

- ◎ PCB电主轴系列
PCB electric spindle series
- ◎ 玻璃磨削电主轴系列
Electric spindle glass grinding series
- ◎ 高光及超精加工电主轴系列
High-gloss and superfinishing electric spindle series
- ◎ 超声波主轴系列
Ultrasonic spindle series
- ◎ 加工中心主轴系列
Machining center spindle series
- ◎ 雕铣电主轴系列
Engraving and milling electric spindle series
- ◎ 磨削产品系列
Grinding solutions
- ◎ 车床主轴系列
Lathe spindle series
- ◎ 木工电主轴系列
Woodworking electric spindle series
- ◎ 牙雕电主轴系列
Dental electric spindle series
- ◎ 半导体电主轴系列
Semiconductor electric spindle series
- ◎ 减速器系列
Reducer series
- 直线电机系列
Linear motor series
- ◎ 转台及摆头系列
Turntable and swivel rotary head series
- ◎ 刀柄夹头系列
Tool holder and collet series
- ◎ 夹具系列
Clamping series
- ◎ 昊志氢电空压机
Haozhi hydrogen electric air compressor
- ◎ 丝杠导轨系列
Guide rail screw series

直线电机系列

Linear motor series



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高精·高效·高稳定性
昊志机电产品之道
High precision · High efficiency · High stability
Haozhi Product Philosophy

为助力全球先进装备制造,
提升人类良好体验
而奋斗不止

Keeps on striving for global advanced
manufacturing industry,for improving
human experience.

关于我们 About us

广州市昊志机电股份有限公司成立于2006年，是一家专业从事中高端数控机床、机器人、新能源汽车核心功能部件等的研发设计、生产制造、销售与维修服务的国家高新技术企业，于2016年在创业板上市（股票代码300503）。

昊志机电秉承“立足自主技术创新、服务全球先进制造”的发展战略，逐步发展成为国内外主轴专业领域中研产销规模最大的企业之一，电主轴领域全球市场占有率第一，公司立足主轴行业，借助在研发、制造、客户、品牌等方面的积累，稳步向数控机床和工业机器人等高端装备的核心功能部件领域横向扩张，目前产品涵盖PCB钻孔机/成型机/划片机电主轴、数控金属/玻璃雕铣机电主轴、数控车床主轴/电主轴、走芯车床电主轴、直结与皮带式机械主轴、加工中心电主轴、钻攻中心电主轴、高速内/外圆磨床主轴、木工雕铣机电主轴、高光及超精加工电主轴、超声波电主轴、液静压主轴、铣削动力头、末端执行机构、刀柄夹头、数控转台、直线电机、谐波减速器、数控系统、伺服电机、驱动器、传感器、燃料电池压缩机、曝气鼓风机、直驱类高速风机等数十个系列上百种产品。

昊志机电拥有一批经验丰富、锐意创新的科技型人才队伍，研发人员400余人，研究生占比12%，具备优异的创新水平、研发实力和竞争力，近三年平均研发投入占营收比重的8%以上，截止2026年04月30日，公司及境内子公司合计拥有专利857项。公司具备完善、齐全的各类高端实验室，包括：理化实验室、轴承实验室、测量实验室、电机实验室、综合性能实验室、切削实验室、直线电机实验室、减速机实验室、机器人实验室、磨合测试实验室、抗干扰能力实验室、可靠性实验室等。

Guangzhou Haozhi Industrial Co., Ltd.

Founded in 2006 and listed on GEM (stock code: 300503) in 2016, Haozhi is a international high-tech enterprise specializing in the R&D, design, production, sales, and maintenance of core functional components for mid- to high-end CNC machine tools, robots, and new-energy vehicles. Haozhi leads the motor spindles market and continues to expand.

Haozhi product range includes:

- Dental Spindles
- High Speed Cutting Spindles
- High Performance Cutting Spindles
- Coupling Spindles
- Turning Spindles
- Grinding Spindles
- PCB Drilling/Routing Spindles
- Ultra-precision Finish Milling Spindles
- Collets and Tool holders
- 4 Axis and 5 Axis Rotary Tables
- Linear Motors
- Cobots/Harmonic Reducers/Robot Joint/Brake/Torque Sensor/End Effector
- EV Hydrogen Compressor

Haozhi boasts a highly skilled and innovative team with over 300 R&D personnel and more than 30 specially appointed experts, both domestic and international masters. The proportion of R&D investment in operating income over the past three years exceeds 8%, resulting in 857 patents as of April 30, 2026. Haozhi maintains comprehensive high-end laboratories for extensive testing and innovation.



禾丰厂 Hefeng Factory



江东厂 Jiangdong Factory



田园厂 Tianyuan Factory

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直线电机需求表

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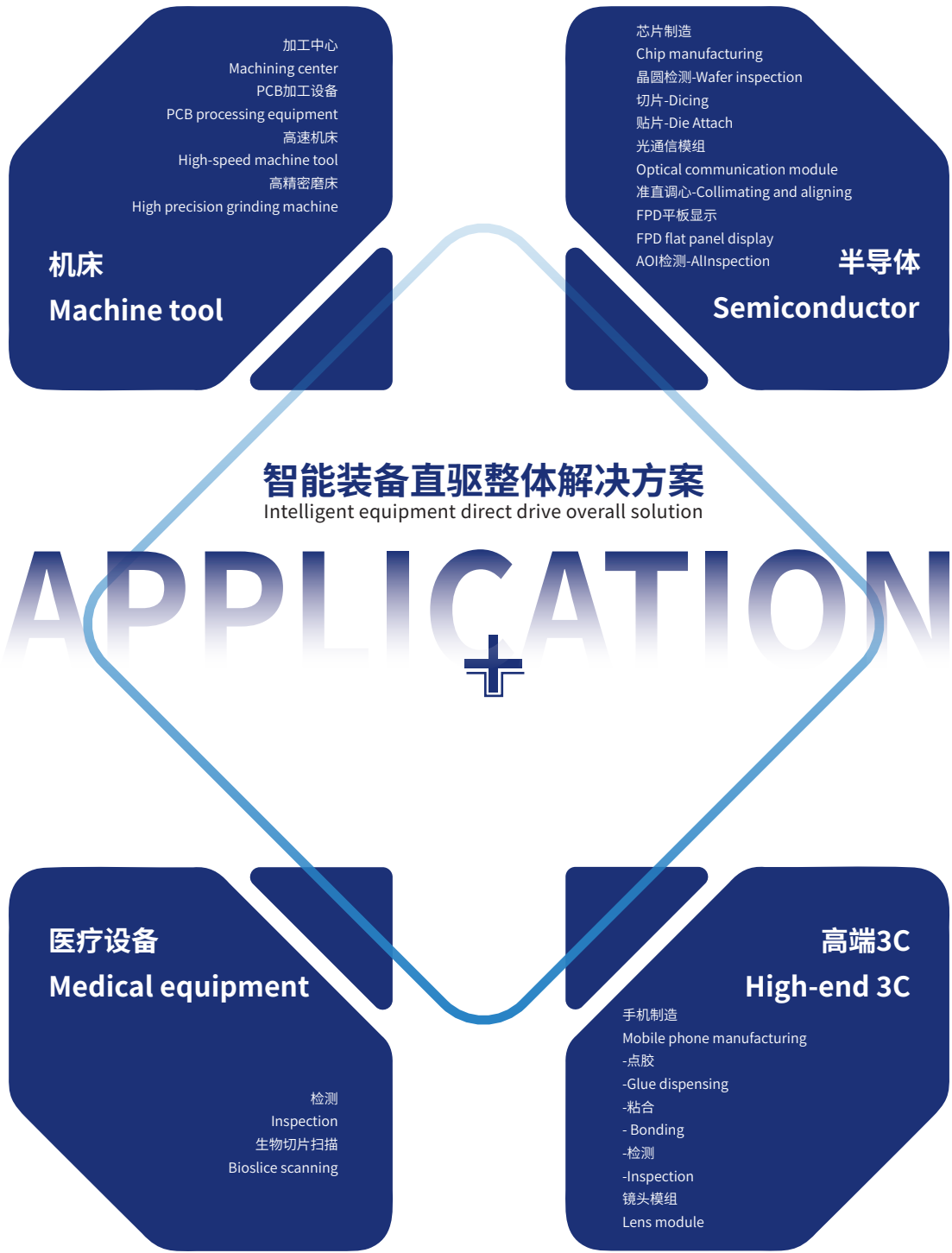
直线电机系列

Linear Motor Series

作为专业直驱方案的供应商, 昊志直线电机凭借其专业的设计和先进的制造工艺获得了广泛的应用, 该系列产品具有高推力密度、高速度、高动态响应、推力波动小和温升低的突出特点, 可广泛应用于PCB钻孔机、高速精密机床、半导体设备、激光加工设备、精密检测设备和其他工业自动化设备。

As a professional direct drive solution supplier, Haozhi's linear motor is widely used because of its professional design and advanced manufacturing technology. This series of products have the outstanding characteristics of high thrust density, high speed, high dynamic response, low thrust fluctuation temperature rise, and can be widely used in PCB drilling machine, high-speed precision machine tools, semiconductor equipment, laser processing equipment, precision testing equipment and other industrial automation equipment.

应用



直线电机初级命名规则

Primary Naming Rule of Linear Motor

D LM F P 100 - 04 W -0060 - 6.0

昊志	直线电机	产品系列	部件代号 P:表示初级部件 无:表示整机	初级宽度代号 50,100,150...	初级长度代号 01、02、03...	冷却形式 W:水冷 无:自然冷	最大速度 0060:60m/min 0090:90m/min	电缆线长度 6.0:6米
Haozhi	Linear Motor	Product Series	Part Code P: Indicates Primary Part None: Indicates Complete Machine	Primary Width Code 50, 100, 150...	Primary Length Code 01, 02, 03...	Cooling Method W: Water Cooling None: Natural Cooling	Max Speed 0060: 60m/min 0090: 90m/min	Cable Length 6.0: 6 Meters

直线电机次级命名规则

Secondary Naming Rule of Linear Motor

D LM F S 100 - N 384

昊志	直线电机	产品系列	部件代号 S:表示次级部件	次级宽度代号 50,100,150...	次级极性代号 N:第一列磁钢是N极 S:第一列磁钢是S极	次级长度 384:384mm
Haozhi	Linear Motor	Product Series	Part Code S: Indicates Secondary Part	Secondary Width Code 50,100,150...	Secondary Polarity Code N: The first row of magnetic steel is N pole S: The first row of magnetic steel is S pole	Secondary Length 384:384mm

直线电机系列一览表

Linear Motor Series Overview

有铁芯直线电机 IRON CORE LINEAR MOTOR	系列 Series	特点 Features	推力范围 Thrust Range	
	DLMFP系列 DLMFP Series	大推力、高刚性 优异的水路设计 低推力波动 最大母线电压600Vdc 高性价比 High Thrust, High Rigidity Excellent Waterway Design Low Thrust Ripple Maximum Bus Voltage 600Vdc High Cost-effectiveness	持续推力: Fcn =635N ~ 6490N, 峰值推力: Fpk =1476N ~ 12150N Continuous Thrust: Fcn = 635N ~ 6490N, Peak Thrust: Fpk = 1476N ~ 12150N	典型案例: PCB钻孔机、PCB成型机、激光加工设备、光伏、半导体等 Typical Cases: PCB Drilling Machines, PCB Forming Machines, Laser Processing Equipment, Photovoltaics, Semiconductors, etc.
	DLMXP系列 DLMXP Series	大推力、高刚性 优异的水路设计 低推力波动 最大母线电压600Vdc 高防护等级IP65 High Thrust, High Rigidity Excellent Waterway Design Low Thrust Ripple Maximum Bus Voltage 600Vdc High Protection Rating IP65	持续推力: Fcn =275N ~ 8390N, 峰值推力: Fpk =550N ~ 20920N Continuous Thrust: Fcn = 275N ~ 8390N, Peak Thrust: Fpk = 550N ~ 20920N	典型案例: 五轴加工中心、龙门加工中心、超精密车床、螺纹磨床、复合磨床、内外圆磨床等 Typical Cases: 5-axis Machining Centers, Gantry Machining Centers, Ultra-precision Lathes, Thread Grinding Machines, Composite Grinding Machines, Internal and External Cylindrical Grinding Machines, etc.
	DLMHP系列 DLMHP Series	大推力、高刚性 优异的水路设计 低推力波动 最大母线电压600Vdc 高防护等级IP65 High Thrust, High Rigidity Excellent Waterway Design Low Thrust Ripple Maximum Bus Voltage 600Vdc High Protection Rating IP65	持续推力: Fcn =550N ~ 8300N, 峰值推力: Fpk =2200N ~ 26400N Continuous Thrust: Fcn = 550N ~ 8300N, Peak Thrust: Fpk = 2200N ~ 26400N	典型案例: 五轴加工中心、龙门加工中心、超精密车床、螺纹磨床、复合磨床、内外圆磨床等 Typical Cases: 5-axis Machining Centers, Gantry Machining Centers, Ultra-precision Lathes, Thread Grinding Machines, Composite Grinding Machines, Internal and External Cylindrical Grinding Machines, etc.
	DLMNP系列 DLMNP Series	高响应与带宽 小体积超薄设计 低推力波动 最大母线电压600Vdc High Response and Bandwidth Compact and Ultra-thin Design Low Thrust Ripple Maximum Bus Voltage 600Vdc	持续推力: Fcn =102N ~ 1532N, 峰值推力: Fpk =276N ~ 4090N Continuous Thrust: Fcn = 102N ~ 1532N, Peak Thrust: Fpk = 276N ~ 4090N	典型案例: 五轴工具磨床、激光加工设备、木工、测试、点胶等 Typical Cases: 5-axis tool grinding machines, laser processing equipment, woodworking machinery, testing equipment, dispensing machines, etc.
无铁芯直线电机 CORELESS LINEAR MOTOR	DLMUP系列 DLMUP Series	无铁芯技术 无齿槽效应 低推力波动 最大母线电压600Vdc Coreless technology Cogging-free Low thrust ripple Maximum Bus Voltage 600Vdc	持续推力: Fcn =37N ~ 184.8N, 峰值推力: Fpk =1850N ~ 10100N Continuous Thrust: Fcn = 37N ~ 184.8N, Peak Thrust: Fpk = 1850N ~ 10100N	典型案例: 半导体、高端3C自动化、检测设备、光学、生物医疗等 Typical Applications: Semiconductor, high-end 3C automation, inspection equipment, optics, and biomedical.

DLMFP系列
DLMFP Series

电机介绍

Motor Introduction

DLMFP系列电机推力大、响应快,全系列水冷设计,冷却效果好,适合各种大推力、大负载的应用。

持续推力:Fcn =635N ~ 6490N

峰值推力:Fpk =1476N ~ 12150N

The DLMFP series motors feature high thrust and fast response. The entire series adopts a water-cooling design with excellent cooling effects, making them suitable for various high-thrust and heavy-load applications.

Continuous Thrust: Fcn = 635N ~ 6490N

Peak Thrust: Fpk = 1476N ~ 12150N

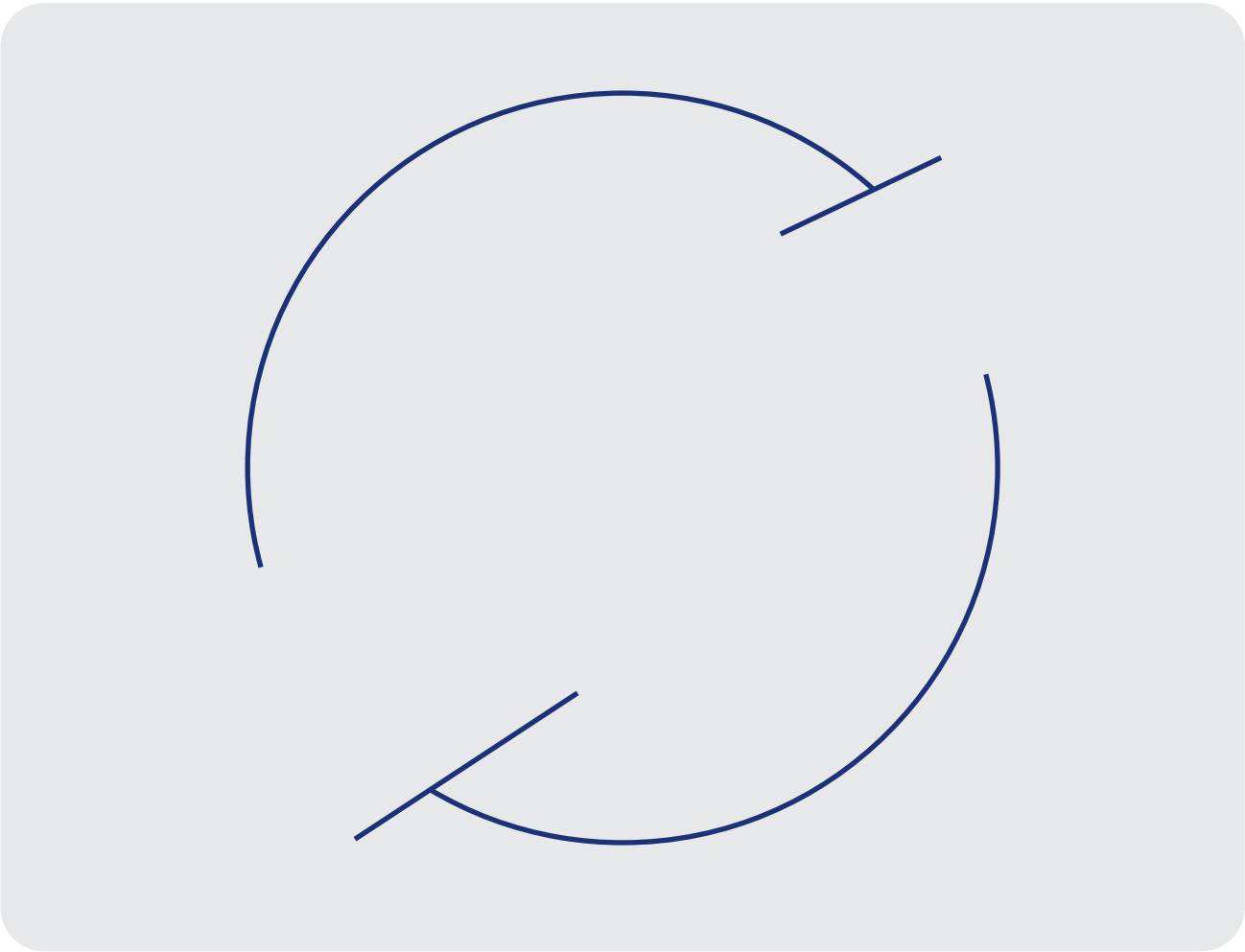
典型案例:PCB钻孔机、PCB成型机、激光加工设备、光伏、半导体等。

Typical Applications: PCB drilling machines, PCB routing machines, laser processing equipment, photovoltaics, semiconductors, etc.

▴ 产品特点

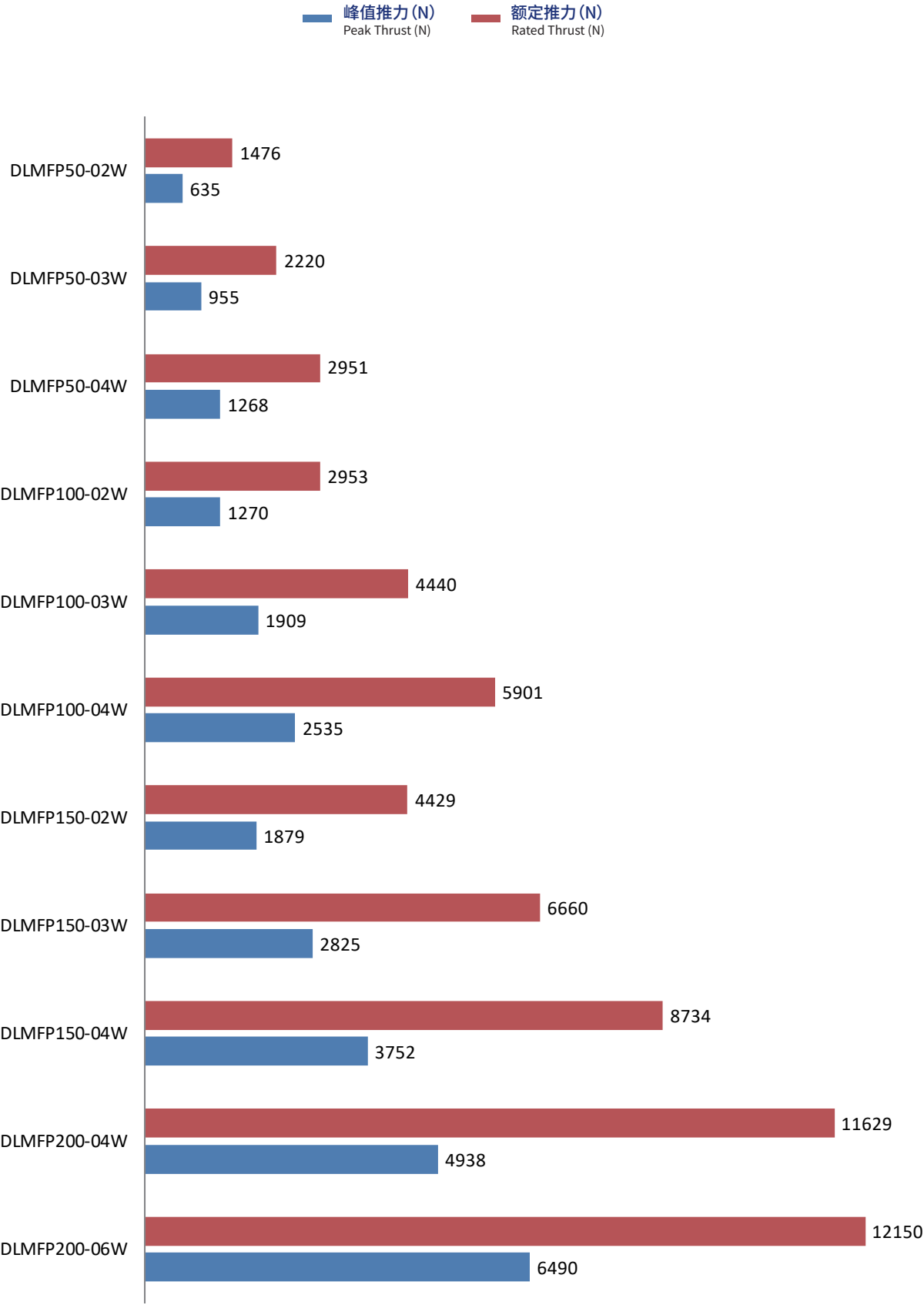
Product Features

- 大推力、高刚性
 - 优异的水路设计
 - 低推力波动
 - 最大母线电压
 - 600Vdc
- High thrust and high rigidity
 - Optimized water cooling design
 - Low thrust ripple
 - Max. DC bus voltage: 600Vdc
 - Highly cost-effective



DLMFP系列直线电机推力图

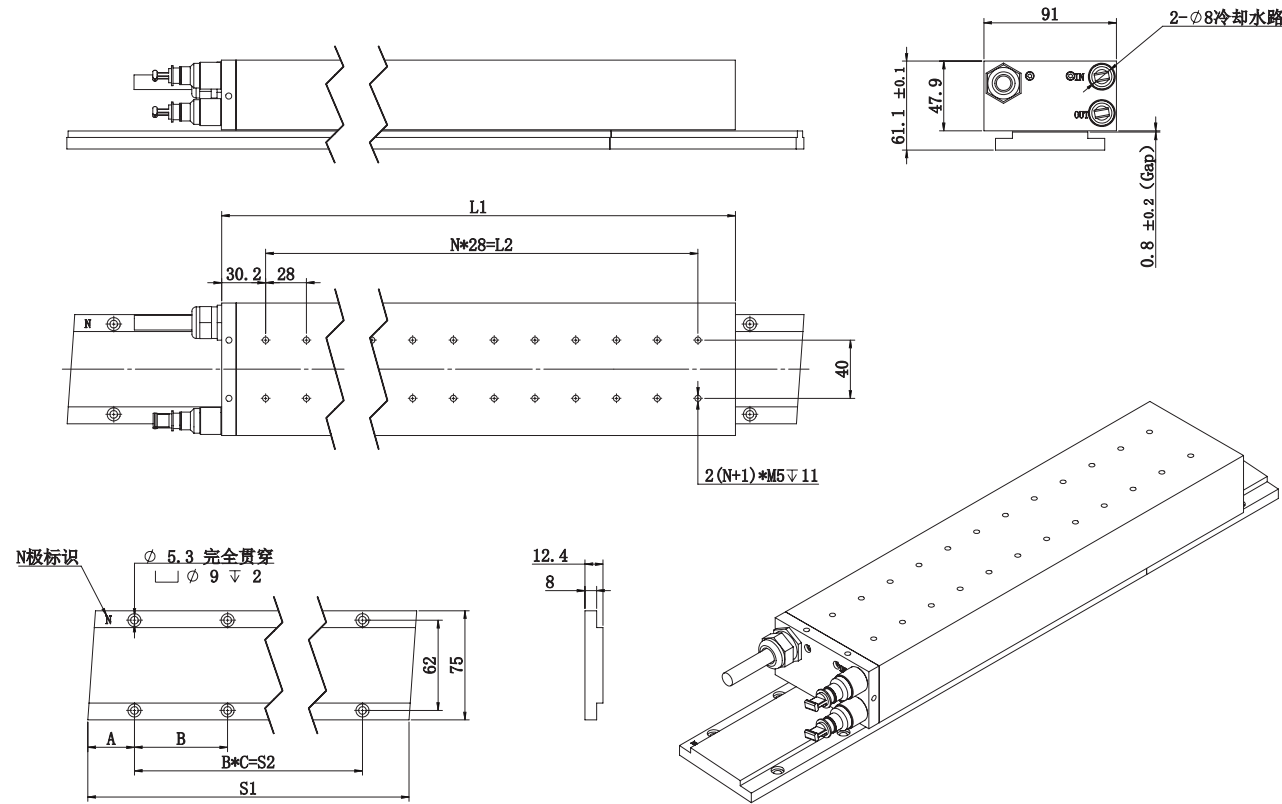
DLMFP Series Linear Motor Thrust Curve





DLMFP50-W系列机械尺寸

DLMFP50-W Series Mechanical Dimensions



初级规格			
初级型号	L1	L2	N
DLMFP50-02W	248	196	7
DLMFP50-03W	364	308	11
DLMFP50-04W	472	420	15

次级规格						
次级型号	重量kg	S1	S2	A	B	C
DLMFS50-N128-L	0.8	128	64	32	64	1
DLMFS50-N256-L	1.6	256	192	32	64	3
DLMFS50-N384-L	2.4	384	320	32	64	5
DLMFS50-N160-L	1.0	160	84	42	84	1
DLMFS50-S160-L	1.0	160	84	42	84	1
DLMFS50-N336-L	2.1	336	252	42	84	3
DLMFS50-S336-L	2.1	336	252	42	84	3

DLMFP50-W系列有铁芯平板直线电机参数

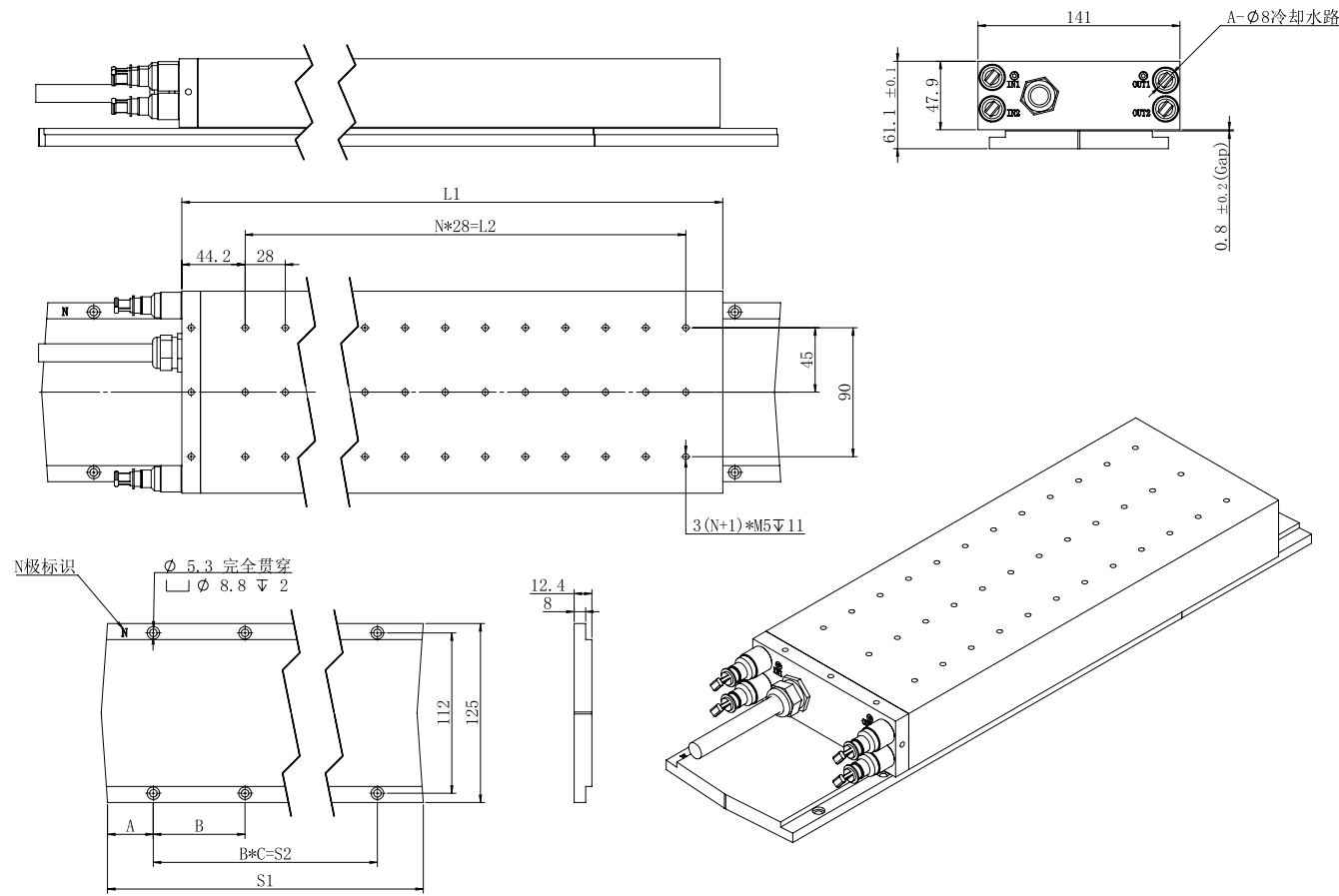
DLMFP50-W Series Ironcore Linear Motor Specifications

型号 Model	符号 Symbol	单位 Unit	DLMFP50-02W(3)	DLMFP50-03W(3)	DLMFP50-04W(3)
连续推力 Continuous Thrust	Fc	N	635	955	1268
峰值推力 Peak Thrust	Fp	N	1476	2220	2951
电机常数 Motor Constant	Km	N/√W	32	40	46
最大持续损耗功率 Max. Continuous Power Loss	Pc	W	387	574	774
连续电流 Continuous Current	Ic	Arms	9.5	14.3	19
峰值电流 Peak Current	Ip	Arms	29.5	44	58.5
推力常数 Thrust Constant	Kf	N/Arms	67	67	67
反电势常数 Back EMF Constant	Ke	Vrms•s/m	40.2	40.2	40.2
600Vdc持续推力最大速度 Max. Speed at Continuous Thrust (600Vdc)	Vcn	m/s	6.9	6.9	6.9
600Vdc峰值推力最大速度 Max. Speed at Peak Thrust (600Vdc)	Vpk	m/s	2.8	2.9	2.9
线电阻25℃±10% Line Resistance at 25℃ ±10%	R25	Ω	2.6	1.7	1.3
线电感25℃±20% Line Inductance at 25℃ ±20%	L	mH	23	15	11.5
最高线圈允许温度 Max. Allowable Coil Temperature	T	℃	130	130	130
最大母线电压 Max. Bus Voltage	Ub	Vdc	600	600	600
极对距 (N-N) Pole Pitch (N-N)	2τ	mm	32	32	32
最小流量要求 Min. Flow Rate Requirement	Qw	L/min	4	4	4
磁吸力 Magnetic Attractive Force	Fa	N	1963	3500	4680
初级线圈重量 Primary Coil Weight	mc	kg	6	8	10



