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苏州英力智传动机电科技有限公司
Suzhou ITG Linear Motor Co., Ltd.

地址: 苏州市高新区浒关工业园浒泾路6号
No.6 Xujing Road, Xuguan Industrial Park,
SND, Suzhou China
手机: (+86) 139 1403 3275
QQ: 2350199845
邮箱(Email): itgmotor_sz@126.com
网址: www.itg-motor.com



请扫二维码, 惠存名片

苏州英力智传动机电科技有限公司
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ABOUT ITG

关于英力智

自公司成立起,公司全体满怀激情,锐意进取,以专业的队伍、严谨的管理,出色的品质,一流的服务,着力打造高性能直线电机领域的卓越品牌,现已成为国内半导体光刻设备龙头制造商的优质直线电机供应商,及顶级世界知名德国运动平台制造商之重要合作伙伴。英力智公司100%专注于直线电机技术,是高端直驱系统核心部件最佳合作伙伴。



Since the establishment of the company, we are all born to be passionate and determinate. With the professional team, advanced management system, top quality and excellent service, we are devoted to be one of the best linear motor manufacturers. Now ITG has become a high-quality linear motor supplier of leading manufacturers of semiconductor lithography equipment in China and an important partner of top world-famous German motion stage manufacturers. ITG is 100% focusing on linear motor technology, and is the best partner for the linear motors of direct drive system.

OUR STRENGTHS

我们的优势

- 持续的技术创新, 高质量标准
- 专业提供直线电机系统核心部件
- 聚焦客户需求, 快速相应, 订购交期短
- 领先的技术和服务, 可信赖的长期合作伙伴
- Sustainable technology innovation, high quality standards
- Specialized in providing linear motors as the core components of linear motion system
- Focus on customer needs, quick respond and short lead-time
- Leading technology and excellent service, your reliable long-term partner



WHY ITG MOTORS

为何英力智电机

- 结构紧凑: 产品轻薄, 小巧, 扁平化
- 性能卓越: 推力密度大, 运行平稳
- 优秀电磁设计: 高能效比, 发热量小
- 高系统动态性能: 高响应, 整定迅速, 高定位及重复精度
- 易于集成: 安装简单, 兼容众多电子控制系统
- 更宽产品范围: 品类齐全, 推力范围宽泛, 英力智提供市场上品种极丰富的直驱电机产品
- Compact Size: Light weight, thin and smart
- Excellent Performances: High force density, Stable motion
- Excellent Electromagnetic Design: High energy efficiency and low heat
- High system dynamic performance: Swift response, quick tuning and high precisions
- Easy to integrate: Easy to install, compatible with many electronic control systems
- Wider product range: Complete categories and wide force range. ITG offers a wide variety of direct drive motor products on the market

WIDE RANGE OF APPLICATIONS

广泛的应用领域



晶圆和内核级封装



平板印刷



测试和控制设备



贴片机



加工



精加工/磨削



电子



冲压/激光切削



平板显示器



光伏



医疗器械



包装



光学



印刷/扫描



动子型号订购须知 Coil Unit Naming

IC50/76/124
-3S-T-xx

IC=有铁芯 Iron Core
50/76/124=系列 Series Type (动子宽度Width of coil unit)
3/6/9/12/15/18/24/30/45=线圈个数
S/N/Y/Z=线组类型
T/PT100/PT1000/None=温控传感器类型 Sensor Types: T/PT100/PT1000/None: T代表默认PTC110和NTC 10KΩ,
PT100代表带PT100温度传感器, PT1000代表带PT1000温度传感器, None空代表不带任何温控传感器
xx=代表电机出线长度, 长度可根据客户需求定制, 01代表1米出线,
02代表2米出线, 03.....

定子型号订购须知 Magnet Plate Naming

MP50-96

MP=平板 Magnet Plate
50=系列 Series Type
96=磁板长度 Length of
Magnet Plate

直线电机选型索引 Linear motor selection guide

■ 峰值推力Fu (N) ■ 持续推力Fc (N)

IC40 Series				
	IC40-03	110	45	P1-P2
	IC40-06	220	90	
IC50 Series				
	IC50-03	135	66	P3-P4
	IC50-06	270	132	
	IC50-12	540	264	
	IC50-18	810	396	
IC76 Series				
	IC76-06	496	220	P5-P6
	IC76-09	744	330	
	IC76-12	992	440	
	IC76-15	1240	550	
	IC76-18	1488	660	
	IC76-24	1984	880	
	IC76-30	2480	1100	
IC124 Series				
	IC124-12	1900	800	P7-P8
	IC124-15	2375	1000	
	IC124-18	2850	1200	
	IC124-30	4750	2000	
	IC124-45	7125	3000	
IC124WC Series				
	IC124WC-12	1900	1040	P9-P10
	IC124WC-15	2375	1300	
	IC124WC-18	2850	1560	
	IC124WC-30	4750	2600	
	IC124WC-45	7125	3900	
IC177WC Series				
	IC177WC-12	2700	1200 1500	P11-P12
	IC177WC-15	3375	1500 1950	
	IC177WC-18	4040	1800 2340	
	IC177WC-24	5400	2400 3000	
	IC177WC-30	6750	3000 3900	
	IC177WC-45	10125	4500 5850	
IC230WC Series				
	IC230WC-12	3360	1600 2080	P13-P14
	IC230WC-15	4200	2000 2600	
	IC230WC-18	5040	2400 3120	
	IC230WC-24	6720	3200 4160	
	IC230WC-30	8400	4000 5200	
	IC230WC-45	12600	6000 7800	



动子型号订购须知 Coil Unit Naming

IL59-6S-T-01

IL=无铁芯 Ironless
59=系列 Series Type
6S=线圈数与绕组类型 Coil numbers and Winding Types
T/PT100/PT1000/None=温控传感器类型 Sensor Types: T/PT100/PT1000/None: T代表默认PTC110和NTC 10KΩ,
PT100代表带PT100温度传感器, PT1000代表带PT1000温度传感器, None空代表不带任何温控传感器
-01=代表电机出线1米, 长度可根据客户需求定制, 默认为0.5米出线
01 means length of cable 1m, default cable length 0.5m, can be custom made as well

定子型号订购须知 Magnet Plate Naming

MY59-90

MY=磁轨 Magnet Yoke
59=系列 Series Type
90=磁轨长度 Length of
Magnet Yoke

直线电机选型索引 Linear motor selection guide

■ 峰值推力Fu (N) ■ 持续推力Fc (N)

ILS42DHM Series				
	ILS42DHM-03	20	5	P19-P20
	ILS42DHM-06	40	10	
	ILS42DHM-09	60	15	
IL32 Series				
	IL32-03	46	11.5	P21-P22
	IL32-06	92	23	
IL42 Series				
	IL42-03	40	11	P23-P24
	IL42-06	80	22	
IL44 Series				
	IL44-03	45	20	P25-P26
	IL44-06	90	40	
	IL44-09	135	60	
IL59 Series				
	IL59-03	105	30	P27-P28
	IL59-06	210	60	
	IL59-09	315	90	
	IL59-12	420	120	
IL91 Series				
	IL91-03	250	73	P29-P30
	IL91-06	500	146	
	IL91-09	750	219	
	IL91-12	1000	292	
	IL91-15	1250	365	
IL109 Series				
	IL109-03	645	125	P31-P32
	IL109-06	1290	250	
	IL109-09	1935	375	
	IL109-12	2850	500	
	IL109-18	3870	750	
IL109X Series				
	IL109X-03	730	145	P33-P34
	IL109X-06	1460	290	
	IL109X-09	2190	435	
	IL109X-12	2920	580	
	IL109X-18	4380	870	
IL150 Series				
	IL150-03	1250	250	P35-P36
	IL150-06	2500	500	
	IL150-09	3750	750	
	IL150-12	5000	1000	
	IL150-15	7500	1500	



- ※ 小推力应用
- ※ 结构非常紧凑，且具有极大的推力密度
- ※ 极小磁吸力和齿槽力效应
- ※ 良好的散热性能
- ※ 驱动电压45V到三相电压380V可供选择
- ※ S接法绕组的高速电机和Z接法的超高速电机可定制
- ※ 可定制任意长度高柔拖链线缆的电机

Small force applications: Force range Fc:45-90N, Fp:110-220N
 Very compact size, and with extremely high force density
 Very low attraction force and cogging
 Excellent heat dissipation performance
 Driving voltages from 45Vac rms Voltage to 380Vac rms are applicable
 Very high speed motors with the S windings and Supper high speed with the Z windings can be customized
 Any length of high flex chain cables for motors can be chosen

性能参数 Performance					
参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	IC40-03	IC40-06
绕组类型 Winding Type				S	S
电机类型 Motor type	三相同步有铁芯 3 phases synchronous Ironcore			220Vacrms (320Vdc)	
极限推力 Ultimate Force @ 10 C/s ↑	Magnet@25 C	Fu	N	110	220
峰值推力 Peak Force@6 C/s ↑	Magnet@25 C	Fp	N	95	190
持续推力 Continuous Force	Coil@110 C	Fc	N	45	90
最大速度 Maximum Speed	@320V	Vmax	m/s	6	6
电机力常数 Motor Force Constant	Mount. Sfc.@20 C	K	N/Arms	30	30
电机常数 Motor Constant	Coils@25 C	S	N²/W	40	80

电气参数 Electrical					
极限电流 Ultimate Current	Magnet@25 C	Iu	Arms	5.0	9.9
峰值电流 Peak Current	Magnet@25 C	Ip	Arms	3.7	7.3
持续电流 Continuous Current	Coil@110 C	Ic	Arms	1.5	3.0
反电动势常数 Back EMF	Phase-Phase peak	Bemf	V/M/S	24	24
单相电阻 Resistance Per Phase	Coil@25 C	Rph	Ω	5	2.5
单相电感 Induction Per Phase	I<0.63Ip	Lph	mh	30	15
电气时间常数 Electrical Time Constant	Coil@25 C	te	ms	6	6
最大持续功耗 Power Loss	All coils	Pc	W	66	132

热性能参数 Thermal					
热阻 Thermal R.	Coils to mount. Sfc.	Rth	°C/W	1.85	0.94
温度传感器 Temp. Sensor				Optional PTC 1kΩ/NTC	

机械参数 Mechanical					
动子重量 Coil Unit Weight	ex.cables	W	kg	0.4	0.7
动子长度 Coil Unit Length	ex.cables	L	mm	96	160
电机吸引力 Motor Attraction Force	Rms@0A	Fa	N	220	500
磁节距 Magnet Pitch	N-N	τ	mm	32	32
动力线类型 Power Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm²)	6.6(4G0.5mm² AWG21)	
温控线类型 Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm²)	4.9(4*0.14mm² AWG26)	
电线寿命 Cable life	Minimum		Cycles	>5,000,000	
静态弯曲半径 Bending Radius Static	Minimum		mm	≥4x Φ	
动态弯曲半径 Bending Radius Dynamic	Minimum		mm	≥7.5x Φ	

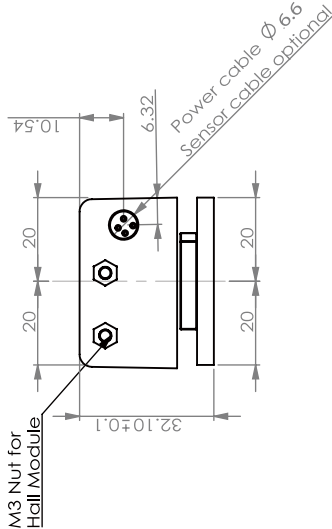
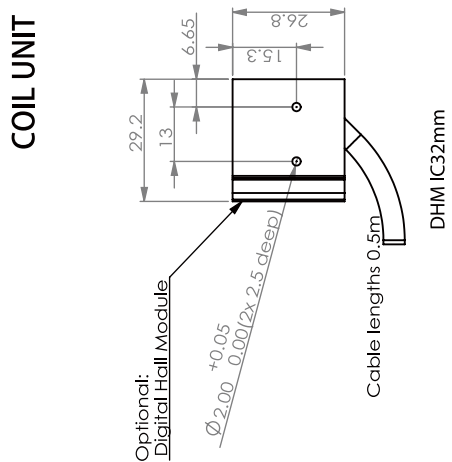
温度传感器接线图 Temperature Sensor connections				
1	PTC 1KΩ	棕色 Brown		
2	PTC 1KΩ	白色 White		
3	NTC	黄色 Yellow		
4	NTC	绿色 Green		

电机接线图 Motor connections				
1	Phase U	相 Phase 1		
2	Phase V	相 Phase 2		
3	Phase W	相 Phase 3		
4	PE	黄绿 Yellow-Green		

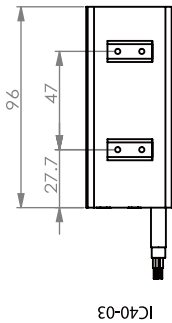
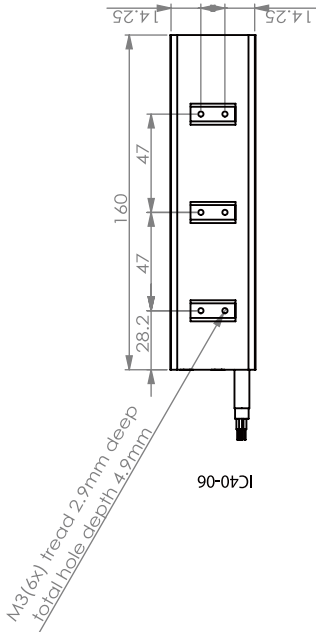
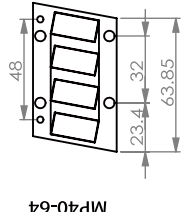
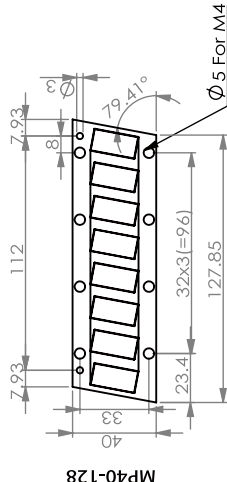
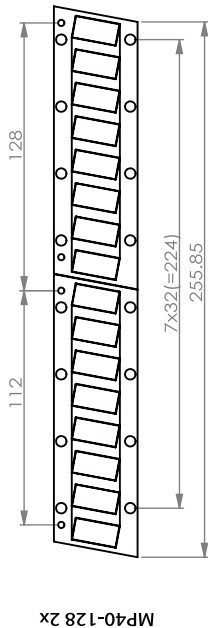
数字霍尔接线图 Dig. Hall sensor connections				
1	0V	灰色 Gray		
2	5~28V	棕色 Brown		
3	Hall A	白色 White		
4	Hall B	绿色 Green		
5	Hall C	黄色 Yellow		

磁板装配尺寸 Magnet Plate Mounting Dimensions				
长度 Length (mm)	64	128		
M4螺栓 Bolts	4	8		
重量 Weight (Kg/m)		1.6		
磁板可以无限拼接 Magnet Plates can be jointed together without limits				

COIL UNIT



MAGNET PLATE





- ※ 中低推力应用
- ※ 结构紧凑具有极大的推力密度和推力重量比
- ※ 极小的磁吸力和齿槽力效应
- ※ 良好的散热性能
- ※ 驱动电压45V到三相电压380V可供选择
- ※ S接法绕组的高速电机和Z接法的超高速电机可选
- ※ 数字霍尔可直接安装在电机动子上
- ※ 可定制任意长度高柔拖链线缆的电机

Middle-Low force applications: Force range Fc: 66-396N, Fp:135-810N
Compact size with extremely high force density and ratio of force/weight
Very low attraction force and cogging
Very good heat dissipation performance
Driving voltages from 45Vac rms Voltage to 380Vac rms are available
Very high speed motors with the S windings and Supper high speed available for the Z windings
Digital hall module can be mounted directly on the coil unit of motor
Any length of high flex chain cables for motors can be made

性能参数 Performance													
参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	IC50-03	IC50-06	IC50-09	IC50-12	IC50-18	IC50LV-03	IC50LV-06	IC50LV-12	IC50LV-18	
绕组类型 Winding Type				S	S	N	S	S	Z	Z	Z	Y	
电机类型 Motor type	三相同步有铁芯 3 phases synchronous Ironcore, 380Vacrms (600Vdc) 低电压 Low voltage 45Vacrms (60Vdc)												
极限推力 Ultimate Force @ 10℃/s ↑	Magnet@25℃	Fu	N	135	270	405	405	540	810	135	270	540	810
峰值推力 Peak Force@6℃/s ↑	Magnet@25℃	Fp	N	116	232	348	348	464	696	116	232	464	696
持续推力 Continuous Force	Coil@110℃	Fc	N	66	132	198	198	264	396	66	132	264	396
最大速度 Maximum Speed	@600V	Vmax	m/s	12	12	3.2	12	12	5	5	5	5	
电机电常数 Motor Force Constant	Mount. Sfc.@20℃	K	N/Arms	39	39	119	39	39	13	13	13	26	
电机常数 Motor Constant	Coils@25℃	S	N ² /W	94	188	282	282	376	563	94	188	376	563

电气参数 Electrical													
极限电流 Ultimate Current	Magnet@25℃	Iu	Arms	4.7	9.4	4.6	14.0	18.7	28.1	14.0	28.1	56.1	42.1
峰值电流 Peak Current	Magnet@25℃	Ip	Arms	3.5	6.9	3.4	10.4	13.8	20.8	10.4	20.8	41.5	31.1
持续电流 Continuous Current	Coil@110℃	Ic	Arms	1.7	3.4	1.7	5.0	6.8	10.2	5.1	10.2	20.3	15.2
反电动势常数 Back EMF	Phase-Phase peak	Bemf	V/M/S	32	32	97	32	32	11	11	11	21	
单相电阻 Resistance Per Phase	Coil@25℃	Rph	Ω	5.4	2.7	16	1.8	1.35	0.90	0.56	0.28	0.14	0.40
单相电感 Induction Per Phase	I<0.63Ip	Lph	mh	35	17.6	104.0	11.7	8.8	5.9	3.6	1.8	0.9	2.6
电气时间常数 Electrical Time Constant	Coil@25℃	τe	ms	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	
最大持续功耗 Power Loss	All coils	Pc	W	62	124	186	186	248	372	62	124	248	372

热性能参数 Thermal													
热阻 Thermal R.	Coils to mount. Sfc.	Rth	°C/W	1.5	0.75	0.5	0.5	0.375	0.25	1.5	0.75	0.375	0.25
温度传感器 Temp. Sensor													PTC 1kΩ/NTC

机械参数 Mechanical													
动子重量 Coil Unit Weight	ex.cables	W	kg	0.55	0.9	1.2	1.2	1.55	2.25	0.55	0.9	1.55	2.25
动子长度 Coil Unit Length	ex.cables	L	mm	93	143	190	190	241	336	93	143	241	336
电机吸引力 Motor Attraction Force	Rms@0A	Fa	N	300	500	700	700	900	1300	300	500	900	1300
磁节距 Magnet Pitch	N-N	τ	mm	24	24	24	24	24	24	24	24	24	24
动力线类型 Power Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm ²)	7.2(4G0.75mm ² AWG19)								11(4G2.5mm ² AWG14)	8(4G1.3mm ² AWG18)
温控线类型 Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm ²)	4.9(4*0.14mm ² AWG26)									
电线寿命 Cable life	Minimum	Cycles		>5,000,000									
静态弯曲半径 Bending Radius Static	Minimum	mm		≥4x φ									
动态弯曲半径 Bending Radius Dynamic	Minimum	mm		≥7.5x φ									

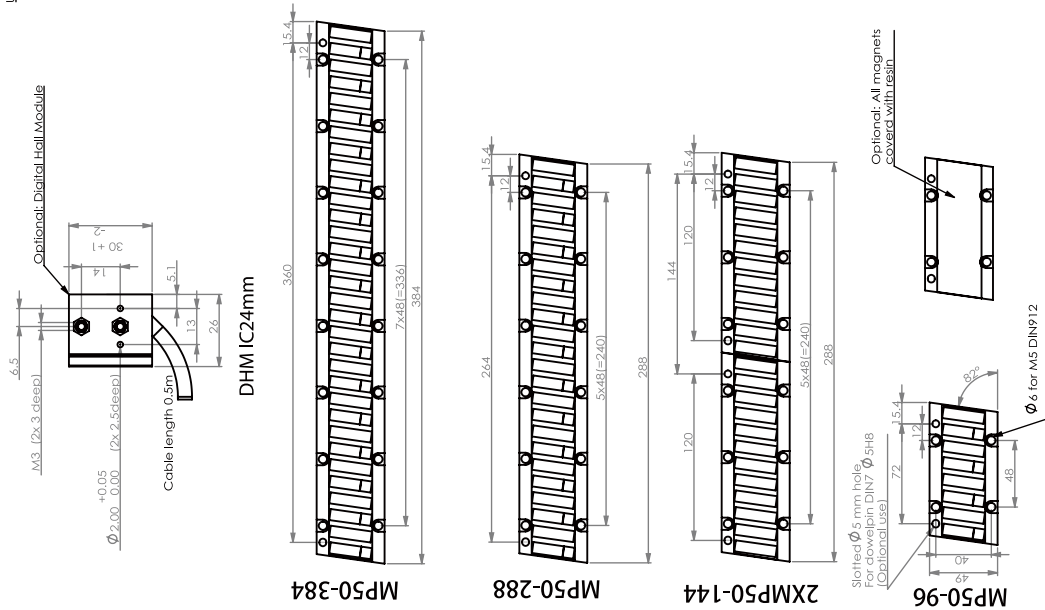
温度传感器接线图 Temperature Sensor connections				
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2	PTC 1KΩ	白色 White		
3	NTC	黄色 Yellow		
4	NTC	绿色 Green		

电机接线图 Motor connections				
1	Phase U	相 Phase 1		
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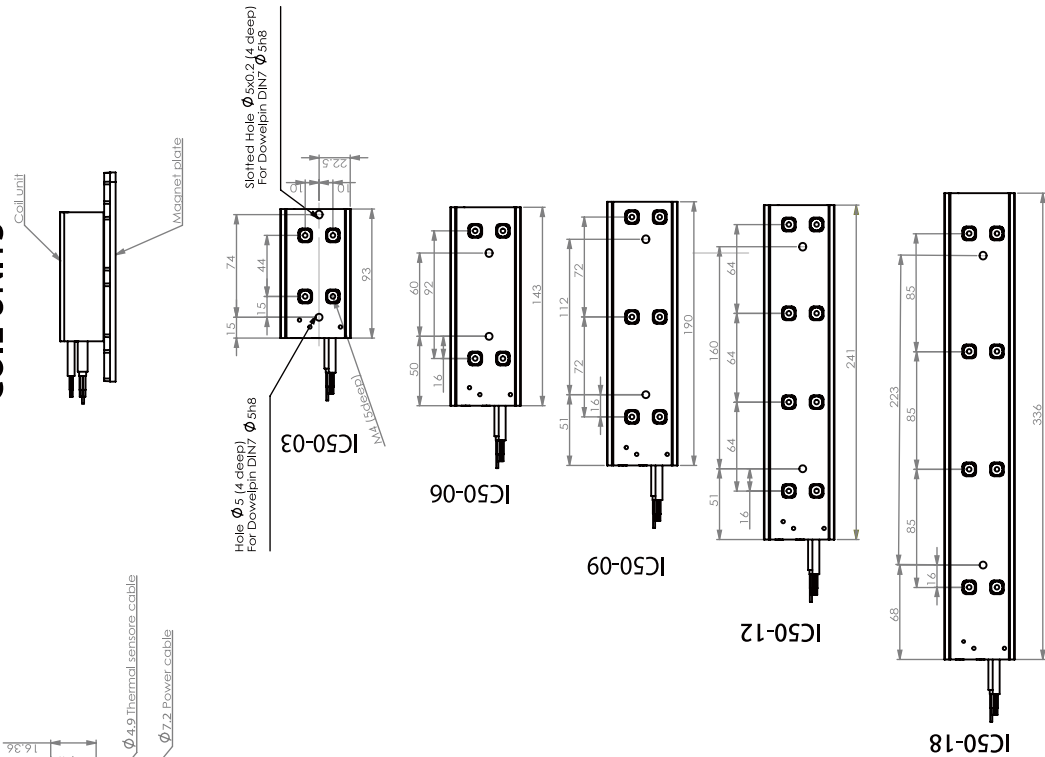
数字霍尔接线图 Dig. Hall sensor connections				
1	0V	灰色 Gray		
2	5~28V	棕色 Brown		
3	Hall A	白色 White		
4	Hall B	绿色 Green		
5	Hall C	黄色 Yellow		

磁板装配尺寸 Magnet Plate Mounting Dimensions				
长度 Length (mm)	96	144	288	384
M5螺栓 Bolts	4	6	12	16
重量 Weight (Kg/m)	2.05			
磁板可以无限拼接 Magnet Plates can be jointed together without limits				

MAGNET PLATES



COIL UNITS





- ※ 中等推力应用
- ※ 结构紧凑具有极大的推力密度和推力重量比
- ※ 极小的磁吸力和齿槽力效应
- ※ 良好的散热性能
- ※ 空冷和水冷应用可选
- ※ N绕组电机驱动电流小使整体成本更低，S绕组电机能实现重载高速运动
- ※ 长动子电机覆盖各种大推力和长行程应用
- ※ 数字霍尔可直接安装在电机动子上
- ※ 可定制任意长度高柔拖链线缆的电机

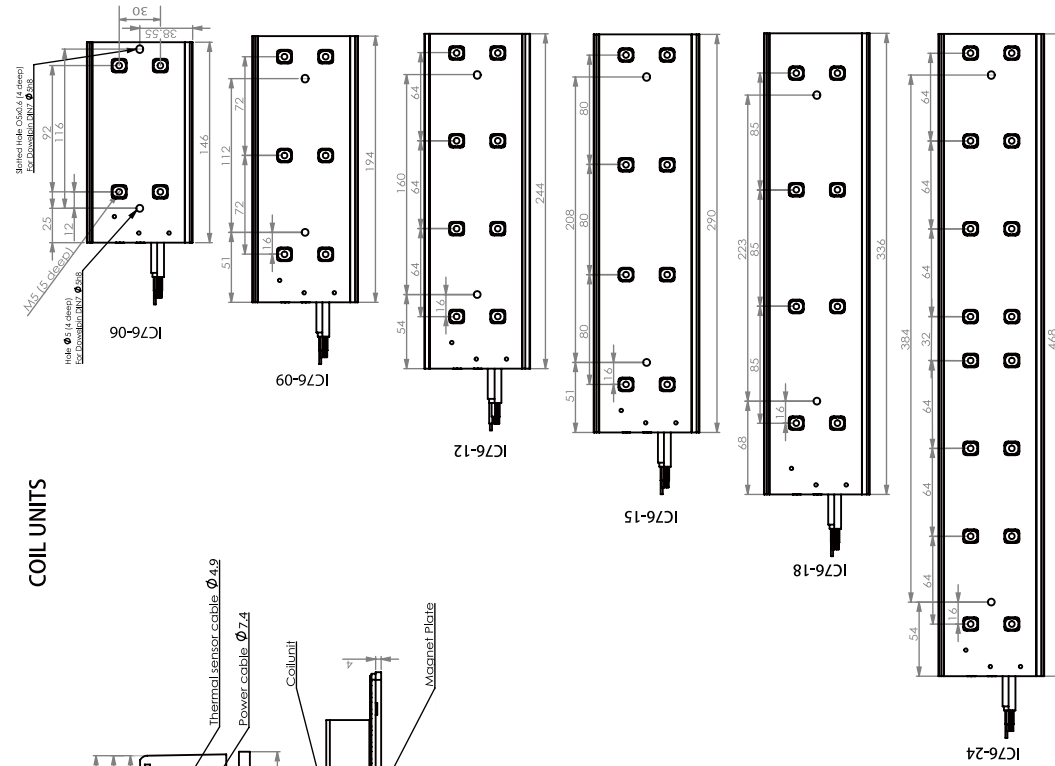
Middle force applications: Force range Fc: 220-1100N, Fp: 496-2480N
Compact size with extremely high force density and ratio of force/weight
Very low attraction force and cogging
Very good heat dissipation performance
Air cooling and water cooling are optional
N windings motors with small driving current make the entire solution less costly, S winding motors can provide high speed for heavy duties
Long Versions of motors widely cover the big force and long travel applications
Digital hall module can be mounted directly on the coil unit of motor
Any length of high flex chain cables for motors can be made

性能参数 Performance																
参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	IC76-06		IC76-09		IC76-12		IC76-15		IC76-18		IC76-24		IC76-30
绕组类型 Winding Type				N	S	N	S	N	S	N	S	N	S	N	S	S
电机类型 Motor type	三相同步有铁芯 3 phases synchronous Ironcore, 380Vacrms (600Vdc)															
极限推力 Ultimate Force @ 10 C/s ↑	Magnet@25 C	Fu	N	496	496	744	744	992	992	1240	1240	1488	1488	1984	1984	2480
峰值推力 Peak Force@6 C/s ↑	Magnet@25 C	Fp	N	440	440	660	660	880	880	1100	1100	1320	1320	1760	1760	2200
持续推力 Continuous Force	Coil@110 C	Fc	N	220	220	330	330	440	440	550	550	660	660	880	880	1100
最大速度 Maximum Speed	@600V	Vmax	m/s	4	8	4	8	4	8	4	8	4	8	4	8	8
电机力常数 Motor Force Constant	Mount. Sfc.@20 C	K	N/Arms	93	46.5	139.5	46.5	93	46.5	112.5	46.5	93	46.5	93	46.5	112.5
电机常数 Motor Constant	Coils@25 C	S	N ² /W	380	380	570	570	760	760	950	950	1140	1140	1520	1520	1900

