ITG Linear Motor

Direct Drive Components

Simply better !

Suzhou ITG Linear Motor Co., Ltd.

Version: 4

ABOUT ITG

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 direct drive manufacturers. Now ITG has become a high-quality direct drive 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 direct drive technology, and is the best partner for direct drive systems.

WIDE RANGE OF APPLICATIONS

Wafer and core level packaging

Lithography

Test and control equipment

SMT machine

Stamping/laser cutting

Flat panel display

Photovoltaic

OUR STRENGTHS

- Sustainable technology innovation, high quality standards
- Specialized in providing direct drive as the core components of direct drive system
- Focus on customer needs, quick respond and short lead-time
- Leading technology and excellent service, your reliable long-term partner

WHY ITG MOTORS

- 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

Processing

Finishing/grinding

Electronic

Medical machinery

Packaging

Optics

Print/Scan

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ITG Linear Motor

Ironcore Linear Motors

Coil Unit Naming

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

IC = Iron Core

50/76/124 = Series Series Type (Width of coil unit)

3/6/9/12/15/18/24/30/45 = Number of coils

S/N/Y/Z = Line group type

T/PT100/PT1000/None=temperature control Sensor type Sensor Types: T/PT100/PT1000/-None: T represents the default PTC110 and NTC 10KΩ, PT100 represents with PT100 temperature sensor, PT1000 represents with PT1000 temperature sensor, None represents without Any temperature control sensor xx= represents the length of the motor outlet, the length can be customized according to customer needs, 01 represents 1 meter outlet, 02 represents 2 meters outlet, 03...

Magnet Plate Naming

MP50-96

MP = Magnet Plate

50 = Series Type

96 = Length of Magnet Plate

Linear motor selection guide

		Fu (N)	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		Air cooled Fc	Water cooling Fc	
	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		Air cooled Fc	Water cooling Fc	
	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	

Coil Unit Naming

IL59-6S-T-01

IL= Ironless

59= Series Type

6S= Coil numbers and Winding Types

T/PT100/PT1000/None = temperature control sensor type Sensor Types: T/PT100/PT1000/None: T represents the default PTC110 and NTC 10KΩ, PT100 means with PT100 temperature sensor, PT1000 means with PT1000 temperature sensor, None means without any temperature control sensor

01 means length of cable 1m, default cable length 0.5m, can be custom made as well

Magnet Plate Naming

MY59-90

MY = Magnet Yoke

59 = Series Type

90 = Length of Magnet Yoke

Linear motor selection guide

		Fu (N)	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	

- 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

Performances					
Parameters	Remarks	Symbol	Unit	IC40-03	IC40-06
Winding Type				S	S
Motor type	3 phases synchronous Ironcore			220Vacrms (320Vdc)	
Ultimate Force @ 10℃/s ↑	Magnet@25℃	Fu	N	110	220
Peak Force@6℃/s ↑	Magnet@25℃	Fp	N	95	190
Continuous Force	Coil@110℃	Fc	N	45	90
Maximum Speed	@320V	Vmax	m/s	6	6
Motor Force Constant	Mount. Sfc.@20℃	K	N/Arms	30	30
Motor Constant	Coils@25℃	S	N^2/W	40	80
Electrical					
Ultimate Current	Magnet@25℃	Iu	Arms	5.0	9.9
Peak Current	Magnet@25℃	Ip	Arms	3.7	7.3
Continuous Current	Coil@110℃	Ic	Arms	1.5	3.0
Back EMF	Phase-Phase peak	Bemf	V/M/S	24	24
Resistance Per Phase	Coil@25℃	Rph	Ω	5	2.5
Induction Per Phase	I<0.63Ip	Lph	mh	30	15
Electrical Time Constant	Coil@25℃	τe	ms	6	6
Power Loss	All coils	Pc	W	66	132
Thermal					
Thermal R.	Coils to mount. Sfc.	Rth	℃/W	1.85	0.94
Temp. Sensor			Optional PTC 1kΩ/NTC		
Mechanical					
Coil Unit Weight	ex.cables	W	kg	0.4	0.7
Coil Unit Length	ex.cables	L	mm	96	160
Motor Attraction Force	Rms@0A	Fa	N	220	500
Magnet Pitch	N-N	τ	mm	32	32
Power Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm^2)	6.6(4G0.5mm^2 AWG21)	
Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm^2)	4.9(4*0.14mm^2 AWG26)	
Cable life	Minimum		Cycles	>5,000,000	
Bending Radius Static	Minimum		mm	≥4xΦ	
Bending Radius Dynamic	Minimum		mm	≥7.5xΦ	