DLMFP100-W系列机械尺寸

DLMFP100-W Series Mechanical Dimensions



初级规格				
初级型号	L1	L2	N	A
DLMFP100-02W	277	196	7	2
DLMFP100-03W	378	308	11	4
DLMFP100-04W	490	420	15	4

次级规格						
次级型号	重量kg	S1	S2	A	B	C
DLMFS100-N128-L	1.4	128	64	32	64	1
DLMFS100-N256-L	2.8	256	192	32	64	3
DLMFS100-N384-L	4.2	384	320	32	64	5
DLMFS100-N160-L	1.8	160	84	42	84	1
DLMFS100-S160-L	1.8	160	84	42	84	1
DLMFS100-N336-L	3.8	336	252	42	84	3
DLMFS100-S336-L	3.8	336	252	42	84	3

DLMFP100-W系列有铁芯平板直线电机参数

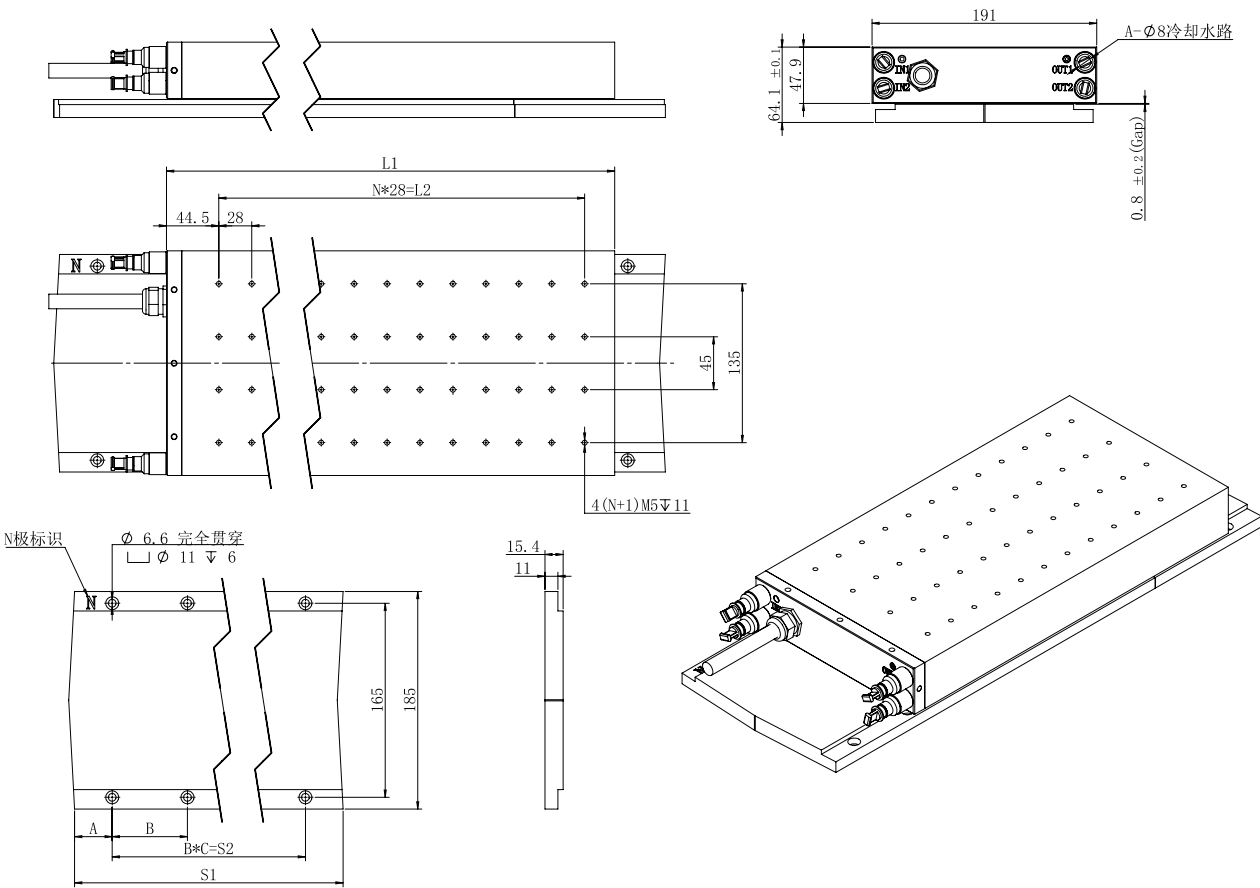
DLMFP100-W Series Ironcore Linear Motor Specifications

型号 Model	符号 Symbol	单位 Unit	DLMFP100-02W(3)	DLMFP100-03W(3)	DLMFP100-04W(3)
连续推力 Continuous Thrust	Fc	N	1270	1909	2535
峰值推力 Peak Thrust	Fp	N	2953	4440	5901
电机常数 Motor Constant	Km	N/√W	48	58	67
最大持续损耗功率 Max. Continuous Power Loss	Pc	W	715	1080	1430
连续电流 Continuous Current	Ic	Arms	9.5	14.3	19
峰值电流 Peak Current	Ip	Arms	29.2	44	58.5
推力常数 Thrust Constant	Kf	N/Arms	134	134	134
反电势常数 Back EMF Constant	Ke	Vrms•s/m	80.4	80.4	80.4
600Vdc持续推力最大速度 Max. Speed at Continuous Thrust (600Vdc)	Vcn	m/s	3.2	3.2	3.2
600Vdc峰值推力最大速度 Max. Speed at Peak Thrust (600Vdc)	Vpk	m/s	1.2	1.2	1.2
线电阻25℃±10% Line Resistance at 25℃ ±10%	R25	Ω	4.8	3.2	2.4
线电感25℃±20% Line Inductance at 25℃ ±20%	L	mH	49.8	33	24.9
最高线圈允许温度 Max. Allowable Coil Temperature	T	℃	130	130	130
最大母线电压 Max. Bus Voltage	Ub	Vdc	600	600	600
极对距 (N-N) Pole Pitch (N-N)	2τ	mm	32	32	32
最小流量要求 Min. Flow Rate Requirement	Qw	L/min	4	2*4	2*4
磁吸力 Magnetic Attractive Force	Fa	N	3926	5875	7832
初级线圈重量 Primary Coil Weight	mc	kg	10	15	20



DLMFP150-W系列机械尺寸

DLMFP150-W Series Mechanical Dimensions



初级规格				
初级型号	L1	L2	N	A
DLMFP150-02W	277	196	7	2
DLMFP150-03W	378	308	11	4
DLMFP150-04W	490	420	15	4

次级规格						
次级型号	重量kg	S1	S2	A	B	C
DLMFS150-N128-L	2.7	128	64	32	64	1
DLMFS150-N256-L	5.4	256	192	32	64	3
DLMFS150-N384-L	8.1	384	320	32	64	5
DLMFS150-N160-L	3.3	160	84	42	84	1
DLMFS150-S160-L	3.3	160	84	42	84	1
DLMFS150-N336-L	7.0	336	252	42	84	3
DLMFS150-S336-L	7.0	336	252	42	84	3

DLMFP150-W系列有铁芯平板直线电机参数

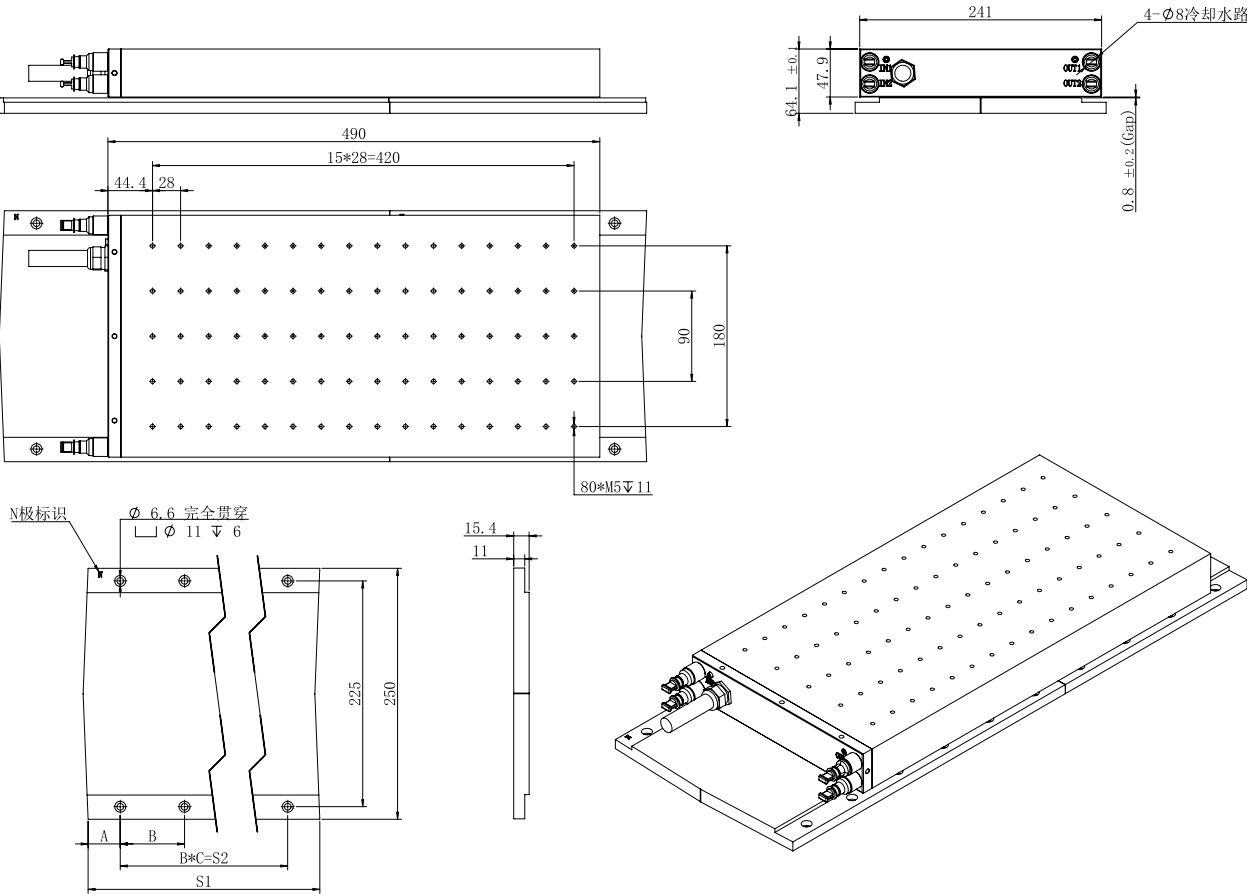
DLMFP150-W Series Ironcore Linear Motor Specifications

型号 Model	符号 Symbol	单位 Unit	DLMFP150-02W	DLMFP150-03W	DLMFP150-04W
连续推力 Continuous Thrust	Fc	N	1879	2825	3752
峰值推力 Peak Thrust	Fp	N	4429	6660	8734
电机常数 Motor Constant	Km	N/√W	61	70	86
最大持续损耗功率 Max. Continuous Power Loss	Pc	W	953	1620	1906
连续电流 Continuous Current	Ic	Arms	9.5	14.3	19
峰值电流 Peak Current	Ip	Arms	29.2	44	58.5
推力常数 Thrust Constant	Kf	N/Arms	198	198	198
反电势常数 Back EMF Constant	Ke	Vrms*s/m	119	119	119
600Vdc持续推力最大速度 Max. Speed at Continuous Thrust (600Vdc)	Vcn	m/s	2	1.8	2
600Vdc峰值推力最大速度 Max. Speed at Peak Thrust (600Vdc)	Vpk	m/s	0.7	0.6	0.7
线电阻25℃±10% Line Resistance at 25℃ ±10%	R25	Ω	6.4	4.8	3.2
线电感25℃±20% Line Inductance at 25℃ ±20%	L	mH	82	61.5	41
最高线圈允许温度 Max. Allowable Coil Temperature	T	℃	130	130	130
最大母线电压 Max. Bus Voltage	Ub	Vdc	600	600	600
极对距 (N-N) Pole Pitch (N-N)	2τ	mm	32	32	32
最小流量要求 Min. Flow Rate Requirement	Qw	L/min	4	2*4	2*4
磁吸力 Magnetic Attractive Force	Fa	N	5810	8695	11592
初级线圈重量 Primary Coil Weight	mc	kg	16	23	30



DLMFP200-04W系列机械尺寸

DLMFP200-04W Series Mechanical Dimensions



次级规格						
次级型号	重量kg	S1	S2	A	B	C
DLMFS200-N128-L	3.6	128	64	32	64	1
DLMFS200-N256-L	7.2	256	192	32	64	3
DLMFS200-N384-L	10.8	384	320	32	64	5
DLMFS200-N160-L	4.5	160	84	42	84	1
DLMFS200-S160-L	4.5	160	84	42	84	1
DLMFS200-N336-L	9.5	336	252	42	84	3
DLMFS200-S336-L	9.5	336	252	42	84	3

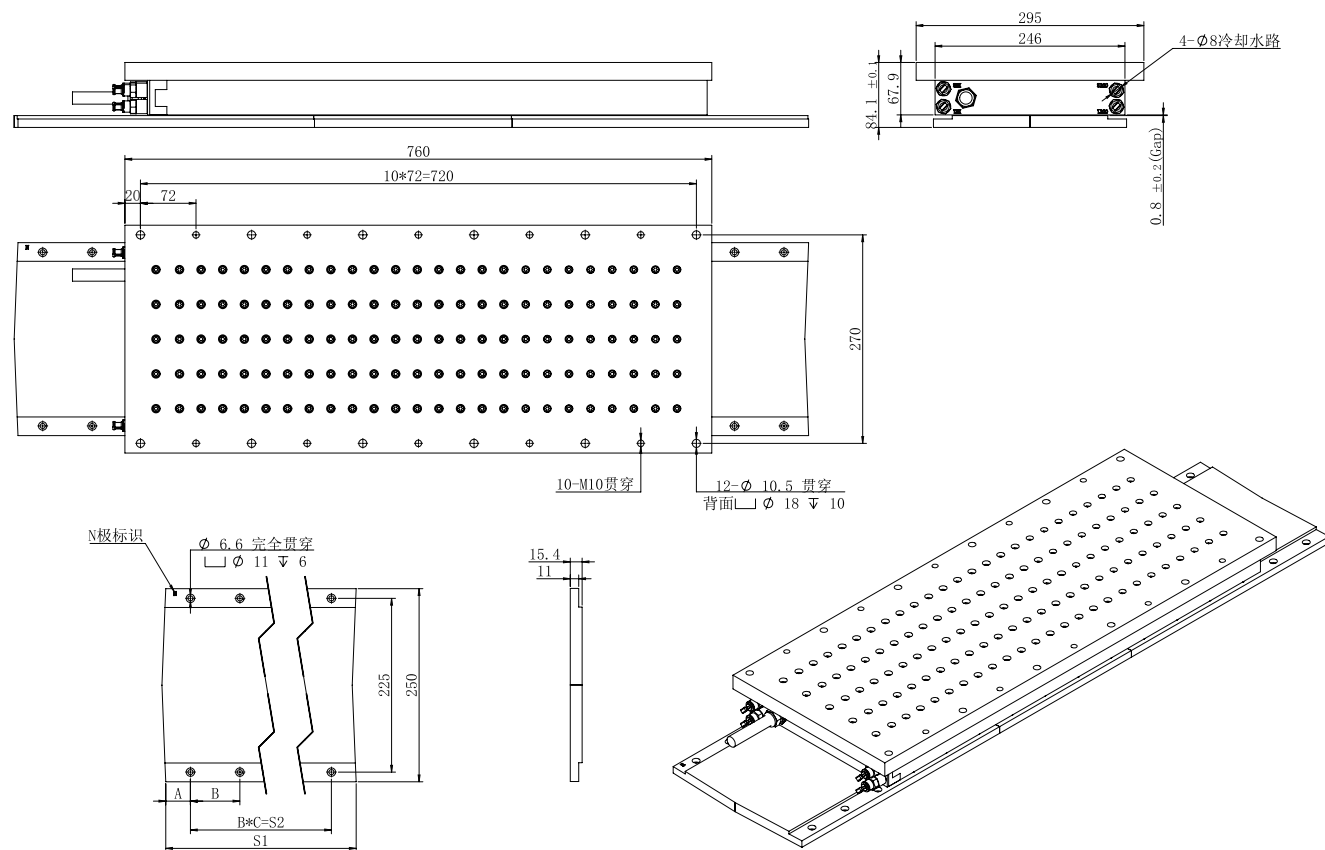
DLMFP200-04W系列有铁芯平板直线电机参数

DLMFP200-04W Series Ironcore Linear Motor Specifications

型号 Model	符号 Symbol	单位 Unit	DLMFP200-04W
连续推力 Continuous Thrust	Fc	N	4938
峰值推力 Peak Thrust	Fp	N	11629
电机常数 Motor Constant	Km	N/√W	94
最大持续损耗功率 Max. Continuous Power Loss	Pc	W	2749
连续电流 Continuous Current	Ic	Arms	34.5
峰值电流 Peak Current	Ip	Arms	108
推力常数 Thrust Constant	Kf	N/Arms	143
反电势常数 Back EMF Constant	Ke	Vrms•s/m	86.2
600Vdc持续推力最大速度 Max. Speed at Continuous Thrust (600Vdc)	Vcn	m/s	2.9
600Vdc峰值推力最大速度 Max. Speed at Peak Thrust (600Vdc)	Vpk	m/s	1.1
线电阻25°C±10% Line Resistance at 25°C ±10%	R25	Ω	1.4
线电感25°C±20% Line Inductance at 25°C ±20%	L	mH	15
最高线圈允许温度 Max. Allowable Coil Temperature	T	°C	130
最大母线电压 Max. Bus Voltage	Ub	Vdc	600
极对距 (N-N) Pole Pitch (N-N)	2τ	mm	32
最小流量要求 Min. Flow Rate Requirement	Qw	L/min	2*4
磁吸力 Magnetic Attractive Force	Fa	N	15273
初级线圈重量 Primary Coil Weight	mc	kg	38

DLMFP200-06W系列机械尺寸

DLMFP200-06W Series Mechanical Dimensions



次级规格						
次级型号	重量kg	S1	S2	A	B	C
DLMFS200-N128-L	3.6	128	64	32	64	1
DLMFS200-N256-L	7.2	256	192	32	64	3
DLMFS200-N384-L	10.8	384	320	32	64	5
DLMFS200-N160-L	4.5	160	84	42	84	1
DLMFS200-S160-L	4.5	160	84	42	84	1
DLMFS200-N336-L	9.5	336	252	42	84	3
DLMFS200-S336-L	9.5	336	252	42	84	3

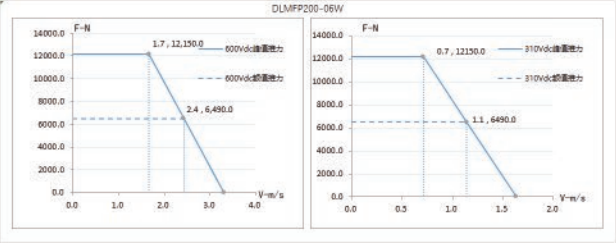
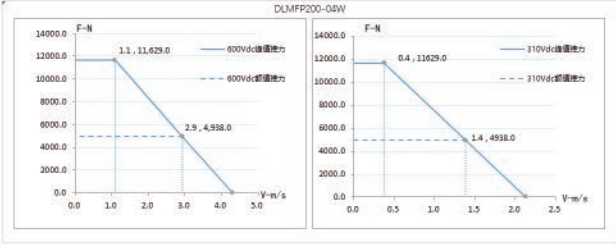
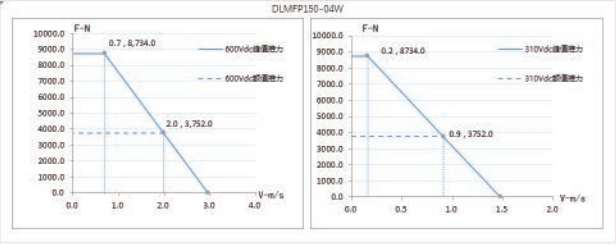
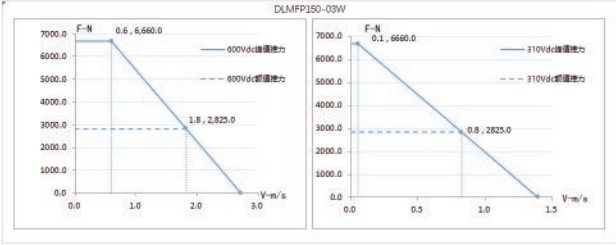
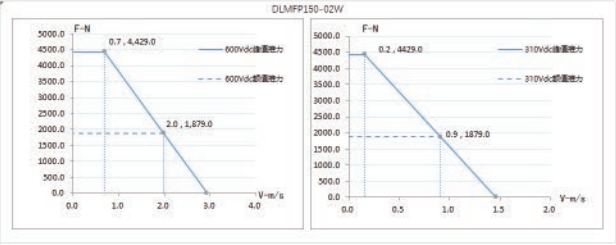
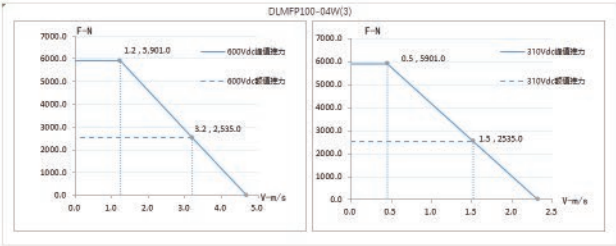
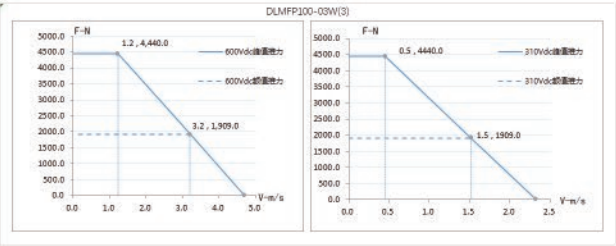
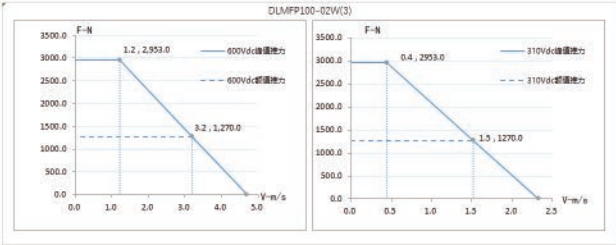
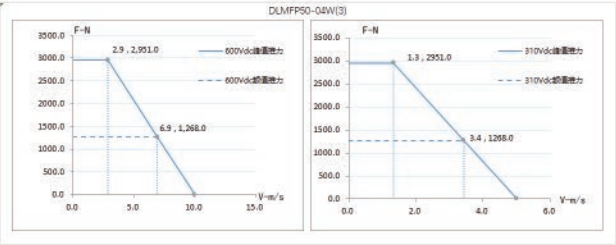
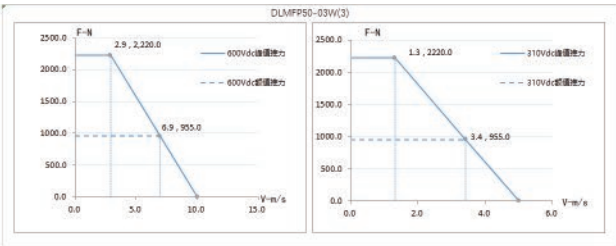
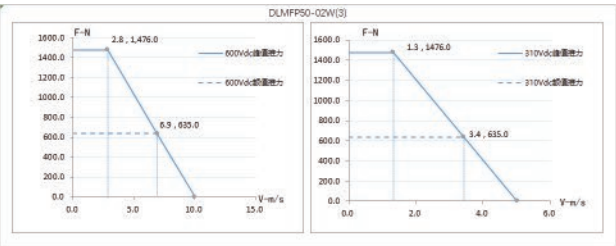
DLMFP200-06W系列有铁芯平板直线电机参数

DLMFP200-06W Series Ironcore Linear Motor Specifications

型号 Model	符号 Symbol	单位 Unit	DLMFP200-06W
连续推力 Continuous Thrust	Fc	N	6490
峰值推力 Peak Thrust	Fp	N	12150
电机常数 Motor Constant	Km	N/√W	146
最大持续损耗功率 Max. Continuous Power Loss	Pc	W	1966
连续电流 Continuous Current	Ic	Arms	28
峰值电流 Peak Current	Ip	Arms	56
推力常数 Thrust Constant	Kf	N/Arms	231.8
反电势常数 Back EMF Constant	Ke	Vrms•s/m	133.5
600Vdc持续推力最大速度 Max. Speed at Continuous Thrust (600Vdc)	Vcn	m/s	2.4
600Vdc峰值推力最大速度 Max. Speed at Peak Thrust (600Vdc)	Vpk	m/s	1.7
线电阻25°C±10% Line Resistance at 25°C ±10%	R25	Ω	1.52
线电感25°C±20% Line Inductance at 25°C ±20%	L	mH	16
最高线圈允许温度 Max. Allowable Coil Temperature	T	°C	130
最大母线电压 Max. Bus Voltage	Ub	Vdc	600
极对距 (N-N) Pole Pitch (N-N)	2τ	mm	32
最小流量要求 Min. Flow Rate Requirement	Qw	L/min	2*4
磁吸力 Magnetic Attractive Force	Fa	N	27800
初级线圈重量 Primary Coil Weight	mc	kg	84

DLMFP系列电机F-V曲线

F-V Curve of the DLMFP Series



DLMXP系列

DLMXP Series

电机介绍

Motor Introduction

DLMXP系列电机推力大、响应快, 全系列水冷设计, 配置隔离冷却器, 防护等级IP65, 适合各种大推力、大负载、环境恶劣的应用。

持续推力: $F_{cn} = 275N \sim 8390N$

峰值推力: $F_{pk} = 550N \sim 20920N$

The DLMXP series offers high thrust and rapid response. With full-series water cooling, an isolated cooler, and an IP65 rating, these motors are perfect for high-thrust, heavy-duty tasks in harsh conditions.

Continuous Thrust: $F_{cn} = 275N \sim 8390N$

Peak Thrust: $F_{pk} = 550N \sim 20920N$

典型案例: 五轴加工中心、龙门加工中心、超精密车床、螺纹磨床、复合磨床、内外圆磨床等。

5-axis machining centers, gantry machining centers, ultra-precision lathes, thread grinding machines, combination grinding machines, and internal/external cylindrical grinding machines.

产品特点

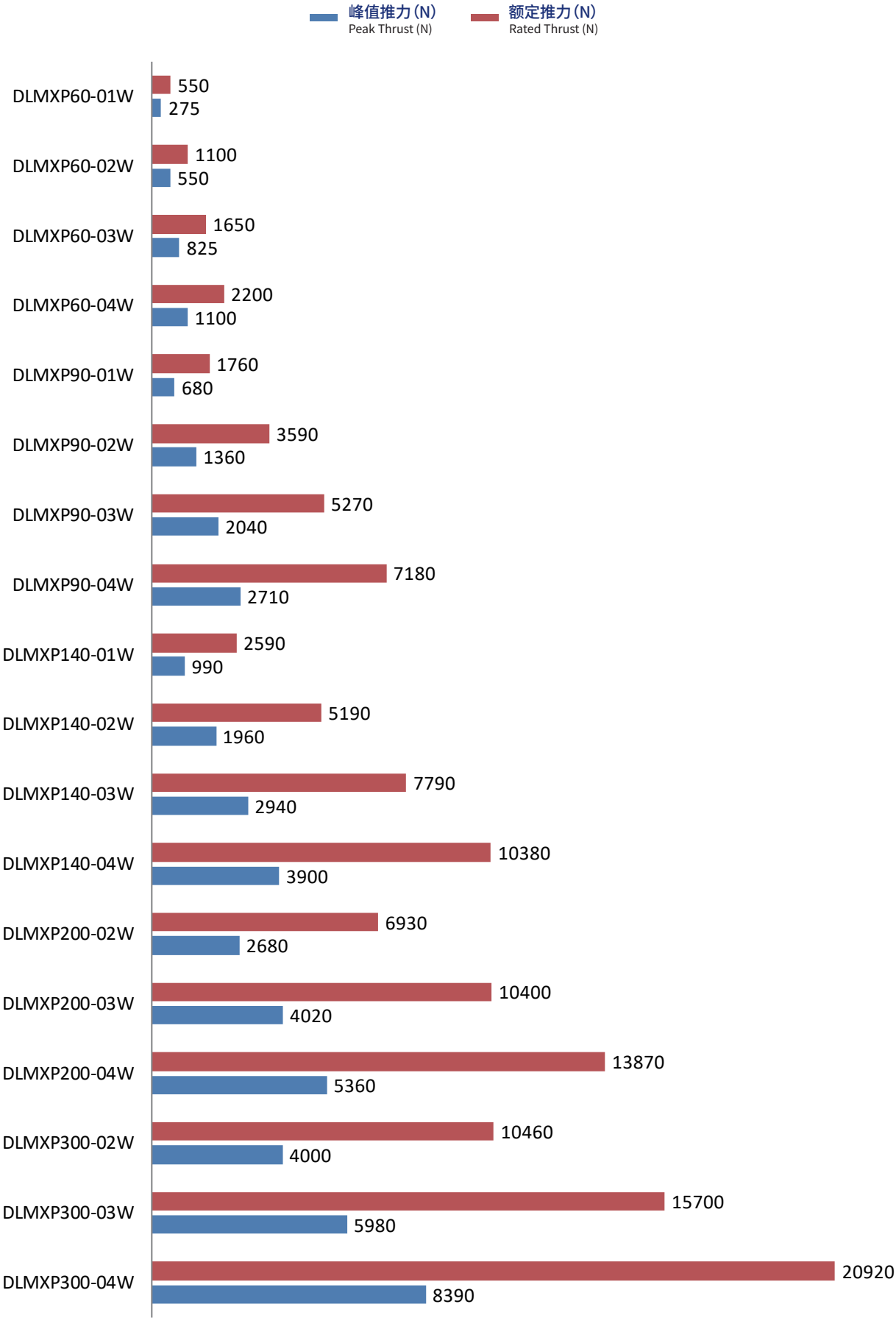
Product Features

- 大推力、高刚性
 - 优异的水路设计
 - 低推力波动
 - 最大母线电压600Vdc
 - 高防护等级IP65
- High thrust and high rigidity
 - Optimized water cooling design
 - Low thrust ripple
 - Max. DC bus voltage: 600Vdc
 - IP65 high protection rating