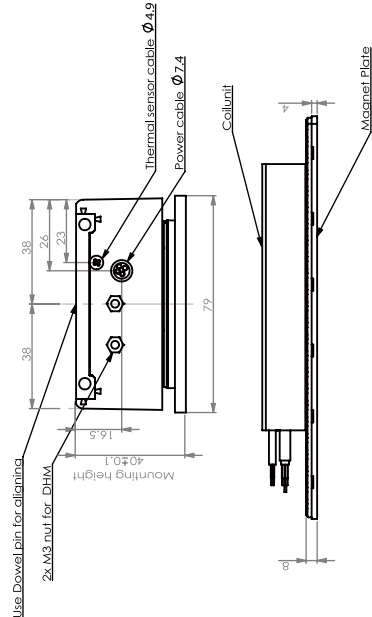
电气参数 Electrical																
极限电流 Ultimate Current	Magnet@25 C	Iu	Arms	7.2	14.4	7.2	21.6	14.4	28.8	14.9	36.0	21.6	43.2	28.8	57.7	29.8
峰值电流 Peak Current	Magnet@25 C	Ip	Arms	5.5	11.0	5.5	16.5	11.0	22.0	11.4	27.5	16.5	33.0	22.0	44.0	55.0
持续电流 Continuous Current	Coil@110 C	Ic	Arms	2.4	4.7	2.4	7.1	4.7	9.5	4.9	11.8	7.1	14.2	9.5	18.9	23.7
反电动势常数 Back EMF	Phase-Phase peak	Bemf	V/M/S	76	38	114	38	76	38	92	38	76	38	76	38	38
单相电阻 Resistance Per Phase	Coil@25 C	Rph	Ω	7.21	1.80	10.80	1.21	3.61	0.90	4.32	0.72	2.41	0.59	1.81	0.46	0.37
单相电感 Induction Per Phase	I<0.63Ip	Lph	mH	54.1	13.5	81.0	9.1	27.1	6.8	32.4	5.4	18.1	4.4	13.6	3.5	2.8
电气时间常数 Electrical Time Constant	Coil@25 C	te	ms	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
最大持续功耗 Power Loss	All coils	Pc	W	171	171	256	256	341	341	427	427	512	512	683	683	853

热性能参数 Thermal																
热阻 Thermal Resistance	Coils to mount. Sfc.	Rth	°C/W	0.48	0.48	0.32	0.32	0.24	0.24	0.19	0.19	0.16	0.16	0.12	0.1	0.1
温度传感器 Temp. Sensor				PTC 1kΩ/NTC												

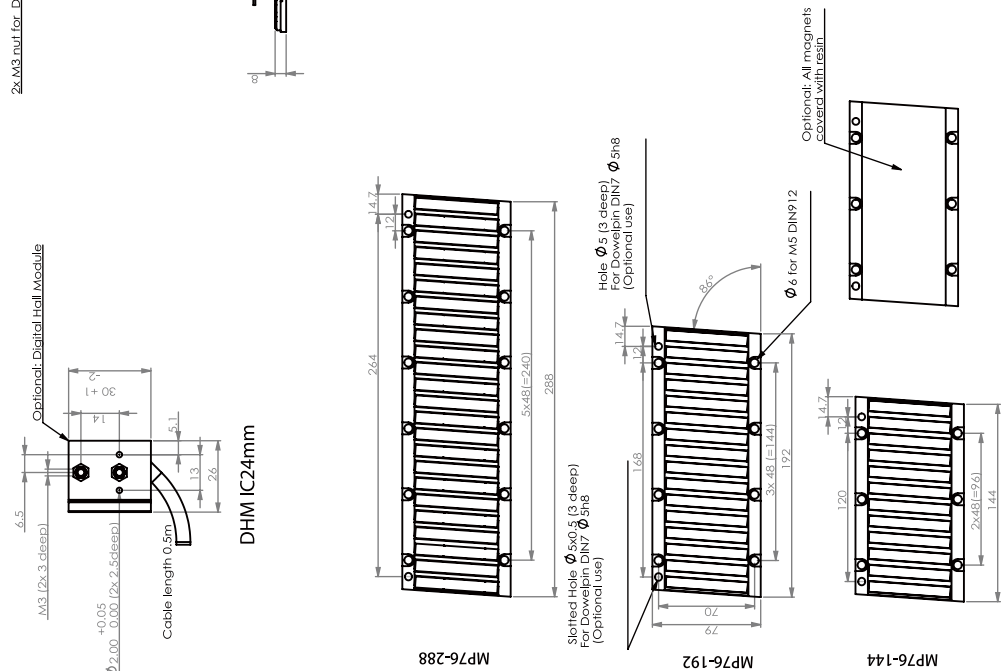
机械参数 Mechanical																				
动子重量 Coil Unit Weight	ex.cables	W	kg	1.45	1.45	1.9	1.9	2.5	2.5	3	3	3.65	3.65	5	5	6	6			
动子长度 Coil Unit Length	ex.cables	L	mm	146	146	194	194	244	244	290	290	336	336	468	468	562	562			
电机吸引力 Motor Attraction Force	Rms@0A	Fa	N	950	950	1325	1325	1700	1700	2075	2075	2450	2450	3400	3400	4150	4150			
磁节距 Magnet Pitch	N-N	τ	mm	24	24	24	24	24	24	24	24	24	24	24	24	24	24			
动力线类型 Power Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm²)	7.4(4G1mm² AWG18)												10.1(4G2.5mm² AWG14)				
温控线类型 Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm²)	4.9(4*0.14mm² AWG26)																
电线寿命 Cable life	Minimum	Cycles	>5,000,000																	
静态弯曲半径 Bending Radius Static	Minimum	mm	≥4x Φ																	
动态弯曲半径 Bending Radius Dynamic	Minimum	mm	≥7.5x Φ																	



COIL UNITS



MAGNET PLATES



温度传感器接线图 Temperature Sensor connections				
1	PTC 1KΩ	棕色 Brown		
2	PTC 1KΩ	白色 White		
3	NTC	黄色 Yellow		
4	NTC	绿色 Green		

电机接线图 Motor connections				
1	Phase U	相 Phase 1		
2	Phase V	相 Phase 2		
3	Phase W	相 Phase 3		
4	PE	黄绿 Yellow-Green		

数字霍尔接线图 Dig. Hall sensor connections				
1	0V	灰色 Gray		
2	5~28V	棕色 Brown		
3	Hall A	白色 White		
4	Hall B	绿色 Green		
5	Hall C	黄色 Yellow		

磁板装配尺寸 Magnet Plate Mounting Dimensions				
长度 Length (mm)	144	192	288	
M5螺栓 Bolts	6	8	12	
重量 Weight (Kg/m)	3.75			
磁板可以无限拼接 Magnet Plates can be jointed together without limits				



- ※ 大推力应用
- ※ 结构紧凑具有极大的推力密度和推力重量比
- ※ 高加速, 高速度, 亚微米级定位精度且低功耗
- ※ 极小的磁吸力和齿槽力效应
- ※ 良好的散热性能
- ※ 数字霍尔可直接安装在电机动子上
- ※ 可定制任意长度高柔拖链线缆的电机

Large force applications: Force range Fc:800-3000N, Fp:1900-7125N
Compact size with extremely high force density and ratio of force/weight
High acceleration, high speed, submicron positioning accuracy and low power consumption
Very low attraction force and cogging
Very good heat dissipation performance
Digital hall module can be mounted directly on the coil unit of motor
Any length of high flex chain cables for motors can be made

性能参数 Performance															
参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	IC124-12		IC124-15		IC124-18		IC124-24		IC124-30		IC124-45	
绕组类型 Winding Type				N	S	N	S	N	S	N	S	N	S	N	S
电机类型 Motor type	三相同步有铁芯 3 phases synchronous Ironcore, 380Vacrms (600Vdc)														
极限推力 Ultimate Force @10 C/s ↑	Magnet@25 C	Fu	N	1900	1900	2375	2375	2850	2850	3800	3800	4750	4750	7125	7125
峰值推力 Peak Force@6 C/s ↑	Magnet@25 C	Fp	N	1680	1680	2100	2100	2520	2520	3360	3360	4200	4200	6300	6300
持续推力 Continuous Force	Coil@110 C	Fc	N	800	800	1000	1000	1200	1200	1600	1600	2000	2000	3000	3000
最大速度 Maximum Speed	@600V	Vmax	m/s	3	6	3	6	3	6	3.0	6.0	3	6	3	6
电机电常数 Motor Force Constant	Mount. Sfc.@20 C	K	N/Arms	186.0	93.0	224.5	93.0	186.0	89.9	186.0	93.0	224.5	93.0	224.5	93.0
电机常数 Motor Constant	Coils@25 C	S	N ² /W	1760	1760	2200	2200	2640	2640	3520	3520	4400	4400	6600	6600

电气参数 Electrical															
极限电流 Ultimate Current	Magnet@25 C	Iu	Arms	14	28	14	35	21	43	28	56	29	69	43	104
峰值电流 Peak Current	Magnet@25 C	Ip	Arms	11	21	11	26	16	33	21	42	22	53	33	79
持续电流 Continuous Current	Coil@110 C	Ic	Arms	4	9	4	11	6	13	9	18	9	22	13	32
反电动势常数 Back EMF	Phase-Phase peak	Bemf	V/M/S	152	76	183	76	152	73	152	76	183	76	183	76
单相电阻 Resistance Per Phase	Coil@25 C	Rph	Ω	6.35	1.59	7.55	1.27	4.24	1.02	3.2	0.8	3.78	0.64	2.53	0.43
单相电感 Induction Per Phase	I<0.63Ip	Lph	mH	51	13	60	10	34	8	25.4	6.4	30	5	20	3
电气时间常数 Electrical Time Constant	Coil@25 C	τe	ms	8	8	8	8	8	8	8	8	8	8	8	8
最大持续功耗 Power Loss	All coils	Pc	W	487	487	609	609	731	731	853	853	1218	1218	1827	1827

热性能参数 Thermal															
热阻 Thermal R.	Coils to mount. Sfc.	Rth	°C/W	0.17	0.17	0.13	0.13	0.11	0.11	0.08	0.08	0.07	0.07	0.04	0.04
温度传感器 Temp. Sensor	PTC 1kΩ/NTC														

机械参数 Mechanical																
动子重量 Coil Unit Weight	ex.cables	W	kg	4.6	4.6	5.5	5.5	6.5	6.5	9	9	11	11	16.5	16.5	
动子长度 Coil Unit Length	ex.cables	L	mm	244	244	290	290	338	338	468	468	562	562	847	847	
电机吸引力 Motor Attraction Force	Rms@0A	Fa	N	3400	3400	4150	4150	4900	4900	6800	6800	8300	8300	12450	12450	
磁节距 Magnet Pitch	N-N	τ	mm	24	24	24	24	24	24	24	24	24	24	24	24	
动力线类型 Power Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm²)	8.4(4G1.5mm² AWG16)						10.1(4G2.5mm² AWG14)						12.1(4G4mm²)
温控线类型 Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm²)	4.9(4*0.14mm² AWG26)												
电线寿命 Cable Life	Minimum	Cycles		>5,000,000												>3.5millions
静态弯曲半径 Bending Radius Static	Minimum		mm	≥4× Φ												≥5×φ
动态弯曲半径 Bending Radius Dynamic	Minimum		mm	≥7.5× Φ												≥10×φ

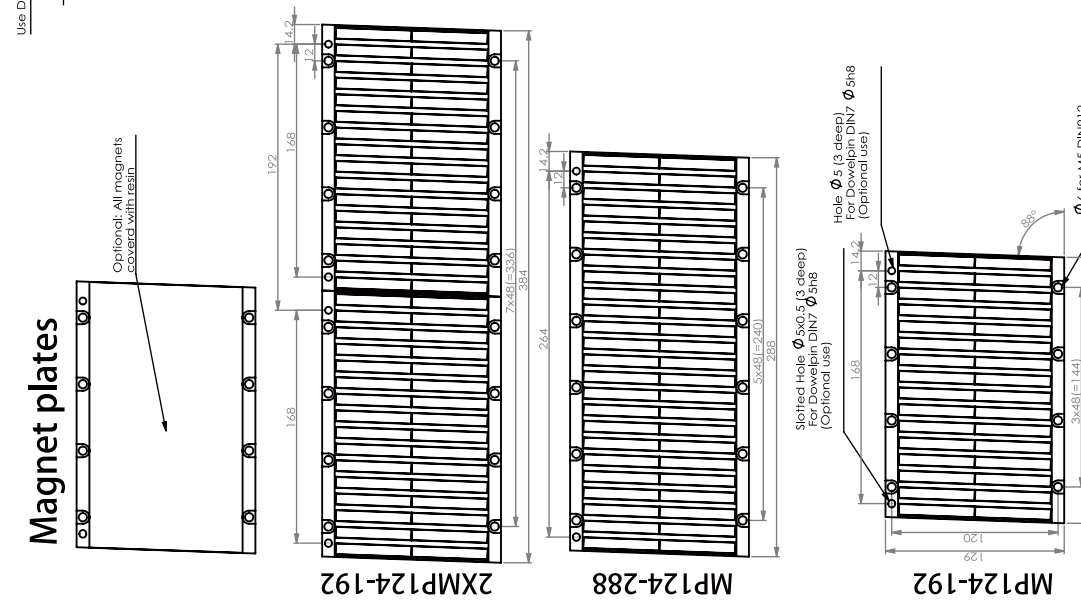
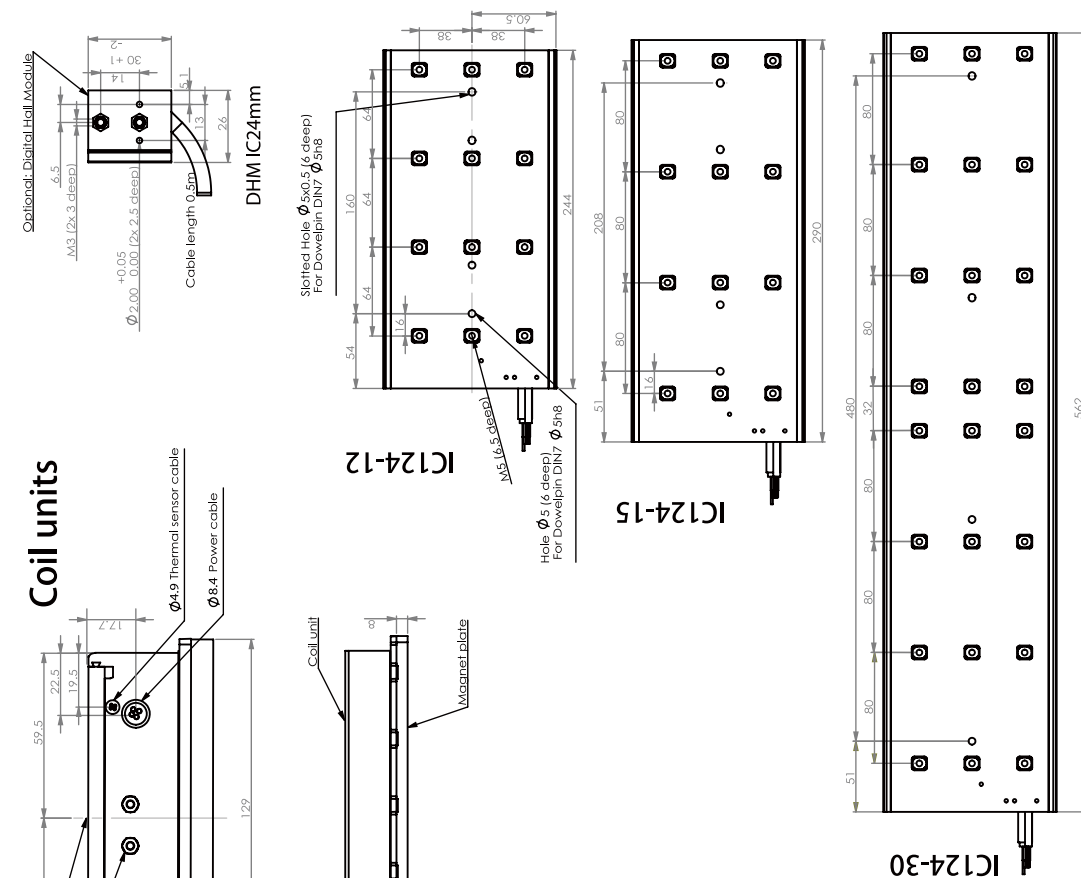
1	PTC 1KΩ	棕色 Brown
2	PTC 1KΩ	白色 White
3	NTC	黄色 Yellow
4	NTC	绿色 Green

电机接线图 <i>Motor connections</i>	
1	Phase U 相 Phase 1
2	Phase V 相 Phase 2
3	Phase W 相 Phase 3
4	PE 黄绿 Yellow-Green

数字霍尔接线图 Dig. Hall sensor connections		
1	0V	灰色 Gray
2	5~28V	棕色 Brown
3	Hall A	白色 White
4	Hall B	绿色 Green
5	Hall C	黄色 Yellow

磁板裝配尺寸 Magnet Plate Mounting Dimensions		
長度 Length (mm)	192	288
M5螺栓 Bolts	8	12
重量 Weight (Kg/m)	10.45	

磁板可以無限拼接 Magnet Plates can be jointed together without limits





- ※ IC124系列电机的水冷版
- ※ 结构非常紧凑，且具有极大的推力密度
- ※ 高加速，高速度，亚微米级定位精度且低功耗
- ※ 非常小的磁吸力和齿槽力效应
- ※ 良好的散热性能
- ※ 可定制任意长度高柔拖链线缆的电机

Water cooled technology Version for the IC124 series motors
Very compact size, and with extremely high force density
High acceleration, high speed, submicron positioning accuracy and low power consumption
Very low attraction force and cogging
Very good heat dissipation performance
Any length of high flex chain cables for motors can be made

性能参数 Performance													
参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	IC124WC-12		IC124WC-15		IC124WC-18		IC124WC-30		IC124WC-45	
绕组类型 Winding Type				N	S	N	S	N	S	N	S	N	S
电机类型 Motor type	三相同步有铁芯 3 phases synchronous Ironcore,380Vacrms (600Vdc)												
极限推力 Ultimate Force @ 10 C/s ↑	Magnet@25 C	Fu	N	1900	1900	2375	2375	2850	2850	4750	4750	7125	7125
峰值推力 Peak Force@6 C/s ↑	Magnet@25 C	Fp	N	1680	1680	2100	2100	2520	2520	4200	4200	6300	6300
持续推力(水冷) Continuous Force	Coil@110 C	Fcw	N	1040	1040	1300	1300	1560	1560	2600	2600	3900	3900
最大速度 Maximum Speed	@600V	Vmax	m/s	3	6	3	6	3	6	3	6	3	6
电机电常数 Motor Force Constant	Mount. Sfc.@20 C	K	N/Arms	186.0	93.0	224.5	93.0	186.0	90.0	224.5	93.0	224.5	93.0
电机常数 Motor Constant	Coils@25 C	S	N²/W	1760	1760	2200	2200	2640	2640	4400	4400	6600	6600

电气参数 Electrical													
极限电流 Ultimate Current	Magnet@25 C	Iu	Arms	14	28	14	35	21	43	29	69	43	104
峰值电流 Peak Current	Magnet@25 C	Ip	Arms	11	21	11	26	16	33	22	53	33	79
持续电流(水冷) Continuous Current Water cooled	Coil@110 C	Icw	Arms	6	11	6	14	8	17	12	28	17	42
反电动势常数 Back EMF	Phase-Phase peak	Bemf	V/M/S	152	76	183	76	152	73	183	76	183	76
单相电阻 Resistance Per Phase	Coil@25 C	Rph	Ω	6.35	1.59	7.55	1.27	4.24	1.02	3.78	0.64	2.53	0.43
单相电感 Induction Per Phase	I<0.63Ip	Lph	mH	51	13	60	10	34	8	30	5	20	3
电气时间常数 Electrical Time Constant	Coil@25 C	τe	ms	8	8	8	8	8	8	8	8	8	8
最大持续功耗 Power Loss	All coils	Pc	W	487	487	609	609	731	731	1218	1218	1827	1827

热性能参数 Thermal													
热阻 Thermal R.	Coils to mount. Sfc.	Rth	°C/W	0.17	0.17	0.13	0.13	0.11	0.11	0.07	0.07	0.04	0.04
温度传感器 Temp. Sensor				PTC 1kΩ/NTC									

机械参数 Mechanical													
动子重量 Coil Unit Weight	ex.cables	W	kg	4.8	4.8	6	6	7.2	7.2	12	12	18	18
动子长度 Coil Unit Length	ex.cables	L	mm	244	244	290	290	338	338	568	568	847	847
电机吸引力 Motor Attraction Force	Rms@0A	Fa	N	3400	3400	4150	4150	4900	4900	8300	8300	12450	12450
磁节距 Magnet Pitch	N-N	τ	mm	24	24	24	24	24	24	24	24	24	24
动力线类型 Power Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm ²)	8.4(4G1.5mm ² AWG16)						10.1(4G2.5mm ² AWG14)		12.1(4G4mm ²)	
温控线类型 Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm ²)	4.9(4*0.14mm ² AWG26)									
电线寿命 Cable life	Minimum	Cycles		>5,000,000								>3-5millions	
静态弯曲半径 Bending Radius Static	Minimum	mm		≥4x ϕ								≥5x ϕ	
动态弯曲半径 Bending Radius Dynamic	Minimum	mm		≥7.5x ϕ								≥10x ϕ	

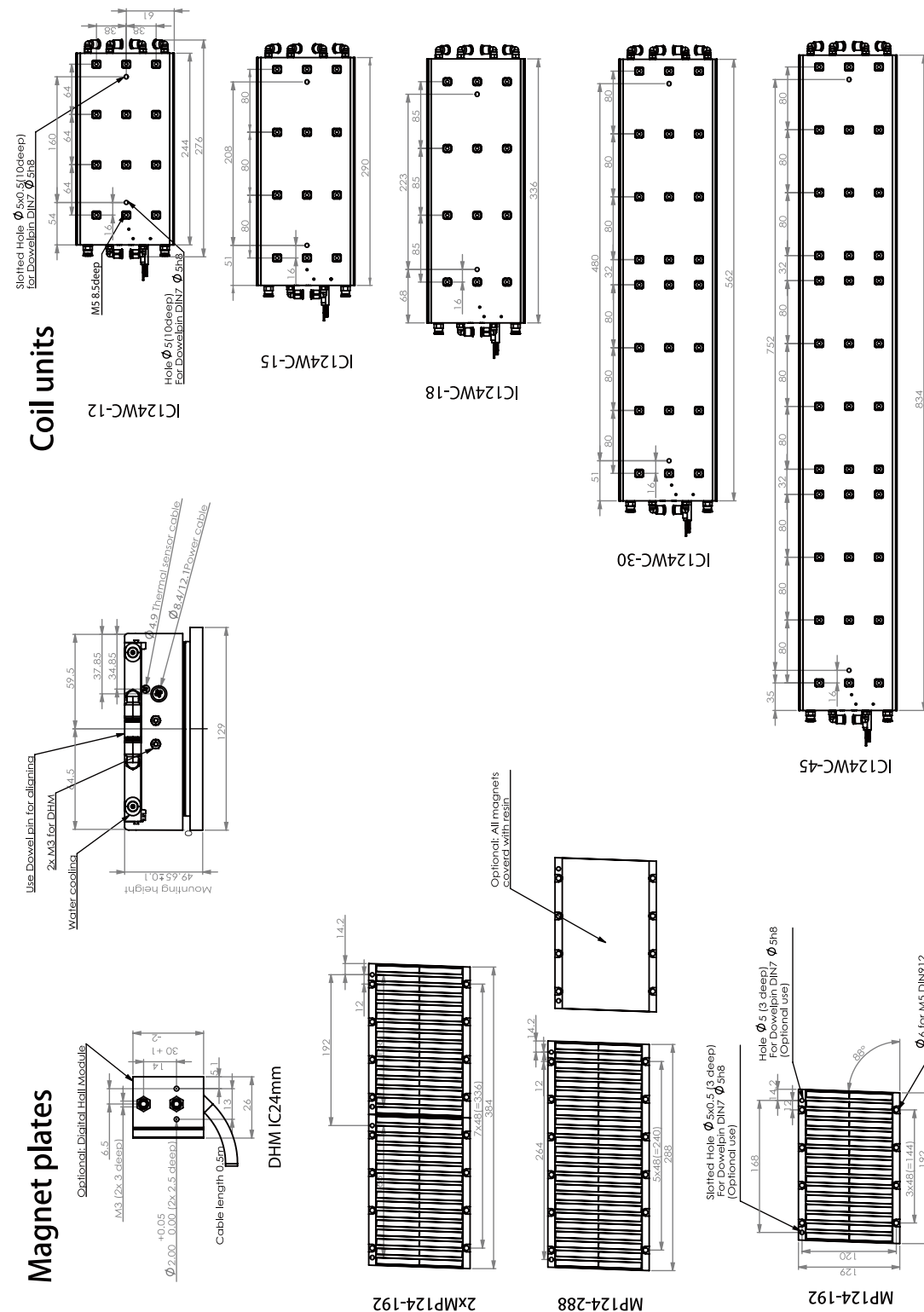
温度传感器接线图 Temperature Sensor connections	
1	PTC 1KΩ 棕色 Brown
2	PTC 1KΩ 白色 White
3	NTC 黄色 Yellow
4	NTC 绿色 Green

电机接线图 <i>Motor connections</i>	
1	Phase U 相 Phase 1
2	Phase V 相 Phase 2
3	Phase W 相 Phase 3
4	PE 黄绿 Yellow-Green

数字霍尔接线图 Dig. Hall sensor connections		
1	0V	灰色 Gray
2	5~28V	棕色 Brown
3	Hall A	白色 White
4	Hall B	绿色 Green
5	Hall C	黄色 Yellow

磁板裝配尺寸 Magnet Plate Mounting Dimensions			
長度 Length (mm)	192	288	
M5 螺柱 Bolts	8	12	
重量 Weight (Kg/m)	10.45		

磁板可以無限拼接 Magnet Plates can be joined together without limits





※ 水冷/自冷电机可选: 动定子组合宽度<185mm
※ 极大推力应用
※ 结构非常紧凑, 且具有极大的推力密度
※ 高加速, 高速度, 亚微米级定位精度且低功耗
※ 非常小的磁吸力和齿槽力效应
※ 良好的散热性能
※ 可定制任意长度高柔拖链线缆的电机

Water cooled/Air cooled are optional, width of motor setup <185mm
Very large force applications: Force range Fc_wc:1500-5850N, Fp_wc:2700-10125N
Very compact size, and with extremely high force density
High acceleration, high speed, submicron positioning accuracy and low power consumption
Very low attraction force and cogging
Very good heat dissipation performance
Any length of high flex chain cables for motors can be made

性能参数 Performance

参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	IC177WC-12		IC177WC-15		IC177WC-18		IC177WC-24		IC177WC-30		IC177WC-45	
绕组类型 Winding Type				N	S	N	S	N	S	N	S	N	S	N	S
电机类型 Motor type	三相同步有铁芯 3 phases synchronous Ironcore,380Vacrms (600Vdc)														
极限推力 Ultimate Force @ 10°C/s ↑	Magnet@25°C	Fu	N	2700	2700	3375	3375	4050	4050	5400	5400	6750	6750	10125	10125
峰值推力 Peak Force@6°C/s ↑	Magnet@25°C	Fp	N	2400	2400	3000	3000	3600	3600	4800	4800	6000	6000	9000	9000
持续推力(水冷) Continuous Force	Coil@110°C	Fcw	N	1500	1500	1950	1950	2340	2340	3000	3000	3900	3900	5850	5850
持续推力(自冷) Continuous Force	Coil@110°C	Fc	N	1200	1200	1500	1500	1800	1800	2400	2400	3000	3000	4500	4500
最大速度 Maximum Speed	@600V	Vmax	m/s	2	4	1.5	4	2	4	2	4	1.5	4	1.5	4
电机力常数 Motor Force Constant	Mount. Sfc.@20°C	K	N/Arms	279.0	139.5	336.0	139.5	279.0	135.0	279.0	139.5	336.0	139.5	336.0	139.5
电机常数 Motor Constant	Coils@25°C	S	N²/W	2864	2864	3580	3580	4296	4296	5728	5728	7160	7160	10740	10740

