.2 (79.0)	1404.9 (315.9)
BLMH-262	266.2 (59.9)	437.1 (98.3)	1748.6 (393.1)
BLMH-322	303.2 (68.2)	489.2 (110.0)	1956.7 (439.9)
BLMH-382	357.9 (80.5)	548.8 (123.4)	2195.0 (493.5)
BLMX-382	537 (121)	972 (218)	3887 (874)
BLMX-502	601 (135)	1063 (239)	4252 (956)
BLMFI-81	18.7 (4.2)	N/A	74.7 (16.8)
BLMFI-142	32.4 (7.3)	N/A	129.7 (29.2)
BLMFI-264	64.8 (14.6)	N/A	259.1 (58.2)
BLMFI-325	90.2 (20.3)	N/A	360.7 (81.1)
BLMFI-386	112.1 (25.2)	N/A	448.4 (100.8)
BLMFS-81	28.0 (6.3)	N/A	112.1 (25.2)
BLMFS-142	48.0 (10.8)	N/A	192.2 (43.2)
BLMFS-264	97.1 (21.8)	N/A	388.6 (87.4)
BLMFS-325	134.5 (30.2)	N/A	538.0 (121.0)
BLMFS-386	159.4 (35.8)	N/A	637.7 (143.4)
BLMFSS-142	174.8 (39.3)	323.4 (72.7)*	699.3 (157.2)
BLMFSS-262	282.3 (63.5)	522.3 (117.4)*	1129.2 (253.9)
BLMFSS-382	376.8 (84.7)	697.1 (156.7)*	1507.2 (338.8)

* Water cooling



BLMUC 系列

BLMUC系列線性馬達為微型之U型線性馬達，截面積僅有52.0 mm x 20.8。設計理念是為了提供微型尺寸下提供極大的出力。BLMUC使用於小負載/嚴苛空間限制之應用如：高速取放設備，與其他低負載高加速度之物件搬運。

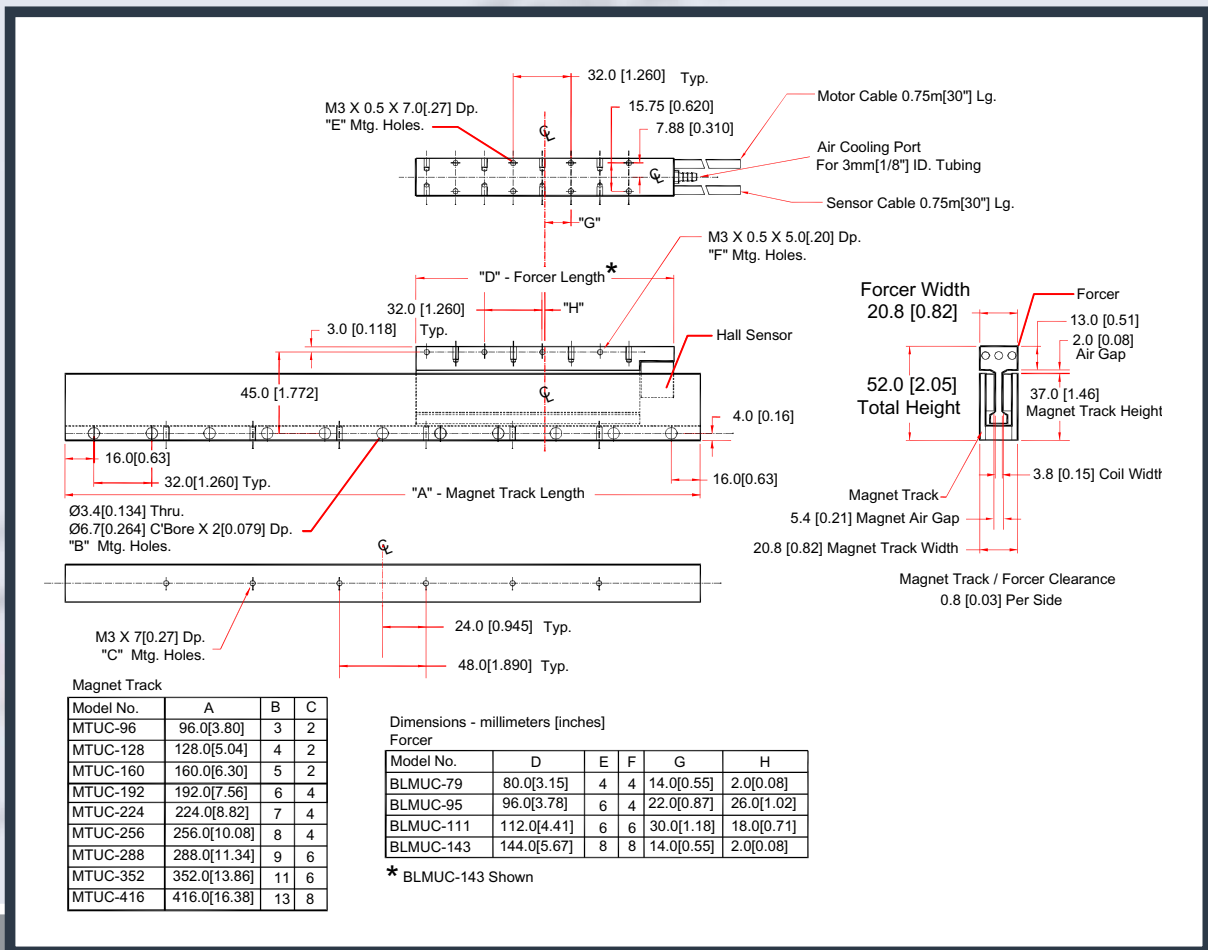
Motor Model	Units	BLMUC-79	BLMUC-95	BLMUC-111	BLMUC-143
Performance Specifications^(1,5)					
Continuous Force, 1.4 bar (20 psi) ⁽²⁾	N (lb)	31.4 (7.0)	40.5 (9.1)	46.9 (10.5)	58.0 (13.0)
Continuous Force, No Air ⁽²⁾	N (lb)	18.3 (4.1)	23.0 (5.2)	30.6 (6.9)	39.8 (9.0)
Peak Force ⁽³⁾	N (lb)	125.4 (28.2)	161.9 (36.4)	187.6 (42.2)	231.8 (52.1)
Electrical Specifications⁽⁵⁾					
Winding Designation		-A	-A	-A	-A
BEMF Constant (line-line, max)	V/m/s (V/in/s)	6.80 (0.17)	9.00 (0.23)	11.35 (0.29)	15.90 (0.40)
Continuous Current, 1.4 bar (20 psi) ⁽²⁾	Amp _{pk}	5.30	5.17	4.75	4.19
	Amp _{rms}	3.75	3.66	3.36	2.96
Continuous Current, No Air ⁽²⁾	Amp _{pk}	3.10	2.94	3.10	2.88
	Amp _{rms}	2.19	2.08	2.19	2.04
Peak Current, Stall ⁽³⁾	Amp _{pk}	21.20	20.68	19.00	16.76
	Amp _{rms}	14.99	14.62	13.44	11.85
Force Constant, Sine Drive ^(4,8)	N/Amp _{pk} (lb/Amp _{pk})	5.92 (1.33)	7.83 (1.76)	9.87 (2.22)	13.83 (3.11)
	N/Amp _{rms} (lb/Amp _{rms})	8.37 (1.88)	11.07 (2.49)	13.96 (3.14)	19.56 (4.40)
Motor Constant ^(2,4)	N/√W (lb/√W)	2.89 (0.65)	3.35 (0.75)	3.78 (0.85)	4.53 (1.02)
Resistance, 25°C, Line-Line	ohms	4.0	5.2	6.5	8.9
Inductance, Line-Line	mH	0.51	0.70	0.87	1.10
Thermal Resistance, 1.4 bar (20 psi)	°C/W	0.85	0.69	0.65	0.61
Thermal Resistance, No Air	°C/W	2.48	2.12	1.52	1.29
Maximum Bus Voltage	VDC	160	160	160	160
Mechanical Specifications					
Air Flow, 20 psi	m ³ /s	1.5x10 ⁻³	1.5x10 ⁻³	1.5x10 ⁻³	1.5x10 ⁻³
	SCFM	3.12	3.15	3.22	3.12
Coil Weight	kg (lb)	0.10 (0.22)	0.12 (0.26)	0.14 (0.31)	0.20 (0.44)
Coil Length	mm (in)	80.0 (3.15)	96.0 (3.78)	112.0 (4.41)	144.0 (5.61)
Heat Sink	mm (in)	250x250x25 (10x10x1)	250x250x25 (10x10x1)	250x250x25 (10x10x1)	250x250x25 (10x10x1)
Magnet Track Weight	kg/m (lb/ft)	4.04 (2.71)	4.04 (2.71)	4.04 (2.71)	4.04 (2.71)
Magnetic Pole Pitch	mm (in)	16.00 (0.63)	16.00 (0.63)	16.00 (0.63)	16.00 (0.63)

Notes:

1. Performance is dependent upon heat sink configuration, system cooling conditions, and ambient temperature.
2. Values shown @ 100°C rise above a 25°C ambient temperature, with motor mounted to the specified aluminum heat sink.
3. Peak force assumes correct rms current; consult Aerotech.
4. Force constant and motor constant specified at stall.
5. All performance and electrical specifications ±10%.
6. Maximum winding temperature is 125°C.
7. Ambient operating temperature range 0°C - 25°C. Consult Aerotech for performance in elevated ambient temperatures.
8. All Aerotech amplifiers are rated A_{pk}; use torque constant in N-m/A_{pk} when sizing.