DLMXP系列直线电机推力图

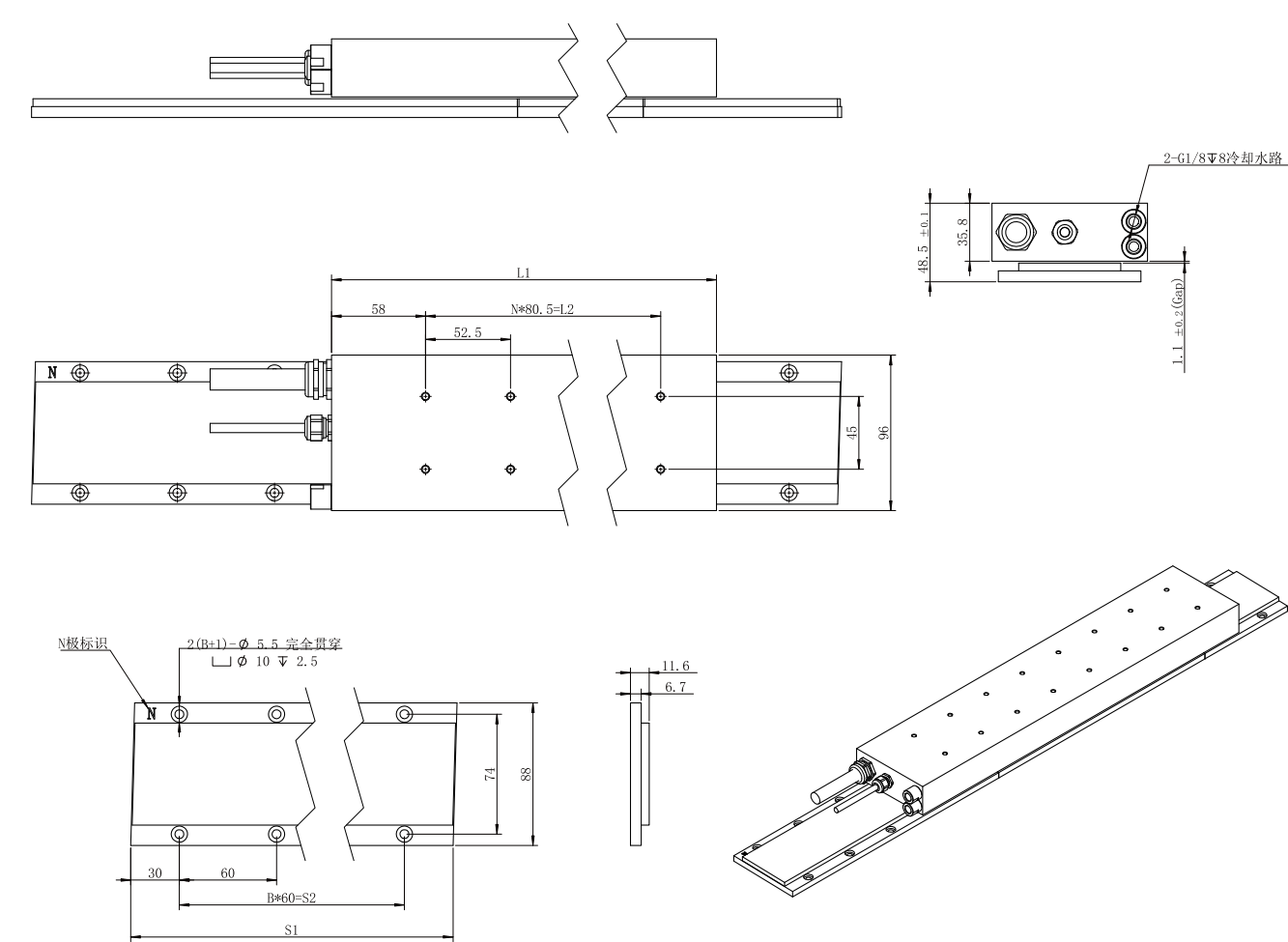
DLMXP Series Linear Motor Thrust Curve





DLMXP60-W系列机械尺寸

DLMXP60-W Series Mechanical Dimensions



初级规格			
初级型号	L1	L2	N
DLMXP60-01W	145	52.5	1
DLMXP60-02W	250	157.5	3
DLMXP60-03W	355	262.5	5
DLMXP60-04W	460	367.5	7

次级规格				
次级型号	重量kg	S1	S2	B
DLMXS60-N120	0.8	120	60	1
DLMXS60-N180	1.2	180	120	2
DLMXS60-N300	2	300	240	4

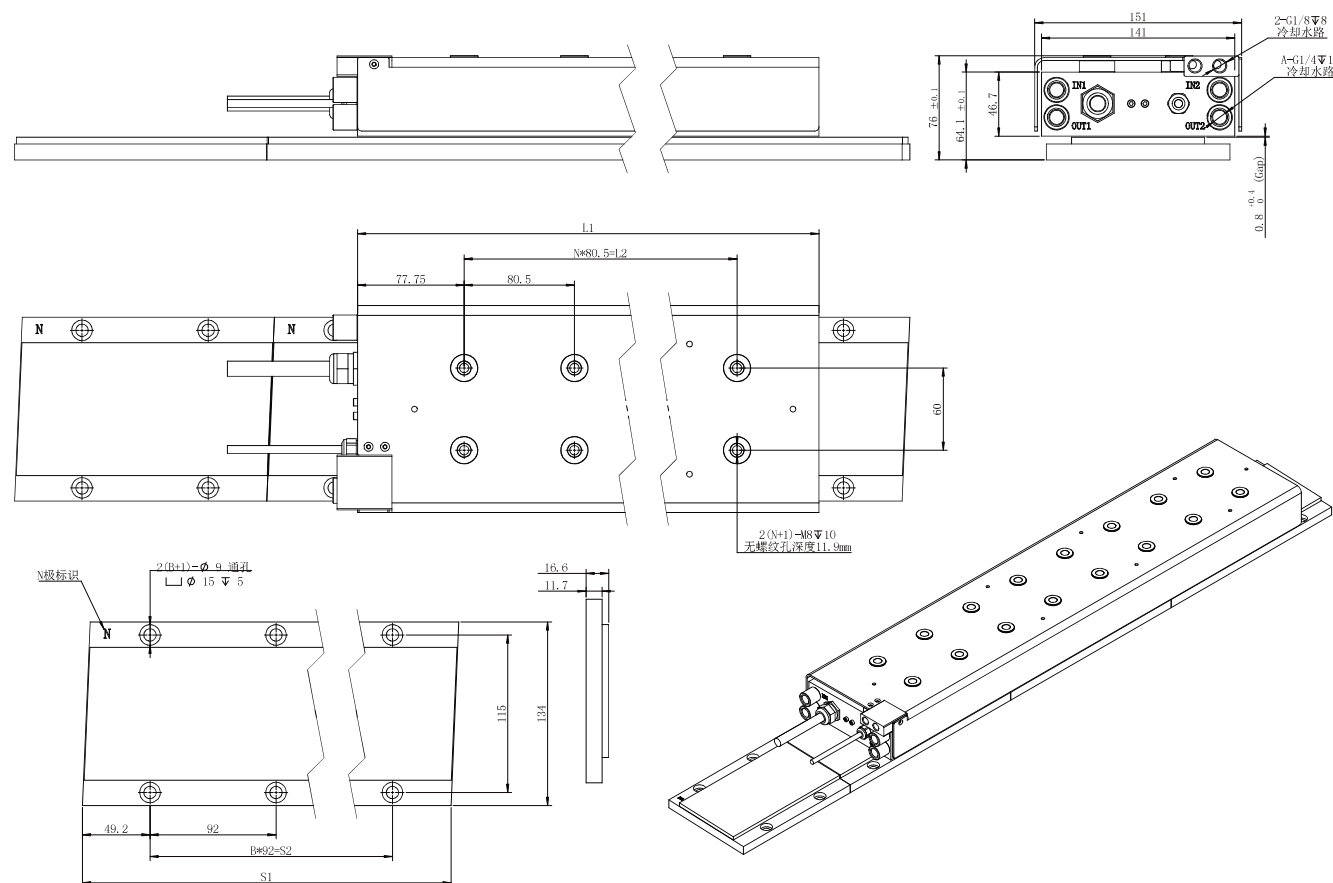
DLMXP60-W系列有铁芯平板直线电机参数

DLMXP60-W Series Ironcore Linear Motor Specifications

型号 Model	符号 Symbol	单位 Unit	DLMXP60-01W	DLMXP60-02W	DLMXP60-03W	DLMXP60-04W
连续推力 Continuous Thrust	Fc	N	275	550	825	1100
峰值推力 Peak Thrust	Fp	N	550	1100	1650	2200
电机常数 Motor Constant	Km	N/√W	21	30	36	42
最大持续损耗功率 Max. Continuous Power Loss	Pc	W	176	342	512	683
连续电流 Continuous Current	Ic	Arms	2.8	5.6	8.4	11.2
峰值电流 Peak Current	Ip	Arms	6.4	12.7	19.1	25.4
推力常数 Thrust Constant	Kf	N/Arms	98.2	98.2	98.2	98.2
反电势常数 Back EMF Constant	Ke	Vrms•s/m	56.7	56.7	56.7	56.7
600Vdc持续推力最大速度 Max. Speed at Continuous Thrust (600Vdc)	Vcn	m/s	5.6	5.6	5.6	5.6
600Vdc峰值推力最大速度 Max. Speed at Peak Thrust (600Vdc)	Vpk	m/s	3.4	3.4	3.4	3.4
线电阻25°C±10% Line Resistance at 25°C ±10%	R25	Ω	13.6	6.6	4.4	3.3
线电感25°C±20% Line Inductance at 25°C ±20%	L	mH	70	35	23.3	17.5
最高线圈允许温度 Max. Allowable Coil Temperature	T	°C	130	130	130	130
最大母线电压 Max. Bus Voltage	Ub	Vdc	600	600	600	600
极对距 (N-N) Pole Pitch (N-N)	2τ	mm	30	30	30	30
最小流量要求 Min. Flow Rate Requirement	Qw	L/min	3	3	3	3
磁吸力 Magnetic Attractive Force	Fa	N	1185	2370	3555	4740
初级线圈重量 Primary Coil Weight	mc	kg	2.2	4.1	5.9	7.8

DLMXP90-W系列机械尺寸

DLMXP90-W Series Mechanical Dimensions



初级规格				
初级型号	L1	L2	N	A
DLMP90-01W	218	80.5	1	2
DLMP90-02W	379	241.5	3	2
DLMP90-03W	540	402.5	5	4
DLMP90-04W	701	563.5	7	4

次级规格				
次级型号	重量kg	S1	S2	B
DLMS90-N184	2.5	184	92	1
DLMS90-N276	4	276	184	2
DLMS90-N460	6.5	460	368	4

DLMXP90-W系列有铁芯平板直线电机参数

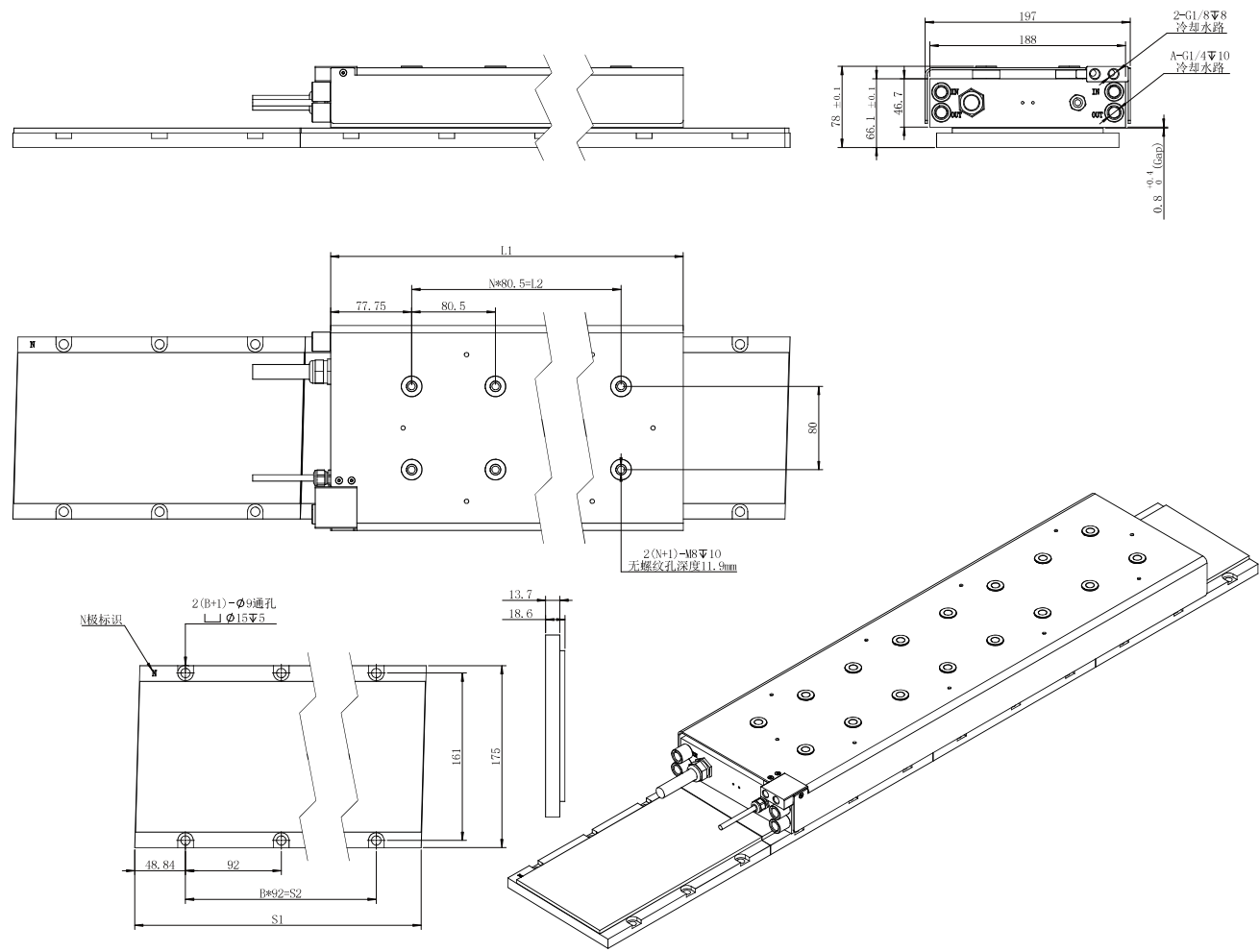
DLMXP90-W Series Ironcore Linear Motor Specifications

型号 Model	符号 Symbol	单位 Unit	DLMXP90-01W	DLMXP90-02W	DLMXP90-03W	DLMXP90-04W
连续推力 Continuous Thrust	Fc	N	680	1360	2040	2710
峰值推力 Peak Thrust	Fp	N	1760	3590	5270	7180
电机常数 Motor Constant	Km	N/√W	36	50	61	70
最大持续损耗功率 Max. Continuous Power Loss	Pc	W	367	733	1120	1519
连续电流 Continuous Current	Ic	Arms	6.3	12.6	18.9	25.2
峰值电流 Peak Current	Ip	Arms	19	38	58	76
推力常数 Thrust Constant	Kf	N/Arms	104	104	104	104
反电势常数 Back EMF Constant	Ke	Vrms•s/m	60	60	60	60
600Vdc持续推力最大速度 Max. Speed at Continuous Thrust (600Vdc)	Vcn	m/s	5.1	5.1	5.1	5.1
600Vdc峰值推力最大速度 Max. Speed at Peak Thrust (600Vdc)	Vpk	m/s	2.4	2.4	2.3	2.3
线电阻25°C±10% Line Resistance at 25°C ±10%	R25	Ω	5.6	2.8	1.9	1.45
线电感25°C±20% Line Inductance at 25°C ±20%	L	mH	56	28	19	14.5
最高线圈允许温度 Max. Allowable Coil Temperature	T	°C	130	130	130	130
最大母线电压 Max. Bus Voltage	Ub	Vdc	600	600	600	600
极对距 (N-N) Pole Pitch (N-N)	2τ	mm	46	46	46	46
最小流量要求 Min. Flow Rate Requirement	Qw	L/min	6	6	2*6	2*6
磁吸力 Magnetic Attractive Force	Fa	N	2610	5180	7720	10240
初级线圈重量 Primary Coil Weight	mc	kg	6.3	12.5	18.8	25



DLMXP140-W系列机械尺寸

DLMXP140-W Series Mechanical Dimensions



初级规格				
初级型号	L1	L2	N	A
DLMXP140-01W	218	80.5	1	2
DLMXP140-02W	379	241.5	3	2
DLMXP140-03W	540	402.5	5	4
DLMXP140-04W	701	563.5	7	4

次级规格				
次级型号	重量kg	S1	S2	B
DLMXS140-N184	4	184	92	1
DLMXS140-N276	6	276	184	2
DLMXS140-N460	10	460	368	4

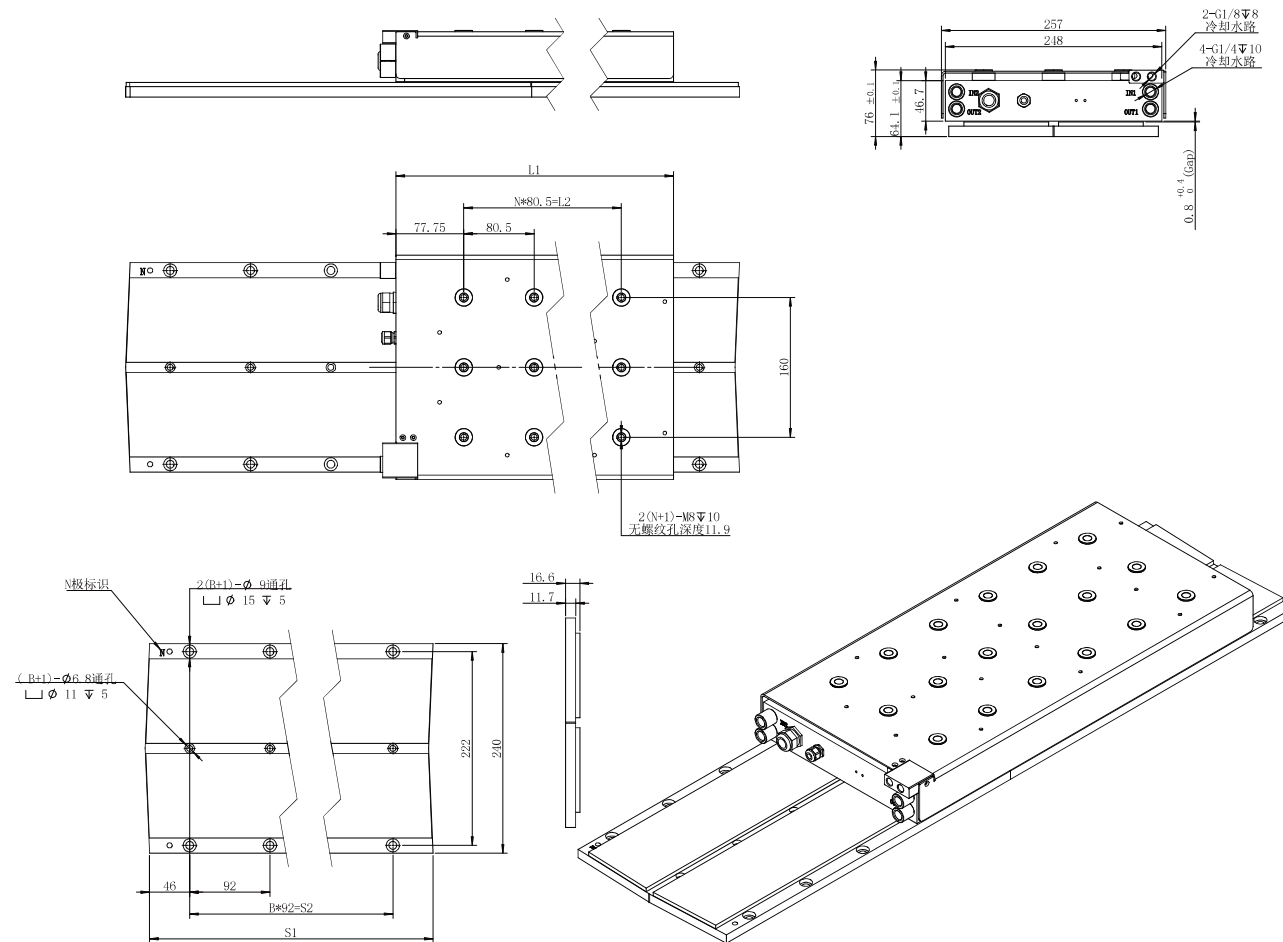
DLMXP140-W系列有铁芯平板直线电机参数

DLMXP140-W Series Ironcore Linear Motor Specifications

型号 Model	符号 Symbol	单位 Unit	DLMXP140-01W	DLMXP140-02W	DLMXP140-03W	DLMXP140-04W
连续推力 Continuous Thrust	Fc	N	990	1960	2940	3900
峰值推力 Peak Thrust	Fp	N	2590	5190	7790	10380
电机常数 Motor Constant	Km	N/√W	46	65	79	91
最大持续损耗功率 Max. Continuous Power Loss	Pc	W	460	920	1380	1840
连续电流 Continuous Current	Ic	Arms	6.5	13	19.5	26
峰值电流 Peak Current	Ip	Arms	19.5	39	58.5	78
推力常数 Thrust Constant	Kf	N/Arms	145	145	145	145
反电势常数 Back EMF Constant	Ke	Vrms•s/m	84	84	84	84
600Vdc持续推力最大速度 Max. Speed at Continuous Thrust (600Vdc)	Vcn	m/s	3.8	3.8	3.8	3.8
600Vdc峰值推力最大速度 Max. Speed at Peak Thrust (600Vdc)	Vpk	m/s	1.8	1.8	1.8	1.8
线电阻25℃±10% Line Resistance at 25℃ ±10%	R25	Ω	6.6	3.3	2.2	1.65
线电感25℃±20% Line Inductance at 25℃ ±20%	L	mH	66	33	22	16.5
最高线圈允许温度 Max. Allowable Coil Temperature	T	℃	130	130	130	130
最大母线电压 Max. Bus Voltage	Ub	Vdc	600	600	600	600
极对距 (N-N) Pole Pitch (N-N)	2τ	mm	46	46	46	46
最小流量要求 Min. Flow Rate Requirement	Qw	L/min	6	6	2*6	2*6
磁吸力 Magnetic Attractive Force	Fa	N	4000	8000	12000	16000
初级线圈重量 Primary Coil Weight	mc	kg	9	17	25	33

DLMXP200-W系列机械尺寸

DLMXP200-W Series Mechanical Dimensions



初级规格			
初级型号	L1	L2	N
DLMXP200-02W	379	241.5	3
DLMXP200-03W	540	402.5	5
DLMXP200-04W	701	563.5	7

次级规格				
次级型号	重量kg	S1	S2	B
DLMXS200-N184	4.6	184	92	1
DLMXS200-N276	7.3	276	184	2
DLMXS200-N460	11.5	460	368	4

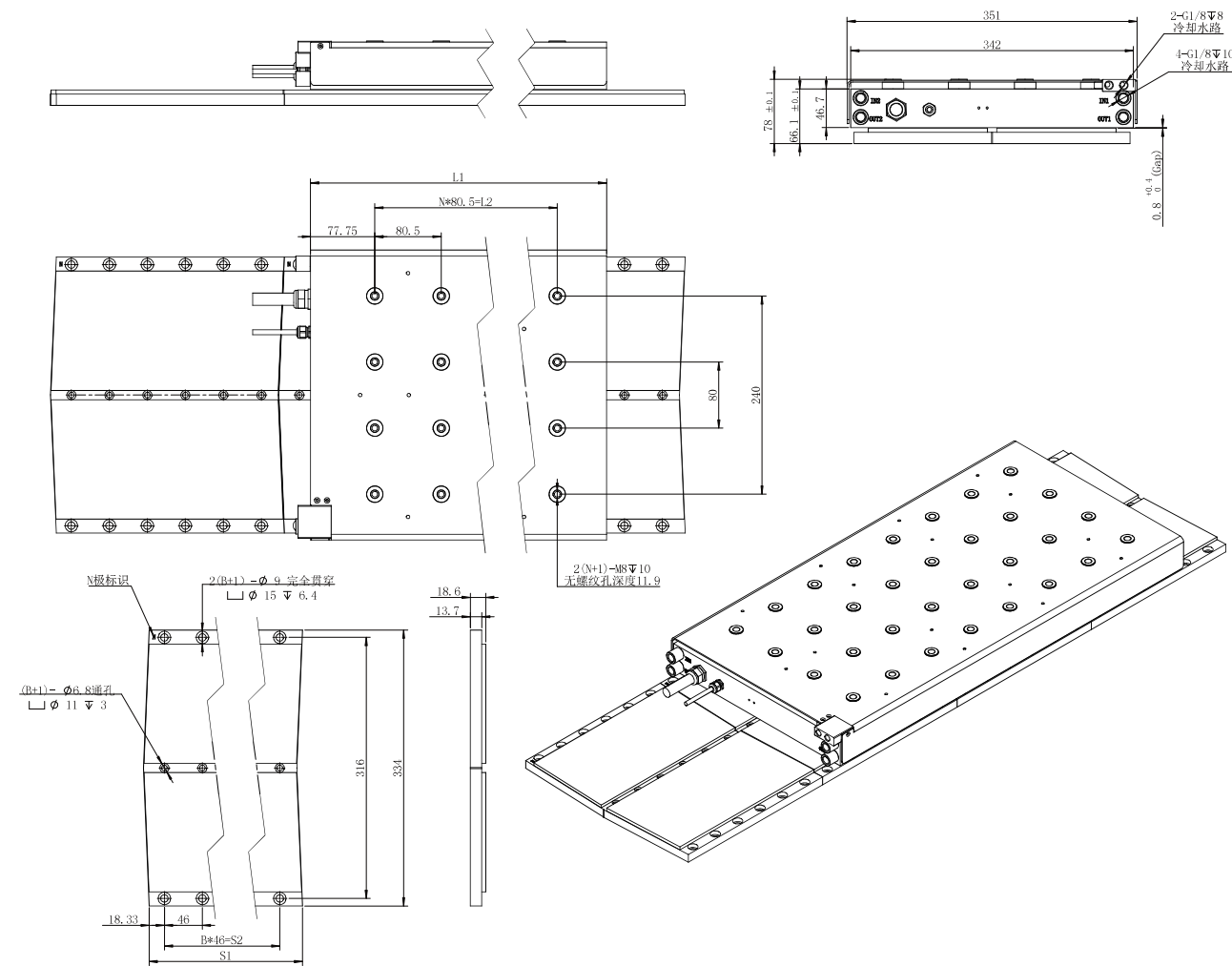
DLMXP200-W系列有铁芯平板直线电机参数

DLMXP200-W Series Ironcore Linear Motor Specifications

型号 Model	符号 Symbol	单位 Unit	DLMXP200-02W	DLMXP200-03W	DLMXP200-04W
连续推力 Continuous Thrust	Fc	N	2680	4020	5360
峰值推力 Peak Thrust	Fp	N	6930	10400	13830
电机常数 Motor Constant	Km	N/√W	78	96	111
最大持续损耗功率 Max. Continuous Power Loss	Pc	W	1171	1757	2342
连续电流 Continuous Current	Ic	Arms	13	19.5	26
峰值电流 Peak Current	Ip	Arms	37.5	56.3	75
推力常数 Thrust Constant	Kf	N/Arms	210	210	210
反电势常数 Back EMF Constant	Ke	Vrms•s/m	122	122	122
600Vdc持续推力最大速度 Max. Speed at Continuous Thrust (600Vdc)	Vcn	m/s	2.5	2.5	2.5
600Vdc峰值推力最大速度 Max. Speed at Peak Thrust (600Vdc)	Vpk	m/s	1.1	1.1	1.1
线电阻25°C±10% Line Resistance at 25°C ±10%	R25	Ω	4.4	2.9	2.2
线电感25°C±20% Line Inductance at 25°C ±20%	L	mH	52	34.7	26
最高线圈允许温度 Max. Allowable Coil Temperature	T	°C	130	130	130
最大母线电压 Max. Bus Voltage	Ub	Vdc	600	600	600
极对距 (N-N) Pole Pitch (N-N)	2τ	mm	16	16	16
最小流量要求 Min. Flow Rate Requirement	Qw	L/min	2*6	2*6	2*6
磁吸力 Magnetic Attractive Force	Fa	N	10940	16300	21610
初级线圈重量 Primary Coil Weight	mc	kg	24	33	42

DLMXP300-W系列机械尺寸

DLMXP300-W Series Mechanical Dimensions



初级规格			
初级型号	L1	L2	N
DLMXP300-02W	379	241.5	3
DLMXP300-03W	540	402.5	5
DLMXP300-04W	701	563.5	7