电气参数 Electrical

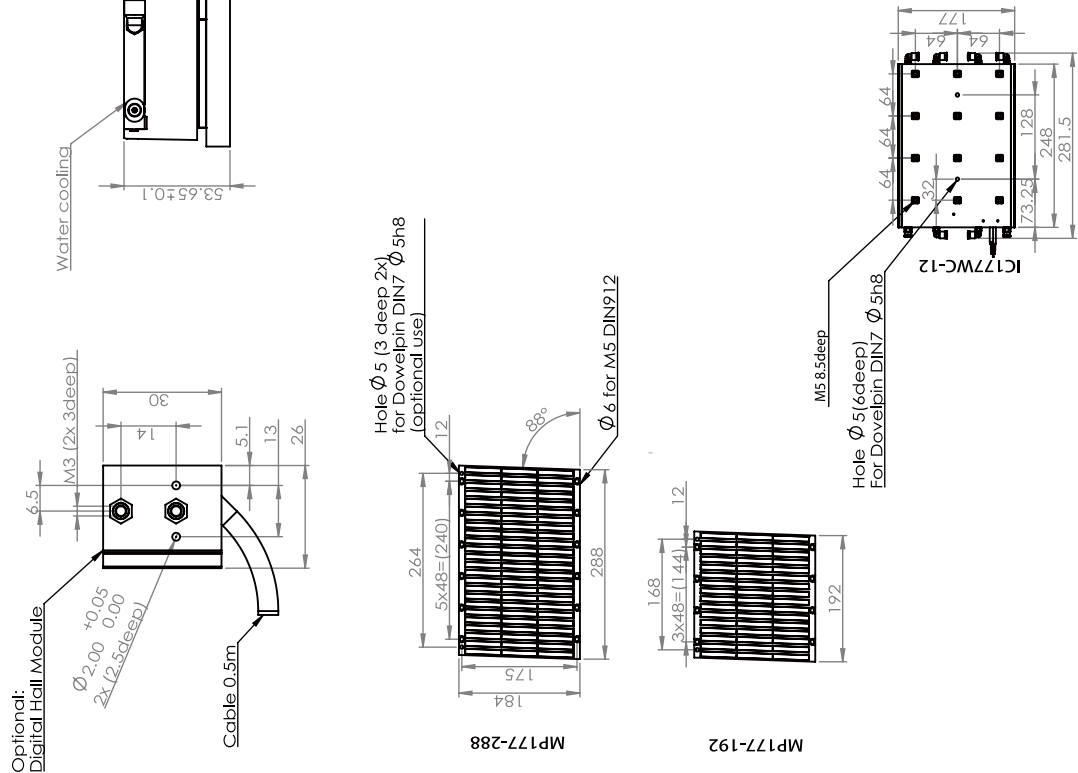
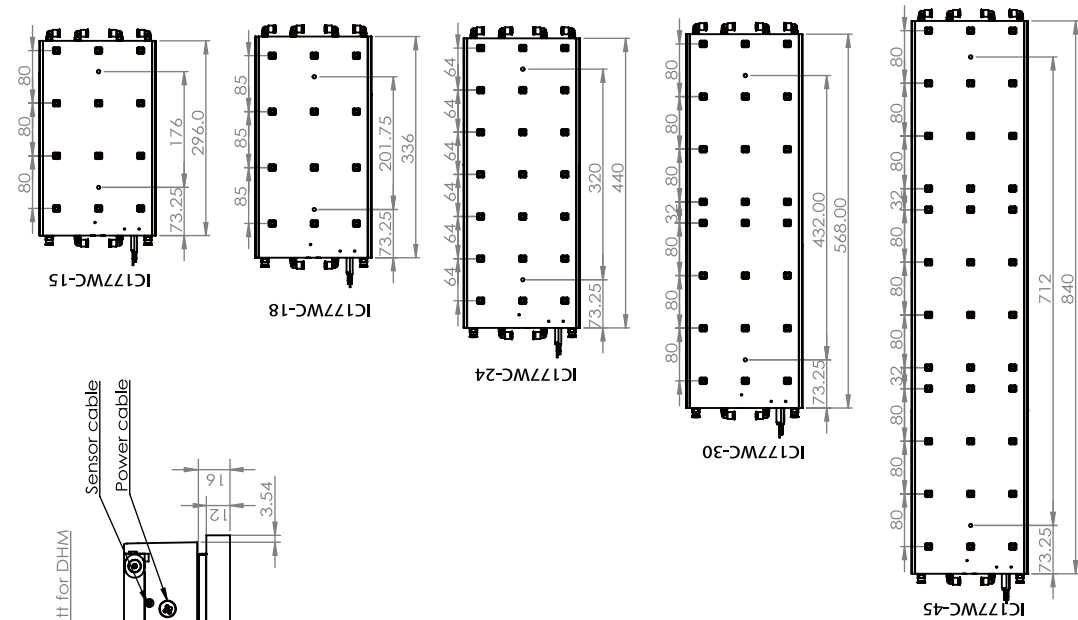
极限电流 Ultimate Current	Magnet@25°C	Iu	Arms	13.1	26	13.5	33	20	41	27	52	28	66	41	98
峰值电流 Peak Current	Magnet@25°C	Ip	Arms	10	20	11	25	15	31	20	40	21	50	31	75
持续电流(水冷) Continuous Current Water cooled	Coil@110°C	Icw	Arms	5.5	11	6	14	8	17	11	22	12	29	18	42
持续电流(自冷) Continuous Current Air cooled	Coil@110°C	Ic	Arms	4.3	9	4.3	11	6.5	13.4	9	18	9	22	13.4	32
反电动势常数 Back EMF	Phase-Phase peak	Bemf	V/M/S	228	114	274	114	228	110	228	114	274	114	274	114
单相电阻 Resistance Per Phase	Coil@25°C	Rph	Ω	9.1	2.27	10.8	1.82	6.06	1.45	4.54	1.14	5.4	0.91	3.61	0.61
单相电感 Induction Per Phase	I<0.63Ip	Lph	mh	77.35	19	92	15	52	12	39	10	46	8	31	5
电气时间常数 Electrical Time Constant	Coil@25°C	τe	ms	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
最大持续功耗 Power Loss	All coils	Pc	W	713	713	891	891	1011	1011	1347	1347	1684	1684	2527	2527

热性能参数 Thermal

热阻 Thermal Resistance	Coils to mount. Sfc.	Rth	°C/W	0.13	0.13	0.12	0.12	0.11	0.11	0.09	0.09	0.07	0.07	0.03	0.03
温度传感器 Temp. Sensor				PTC 1kΩ/NTC											

机械参数 Mechanical

动子重量 Coil Unit Weight	ex.cables	W	kg	7	7	9	9	12	12	16	16	18	18	27	27
动子长度 Coil Unit Length	ex.cables	L	mm	248	248	296	296	336	336	440	440	568	568	840	840
电机吸引力 Motor Attraction Force	Rms@0A	Fa	N	5100	5100	6225	6225	7350	7350	6800	6800	12450	12450	18675	18675
磁节距 Magnet Pitch	N-N	τ	mm	24	24	24	24	24	24	24	24	24	24	24	24
动力线类型 Power Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm²)	10.1(4G2.5mm² AWG14)									12.1(4G4mm²)	14.7(4G6mm²)	
温控线类型 Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm²)	4.9(4*0.14mm² AWG26)											
电线寿命 Cable life	Minimum		Cycles	>5,000,000									>3-5millions		
静态弯曲半径 Bending Radius Static	Minimum		mm	≥4x ϕ									≥5x ϕ		
动态弯曲半径 Bending Radius Dynamic	Minimum		mm	≥7.5x ϕ									≥10x ϕ		



温度传感器接线图 Temperature Sensor connections				
1	PTC 1KΩ	棕色 Brown		
2	PTC 1KΩ	白色 White		
3	NTC	黄色 Yellow		
4	NTC	绿色 Green		

电机接线图 Motor connections				
1	Phase U	相 Phase 1		
2	Phase V	相 Phase 2		
3	Phase W	相 Phase 3		
4	PE	黄绿 Yellow-Green		

数字霍尔接线图 Dig. Hall sensor connections				
1	0V	灰色 Gray		
2	5~28V	棕色 Brown		
3	Hall A	白色 White		
4	Hall B	绿色 Green		
5	Hall C	黄色 Yellow		

磁板装配尺寸 Magnet Plate Mounting Dimensions				
长度 Length (mm)	288	192	12	17
M5螺栓 Bolts		8		
重量 Weight (Kg/m)				

磁板可以无限拼接 Magnet Plates can be jointed together without limits



※ 水冷/自冷电机可选: 动定子组合宽度≤230mm
 ※ 超大推力应用
 ※ 结构非常紧凑, 且具有极大的推力密度
 ※ 高加速, 高速度, 亚微米级定位精度且低功耗
 ※ 非常小的磁吸力和齿槽力效应
 ※ 良好的散热性能
 ※ 可定制任意长度高柔拖链线缆的电机

Water cooled/Air cooled are optional, width of motor setups≤230mm
 Extremely large force applications: Force range Fc_wc:2080-7800N, Fp_wc:3360-12600N
 Very compact size, and with extremely high force density
 High acceleration, high speed, submicron positioning accuracy and low power consumption
 Very low attraction force and cogging
 Very good heat dissipation performance
 Any length of high flex chain cables for motors can be made

性能参数 Performance									
参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	IC230WC-12	IC230WC-15	IC230WC-18	IC230WC-24	IC230WC-30	IC230WC-45
绕组类型 Winding Type				S	S	S	S	S	S
电机类型 Motor type	三相同步有铁芯 3 phases synchronous Ironcore, 380Vacrms (600Vdc)								
极限推力 Ultimate Force @ 10 °C/s ↑	Magnet@25 °C	Fu	N	3360	4200	5040	6720	8400	12600
峰值推力 Peak Force@6 °C/s ↑	Magnet@25 °C	Fp	N	3200	4000	4800	6400	8000	12000
持续推力(水冷) Continuous Force	Coil@110 °C	Fcw	N	2080	2600	3120	4160	5200	7800
持续推力(自冷) Continuous Force	Coil@110 °C	Fc	N	1600	2000	2400	3200	4000	6000
最大速度 Maximum Speed	@600V	Vmax	m/s	3.0	3.0	3.0	3.0	3.0	3.0
电机力常数 Motor Force Constant	Mount. Sfc.@20 °C	K	N/Arms	174	174	174	174	174	174
电机常数 Motor Constant	Coils@25 °C	S	N ² /W	1802	2243	2883	3604	4485	12615

电气参数 Electrical									
极限电流 Ultimate Current	Magnet@25 °C	Iu	Arms	26.0	34.0	40.0	52.0	65.0	98
峰值电流 Peak Current	Magnet@25 °C	Ip	Arms	21	27	32	43	53	80
持续电流(水冷) Continuous Current Water cooled	Coil@110 °C	Icw	Arms	12	15	18	24	30	45
持续电流(自冷) Continuous Current Air cooled	Coil@110 °C	Ic	Arms	9.2	12.0	14.0	18.5	23.0	35.0
反电动势常数 Back EMF	Phase-Phase peak	Bemf	V/M/S	142	142	142	142	142	142
单相电阻 Resistance Per Phase	Coil@25 °C	Rph	Ω	2.8	2.25	1.75	1.4	1.125	0.8
单相电感 Induction Per Phase	I<0.63Ip	Lph	mh	28.0	22.5	17.5	14.0	11.3	8.0
电气时间常数 Electrical Time Constant	Coil@25 °C	τe	ms	10	10	10	10	10	10
最大持续功耗 Power Loss	All coils	Pc	W	1847	2319	2597	3693	4638	6957

热性能参数 Thermal									
热阻 Thermal R.	Coils to mount. Sfc.	Rth	°C/W	0.08	0.06	0.05	0.04	0.03	0.01
温度传感器 Temp. Sensor	Temperature Cut-off	PTC 1kΩ/NTC							

机械参数 Mechanical									
动子重量 Coil Unit Weight	ex.cables	W	kg	9	12	15	20	25	38
动子长度 Coil Unit Length	ex.cables	L	mm	273	321	336	465	593	865
电机吸引力 Motor Attraction Force	Rms@0A	Fa	N	7200	9000	10800	14400	18000	27000
磁节距 Magnet Pitch	N-N	τ	mm	24	24	24	24	24	24
动力线类型 Power Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm ²)	10.1(4G2.5mm ² AWG14)		12.1(4G4mm ²)			14.7(4G6mm ²)
温控线类型 Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm ²)	4.9(4*0.14mm ² AWG26)					
电线寿命 Cable life	Minimum	Cycles	>5,000,000			>3-5millions			
静态弯曲半径 Bending Radius Static	Minimum	mm	≥4x ϕ			≥5x ϕ			
动态弯曲半径 Bending Radius Dynamic	Minimum	mm	≥7.5x ϕ			≥10x ϕ			

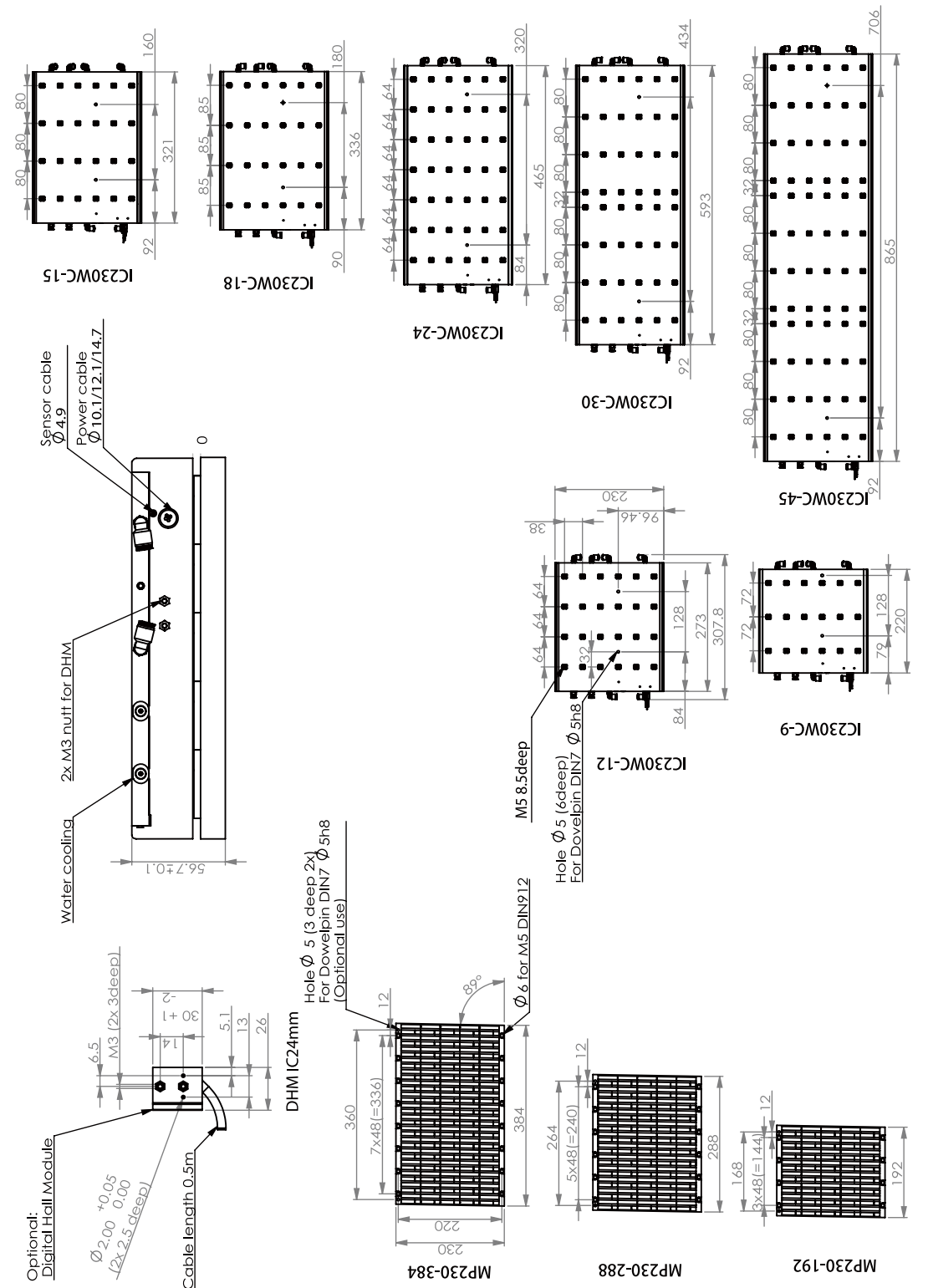
温度传感器接线图 Temperature Sensor connections				
1	PTC 1KΩ	棕色 Brown	2	PTC 1KΩ
3	NTC	白色 White	4	NTC
		黄色 Yellow		绿色 Green

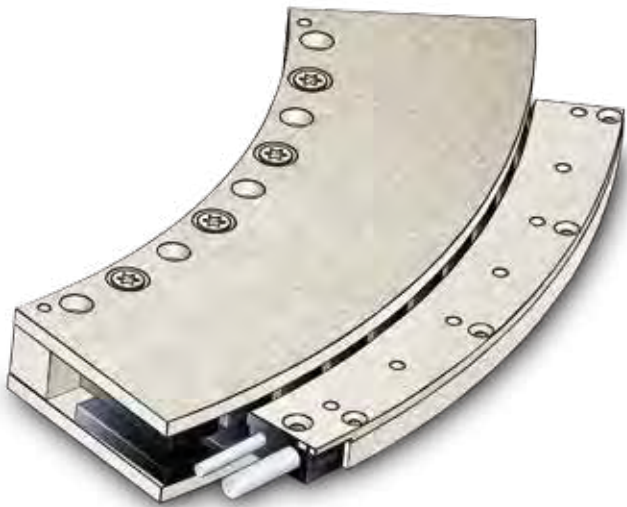
电机接线图 Motor connections				
1	Phase U	相 Phase 1	2	Phase V
3	Phase W	相 Phase 2	4	Phase W
		相 Phase 3		黄绿 Yellow-Green
				PE

数字霍尔接线图 Dig. Hall sensor connections				
1	0V	灰色 Gray	2	5~28V
3	Hall A	棕色 Brown	4	Hall B
5	Hall C	白色 White		绿色 Green
		黄色 Yellow		黄色 Yellow

磁板装配尺寸 Magnet Plate Mounting Dimensions				
长度 Length (mm)	192	288	384	16
M5螺栓 Bolts	8	12	16	34
重量 Weight (Kg/m)				

磁板可以无限拼接 Magnet Plates can be jointed together without limits





※ 中小扭矩无铁芯弧形电机，持续扭矩范围5.5N.m-22N.m
※ 圆弧线圈数从3线圈到12线圈可定制
※ 小电流型绕组N（串联）或高速S（并联）绕组类型可选
※ 圆弧磁轨型号可选45°和54°两种自由搭配45°和54°
※ 高加速，高速度，高定位精度且低功耗
※ 0吸力和0齿槽力，高动态运动性能
※ 极优的散热性能

Small middle toque ironless curve motor, continuous torque range from 5.5N.m to 22N.m
Curve coil unit can be customized from 3 coils to 12 coils
Small Current N winding type or high speed S winding type are optional
Curve magnet yokes are available for assembling together freely
Compact size, light weight and great torque density
High acceleration, high speed, high precision and low power consumption
No attraction force and cogging, high dynamic motion performances
Excellent heat dissipation performance

性能参数 Performance

参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	型号 Type IL59C-6
绕组类型 Winding Type				S
电机类型 Motor type	三相同步无铁芯 3 phases synchronous Ironless, 230Vacrms (320Vdc)			
峰值扭矩 Peak Force@6 C/s ↑	Magnet@25 C	Tp	N.m	40
持续扭矩 Continuous Force	Coil@110 C	Tc	N.m	11

电气参数 Electrical

峰值电流 Current@Tp		Ip	Amps	10.5
最大持续电流 Max.Current@Tc		Ic	Amps	3
最大速度 Maximum Speed	@Tc@320Vrms	nmax	Rmp	576
电机扭矩常数 Motor Torque Constant		Kt	Nm/Arms	3.67
电机常数 Motor Constant	Coil@25 C	Km	Nm ² /W	1.6
反电动势常数 Back EMF Constant	25 C +/-10%	Bemf	V/(rad/sec)	2.12
单相电阻 Resistance Per Phase	Coil@25 C		Ohm	2.75
单相电感 Inductance Per Phase	l<0.63Ip	Lph	milli-Henry	0.9
电气时间常数 Electrical Time Constant	Coil@25 C	te	ms	0.33
最大持续功耗 Max. Continuous Power Loss	All Coils	Pc	W	98

机械参数 Mechanical

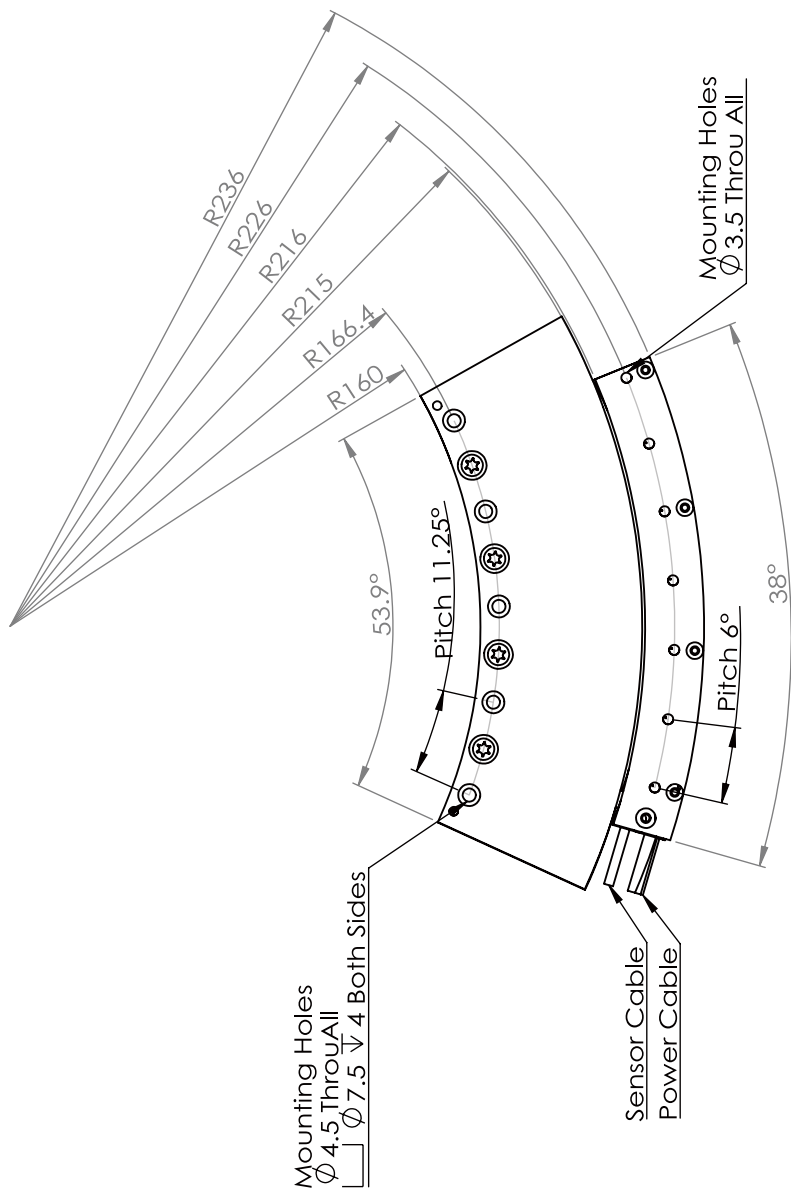
定子重量 Coil Unit Weight	ex.cables	Wc	Kg	0.16
定子重量 Magnet Yoke 72°Weight		Wm	Kg	0.98
磁节距 Magnet Pitch	N-N	τ	Degree	9

电机接线图 Motor connections

1	Phase U	相 Phase 1
2	Phase V	相 Phase 2
3	Phase W	相 Phase 3
4	PE	黄绿 Yellow-Green

电源线定义 Cable Definition

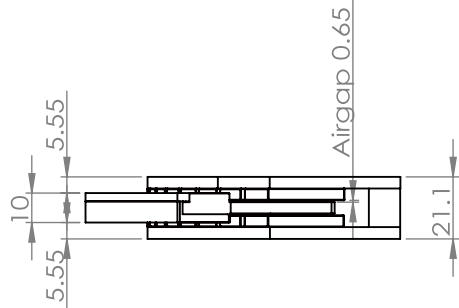
出线默认长度 Defaulted Cable Length =0.5M
4芯线带号码1,2,3 和黄绿PE线
4 wires with Number Phase 1,2,3 and PE wires
4G0.5mm2 AWG20 outer diameter of power cable: 06.5



IL59C-6+MY59C-54°

Mounting Holes
Ø 4.5 Throu All
Ø 7.5 ∇ 4 Both Sides

Sensor Cable
Power Cable



序号 No.	线圈组件订购型号 Coilunit Ordering Type	备注
1	IL59C-6	存在 Existed
2	L59C-3,9,12	可定制 Can be customized

序号 No.	磁轨订购型号 Magnet Yoke Ordering Type	备注
1	MY59C-45°	存在 Existed
2	MY59C-54°	存在 Existed
3	MY59C-63° 72° 360°	可定制 Can be customized



※ 中等扭矩无铁芯弧形电机，持续扭矩范围11.9N.m-59.3N.m
※ 圆弧线圈数从3线圈到15线圈可定制
※ 小电流型绕组N（串联）或高速S（并联）绕组类型可选
※ 圆弧磁轨型号72°可自由搭配72°
※ 结构紧凑，轻薄且扭矩密度极大
※ 高加速，高速度，高定位精度且低功耗
※ 0吸力和0齿槽力，高动态运动性能
※ 极优的散热性能

Middle torque ironless curve motor, continuous torque range from 11.9N.m to 59.3N.m
Curve coil unit can be customized from 3 coils to 15 coils
Small Current N winding type or high speed S winding type are optional
Curve magnet yoke type can be assembled together freely
Compact size, light weight and great torque density
High acceleration, high speed, high precision and low power consumption
No attraction force and cogging, high dynamic motion performances
Excellent heat dissipation performance

性能参数 Performance

参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	型号 Type IL91C-9
绕组类型 Winding Type				N
电机类型 Motor type	三相同步无铁芯 3 phases synchronous Ironless, 230Vacrms (320Vdc)			
峰值扭矩 Peak Force@6 C/s ↑	Magnet@25 C	Tp	N.m	142
持续扭矩 Continuous Force	Coil@110 C	Tc	N.m	35.6

电气参数 Electrical

峰值电流 Current@Tp		Ip	Amps	12
最大持续电流 Max.Current@Tc		Ic	Amps	3
最大速度 Maximum Speed	@Tc@320Vrms	nmax	Rmp	456
电机扭矩常数 Motor Torque Constant		Kt	Nm/Arms	11.3
电机常数 Motor Constant	Coil@25 C	Km	Nm ² /W	10.64
反电动势常数 Back EMF Constant	25 C +/-10%	Bemf	V/(rad/sec)	6.5
单相电阻 Resistance Per Phase	Coil@25 C		Ohm	4.2
单相电感 Inductance Per Phase	l<0.63Ip	Lph	milli-Henry	4
电气时间常数 Electrical Time Constant	Coil@25 C	te	ms	0.95
最大持续功耗 Max. Continuous Power Loss	All Coils	Pc	W	155

机械参数 Mechanical

定子重量 Coil Unit Weight	ex.cables	Wc	Kg	0.6
定子重量 Magnet Yoke 72°Weight		Wm	Kg	3.2
磁节距 Magnet Pitch	N-N	τ	Degree	9

电机接线图 Motor connections

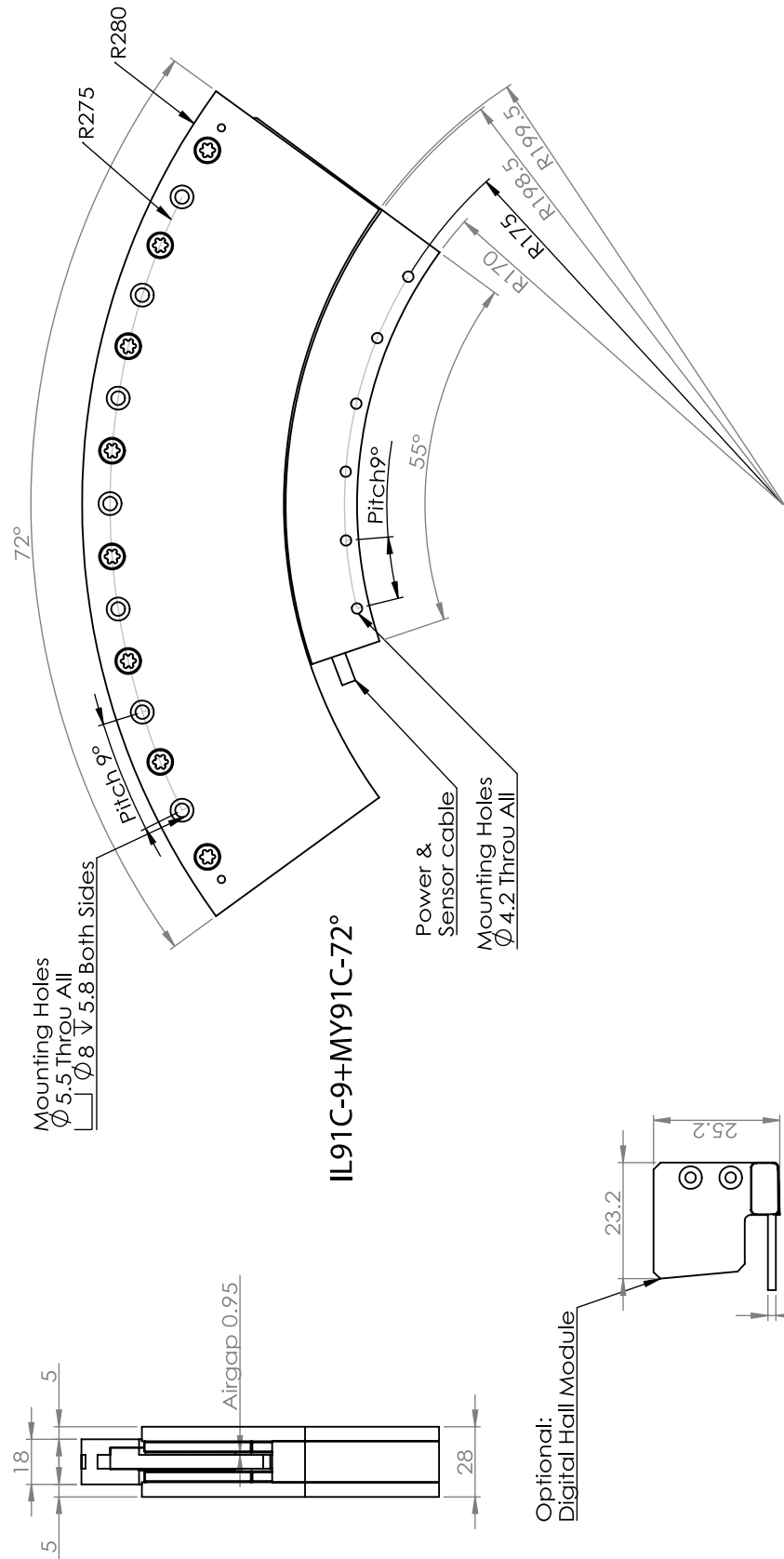
1	Phase U	相 Phase 1
2	Phase V	相 Phase 2
3	Phase W	相 Phase 3
4	PE	黄绿 Yellow-Green

霍尔接线定义 Hall sensor connection definition

1	+5Vdc	红色 Red
2	-	白色 White
3	U	绿色 Green
4	V	黄色 Yellow
5	W	棕色 Brown

电源线定义 Cable Definition

出线默认长度 Defaulted Cable Length =0.5M
4芯线带号码1,2,3 和黄绿PE线
4 wires with Number Phase 1,2,3 and PE wires
4G0.75mm2 AWG19 外径 diameter of power cable: Φ7.1



序号 No.	线圈组件订购型号 Coilunit Ordering Type	备注
1	IL91C-9	存在 Existed
2	IL91C-3,6,12,15	可定制 Can be customized