Aerotech BLMUC
線性馬達



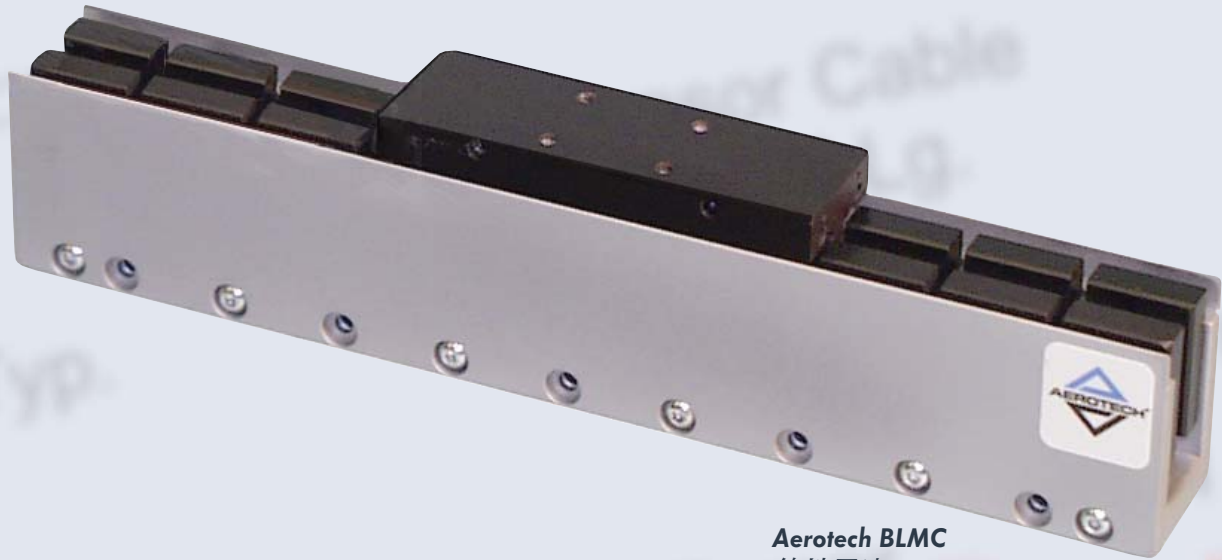
BLMC 系列

BLMC系列線性馬達為小型之U型線性馬達，截面積僅有57.2 mm x 31.8 mm。這個小型的動子線圈包含霍爾元件與熱感測器，並以硬化陶瓷環氧樹脂製成。此無鐵心設計去除了渦電流損失(Eddy-current losses)，此渦電流損失通常是造成速度與額外的熱產生之來源。若須得到最大的RMS推力，使用者可選擇氣冷(air cooling)選項。雖然BLMC線性馬達已經可提供極大的出力，使用者更可選擇強力磁鐵(high-power magnets)以額外提供更大的出力。

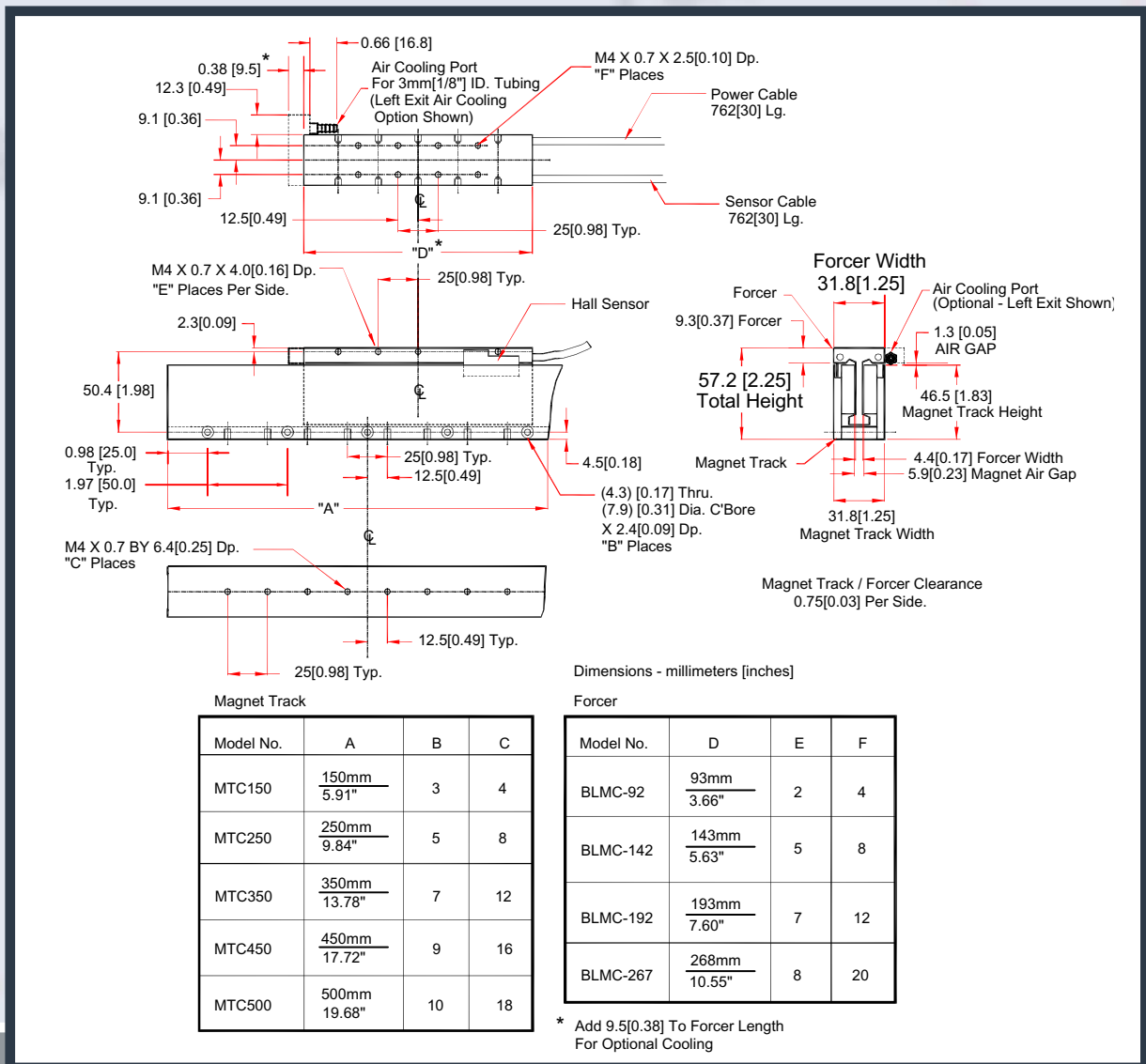
Motor Model	Units	BLMC-92	BLMC-142	BLMC-192	BLMC-267
Performance Specifications^(1,5)					
Continuous Force, 1.4 bar (20 psi) ⁽²⁾	N (lb)	65.9 (14.8)	105.5 (23.7)	135.7 (30.5)	161.4 (36.3)
Continuous Force, No Air ⁽²⁾	N (lb)	39.0 (8.8)	68.2 (15.3)	93.6 (21.0)	108.3 (24.4)
Peak Force ⁽³⁾	N (lb)	263.7 (59.3)	422.1 (94.9)	542.8 (122.0)	645.6 (145.2)
Electrical Specifications⁽⁵⁾					
Winding Designation		-A	-A	-A	-A
BEMF Constant (Line-Line, Max)	V/m/s (V/in/s)	9.97 (0.25)	18.66 (0.47)	26.89 (0.68)	36.10 (0.92)
Continuous Current, 1.4 bar (20 psi) ⁽²⁾	Amp _{pk}	7.60	6.50	5.80	5.14
	Amp _{rms}	5.37	4.60	4.10	3.63
Continuous Current, No Air ⁽²⁾	Amp _{pk}	4.50	4.20	4.00	3.45
	Amp _{rms}	3.18	2.97	2.83	2.44
Peak Current, Stall ⁽³⁾	Amp _{pk}	30.40	26.00	23.20	20.56
	Amp _{rms}	21.50	18.38	16.40	14.54
Force Constant, Sine Drive ^(4,8)	N/Amp _{pk} (lb/Amp _{pk})	8.67 (1.95)	16.24 (3.65)	23.40 (5.26)	31.40 (7.06)
	N/Amp _{rms} (lb/Amp _{rms})	12.27 (2.76)	22.96 (5.16)	33.09 (7.44)	44.41 (9.98)
Motor Constant ^(2,4)	N/√W (lb/√W)	4.97 (1.12)	7.23 (1.63)	9.03 (2.03)	10.10 (2.27)
Resistance, 25°C (Line-Line)	ohms	2.9	4.8	6.4	9.2
Inductance (Line-Line)	mH	0.83	1.33	1.90	3.40
Thermal Resistance, 1.4 bar (20 psi)	°C/W	0.57	0.47	0.44	0.39
Thermal Resistance (No Cooling)	°C/W	1.62	1.12	0.93	0.87
Maximum Bus Voltage	VDC	340	340	340	340
Mechanical Specifications					
Air Flow, 20 psi	m ³ /s	1.3x10 ⁻³	1.7x10 ⁻³	1.4x10 ⁻³	1.5x10 ⁻³
	SCFM	2.9	3.6	2.9	3.2
Coil Weight	kg (lb)	0.16 (0.35)	0.26 (0.57)	0.34 (0.75)	0.52 (1.14)
Coil Length	mm (in)	93.0 (3.66)	143.0 (5.63)	193.0 (7.60)	268.0 (10.55)
Heat Sink	mm (in)	250x250x25 (10x10x1)	250x250x25 (10x10x1)	250x250x25 (10x10x1)	250x250x25 (10x10x1)
Magnet Track Weight	kg/m (lb/ft)	9.06 (6.08)	9.06 (6.08)	9.06 (6.08)	9.06 (6.08)
Magnetic Pole Pitch	mm (in)	25.00 (0.98)	25.00 (0.98)	25.00 (0.98)	25.00 (0.98)

Notes:

1. Performance is dependent upon heat sink configuration, system cooling conditions, and ambient temperature.
2. Values shown @ 100°C rise above a 25°C ambient temperature, with motor mounted to the specified aluminum heat sink.
3. Peak force assumes correct rms current; consult Aerotech.
4. Force constant and motor constant specified at stall.
5. All performance and electrical specifications ±10%.
6. Maximum winding temperature is 125°C.
7. Ambient operating temperature range 0°C - 25°C. Consult Aerotech for performance in elevated ambient temperatures.
8. All Aerotech amplifiers are rated A_{pk}; use torque constant in N-m/A_{pk} when sizing.