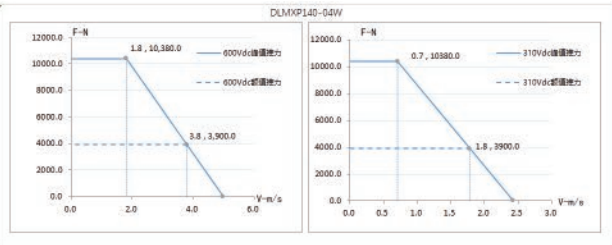
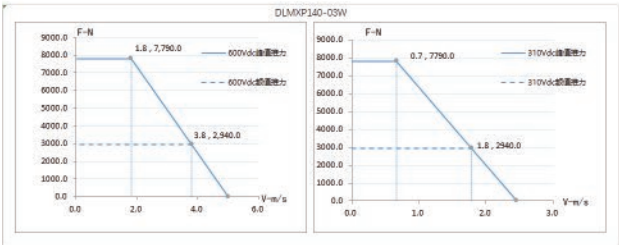
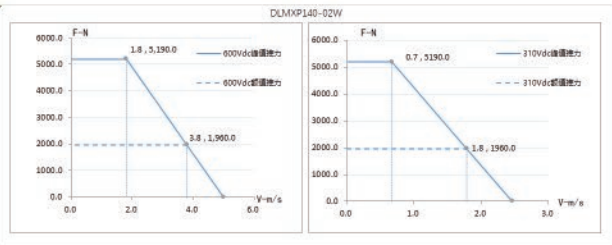
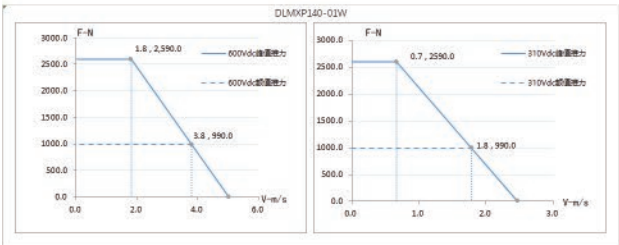
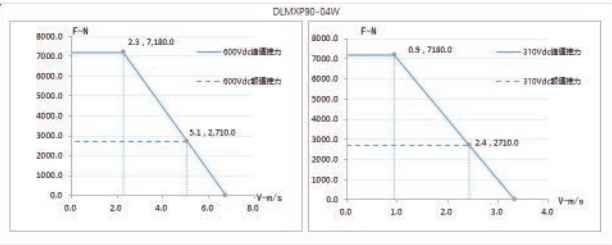
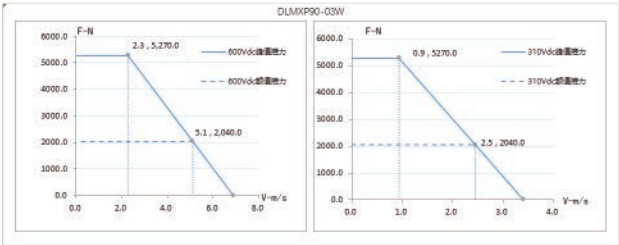
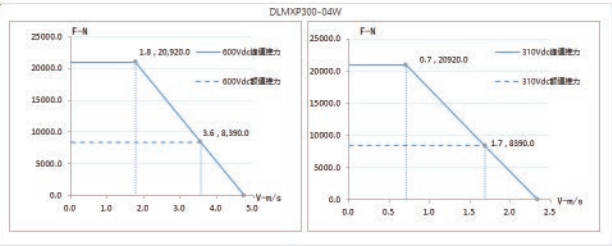
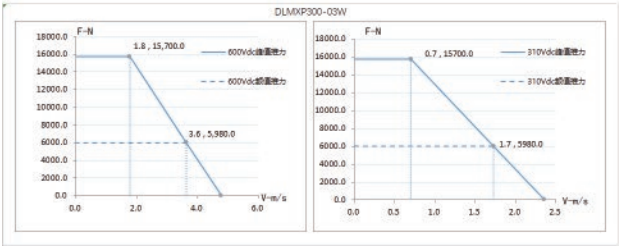
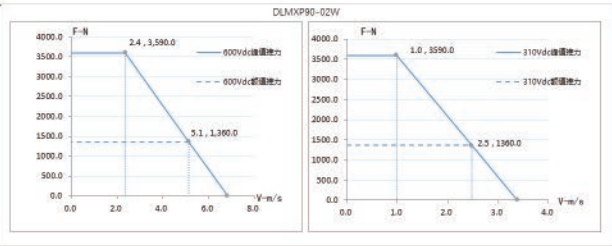
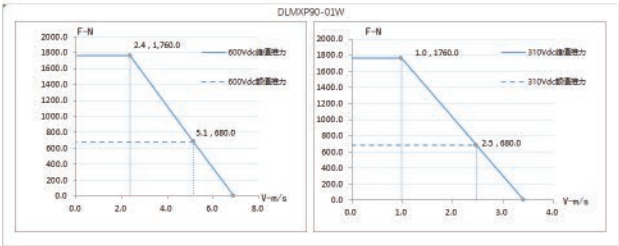
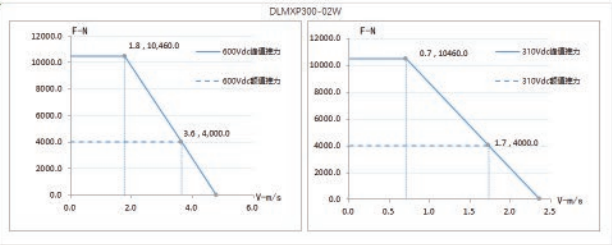
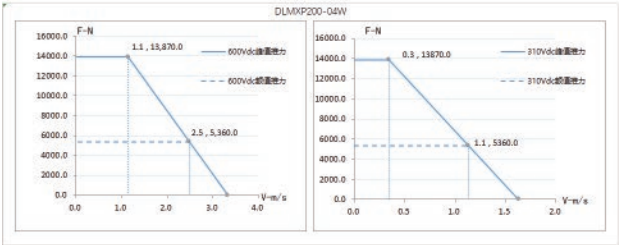
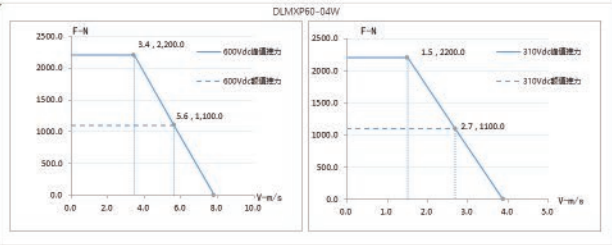
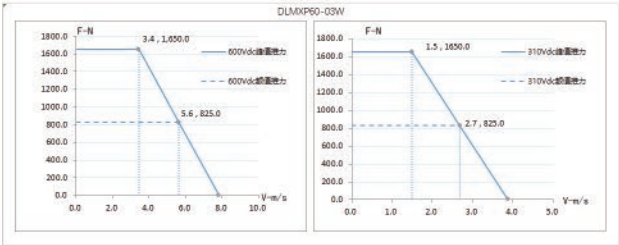
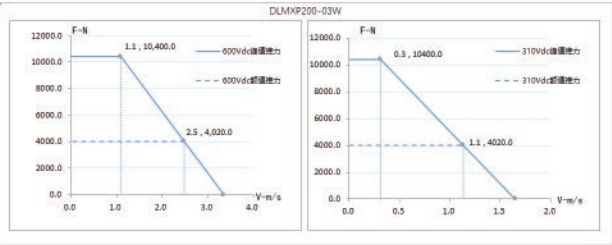
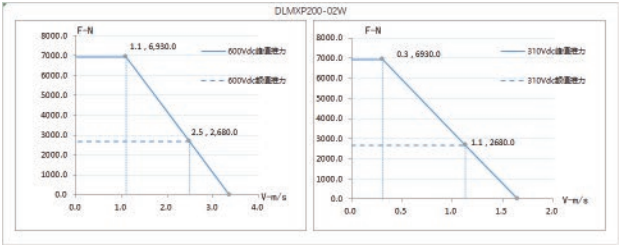
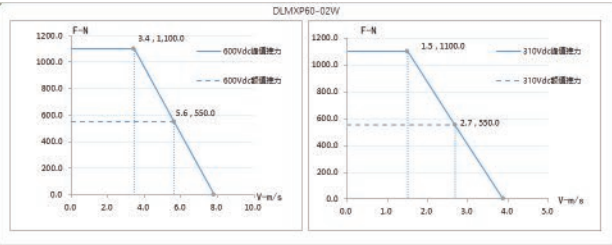
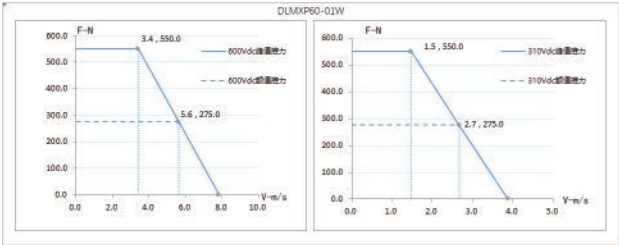
次级规格				
次级型号	重量kg	S1	S2	B
DLMXS300-N184	7	184	138	3
DLMXS200-N276	11	276	230	5
DLMXS300-N460	18	460	368	9

DLMXP300-W系列有铁芯平板直线电机参数

DLMXP300-W Series Ironcore Linear Motor Specifications

型号 Model	符号 Symbol	单位 Unit	DLMXP300-02W	DLMXP300-03W	DLMXP300-04W
连续推力 Continuous Thrust	Fc	N	4000	5980	8390
峰值推力 Peak Thrust	Fp	N	10460	15700	20920
电机常数 Motor Constant	Km	N/√W	99	121	139
最大持续损耗功率 Max. Continuous Power Loss	Pc	W	1628	2459	3644
连续电流 Continuous Current	Ic	Arms	26	39	55
峰值电流 Peak Current	Ip	Arms	78	117	165
推力常数 Thrust Constant	Kf	N/Arms	154	154	154
反电势常数 Back EMF Constant	Ke	Vrms*s/m	89	89	89
600Vdc持续推力最大速度 Max. Speed at Continuous Thrust (600Vdc)	Vcn	m/s	3.6	3.6	3.6
600Vdc峰值推力最大速度 Max. Speed at Peak Thrust (600Vdc)	Vpk	m/s	1.8	1.8	1.7
线电阻25℃±10% Line Resistance at 25℃ ±10%	R25	Ω	1.46	0.98	0.73
线电感25℃±20% Line Inductance at 25℃ ±20%	L	mH	17.2	11.5	8.6
最高线圈允许温度 Max. Allowable Coil Temperature	T	℃	130	130	130
最大母线电压 Max. Bus Voltage	Ub	Vdc	600	600	600
极对距(N-N) Pole Pitch (N-N)	2τ	mm	46	46	46
最小流量要求 Min. Flow Rate Requirement	Qw	L/min	2*6	2*6	2*6
磁吸力 Magnetic Attractive Force	Fa	N	17000	24900	33000
初级线圈重量 Primary Coil Weight	mc	kg	23	40	55

DLMXP系列电机F-V曲线
F-V Curve of the DLMXP Series



DLMHP系列

DLMHP Series

电机介绍

Motor Introduction

DLMHP系列电机推力大、响应快,全系列水冷设计,配置隔离冷却器,防护等级IP65,适合各种大推力、大负载、环境恶劣的应用。

持续推力: $F_{cn} = 550N \sim 8300N$

峰值推力: $F_{pk} = 2200N \sim 26428N$

The DLMHP series offers high thrust and rapid response. With full-series water cooling, an isolated cooler, and an IP65 rating, these motors are perfect for high-thrust, heavy-duty tasks in harsh conditions.

Continuous Thrust: $F_{cn} = 550N \sim 8300N$

Peak Thrust: $F_{pk} = 2200N \sim 26428N$

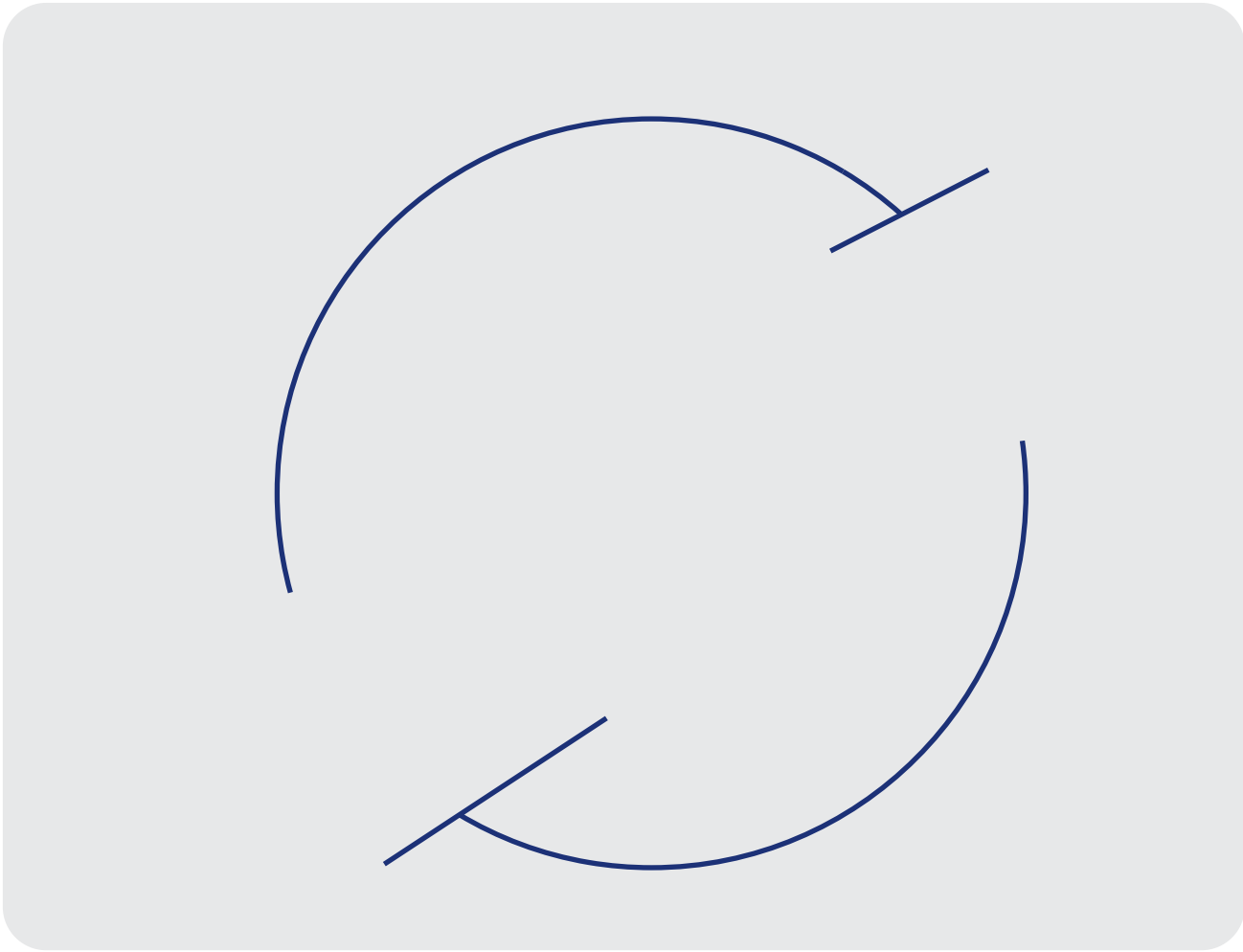
典型案例: 五轴加工中心、龙门加工中心、超精密车床、螺纹磨床、复合磨床、内外圆磨床等。

5-axis machining centers, gantry machining centers, ultra-precision lathes, thread grinding machines, combination grinding machines, and internal/external cylindrical grinding machines.

产品特色

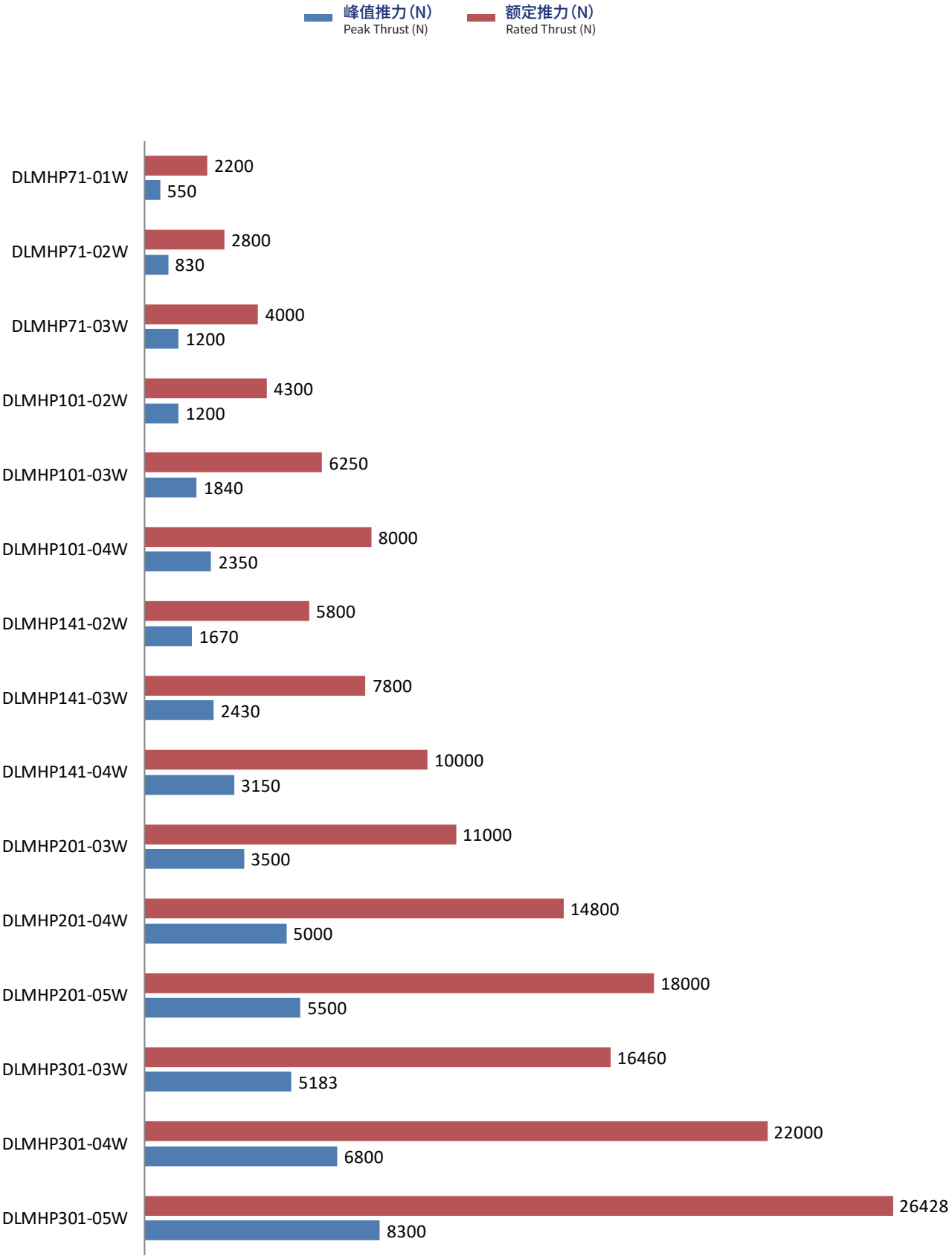
Product Features

- 大推力、高刚性
 - 优异的水路设计
 - 低推力波动
 - 最大母线电压600Vdc
 - 高防护等级IP65
- High thrust and high rigidity
 - Optimized water cooling design
 - Low thrust ripple
 - Max. DC bus voltage: 600Vdc
 - IP65 high protection rating



DLMHP系列直线电机推力图

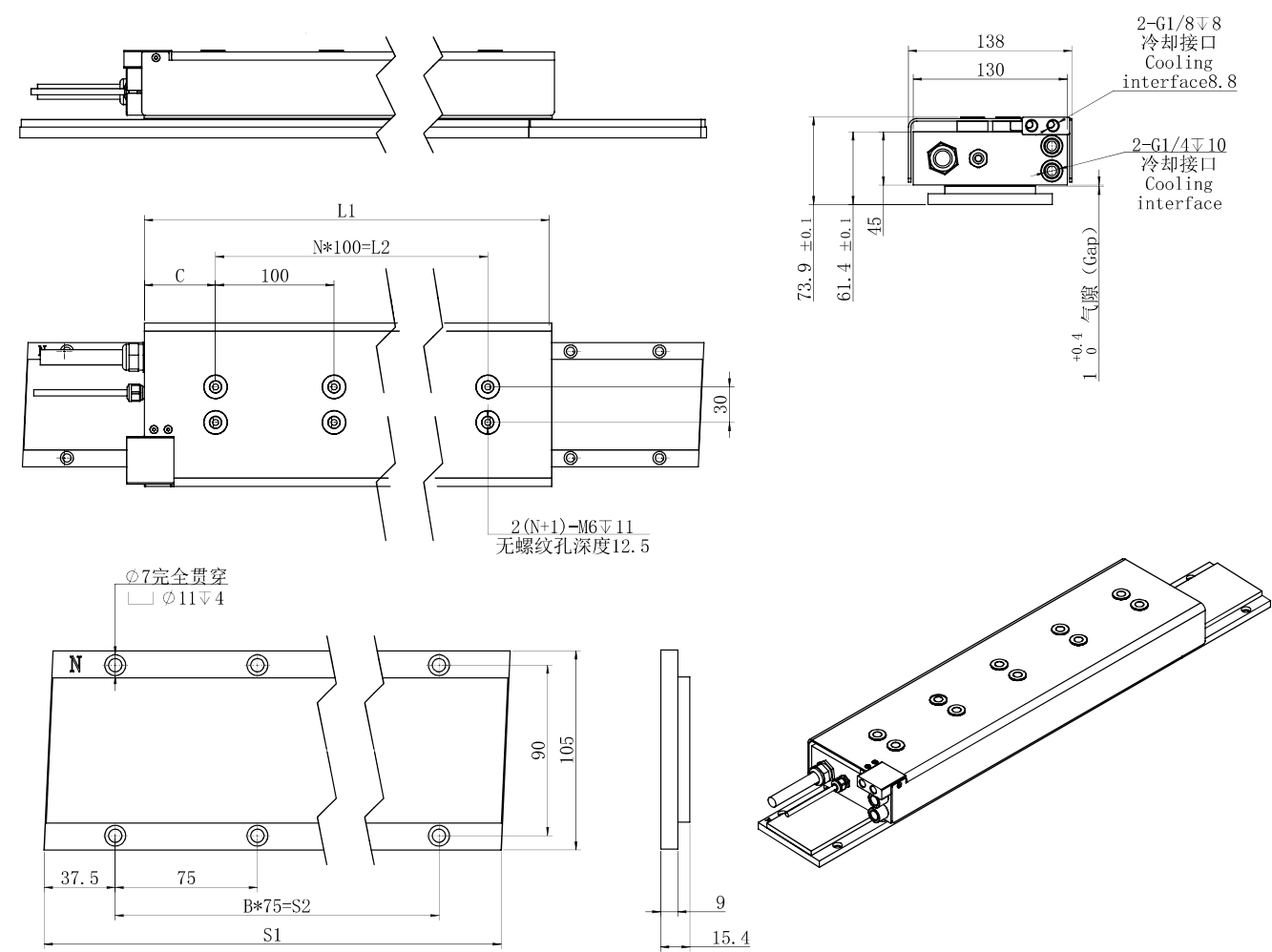
DLMHP Series Linear Motor Thrust Curve





DLMHP71-W系列机械尺寸

DLMHP71-W Series Mechanical Dimensions



初级规格				
初级型号	L1	L2	C	N
DLMHP71-01W	290	100	61	2
DLMHP71-02W	364	200	90	2
DLMHP71-03W	514	400	60	4

次级规格				
次级型号	重量kg	S1	S2	B
DLMHS71-N150	1.4	150	75	1
DLMHS71-N450	4.6	450	375	5
DLMHS71-N600	5.6	600	525	7

DLMHP71-W系列有铁芯平板直线电机参数

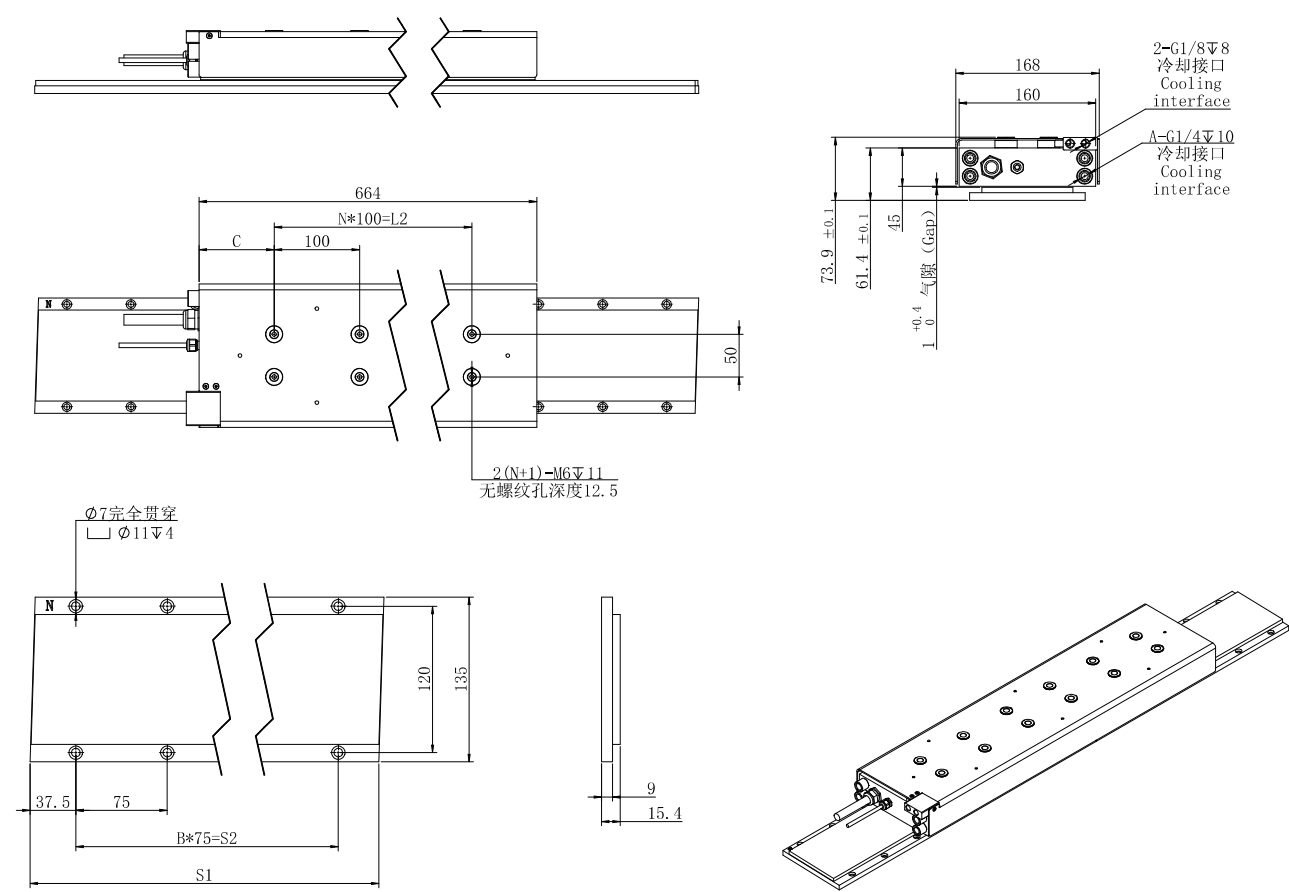
DLMHP71-W Series Ironcore Linear Motor Specifications

型号 Model	符号 Symbol	单位 Unit	DLMHP71-01W	DLMFP71-02W	DLMFP71-03W
连续推力 Continuous Thrust	Fc	N	550	830	1200
峰值推力 Peak Thrust	Fp	N	2200	2800	4000
电机常数 Motor Constant	Km	N/√W	35	39	48
最大持续损耗功率 Max. Continuous Power Loss	Pc	W	253	443	616
连续电流 Continuous Current	Ic	Arms	4.8	11	10.6
峰值电流 Peak Current	Ip	Arms	31.5	58	54
推力常数 Thrust Constant	Kf	N/Arms	114	76	115
反电势常数 Back EMF Constant	Ke	Vrms•s/m	66	44	66
600Vdc持续推力最大速度 Max. Speed at Continuous Thrust (600Vdc)	Vcn	m/s	5.7	8.6	5.7
600Vdc峰值推力最大速度 Max. Speed at Peak Thrust (600Vdc)	Vpk	m/s	2	3.7	2.5
线电阻25°C±10% Line Resistance at 25°C ±10%	R25	Ω	6.65	2.22	3.32
线电感25°C±20% Line Inductance at 25°C ±20%	L	mH	47.9	17	21.1
最高线圈允许温度 Max. Allowable Coil Temperature	T	°C	130	130	130
最大母线电压 Max. Bus Voltage	Ub	Vdc	600	600	600
极对距(N-N) Pole Pitch (N-N)	2τ	mm	75	75	75
最小流量要求 Min. Flow Rate Requirement	Qw	L/min	4	4	4
磁吸力 Magnetic Attractive Force	Fa	N	2730	3680	5410
初级线圈重量 Primary Coil Weight	mc	kg	8.5	11.5	14.5



DLMHP101-W系列机械尺寸

DLMHP101-W Series Mechanical Dimensions



总表					
初级规格					
初级型号	L1	L2	C	N	A
DLMHP101-02W	364	200	90	2	2
DLMHP101-03W	514	400	60	4	2
DLMHP101-04W	664	500	88	5	4

次级规格					
次级型号	重量kg	S1	S2	B	
DLMHS101-N150	2.0	150	75	1	
DLMHS101-N450	6.6	450	375	5	
DLMHS101-N600	8.0	600	525	7	

DLMHP101-W系列有铁芯平板直线电机参数

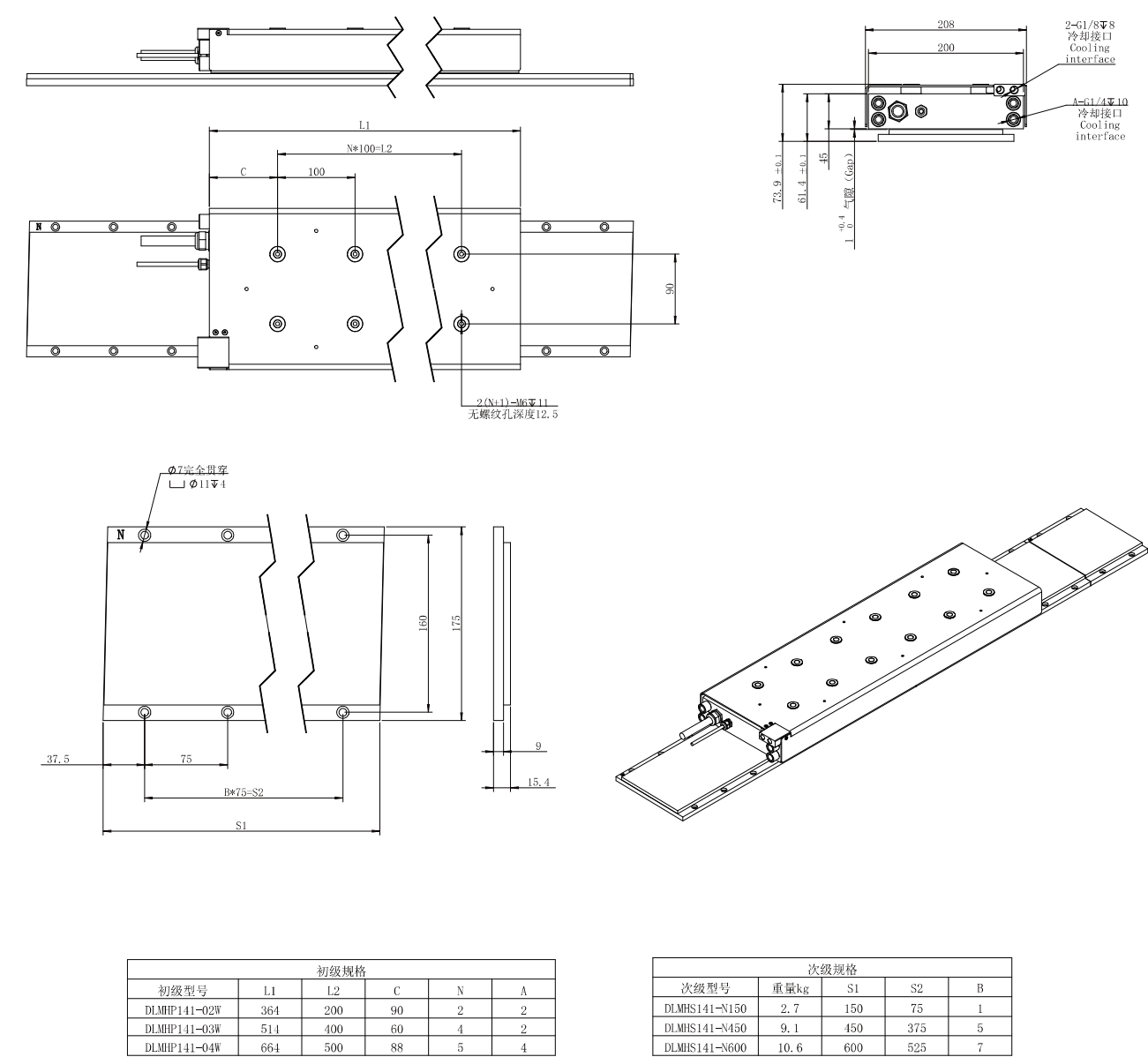
DLMHP101-W Series Ironcore Linear Motor Specifications

型号 Model	符号 Symbol	单位 Unit	DLMHP101-02W	DLMHP101-03W	DLMHP101-04W	
绕组代号 Winding Code	/	/	0180	0120	0060	0160
连续推力 Continuous Thrust	Fc	N	1200	1840	2350	2350
峰值推力 Peak Thrust	Fp	N	4300	6250	8000	8000
电机常数 Motor Constant	Km	N/√W	47	61	71	71
最大持续损耗功率 Max. Continuous Power Loss	Pc	W	654	906	1083	1083
连续电流 Continuous Current	Ic	Arms	11.9	11.3	10.75	21.5
峰值电流 Peak Current	Ip	Arms	69.2	62.2	60	120
推力常数 Thrust Constant	Kf	N/Arms	108.2	162.9	219.0	109.6
反电势常数 Back EMF Constant	Ke	Vrms·s/m	63	94	126	63
600Vdc持续推力最大速度 Max. Speed at Continuous Thrust (600Vdc)	Vcn	m/s	6.0	3.9	2.7	6.1
600Vdc峰值推力最大速度 Max. Speed at Peak Thrust (600Vdc)	Vpk	m/s	2.5	1.3	0.5	2.8
线电阻25°C±10% Line Resistance at 25°C ±10%	R25	Ω	2.80	4.30	5.68	1.42
线电感25°C±20% Line Inductance at 25°C ±20%	L	mH	16.5	25.6	49.5	8.5
最高线圈允许温度 Max. Allowable Coil Temperature	T	°C	130	130	130	130
最大母线电压 Max. Bus Voltage	Ub	Vdc	600	600	600	600
极对距 (N-N) Pole Pitch (N-N)	2τ	mm	75	75	75	75
最小流量要求 Min. Flow Rate Requirement	Qw	L/min	6	6	6	6
磁吸力 Magnetic Attractive Force	Fa	N	5260	7730	10330	10330
初级线圈重量 Primary Coil Weight	mc	kg	14	20	26	26