序号 No.	磁轨订购型号 Magnet Yoke Ordering Type	备注
1	MY91C-72°	存在 Existed
2	MY91C-54°,63°360°	可定制 Can be customized



动子集成
数字霍尔



- ※ 小推力应用
- ※ 单磁轨，无铁芯直线电机
- ※ 数字霍尔被内置到电机动子里实现一体化安装
- ※ 结构扁平化，更轻更薄。电机组装高度不到10mm
- ※ 0吸力和0齿槽力，高动态运动性能
- ※ 优异的散热性能
- ※ 高加速，高速度，亚微米级定位精度且低功耗
- ※ 可定制任意长度高柔拖链线缆的电机

Low force applications: Force range Fc: 6-18N, Fp: 20-60N
Single magnet yoke, Ironless linear motor
The Digital Hall module is built into the coil unit of motor for Integrated installation
Flat structure makes the motor lighter and thinner, assembly height less than 10mm
No attraction force and cogging, high dynamic motion performances
Excellent heat dissipation performance with big housing
High acceleration, high speed, submicron positioning accuracy and low power consumption
Any length of high flex chain cables can be customized

性能参数 Performance									
参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	ILS42-03	ILS42-06	ILS42-09	ILS42DHM-03S	ILS42DHM-06S	ILS42DHM-09S
绕组类型 Winding Type				S	S	S	集成了霍尔 Hall Integrated		
电机类型 Motor type	三相同步无铁芯 3 phases synchronous Ironless, 45Vacrms (60Vdc)								
峰值推力 Peak Force@20 C/s ↑	Magnet@25 C	Fp	N	20	40	60	20	40	60
持续推力 Continuous Force	Coil@110 C	Fc	N	5	10	15	5	10	15
最大速度 Maximum Speed	60V	Vmax	m/s	6	6	6	6	6	6
电机力常数 Motor Force Constant	Mount. Sfc.@20 C	K	N/Arms	6	6	6	6	6	6
电机常数 Motor Constant	Coils@25 C	S	N ² /W	3	6	9	3	6	9

电气参数 Electrical									
峰值电流 Peak Current	Magnet@25 C	Ip	Arms	3.3	6.7	10.0	3.3	6.7	10.0
持续电流 Continuous Current	Coil@110 C	Ic	Arms	0.8	1.7	2.5	0.8	1.7	2.5
反电动势常数 Back EMF	Phase-Phase peak	Bemf	V/M/S	5	5	5	5	5	5
单相电阻 Resistance Per Phase	Coil@25 C	Rph	Ω	4.75	2.38	1.58	4.75	2.38	1.58
单相电感 Induction Per Phase	I<0.63Ip	Lph	mh	0.8	0.4	0.3	0.8	0.4	0.3
电气时间常数 Electrical Time Constant	Coil@25 C	te	ms	0.16	0.16	0.16	0.16	0.16	0.16
最大持续功耗 Power Loss	All coils	Pc	W	11.2	22.4	33.6	11.2	22.4	33.6

热性能参数 Thermal									
热阻 Thermal R.	Coils to mount. Sfc.	Rth	°C/W	1.6	0.8	0.53	1.6	0.8	0.53
温度传感器 Temp. Sensor	Temperature Cut-off			None					

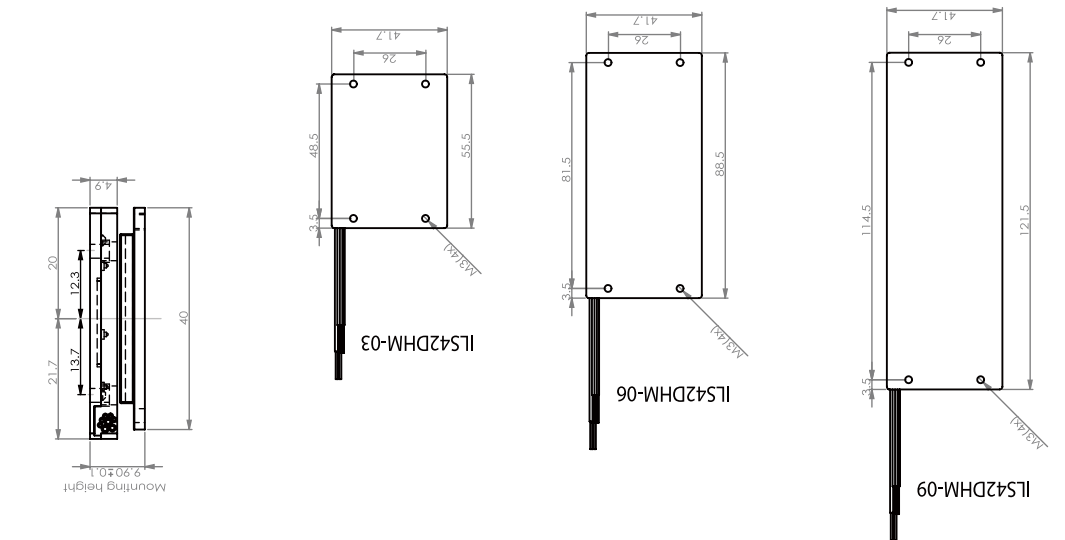
机械参数 Mechanical									
动子重量 Coil Unit Weight	ex.cables	W	Kg	0.03	0.055	0.085	0.035	0.06	0.09
动子长度 Coil Unit Length	ex.cables	L	mm	45	78	111	56	89	122
电机吸引力 Motor Attraction Force	Rms@0A	Fa	N	0	0	0	0	0	0
磁节距 Magnet Pitch	N-N	τ	mm	16.5	16.5	16.5	16.5	16.5	16.5
动力线类型 Power Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm²)	Leadwires 3*0.3mm²			5.6(3*0.3mm²+5*0.08)		
温控线类型 Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm²)	NA					
电线寿命 Cable life	Minimum		Cycles	≥12,000,000					
静态弯曲半径 Bending Radius Static	Minimum		mm	≥4x φ					
动态弯曲半径 Bending Radius Dynamic	Minimum		mm	≥7.5x φ					

电机接线图 Motor connections	
1	Phase U 黑色 Black (粉色Pink)
2	Phase V 红色 Red
3	Phase W 白色 White
4	PE 外壳 Housing

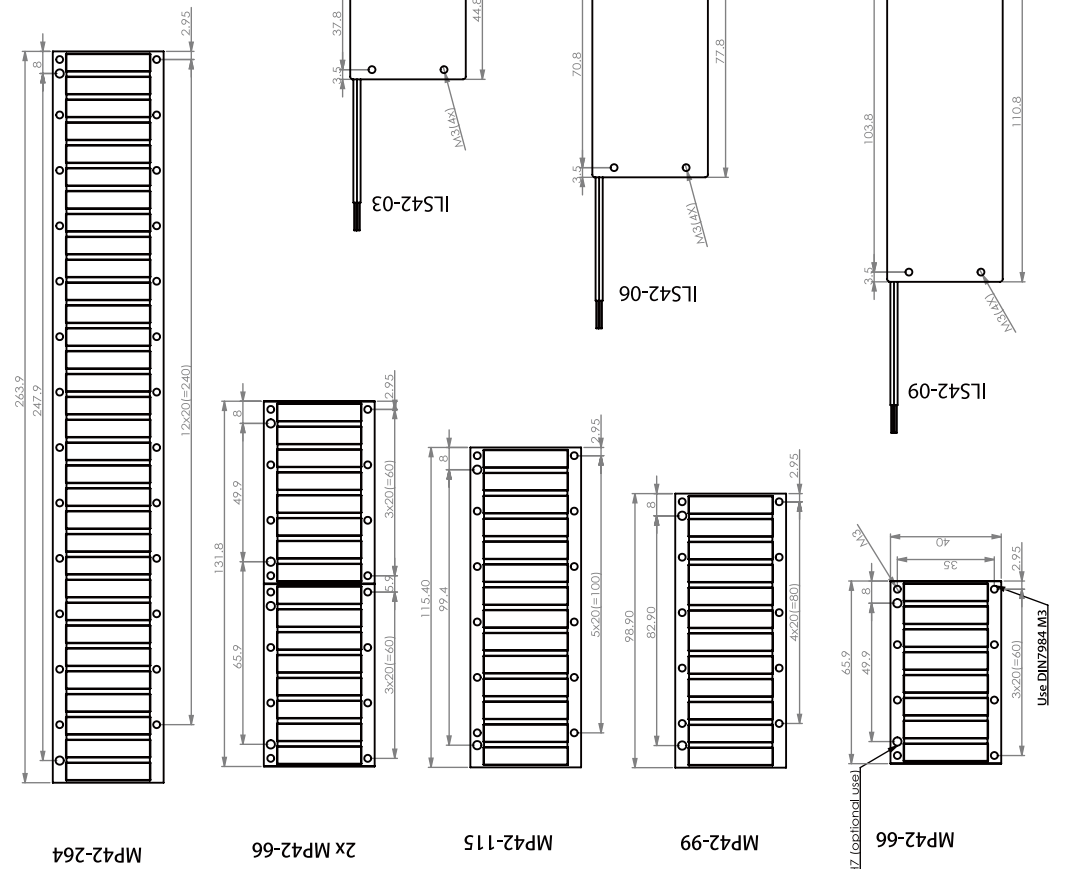
数字霍尔接线图 Dig. Hall sensor connections		
1	0V	灰色 Grey
2	5~28V	棕色 Brown
3	Hall A	蓝色 Blue
4	Hall B	绿色 Green
5	Hall C	黄色 Yellow

磁板装配尺寸 Magnet Plate Mounting Dimensions				
长度 Length (mm)	66	99	115	264
M3螺栓 Bolts	8	10	12	26
重量 Weight (Kg/m)	1.06			
磁板可以无限拼接 Magnet Plates can be jointed together without limits				

COIL UNIT



MAGNET PLATE





- ※ 小推力应用
- ※ 结构非常紧凑, 且具有极大的推力密度
- ※ 转子质量极其轻且出力大非常适合垂直方向应用
- ※ 0吸力和0齿槽力, 高动态运动性能
- ※ 高加速, 高速度, 亚微米级定位精度且低功耗
- ※ 良好的散热性能
- ※ 可定制任意长度高柔拖链线缆的电机

Low force applications: Force range F_c : 11.5-23N, F_p : 46-92N
 Very compact size, and with extremely high force density
 Very Low weight and extremely big force makes the perfect fit for vertical applications
 no attraction force and cogging, high dynamic motion performances
 High acceleration, high speed, submicron positioning accuracy and low power consumption
 Very good heat dissipation performance
 Any length of high flex chain cables for motors can be made

性能参数 Performance					
参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	IL32-03	IL32-06
绕组类型 Winding Type				S	S
电机类型 Motor type	三相同步无铁芯 3 phases synchronous Ironless, 45Vacrms (60Vdc)				
峰值推力 Peak Force@20 C/s ↑	Magnet@25 C	Fp	N	46	92
持续推力 Continuous Force	Coil@120 C	Fc	N	11.5	23
最大速度 Maximum Speed	@60V	Vmax	m/s	5	5
电机力常数 Motor Force Constant	Mount. Sfc.@20 C	K	N/Arms	7.3	7.3
电机常数 Motor Constant	Coils@25 C	S	N ² /W	7.5	15

电气参数 Electrical					
峰值电流 Peak Current	Magnet@25 C	Ip	Arms	6.3	12.6
持续电流 Continuous Current	Coil@120 C	Ic	Arms	1.6	3.2
反电动势常数 Back EMF	Phase-Phase peak	Bemf	V/M/S	6.0	6
单相电阻 Resistance Per Phase	Coil@25 C	Rph	Ω	2.4	1.175
单相电感 Induction Per Phase	I<0.63Ip	Lph	mh	0.8	0.4
电气时间常数 Electrical Time Constant	Coil@25 C	τe	ms	0.355	0.355
最大持续功耗 Power Loss	All coils	Pc	W	24.0	47

热性能参数 Thermal					
热阻 Thermal R.	Coils to mount. Sfc.	Rth	°C/W	3.2	1.6
温度传感器 Temp. Sensor	Temperature Cut-off	NTC 可选 Optional			

机械参数 Mechanical					
动子重量 Coil Unit Weight	ex.cables	W	kg	0.038	0.075
动子长度 Coil Unit Length	ex.cables	L	mm	49	97
电机引力 Motor Attraction Force	Rms@0A	Fa	N	0	0
磁节距 Magnet Pitch	N-N	τ	mm	24	24
电源线重量 Cable Mass		M	Kg/m	0.065	0.065
电线类型 Cable Type(Flex.cable柔性线)	length 1m	d	mm(AWG)	4.5(24)	4.5(24)
动力线类型 Power Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm²)	4.5(3*0.3mm²)	
温控线类型 Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm²)	可定制	
电线寿命 Cable life	Minimum		Cycles	≥12,000,000	
静态弯曲半径 Bending Radius Static	Minimum		mm	≥4x ϕ	
动态弯曲半径 Bending Radius Dynamic	Minimum		mm	≥7.5x ϕ	

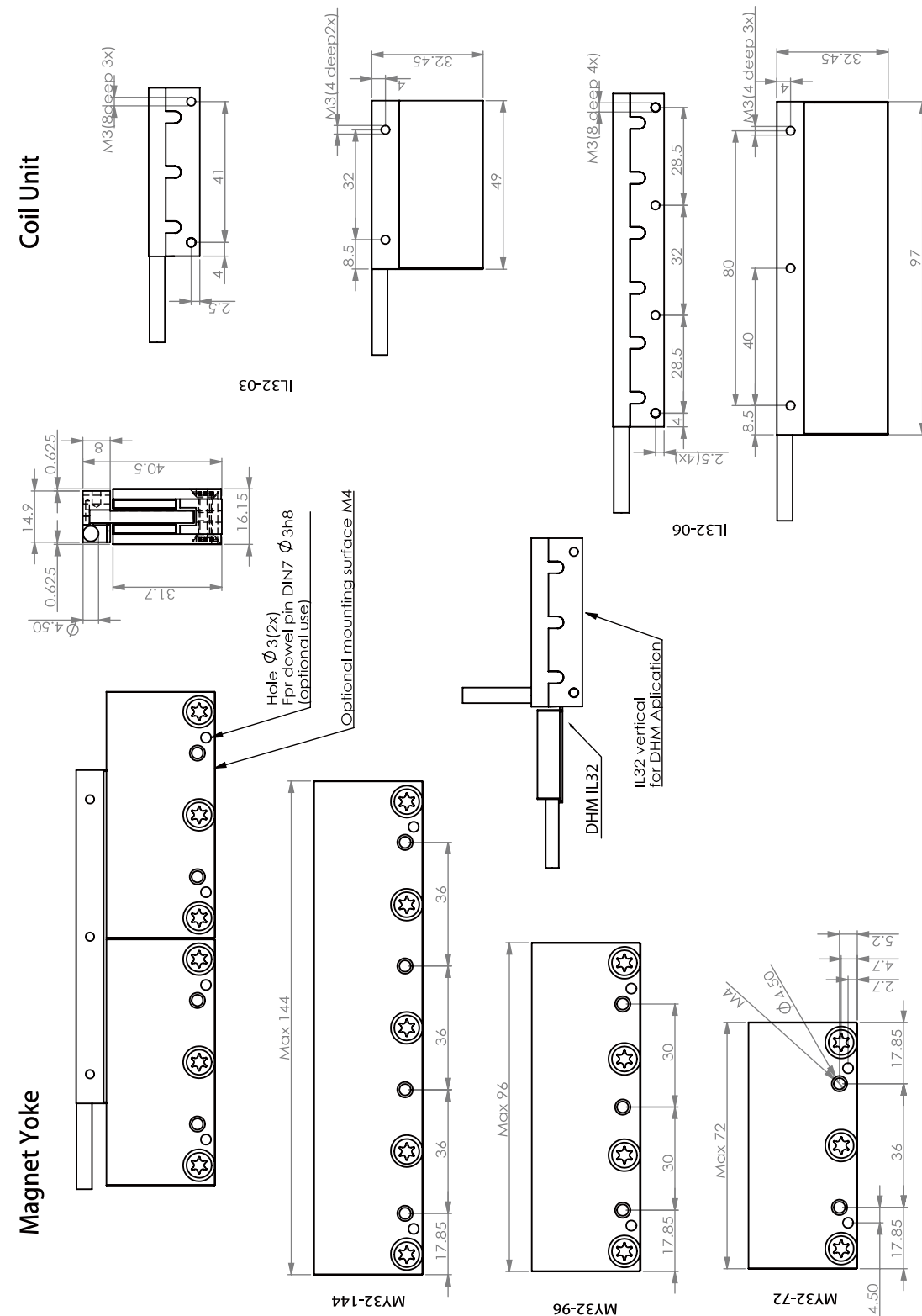
温度传感器接线图 Temperature Sensor connections	
1	PTC 1KΩ 棕色 Brown
2	PTC 1KΩ 白色 White
3	NTC 黄色 Yellow
4	NTC 绿色 Green

电机接线图 <i>Motor connections</i>	
1	Phase U 相 Phase 1
2	Phase V 相 Phase 2
3	Phase W 相 Phase 3
4	PE 黄绿 Yellow-Green

數字霍尔接線圖 Dig. Hall sensor connections		
1	0V	白色 White
2	5~28V	棕色 Brown
3	Hall A	綠色 Green
4	Hall B	黃色 Yellow
5	Hall C	紅色 Red

磁板裝配尺寸 Magnet Plate Mounting Dimensions				
長度 Length (mm)	72	96	144	
M4螺栓 Bolts	2	3	4	
重量 Weight (Kg/m)	2.3			

磁板可以无隔拼接 Magnet Plates can be jointed together without limits



IL42系列性能参数





- ※ 小推力应用
- ※ 推力增强版的IL42，结构紧凑，推力更大
- ※ 非常适合医疗和半导体行业运动系统应用
- ※ 高加速，高速度，亚微米级定位精度且低功耗
- ※ 0吸力和0齿槽力,高动态运动性能
- ※ 良好的散热性能
- ※ 可定制任意长度高柔拖链线缆的电机

Low force applications: Force range Fc:11-22N, Fp:40-80N
Force enhanced version of IL42, compact size, but even bigger force
Ideal solution for applications in the medical and semiconductor industries motions
High acceleration, high speed, submicron positioning accuracy and low power consumption
No attraction force and cogging, high dynamic motion performances
Very good heat dissipation performance
Any length of high flex chain cables for motors can be made

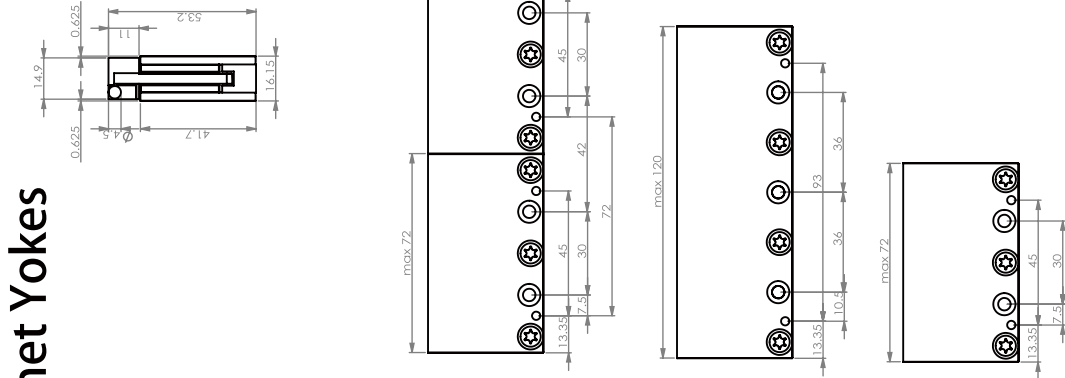
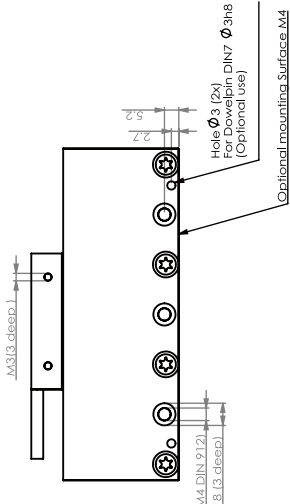
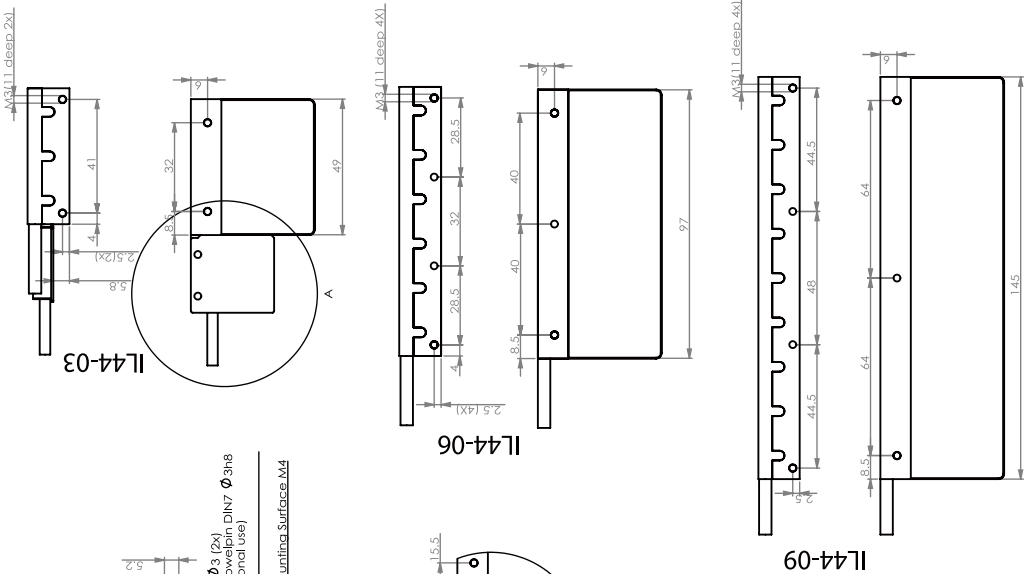
性能参数 Performance						
参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	IL44-03	IL44-06	IL44-09
绕组类型 Winding Type				S	S	S
电机类型 Motor type	三相同步无铁芯 3 phases synchronous Ironless, 45Vacrms (60Vdc)					
峰值推力 Peak Force@20 C/s ↑	Magnet@25 C	Fp	N	45	90	135
持续推力 Continuous Force	Coil@110 C	Fc	N	20	40	60
最大速度 Maximum Speed	60V	Vmax	m/s	5.0	5.0	5.0
电机力常数 Motor Force Constant	Mount. Sfc.@20 C	K	N/Arms	12.4	12.4	12.4
电机常数 Motor Constant	Coils@25 C	S	N²/W	15	29	44

电气参数 Electrical						
峰值电流 Peak Current	Magnet@25 C	Ip	Arms	3.6	7.3	11.0
持续电流 Continuous Current	Coil@110 C	Ic	Arms	1.6	3.2	4.8
反电动势常数 Back EMF	Phase-Phase peak	Bemf	V/M/S	10	10	10
单相电阻 Resistance Per Phase	Coil@25 C	Rph	Ω	3.5	1.75	1.17
单相电感 Induction Per Phase	I<0.63Ip	Lph	mh	1.2	0.6	0.4
电气时间常数 Electrical Time Constant	Coil@25 C	τe	ms	0.355	0.355	0.355
最大持续功耗 Power Loss	All coils	Pc	W	37	74	74

热性能参数 Thermal						
热阻 Thermal R.	Coils to mount. Sfc.	Rth	°C/W	2.35	1.175	0.5875
温度传感器 Temp. Sensor	Temperature Cut-off			None (NTC或PTC可定制 can be customized)		

机械参数 Mechanical						
定子重量 Coil Unit Weight	ex.cables	W	Kg	0.05	0.1	0.15
定子长度 Coil Unit Length	ex.cables	L	mm	49	97	145
电机吸力 Motor Attraction Force	Rms@0A	Fa	N	0	0	0
磁节距 Magnet Pitch	N-N	τ	mm	24	24	24
动力线类型 Power Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm²)	4.5(3*0.3mm²)		
温控线类型 Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm²)	可定制		
电线寿命 Cable life	Minimum		Cycles	≥12,000,000		
静态弯曲半径 Bending Radius Static	Minimum		mm	≥4x ϕ		
动态弯曲半径 Bending Radius Dynamic	Minimum		mm	≥7.5x ϕ		

Coil Units



2X MY44-72

MY44-120

MY44-72

电机接线图 <i>Motor connections</i>		
1	Phase U	黑色 Black
2	Phase V	红色 Red
3	Phase W	白色 White
4	PE	屏蔽 Shield

数字霍尔接线图 Dig. Hall sensor connections				
1	0V	白色 White		
2	5~28V	棕色 Brown		
3	Hall A	绿色 Green		
4	Hall B	黄色 Yellow		
5	Hall C	红色 Red		

磁板装配尺寸 Magnet Plate Mounting Dimensions				
长度 Length (mm)	72	120	3	
M4螺栓 Bolts	2			
重量 Weight (Kg/m)		3.3		

磁板可以无限拼接 Magnet Plates can be jointed together without limits

Magnet Yokes

※ 中大推力应用
※ 高加速，高速度，亚微米级定位精度且低功耗
※ 良好的散热性能
※ 数字霍尔可直接安装在电机动子上
※ 0吸力和0齿槽力，高动态运动性能
※ 可定制任意长度高柔拖链线缆的电机

Mid-large force applications: Force range Fc: 73-365N, Fp: 250-1250N
High acceleration, high speed, submicron positioning accuracy and low power consumption
Very good heat dissipation performance
Digital hall module can be mounted directly on the coil unit of motor
No attraction force and cogging, high dynamic motion performances
Any length of high flex chain cables for motors can be made

性能参数 Performance													
参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	IL91-03		IL91-06		IL91-09		IL91-12		IL91-15	
绕组类型 Winding Type				N	S	N	S	N	S	N	S	N	S
电机类型 Motor type	三相同步无铁芯 3 phases synchronous Ironless, 230Vacrms (320Vdc)												
峰值推力 Peak Force@20℃/s ↑	Magnet@25℃	Fp	N	250	250	500	500	750	750	1000	1000	1250	1250
持续推力 Continuous Force	Coil@120℃	Fc	N	73	73	146	146	219	219	292	292	365	365
最大速度 Maximum Speed	@320V	Vmax	m/s	5.0	12.3	5.0	12.3	5.0	12.3	5.0	12.3	5.0	12.3
电机力常数 Motor Force Constant	Mount. Sfc.@20℃	K	N/Arms	67.5	27.1	67.5	27.1	67.5	27.1	67.5	27.1	67.5	27.1
电机常数 Motor Constant	Coils@25℃	S	N ² /W	93	93	186	186	279	279	372	372	465	465

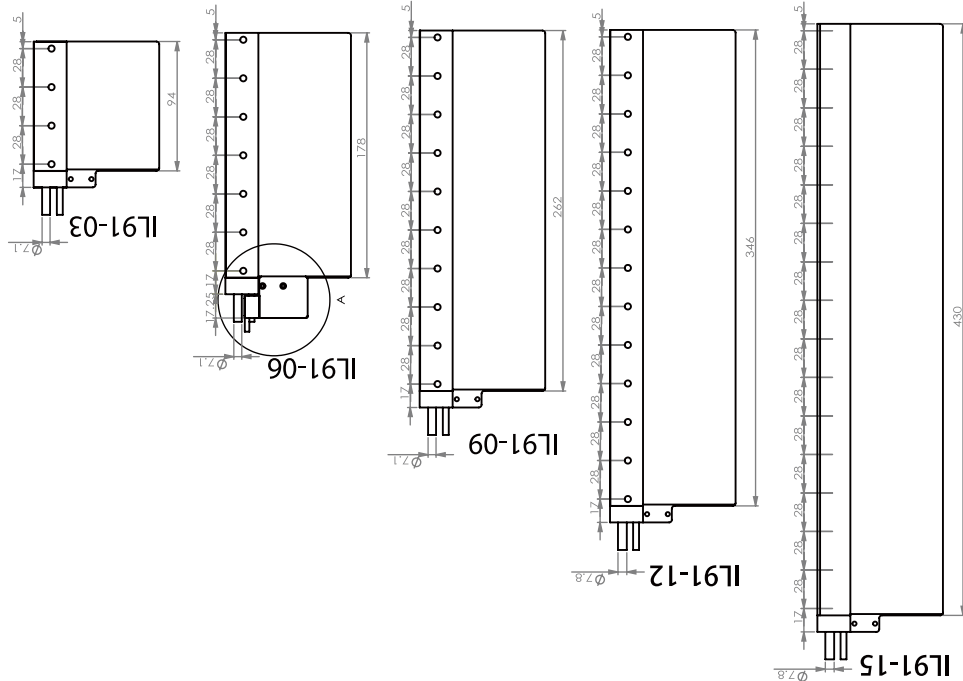
电气参数 Electrical													
峰值电流 Peak Current	Magnet@25℃	Ip	Arms	3.7	9.2	7.4	18.5	11.1	27.7	14.8	36.9	18.5	46.1
持续电流 Continuous Current	Coil@120℃	Ic	Arms	1.1	2.7	2.2	5.4	3.2	8.1	4.3	10.8	5.4	13.5
反电动势常数 Back EMF	Phase-Phase peak	Bemf	V/M/S	54.7	22.1	54.7	22.1	54.7	22.1	54.7	22.1	54.7	22.1
单相电阻 Resistance Per Phase	Coil@25℃	Rph	Ω	15.9	2.64	7.96	1.33	5.53	0.88	3.98	0.66	3.32	0.53
单相电感 Induction Per Phase	I<0.63Ip	Lph	mh	12.7	2.1	6.4	1.1	4.4	0.7	3.2	0.5	2.7	0.4
电气时间常数 Electrical Time Constant	Coil@25℃	te	ms	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
最大持续功耗 Power Loss	All coils	Pc	W	77	77	154	154	231	231	308	308	385	385

热性能参数 Thermal													
热阻 Thermal R.	Coils to mount. Sfc.	Rth	°C/W	1.2	1.2	0.6	0.6	0.4	0.4	0.3	0.3	0.24	0.24
温度传感器 Temp. Sensor	Temperature Cut-off			PTC 1KΩ/NTC									