Aerotech BLMC
線性馬達



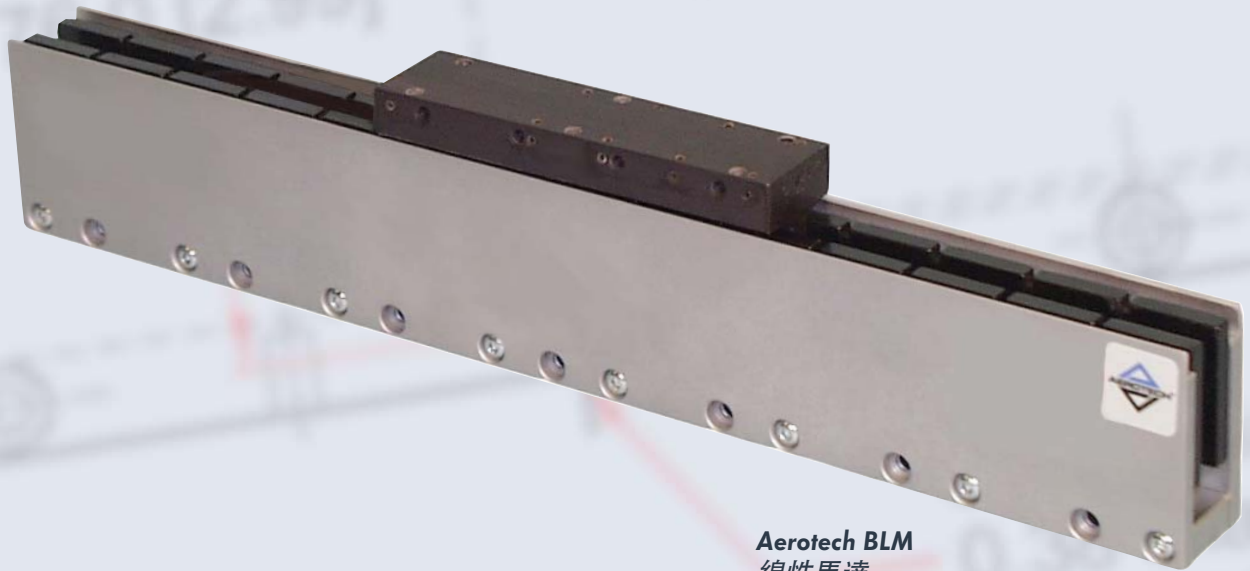
BLM 系列

Aerotech BLM系列線性馬達之截面積為86.4 mm x 34.3 mm, 已於各種產業證明其可提供高精度與高產能。BLM系列無鐵心線性馬達為無頓轉, 無磁吸力之線性馬達, 可提供極端平滑運動與非常緊密之速度與位置控制。這類型之線性馬達可提供極高等級之定位解析度與定位精度。BLM線性馬達可很簡易的對位組裝, 並保持磁場範圍包負於定子磁軌內, 以確保無渦電流損失。行程方面, 磁軌可組裝至任何行程長度。因不產生碎屑與粒子, 此類線性馬達也適用於無塵室應用。

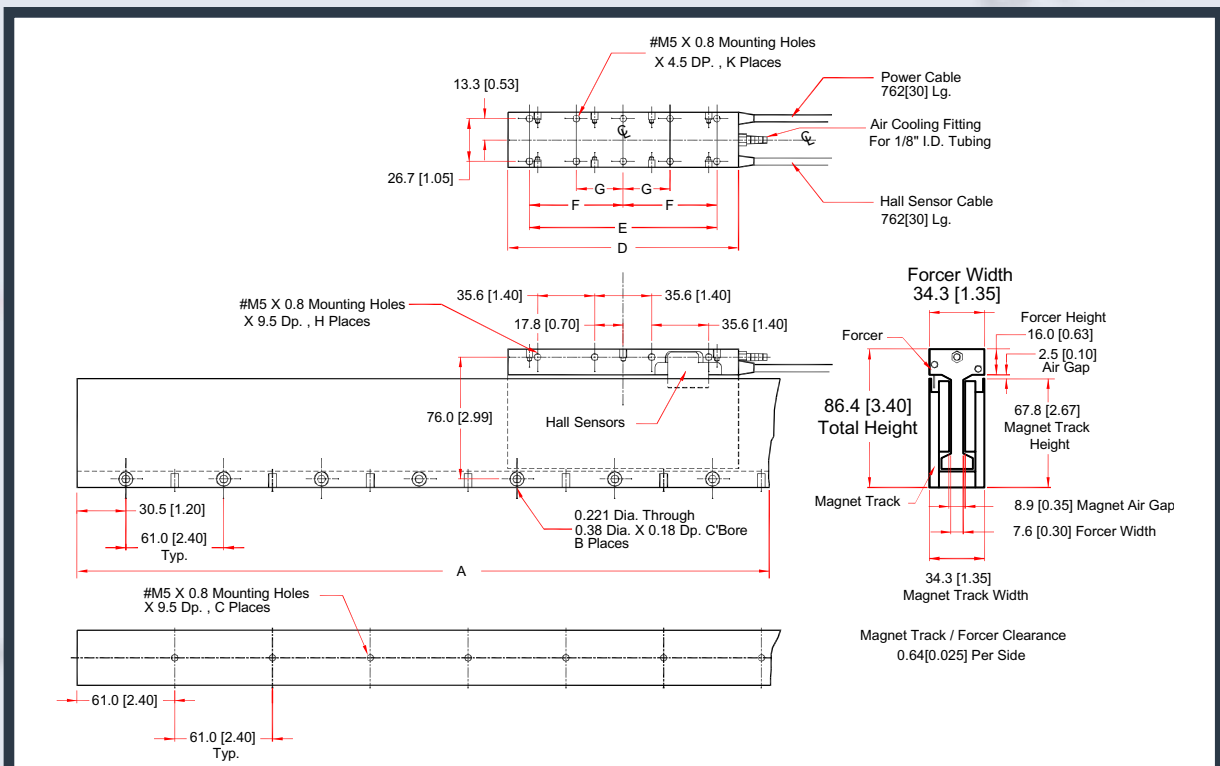
Motor Model (assumes -P magnet track)	Units	BLM-142		BLM-203		BLM-264		BLM-325		BLM-386	
Performance Specifications^(1,5)											
Continuous Force, 1.4 bar (20 psi) ⁽²⁾	N (lb)	173.2 (38.9)		251.6 (56.6)		301.7 (67.8)		332.2 (74.7)		397.6 (89.4)	
Continuous Force, No Air ⁽²⁾	N (lb)	110.5 (24.8)		153.3 (34.5)		197.2 (44.3)		230.7 (51.9)		257.3 (57.8)	
Peak Force ⁽³⁾	N (lb)	692.7 (155.7)		1006.4 (226.3)		1206.6 (271.3)		1328.6 (298.7)		1590.4 (357.5)	
Electrical Specifications⁽⁵⁾											
Winding Designation		-A		-B (opt)		-A		-B (opt)		-A	
BEMF Constant (Line-Line, Max)	V/m/s (V/in/s)	40.96 (1.04)	20.48 (0.52)	33.24 (0.84)	66.49 (1.69)	44.46 (1.13)	88.91 (2.26)	53.03 (1.35)	106.06 (2.69)	67.21 (1.71)	134.42 (3.41)
Continuous Current, 1.4 bar, 20 psi ⁽²⁾	Amp _{pk} (Amp _{rms})	4.86 (3.44)	9.72 (6.87)	8.70 (6.15)	4.35 (3.08)	7.80 (5.52)	3.90 (2.76)	7.20 (5.09)	3.60 (2.55)	6.80 (4.81)	3.40 (2.40)
Continuous Current, No Air ⁽²⁾	Amp _{pk} (Amp _{rms})	3.10 (2.19)	6.20 (4.38)	5.30 (3.75)	2.65 (1.87)	5.10 (3.61)	2.55 (1.80)	5.00 (3.54)	2.50 (1.77)	4.40 (3.11)	2.20 (1.56)
Peak Current, Stall ⁽³⁾	Amp _{pk} (Amp _{rms})	19.44 (13.75)	38.88 (27.49)	34.80 (24.61)	17.40 (12.30)	31.20 (22.06)	15.60 (11.03)	28.80 (20.36)	14.40 (10.18)	27.20 (19.23)	13.60 (9.62)
Force Constant, Sine Drive ^(4,8)	N/Amp _{pk} (lb/Amp _{pk})	35.63 (8.01)	17.82 (4.01)	28.92 (6.50)	57.84 (13.00)	38.67 (8.69)	77.35 (17.39)	46.13 (10.37)	92.27 (20.74)	58.47 (13.15)	116.94 (26.29)
	N/Amp _{rms} (lb/Amp _{rms})	50.39 (11.33)	25.20 (5.66)	40.90 (9.19)	81.80 (18.39)	54.69 (12.30)	109.39 (24.59)	65.24 (14.67)	130.48 (29.34)	82.69 (18.59)	165.38 (37.18)
Motor Constant ^(2,4)	N/√W (lb/√W)	10.53 (2.37)		14.11 (3.17)		16.39 (3.69)		17.66 (3.97)		20.17 (4.54)	
Resistance, 25°C (Line-Line)	ohms	10.9	2.7	4.0	16.0	5.3	21.2	6.5	26.0	8.0	32.0
Inductance (Line-Line)	mH	8.70	2.18	3.20	12.80	4.20	16.80	5.20	20.80	6.20	24.80
Thermal Resistance, 1.4 bar, 20 psi	°C/W	0.37		0.31		0.30		0.28		0.26	
Thermal Resistance, No Cooling	°C/W	0.91		0.85		0.69		0.59		0.61	
Maximum Bus Voltage	VDC	340		340		340		340		340	
Mechanical Specifications											
Air Flow, 20 psi	m ³ /s SCFM	1.7x10 ⁻³ 3.5		1.5x10 ⁻³ 3.2		1.6x10 ⁻³ 3.3		1.6x10 ⁻³ 3.3		1.6x10 ⁻³ 3.4	
Coil Weight	kg (lb)	0.60 (1.32)		0.90 (1.98)		1.10 (2.42)		1.40 (3.08)		1.70 (3.74)	
Coil Length	mm (in)	143.8 (5.66)		204.7 (8.06)		265.7 (10.46)		326.6 (12.86)		387.6 (15.26)	
Heat Sink	mm (in)	250x250x25 (10x10x1)		250x250x25 (10x10x1)		250x250x25 (10x10x1)		250x400x25 (10x16x1)		250x400x25 (10x16x1)	
Magnet Track Weight	kg/m (lb/ft)	10.76 (7.22)		10.76 (7.22)		10.76 (7.22)		10.76 (7.22)		10.76 (7.22)	
Magnetic Pole Pitch	mm (in)	30.48 (1.20)		30.48 (1.20)		30.48 (1.20)		30.48 (1.20)		30.48 (1.20)	

Notes:

- Performance is dependent upon heat sink configuration, system cooling conditions, and ambient temperature.
- Values shown @ 100°C rise above a 25°C ambient temperature, with motor mounted to the specified aluminum heat sink.
- Peak force assumes correct rms current; consult Aerotech.
- Force constant and motor constant specified at stall.
- All performance and electrical specifications ±10%.
- Maximum winding temperature is 125°C.
- Ambient operating temperature range 0°C - 25°C. Consult Aerotech for performance in elevated ambient temperatures.
- All Aerotech amplifiers are rated A_{pk}; use torque constant in N-m/A_{pk} when sizing.