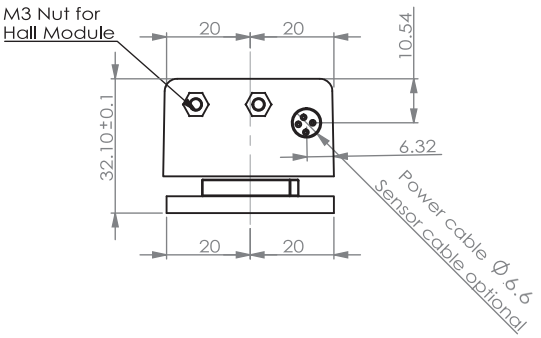
Magnet Plate Mounting Dimensions		
Length (mm)	64	128
M4 Bolts	4	8
Weight (Kg/m)	1.6	
Magnet Plates can be jointed together without limits		

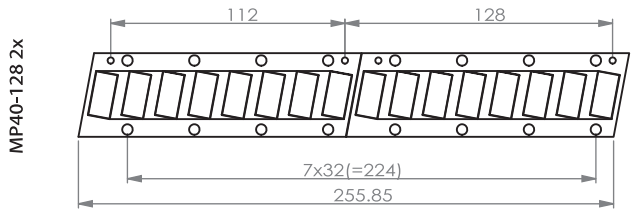
Dig. Hall sensor connections		
1	0V	Gray
2	5~28V	Brown
3	Hall A	White
4	Hall B	Green
5	Hall C	Yellow

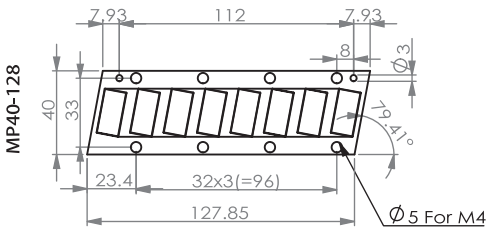
Motor connections		
1	Phase U	Phase 1
2	Phase V	Phase 2
3	Phase W	Phase 3
4	PE	Yellow-Green

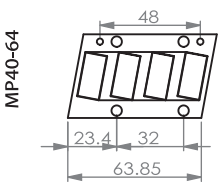
Temperature Sensor connections		
1	PTC 1KΩ	Brown
2	PTC 1KΩ	White
3	NTC	Yellow
4	NTC	Green