DLMHP141-W系列机械尺寸

DLMHP141-W Series Mechanical Dimensions



DLMHP141-W系列有铁芯平板直线电机参数

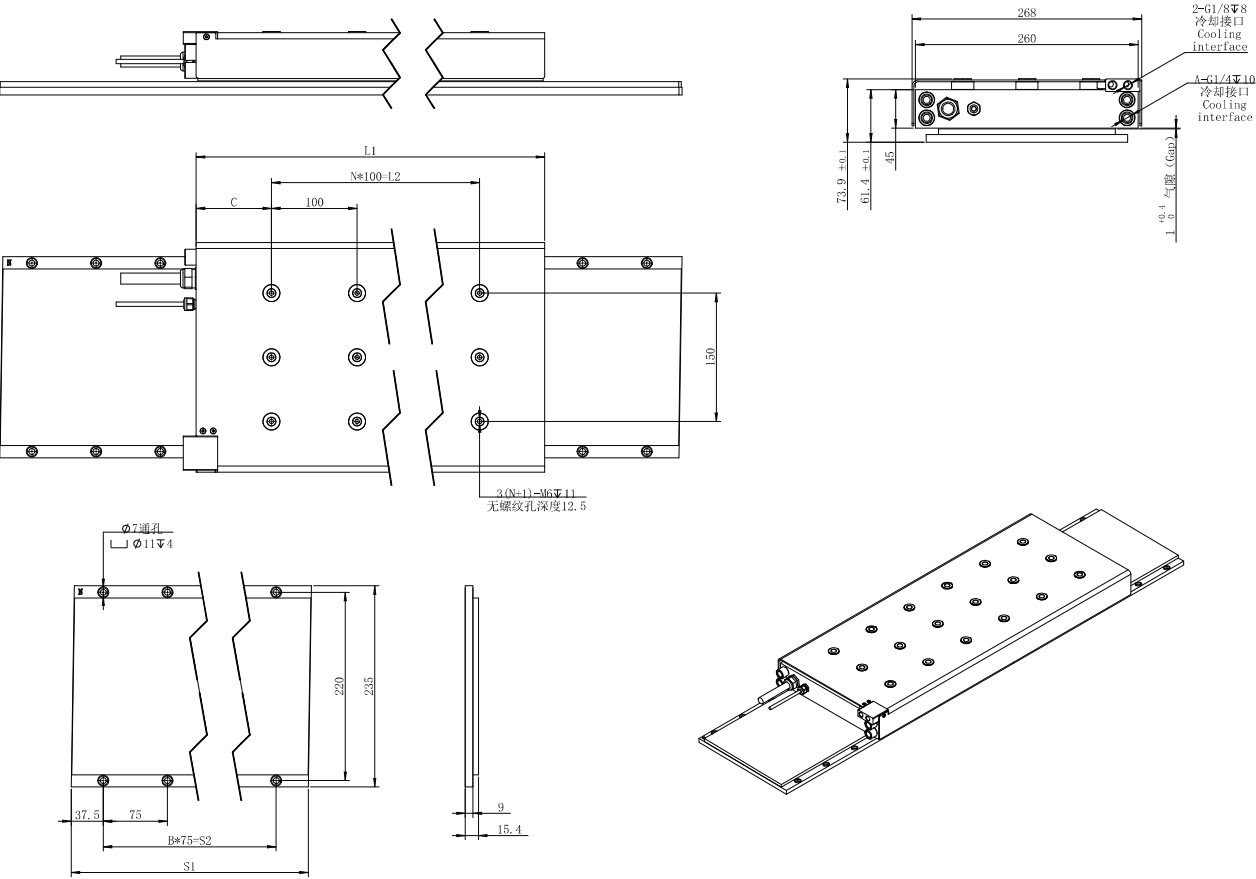
DLMHP141-W Series Ironcore Linear Motor Specifications

型号 Model	符号 Symbol	单位 Unit	DLMHP141-02W	DLMFP141-03W	DLMFP141-04W	
绕组代号 Winding Code	/	/	0120	0120	0060	0120
连续推力 Continuous Thrust	Fc	N	1670	2430	3150	3150
峰值推力 Peak Thrust	Fp	N	5800	7800	10000	10000
电机常数 Motor Constant	Km	N/√W	62	77	88	89
最大持续损耗功率 Max. Continuous Power Loss	Pc	W	725	1001	1276	1267
连续电流 Continuous Current	Ic	Arms	12.1	17.5	11.4	22.7
峰值电流 Peak Current	Ip	Arms	71	82.3	60	120
推力常数 Thrust Constant	Kf	N/Arms	139	139	280	139
反电势常数 Back EMF Constant	Ke	Vrms·s/m	80	80	160	80
600Vdc持续推力最大速度 Max. Speed at Continuous Thrust (600Vdc)	Vcn	m/s	4.7	4.7	2.2	4.8
600Vdc峰值推力最大速度 Max. Speed at Peak Thrust (600Vdc)	Vpk	m/s	1.9	2.4	0.4	2.2
线电阻25℃±10% Line Resistance at 25℃ ±10%	R25	Ω	3.00	1.98	5.95	1.49
线电感25℃±20% Line Inductance at 25℃ ±20%	L	mH	20.2	14.2	32.6	14.3
最高线圈允许温度 Max. Allowable Coil Temperature	T	℃	130	130	130	130
最大母线电压 Max. Bus Voltage	Ub	Vdc	600	600	600	600
极对距 (N-N) Pole Pitch (N-N)	2τ	mm	75	75	75	75
最小流量要求 Min. Flow Rate Requirement	Qw	L/min	6	6	6	6
磁吸力 Magnetic Attractive Force	Fa	N	7360	10820	14460	14460
初级线圈重量 Primary Coil Weight	mc	kg	19	26	33	33



DLMHP201-W系列机械尺寸

DLMHP201-W Series Mechanical Dimensions



初级规格					
初级型号	L1	L2	C	N	A
DLMHP201-02W	364	200	90	2	2
DLMHP201-03W	514	400	60	4	2
DLMHP201-04W	664	500	88	5	4
DLMHP201-05W	822	700	68	7	4

次级规格				
次级型号	重量kg	S1	S2	B
DLMHS201-N150	3.8	150	75	1
DLMHS201-N450	11.4	450	375	5
DLMHS201-N600	15.2	600	525	7

DLMHP201-W系列有铁芯平板直线电机参数

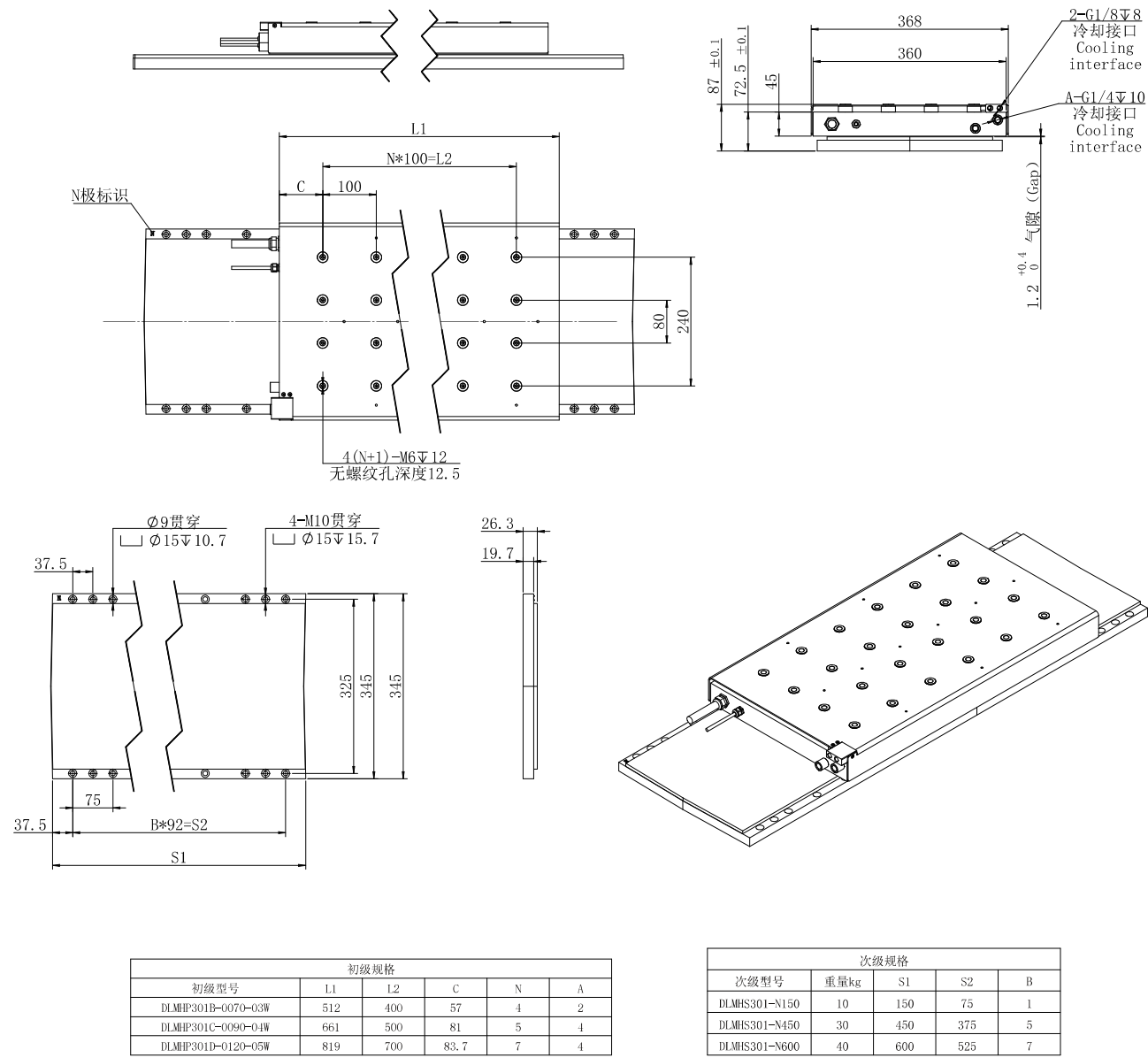
DLMHP201-W Series Ironcore Linear Motor Specifications

型号 Model	符号 Symbol	单位 Unit	DLMHP201-03W	DLMHP201-04W	DLMFP201-05W	
绕圈代号 Coil Code	/	/	0060	0090	0060	0180
连续推力 Continuous Thrust	Fc	N	3500	5000	5500	5500
峰值推力 Peak Thrust	Fp	N	11000	14800	18750	18750
电机常数 Motor Constant	Km	N/√W	98	114	127	132
最大持续损耗功率 Max. Continuous Power Loss	Pc	W	1267	1927	1867	1742
连续电流 Continuous Current	Ic	Arms	16	22.9	25.2	38.1
峰值电流 Peak Current	Ip	Arms	75	100	126	155
推力常数 Thrust Constant	Kf	N/Arms	219	218	218	145
反电势常数 Back EMF Constant	Ke	Vrms·s/m	126	126	126	83.2
600Vdc持续推力最大速度 Max. Speed at Continuous Thrust (600Vdc)	Vcn	m/s	2.9	2.9	2.9	4.7
600Vdc峰值推力最大速度 Max. Speed at Peak Thrust (600Vdc)	Vpk	m/s	1.2	1.2	1.2	3.1
线电阻25℃±10% Line Resistance at 25℃ ±10%	R25	Ω	3.3	2.45	1.96	0.8
线电感25℃±20% Line Inductance at 25℃ ±20%	L	mH	17	13	11.8	4.8
最高线圈允许温度 Max. Allowable Coil Temperature	T	℃	130	130	130	130
最大母线电压 Max. Bus Voltage	Ub	Vdc	600	600	600	600
极对距 (N-N) Pole Pitch (N-N)	2τ	mm	75	75	75	75
最小流量要求 Min. Flow Rate Requirement	Qw	L/min	6	6	6	6
磁吸力 Magnetic Attractive Force	Fa	N	15700	20200	25100	25100
初级线圈重量 Primary Coil Weight	mc	kg	36	44	52	52



DLMHP301-W系列机械尺寸

DLMHP301-W Series Mechanical Dimensions

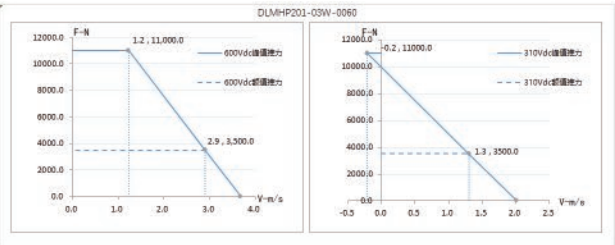
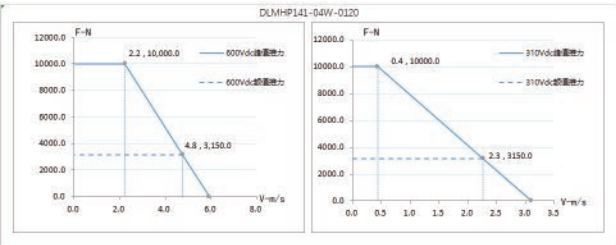
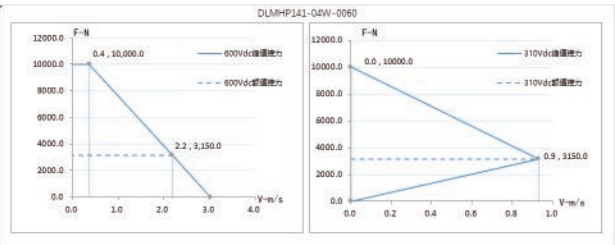
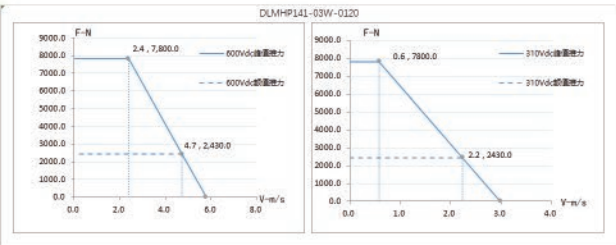
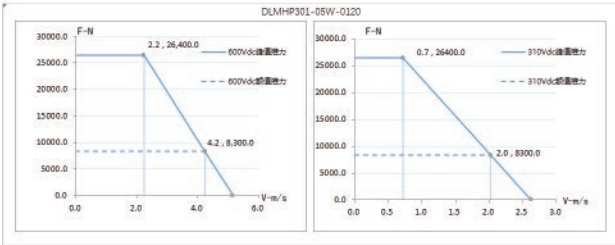
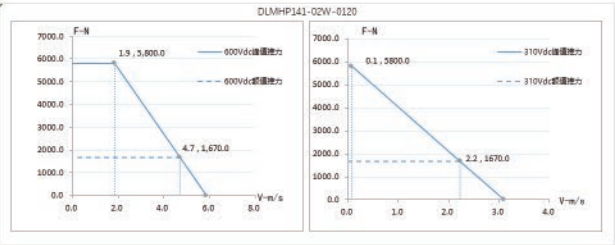
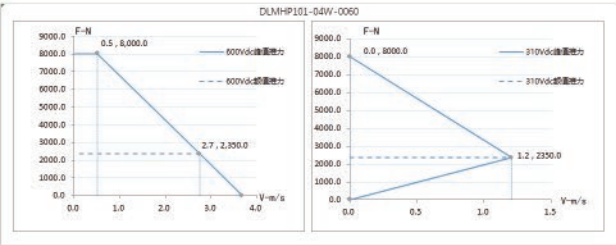
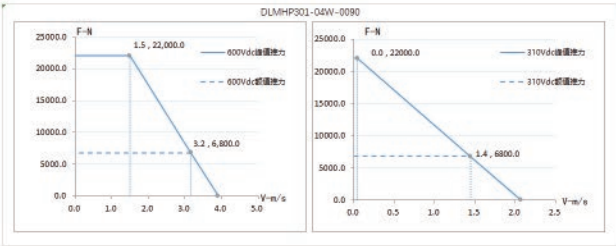
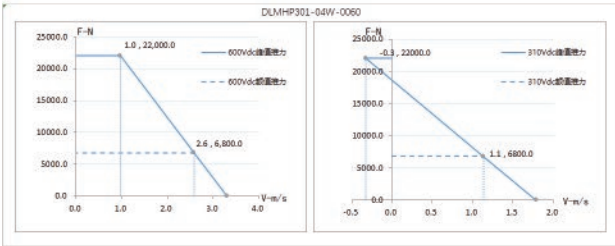
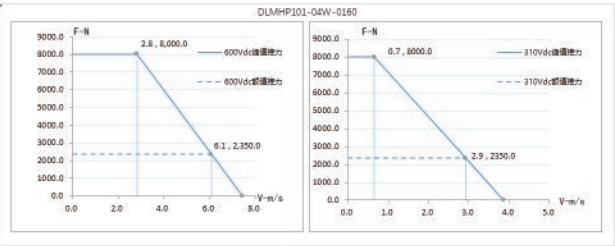
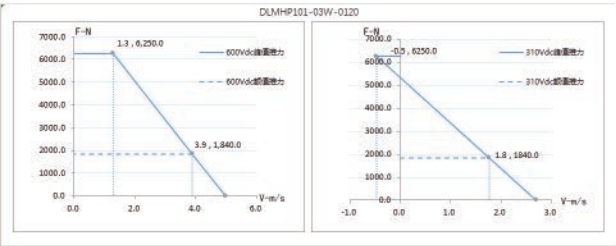
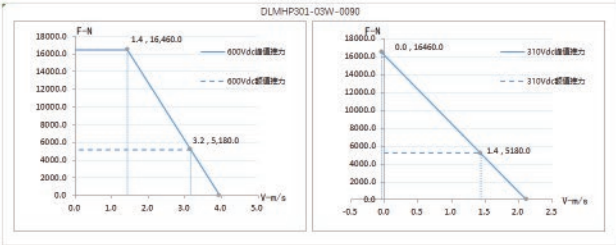
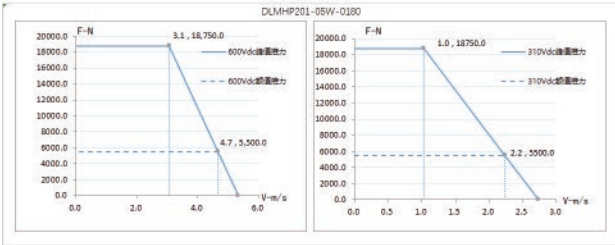
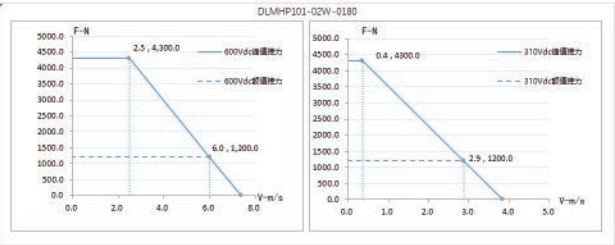
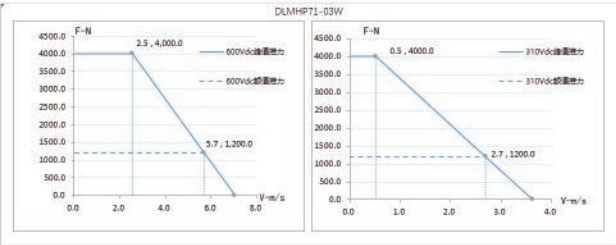
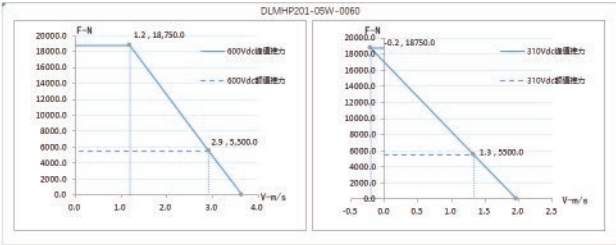
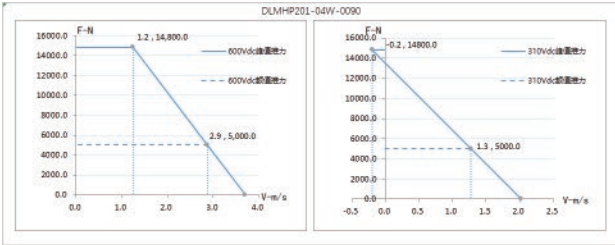
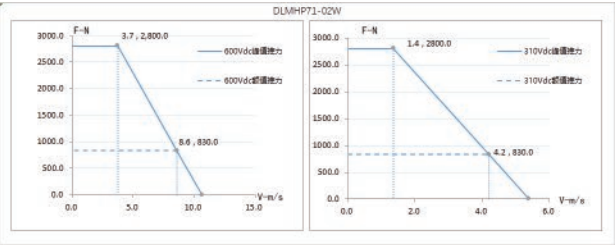
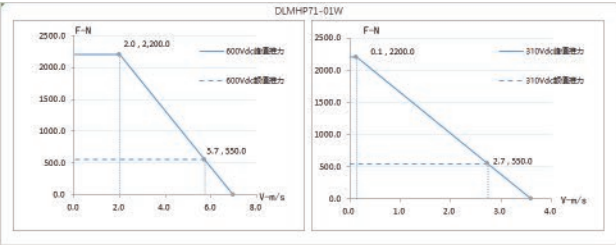


DLMHP301-W系列有铁芯平板直线电机参数

DLMHP301-W Series Ironcore Linear Motor Specifications

型号 Model	符号 Symbol	单位 Unit	DLMHP301B-03W	DLMHP301C-04W		DLMFP301D-05W
绕圈代号 Coil Code	/	/	0090	0060	0090	0120
连续推力 Continuous Thrust	Fc	N	5180	6800	6800	8300
峰值推力 Peak Thrust	Fp	N	16460	22000	22000	26400
电机常数 Motor Constant	Km	N/√W	120	137	139	164
最大持续损耗功率 Max. Continuous Power Loss	Pc	W	1853	2470	2385	2557
连续电流 Continuous Current	Ic	Arms	25.5	28	33.7	53.3
峰值电流 Peak Current	Ip	Arms	118	128	153	231
推力常数 Thrust Constant	Kf	N/Arms	203	243	202	156
反电势常数 Back EMF Constant	Ke	Vrms·s/m	117	139	117	89
600Vdc持续推力最大速度 Max. Speed at Continuous Thrust (600Vdc)	Vcn	m/s	3.2	2.6	3.2	4.2
600Vdc峰值推力最大速度 Max. Speed at Peak Thrust (600Vdc)	Vpk	m/s	1.4	1.0	1.5	2.2
线电阻25℃±10% Line Resistance at 25℃ ±10%	R25	Ω	1.9	2.1	1.4	0.6
线电感25℃±20% Line Inductance at 25℃ ±20%	L	mH	11.6	12.7	8.9	6
最高线圈允许温度 Max. Allowable Coil Temperature	T	℃	130	130	130	130
最大母线电压 Max. Bus Voltage	Ub	Vdc	600	600	600	600
极对距 (N-N) Pole Pitch (N-N)	2τ	mm	75	75	75	75
最小流量要求 Min. Flow Rate Requirement	Qw	L/min	8	8	8	8
磁吸力 Magnetic Attractive Force	Fa	N	22400	29400	41700	41700
初级线圈重量 Primary Coil Weight	mc	kg	47	61	61	75

DLMHP系列电机F-V曲线
F-V Curve of the DLMHP Series





DLMNP系列

DLMNP Series

电机介绍

Motor Introduction

DLMNP系列电机推力大、响应快,全系列水冷设计,冷却效果好,适合各种大推力、大负载的应用。

持续推力: $F_{cn} = 635N \sim 6490N$

峰值推力: $F_{pk} = 1476N \sim 12150N$

The DLMNP series motors feature high thrust and fast response. With a full-range water-cooled design for excellent cooling performance, they are ideal for various high-thrust, heavy-load applications.

Continuous Thrust: $F_{cn} = 100N \sim 1532N$

Peak Thrust: $F_{pk} = 275N \sim 4090N$

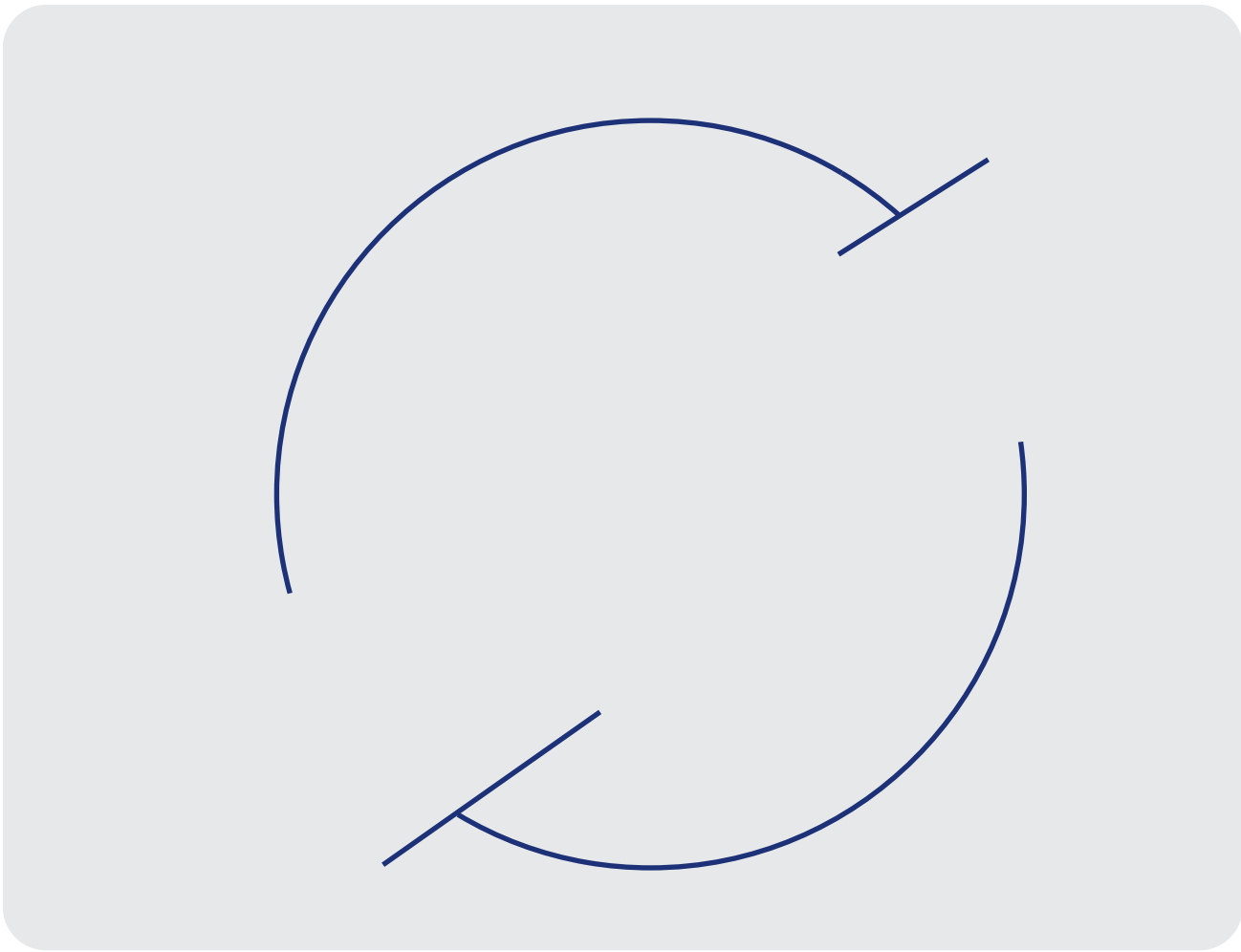
典型案例: 五轴工具磨床、激光加工设备、木工、测试、点胶等。

Typical applications include 5-axis tool grinding machines, laser processing equipment, woodworking, testing, and glue dispensing.