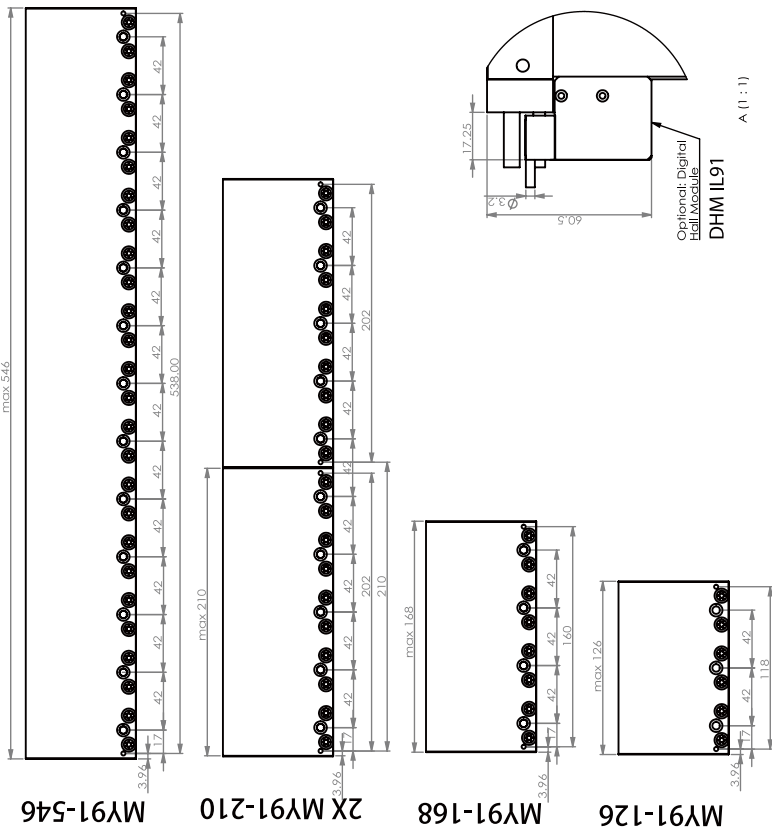
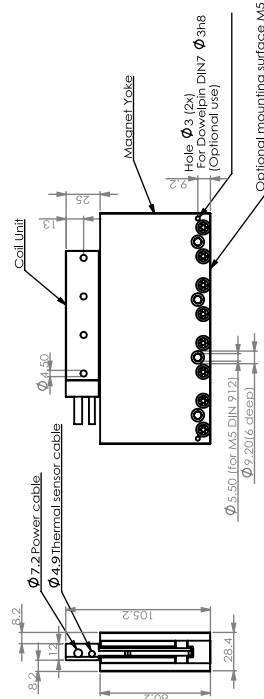
机械参数 Mechanical													
动子重量 Coil Unit Weight	ex.cables	W	Kg	0.25	0.25	0.46	0.46	0.68	0.68	0.9	0.9	1.12	1.12
动子长度 Coil Unit Length	ex.cables	L	mm	106	106	190	190	274	274	358	358	442	442
电机吸力 Motor Attraction Force	Rms@0A	Fa	N	0	0	0	0	0	0	0	0	0	0
磁节距 Magnet Pitch	N-N	τ	mm	42	42	42	42	42	42	42	42	42	42
动力线类型 Power Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm ²)	7.2(4G0.75mm ² AWG19)									
温控线类型 Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm ²)	4.9(4*0.14mm ² AWG26)									
电线寿命 Cable life	Minimum	Cycles		>5,000,000									
静态弯曲半径 Bending Radius Static	Minimum	mm		≥4x φ									
动态弯曲半径 Bending Radius Dynamic	Minimum	mm		≥7.5x φ									



Coil Unit



Magnet Yoke



温度传感器接线图 Temperature Sensor connections		
1	PTC 1KΩ	棕色 Brown
2	PTC 1KΩ	白色 White
3	NTC	黄色 Yellow
4	NTC	绿色 Green

电机接线图 Motor connections		
1	Phase U	相 Phase 1
2	Phase V	相 Phase 2
3	Phase W	相 Phase 3
4	PE	黄绿 Yellow-Green

数字霍尔接线图 Dig. Hall sensor connections		
1	0V	白色 White
2	5~28V	棕色 Brown
3	Hall A	绿色 Green
4	Hall B	红色 Red
5	Hall C	黄色 Yellow

磁板装配尺寸 Magnet Plate Mounting Dimensions				
长度 Length (mm)	126	168	210	546
M5螺栓 Bolts	3	4	5	13
重量 Weight (Kg/m)	11.25			
磁板可以无限拼接 Magnet Plates can be jointed together without limits				



※ 大推力应用
※ 0吸力和0齿槽力,高动态运动性能
※ 高加速, 高速度, 亚微米级定位精度且低功耗
※ 良好的散热性能
※ 数字霍尔可直接安装在电机动子上
※ 可定制任意长度高柔拖链线缆的电机

Large force applications: Force range Fc: 125-750N, Fp: 645-3870N
No attraction force and cogging, high dynamic motion performances
High acceleration, high speed, submicron positioning accuracy and low power consumption
Very good heat dissipation performance
Digital hall module can be mounted directly on the coil unit of motor
Any length of high flex chain cables for motors can be made

性能参数 Performance

参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	IL109-03		IL109-06		IL109-09		IL109-12		IL109-18	
绕组类型 Winding Type				N	S	N	S	N	S	N	S	N	S
电机类型 Motor type	三相同步无铁芯 3 phases synchronous Ironless, 230Vacrms (320Vdc)												
峰值推力 Peak Force@20℃/s ↑	Magnet@25℃	Fp	N	645	645	1290	1290	1935	1935	2580	2580	3870	3870
持续推力 Continuous Force	Coil@120℃	Fc	N	125	125	250	250	375	375	500	500	750	750
最大速度 Maximum Speed	@320V	Vmax	m/s	3.1	7.7	3.1	7.7	3.1	7.7	3.1	7.7	3.1	7.7
电机力常数 Motor Force Constant	Mount. Sfc.@20℃	K	N/Arms	107	43.4	107	43.4	107	43.4	107	43.4	107	43.4
电机常数 Motor Constant	Coils@25℃	S	N ² /W	244	244	488	488	732	732	976	976	1464	1464

电气参数 Electrical

峰值电流 Peak Current	Magnet@25℃	I _p	Arms	6.0	14.9	12.1	29.7	18.1	44.6	24.1	59.4	36.2	89.2
持续电流 Continuous Current	Coil@120℃	I _c	Arms	1.2	2.9	2.3	5.8	3.5	8.6	4.7	11.5	7.0	17.3
反电动势常数 Back EMF	Phase-Phase peak	B _{emf}	V/M/S	87	35	87	35	87	35	87	35	87	35
单相电阻 Resistance Per Phase	Coil@25℃	R _{ph}	Ω	15.8	2.6	7.9	1.29	5.3	0.86	3.95	0.65	2.6	0.43
单相电感 Induction Per Phase	I<0.63I _p	L _{ph}	mh	28.4	4.7	14.2	2.3	9.5	1.5	7.1	1.2	4.7	0.8
电气时间常数 Electrical Time Constant	Coil@25℃	τ _e	ms	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
最大持续功耗 Power Loss	All coils	P _c	W	86	86	172	172	258	258	344	344	516	516

热性能参数 Thermal

热阻 Thermal R.	Coils to mount. Sfc.	R _{th}	°C/W	1.03	1.03	0.52	0.52	0.34	0.34	0.25	0.25	0.18	0.18
温度传感器 Temp. Sensor	Temperature Cut-off			PTC 1KΩ/NTC									

机械参数 Mechanical

动子重量 Coil Unit Weight	ex.cables	W	Kg	0.54	0.54	0.94	0.94	1.34	1.34	1.74	1.74	2.54	2.54
动子长度 Coil Unit Length	ex.cables	L	mm	134	134	248	248	362	362	476	476	704	704
电机吸力 Motor Attraction Force	Rms@0A	F _a	N	0	0	0	0	0	0	0	0	0	0
磁节距 Magnet Pitch	N-N	τ	mm	57	57	57	57	57	57	57	57	57	57
动力线类型 Power Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm ²)	7.4(4G1mm ² AWG18)									14(4G3mm ² AWG10)
温控线类型 Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm ²)	4.9(4*0.14mm ² AWG26)									
电线寿命 Cable life	Minimum		Cycles	>5,000,000									
静态弯曲半径 Bending Radius Static	Minimum		mm	≥4x φ									
动态弯曲半径 Bending Radius Dynamic	Minimum		mm	≥7.5x φ									

温度传感器接线图 Temperature Sensor connections

1	PTC 1KΩ	棕色 Brown
2	PTC 1KΩ	白色 White
3	NTC	黄色 Yellow
4	NTC	绿色 Green

电机接线图 Motor connections

1	Phase U	相 Phase 1
2	Phase V	相 Phase 2
3	Phase W	相 Phase 3
4	PE	黄绿 Yellow-Green

数字霍尔接线图 Dig. Hall sensor connections

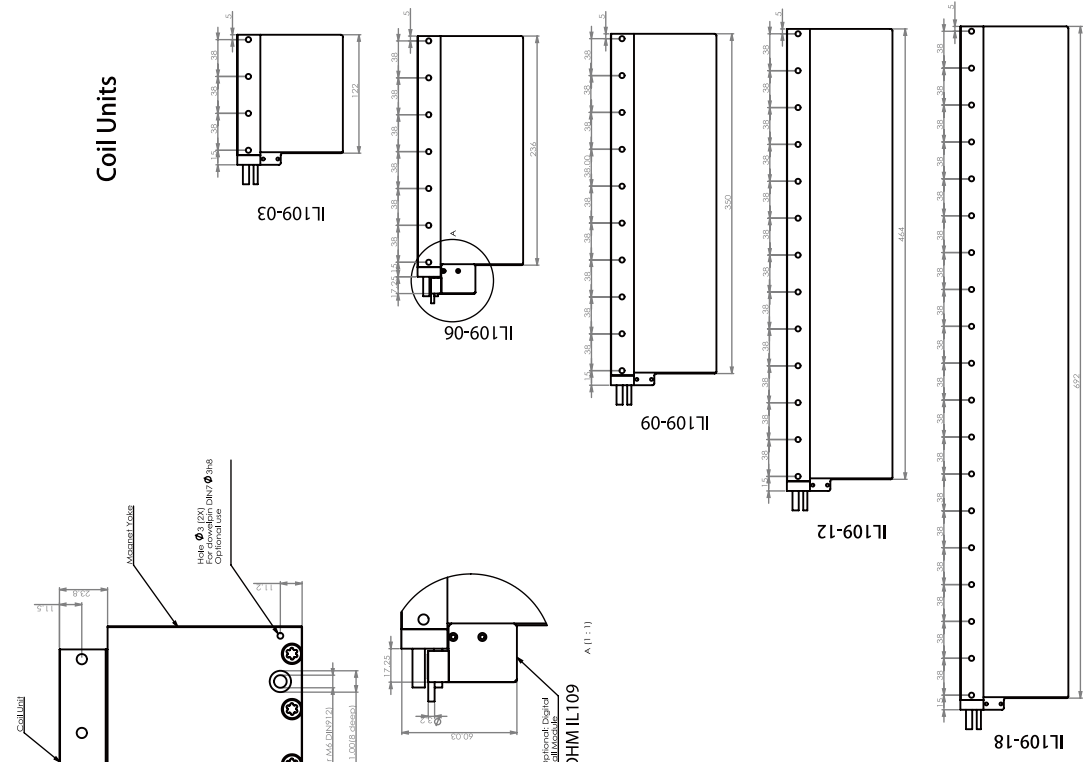
1	0V	白色 White
2	5~28V	棕色 Brown
3	Hall A	绿色 Green
4	Hall B	红色 Red
5	Hall C	黄色 Yellow

磁板装配尺寸 Magnet Plate Mounting Dimensions

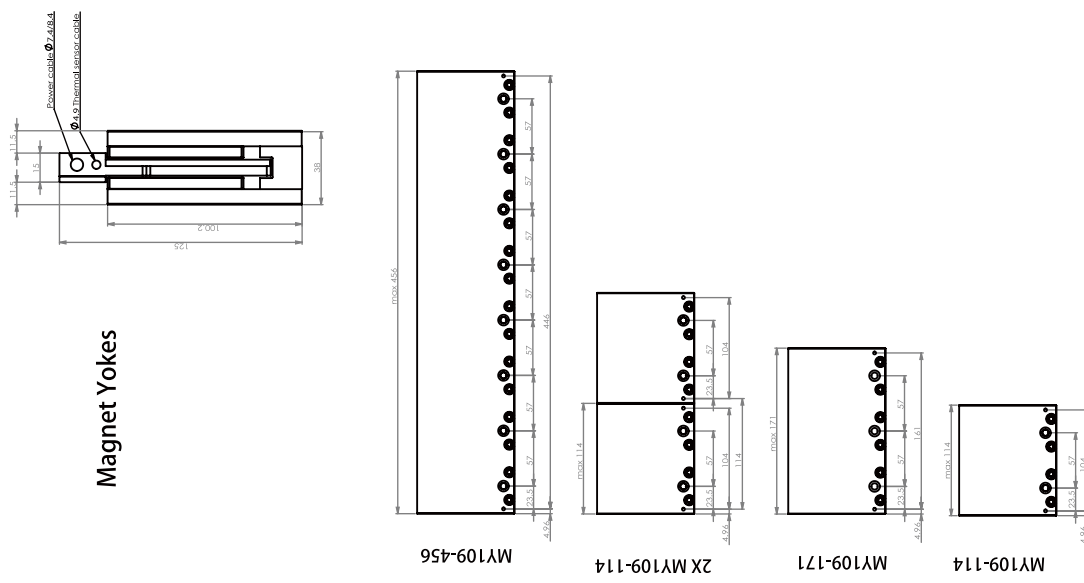
长度 Length (mm)	114	171	456
M6螺栓 Bolts	2	3	8
重量 Weight (Kg/m)	19.1		

磁板可以无限拼接 Magnet Plates can be jointed together without limits

Coil Units



Magnet Yokes



※ 大推力应用
※ 0吸力和0齿槽力,高动态运动性能
※ 推力增强版的IL109, 结构紧凑, 推力更大
※ 高加速, 高速度, 亚微米级定位精度且低功耗
※ 良好的散热性能
※ 数字霍尔可直接安装在电机动子上
※ 可定制任意长度高柔拖链线缆的电机

Large force applications: Force range Fc: 145-870N, Fp: 730-4380N
No attraction force and cogging, high dynamic motion performances
Force enhanced version of IL109, compact size, but larger force
High acceleration, high speed, submicron positioning accuracy and low power consumption
Very good heat dissipation performance
Digital hall module can be mounted directly on the coil unit of motor
Any length of high flex chain cables for motors can be made

性能参数 Performance													
参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	IL109X-03		IL109X-06		IL109X-09		IL109X-12		IL109X-18	
绕组类型 Winding Type				N	S	N	S	N	S	N	S	N	S
电机类型 Motor type	三相同步无铁芯 3 phases synchronous Ironless, 230Vacrms (320Vdc)												
峰值推力 Peak Force@20℃/s ↑	Magnet@25℃	Fp	N	730	730	1460	1460	2190	2190	2920	2920	4380	4380
持续推力 Continuous Force	Coil@120℃	Fc	N	145	145	290	290	435	435	580	580	870	870
最大速度 Maximum Speed	@320V	Vmax	m/s	2.7	6.6	2.7	6.6	2.7	6.6	2.7	6.6	2.7	6.6
电机力常数 Motor Force Constant	Mount. Sfc.@20℃	K	N/Arms	124	50	124	50	124	50	124	50	124	50
电机常数 Motor Constant	Coils@25℃	S	N ² /W	323	323	646	646	969	969	1292	1292	1938	1938

电气参数 Electrical													
峰值电流 Peak Current	Magnet@25℃	I _p	Arms	5.9	14.6	11.8	29.5	17.7	43.8	23.5	58.4	35.3	87.6
持续电流 Continuous Current	Coil@120℃	I _c	Arms	1.2	2.9	2.3	5.8	3.5	8.7	4.7	11.6	7.0	17.4
反电动势常数 Back EMF	Phase-Phase peak	B _{emf}	V/M/S	101	41	101	41	101	41	101	41	101	41
单相电阻 Resistance Per Phase	Coil@25℃	R _{ph}	Ω	15.82	2.6	7.9	1.29	5.3	0.86	3.95	0.65	2.6	0.43
单相电感 Induction Per Phase	I<0.63I _p	L _{ph}	mh	28.5	4.7	14.2	2.3	9.5	1.5	7.1	1.2	4.7	0.8
电气时间常数 Electrical Time Constant	Coil@25℃	τ _e	ms	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
最大持续功耗 Power Loss	All coils	P _c	W	87	87	174	174	262	262	349	349	523	523

热性能参数 Thermal													
热阻 Thermal R.	Coils to mount. Sfc.	R _{th}	°C/W	1.03	1.03	0.52	0.52	0.34	0.34	0.25	0.25	0.18	0.18
温度传感器 Temp. Sensor	Temperature Cut-off			PTC 1KΩ/NTC									

机械参数 Mechanical													
动子重量 Coil Unit Weight	ex.cables	W	Kg	0.54	0.54	0.94	0.94	1.34	1.34	1.74	1.74	2.54	2.54
动子长度 Coil Unit Length	ex.cables	L	mm	134	134	248	248	362	362	476	476	704	704
电机吸力 Motor Attraction Force	Rms@0A	F _a	N	0	0	0	0	0	0	0	0	0	0
磁节距 Magnet Pitch	N-N	τ	mm	57	57	57	57	57	57	57	57	57	57
动力线类型 Power Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm ²)	7.4(4G1mm ² AWG18)									84(63mm ² AWG9)
温控线类型 Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm ²)	4.9(4*0.14mm ² AWG26)									
电线寿命 Cable life	Minimum		Cycles	>5,000,000									
静态弯曲半径 Bending Radius Static	Minimum		mm	≥4x φ									
动态弯曲半径 Bending Radius Dynamic	Minimum		mm	≥7.5x φ									



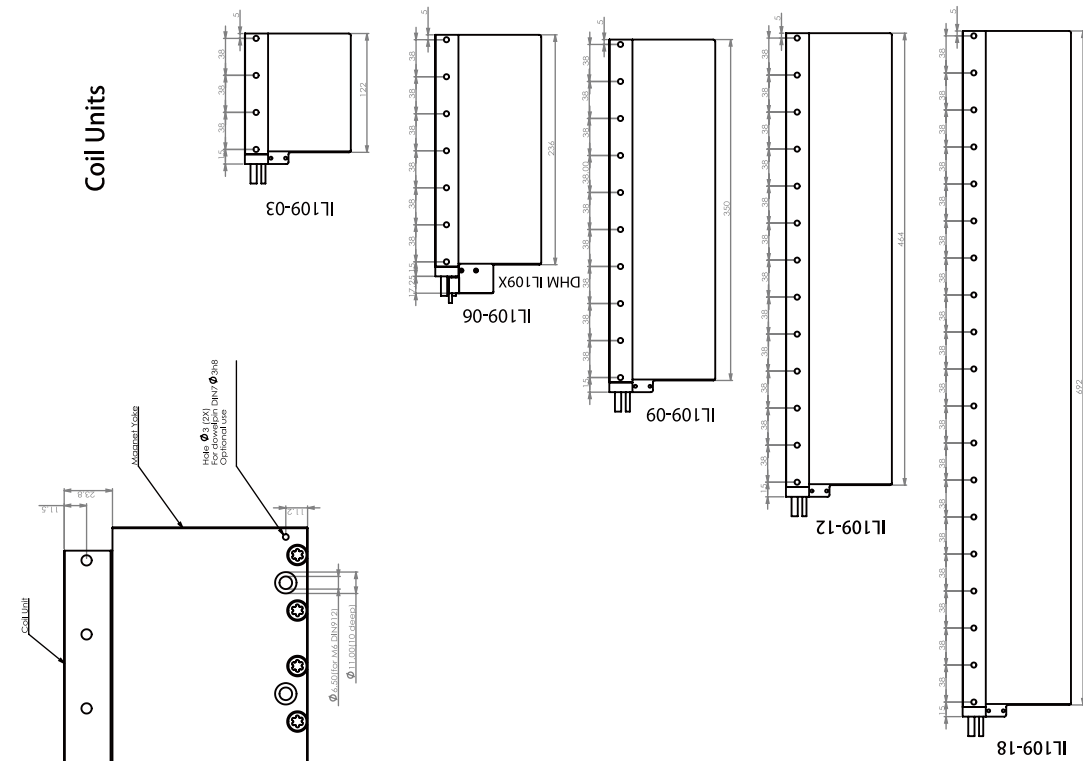
温度传感器接线图 Temperature Sensor connections				
1	PTC 1KΩ	棕色 Brown		
2	PTC 1KΩ	白色 White		
3	NTC	黄色 Yellow		
4	NTC	绿色 Green		

电机接线图 Motor connections				
1	Phase U	相 Phase 1		
2	Phase V	相 Phase 2		
3	Phase W	相 Phase 3		
4	PE	黄绿 Yellow-Green		

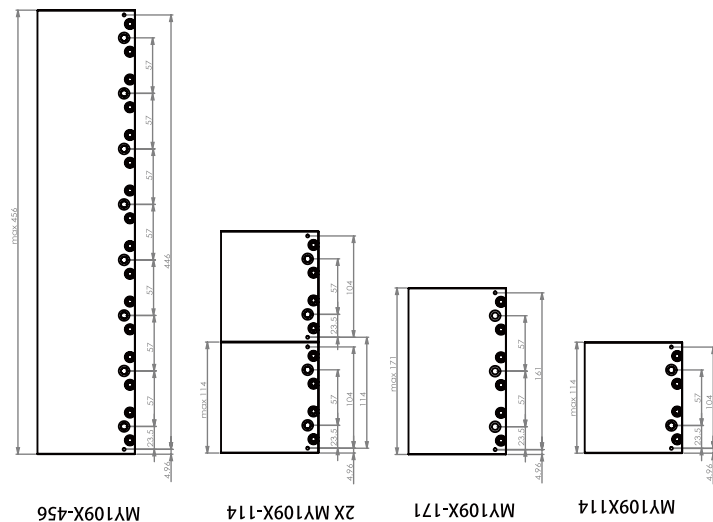
数字霍尔接线图 Dig. Hall sensor connections				
1	0V	白色 White		
2	5~28V	棕色 Brown		
3	Hall A	绿色 Green		
4	Hall B	红色 Red		
5	Hall C	黄色 Yellow		

磁板装配尺寸 Magnet Plate Mounting Dimensions				
长度 Length (mm)	114	171	456	
M6螺栓 Bolts	2	3	8	
重量 Weight (Kg/m)	23.5			
磁板可以无限拼接 Magnet Plates can be jointed together without limits				

Coil Units



Magnet Yokes



※ 超大推力应用
※ 定子长度非常短适合于空间受限且推力要求极高的应用
※ 0吸力和0齿槽力,高动态运动性能
※ 高加速, 高速度, 亚微米级定位精度且低功耗
※ 良好的散热性能
※ 可定制任意长度高柔拖链线缆的电机

Extremely large force applications: Force range Fc:250-1500N, Fp:1250-7500N
The length of coil unit is very short, which is suitable for applications with limited space and big force requirements
No attraction force and cogging, high dynamic motion performances
High acceleration, high speed, submicron positioning accuracy and low power consumption
Very good heat dissipation performance
Any length of high flex chain cables for motors can be made

性能参数 Performance												
参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	IL150-03		IL150-06		IL150-09		IL150-12		IL150-15
绕组类型 Winding Type				N	S	N	S	N	S	N	S	N
电机类型 Motor type	三相同步无铁芯 3 phases synchronous Ironless, 230Vacrms (320Vdc)											
峰值推力 Peak Force@20℃/s ↑	Magnet@25℃	Fp	N	1000	1000	2000	2000	3000	3000	4000	4000	5000
持续推力 Continuous Force	Coil@120℃	Fc	N	250	250	500	500	750	750	1000	1000	1250
最大速度 Maximum Speed	@320V	Vmax	m/s	1.6	3.2	1.6	3.2	1.6	3.2	1.6	3.2	1.6
电机力常数 Motor Force Constant	Mount. Sfc.@20℃	K	N/Arms	177	84	177	84	177	84	177	84	177
电机常数 Motor Constant	Coils@25℃	S	N ² /W	913		1826		2739		3652		4565

电气参数 Electrical												
峰值电流 Peak Current	Magnet@25℃	Ip	Arms	5.6	11.9	11.3	23.8	16.9	35.7	22.6	47.6	28.2
持续电流 Continuous Current	Coil@120℃	Ic	Arms	1.5	3.0	3.0	6.0	4.5	9.0	6.0	12.0	7.2
反电动势常数 Back EMF	Phase-Phase peak	Bemf	V/M/S	145	69	126	60	145	69	145	69	145
单相电阻 Resistance Per Phase	Coil@25℃	Rph	Ω	11.5	2.84	5.75	1.45	3.8	0.95	2.9	0.75	2.3
单相电感 Induction Per Phase	l<0.63Ip	Lph	mh	34.5	8.5	17.3	4.4	11.4	2.9	8.7	2.3	6.9
电气时间常数 Electrical Time Constant	Coil@25℃	te	ms	3	3	3	3	3	3	3	3	3
最大持续功耗 Power Loss	All coils	Pc	W	92	92	183	183	275	275	367	367	459

热性能参数 Thermal												
热阻 Thermal R.	Coils to mount. Sfc.	Rth	°C/W	0.8	0.8	0.4	0.4	0.3	0.3	0.2	0.2	0.15
温度传感器 Temp. Sensor	Temperature Cut-off			PTC 1KΩ/NTC								

机械参数 Mechanical												
定子重量 Coil Unit Weight	ex.cables	W	Kg	0.9	0.9	1.8	1.8	2.7	2.7	3.6	3.6	4.5
定子长度 Coil Unit Length	ex.cables	L	mm	163	163	302.5	302.5	442	442	581.5	581.5	721
电机吸力 Motor Attraction Force	Rms@0A	Fa	N	0	0	0	0	0	0	0	0	0
磁节距 Magnet Pitch	N-N	τ	mm	70	70	70	70	70	70	70	70	70
动力线类型 Power Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm²)	7.4(4G1mm² AWG18)								
温控线类型 Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm²)	4.9(4*0.14mm² AWG26)								
电线寿命 Cable life	Minimum	Cycles		>5,000,000								
静态弯曲半径 Bending Radius Static	Minimum	mm		≥4x φ								
动态弯曲半径 Bending Radius Dynamic	Minimum	mm		≥7.5x φ								

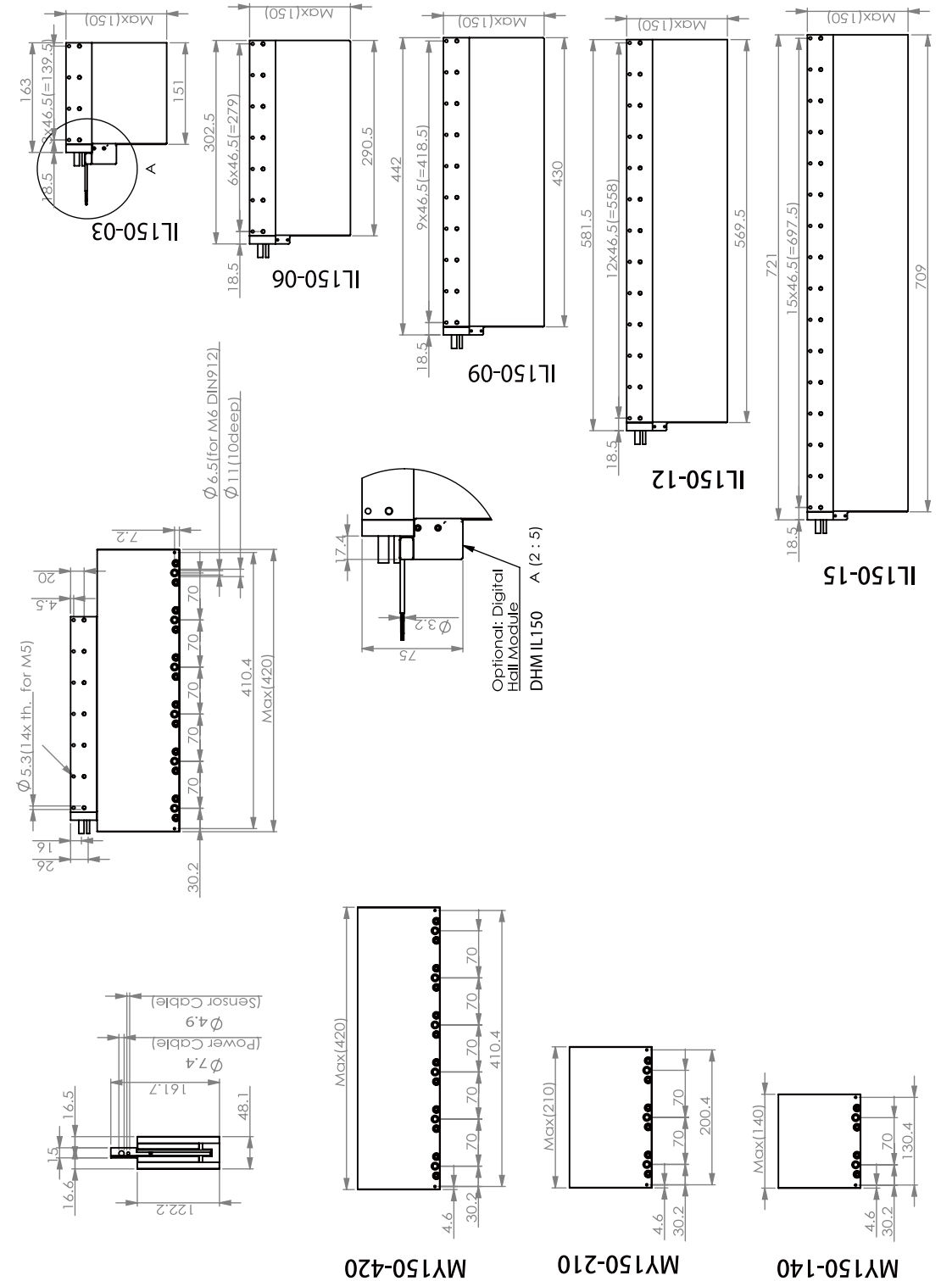


温度传感器接线图 Temperature Sensor connections				
1	PTC 1KΩ	棕色 Brown		
2	PTC 1KΩ	白色 White		
3	NTC	黄色 Yellow		
4	NTC	绿色 Green		