Aerotech BLM
線性馬達



Magnet Track			
Model No.	A	B	C
MT240	243.8 9.6"	4	3
MT300	304.8 12.0"	5	4
MT360	365.8 14.4"	6	5
MT420	426.7 16.8"	7	6
MT480	487.7 19.2"	8	7
MT600	609.6 24.0"	10	9

Dimensions - millimeters[inches]							
Forcer							
Model No.	D	E	F	G	H	K	
BLM-142	143.8 5.68"	116.8 4.60"	58.4 2.30"	NA	8	6	
BLM-203	204.7 8.06"	177.8 7.00"	88.9 3.50"	NA	8	6	
BLM-264	265.7 10.46"	238.8 9.40"	119.4 4.70"	NA	12	6	
BLM-325	326.6 12.86"	299.7 11.80"	149.9 5.90"	82.7 3.26"	16	10	
BLM-386	387.6 15.26"	360.6 14.20"	180.3 7.10"	96.5 3.80"	18	10	

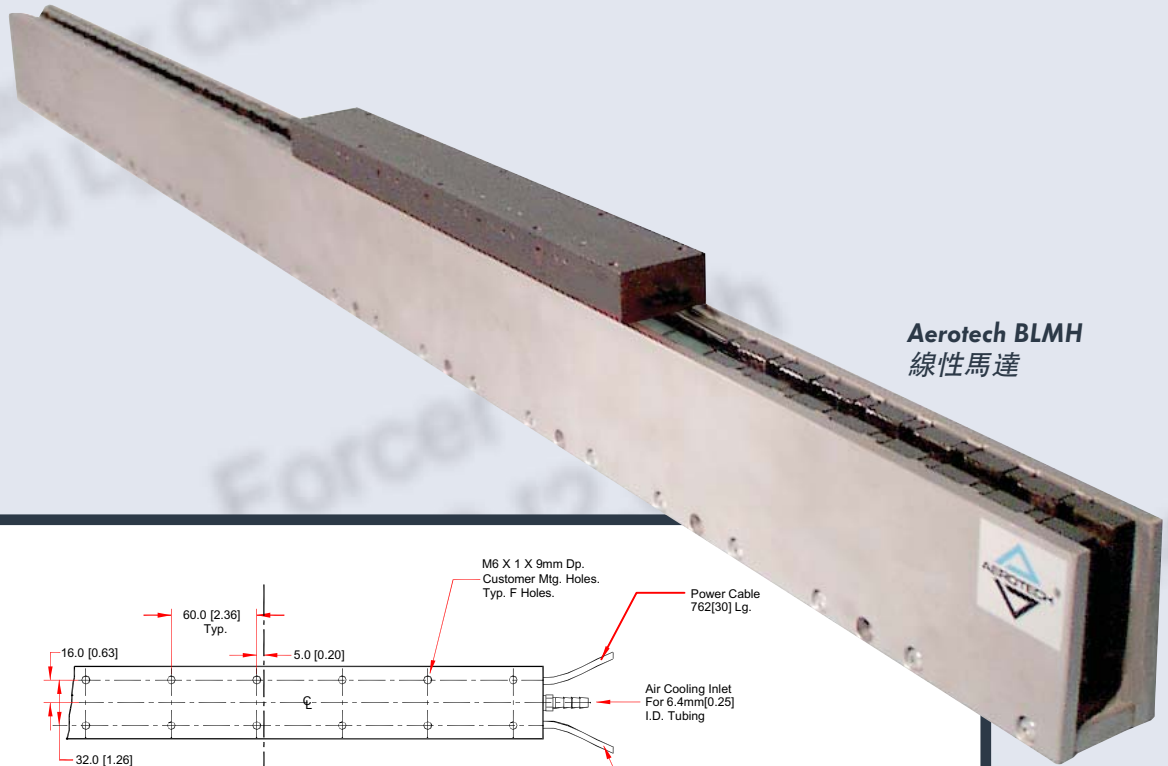
BLMH 系列

BLMH系列U型無刷線性馬達，相較於其他不同供應商之線性馬達，於同樣外觀尺寸條件下，BLMH提供超過他牌70%之連續推力。BLMH系列線性馬達提供高性能磁性線圈，可提供548.8 N (123.4 lb)之連續推力，與2195 N (493.5 lb)之峰值推力。這種極端的高性能還能夠以特殊之強力磁鐵選項來額外增加推力，並降低熱能產生。

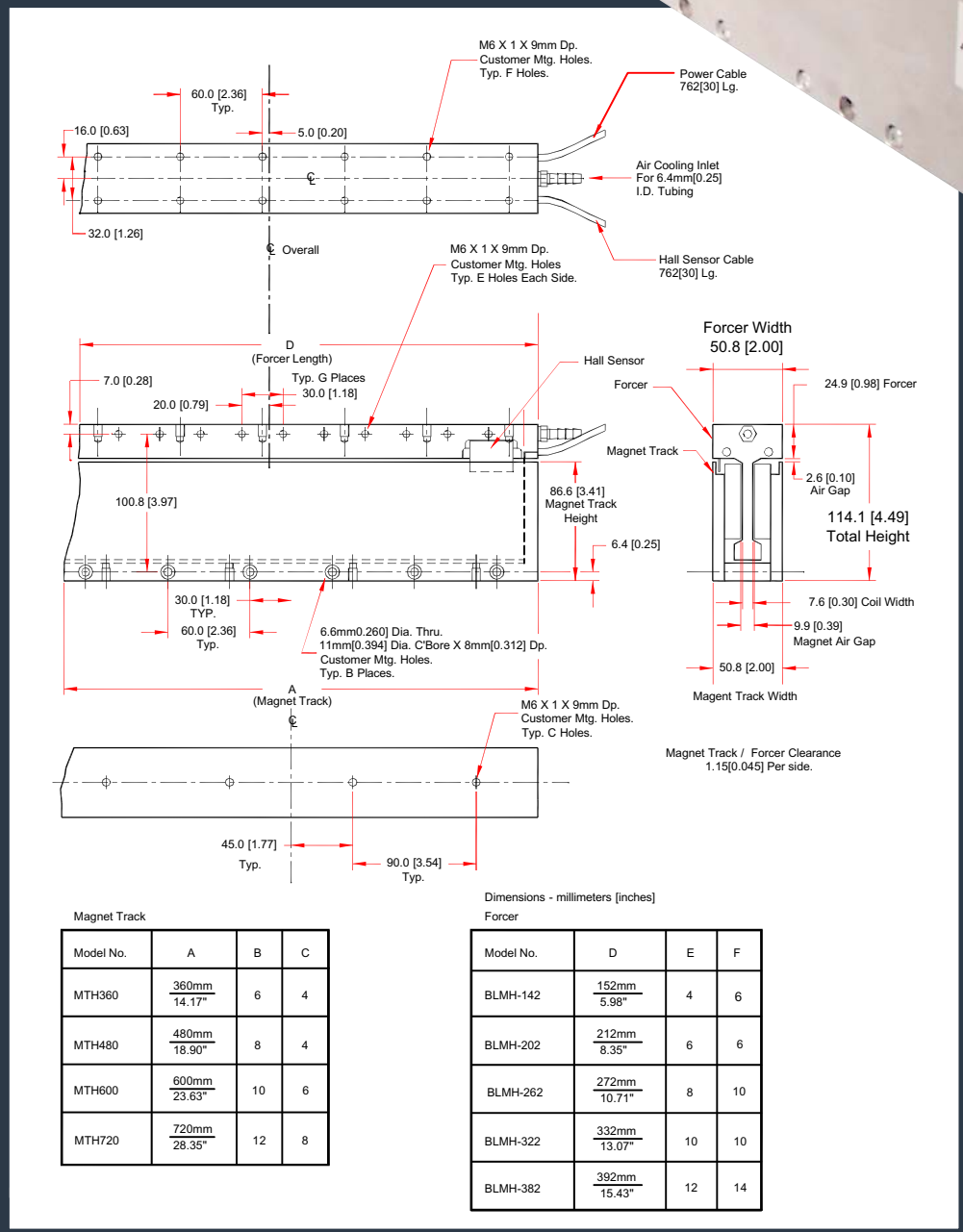
Motor Model (assumes -S magnet track)	Units	BLMH-142		BLMH-202		BLMH-262		BLMH-322		BLMH-382	
Performance Specifications^(1,5)											
Continuous Force, 1.4 bar, 20 psi ⁽²⁾	N (lb)	270.7 (60.9)		351.2 (79.0)		437.1 (98.3)		489.2 (110.0)		548.8 (123.4)	
Continuous Force, No Air ⁽²⁾	N (lb)	150.0 (33.7)		194.2 (43.7)		266.2 (59.9)		303.2 (68.2)		357.9 (80.5)	
Peak Force ⁽³⁾	N (lb)	1082.7 (243.4)		1404.9 (315.9)		1748.6 (393.1)		1956.7 (439.9)		2195.0 (493.5)	
Electrical Specifications⁽⁵⁾											
Winding Designation		-A	-B (opt)	-A	-B (opt)	-A	-B (opt)	-A	-B (opt)	-A	-B (opt)
BEMF Constant (Line-Line)	V/m/s (V/in/s)	32.11 (0.82)	64.22 (1.63)	47.50 (1.21)	95.00 (2.41)	64.42 (1.64)	128.85 (3.27)	79.20 (2.01)	158.40 (4.02)	45.71 (1.16)	91.42 (2.32)
Continuous Current, 1.4 bar, 20 psi ⁽²⁾	Amp _{pk} (Amp _{rms})	9.69 (6.85)	4.85 (3.43)	8.50 (6.01)	4.25 (3.01)	7.80 (5.52)	3.90 (2.76)	7.10 (5.02)	3.55 (2.51)	13.80 (9.76)	6.90 (4.88)
Continuous Current, No Air ⁽²⁾	Amp _{pk} (Amp _{rms})	5.37 (3.80)	2.69 (1.90)	4.70 (3.32)	2.35 (1.66)	4.75 (3.36)	2.38 (1.68)	4.40 (3.11)	2.20 (1.56)	9.00 (6.36)	4.50 (3.18)
Peak Current, Stall ⁽³⁾	Amp _{pk} (Amp _{rms})	38.76 (27.41)	19.38 (13.70)	34.00 (24.04)	17.00 (12.02)	31.20 (22.06)	15.60 (11.03)	28.40 (20.08)	14.20 (10.04)	55.20 (39.03)	27.60 (19.52)
Force Constant, Sine Drive ^(4,8)	N/Amp _{pk} (lb/Amp _{pk})	27.93 (6.28)	55.87 (12.56)	41.32 (9.29)	82.64 (18.58)	56.04 (12.60)	112.09 (25.20)	68.90 (15.49)	137.80 (30.98)	39.77 (8.94)	79.53 (17.88)
	N/Amp _{rms} (lb/Amp _{rms})	39.50 (8.88)	79.01 (17.76)	58.44 (13.14)	116.88 (26.28)	79.26 (17.82)	158.52 (35.64)	97.44 (21.91)	194.88 (43.81)	56.24 (12.64)	112.47 (25.29)
Motor Constant ^(2,4)	N/√W (lb/√W)	14.17 (3.19)		17.20 (3.87)		20.24 (4.55)		22.29 (5.01)		23.19 (5.21)	
Resistance, 25°C, Line-Line	ohms	3.7	14.8	5.5	22.0	7.3	29.2	9.1	36.4	2.8	11.2
Inductance, Line-Line	mH	2.40	9.60	3.80	15.20	4.60	18.40	6.00	24.00	1.80	7.20
Thermal Resistance, 1.4 bar, 20 psi	°C/W	0.27		0.24		0.21		0.21		0.18	
Thermal Resistance, No Cooling	°C/W	0.89		0.78		0.58		0.54		0.42	
Maximum Bus Voltage	VDC	340		340		340		340		340	
Mechanical Specifications											
Air Flow, 20 psi	m ³ /s SCFM	2.5x10 ⁻³ 5.3		2.8x10 ⁻³ 5.9		2.8x10 ⁻³ 5.9		2.9x10 ⁻³ 6.2		2.7x10 ⁻³ 5.8	
Coil Weight	kg (lb)	1.10 (2.42)		1.60 (3.52)		2.10 (4.62)		2.60 (5.72)		3.10 (6.82)	
Coil Length	mm (in)	142.0 (5.59)		202.0 (7.95)		262.0 (10.31)		322.0 (12.68)		382.0 (15.04)	
Heat Sink	mm (in)	250x250x25 (10x10x1)		250x250x25 (10x10x1)		250x250x25 (10x10x1)		250x400x25 (10x16x1)		250x400x25 (10x16x1)	
Magnet Track Weight	kg/m (lb/ft)	23.30 (15.62)									
Magnetic Pole Pitch	mm (in)	30.00 (1.18)									