▀ 产品特色

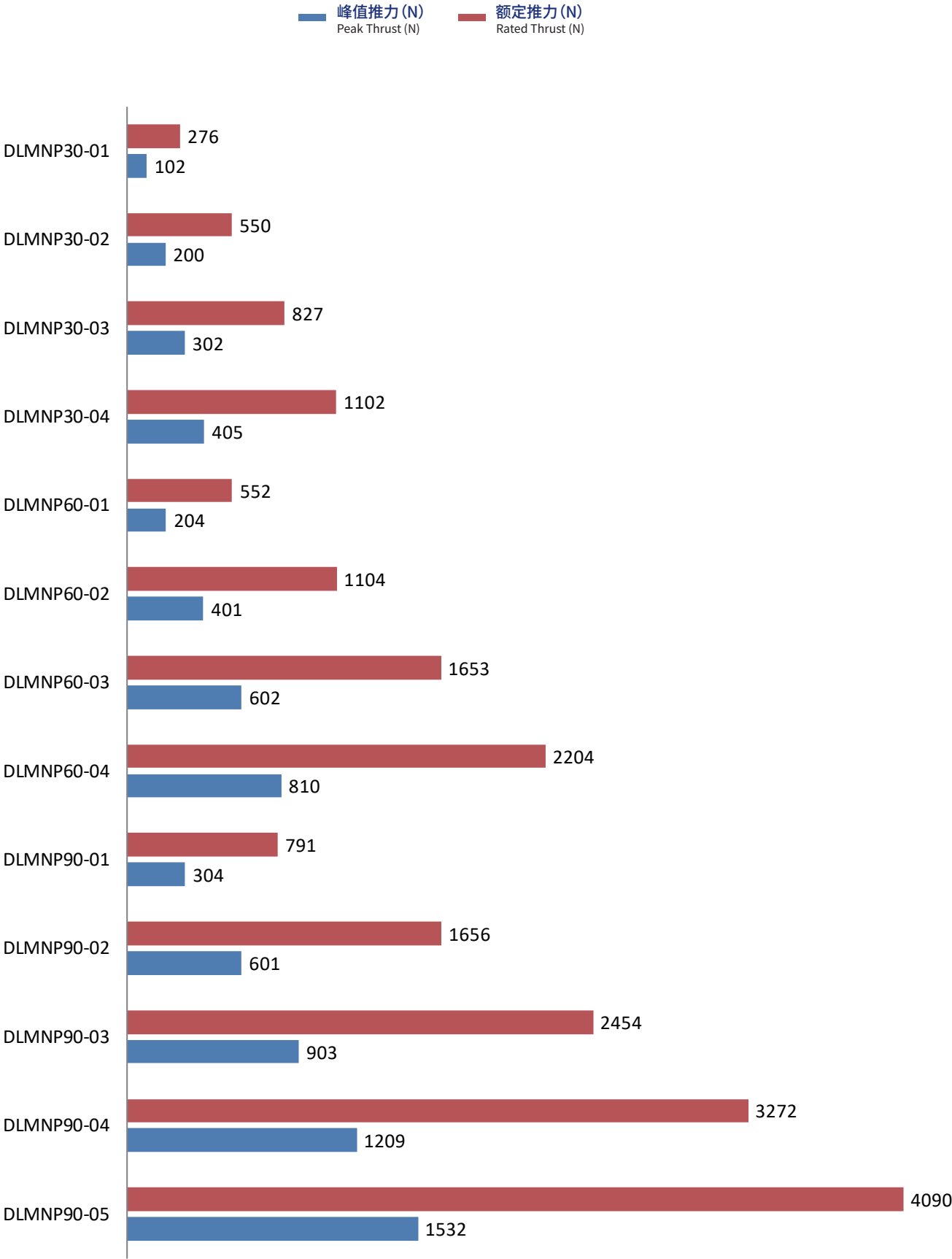
Product Features

- 高响应与带宽
 - 小体积超薄设计
 - 低推力波动
 - 最大母线电压600Vdc
- High response and bandwidth
 - Compact and ultra-thin design
 - Low thrust ripple
 - Maximum bus voltage: 600 Vdc



DLMNP系列直线电机推力图

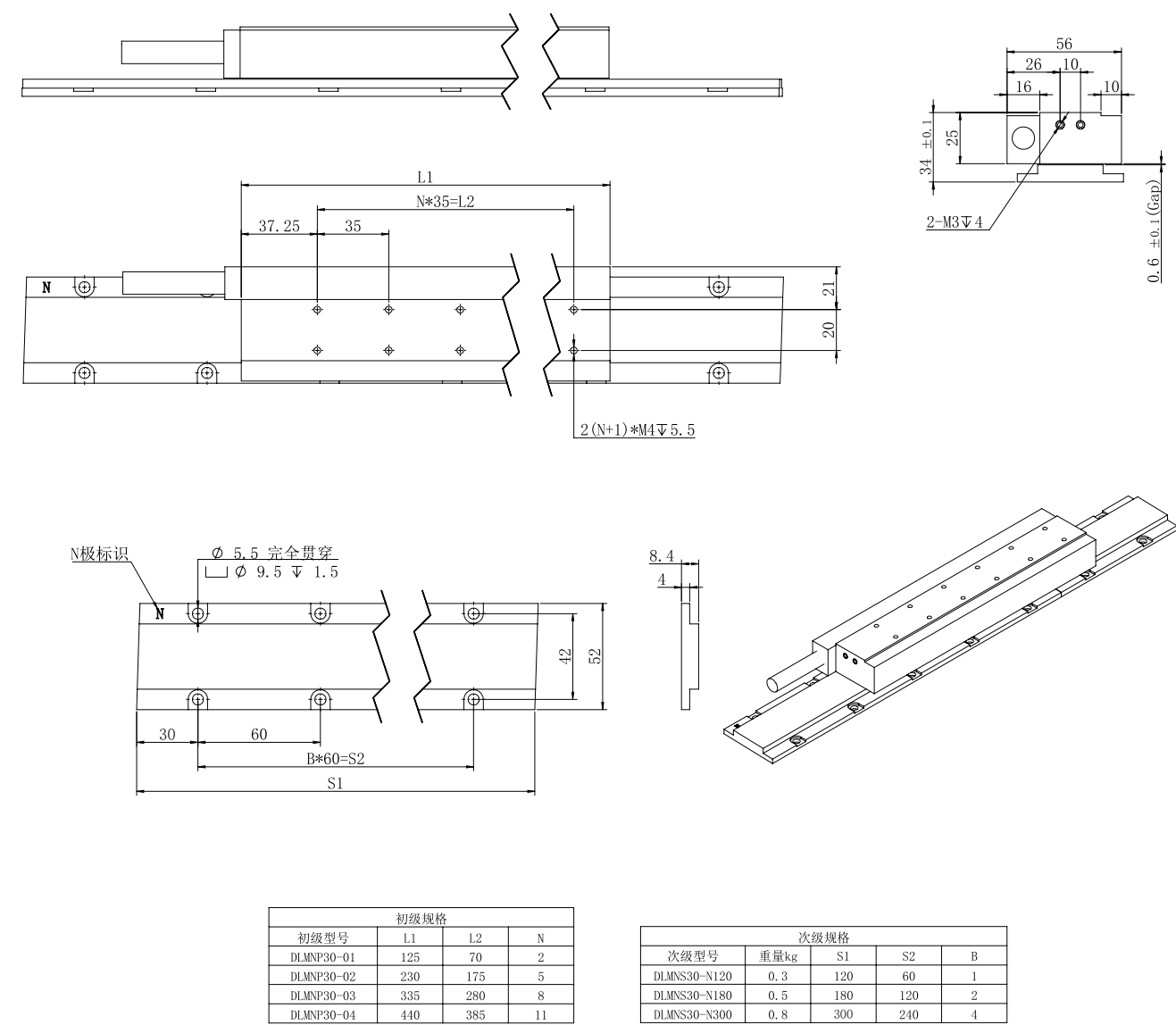
DLMNP Series Linear Motor Thrust Curve





DLMNP30系列机械尺寸

DLMNP30 Series Mechanical Dimensions



DLMNP30系列有铁芯平板直线电机参数

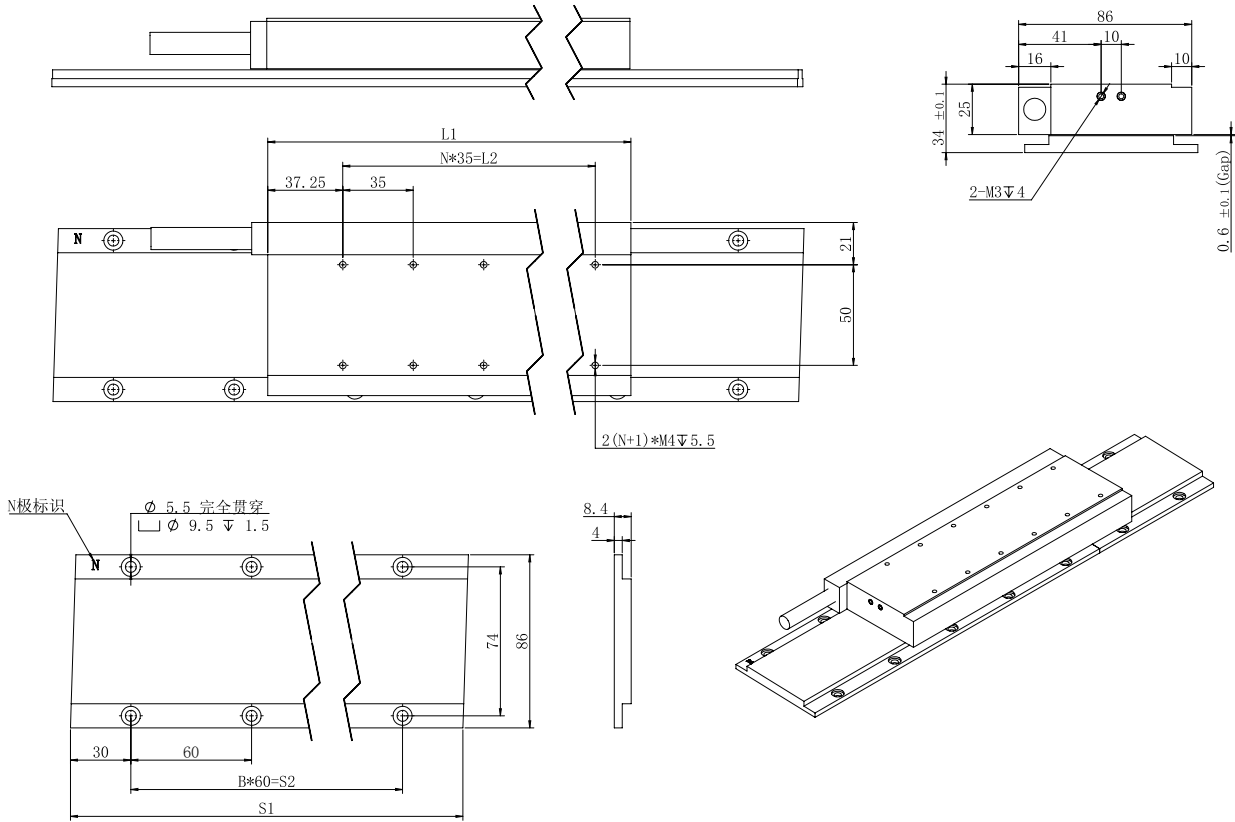
DLMNP30 Series Ironcore Linear Motor Specifications

型号 Model	符号 Symbol	单位 Unit	DLMNP30-01	DLMNP30-02	DLMNP30-03	DLMNP30-04
连续推力 Continuous Thrust	Fc	N	100	200	300	400
峰值推力 Peak Thrust	Fp	N	275	550	825	1100
电机常数 Motor Constant	Km	N/ $\sqrt{W}$	11	16	19	23
最大持续损耗功率 Max. Continuous Power Loss	Pc	W	81	156	237	312
连续电流 Continuous Current	Ic	Arms	2.2	4.3	6.5	8.7
峰值电流 Peak Current	Ip	Arms	6.5	13	19.5	26
推力常数 Thrust Constant	Kf	N/Arms	46	46	46	46
反电势常数 Back EMF Constant	Ke	Vrms $\cdot$ s/m	27	27	27	27
600Vdc持续推力最大速度 Max. Speed at Continuous Thrust (600Vdc)	Vcn	m/s	13.6	13.6	13.6	13.6
600Vdc峰值推力最大速度 Max. Speed at Peak Thrust (600Vdc)	Vpk	m/s	8.4	8.4	8.4	8.4
线电阻25 $^{\circ}$ C $\pm$ 10% Line Resistance at 25 $^{\circ}$ C $\pm$ 10%	R25	Ω	10.1	5.1	3.4	2.5
线电感25 $^{\circ}$ C $\pm$ 20% Line Inductance at 25 $^{\circ}$ C $\pm$ 20%	L	mH	27	13.5	9	6.7
最高线圈允许温度 Max. Allowable Coil Temperature	T	$^{\circ}$ C	130	130	130	130
最大母线电压 Max. Bus Voltage	Ub	Vdc	600	600	600	600
极对距 (N-N) Pole Pitch (N-N)	2 τ	mm	30	30	30	30
磁吸力 Magnetic Attractive Force	Fa	N	463	914	1369	1821
初级线圈重量 Primary Coil Weight	mc	kg	0.8	1.6	2.4	3.2



DLMNP60系列机械尺寸

DLMNP60 Series Mechanical Dimensions



初级规格			
初级型号	L1	L2	N
DLMNP60-01	125	70	2
DLMNP60-02	230	175	5
DLMNP60-03	335	280	8
DLMNP60-04	440	385	11

次级规格				
次级型号	重量kg	S1	S2	B
DLMNS60-N120	0.6	120	60	1
DLMNS60-N180	0.8	180	120	2
DLMNS60-N300	1.4	300	240	4

DLMNP60系列有铁芯平板直线电机参数

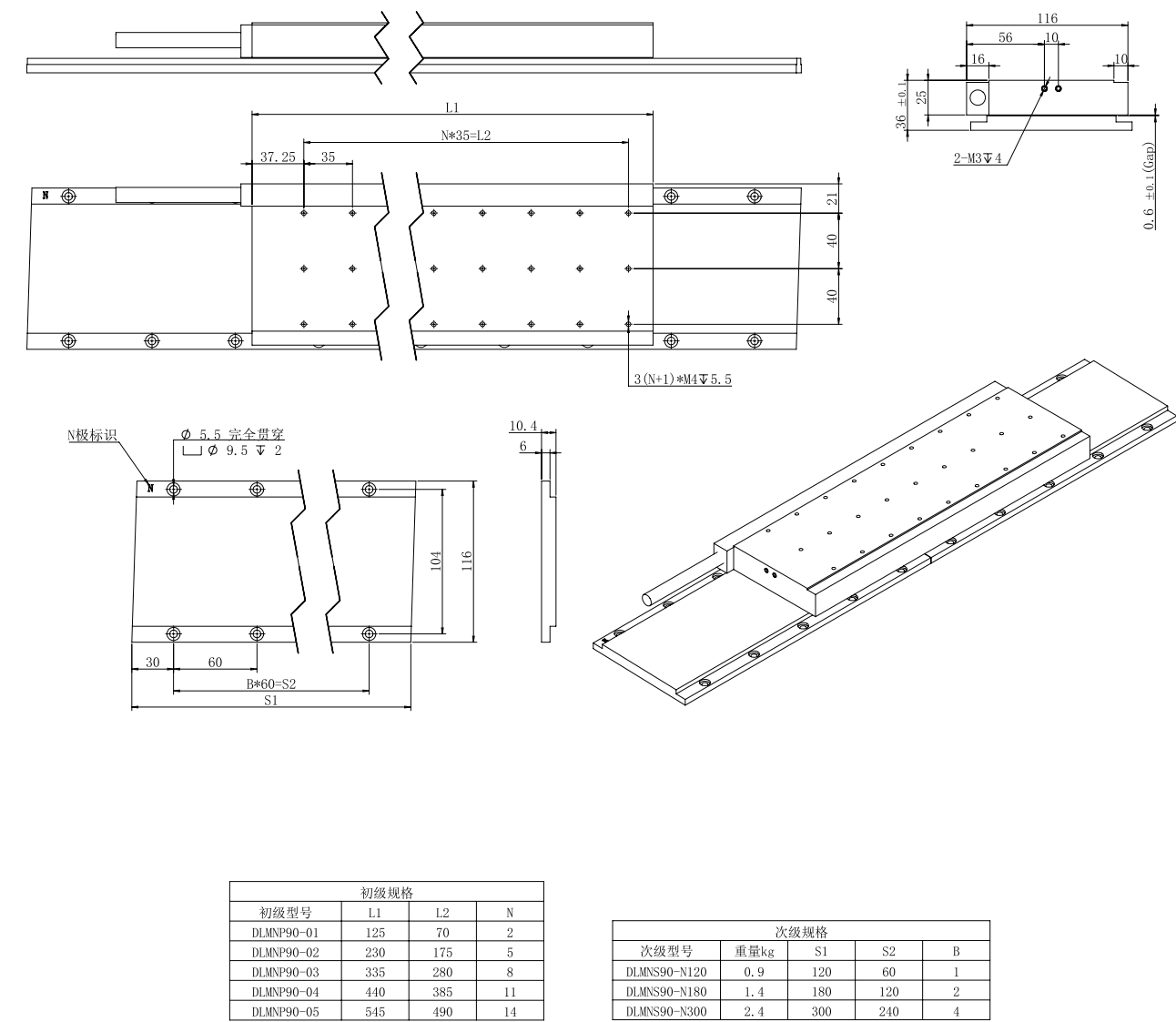
DLMNP60 Series Ironcore Linear Motor Specifications

型号 Model	符号 Symbol	单位 Unit	DLMNP60-01	DLMNP60-02	DLMNP60-03	DLMNP60-04
连续推力 Continuous Thrust	Fc	N	200	400	600	800
峰值推力 Peak Thrust	Fp	N	550	1100	1650	2200
电机常数 Motor Constant	Km	N/√W	18	26	32	36
最大持续损耗功率 Max. Continuous Power Loss	Pc	W	125	238	363	487
连续电流 Continuous Current	Ic	Arms	2.2	4.3	6.5	8.7
峰值电流 Peak Current	Ip	Arms	6.5	13	19.5	26
推力常数 Thrust Constant	Kf	N/Arms	93.5	93.5	93.5	93.5
反电势常数 Back EMF Constant	Ke	Vrms•s/m	54	54	54	54
600Vdc持续推力最大速度 Max. Speed at Continuous Thrust (600Vdc)	Vcn	m/s	6.6	6.6	6.6	6.6
600Vdc峰值推力最大速度 Max. Speed at Peak Thrust (600Vdc)	Vpk	m/s	3.9	3.9	3.9	3.9
线电阻25℃±10% Line Resistance at 25℃ ±10%	R25	Ω	15.6	7.8	5.2	3.9
线电感25℃±20% Line Inductance at 25℃ ±20%	L	mH	54	27	17.9	13.4
最高线圈允许温度 Max. Allowable Coil Temperature	T	℃	130	130	130	130
最大母线电压 Max. Bus Voltage	Ub	Vdc	600	600	600	600
极对距 (N-N) Pole Pitch (N-N)	2τ	mm	30	30	30	30
磁吸力 Magnetic Attractive Force	Fa	N	921	1836	2726	3627
初级线圈重量 Primary Coil Weight	mc	kg	1.1	2.2	3.3	4.4



DLMNP90系列机械尺寸

DLMNP90 Series Mechanical Dimensions

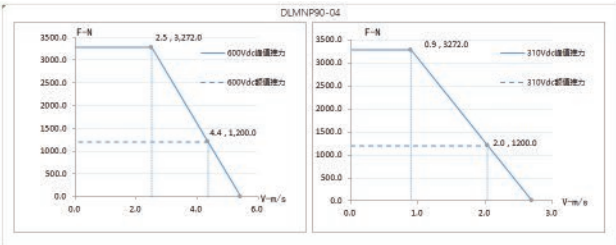
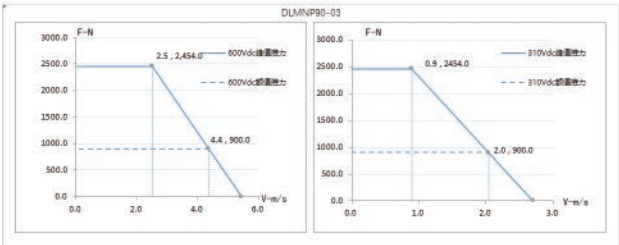
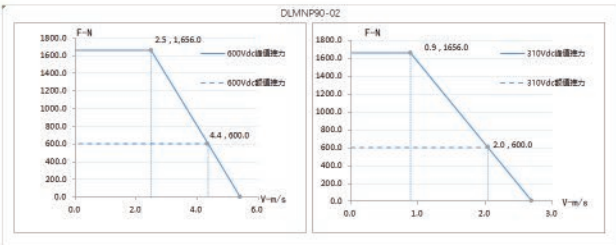
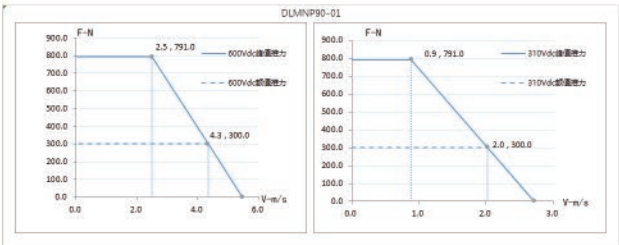
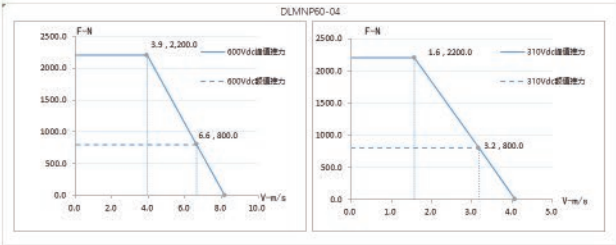
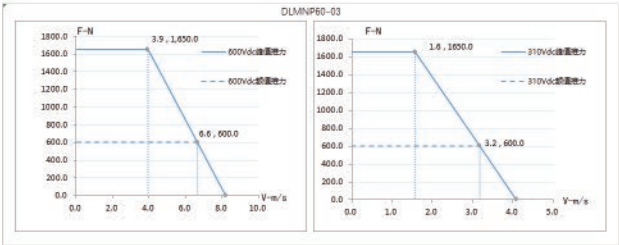
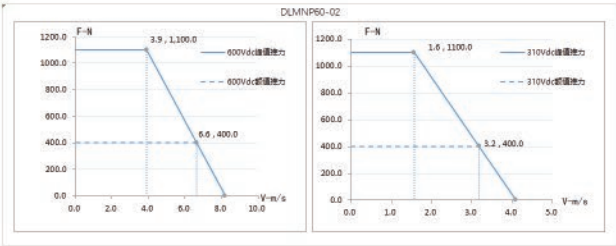
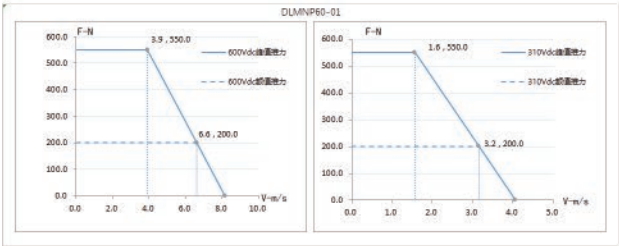
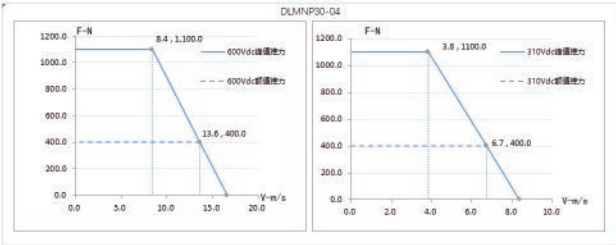
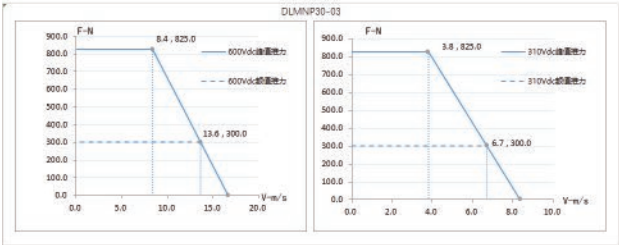
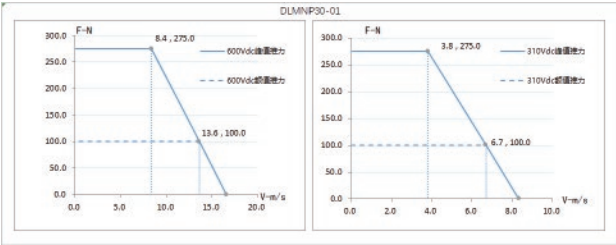
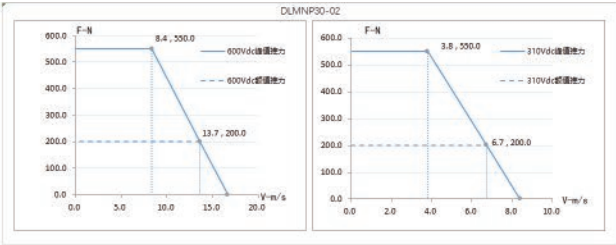
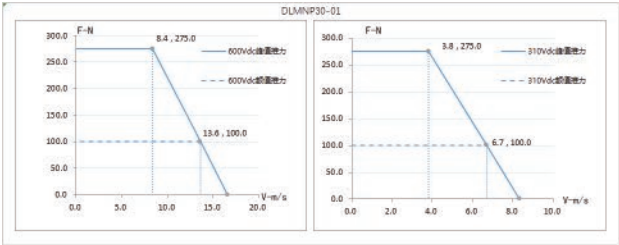


DLMNP90系列有铁芯平板直线电机参数

DLMNP90 Series Ironcore Linear Motor Specifications

型号 Model	符号 Symbol	单位 Unit	DLMNP90-01	DLMNP90-02	DLMNP90-03	DLMNP90-04	DLMNP90-05
连续推力 Continuous Thrust	Fc	N	300	600	900	1200	1532
峰值推力 Peak Thrust	Fp	N	791	1656	2454	3272	4090
电机常数 Motor Constant	Km	N/ $\sqrt$ W	24	35	43	49	56
最大持续损耗功率 Max. Continuous Power Loss	Pc	W	153	293	446	599	759
连续电流 Continuous Current	Ic	Arms	2.2	4.3	6.5	8.7	11
峰值电流 Peak Current	Ip	Arms	6.5	13	19.5	26	32.5
推力常数 Thrust Constant	Kf	N/Arms	140	140	140	140	140
反电势常数 Back EMF Constant	Ke	Vrms $\cdot$ s/m	81	81	81	81	81
600Vdc持续推力最大速度 Max. Speed at Continuous Thrust (600Vdc)	Vcn	m/s	4.3	4.3	4.3	4.3	4.3
600Vdc峰值推力最大速度 Max. Speed at Peak Thrust (600Vdc)	Vpk	m/s	2.5	2.5	2.5	2.5	2.5
线电阻25 $^{\circ}$ C $\pm$ 10% Line Resistance at 25 $^{\circ}$ C $\pm$ 10%	R25	Ω	19.2	9.6	6.4	4.8	3.8
线电感25 $^{\circ}$ C $\pm$ 20% Line Inductance at 25 $^{\circ}$ C $\pm$ 20%	L	mH	80	40	26.4	19.8	15.8
最高线圈允许温度 Max. Allowable Coil Temperature	T	$^{\circ}$ C	130	130	130	130	130
最大母线电压 Max. Bus Voltage	Ub	Vdc	600	600	600	600	600
极对距 (N-N) Pole Pitch (N-N)	2 τ	mm	30	30	30	30	30
磁吸力 Magnetic Attractive Force	Fa	N	1570	3140	4660	6250	7803
初级线圈重量 Primary Coil Weight	mc	kg	1.9	3.8	5.7	7.6	8.5

DLMNP系列电机F-V曲线
F-V Curve of the DLMNP Series



DLMUP系列

DLMUP Series

电机介绍

Motor Introduction

DLMUP系列电机使用无铁芯技术, 具有无齿槽效应, 推力波动小的特点。

持续推力: $F_{cn} = 37N \sim 184.8N$

峰值推力: $F_{pk} = 1850N \sim 10100N$

The DLMUP series motors utilize coreless technology, featuring zero cogging effect and low thrust ripple.

Continuous Thrust: $F_{cn} = 37N \sim 184.8N$

Peak Thrust: $F_{pk} = 1850N \sim 10100N$

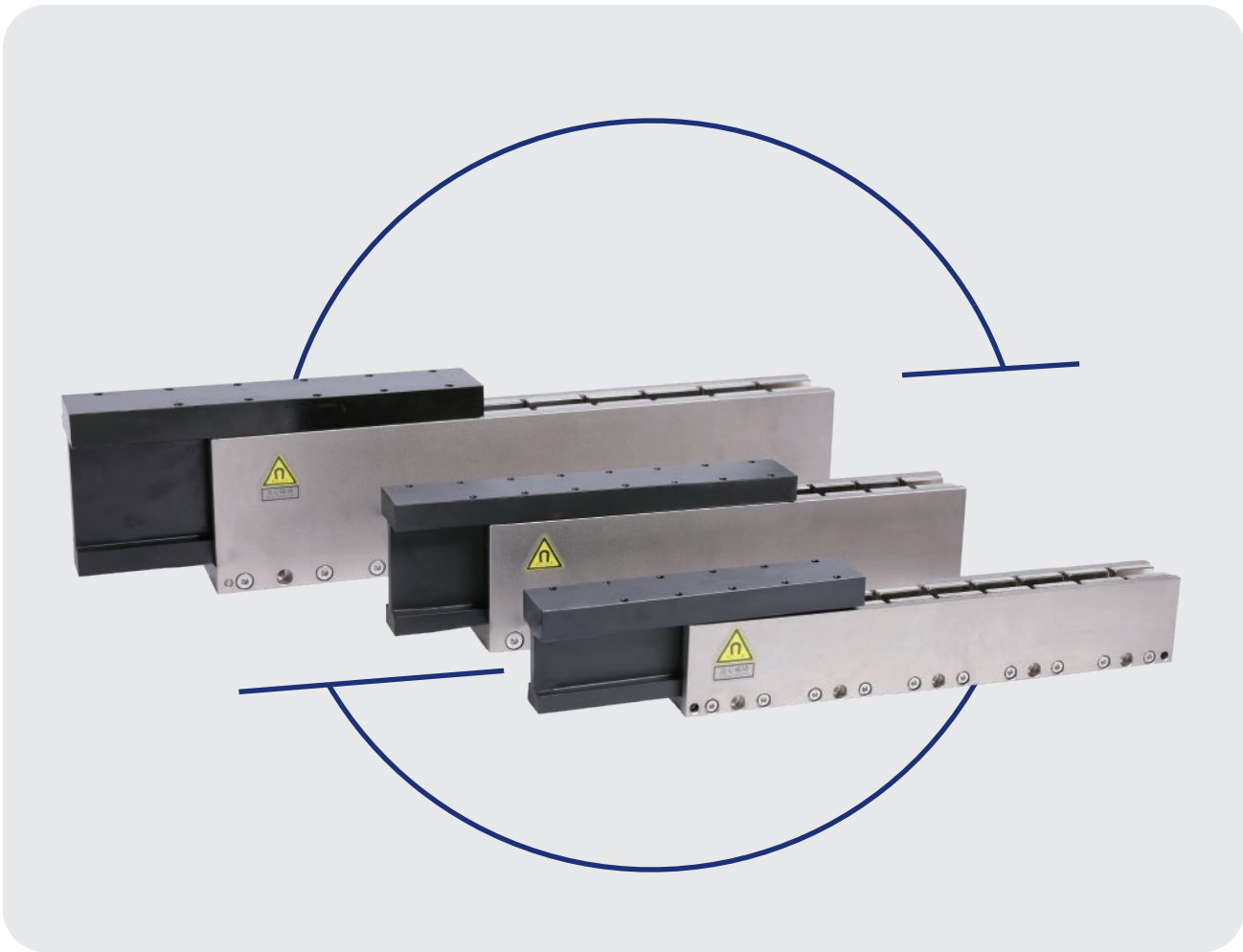
典型案例: 半导体、高端3C自动化、检测设备、光学、生物医疗等。

Typical applications include semiconductor, high-end 3C automation, inspection equipment, optics, and biomedical.