电机接线图 Motor connections				
1	Phase U	相 Phase 1		
2	Phase V	相 Phase 2		
3	Phase W	相 Phase 3		
4	PE	黄绿 Yellow-Green		

数字霍尔接线图 Dig. Hall sensor connections				
1	0V	白色 White		
2	5~28V	棕色 Brown		
3	Hall A	绿色 Green		
4	Hall B	红色 Red		
5	Hall C	黄色 Yellow		

磁板装配尺寸 Magnet Plate Mounting Dimensions				
长度 Length (mm)	140	210	420	
M6螺栓 Bolts	2	3	6	
重量 Weight (Kg/m)	32			
磁板可以无限拼接 Magnet Plates can be jointed together without limits				



直线电机霍尔 Hall Modules



替代
光栅应用

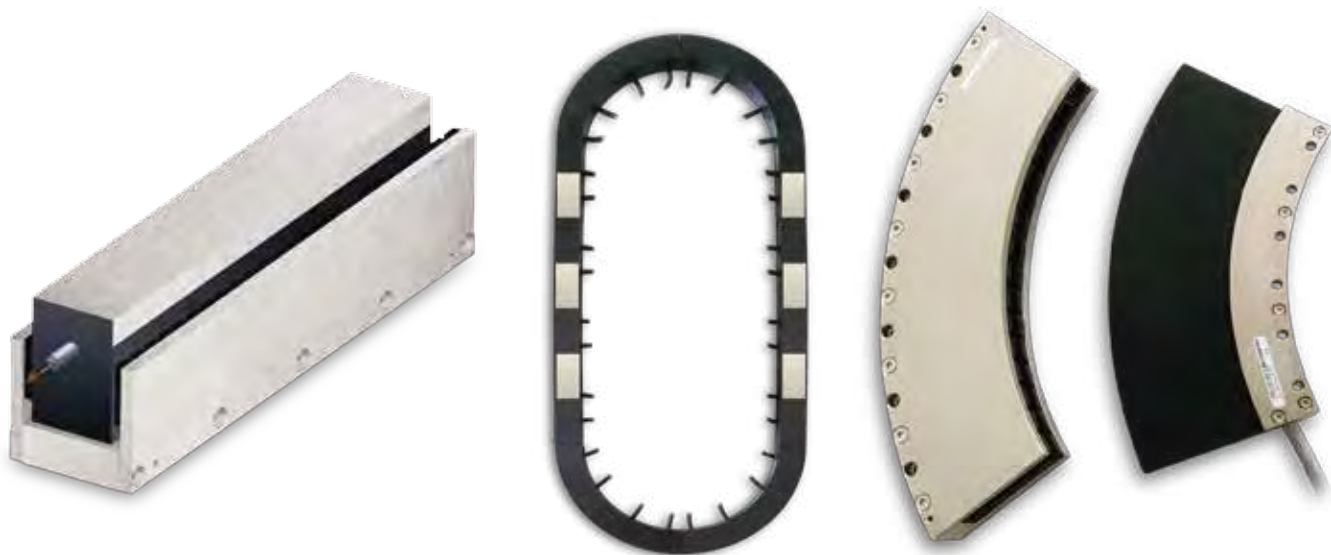
模拟霍尔 Analog Hall Module
电源 Power supplier 5Vdc
绝对精度 Absolute accuracy $\pm 0.05\text{mm}$
重复精度 Repeatable accuracy $\pm 0.015\text{mm}$
输出 1Vpp
正余弦信号 Output 1Vpp Sincos signal
信号周期 Signal period 24mm

数字霍尔 Digital Hall Module
电源 Power supplier 5 Vdc-28Vdc
通信 For Communication
相位偏移 120° Phase shifted 120°
三相数字信号输出 3 Digital outputs

定制化直线电机 Custom Linear Motors

除了以上标准化的直线电机产品，我们还可以根据客户需求定制特性化的直线电机。如更高性能或不同于标准电机的结构尺寸或出线的方式，及我们技术非常领先的圆弧形直线电机。想要了解更多信息，请联系我们，感谢您的关注。

We have the availability of providing customized linear motors and OEM service according to customer requirements besides the standard linear motors listed in this booklet. Such as higher performances, different construction requirements, and different exit direction of cables, as well as the Hi-tech curve linear motors. For more information, Please contact us. Thanks for your attention.



客户名称 Customer: _____
客户负责人 Projector: _____
电子邮件 Email: _____

项目名称 Project Name: _____
联系电话 Tel.: _____
传真 Fax.: _____

运动 Movement

轴运动方向 Motion Direction: _____ ☐ 水平 Horizontal ☐ 垂直 Vertical ☐ 带角度 With Angle
有效行程 Motion Distance: _____ mm
行程时间 Motion Time: _____ sec.
速度要求 Speed requirement: _____ m/s
加速度 Acc. Requirement: _____ m/s^2
或加速减速时间 Or Acc. And Dec. Time: _____ Sec.
运动周期间停顿时间 Dwell: _____ Sec.
运动曲线 Motion Curve: _____ ☐ 梯形 Trapezoid ☐ 三角形 Triangle ☐ 其他 Others

负载 Load

最大负载重量 Max. Load: _____ Kg
是否存在外在推力 External Force?: _____ N
摩擦力 Friction force: _____ N

环境 Environment

环境温度 Environment Temperature: _____ $^\circ\text{C}$
最大允许温升 Max. Temperature Allowed: _____ $^\circ\text{C}$
冷却方式 Cooling Way: _____ ☐ 水冷 Water Cooled ☐ 空冷 Air Cooled
是否无尘环境 If Dust Free Condition: _____ ☐ 是 Yes ☐ 否 No.
安装空间尺寸要求 Space Assembly Requirements: _____

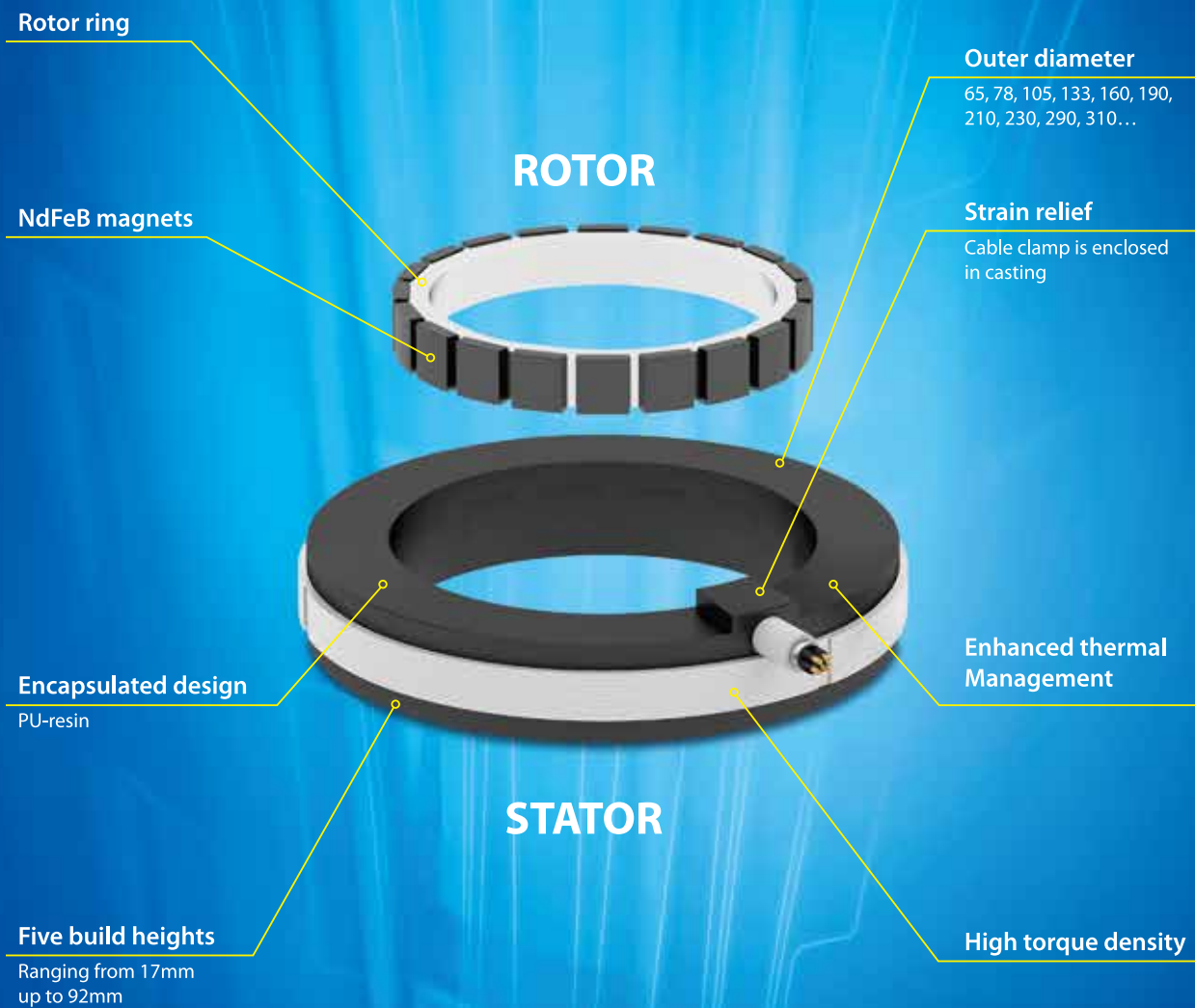
驱动器和电源 Amplifier and Power Supplier

最大电压 Max. Voltage: _____ Vdc
最大电流 Max. Current: _____ A
电源 Power Supplier: _____ ☐ 直流 DC ☐ 交流 AC
电压 Voltage: _____ V ☐ 50HZ ☐ 60HZ

其他 Additional Conditions

需求数量 Required Quantity: _____ Sets
产能要求 Capacity Requirement: _____ Sets/month
其他说明 Other Instructions: _____
客户预算价格 Budget Price: _____

Torque Motors



What is a Torque Motor

什么是力矩电机?

力矩电机是一种特殊类型的无刷永磁同步电机。由于负载直接连接转子,不需要任何传动件,因此力矩电机直接驱动技术是提高生产效率、精度和动态性能的理想途径。

与直线电机类似,力矩电机也是一种“无框”电机。也就是说该电机没有外壳、轴承或反馈系统。这些部件由机器制造商根据性能要求选择,或成套购买。



Torque motors are a special class of brushless permanent magnet synchronous motors. Since the payload is directly connected to the rotor without any other transmission elements, the direct drive technology of torque motors is a perfect way to enhance productivity, accuracy and dynamic performance of applications.

As with linear motors, torque motors are a type of “frame-less” motor. This means that the motor does not include a housing, bearings, or feedback device. These components can be selected by the machine builder and optimized according to the required performance, or purchased as part of an assembly.

Advantage of ITG Torque Motors

英力智力矩电机优势

- 相同尺寸的有铁芯和无槽力矩电机
- 超薄设计
- 最高扭矩密度
- 低热阻
- 低齿槽和零齿槽力
- 带屏蔽电缆的封装设计
- 定子和转子质量低,大中空
- 从45V到600Vdc的宽母线电压范围
- 高品质,高标准



- Inrncore and slotless torque motors with same size
- Ultra-thin design
- Highest torque density
- Low thermal resistance
- Low cogging and zero cogging
- Encapsulated design with shielded cable
- Low stator and rotor mass with large inner diameter
- Wide range of bus voltage from 45V up to 600Vdc
- Top quality with high standards

Applications

应用领域



机械加工



精加工/磨削



工作台/铣头



冲压/激光切割



电子



半导体



包装



印刷/扫描

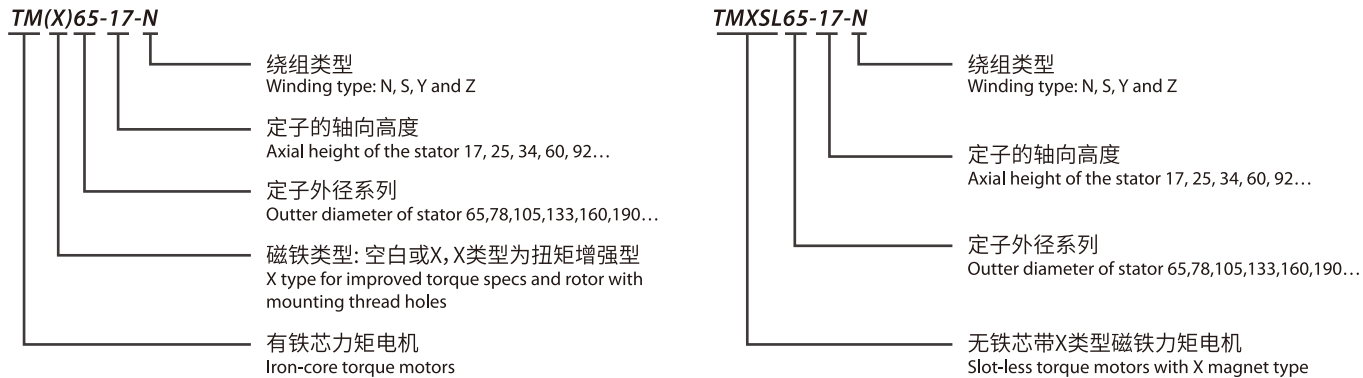


机器人

Torque motor index

力矩电机索引

力矩电机命名规则 Naming of the torque motors:



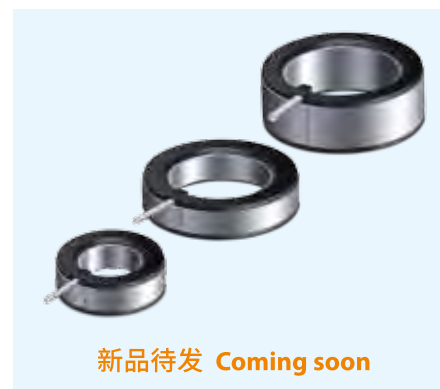
TM-A 65 and 78 series系列

- 力矩电机系列里最小电机
- 小巧的设计且大内径中空
- 支持低压
- 高动态响应和精度
- 最佳的速度控制
- TMSL-X 是增强扭矩的无铁芯力矩电机系列
- Smallest motors in our torque family
- Compact design with large hollow shaft
- Low voltage supported
- High dynamics and accuracy
- Optimal speed control
- TMSL-X is the slot-less torque motor with improved torque specs



TM-A 105-133-160 series系列

- 中扭矩力矩电机系列
- 多种优化的反电动势绕组类型可供选择
- 极广泛的应用
- 高动态响应和精度
- 最佳的速度控制
- TMSL-X 是增强扭矩的无铁芯力矩电机系列
- Medium motor in our torque motor family
- Multiple winding types are available with optimized back EMF
- Various applications can be used.
- High dynamics and accuracy
- Optimal speed control
- TMSL-X is the slot-less torque motor with improved torque specs



TM-A 190 210-230-290-310 series系列

- 大扭矩力矩电机系列
- 多种优化的反电动势绕组类型可供选择
- 极广泛的应用
- 高动态响应和精度
- 最佳的速度控制
- TMSL-X 是增强扭矩的无铁芯力矩电机系列
- Large motor in our torque motor family
- Multiple winding types are available with optimized back EMF
- Various applications can be used.
- High dynamics and accuracy
- Optimal speed control
- TMSL-X is the slot-less torque motor with improved torque specs

Torque motor power range

力矩电机扭力范围

■ 峰值扭矩 Peak torque Tp (N.m)

■ 持续扭矩 Continuous torque Tc (N.m)

	TM65 Series	0.77-11	0.36-4.6
	TMXSL65 Series	0.28-6.4	0.07-1.6
	TM78 Series	1.5-21.7	0.68-8.82
	TMXSL78 Series	0.57-7.33	0.14-1.8
	TM105 Series	3.5-56	1.7-24
	TMXSL105 Series	1.2-20	0.32-5
	TM133 Series	6.72-110	3.2-46.7
	TMXSL133 Series	2.7-36.8	0.7-9.2
	TM160 Series	11.16-183.2	4.92-72
	TMXSL160 Series	4.1-60.8	1.03-15.2



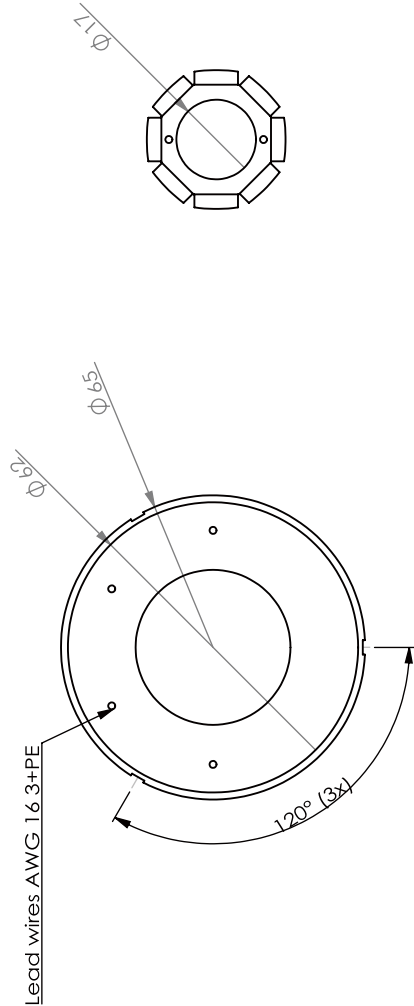
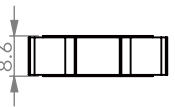
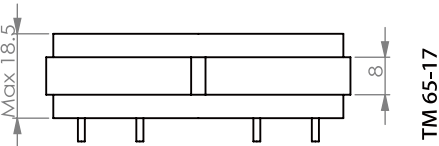
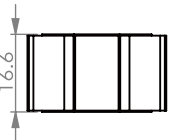
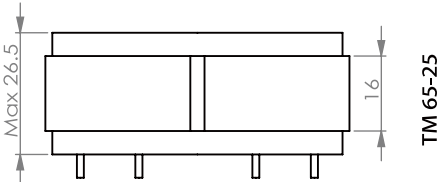
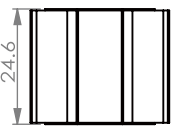
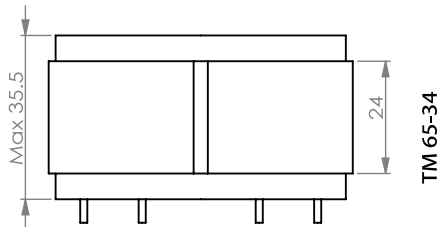
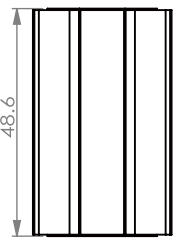
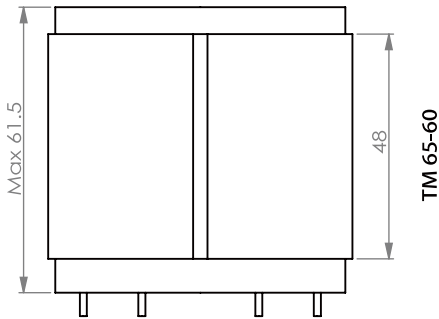
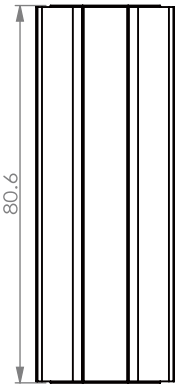
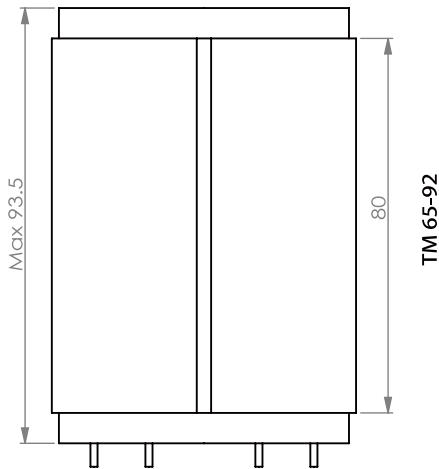
性能参数 Performance								
参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	TM65-17	TM65-25	TM65-34	TM65-60	TM65-92
绕组类型 Winding Type				N	N	Y	Y	Y
电机类型 Motor type	三相同步有铁芯 3 phases synchronous Ironcore 220-380Vac rms (48V-600Vdc)							
峰值扭矩 Peak torque@20 C/s increase	Magnet@25 C	Tp	Nm	0.77	1.54	2.70	6.60	11.00
持续扭矩 Continuous torque	Coil@110 C	Tc	Nm	0.36	0.85	1.30	2.78	4.60
最大速度 Maximum Speed	@Tc	nmax	rpm	28000	28000	28000	13000	10000
电机电矩常数 Motor Torque Constant	Up to Ic	Kt	Nm/Arms	0.072	0.140	0.118	0.320	0.418
电机常数 Motor Constant	Coils@25 C	Km	Nm ² /W	0.002	0.006	0.012	0.036	0.046

电气参数 Electrical								
峰值电流 Peak Current	Magnet@25 C	Ip	Arms	14.5	14.9	30.9	27.9	35.6
最大持续电流 Max.Continuous Current	Coil@110 C	Ic	Arms	5.0	6.1	11.0	8.7	11.0
反电动势常数 Back EMF Phase to Phase peak	25 C +/-10%	Kep	V/krpm	6	12	10	28	36
反电动势常数 Back EMF Phase to Phase RMS	25 C +/-10%	Ke	V/krpm	4	9	7	19	25
单相电阻 Resistance Per Phase	Coil@25 C	Rph	Ω	0.73	1.02	0.38	0.95	1.28
单相电感 Induction Per Phase	l<0.63Ip	Lph	mh	1.10	2.04	0.94	2.66	4.86
电气时间常数 Electrical Time Constant	Coil@25 C	τe	ms	1.5	2.0	2.5	2.8	3.8
最大持续功耗 Max. Continuous Power Loss	All coils	Pc	W	71.2	146.6	177.5	279.6	604.6
极数 Poles		Nmag.	nr	8.0	8.0	8.0	8.0	8.0

热性能参数 Thermal								
热阻 Thermal Resistance	Coils to mount. Sfc.	Rth	°C/W	1.5	0.8	0.58	0.37	0.11
温度传感器 Temperature Sensor				Optional PTC 1KΩ/NTC				

机械参数 Mechanical								
定子外径 Stator OD		Ods	mm	65				
转子内径 Rotor ID		ldr	mm	17				
转子惯量 Rotor inertia		JR	Kg*m ²	4.00E-06	7.80E-06	1.30E-06	2.50E-05	4.20E-05
总重量 Total Mass	Rotor+stator ex.cables	W	kg	0.18	0.32	0.46	0.95	1.6
动力线类型 Power Cable Type	length 0.5m	Diameter	mm(mm ²)	Leadwires (4*1.5mm ²)				

*Remark: Y Z Types can be driven with low voltage 可用低压驱动



STATOR

ROTOR



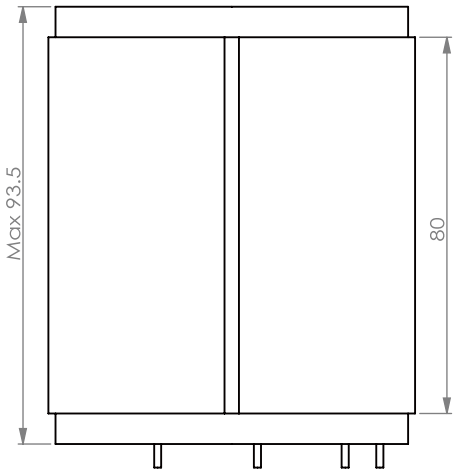
性能参数 Performance								
参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	TM78-17	TM78-25	TM78-34	TM78-60	TM78-92
绕组类型 Winding Type				N	Y	Y	Y	Y
电机类型 Motor type	三相同步有铁芯 3 phases synchronous Ironcore 220-380Vac rms (48V-600Vdc)							
峰值扭矩 Peak torque@20 C/s increase	Magnet@25 C	Tp	Nm	1.5	3.5	5.5	13.0	21.7
持续扭矩 Continuous torque	Coil@110 C	Tc	Nm	0.68	1.66	2.63	5.29	8.82
最大速度 Maximum Speed	@Tc@48V	nmax	rpm	2200	1962	1296	484	220
最大速度 Maximum Speed	@Tc	nmax	rpm	20000	17500	11500	4300	1900
电机力矩常数 Motor Torque Constant	Up to Ic	Kt	Nm/Arms	0.14	0.16	0.24	0.64	1.40
电机常数 Motor Constant	Coils@25 C	Km	Nm ² /W	0.006	0.019	0.034	0.093	0.340

电气参数 Electrical								
峰值电流 Peak Current	Magnet@25 C	Ip	Arms	14.1	30.1	31.0	27.6	20.9
最大持续电流 Max.Continuous Current	Coil@110 C	Ic	Arms	4.9	10.5	11.1	8.3	6.3
反电动势常数 Back EMF Phase to Phase peak	25 C +/-10%	Kep	V/krpm	12	14	20	55	121
反电动势常数 Back EMF Phase to Phase RMS	25 C +/-10%	Ke	V/krpm	9	10	14	39	85
单相电阻 Resistance Per Phase	Coil@25 C	Rph	Ω	1.11	0.44	0.56	1.44	1.92
单相电感 Induction Per Phase	l<0.63p	Lph	mh	1.78	0.97	1.34	4.48	6.53
电气时间常数 Electrical Time Constant	Coil@25 C	τe	ms	1.6	2.2	2.4	3.1	3.4
最大持续功耗 Max. Continuous Power Loss	All coils	Pc	W	102.5	190.9	266.7	390.0	297.2
极数 Poles		Nmag.	nr	12.0	12.0	12.0	12.0	12.0

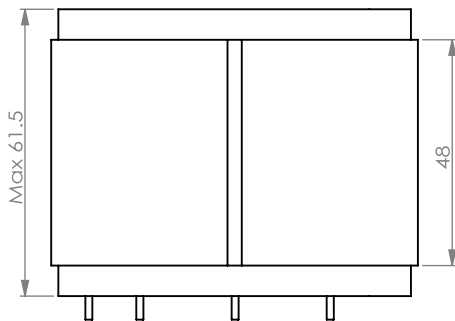
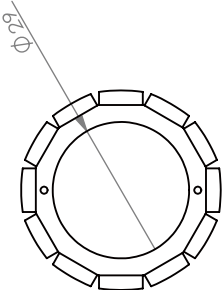
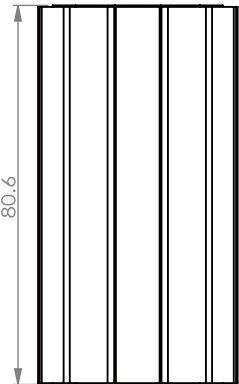
热性能参数 Thermal								
热阻 Thermal Resistance	Coils to mount. Sfc.	Rth	°C/W	0.99	0.54	0.39	0.26	0.16
温度传感器 Temperature Sensor				Optional PTC 1KΩ/NTC				

机械参数 Mechanical								
定子外径 Stator OD		Ods	mm	78				
转子内径 Rotor ID		ldr	mm	29				
转子惯量 Rotor inertia		JR	Kg*m ²	1.30E-05	2.50E-05	3.80E-05	7.60E-05	1.27E-04
总重量 Total Mass	Rotor+stator ex.cables	W	kg	0.28	0.44	0.65	1.3	2
动力线类型 Power Cable Type	length 0.5m	Diameter	mm(mm ²)	Leadwires (4*1.5mm ²)				

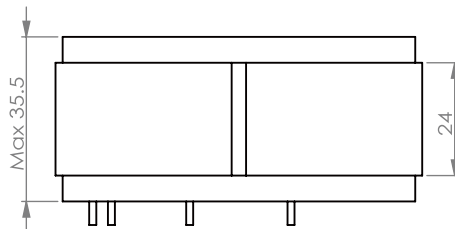
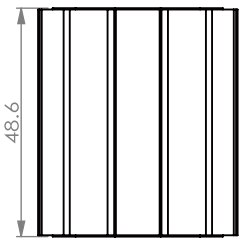
*Remark: Y Z Types can be driven with low voltage 可用低压驱动



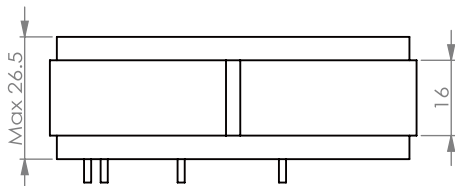
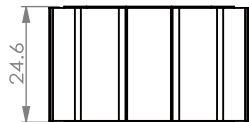
TM 78-92



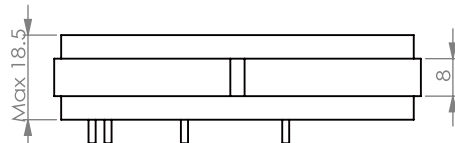
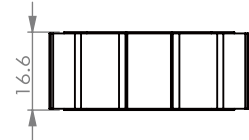
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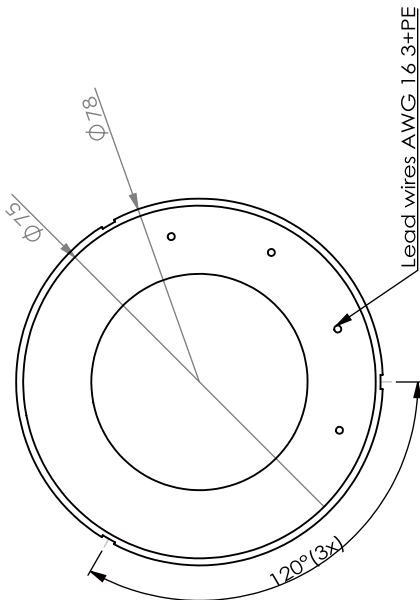
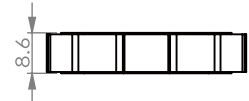
TM 78-34