Notes:

- Performance is dependent upon heat sink configuration, system cooling conditions, and ambient temperature.
- Values shown @ 100°C rise above a 25°C ambient temperature, with motor mounted to the specified aluminum heat sink.
- Peak force assumes correct rms current; consult Aerotech.
- Force constant and motor constant specified at stall.
- All performance and electrical specifications ±10%.
- Maximum winding temperature is 125°C.
- Ambient operating temperature range 0°C - 25°C. Consult Aerotech for performance in elevated ambient temperatures.
- All Aerotech amplifiers are rated A_{pk}; use torque constant in N-m/A_{pk} when sizing.



Aerotech BLMH
線性馬達



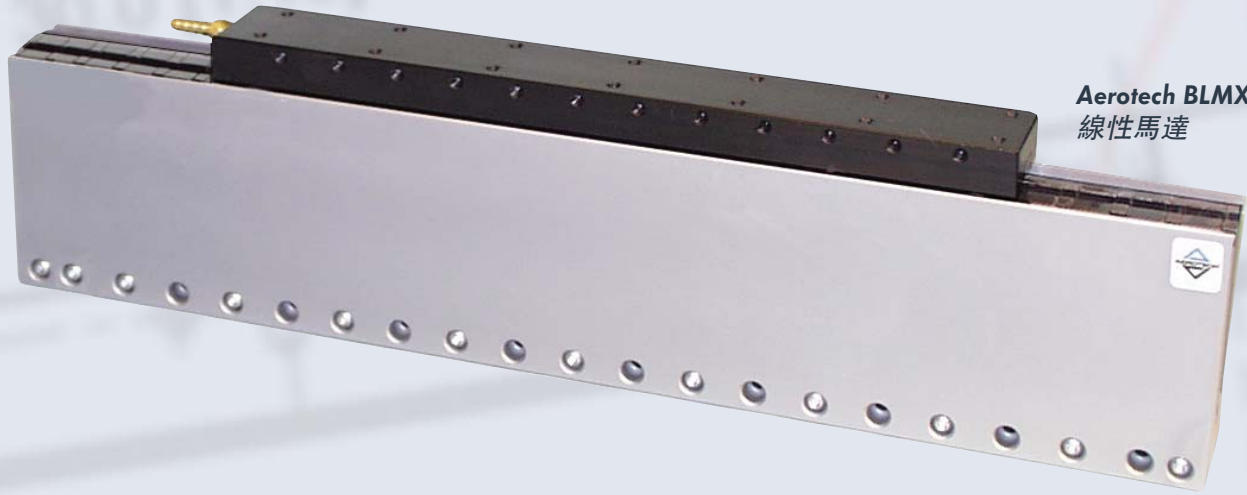
BLMX 系列

BLMX系列U型無刷線性馬達，相較於其他不同供應商之線性馬達，於同樣外觀尺寸條件下，BLMX提供超過他牌49%之連續推力。BLMX的動子線圈包含霍爾元件與熱感測器，並以硬化陶瓷環氧樹脂製成。此無鐵心設計去除了渦電流損失，因而額外提高了速度上線並降低熱產生。BLMX可使用Aerotech無刷驅動器與控制器驅動以達到一完整運動系統。

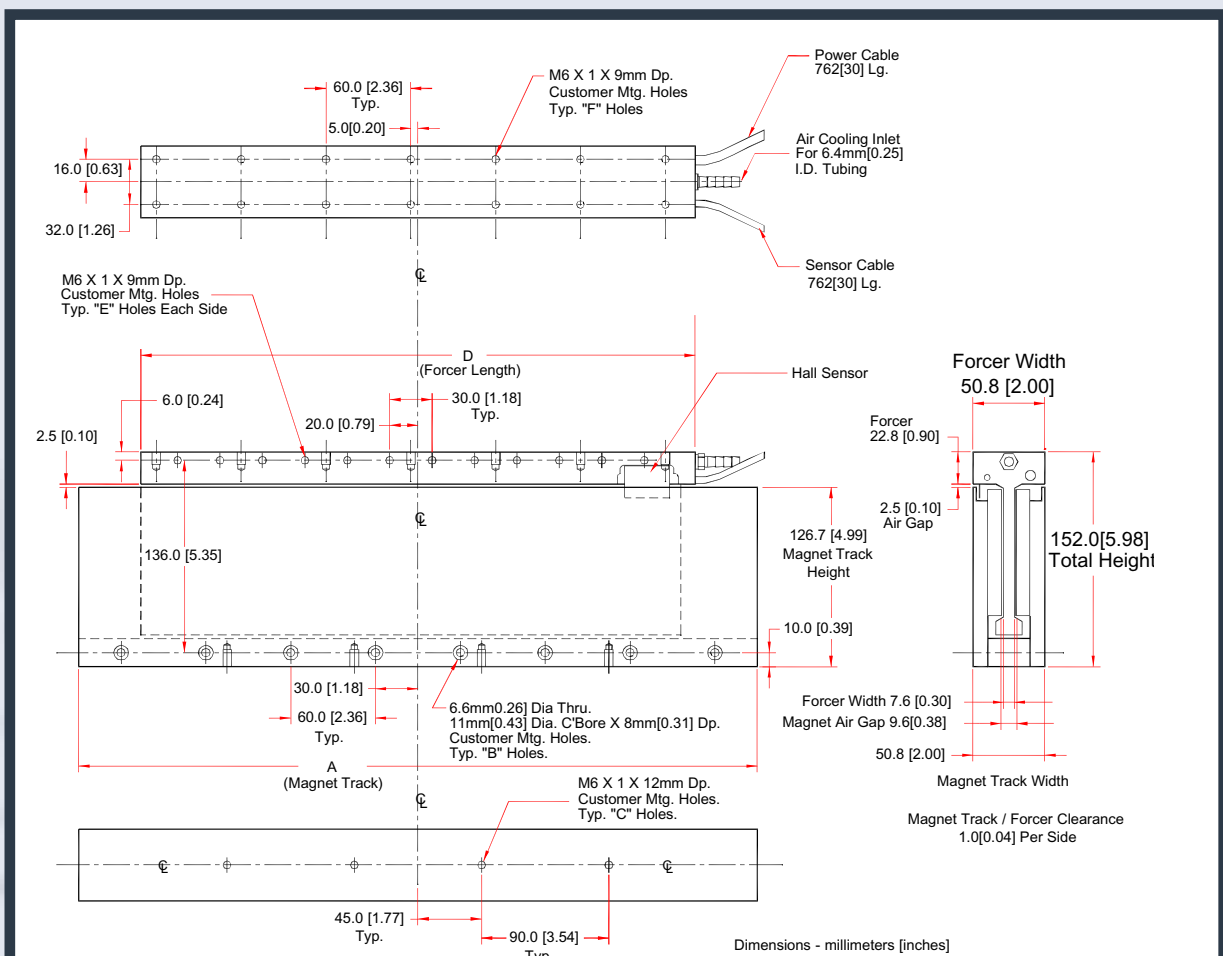
Motor Model	Units	BLMX-382		BLMX-502	
Performance Specifications^(1,5)					
Continuous Force, 1.4 bar, 20 psi ⁽²⁾	N (lb)	972 (218)		1063 (239)	
Continuous Force, No Air ⁽²⁾	N (lb)	537 (121)		601 (135)	
Peak Force ⁽²⁾	N (lb)	3887 (874)		4252 (956)	
Electrical Specifications⁽⁵⁾					
Winding Designation		-A	-B (opt)	-A	-B (opt)
BEMF Constant (Line-Line)	V/m/s (V/in/s)	86.26 (2.19)	172.52 (4.38)	109.59 (2.78)	54.79 (1.39)
Continuous Current, 1.4 bar, 20 psi ⁽²⁾	Amp _{pk} (Amp _{rms})	12.95 (9.16)	6.48 (4.58)	11.15 (7.88)	22.30 (15.77)
Continuous Current, No Air ⁽²⁾	Amp _{pk} (Amp _{rms})	7.15 (5.06)	3.58 (2.53)	6.30 (4.45)	12.60 (8.91)
Peak Current, Stall ⁽³⁾	Amp _{pk} (Amp _{rms})	51.80 (36.63)	25.90 (18.31)	44.60 (31.54)	89.20 (63.08)
Force Constant, Sine Drive ^(4,8)	N/Amp _{pk} (lb/Amp _{pk})	75.04 (16.87)	150.09 (33.74)	95.33 (21.43)	47.67 (10.72)
	N/Amp _{rms} (lb/Amp _{rms})	106.13 (23.86)	212.25 (47.72)	134.82 (30.31)	67.41 (15.16)
Motor Constant ^(2,4)	N/√W (lb/√W)	39.72 (8.93)		46.23 (10.39)	
Resistance, 25°C (Line-Line)	ohms	3.4	13.6	4.5	1.1
Inductance (Line-Line)	mH	3.00	12.00	4.00	1.00
Thermal Resistance, 1.4 bar, 20 psi	°C/W	0.12		0.12	
Thermal Resistance, No Cooling	°C/W	0.40		0.39	
Maximum Bus Voltage	VDC	340		340	
Mechanical Specifications					
Air Flow, 20 psi	m ³ /s SCFM	5.4x10 ⁻³ 11.5		5.6x10 ⁻³ 11.8	
Coil Weight	kg (lb)	3.40 (7.48)		4.45 (9.79)	
Coil Length	mm (in)	382.0 (15.04)		502.0 (19.76)	
Heat Sink	mm (in)	250x400x25 (10x16x1)		250x500x25 (10x20x1)	
Magnet Track Weight	kg/m (lb/ft)	37.26 (24.99)		37.26 (24.99)	
Magnetic Pole Pitch	mm (in)	30.00 (1.18)		30.00 (1.18)	

Notes:

- Performance is dependent upon heat sink configuration, system cooling conditions, and ambient temperature.
- Values shown @ 65°C rise above a 25°C ambient temperature, with motor mounted to the specified aluminum heat sink.
- Peak force assumes correct rms current; consult Aerotech.
- Force constant and motor constant specified at stall.
- All performance and electrical specifications ±10%.
- Maximum winding temperature is 90°C.
- Ambient operating temperature range 0°C - 25°C. Consult Aerotech for performance in elevated ambient temperatures.
- All Aerotech amplifiers are rated A_{pk}; use torque constant in N-m/A_{pk} when sizing.