产品特色

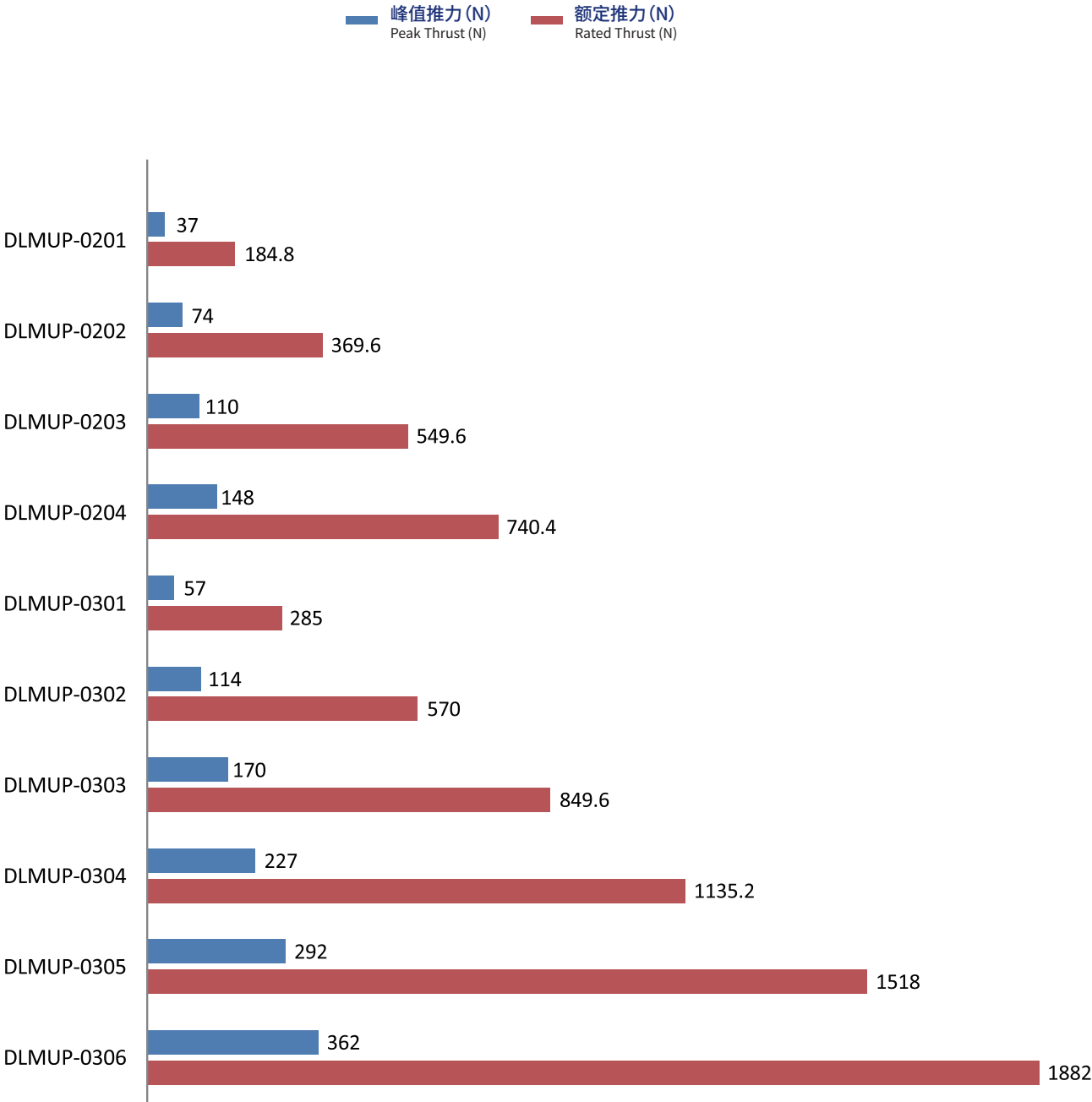
Product Features

- 无铁芯技术
 - 无齿槽效应
 - 低推力波动
 - 最大母线电压600Vdc
- Coreless technology
 - Zero cogging effect
 - Low thrust ripple
 - Maximum bus voltage: 600 Vdc



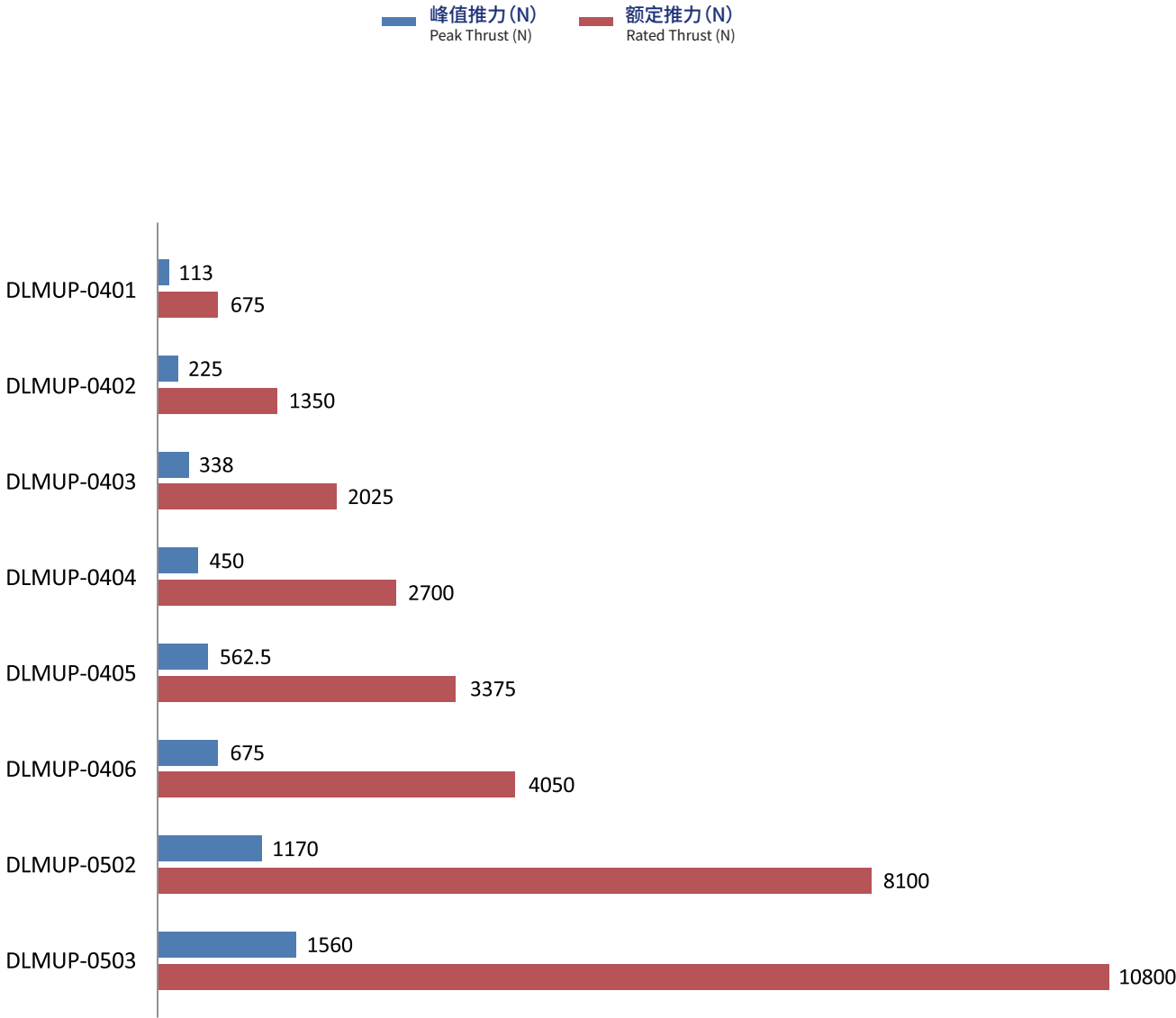
DLMUP系列直线电机推力图

DLMUP Series Linear Motor Thrust Curve

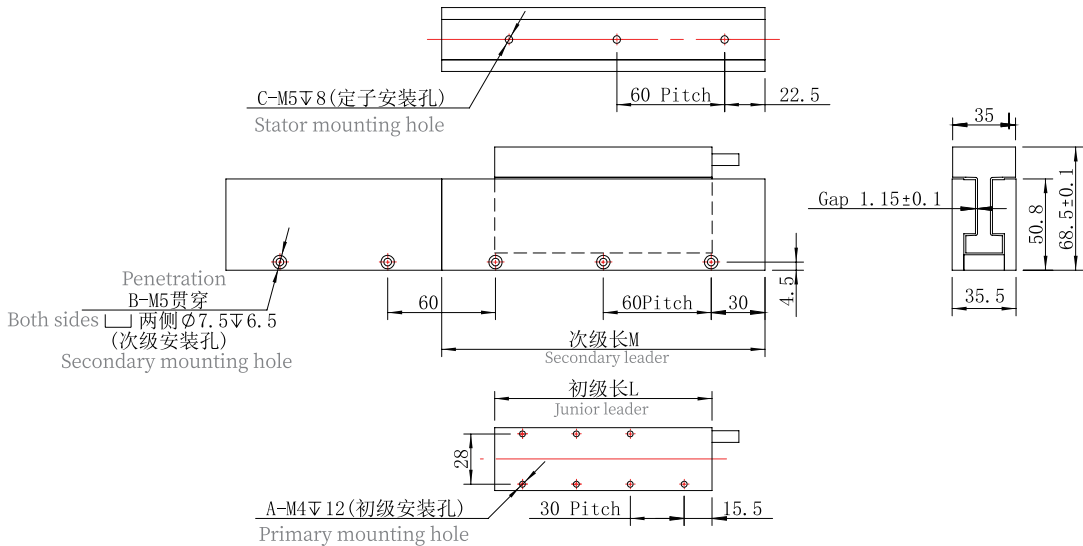


DLMUP系列直线电机推力图

DLMUP Series Linear Motor Thrust Curve



DLMU-02系列 (Series)

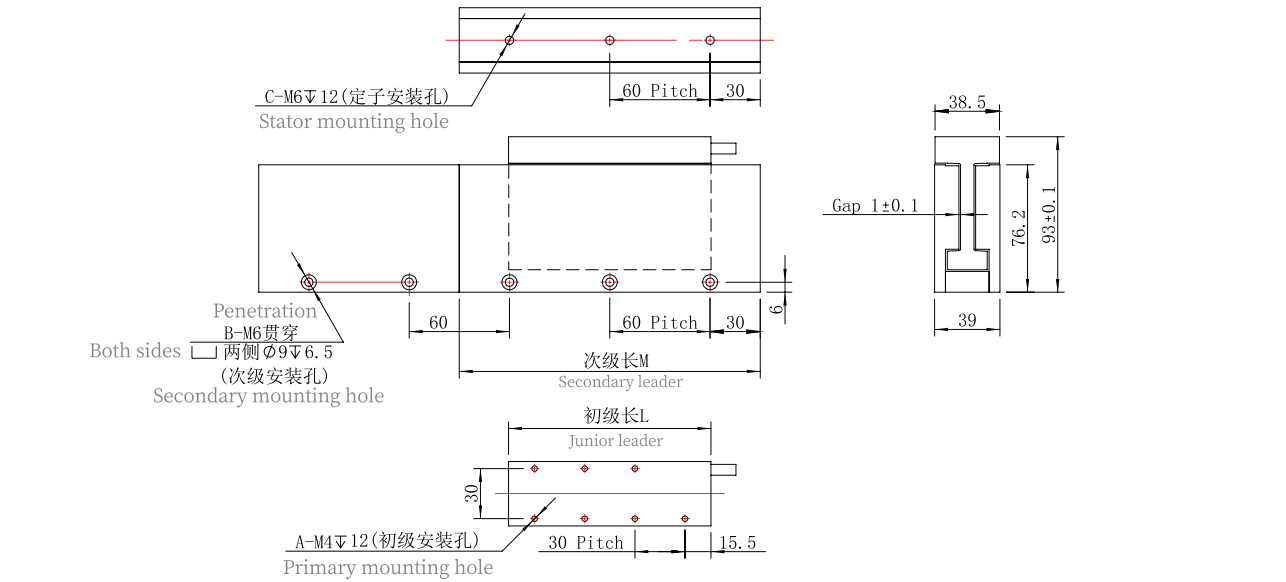


DLMU-02系列初级规格(DLMUP-02) Series primary specification		
初级型号 Primary model	L	A
DLMUP-0201	61	3
DLMUP-0202	121	7
DLMUP-0203	181	11
DLMUP-0204	241	15

DLMU-02系列次级规格(DLMUS-02) Series secondary specification			
次级型号 Secondary model	M	B	C
DLMUS-0201	120	2	2
DLMUS-0202	180	3	3
DLMUS-0203	240	4	4
DLMUS-0204	300	5	5

DLMU-02系列技术参数 (Series technical parameters)					
性能参数 Parameter	单位 (Unit)	DLMUP-0201	DLMUP-0202	DLMUP-0203	DLMUP-0204
持续推力 Sustained thrust	N	37	74	110	148
峰值推力 Peak thrust	N	184.8	369.6	549.6	740.4
电机常数 Motor constant	N/vW	8.2	11.6	14.1	16.1
最大持续损耗功率 Peak Continuous Loss Power	W	20.4	40.9	61.3	84.9
极对距 Polar pair distance	mm	60	60	60	60
持续电流 Continuous current	Arms	2.4	2.4	2.4	2.4
峰值电流 Peak current	Arms	12	12	12	12
推力常数 Force constant	N/Arms	15.4	30.8	45.8	61.7
反电动势常数 Back EMF constant	Vs/m	8.9	17.8	26.4	35.6
电阻@25°C Resistance @25°C	Ohms	2.5	5	7.5	10
电感 Inductance	mH	1.7	3.4	5.1	6.8
电气时间常数 Electrical time constant	ms	0.7	0.7	0.7	0.7
最高线圈温度 Maximum coil temperature	°C	120	120	120	120
初级质量 Primary quality	kg	0.24	0.48	0.72	0.96
初级长度 Primary length	mm	61	121	184	241
次级质量(每米) Secondary mass (per meter)	kg	9			
磁吸引力 Magnetic attraction	kN	0			
次级型号 Secondary model		DLMUS-02			
次级可选长度 Secondary optional length	mm	120、180、240、300			

DLMU-03系列 (Series)

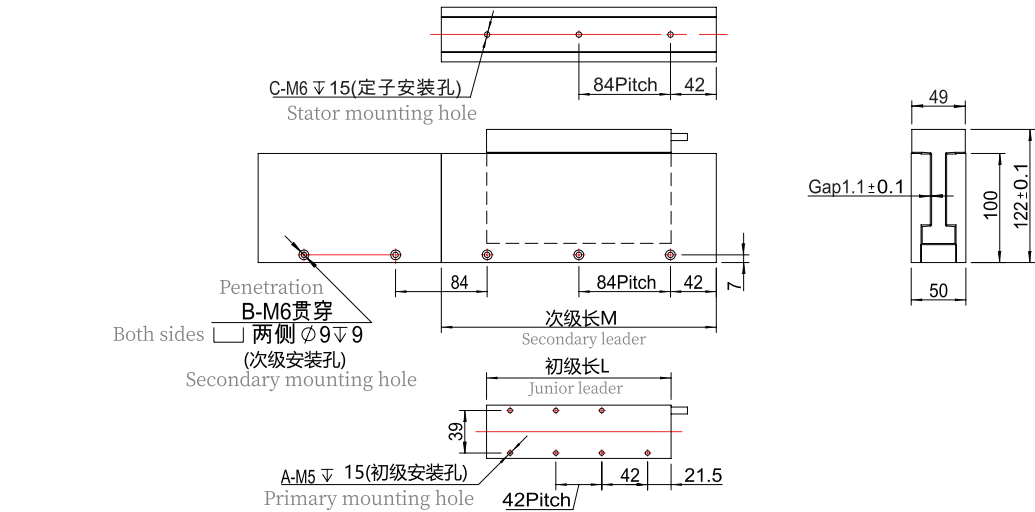


DLMU-03系列初级规格(DLMUP-03) Series primary specification		
初级型号 Primary model	L	A
DLMUP-0301	61	3
DLMUP-0302	121	7
DLMUP-0303	181	11
DLMUP-0304	241	15
DLMUP-0305	301	19
DLMUP-0306	361	23

DLMU-03系列次级规格(DLMUS-03) Series secondary specification			
次级型号 Secondary model	M	B	C
DLMUS-0301	120	2	2
DLMUS-0302	180	3	3
DLMUS-0303	240	4	4
DLMUS-0304	300	5	5

DLMU-03系列技术参数(Series technical parameters)							
性能参数 Parameter	单位 (Unit)	DLMUP-0301	DLMUP-0302	DLMUP-0303	DLMUP-0304	DLMUP-0305	DLMUP-0306
持续推力 Sustained thrust	N	57	114	170	227	292	362
峰值推力 Peak thrust	N	285	570	849.6	1135.2	1518	1882
电机常数 Motor constant	N/vW	10.3	14.6	17.7	21.4	19.4	21.3
最大持续损耗功率 Peak Continuous Loss Power	W	30.7	61.3	92	122.7	149	192
极对距 Polar pair distance	mm	60	60	60	60	60	60
持续电流 Continuous current	Arms	2.4	2.4	2.4	2.4	2.5	2.5
峰值电流 Peak current	Arms	12	12	12	12	13	13
推力常数 Force constant	N/Arms	23.75	47.5	70.8	94.6	116.8	114.8
反电动势常数 Back EMF constant	Vs/m	13.7	27.4	40.9	54.6	95.8	118.1
电阻@25°C Resistance @25°C	Ohms	3.9	7.8	11.7	15.6	17.5	22.5
电感 Inductance	mH	3.4	6.8	10.2	13.6	17.5	21
电气时间常数 Electrical time constant	ms	0.9	0.9	0.9	0.9	1	0.9
最高线圈温度 Maximum coil temperature	°C	120	120	120	120	130	130
初级质量 Primary quality	kg	0.3	0.6	0.9	1.2	1.65	2
初级长度 Primary length	mm	61	121	181	241	301	361
次级质量(每米) Secondary mass (per meter)	kg	15					
磁吸引力 Magnetic attraction	kN	0					
次级型号 Secondary model		DLMUS-03					
次级可选长度 Secondary optional length	mm	120、180、240、300					

DLMU-04系列 (Series)

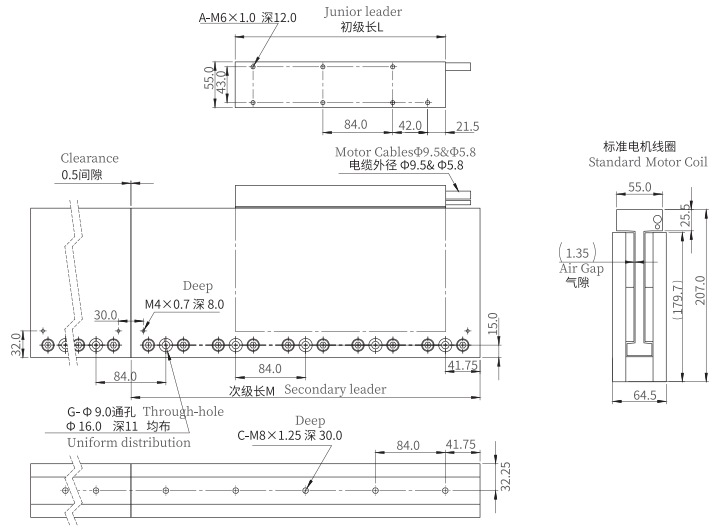


DLMU-04系列初级规格(DLMUP-04) Series primary specification		
初级型号 Primary model	L	A
DLMUP-0401	85	3
DLMUP-0402	169	7
DLMUP-0403	253	11
DLMUP-0404	337	15
DLMUP-0405	421	19
DLMUP-0406	505	23

DLMU-04系列次级规格(DLMUS-04) Series secondary specification			
次级型号 Secondary model	M	B	C
DLMUS-0401	168	2	2
DLMUS-0402	252	3	3
DLMUS-0403	336	4	4
DLMUS-0404	420	5	5

DLMU-04系列技术参数 (Series technical parameters)							
性能参数 Parameter	单位 (Unit)	DLMUP-0401	DLMUP-0402	DLMUP-0403	DLMUP-0404	DLMUP-0405	DLMUP-0406
持续推力 Sustained thrust	N	113	225	338	450	562.5	675
峰值推力 Peak thrust	N	675	1350	2025	2700	3375	4050
电机常数 Motor constant	N/vW	17.5	24.6	30.2	34.8	38.9	42.6
最大持续损耗功率 Peak Continuous Loss Power	W	41.8	83.6	125.4	167.2	209	250.8
极对距 Polar pair distance	mm	84	84	84	84	84	84
持续电流 Continuous current	Arms	2.5	2.5	2.5	2.5	2.5	2.5
峰值电流 Peak current	Arms	15	15	15	15	15	15
推力常数 Force constant	N/Arms	45	90	135	180	225	270
反电动势常数 Back EMF constant	Vs/m	26.0	52.0	78.0	104.0	130.0	156.0
电阻@25°C Resistance @25°C	Ohms	4.9	9.8	14.7	19.6	24.5	29.4
电感 Inductance	mH	9.8	19.6	29.4	39.2	49	58.8
电气时间常数 Electrical time constant	ms	2	2	2	2	2	2
最高线圈温度 Maximum coil temperature	°C	120	120	120	120	120	120
初级质量 Primary quality	kg	0.9	1.7	2.5	3.3	4.1	4.9
初级长度 Primary length	mm	85	169	253	337	421	505
次级质量(每米) Secondary mass (per meter)	kg	25					
磁吸引力 Magnetic attraction	kN	0					
次级型号 Secondary model		DLMUS-04					
次级可选长度 Secondary optional length	mm	168、252、336、420					

DLMU-05系列 (Series)



DLMU-05系列初级规格(DLMUP-05) Series primary specification		
初级型号 Primary model	L	A
DLMUP-0502	505	13
DLMUP-0503	673	17

DLMU-05系列次级规格(DLMUS-05) Series secondary specification			
次级型号 Secondary model	M	G	C
DLMUS-0501	167.5	2	2
DLMUS-0502	251.5	3	3
DLMUS-0504	419.5	5	5

初级型号 Primary model		DLMUP-0502	DLMUP-0503
连续推力(N)	Continuous thrust	1180	1850
峰值推力(N)	Peak thrust	8300	10100
电机常数(N/√W)	Motor constant	34	34
最大持续损耗功率(W)	Peak Continuous Loss Power	470	606
连续电流(A)	Continuous Current	15.6	11.2
峰值电流(A)	Peak Current	108	61
推力常数(N/A)	Thrust Constant	75.6	165
反电势常数(Vs/m))	Back EMF constant	62	135
线电阻20℃(Ω)	Line resistance 20 °C (Ω)	1.85	4.6
线电感(mH)	Line inductance (mH)	1.8	5.1
最高线圈允许温度(℃)	Peakttemperature	130	130
极对距(mm)	Pole width (N-N)	84	84
初级重量(Kg)	Mass of primary	6.9	9.1
标配电缆长度 (M)	Standard cable length (M)	1	1

直线电机选型
Linear motor Selection

直线电机选型

Linear motor Selection

开始选择电机

Start Selecting Motor

以下内容将说明如何根据速度、加速度、行程、负载等需求来选择合适的电机。进行选配工作的基本流程如以下三点：
The following sections describe how to select the appropriate motor based on the requirements of speed, acceleration, stroke, load, and so on. The basic process for the selection work is as follows:



使用符号

Use Symbols

- X: 行程 Stroke(mm)
- T: 移动时间 Move Time(sec)
- a: 加速度 Acceleration(mm/s²)
- V: 速度 Speed(mm/s)
- MI: 负载 Load(kg)
- g: 重力加速度 Acceleration of gravity(mm/s²)
- F : 瞬间推力 Transient thrust(N)
- F_c: 连续推力 Continuous thrust(N)
- F_a: 初次级间吸引力 (适用于LMS, LMF系列) (N)
Primary/Secondary inter-stage attraction (for LMS, LMF series)
- F_i: 惯性力 Inertial thrust(N)
- Kf: 推力常数 Thrust constant(N/Arms)
- I_p: 瞬间电流 Transient curren(Arms)
- I_e: 等效电流 Equivalent current(Arms)
- I_c: 连续电流 Continuous current(Arms)
- V0: 启动速度 Start Speed(mm/s)

STEP1 决定运动规划与运动参数

STEP 1 Determines motion planning and motion parameters

为能正确地决定出适合使用者需求的马达，选择前必须了解下列运动公式的计算。
In order to determine correctly which motor is suitable for the user's needs, it is necessary to understand the calculation of the following motion formula before selecting it.

运动公式

Motion formula

常用的基本运动学方程式描述如下: $V=V_0+aT$ $X=V_0 T+1/2 aT^2$

Common basic kinematic equations are described below: $V=V_0+aT$ $X=V_0 T+1/2 aT^2$

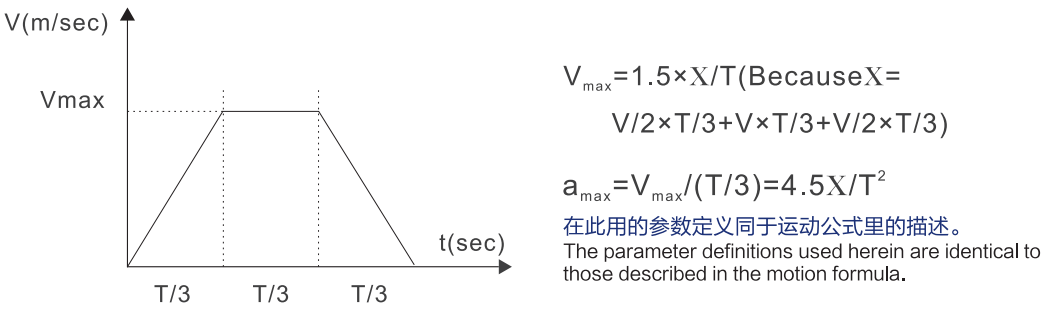
其中V是速度，a是加速度，T是移动时间，X是移动距离。
使用者可以选择这四个变量(V, a, T与X)中的任意两个变量当设计值，剩下的两个变量可以由上述公式计算得到。
It's V is speed, a is acceleration, T is move time, X is move distance.
Users can select any two of the four variables (V,a,T and X) as design values, the remaining two variables can be calculated from the above formula.

速度规划 Speed planning

1) 1/3-1/3-1/3梯形轨迹 (Trapezoid profile)

若已先给定行程(X)与移动时间(T)，则可以采用最常用也最有效的速度规划方式，也就是1/3-1/3-1/3梯形轨迹的点对点运动规划方式，因其可以提供一种最佳化运动方式同时只需要最少功率。其规划方式为将加速段、等速段、减速段分成三等分阶段，其速度曲线如下：

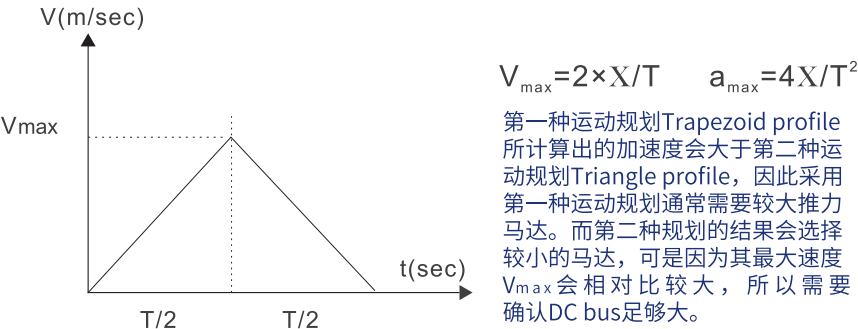
If the stroke (X) and move time (T) are given first, the most common and effective speed planning method, i.e., 1/3-1/3-1/3 trapezoidal profile point-to-point motion planning method, can be adopted, because it can provide an optimal motion mode with minimum power. The planning mode is to divide the acceleration section, constant velocity section and deceleration section into three equal phases, and the velocity curves are as follows:



2) 1/2-1/2三角形轨迹 (Triangle profile)

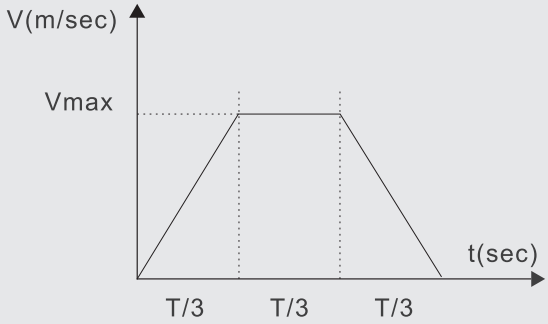
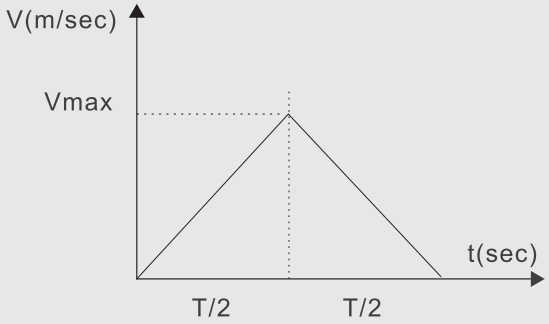
若已先给定X与T，另一种常采用的运动规划方式亦即1/2-1/2三角形轨迹。其规划方式分成加速段与减速段两个部分。其速度曲线如下：

If X and T is given first, another commonly used motion planning method is 1/2-1/2 Triangle Profile. The planning mode is divided into two parts: acceleration and deceleration. The velocity curves are as follows:



The acceleration calculated by the first motion planning Trapezoid profile is greater than that calculated by the second motion planning Triangle profile, so the first motion planning typically requires a larger thrust motor. The second plan results in a smaller motor, but because its maximum speed V_{max} will be relatively large, it needs to be confirmed that the DC bus is large enough.

常用公式 Common Formula

	1/3-1/3-1/3 (Trapezoid profile)	1/2-1/2 (Triangle profile)
		
V	$1.5 \times X/T$	$2 \times X/T$,or $\sqrt{(a \times X)}$
a	$4.5X/T^2$	$4X/T^2$

STEP 2 瞬时推力与等效推力计算

STEP 2 Calculation of instantaneous thrust and equivalent thrust

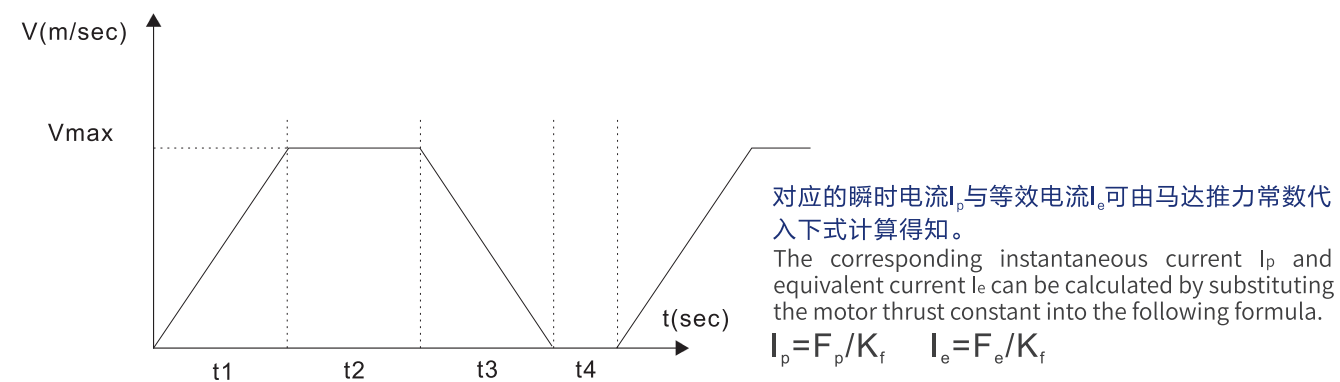
瞬时推力的计算可以由下式: $F_p=M_L \times a_{max}+(M_L \times g+F_a) \times \mu =F_i+F_f$

The calculation of the instantaneous thrust can be carried out by the following formula: $F_p=M_L \times a_{max}+(M_L \times g+F_a) \times \mu =F_i+F_f$

其中Fi为惯性力,而Ff为摩擦力,且μ是摩擦系数。在大部分的使用案例中,运动方式常是周期性点对点运动。假设一周周期性运动,其中t4为运动完的停留时间,因此该周期运动的等效推力计算如下:

Where Fi it is the inertial thrust and Ff friction thrust, and μ is the coefficient of friction. In most use cases, the motion is usually periodic point-to-point motion. Assuming a periodic motion, where t4 is the residence time after the motion is complete, the equivalent thrust of the periodic motion is calculated as follows:

$$F_e=\sqrt{(F_i+F_f)^2t_1+F_f^2t_2+(F_i-F_f)^2t_3)/(t_1+t_2+t_3+t_4)}$$



STEP 3 由瞬时推力需求选择马达并确认驱动电流

STEP 3 selects the motor from the instantaneous thrust demand and confirms the drive current

通过Dake样册的马达规格表,使用者可以根据瞬时推力需求选择合适的马达,之后使用者可以计算确认运动规划后所需供应电流是否在规格限制内。

The motor specifications in the Dake sample allow the user to select the appropriate motor based on the instantaneous thrust requirements, after which the user can calculate to confirm whether the required supply current is within the specification limits after the motion planning.

$I_p=F_p/K_f<I_p$ (查选用马达规格表) $I_p=F_p/K_f<I_p$ ((Motor specifications for check and selection))

使用者应考量等效电流与连续电流的比值,通常规划后其比值 I_e/I_c 建议设计在0.7以内比较安全。

Users should consider the ratio of the equivalent current to the continuous current (I_e/I_c), which is usually set to be safer within 0.7.

马达选用范例 Examples of motor selection

举例来说,假设总负载有580kg,摩擦系数μ为0.01,行程为800mm,移动时间为0.9S及停留时间为0.1S。
For example, assuming that a total load is 580 kg, a friction coefficient is μ of 0.01, a stroke is 800 mm, a move time is 0.9 S, and a residence time is 0.1 S.

首先,我们可以计算这四个变量 V_{max} 、 a_{max} 、 F_p 与 F_e),在此例中选择第一种运动规划,因此其计算如下:
First, we can calculate these four variables (V_{max} 、 a_{max} 、 F_p and F_e), and in this case, we can choose the first motion plan, so it is calculated as follows:

✱ 最大速度 V_{max} 为 ((Maximum speed V_{max} is):

$$V_{max}=1.5 \times X/T=1.5 \times 0.8/0.9=1.333(m/sec)$$

✱ 最大加速度 a_{max} 为 (Maximum acceleration a_{max} is):

$$a_{max}=4.5X/T^2=(4.5 \times 0.8)/(0.9)^2=4.444(m/sec^2)$$

✱ 瞬时推力 F_p 为 (Instantaneous thrust F_p is):

$$\begin{aligned} F_p &= (M_L + M_g) \times a_{max} + (M_L \times g + F_a) \times \mu \\ &= (580 + 25.5) \times 4.444 + (580 \times 9.8 + 11700) \times 0.01 \\ &= 2690.842 + 173.84 = 2864.682(N) \end{aligned}$$

✱ 等效推力为 (Equivalent thrust F_e is):

$$\begin{aligned} F_e &= \sqrt{\frac{(F_i + F_f)^2 t_1 + F_f^2 t_2 + (F_i - F_f)^2 t_3}{t_1 + t_2 + t_3 + t_4}} \\ &= \sqrt{\frac{[(2690.842 + 173.84)^2 + 173.84^2 + (2690.842 - 173.84)^2] \times 0.3}{0.9 + 0.1}} \\ &= 2090.832(N) \end{aligned}$$

✱ 瞬时电流 I_p 为(Instantaneous current I_p is):

$$I_p = F_p/K_f = 2864.682/171.5 = 16.704(A)$$

✱ 等效电流 I_e 为 (Equivalent current I_e is):

$$I_e = \frac{F_e}{K_f} = \frac{2090.832}{171.5} = 12.191(A)$$

✱ 等效电流与连续电流的比值为:

The ratio of the equivalent current to the continuous current is:

$$I_e/I_c = 12.191/17.5 = 0.697 < 0.7$$

因此,选用电机型号为DLMXP140-03W的直线电机满足运动需求。

Therefore, the linear motor model DLMXP140-03W is selected to meet the motion demand.