TM 78-25



TM 78-17



STATOR

ROTOR



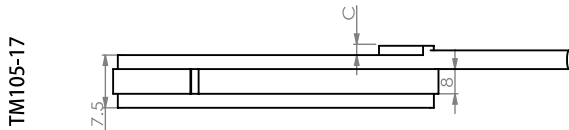
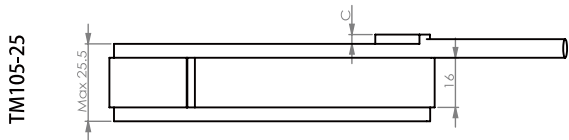
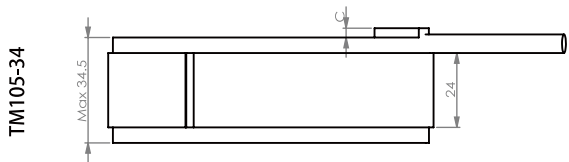
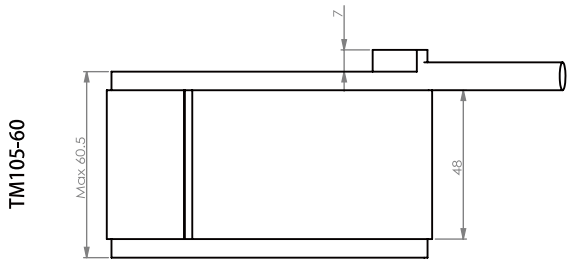
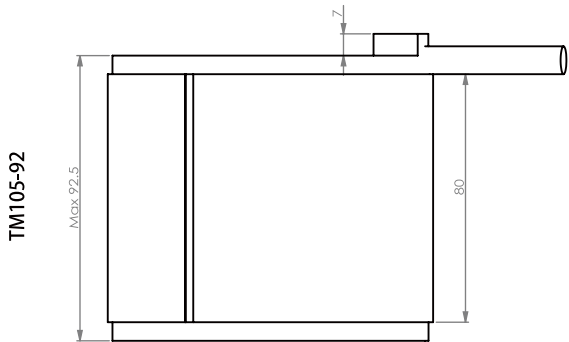
性能参数 Performance														
参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	TM105-17			TM105-25			TM105-34			TM105-60	TM105-92
绕组类型 Winding Type				N	Y	Z	N	Y	Z	N	Y	Z	N	Y
电机类型 Motor type	三相同步有铁芯 3 phases synchronous Ironcore 230Vac rms (320Vdc)												380Vac rms (600Vdc)	
峰值扭矩 Peak torque@20℃/s increase	Magnet@25℃	TP	Nm	3.50	3.96	3.96	7.32	9.00	8.28	12.72	13.56	12.48	34.00	56.00
持续扭矩 Continuous torque	Coil@110℃	Tc	Nm	1.7	1.7	1.7	3.8	4.0	4.0	6.5	6.2	6.2	14.4	24.0
最大速度 Maximum Speed	@Tc	nmax	rpm	5879	10583	17638	2940	5345	9203	1654	3528	6047	1157	1323
电机力矩常数 Motor Torque Constant	Up to Ic	Kt	Nm/Arms	0.36	0.20	0.12	0.72	0.40	0.23	1.28	0.60	0.35	3.43	3.00
电机常数 Motor Constant	Coils@25℃	Km	Nm²/W	0.025	0.024	0.027	0.069	0.070	0.073	0.143	0.125	0.131	0.455	0.493

电气参数 Electrical														
峰值电流 Peak Current	Magnet@25℃	Ip	Arms	13.1	26.8	44.6	13.7	30.7	48.6	13.4	30.5	48.2	13.4	25.2
最大持续电流 Max.Continuous Current	Coil@110℃	Ic	Arms	4.7	8.4	14.0	5.3	10.1	17.4	5.1	10.4	17.8	4.2	8.0
反电动势常数 Back EMF Phase to Phase peak	25℃ +/-10%	Kep	V/krpm	31	17	10	62	34	20	110	52	30	295	258
反电动势常数 Back EMF Phase to Phase RMS	25℃ +/-10%	Ke	V/krpm	22	12	7	44	24	14	78	37	21	209	183
单相电阻 Resistance Per Phase	Coil@25℃	Rph	Ω	1.75	0.55	0.18	2.50	0.75	0.24	3.81	0.96	0.31	8.62	3.26
单相电感 Induction Per Phase	I<0.63Ip	Lph	mh	3.50	1.16	0.36	5.25	1.73	0.53	10.29	2.41	0.78	32.76	13.04
电气时间常数 Electrical Time Constant	Coil@25℃	τe	ms	2.0	2.1	2.0	2.1	2.3	2.2	2.7	2.5	2.5	3.8	4.0
最大持续功耗 Max. Continuous Power Loss	All coils	Pc	W	148.6	151.4	137.6	277.3	298.4	283.1	380.8	405.8	386.8	592.5	813.7
极数 Poles		Nmag.	nr	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0

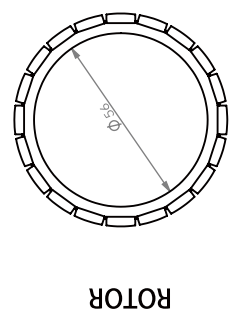
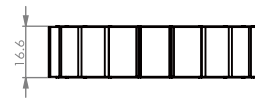
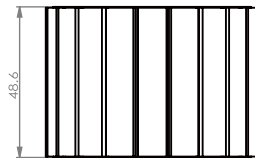
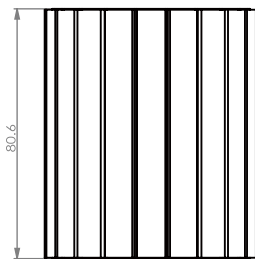
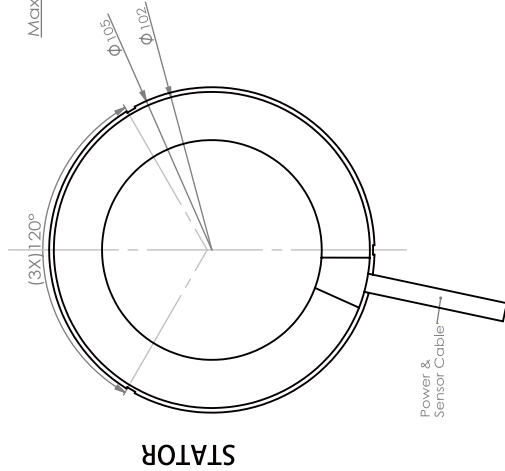
热性能参数 Thermal														
热阻 Thermal Resistance	Coils to mount. Sfc.	Rth	°C/W	0.68	0.68	0.68	0.34	0.34	0.34	0.24	0.24	0.24	0.14	0.11
温度传感器 Temperature Sensor				Optional PTC 1KΩ/NTC										

机械参数 Mechanical														
定子外径 Stator OD		Ods	mm	105										
转子内径 Rotor ID		Idr	mm	56										
转子惯量 Rotor inertia		JR	Kg*m²	8.00E-05			1.50E-04			2.30E-04			4.40E-04	7.40E-04
总重量 Total Mass	Rotor+stator ex.cables	W	kg	0.32			0.62			0.96			1.93	3.12
动力线类型 Power Cable Type	length 0.5m	Diameter	mm(mm²)	6.6(4G0.5mm²)	8.4(4G1.5mm²)	6.6(4G0.5mm²)	8.4(4G1.5mm²)	6.6(4G0.5mm²)	8.4(4G1.5mm²)	6.6(4G0.5mm²)	8.4(4G1.5mm²)	7.4(4G1mm²)		

*Remark: Y Z Types can be driven with low voltage 可用低压驱动



Winding C(mm)
N-----3
Y-Z-----5.5





性能参数 Performance

参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	TM133-17			TM133-25			TM133-34		TM133-60		TM133-92	
绕组类型 Winding Type				N	Y	Z	N	Y	Z	N	Z	N		Y	
电机类型 Motor type	三相同步有铁芯 3 phases synchronous Ironcore 230Vac rms (320Vdc) 380Vac rms (600Vdc)														
峰值扭矩 Peak torque@20 C/s increase	Magnet@25 C	Tp	Nm	6.72	7.68	7.68	14.28	16.20	16.20	24.72	24.72	66.60		110.00	
持续扭矩 Continuous torque	Coil@110 C	Tc	Nm	3.2	3.2	3.2	7.6	7.8	7.8	13.0	12.4	28.0		46.7	
最大速度 Maximum Speed	@Tc	nmax	rpm	3045	5345	9283	1521	2714	4642	843	3150	594		1018	
电机力矩常数 Motor Torque Constant	Up to Ic	Kt	Nm/Arms	0.70	0.40	0.23	1.39	0.78	0.46	2.51	0.67	6.68		3.90	
电机常数 Motor Constant	Coils@25 C	Km	Nm ² /W	0.066	0.070	0.067	0.189	0.201	0.203	0.394	0.352	1.236		1.449	

电气参数 Electrical

峰值电流 Peak Current	Magnet@25 C	Ip	Arms	13.1	26.2	45.5	13.9	28.1	48.0	13.3	49.7	13.5		38.1	
最大持续电流 Max.Continuous Current	Coil@110 C	Ic	Arms	4.6	8.1	14.0	5.5	10.0	17.1	5.2	17.0	4.0		12.0	
反电动势常数 Back EMF Phase to Phase peak	25 C +/-10%	Kep	V/krpm	60	34	20	120	67	39	216	58	575		336	
反电动势常数 Back EMF Phase to Phase RMS	25 C +/-10%	Ke	V/krpm	42	24	14	85	47	28	153	41	407		237	
单相电阻 Resistance Per Phase	Coil@25 C	Rph	Ω	2.44	0.75	0.26	3.42	1.01	0.34	5.33	0.43	12.05		4.56	
单相电感 Induction Per Phase	l<0.63lp	Lph	mh	4.88	1.65	0.55	7.87	2.53	0.82	14.92	1.11	46.98		18.24	
电气时间常数 Electrical Time Constant	Coil@25 C	τe	ms	2.0	2.2	2.1	2.3	2.5	2.4	2.8	2.6	3.9		4.0	
最大持续功耗 Max. Continuous Power Loss	All coils	Pc	W	201.7	191.0	199.7	397.6	393.9	389.1	557.6	563.8	824.4		2546.7	
极数 Poles		Nmag.	nr	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0		28.0	

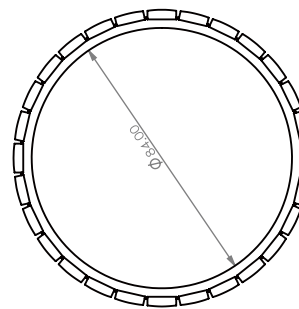
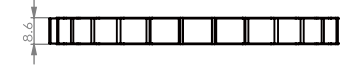
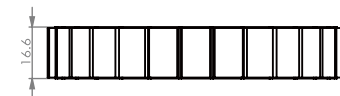
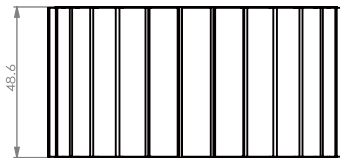
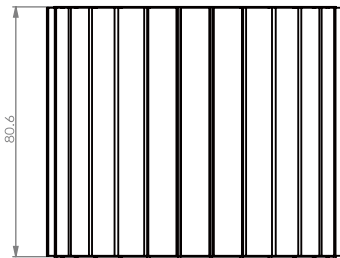
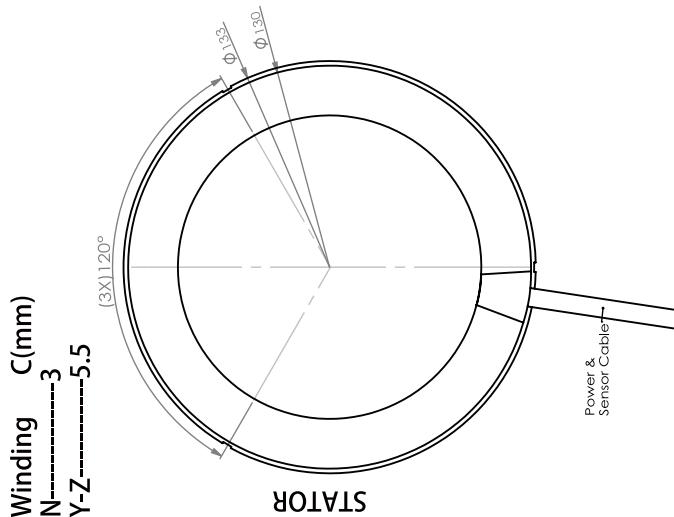
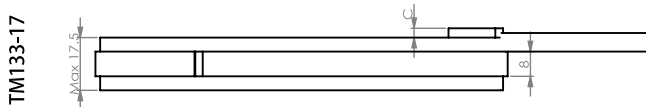
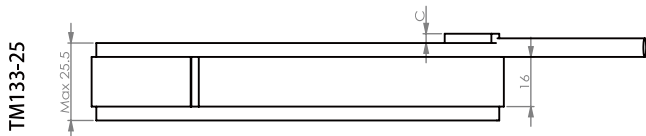
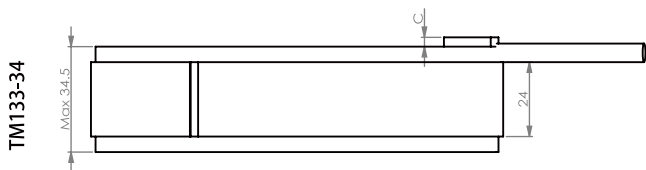
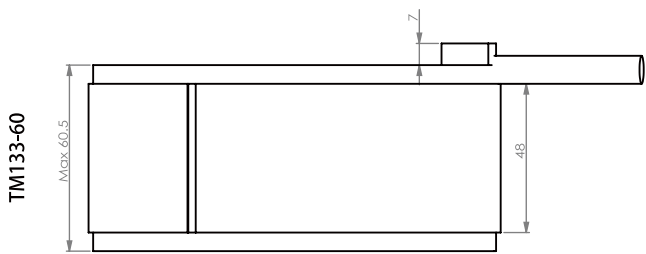
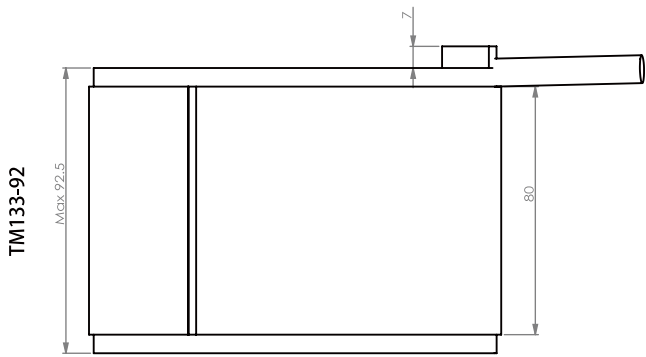
热性能参数 Thermal

热阻 Thermal Resistance	Coils to mount. Sfc.	Rth	°C/W	0.5	0.5	0.5	0.28	0.28	0.28	0.2	0.2	0.13		0.095	
温度传感器 Temperature Sensor				Optional PTC 1KΩ/NTC											

机械参数 Mechanical

定子外径 Stator OD		Ods	mm	133									
转子内径 Rotor ID		ldr	mm	84									
转子惯量 Rotor inertia		JR	Kg*m ²	2.10E-04		4.20E-04		6.20E-04		1.20E-03		1.80E-03	
总重量 Total Mass	Rotor+stator ex.cables	W	kg	0.55		0.955		1.37		2.75		4.3	
动力线类型 Power Cable Type	length 0.5m	Diameter	mm(mm ²)	6.6(4G0.5mm ²)	8.4(4G1.5mm ²)	6.6(4G0.5mm ²)	8.4(4G1.5mm ²)	6.6(4G0.5mm ²)	8.4(4G1.5mm ²)	8.4(4G1.5mm ²)			

*Remark: Y Z Types can be driven with low voltage 可用低压驱动



ROTOR



性能参数 Performance

参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	TM160-17			TM160-25			TM160-34		TM160-60		TM160-92	
绕组类型 Winding Type				N	Y	Z	N	Y	Z	N	Z	N		Y	
电机类型 Motor type	三相同步有铁芯 3 phases synchronous Ironcore 230Vac rms (320Vdc) 380Vac rms (600Vdc)														
峰值扭矩 Peak torque@20 C/s increase	Magnet@25 C	Tp	Nm	11.16	12.72	12.72	23.52	26.88	26.88	40.92	40.30	110.00		183.20	
持续扭矩 Continuous torque	Coil@110 C	Tc	Nm	4.92	5.04	5.04	11.28	11.64	11.64	18.84	18.00	43.56		72.00	
最大速度 Maximum Speed	@Tc	nmax	rpm	1837	3266	5690	916	1648	2845	511	1890	361		397	
电机力矩常数 Motor Torque Constant	Up to Ic	Kt	Nm/Arms	1.15	0.65	0.37	2.31	1.28	0.74	4.14	1.12	11.00		10.00	
电机常数 Motor Constant	Coils@25 C	Km	Nm ² /W	0.140	0.147	0.149	0.407	0.423	0.418	0.832	0.760	2.605		4.263	

电气参数 Electrical

峰值电流 Peak Current	Magnet@25 C	Ip	Arms	13.1	26.5	46.2	13.8	28.3	48.8	13.4	48.6	13.5		24.8	
最大持续电流 Max.Continuous Current	Coil@110 C	Ic	Arms	4.3	7.8	13.5	4.9	9.1	16.0	4.6	16.1	4.0		7.2	
反电动势常数 Back EMF Phase to Phase peak	25 C +/-10%	Kep	V/krpm	99	56	32	199	111	64	356	96	947		861	
反电动势常数 Back EMF Phase to Phase RMS	25 C +/-10%	Ke	V/krpm	70	39	23	141	78	45	252	68	670		609	
单相电阻 Resistance Per Phase	Coil@25 C	Rph	Ω	3.15	0.95	0.31	4.37	1.30	0.44	6.87	0.55	15.49		5.86	
单相电感 Induction Per Phase	l<0.63lp	Lph	mh	6.62	2.09	0.68	10.05	3.25	1.10	19.92	1.43	61.94		24.61	
电气时间常数 Electrical Time Constant	Coil@25 C	te	ms	2.1	2.2	2.2	2.3	2.5	2.5	2.9	2.6	4.0		4.2	
最大持续功耗 Max. Continuous Power Loss	All coils	Pc	W	224.1	224.1	221.9	406.4	416.0	421.0	554.9	554.0	947.1		1184.8	
极数 Poles		Nmag.	nr	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0		36.0	

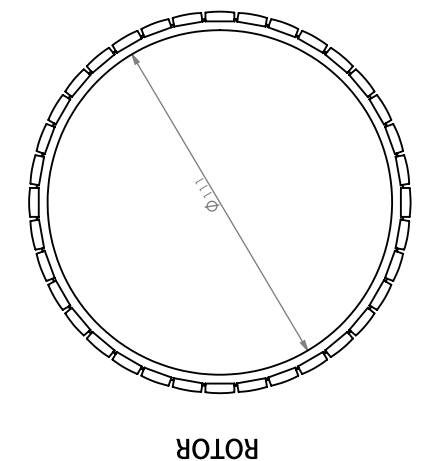
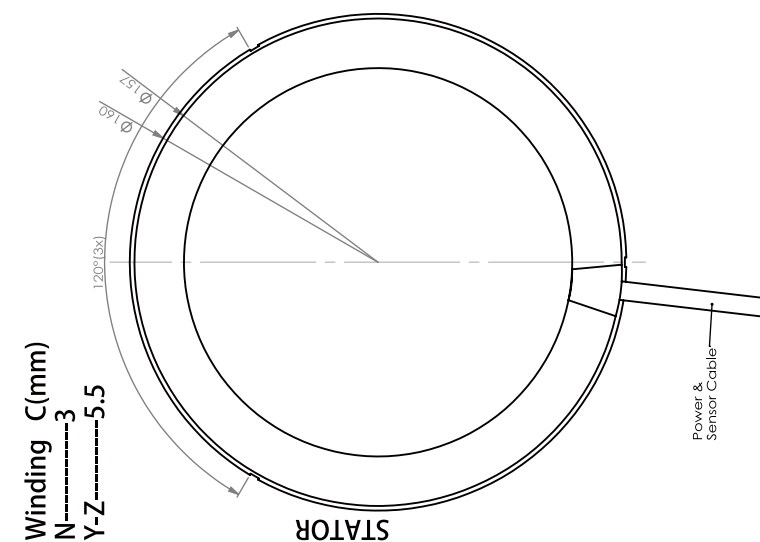
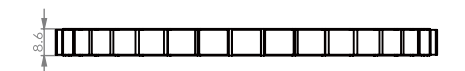
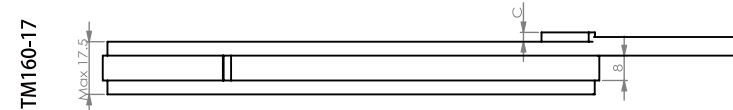
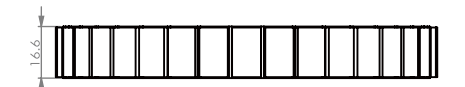
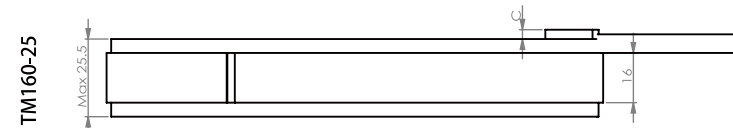
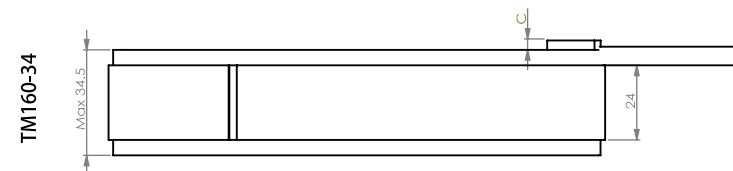
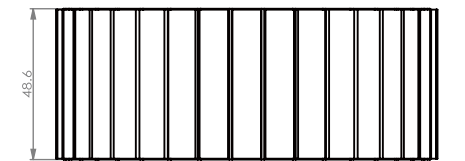
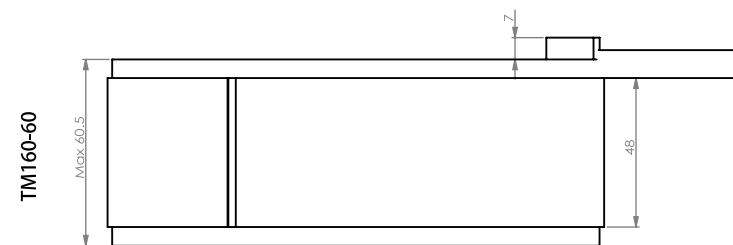
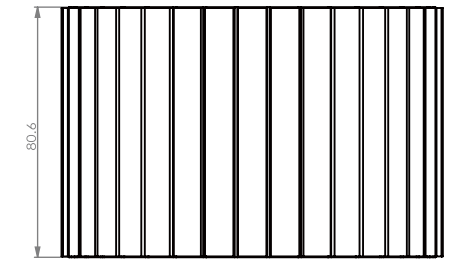
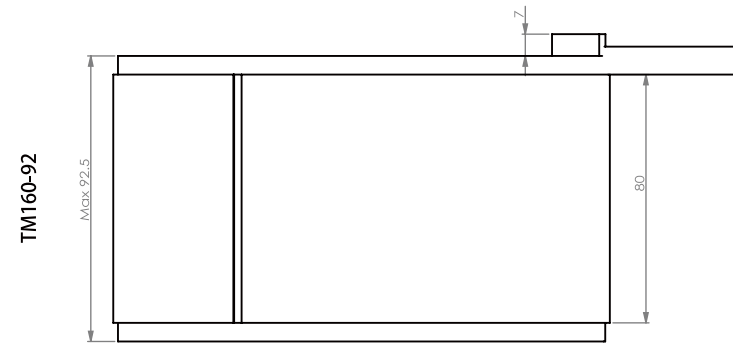
热性能参数 Thermal

热阻 Thermal Resistance	Coils to mount. Sfc.	Rth	°C/W	0.43	0.43	0.43	0.23	0.23	0.23	0.17	0.17	0.1		0.06	
温度传感器 Temperature Sensor				Optional PTC 1KΩ/NTC											

机械参数 Mechanical

定子外径 Stator OD		Ods	mm	160													
转子内径 Rotor ID		ldr	mm	111													
转子惯量 Rotor inertia		JR	Kg*m ²	4.60E-04			9.20E-04			1.40E-03		2.60E-03		4.20E-03			
总重量 Total Mass	Rotor+stator ex.cables	W	kg	0.65			1.15			1.6		3.3		5.5			
动力线类型 Power Cable Type	length 0.5m	Diameter	mm(mm ²)	6.6(4G0.5mm ²)		8.4(4G1.5mm ²)		6.6(4G0.5mm ²)		8.4(4G1.5mm ²)		6.6(4G0.5mm ²)		8.4(4G1.5mm ²)		8.4(4G1.5mm ²)	

*Remark: Y Z Types can be driven with low voltage 可用低压驱动





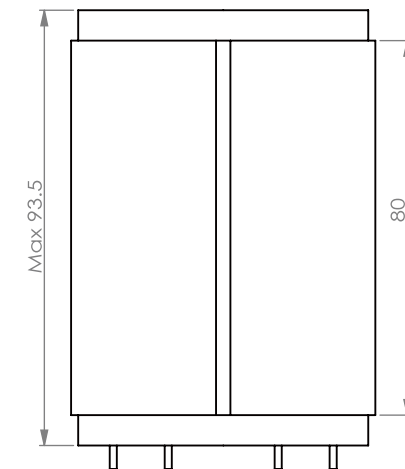
性能参数 Performance								
参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	TMXSL65-17	TMXSL65-25	TMXSL65-34	TMXSL65-60	TMXSL65-92
绕组类型 Winding Type				N	N	Y	Y	Y
电机类型 Motor type	三相同步无槽（无铁芯）3 Phase synchronous slotless 220V-380Vac rms (48V-600V)							
峰值扭矩 Peak torque@20 C/s increase	Magnet@25 C	Tp	Nm	0.28	0.85	1.44	3.84	6.40
持续扭矩 Continuous torque	Coil@110 C	Tc	Nm	0.07	0.21	0.36	0.96	1.60
最大速度 Maximum Speed	@Tc	nmax	rpm	30000	30000	30000	30000	30000
电机电矩常数 Motor Torque Constant	Up to Ic	Kt	Nm/Arms	0.015	0.030	0.025	0.067	0.113
电机常数 Motor Constant	Coils@25 C	Km	Nm²/W	0.0001	0.0003	0.0005	0.0016	0.0033

电气参数 Electrical								
峰值电流 Peak Current	Magnet@25 C	Ip	Arms	18.7	28.4	58.8	57.5	56.6
最大持续电流 Max.Continuous Current	Coil@110 C	Ic	Arms	4.7	7.1	14.7	14.4	14.2
反电动势常数 Back EMF Phase to Phase peak	25 C +/-10%	Kep	V/krpm	1.29	2.58	2.11	5.75	9.73
反电动势常数 Back EMF Phase to Phase RMS	25 C +/-10%	Ke	V/krpm	0.91	1.83	1.49	4.06	6.88
单相电阻 Resistance Per Phase	Coil@25 C	Rph	Ω	0.73	1.02	0.38	0.95	1.28
单相电感 Induction Per Phase	l<0.63Ip	Lph	mh	0.37	0.67	0.30	1.08	1.72
电气时间常数 Electrical Time Constant	Coil@25 C	τe	ms	0.5	0.7	0.8	1.1	1.3
最大持续功耗 Max. Continuous Power Loss	All coils	Pc	W	62.0	200.5	315.8	766.4	1000.8
极数 Poles		Nmag.	nr	8.0	8.0	8.0	8.0	8.0

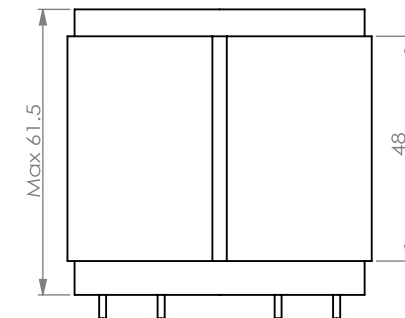
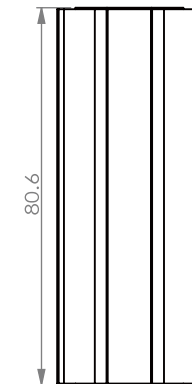
热性能参数 Thermal								
热阻 Thermal Resistance	Coils to mount. Sfc.	Rth	°C/W	1.5	0.8	0.58	0.37	0.11
温度传感器 Temperature Sensor				Optional PTC 1KΩ/NTC				

机械参数 Mechanical								
定子外径 Stator OD		Ods	mm	65				
转子内径 Rotor ID		Idr	mm	15				
转子惯量 Rotor inertia		JR	Kg*m²	3.12E-06	6.23E-06	9.23E-06	1.8E-05	3.19E-05
总重量 Total Mass	Rotor+stator ex.cables	W	kg	0.18	0.32	0.46	0.95	1.6
动力线类型 Power Cable Type	length 0.5m	Diameter	mm(mm²)	Leadwires (4*1.5mm²)				

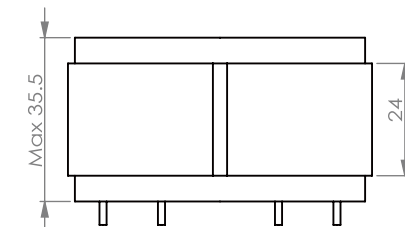
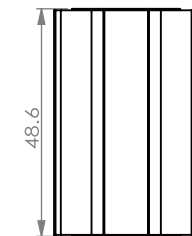
*Remark: Y Z Types can be driven with low voltage 可用低压驱动