Aerotech BLMX
線性馬達



Magnet Track

Model No.	A	B	C
MTX480	480mm 18.90"	8	4
MTX600	600mm 23.63"	10	6
MTX720	720mm 28.35"	12	8

Forcer

Model No.	D	E	F
BLMX-382	392mm 15.43"	12	14
BLMX-502	512mm 20.16"	16	18

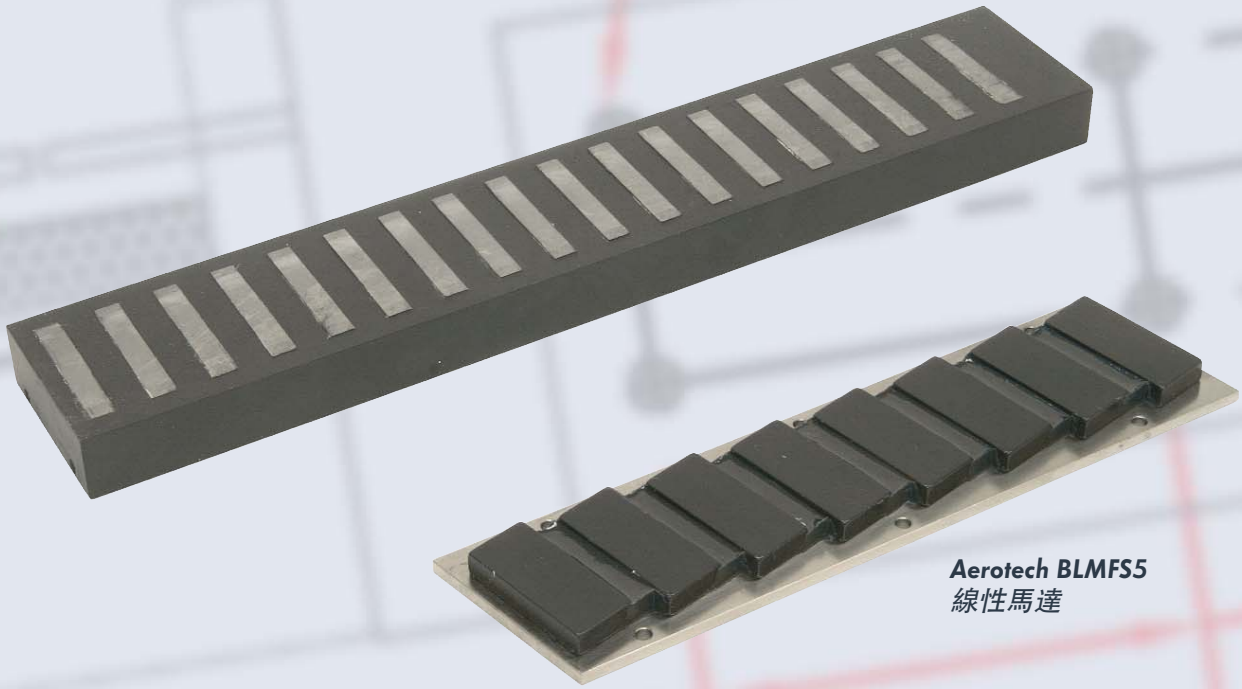
BLMFS-5 系列

BLMFS5線性馬達相較於傳統線性馬達而言，可提供更高的產能與薄型設計。此設計是經由專利的生產製程與層壓之鐵心以達到此更高推力。BLMFS5應用鋼材於動子線圈內，可提供在有限的動子長度提供更大的推力。因此，BLMFS5適合使用於高速點對點運動，而磁吸力更能使用於軸承預載(pre-load)。

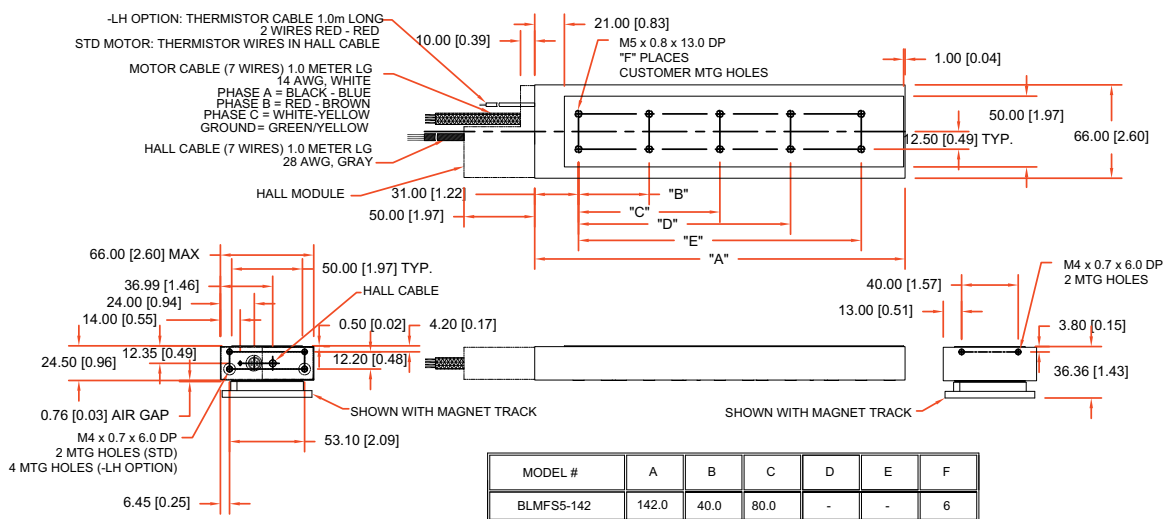
Motor Model	Units	BLMFS5-142		BLMFS5-262		BLMFS5-382	
Performance Specifications^(1,5)							
Continuous Force, Water Cooling ^(2,6)	N (lb)	323.4 (72.7)		522.3 (117.4)		697.1 (156.7)	
Continuous Force, No Cooling ⁽²⁾	N (lb)	174.8 (39.3)		282.3 (63.5)		376.8 (84.7)	
Peak Force ⁽³⁾	N (lb)	699.3 (157.2)		1129.2 (253.9)		1507.2 (338.8)	
Cogging Force	N (lb)	57.8 (13.0)		62.3 (14.0)		67.2 (15.1)	
Attractive Force	N (lb)	2410 (542)		4446 (1000)		6482 (1457)	
Electrical Specifications⁽⁵⁾							
Winding Designation		-A	-B	-A	-B	-A	-B
BEMF (Line-Line, Max)	V/m/s (V/in/s)	21.99 (0.56)	43.97 (1.12)	21.99 (0.56)	43.97 (1.12)	21.99 (0.56)	43.97 (1.12)
Continuous Current, Water Cooling ^(2,6)	Amp _{pk} (Amp _{rms})	16.91 (11.96)	8.45 (5.98)	27.31 (19.31)	13.65 (9.65)	36.45 (25.77)	18.22 (12.89)
Continuous Current, No Cooling ⁽²⁾	Amp _{pk} (Amp _{rms})	9.14 (6.46)	4.57 (3.23)	14.76 (10.44)	7.38 (5.22)	19.70 (13.93)	9.85 (6.97)
Peak Current, Stall ⁽²⁾	Amp _{pk} (Amp _{rms})	36.56 (25.85)	18.28 (12.93)	59.04 (41.75)	29.52 (20.87)	78.80 (55.72)	39.40 (27.86)
Average Force Constant, Sine Drive ^(4,8)	N/Amp _{pk} (lb/Amp _{pk})	19.13 (4.30)	38.25 (8.60)	19.13 (4.30)	38.25 (8.60)	19.13 (4.30)	38.25 (8.60)
	N/Amp _{rms} (lb/Amp _{rms})	27.05 (6.08)	54.10 (12.16)	27.05 (6.08)	54.10 (12.16)	27.05 (6.08)	54.10 (12.16)
Motor Constant ^(2,4)	N/√W (lb/√W)	14.40 (3.24)	14.40 (3.24)	20.37 (4.58)	20.37 (4.58)	24.94 (5.61)	24.94 (5.61)
Resistance, 25°C (Line-Line)	ohms	1.7	6.7	0.8	3.4	0.6	2.2
Inductance (Line-Line)	mH	9.90	39.60	4.95	19.80	3.30	13.20
Thermal Resistance, Water Cooling ⁽⁶⁾	°C/W	0.20		0.15		0.13	
Thermal Resistance, No Cooling	°C/W	0.68		0.52		0.44	
Maximum Bus Voltage	VDC	340	340	340	340	340	340
Mechanical Specifications							
Coil Weight	kg (lb)	1.42 (3.12)		2.31 (5.08)		3.81 (8.38)	
Coil Length	mm (in)	142.0 (5.59)		262.0 (10.31)		382.0 (15.04)	
Heat Sink	mm (in)	380x380x13 (15x15x0.5)					
Magnet Track Weight	kg/m (lb/ft)	4.40 (2.95)					
Magnetic Pole Pitch	mm (in)	30.00 (1.18)					

Notes:

1. Performance is dependent upon heat sink configuration, system cooling conditions, and ambient temperature.
2. Values shown @ 100°C rise above a 25°C ambient temperature, with motor mounted to the specified aluminum heat sink.
3. Peak force assumes correct rms current; consult Aerotech.
4. Force constant and motor constant specified at stall.
5. All performance and electrical specifications ±10%.
6. Maximum winding temperature is 125°C.
7. Ambient operating temperature range 0°C - 25°C. Consult Aerotech for performance in elevated ambient temperatures.
8. All Aerotech amplifiers are rated A_{pk}; use torque constant in N-m/A_{pk} when sizing.