应用常见问题

Application FAQ

✧ 为何要使用直线电机，与滚珠丝杠相比有何优势？ Why do use linear motors and what are the advantages compared with ball screws?

直线电机采用直接驱动的方式，可以减少定位系统的零件数量，降低机械复杂度，提高可靠度。
直线电机的速度比滚珠螺杆快，而且当行程越长时，直线电机越有利，因为直线电机的定子采用模组的方式设计，可以无限连接模组，所以基本上行程不受限制。滚珠螺杆行程长时则会有下垂的问题。
直线电机因直接驱动所以没有背隙的问题。

Linear motor driven directly can reduce the number of parts of positioning system, reduce the mechanical complexity and improve the reliability.
The speed of linear motor is faster than ball screw, and the longer the stroke, the more advantageous the linear motor. Because the stator of the linear motor is designed in the mode of module, it can be infinitely connected with the module, so the stroke is basically unlimited. When ball screw stroke is long, it may have the problem of sagging.
Linear motors have no backlash problem because they are driven directly.

✧ 速度最快多少？最慢多少？ What's the fastest speed? What's the slowest speed?

高速运动除了受行程的影响之外，负载、电机推力所造成的加减速都是关键。实际上以测试过的经验来讲，最快跑到4M/s并没有问题。但是必须考虑滑轨、跑线槽等周边的搭配。
低速运动基本上并没有特殊限制，只要驱动控制设备支持，基本上每秒要跑几个微米都没有问题。

The acceleration and deceleration caused by load and motor thrust are the key to high-speed motion besides the effect of stroke. In fact, it can run up to 4M/s, which is not a problem in terms of tested experience. But we must consider the slideway, wiring groove and other periphery matches.
There are essentially no special limits to low-speed motion, and there is basically no problem running several micron per second as long as the drive control device supports it.

✧ 加速度能到多少？ How much acceleration can it reach?

目前直线电机的加速度大推力可达到3~5g, 小推力的可达到10g。
At present, the large acceleration thrust of the linear motor can reach 3~5g, and the small thrust can reach10g.

✧ 电机发热问题 Motor heating problem

电机在运行时都会有热量的产生，在设计阶段就已经对此问题进行了优化，如果电机在设计电流值下运行或加减速运动，电机的发热量满足设计要求，不会出现发热严重的问题。
如果在最大推力或者加减速的过程中，有短暂的大电流需求，此时就必须考虑电机的发热问题，只能瞬时运行或短暂运行，则需加入暂停运动的时间，否则电机将出现发热过大的问题。

When the motor is running, there will be heat generation, which has been optimized in the design stage. If the motor runs at the design current value or increases or decreases its running speed, the heat generation of the motor can meet the design requirements, and there will be no serious heating problems.
If there is a short-term large current demand in the process of maximum thrust or acceleration/deceleration, the heating problem of the motor must be considered at this time, and only instantaneous operation or short-term operation is allowed, then the time of pause motion must be added; otherwise the motor will have the problem of excessive heating.

✧ 负载可以到多大？ How much load can it reach?

电机在定位系统中提供推力来源，搭载重量主要依存加速度的需求，根据F=am可知道，推力一定时，所需加速度越大，加载的质量就必须越小，反之则越大。实际运用中，越大质量对滑轨或空气轴承造成的负荷也越大，增加滑轨与滑块之间的摩擦力，所以目前对于这个问题并没有统一的答案，具体应用可咨询工程师。

The motor provides the thrust source in the positioning system, and the load weight mainly depends on the acceleration demand. According to F=am, when the thrust thrust is constant, the higher the acceleration required, the smaller the load mass must be, and vice versa. In practice, the greater the mass of the sliding rail or air bearing, the greater the load on them, which will increase the friction between the sliding rail and the block, so there is no unified answer as to this question, engineers can be consulted for specific applications.

✧ 行程可以多长？ What stroke can it reach?

行程理论上不受限制，定子通过模组拼接的方式可以无限延长。但实际应用受线缆、信号反馈装置等其他因素的限制。

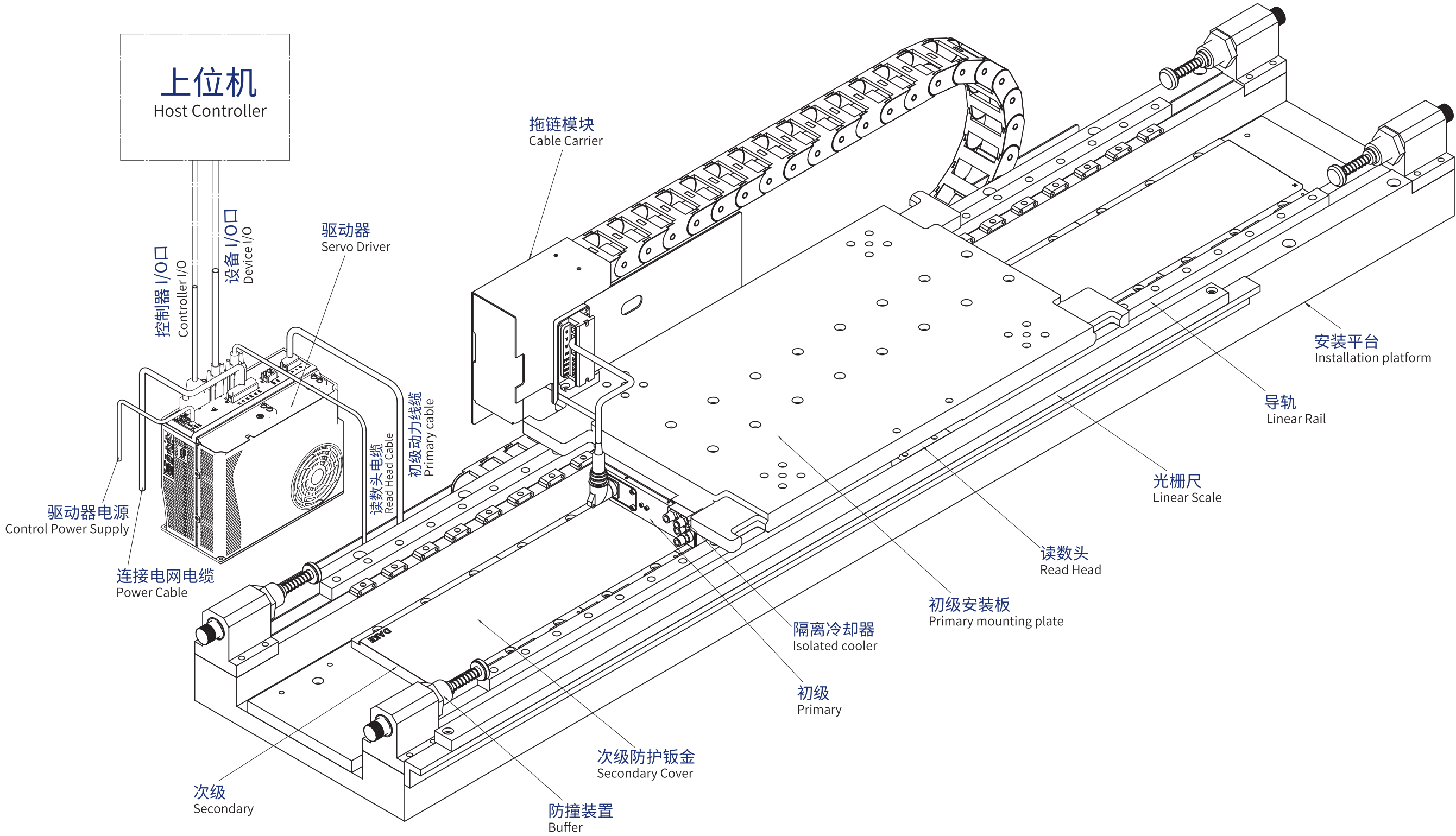
Theoretically, the stroke is not limited, and the stator can be infinitely prolonged by means of modular splicing. But the practical application is limited by other factors such as cable, signal feedback device and so on.

✧ 精度和重复精度由什么决定？ What determines the accuracy and repetition accuracy?

位置反馈装置的分辨率。1um的数位式光学尺最为常用，也可以选择0.1um的数位式光学尺。分辨率越高，定位精度越高。一般定位精度在正负0.005mm以内，重复定位精度在正负0.002mm以内。

Resolution of position feedback devices. 1MICRON digital optical ruler is the most commonly used, and 0.1MICRON digital optical ruler can also be selected. The higher the resolution, the higher the positioning accuracy, the positioning accuracy is within ±0.05 mm, and the repetitive positioning accuracy is within ±0.002 mm.

直驱运动伺服系统构成图
Direct drive motion servo system composition diagram



直线电机应用实例

An Application Example of Linear Motor

PCB钻孔机应用实例 An Application Example of PCB Drilling Machine

作为直线电机在高端装备领域的典型应用，PCB钻孔机（目前以6轴和4轴机型最为流行）的技术升级极具代表性。其钻孔速度、定位精度和重复定位精度（直接反映为孔位精度CPK）是衡量设备竞争力的关键指标。为满足客户对现有6轴钻孔机进行技术升级的严苛要求——即在X轴负载约350KG、Y轴负载约500KG、Z轴负载约12KG的工况下，实现XY两轴快移速度达到100m/min、加速度达到1.5G，Z轴快移速度达到36m/min、加速度达到4G以提升效率，并将重复定位精度提升至0.002mm以优化孔位精度CPK，该设备最终采用了直线电机驱动方案以实现高速高精度定位。具体应用中，X轴选用了DLMFP150-04W永磁直线电机，Y轴选用了DLMFP200-04W永磁直线电机，Z轴选用了DLMFP-01E03W永磁直线电机，完美契合了高端PCB钻孔设备的性能需求。

As a typical application of linear motors in the field of high-end equipment, the technical upgrade of PCB drilling machines (currently dominated by 6-axis and 4-axis models) is highly representative. Its drilling speed, positioning accuracy, and repeatability (which directly translates to hole position accuracy CPK) are key metrics for evaluating equipment competitiveness. To meet the stringent technical upgrade requirements for existing 6-axis drilling machines—specifically, achieving a rapid traverse speed of 100 m/min and an acceleration of 1.5G on the X and Y axes under a payload of approximately 350 kg on the X-axis and 500 kg on the Y-axis, as well as a rapid traverse speed of 36 m/min and an acceleration of 4G on the Z-axis under a payload of approximately 12 kg to improve efficiency, while upgrading repeatability to 0.002 mm to optimize the hole position accuracy CPK—the equipment ultimately adopted a linear motor drive solution to achieve high-speed and high-precision positioning. In the specific application, the DLMFP150-04W permanent magnet linear motor was selected for the X-axis, the DLMFP200-04W permanent magnet linear motor for the Y-axis, and the DLMFP-01E03W permanent magnet linear motor for the Z-axis, perfectly meeting the performance demands of high-end PCB drilling equipment.



实现效果 Achieved effects

轴 Axis	X	Y	Z*6
行程 Stroke	890mm	780mm	70mm
负载 Load	350Kg	500Kg	12kg
速度 Velocity	100m/min	100m/min	36m/min
加速度 Acceleration	1.5g	1.5g	3.5g
重复定位精度 Repeatability	0.002mm	0.002mm	0.003mm
定位精度 Positioning accuracy	0.003mm	0.003mm	0.005mm
电机型号 Motor model	DLMFP150-04W	DLMFP200-04W	DLMFP-01E03W

直线电机应用实例

An Application Example of Linear Motor

石墨机应用实例 An Application Case of Graphite

作为直线电机在高精度磨削领域的典型应用，螺纹磨床（涵盖丝锥磨床、蜗杆磨床及内螺纹磨削中心等）的技术升级极具代表性。其砂轮进给轴与工件旋转轴（C轴）的联动精度、微进给分辨率以及高速振荡磨削的动态响应，直接决定了丝杠、丝锥等精密传动件的螺距精度与表面质量。传统“旋转伺服电机+滚珠丝杠”的进给方式，因存在反向间隙、弹性变形及螺母磨损，难以在长行程下持续保持亚微米级的精度稳定性，而螺纹磨削中的速度抖动更会以波纹形式直接反映为螺距累积误差。为满足客户对微进给精度达1μm，以及长期免维护运行的严苛要求，直线电机驱动方案被引入螺纹磨床的进给系统：通过消除中间机械传动环节，实现无接触、无间隙的“零传动”，配合高分辨率光栅尺构成全闭环控制，从而获得极高的动态响应与定位精度。

直线电机以其高刚性、高响应和长行程精度恒定的特性，为螺纹磨床突破精度瓶颈、实现精密传动件的高效批量加工提供了核心驱动保障。

As a typical application of linear motors in high-precision grinding, the technical upgrade of thread grinding machines (including tap, worm, and internal thread grinders) is highly representative. The interpolation accuracy between the wheel feed axis and the C-axis, micro-feed resolution, and dynamic response during high-speed oscillating grinding directly determine the pitch accuracy and surface quality of precision components like lead screws and taps. Traditional "rotary servo + ball screw" systems struggle to maintain sub-micron stability over long strokes due to backlash, elastic deformation, and wear. Furthermore, speed fluctuations easily translate into cumulative pitch errors.

To meet stringent requirements for 1μm micro-feed accuracy and maintenance-free operation, linear motors are introduced to the feed system. By eliminating mechanical transmission, they achieve contactless, backlash-free "zero transmission." Combined with high-resolution linear encoders for full closed-loop control, this ensures exceptional dynamic response and positioning accuracy. With high rigidity, fast response, and consistent long-stroke precision, linear motors provide the core drive assurance for thread grinding machines to break through precision bottlenecks and enable highly efficient batch processing.



实现效果 Achieved effects

轴 Axis	X	Z
行程 Stroke	400mm	1200mm
负载 Load	1780Kg	1350Kg
速度 Velocity	15m/min	15m/min
加速度 Acceleration	0.4g	0.4g
重复定位精度 Repeatability	±0.5um	±0.5um
定位精度 Positioning accuracy	±1um	±1um
电机型号 Motor model	DLMXP200-04W	DLMXP140-04W

推荐驱动器

Recommended Driver

瑞士瑞诺集团 (Infranor) 于1941年创建于日内瓦, 是欧洲著名的高品质工业自动化驱动及控制类产品制造商。客户包括西门子, 博士, ABB, 可口可乐, 劳力士, 库卡, 雪铁龙等, 为其提供了高效精确的驱动类产品及自动化系统解决方案。瑞诺产品在国外广泛应用于3C 行业、激光、平板显示、半导体、新能源等新兴产业工艺制程和检测设备, 以及传统工业和军事工业。

瑞士瑞诺集团 (Infranor) 早在1973年就开始研发、生产伺服驱动器, 至今技术已非常成熟, 现在瑞士瑞诺集团 (Infranor) 推出新一代适合国内直驱市场 (直线和DD电机) XtrapulsPacHPa系列伺服驱动器。2020年1月6日, 广州市昊志机电股份有限公司 (股票代码: 330503) 在瑞士100%完成了Infranor集团并购。

Founded in 1941 in Geneva, Infranor is a famous manufacturer of high-quality industrial auto drive and control products in Europe. It has established cooperation relationship with the enterprises, including Siemens, BOSCH, ABB, Coca Cola, Rolex and Citroen, to offer efficient and accurate drive products and auto system solutions. Infranor’s products are widely applied in the manufacturing processes and detection equipment of overseas emerging industries, such as 3C industry, laser, panel display, semiconductor and new energy, as well as traditional industries and military industries.

Infranor has already started R&D and production of servo drives since 1973, which contributes to its present mature techniques. Infranor has launched new generation XtrapulsPacHPa series servo drives, which apply to domestic direct-drive markets (linear and DD motors). On January 6, 2020, Guangzhou Haozhi Industrial Co., Ltd. (stock code: 330503) has completed M & A of Infranor in Switzerland.

Xtrapuls PacHPa系列高性能伺服驱动器

Xtrapuls PacHPa Series High-performance servo drive



优点:

全数字式交流伺服驱动器

- 控制方式
 - 总线控制 (CANopen®或EtherCAT®)
 - 脉冲(包括电子手轮的A/B脉冲)和模拟控制

- 支持多种编码器反馈接口:
 - TTL encoder + HES
 - SinCos encoder + HES
 - Absolute single-turn SinCos encoder
 - Hiperface® with SinCos channels
 - EnDat®2.2 (without SinCos channels)
 - Hiperface DSL® (one single motor cable)
 - BiSS-C

- 多种自整定功能:
 - Auto-phasing
 - Auto-tuning
 - Cogging Torque Compensation

- RS232外挂功能/USB通信诊断接口
- 安全扭矩关闭功能 (STO)

Advantage:

All-digital AC servo drive

- Control mode
 - Bus control (CANopen®or EtherCAT®)
 - Pulse (including A/B pulse of electronic handwheel) and analog control

- Support multiple feedback interfaces of encoders:
 - TTL encoder + HES
 - SinCos encoder + HES
 - Absolute single-turn SinCos encoder
 - Hiperface® with SinCos channels
 - EnDat®2.2 (without SinCos channels)
 - Hiperface DSL® (one single motor cable)
 - BiSS-C

- Multiple self-tuning functions:
 - Auto-phasing
 - Auto-tuning
 - Cogging Torque Compensation

- RS232 external function/USB communication diagnosis interface
- STO (safe torque off) function

Xtrapuls PacHPa系列伺服驱动器结构合理, 使用方便, 控制算法先进, 性能优越, 是高精度, 高效益设备的首选。

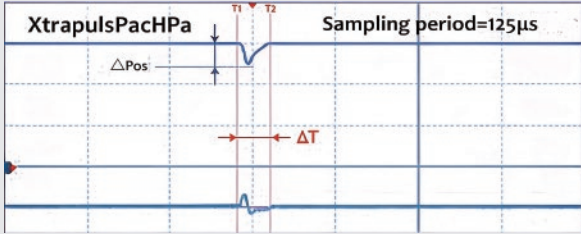
With reasonable drive structure, convenient use, advanced control algorithm and excellent performance, Xtrapuls PacHPa series servo drive is always the first choice for high-accuracy and high-benefit equipment.

伺服驱动器动态性能

Dynamic performance of servo drive

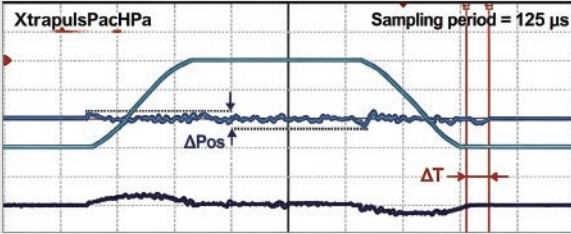
与以前版本的XtrapulsPac™相比, 伺服动态性能提高了3倍, 位置误差和响应时间减小3倍
In comparison to the last version XtrapulsPac™, its servo dynamic performance is improved by 3 times and its position error and response time are reduced by 3 times

在电机轴上施加阶梯状转矩扰动的位位置偏差刚度试验。
The position deviation and rigidity test of stair torque disturbance is applied on the motor spindle.



图一(Figure 1)

位置模式下S型加减速轨迹运行的位置跟随误差试验。
Position following error test of S-shape acceleration/ deceleration track at position mode

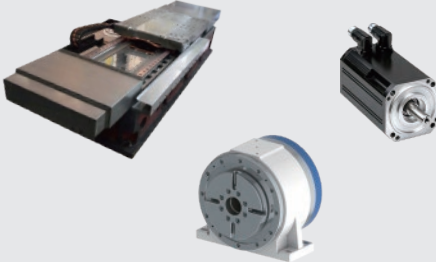


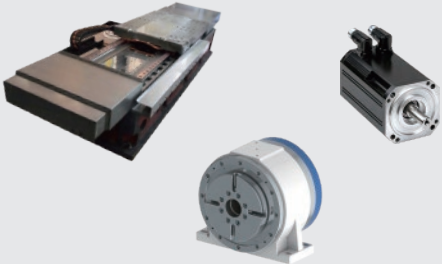
图二(Figure 2)

控制环路 Control loop	I/O 接口 I/O Interface	运行模式 Running mode
—电流环采样周期: 31.25μs (PWM 16kHz) 62.5μs (PWM 8kHz) —速度和位置环采样周期: 125μs、250μs、500μs (可选) —最高速度高达25000rpm —齿槽转矩补偿 —Sampling period of current loop: 31.25μs (PWM 16kHz) 62.5μs (PWM 8kHz) —Sampling period of speed and position loop: 125μs、250μs、500μs (Optional) —Max. speed 25000rpm —Torque compensation of tooth socket	—模拟输入±10V/16位 —模拟输出0-5V/12位 —“AOK” 继电器输出 —电机制动控制 —用户可设置的数字I/O Input×5,Output×3 (可编程, 用于Sequences运行模式)。 —Analog input ±10V/16-bit —Analog output 0-5V/12-bit —AOK” relay output —Motor brake control —Settable figure I/O of user Input×5,Output×3(Programmable, applies to Sequences running mode)	—EtherCAT®或 CANopen®总线控制 循环同步位置模式 循环同步速度模式 循环同步转矩模式 位置插补模式 轮廓位置模式 轮廓速度模式 轮廓扭矩模式 回零模式 —EtherCAT®or CANopen®Bus control Cyclic synchronization position mode Cyclic synchronization speed mode Cyclic synchronization torque mode Position interpolation mode Outline position mode Outline speed mode Outline torque mode Homing mode —Analog speed —Stepper emulation —Sequences —Master-slave gearing —Master-slave camming —Electronic gearing

多轴工具箱 Multi-spindle toolbox		认证 Authentication
配置工具 —电机和驱动器配置 —应用程序配置 —接口配置 —自动调谐、自动定相 —定序器编程 —电机库 —多语言软件 Configuration tools - Configuration of motor and drive - Configuration of application program - Interface configuration - Self-tuning, self-phasing - Sequencer programming - Motor warehouse - Multi-language software	诊断工具 —多轴示波器 —设备控制 —设备监控 —对象对话框窗口 Diagnosis tools - Multi-spindle oscilloscope - Equipment control - Equipment monitoring - Object dialog window	CE UL LISTED FR

订购选型：指令与反馈（Order selection: Instruction and feedback）

产品系列 Product series	控制方式 Control mode	反馈传感器 Feedback sensor	可适配直线电机、DD电机、伺服电机使用 Applies to linear motor, DD motor and servo motor
PacHPa-ed	EtherCAT® Stepper emulation(5M max) Analog speed RS232	TTL encoder + HES SinCos encoder + HES Absolute single-turn SinCos encoder Hiperface® with SinCos channels	
PacHPa-kd	CANopen® Stepper emulation(5M max) Analog speed RS232	EnDat®2.2 (without SinCos channels) Hiperface DSL® (one single motor cable) BiSS-C	
PacHPa-et	EtherCAT® RS232	TTL encoder + HES Transmitter relsover SinCos tracks relsover SinCos encoder + HES Absolute single-turn SinCos encoder Hiperface with SinCos channels®	



订购选型：功率规格与尺寸（Order selection: Power specification and dimensions）

型号(Model)	电源相数 Power phase number	电源电压(V _{ac}) Supply voltage	额定电流(A _{rms}) Rated current	峰值电流(A _{max} 3S) Peak current	宽(mm) Wide	高(mm) High	深(mm) Deep
PacHPa-ed-230/17	单相(Single phase)	230	8.5	17	75.45	177.80	149.10
PacHPa-ed-400/20	单相(Single phase) 三相(Three phase)	230/400	10	20	75.45	235	192.10
PacHPa-ed-400/45	三相(Three phase)	400	22.5	45	75.45	235	192.10
PacHPa-ed-400/100	三相(Three phase)	400	35	100	80	235	215.30
PacHPa-ed-400/200	三相(Three phase)	400	75	200	166.6	295	215
PacHPa-kd-230/17	单相(Single phase)	230	8.5	17	75.45	177.80	149.10
PacHPa-kd-400/20	单相(Single phase) 三相(Three phase)	230/400	10	20	75.45	235	192.10
PacHPa-kd-400/45	三相(Three phase)	400	22.5	45	75.45	235	192.10
PacHPa-kd-400/100	三相(Three phase)	400	35	100	80	235	215.30
PacHPa-kd-400/200	三相(Three phase)	400	75	200	166.6	295	215
PacHPa-et-230/17	单相(Single phase)	230	8.5	17	75.45	177.80	149.10
PacHPa-et-400/20	单相(Single phase) 三相(Three phase)	230/400	10	20	75.45	235	192.10
PacHPa-et -400/45	三相(Three phase)	400	22.5	45	75.45	235	192.10
PacHPa-et -400/100	三相(Three phase)	400	35	100	80	235	215.30
PacHPa-et-400/200	三相(Three phase)	400	75	200	166.6	295	215
GDPS-400V/16kW	三相(Three phase)	400	—	16kw	70	235	158
GDPS-400V/32kW	三相(Three phase)	400	—	32kw	70	235	158
GDPS-400V/64kW	三相(Three phase)	400	—	64kw	71.5	295	207
备注：400/45~400/200驱动器需要配置GDPS母线电源。 Note: The 400/45~400/200 drive should be configured with GDPS bus power supply.							

相关技术指标（Relevant technical indexes）

峰值电流过载时间 Peak current overload time	寻相功能 Phase finding function	参数增益自整定 整定过程基本不需要运行，最快1/4秒完成 Parameter gain self-tuning, No running is required basically in tuning process, completed within 1/4s as the shortest period	速度波动 Velocity fluctuation	整定时间 Tuning time
3秒	一键寻相，几秒内自动完成 One-key phase finding, completed automatically within several seconds.	整定参数能满足大部分使用场合 Tuning parameters can satisfy most application scenarios.	行业最优 The optimum choice in industry	行业最优 The optimum choice in industry

直线电机需求工况表

*客户名称：				
*应用行业：				
1	*电机型式	单轴直线电机	多轴直线电机	
2	*轴数需求	☐ X ☐ Y ☐ Z	☐ 十字交叉	☐ 龙门式
3	*安装方式	☐ 水平 ☐ 垂直 ☐ 侧挂悬臂 ☐ 悬臂 ☐ 倒挂		
4	*各轴行程	mm	下： mm; 上： mm	X 轴： mm; Y 轴： mm; Z 轴： mm
5	*负载重量	kg	下： kg; 上： kg	X 轴： kg; Y 轴： kg; Z 轴： kg
6	*最大速度	m/s	下： m/s; 上： m/s	X 轴： m/s; Y 轴： m/s; Z 轴： m/s
7	*最大加速度	m/s²	下： m/s²; 上： m/s²	X 轴： m/s²; Y 轴： m/s²; Z 轴： m/s²
8	运行时间	加速时间： ms 匀速时间： ms 减速时间： ms 停顿时间： ms	下 上 加速时间： ms 匀速时间： ms 减速时间： ms 停顿时间： ms	X Y Z 加速时间： ms 匀速时间： ms 减速时间： ms 停顿时间： ms
9	重复定位精度	μm	下： μm; 上： μm	X 轴： μm; Y 轴： μm; Z 轴： μm;
10	定位精度	μm	下： μm; 上： μm	X 轴： μm; Y 轴： μm; Z 轴： μm
11	驱动器及控制方式	额定电压： V 额定电流： A 峰值电流： A 总线： ☐ EtherCAT ☐ CANopen ☐ M3 ☐ Profinet ☐ 其它 ☐ PWM ☐ Analog	下 上 额定电压： V 额定电流： A 峰值电流： A 总线： ☐ EtherCAT ☐ CANopen ☐ M3 ☐ Profinet ☐ 其它 ☐ PWM ☐ Analog	X Y Z 额定电压： V 额定电流： A 峰值电流： A
12	控制器型式	☐ 运动控制器 ☐ 控制卡 ☐ PLC 品牌： 型号：		
13	电缆线规格	规格： 长度：	规格： 长度：	规格： 长度：
14	冷却方式	☐ 水冷 ☐ 自冷		
15	次级覆盖方式	☐ 环氧树脂 ☐ 钣金 ☐ 无要求		
16	特殊要求			
17	其它			

注:*为必填项

Linear motor demand table

*Customer name:

*Application sector:

1	Motor type	Single-axis linear motor		Multi-axis linear motor		
2	Axis number requirement	☐ X ☐ Y ☐ Z		☐ Cross	☐ Gantry type	
3	Installation mode	☐ Level ☐ vertical ☐ Side cantilever ☐ cantilever ☐ Hang upside down				
4	Total travel	mm	down: mm; up: mm	X axis: mm; Y axis: mm; Z axis: mm		
5	Load weight	kg	down: kg; up: kg	X axis: kg; Y axis: kg; Z axis: kg		
6	Maximum speed	m/s	m/s; up: m/s	X axis: m/s; Y axis: m/s; Z axis: m/s		
7	Maximum acceleration	m/s²	down: m/s²; up: m/s²	X axis: m/s²; Y axis: m/s²; Z axis: m/s²		
8	Running time	Acceleration time: ms Constant speed time: ms Deceleration time: ms Pause time: ms	down up Acceleration time: ms Constant speed time: ms Deceleration time: ms Pause time: ms	X Y Z Acceleration time: ms Constant speed time: ms Deceleration time: ms Pause time: ms		
9	Repeated positioning accuracy	μm	down: μm ; up: μm	X axis: μm ; Y axis: μm ; Z axis: μm ;		
10	Positional accuracy	μm	down: μm ; up: μm	X axis: μm ; Y axis: μm ; Z axis: μm		
11	Drive and control mode	Rated voltage: V Rated current: A Peak current: A Communication bus: ☐ EtherCAT ☐ CANopen ☐ M3 ☐ Profinet ☐ Other ☐ PWM ☐ Analog	下 上 Rated voltage: V Rated current: A Peak current: A Communication bus: ☐ EtherCAT ☐ CANopen ☐ M3 ☐ Profinet ☐ Other ☐ PWM ☐ Analog	X Y Z Rated voltage: V Rated current: A Peak current: A		
12	Controller type	☐ Motion controller ☐ Control card ☐ PLC Brand: Model:				
13	Cable specification	Specification: Length:	Specification: Length:	Specification: Length:		
14	Cooling type	☐ water cooling ☐ natural cooling				
15	Secondary covering system	☐ Epoxy resin ☐ Sheet metal ☐ No requirement				
16	Special requirements					
17	Other					

Note: * indicates a required field.

为客户带去超值·为股东创造所值
为员工体现价值·为社会营造增值

Deliver Extra Value To Customers.
Create Lucrative Value For Shareholders.
Help Employees Realize Their Values.
Bring Added- Value To Society.

市场布局

Market Layout



 Manufacturing Sites  Sales & Service Locations

Europe

- | | | |
|---|--|--|
|  Barcelona, Spain
MAVILOR MOTORS S.A.U. |  Yverdon-les-Bains, Switzerland
CYBELEC SA |  Lourdes, France
INFRANOR SAS |
|  Hanau, Germany
INFRANOR GERMANY |  Arese (MI), Italy
INFRANOR ITALY |  Barcelona, Spain
INFRANOR SPAIN |
|  Regensdorf, Switzerland
INFRANOR SWITZERLAND |  Lourdes, France
INFRANOR SAS | |

North America

-  Wilmington, MA, USA
INFRANOR USA

ASIA

- | | |
|---|--|
|  Guangzhou, China
Guangzhou Haozhi Industrial Co., Ltd. |  Yueyang, Hunan, China
KLKJ |
|  Shanghai, China
CNCT |  Yueyang, Hunan, China
Hunan Linear Motion |
|  Suzhou, China
Guangzhou Haozhi Industrial Co., Ltd. |  Shanghai, China
IMCT |
|  Bac Ninh Province, Vietnam
Haozhi Industrial (Vietnam) Co., Ltd. | |