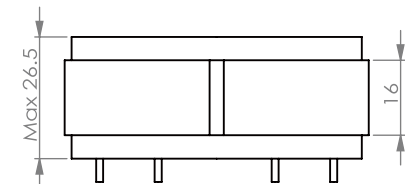
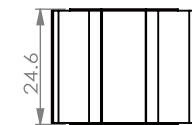
TMXSL 65-92



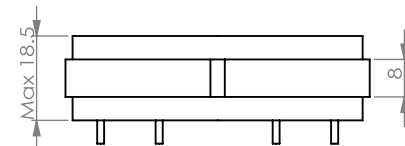
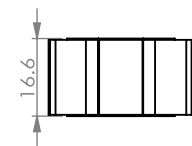
TMXSL 65-60



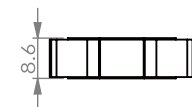
TMXSL 65-34



TMXSL 65-25

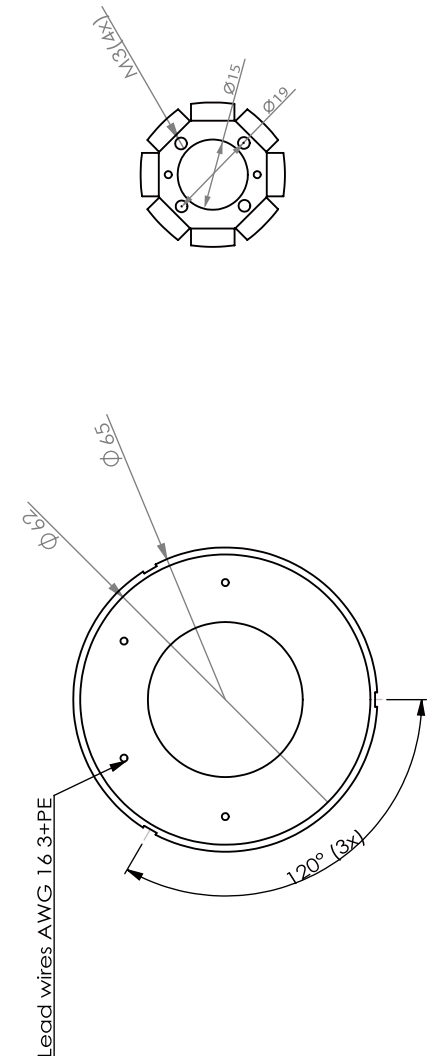


TMXSL 65-17



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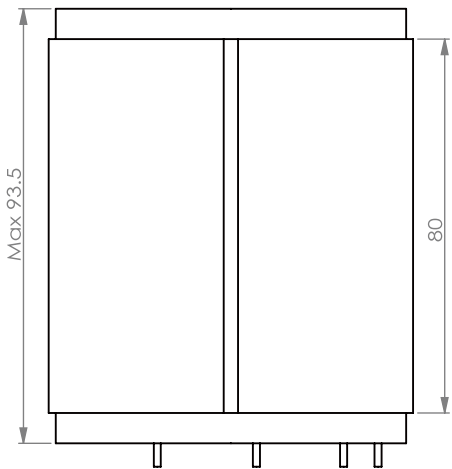
性能参数 Performance								
参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	TMXSL78-17	TMXSL78-25	TMXSL78-34	TMXSL78-60	TMXSL78-92
绕组类型 Winding Type				N	Y	Y	Y	Y
电机类型 Motor type	三相同步无槽 (无铁芯) 3 Phase synchronous slotless 220V-380Vac rms (48V-600V)							
峰值扭矩 Peak torque@20 C/s increase	Magnet@25 C	Tp	Nm	0.57	1.38	2.20	4.40	7.33
持续扭矩 Continuous torque	Coil@110 C	Tc	Nm	0.14	0.35	0.54	1.10	1.80
最大速度 Maximum Speed	@Tc@48V	nmax	rpm	3000	3000	3000	3000	3000
最大速度 Maximum Speed	@Tc	nmax	rpm	25000	25000	25000	25000	25000
电机力矩常数 Motor Torque Constant	Up to Ic	Kt	Nm/Arms	0.027	0.033	0.05	0.13	0.28
电机常数 Motor Constant	Coils@25 C	Km	Nm ² /W	0.0002	0.0008	0.0015	0.0039	0.0084

电气参数 Electrical								
峰值电流 Peak Current	Magnet@25 C	Ip	Arms	21.0	41.8	44.0	33.8	26.0
最大持续电流 Max.Continuous Current	Coil@110 C	Ic	Arms	4.9	11.0	11.1	8.3	6.4
反电动势常数 Back EMF Phase to Phase peak	25 C +/-10%	Kep	V/krpm	2.3	2.8	4.3	11.2	24.1
反电动势常数 Back EMF Phase to Phase RMS	25 C +/-10%	Ke	V/krpm	1.6	2.0	3.0	7.9	17.0
单相电阻 Resistance Per Phase	Coil@25 C	Rph	Ω	1.11	0.44	0.56	1.44	1.92
单相电感 Induction Per Phase	l<0.63Ip	Lph	mh	0.67	0.40	0.56	1.88	2.88
电气时间常数 Electrical Time Constant	Coil@25 C	τe	ms	0.6	0.9	1.0	1.3	1.5
最大持续功耗 Max. Continuous Power Loss	All coils	Pc	W	116.8	187.6	254.3	403.3	309.5
极数 Poles		Nmag.	nr	12.0	12.0	12.0	12.0	12.0

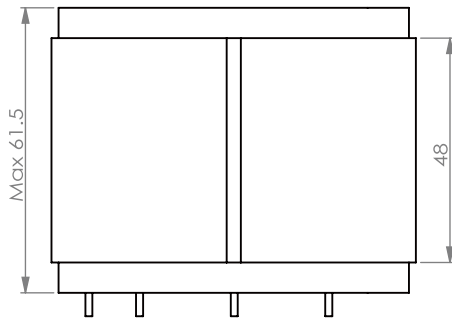
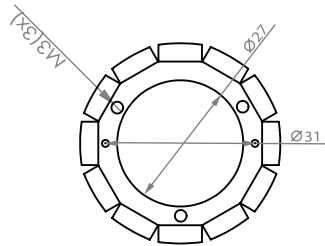
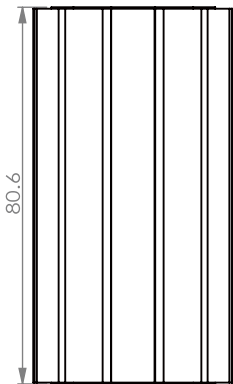
热性能参数 Thermal								
热阻 Thermal Resistance	Coils to mount. Sfc.	Rth	°C/W	0.99	0.54	0.39	0.26	0.14
温度传感器 Temperature Sensor				Optional PTC 1KΩ/NTC				

机械参数 Mechanical								
定子外径 Stator OD		Ods	mm	78				
转子内径 Rotor ID		ldr	mm	27				
转子惯量 Rotor inertia		JR	Kg*m ²	1.30E-05	2.49E-05	3.75E-05	7.46E-05	1.27E-04
总重量 Total Mass	Rotor+stator ex.cables	W	kg	0.28	0.44	0.65	1.3	2
动力线类型 Power Cable Type	length 0.5m	Diameter	mm(mm ²)	Leadwires (4*1.5mm ²)				

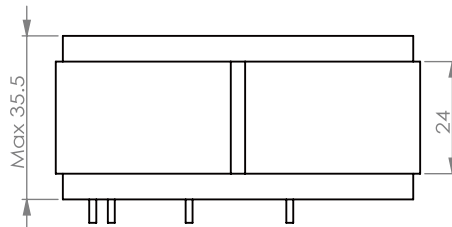
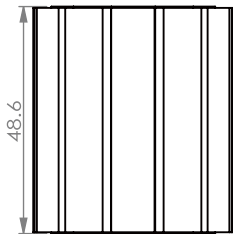
*Remark: Y Z Types can be driven with low voltage 可用低压驱动



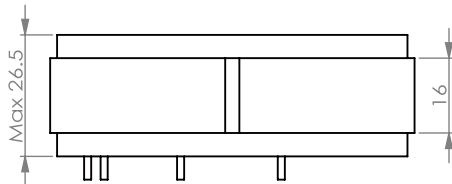
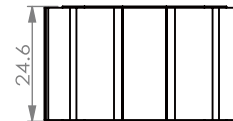
TMXSL 78-92



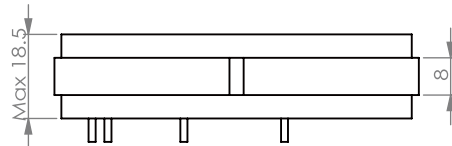
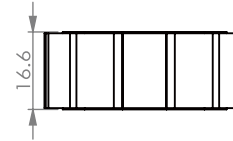
TMXSL 78-60



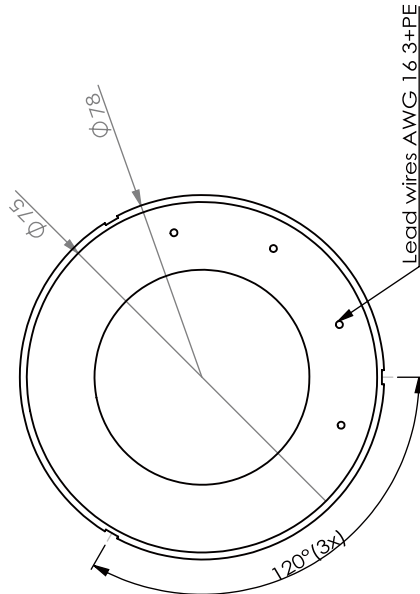
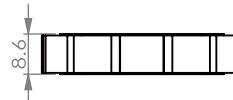
TMXSL 78-34



TMXSL 78-25



TMXSL 78-17



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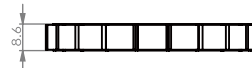
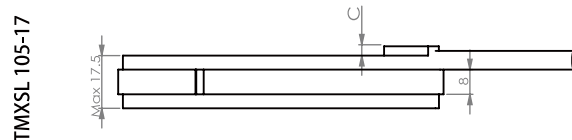
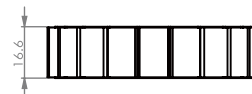
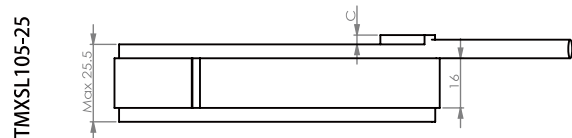
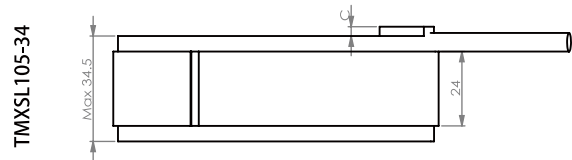
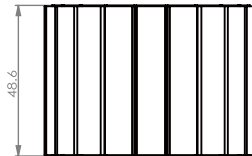
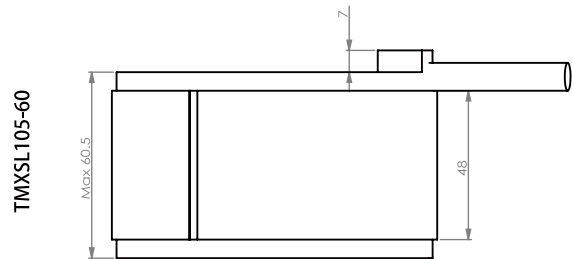
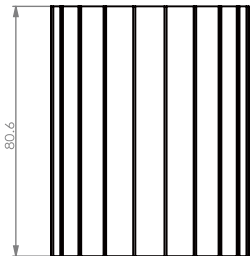
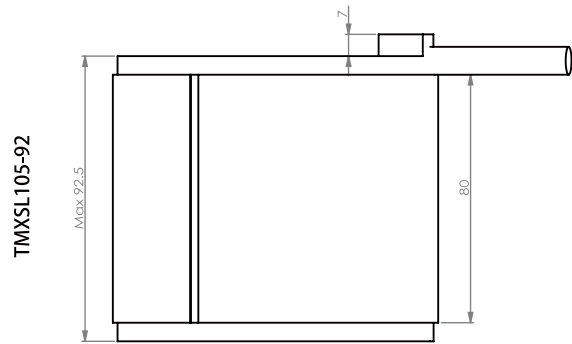
性能参数 Performance														
参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	TMXSL105-17			TMXSL105-25			TMXSL105-34			TMXSL105-60	TMXSL105-92
绕组类型 Winding Type				N	Y	Z	N	Y	Z	N	Y	Z	N	Y
电机类型 Motor type	三相同步无槽（无铁芯）3 phases synchronous slotless 220Vac rms (320Vdc)												380Vac rms (600Vdc)	
峰值扭矩 Peak torque@20 C/s increase	Magnet@25 C	Tp	Nm	1.20	1.2	1.2	3.2	3.2	3.2	5.4	5.4	5.4	12.0	20.0
持续扭矩 Continuous torque	Coil@110 C	Tc	Nm	0.32	0.32	0.32	0.80	0.80	0.80	1.35	1.35	1.35	3.00	5.00
最大速度 Maximum Speed	@Tc	nmax	rpm	20000	30000	50000	10000	20000	30000	5000	10000	20000	3000	3000
电机力矩常数 Motor Torque Constant	Up to Ic	Kt	Nm/Arms	0.07	0.04	0.02	0.15	0.08	0.05	0.26	0.13	0.07	0.71	0.60
电机常数 Motor Constant	Coils@25 C	Km	Nm ² /W	0.0009	0.0009	0.0009	0.0029	0.0028	0.0031	0.0061	0.0054	0.0058	0.0197	0.0199

电气参数 Electrical														
峰值电流 Peak Current	Magnet@25 C	Ip	Arms	17.3	31.9	55.1	21.6	40.0	68.0	20.4	43.2	73.6	16.8	33.2
最大持续电流 Max.Continuous Current	Coil@110 C	Ic	Arms	4.6	8.5	14.7	5.4	10.0	17.0	5.1	10.8	18.4	4.2	8.3
反电动势常数 Back EMF Phase to Phase peak	25 C +/-10%	Kep	V/krpm	6	3	2	13	7	4	23	11	6	62	52
反电动势常数 Back EMF Phase to Phase RMS	25 C +/-10%	Ke	V/krpm	4	2	1	9	5	3	16	8	4	43	37
单相电阻 Resistance Per Phase	Coil@25 C	Rph	Ω	1.75	0.55	0.18	2.50	0.75	0.24	3.81	0.96	0.31	8.62	6.08
单相电感 Induction Per Phase	l<0.63lp	Lph	mh	1.61	0.56	0.16	3.00	0.75	0.25	4.99	1.25	0.37	16.01	12.75
电气时间常数 Electrical Time Constant	Coil@25 C	τe	ms	0.9	1.0	0.9	1.2	1.0	1.0	1.2	1.3	1.2	1.8	1.9
最大持续功耗 Max. Continuous Power Loss	All coils	Pc	W	144.4	155.0	151.7	284.3	292.5	270.5	386.5	437.6	412.0	593.0	1633.5
极数 Poles		Nmag.	nr	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0

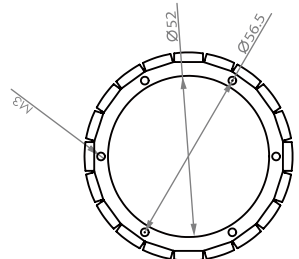
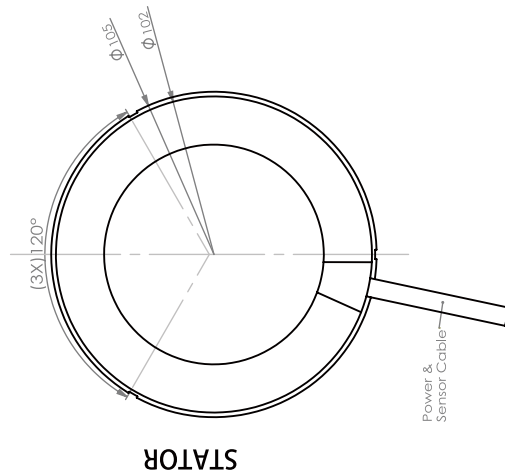
热性能参数 Thermal														
热阻 Thermal Resistance	Coils to mount. Sfc.	Rth	°C/W	0.68	0.68	0.68	0.34	0.34	0.34	0.24	0.24	0.24	0.14	0.11
温度传感器 Temperature Sensor				Optional PTC 1KΩ/NTC										

机械参数 Mechanical														
定子外径 Stator OD		Ods	mm	105										
转子内径 Rotor ID		ldr	mm	52										
转子惯量 Rotor inertia		JR	Kg*m ²	7.6E-05			1.5E-04			2.2E-04			4.47E-04	7.58E-04
总重量 Total Mass	Rotor+stator ex.cables	W	kg	0.32			0.62			0.96			1.93	3.12
动力线类型 Power Cable Type	length 0.5m	Diameter	mm(mm ²)	6.6(40.5mm ²)	8.4(4G1.5mm ²)	6.6(40.5mm ²)	8.4(4G1.5mm ²)	6.6(40.5mm ²)	8.4(4G1.5mm ²)	6.6(40.5mm ²)	8.4(4G1.5mm ²)	7.4(4G1mm ²)		

*Remark: Y Z Types can be driven with low voltage 可用低压驱动



Winding C(mm)
N-----3
Y-Z-----5.5



ROTOR



性能参数 Performance

参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	TMXSL133-17			TMXSL133-25			TMXSL133-34			TMXSL133-60			TMXSL133-92
绕组类型 Winding Type				N	Y	Z	N	Y	Z	N	Y	Z	N	Z	Y	
电机类型 Motor type	三相同步无槽（无铁芯） 3 phases synchronous slotless 230Vac rms (320Vdc)															380Vac rms (600Vdc)
峰值扭矩 Peak torque@20 C/s increase	Magnet@25 C	Tp	Nm	2.7	2.7	2.8	6.0	6.0	6.0	10.0	10.0	10.0	22.0	22.0	36.8	
持续扭矩 Continuous torque	Coil@110 C	Tc	Nm	0.7	0.7	0.7	1.5	1.5	1.5	2.5	2.4	2.5	5.5	5.5	9.2	
最大速度 Maximum Speed	@Tc	nmax	rpm	14111	25501	44096	7055	12985	22280	4047	8819	15119	2835	11339	1725	
电机力矩常数 Motor Torque Constant	Up to Ic	Kt	Nm/Arms	0.150	0.083	0.048	0.300	0.163	0.095	0.523	0.240	0.140	1.400	0.350	2.300	
电机常数 Motor Constant	Coils@25 C	Km	Nm ² /W	0.003	0.003	0.003	0.009	0.009	0.009	0.017	0.015	0.015	0.054	0.051	0.504	

电气参数 Electrical

峰值电流 Peak Current	Magnet@25 C	Ip	Arms	18.0	32.0	58.0	20.0	36.8	63.2	19.1	41.7	71.4	15.7	62.9	16.0	
最大持续电流 Max.Continuous Current	Coil@110 C	Ic	Arms	4.5	8.0	14.6	5.0	9.2	16.0	4.8	10	17.9	3.9	16.0	4.0	
反电动势常数 Back EMF Phase to Phase peak	25 C +/-10%	Kep	V/krpm	13	7	4	26	14	8	45	21	12	121	30	198	
反电动势常数 Back EMF Phase to Phase RMS	25 C +/-10%	Ke	V/krpm	9	5	3	18	10	6	32	15	9	85	21	140	
单相电阻 Resistance Per Phase	Coil@25 C	Rph	Ω	2.44	0.75	0.26	3.42	1.01	0.34	5.33	1.28	0.43	12.05	0.80	4.56	
单相电感 Induction Per Phase	l<0.63lp	Lph	mh	2.44	0.75	0.26	3.42	1.01	0.34	5.33	1.28	0.43	12.05	0.80	4.56	
电气时间常数 Electrical Time Constant	Coil@25 C	τe	ms	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
最大持续功耗 Max. Continuous Power Loss	All coils	Pc	W	192.7	187.2	215.7	333.5	333.6	331.6	475.0	499.2	532.3	725.0	770.4	284.5	
极数 Poles		Nmag.	nr	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	

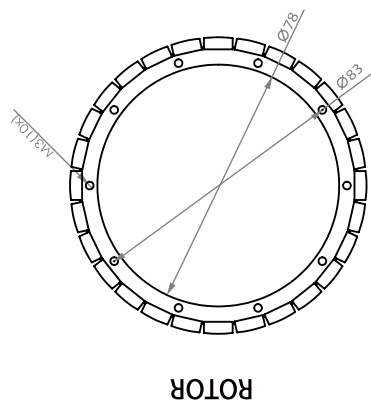
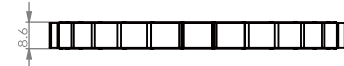
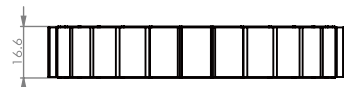
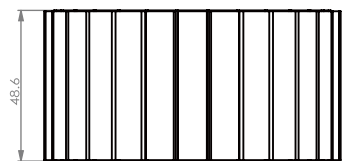
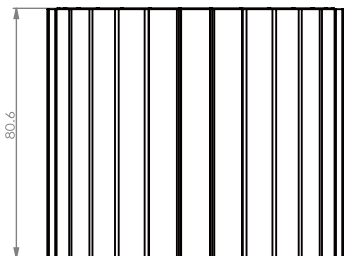
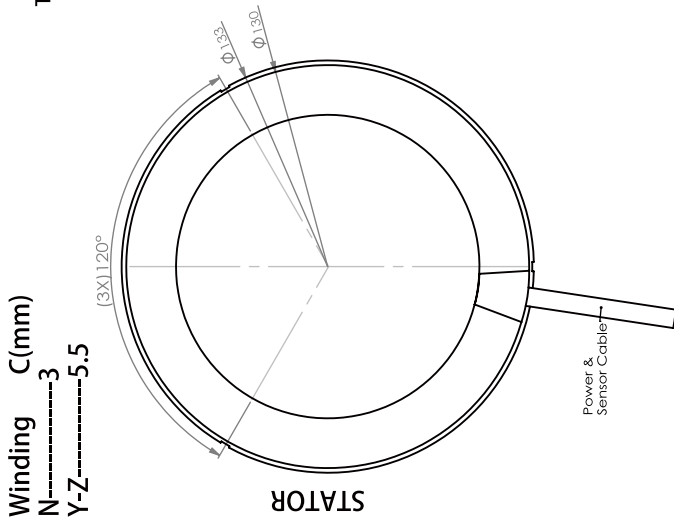
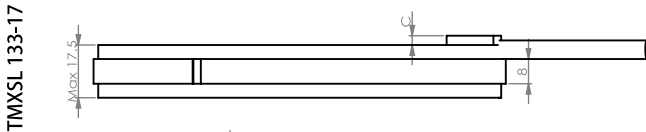
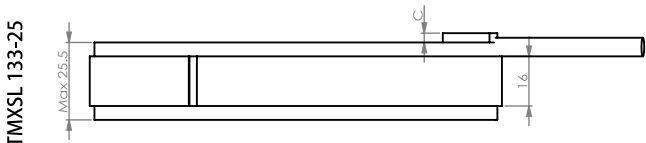
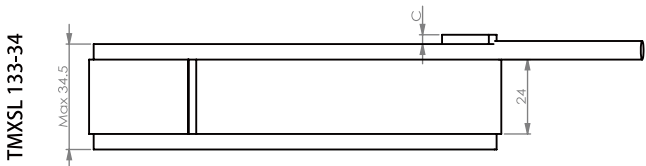
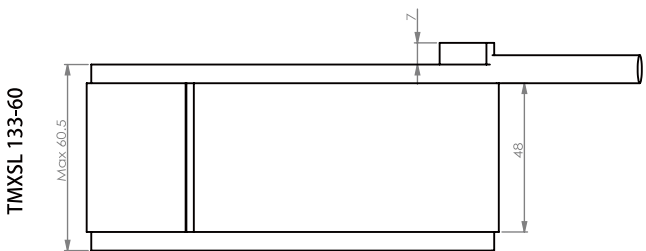
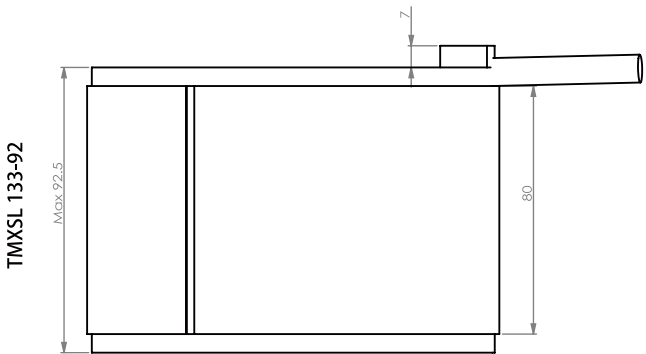
热性能参数 Thermal

热阻 Thermal Resistance	Coils to mount. Sfc.	Rth	°C/W	0.5	0.5	0.5	0.28	0.28	0.28	0.2	0.2	0.2	0.13	0.13	0.095	
温度传感器 Temperature Sensor				Optional PTC 1KΩ/NTC												

机械参数 Mechanical

定子外径 Stator OD		Ods	mm	133												
转子内径 Rotor ID		ldr	mm	78												
转子惯量 Rotor inertia		JR	Kg*m ²	2.49E-04			4.86E-04			7.2E-04			1.44E-03			2.46E-03
总重量 Total Mass	Rotor+stator ex.cables	W	kg	0.55			0.955			1.37			2.75			4.3
动力线类型 Power Cable Type	length 0.5m	Diameter	mm(mm ²)	6.6(4G0.5mm ²)	8.4(4G1.5mm ²)	6.6(4G0.5mm ²)	8.4(4G1.5mm ²)	6.6(4G0.5mm ²)	8.4(4G1.5mm ²)	6.6(4G0.5mm ²)	8.4(4G1.5mm ²)	6.6(4G0.5mm ²)	8.4(4G1.5mm ²)	8.4(4G1.5mm ²)		

*Remark: Y Z Types can be driven with low voltage 可用低压驱动



ROTOR



性能参数 Performance													
参数 Parameter	备注 Remarks	符号 Symbol	单位 Unit	TMXSL160-17			TMXSL160-25			TMXSL160-34		TMXSL160-60	TMXSL160-92
绕组类型 Winding Type				N	Y	Z	N	Y	Z	N	Z	N	Y
电机类型 Motor type	三相同步无槽（无铁芯） 3 phases synchronous slotless 230Vac rms (320Vdc)											380Vac rms (600Vdc)	
峰值扭矩 Peak torque@20 C/s increase	Magnet@25 C	Tp	Nm	4.1	4.1	4.1	9.7	9.7	9.7	15.9	15.0	36.4	60.8
持续扭矩 Continuous torque	Coil@110 C	Tc	Nm	1.03	1.03	1.03	2.43	2.43	2.43	3.98	3.75	9.10	15.20
最大速度 Maximum Speed	@Tc	nmax	rpm	8819	15679	26458	4410	7898	13656	2453	9407	1725	1036
电机力矩常数 Motor Torque Constant	Up to Ic	Kt	Nm/Arms	0.240	0.14	0.08	0.48	0.27	0.16	0.86	0.23	2.30	3.83
电机常数 Motor Constant	Coils@25 C	Km	Nm ² /W	0.006	0.006	0.007	0.018	0.018	0.018	0.036	0.031	0.114	0.625

电气参数 Electrical													
峰值电流 Peak Current	Magnet@25 C	Ip	Arms	17.2	30.5	51.5	20.3	36.3	62.7	18.4	66.7	15.8	15.9
最大持续电流 Max.Continuous Current	Coil@110 C	Ic	Arms	4.3	7.6	12.9	5.1	9.1	15.7	4.6	16.7	4.0	4.0
反电动势常数 Back EMF Phase to Phase peak	25 C +/-10%	Kep	V/krpm	21	12	7	41	23	13	74	19	198	330
反电动势常数 Back EMF Phase to Phase RMS	25 C +/-10%	Ke	V/krpm	15	8	5	29	16	9	53	14	140	233
单相电阻 Resistance Per Phase	Coil@25 C	Rph	Ω	3.15	0.95	0.31	4.37	1.30	0.44	6.87	0.55	15.49	5.68
单相电感 Induction Per Phase	l<0.63lp	Lph	mh	3.78	1.24	0.40	6.12	1.95	0.66	10.99	0.88	26.33	16.47
电气时间常数 Electrical Time Constant	Coil@25 C	τe	ms	1.2	1.3	1.3	1.4	1.5	1.5	1.6	1.6	1.7	2.9
最大持续功耗 Max. Continuous Power Loss	All coils	Pc	W	226.3	215.7	200.4	436.8	416.2	422.7	568.4	595.8	945.4	348.9
极数 Poles		Nmag.	nr	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0

热性能参数 Thermal													
热阻 Thermal Resistance	Coils to mount. Sfc.	Rth	°C/W	0.43	0.43	0.43	0.23	0.23	0.23	0.17	0.17	0.1	0.06
温度传感器 Temperature Sensor				Optional PTC 1KΩ/NTC									

机械参数 Mechanical													
定子外径 Stator OD		Ods	mm	160									
转子内径 Rotor ID		ldr	mm	105									
转子惯量 Rotor inertia		JR	Kg*m ²	5.7E-04		1.1E-03		1.6E-03		3.36E-03		5.75E-03	
总重量 Total Mass	Rotor+stator ex.cables	W	kg	0.65		1.15		1.6		3.3		5.5	
动力线类型 Power Cable Type	length 0.5m	Diameter	mm(mm ²)	6.6(4G0.5mm ²)	8.4(4G1.5mm ²)	6.6(4G0.5mm ²)	8.4(4G1.5mm ²)	6.6(4G0.5mm ²)	8.4(4G1.5mm ²)	6.6(4G0.5mm ²)	8.4(4G1.5mm ²)	8.4(4G1.5mm ²)	

*Remark: Y Z Types can be driven with low voltage 可用低压驱动