Aerotech BLMF55
線性馬達



BLMF 系列

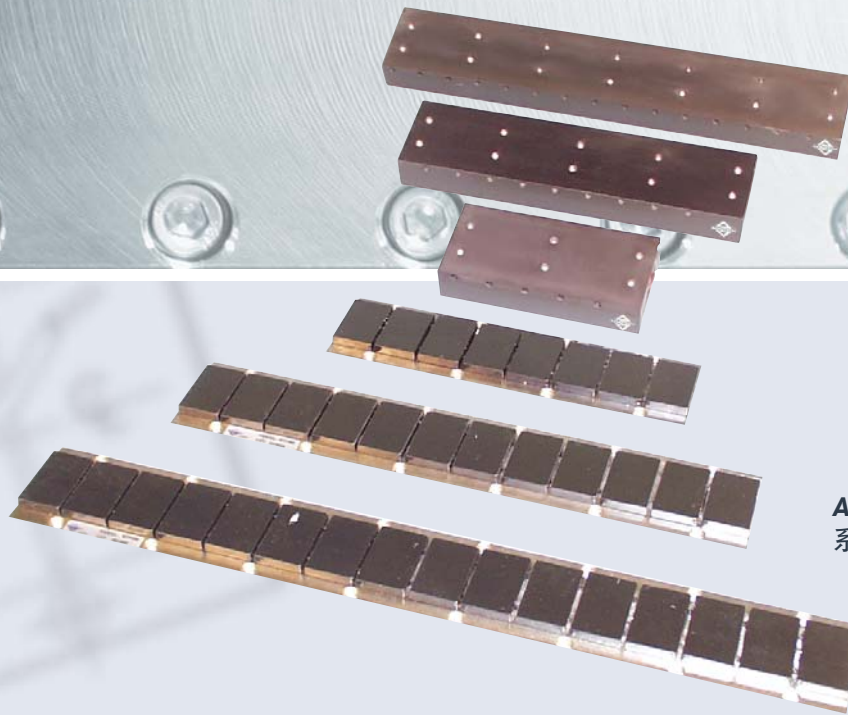
BLMF系列平板線性馬達相較於U型磁軌，具有較低價格與薄型結構。BLMFI不包含磁性材質以達到零頓轉，與零磁吸力之運動，而BLMFS包含磁性材質以達到更高的單位體積之出力。BLMF系列線性馬達可使用Aerotech無刷驅動器與控制器驅動以達到一完整運動系統。

BLMFI "Ironless" Forcer Models

Motor Model	Units	BLMFI-81		BLMFI-142		BLMFI-264		BLMFI-325		BLMFI-386	
Performance Specifications^(1,5)											
Continuous Force, No Air ⁽²⁾	N (lb)	18.7 (4.2)		32.4 (7.3)		64.8 (14.6)		90.2 (20.3)		112.1 (25.2)	
Peak Force ⁽³⁾	N (lb)	74.7 (16.8)		129.7 (29.2)		259.1 (58.2)		360.7 (81.1)		448.4 (100.8)	
Attraction Force	N (lb)	0		0		0		0		0	
Electrical Specifications⁽⁵⁾											
Winding Designation		-A	-B	-A	-B	-A	-B	-A	-B	-A	-B
BEMF Constant (Line-Line, Max)	V/m/s (V/in/s)	7.16 (0.18)	3.58 (0.09)	13.81 (0.35)	6.90 (0.18)	14.32 (0.36)	28.63 (0.73)	18.51 (0.47)	37.02 (0.94)	23.01 (0.58)	46.02 (1.17)
Continuous Current, No Air ⁽²⁾	Amp _{pk} (Amp _{rms})	3.00 (2.12)	6.00 (4.24)	2.70 (1.91)	5.40 (3.82)	5.20 (3.68)	2.60 (1.84)	5.60 (3.96)	2.80 (1.98)	5.60 (3.96)	2.80 (1.98)
Peak Current, Stall ⁽³⁾	Amp _{pk} (Amp _{rms})	12.00 (8.49)	24.00 (16.97)	10.80 (7.64)	21.60 (15.27)	20.80 (14.71)	10.40 (7.35)	22.40 (15.84)	11.20 (7.92)	22.40 (15.84)	11.20 (7.92)
Force Constant, Sine Drive ^(4,8)	N/Amp _{pk} (lb/Amp _{pk})	6.23 (1.40)	3.11 (0.70)	12.01 (2.70)	6.00 (1.35)	12.45 (2.80)	24.91 (5.60)	16.10 (3.62)	32.20 (7.24)	20.02 (4.50)	40.03 (9.00)
	N/Amp _{rms} (lb/Amp _{rms})	8.81 (1.98)	4.40 (0.99)	16.98 (3.82)	8.49 (1.91)	17.61 (3.96)	35.23 (7.92)	22.77 (5.12)	45.54 (10.24)	28.31 (6.36)	56.61 (12.73)
Motor Constant ^(2,4)	N/√W (lb/√W)	2.59 (0.58)		3.55 (0.80)		5.28 (1.19)		6.16 (1.39)		6.91 (1.55)	
Resistance, 25°C (Line-Line)	ohms	5.5	1.4	10.9	2.7	5.3	21.2	6.5	26.0	8.0	32.0
Inductance (Line-Line)	mH	2.90	0.73	6.50	1.63	3.50	14.00	4.48	17.92	5.30	21.20
Thermal Resistance, No Cooling	°C/W	1.92		1.20		0.66		0.47		0.38	
Maximum Bus Voltage	VDC	340		340		340		340		340	
Mechanical Specifications											
Coil Weight	kg (lb)	0.50 (1.10)		0.84 (1.85)		1.10 (2.42)		1.40 (3.08)		1.70 (3.74)	
Coil Length	mm (in)	81.0 (3.19)		142.2 (5.60)		264.2 (10.40)		325.1 (12.80)		386.1 (15.20)	
Heat Sink	mm (in)	100x100x13 (4x4x0.5)		150x150x13 (6x6x0.5)		300x300x13 (12x12x0.5)		350x350x13 (14x14x0.5)		400x400x13 (16x16x0.5)	
Magnet Track Weight	kg/m (lb/ft)	4.75 (3.19)		4.75 (3.19)		4.75 (3.19)		4.75 (3.19)		4.75 (3.19)	
Magnetic Pole Pitch	mm (in)	30.00 (1.18)		30.00 (1.18)		30.00 (1.18)		30.00 (1.18)		30.00 (1.18)	

Notes:

- Performance is dependent upon heat sink configuration, system cooling conditions, and ambient temperature.
- Values shown @ 100°C rise above a 25°C ambient temperature, with motor mounted to the specified aluminum heat sink.
- Peak force assumes correct rms current; consult Aerotech.
- Force constant and motor constant specified at stall.
- All performance and electrical specifications ±10%.
- Maximum winding temperature is 125°C.
- Ambient operating temperature range 0°C - 25°C. Consult Aerotech for performance in elevated ambient temperatures.
- All Aerotech amplifiers are rated A_{pk}; use torque constant in N-m/A_{pk} when sizing.



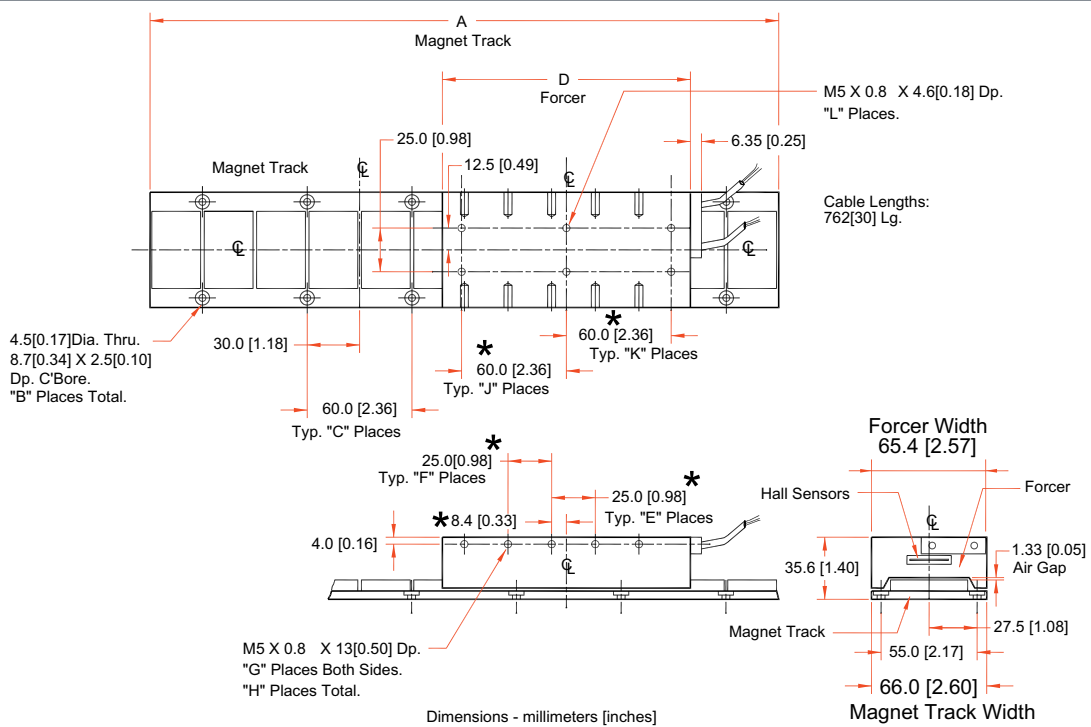
Aerotech BLMF
系列線性馬達

BLMFS "Steel Laminated" Forcer Models											
Motor Model	Units	BLMFS-81	BLMFS-142	BLMFS-264	BLMFS-325	BLMFS-386					
Performance Specifications^(1,5)											
Continuous Force, No Air ⁽²⁾	N (lb)	28.0 (6.3)	48.0 (10.8)	97.1 (21.8)	134.5 (30.2)	159.4 (35.8)					
Peak Force ⁽³⁾	N (lb)	112.1 (25.2)	192.2 (43.2)	388.6 (87.4)	538.0 (121.0)	637.7 (143.4)					
Attraction Force	N (lb)	134 (30)	232 (52)	427 (96)	535 (120)	629 (141)					
Electrical Specifications⁽⁵⁾											
Winding Designation		-A	-B	-A	-B	-A	-B	-A	-B	-A	-B
BEMF Constant (Line-Line, Max)	V/m/s (V/in/s)	10.74 (0.27)	5.37 (0.14)	20.45 (0.52)	10.23 (0.26)	21.47 (0.55)	42.95 (1.09)	27.61 (0.70)	55.22 (1.40)	32.72 (0.83)	65.45 (1.66)
Continuous Current, No Air ⁽²⁾	Amp _{pk} (Amp _{rms})	3.0 (2.12)	6.00 (4.24)	2.70 (1.91)	5.40 (3.82)	5.20 (3.68)	2.60 (1.84)	5.60 (3.96)	2.80 (1.98)	5.60 (3.96)	2.80 (1.98)
Peak Current, Stall ⁽³⁾	Amp _{pk} (Amp _{rms})	12.00 (8.49)	24.00 (16.97)	10.80 (7.64)	21.60 (15.27)	20.80 (14.71)	10.40 (7.35)	22.40 (15.84)	11.20 (7.92)	22.40 (15.84)	11.20 (7.92)
Force Constant, Sine Drive ^(4,8)	N/Amp _{pk} (lb/Amp _{pk})	9.34 (2.10)	4.67 (1.05)	17.79 (4.00)	8.90 (2.00)	18.68 (4.20)	37.36 (8.40)	24.02 (5.40)	48.04 (10.80)	28.47 (6.40)	56.93 (12.80)
	N/Amp _{rms} (lb/Amp _{rms})	13.21 (2.97)	6.60 (1.48)	25.16 (5.66)	12.58 (2.83)	26.42 (5.94)	52.84 (11.88)	33.97 (7.64)	67.94 (15.27)	40.26 (9.05)	80.52 (18.10)
Motor Constant ^(2,4)	N/√W (lb/√W)	3.89 (0.87)		5.26 (1.18)		7.92 (1.78)		9.19 (2.07)		9.82 (2.21)	
Resistance, 25°C (Line-Line)	ohms	5.5	1.4	10.9	2.7	5.3	21.2	6.5	26.0	8.0	32.0
Inductance (Line-Line)	mH	4.50	1.13	10.40	2.60	5.70	22.80	7.40	29.60	8.75	35.00
Thermal Resistance, No Cooling	°C/W	1.92		1.20		0.66		0.47		0.38	
Maximum Bus Voltage	VDC	340		340		340		340		340	
Mechanical Specifications											
Coil Weight	kg (lb)	0.60 (1.32)		1.02 (2.24)		1.90 (4.18)		2.31 (5.08)		2.76 (6.07)	
Coil Length	mm (in)	81.0 (3.19)		142.2 (5.60)		264.2 (10.40)		325.1 (12.80)		386.1 (15.20)	
Heat Sink	mm (in)	100x100x13 (4x4x0.5)		150x150x13 (6x6x0.5)		300x300x13 (12x12x0.5)		350x350x13 (14x14x0.5)		400x400x13 (16x16x0.5)	
Magnet Track Weight	kg/m (lb/ft)	4.75 (3.19)		4.75 (3.19)		4.75 (3.19)		4.75 (3.19)		4.75 (3.19)	
Magnetic Pole Pitch	mm (in)	30.00 (1.18)		30.00 (1.18)		30.00 (1.18)		30.00 (1.18)		30.00 (1.18)	

Notes:

- Performance is dependent upon heat sink configuration, system cooling conditions, and ambient temperature.
- Values shown @ 100°C rise above a 25°C ambient temperature, with motor mounted to the specified aluminum heat sink.
- Peak force assumes correct rms current; consult Aerotech.
- Force constant and motor constant specified at stall.
- All performance and electrical specifications ±10%.
- Maximum winding temperature is 125°C.
- Ambient operating temperature range 0°C - 25°C. Consult Aerotech for performance in elevated ambient temperatures.
- All Aerotech amplifiers are rated A_{pk}; use torque constant in N-m/A_{pk} when sizing.

BLMF 系列



Magnet Track

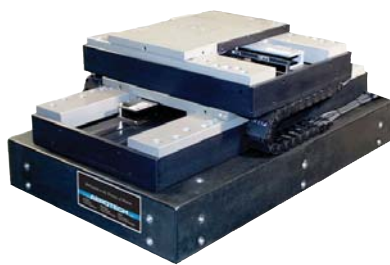
Model No.	A	B	C
MTF240	240mm 9.45"	8	3
MTF300	300mm 11.81"	10	4
MTF360	360mm 14.17"	12	5
MTF480	480mm 18.90"	16	7
MTF540	540mm 21.26"	16	7

Forcer

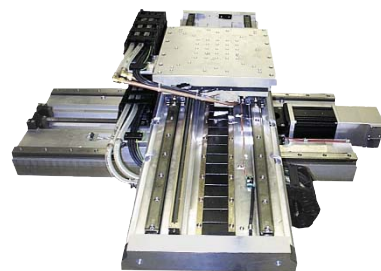
Model No.	D	E	F	G	H	J	K	L
BLMF-81	81mm 3.19"	1	1	2	4	1	1	4
BLMF-142	142mm 5.59"	2	2	5	10	1	1	6
BLMF-264	264mm 10.39"	4	4	9	18	2	2	10
BLMF-325	325mm 12.80"	5	5	11	22	2	2	10
BLMF-386	386mm 15.20"	7	7	15	30	3	3	14

* Dimensions Do Not Apply To BLMF-81. Consult Aerotech Inc.

Aerotech 線性馬達之 各種應用



ABL8000XY定位平台



真空預備ALS5000定位平台



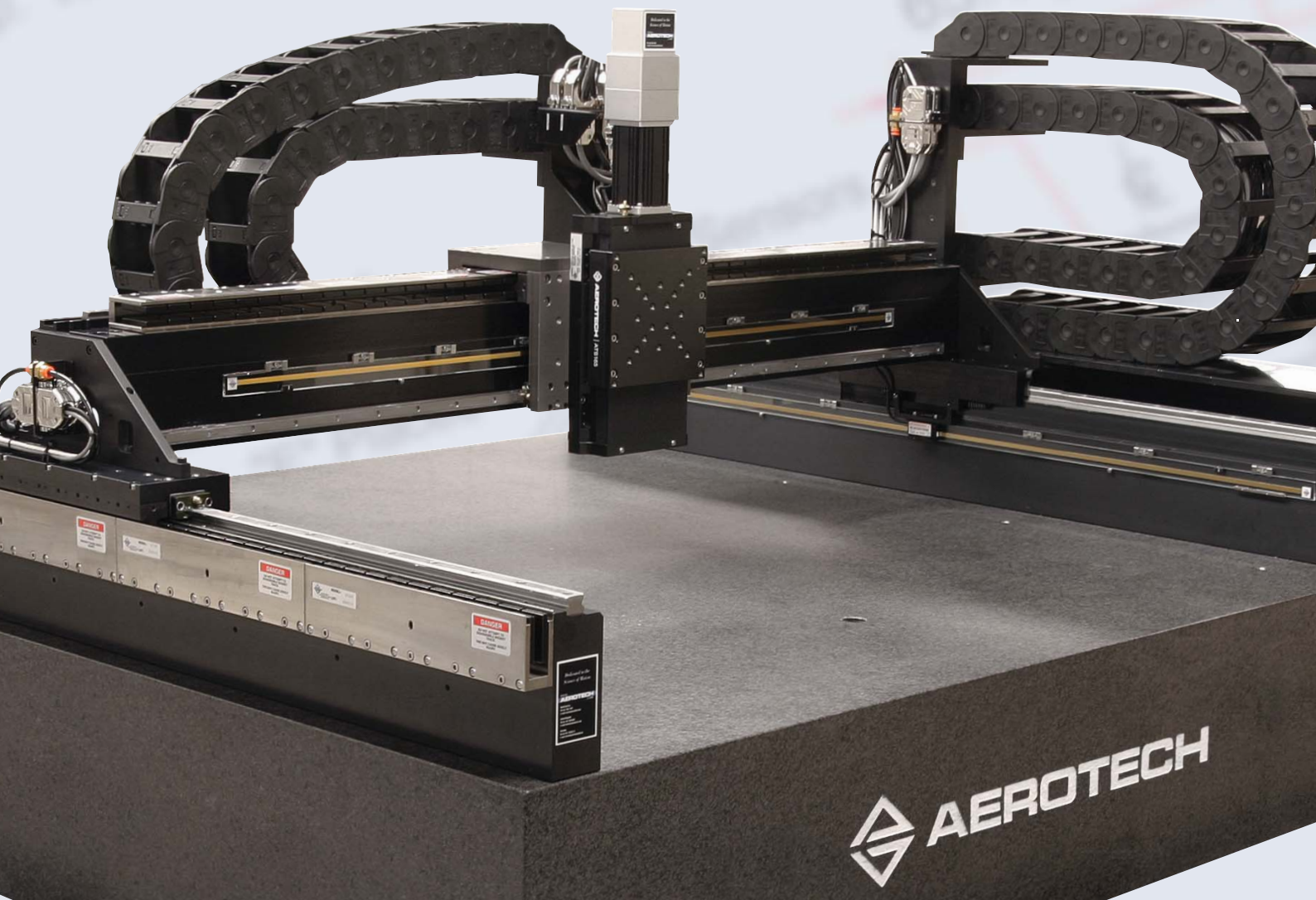
開框式Z垂直定位平台



多軸光罩對準平台



AGS15000龍門系統

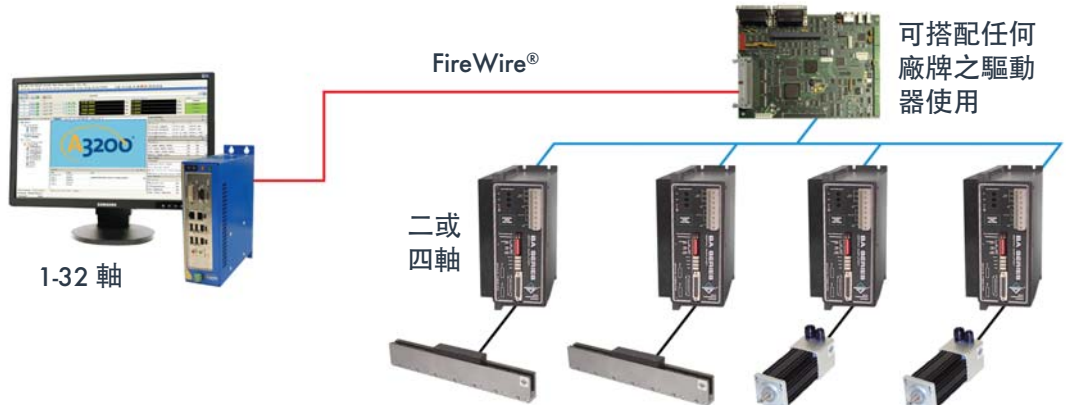


 AEROTECH

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- 降低設定與起始時間
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OEM 控制器: A3200與 Nservo 軟體控制器



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- 先進控制功能可用於嚴苛應用
- 1至32軸同步運動
- 整合雷射打標之振鏡控制
- 緊密整合雷射加工之功能如脈寬調變與位置同步觸發
- 可整合於既有機構系統以提高系統性能
- 類比與數位I/O



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- 最高至四組多工作業
- 獨立1-至10軸運動同步運動控制
- 靈活搭配, 低成本之同步運動控制
- PWM或線性驅動器 (10-150 A峰值電流)
- 無刷, 有刷, 或步徑馬達
- 桌上型或嵌入式控制器
- .NET, C, LabVIEW®,或AeroBasic™
- GPIB, Ethernet, USB



Soloist

- 獨立, 單軸運動控制器
- 支援單脈波模式 (Clock and direction) 控制, 可使用他牌軸卡控制
- PWM或線性驅動器(10-150 A峰值電流)
- .NET, C, LabVIEW®,或AeroBasic™
- Ethernet, USB
- 伺服馬達整流換向



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