MAGNET PLATE

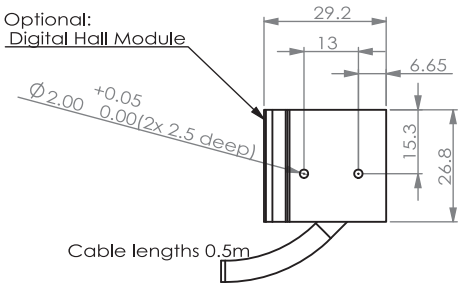




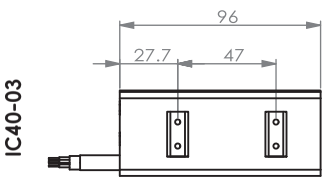


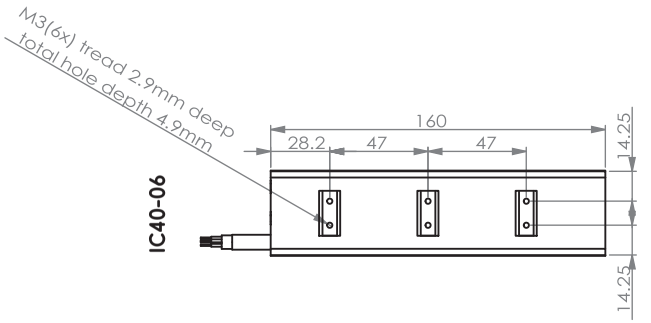


COIL UNIT



DHM IC32mm





- 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

Performance													
Parameter	Remarks	Symbol	Unit	IC50-03	IC50-06	IC50-09		IC50-12	IC50-18	IC50LV-03	IC50LV-06	IC50LV-12	IC50LV-18
Winding Type				S	S	N	S	S	S	Z	Z	Z	Y
Motor type	3 phases synchronous Ironcore, 380Vacrms (600Vdc)									Low voltage 45Vacrms (60Vdc)			
Ultimate Force @ 10℃/s ↑	Magnet@25℃	Fu	N	135	270	405	405	540	810	135	270	540	810
Peak Force@6℃/s ↑	Magnet@25℃	Fp	N	116	232	348	348	464	696	116	232	464	696
Continuous Force	Coil@110℃	Fc	N	66	132	198	198	264	396	66	132	264	396
Maximum Speed	@600V	Vmax	m/s	12	12	3.2	12	12	12	5	5	5	5
Motor Force Constant	Mount. Sfc.@20℃	K	N/Arms	39	39	119	39	39	39	13	13	13	26
Motor Constant	Coils@25℃	S	N^2/W	94	188	282	282	376	563	94	188	376	563
Electrical													
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
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
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
Back EMF	Phase-Phase peak	Bemf	V/M/S	32	32	97	32	32	32	11	11	11	21
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
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
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	6.5
Power Loss	All coils	Pc	W	62	124	186	186	248	372	62	124	248	372
Thermal													
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
Temp. Sensor				PTC 1kΩ/NTC									
Mechanical													
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
Coil Unit Length	ex.cables	L	mm	93	143	190	190	241	336	93	143	241	336
Motor Attraction Force	Rms@0A	Fa	N	300	500	700	700	900	1300	300	500	900	1300
Magnet Pitch	N-N	τ	mm	24	24	24	24	24	24	24	24	24	24
Power Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm^2)	7.2(4G0.75mm^2 AWG19)								10.1 (4G2.5mm^2 AWG14)	8.4 (4G1.5mm^2 AWG16)
Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm^2)	4.9(4*0.14mm^2 AWG26)									
Cable life	Minimum		Cycles	>5,000,000									
Bending Radius Static	Minimum		mm	≥4x Φ									
Bending Radius Dynamic	Minimum		mm	≥7.5x Φ									

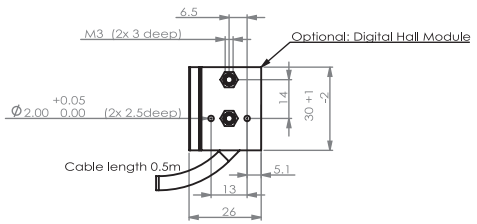
Magnet Plate Mounting Dimensions				
Length (mm)	96	144	288	384
M5 Bolts	4	6	12	16
Weight (Kg/m)	2.05			
Magnet Plates can be jointed together without limits				

Dig. Hall sensor connections		
1	0V	Gray
2	5~28V	Brown
3	Hall A	White
4	Hall B	Green
5	Hall C	Yellow

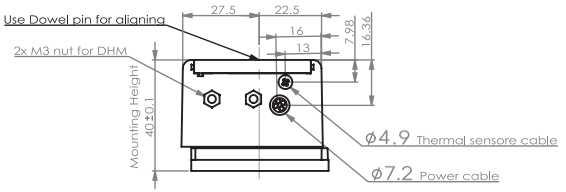
Motor connections		
1	Phase U	Phase 1
2	Phase V	Phase 2
3	Phase W	Phase 3
4	PE	Yellow-Green

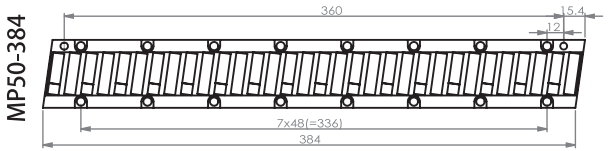
Temperature Sensor connections		
1	PTC 1KΩ	Brown
2	PTC 1KΩ	White
3	NTC	Yellow
4	NTC	Green

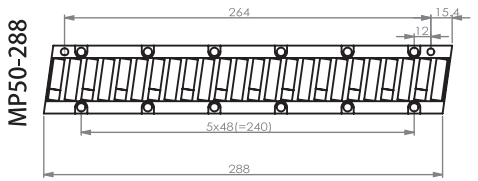
MAGNET PLATES

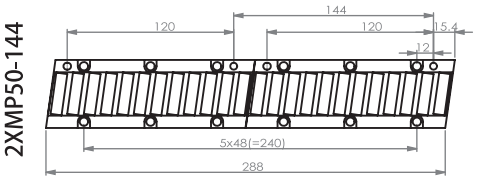


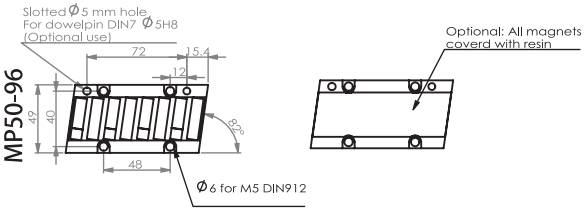
DHM IC24mm



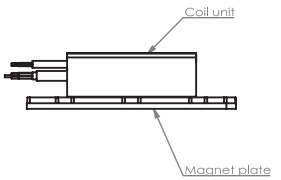


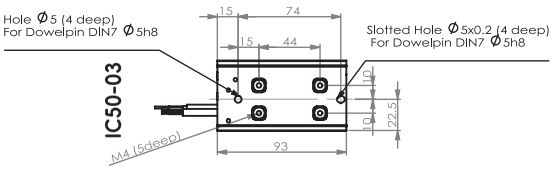


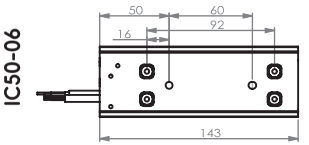


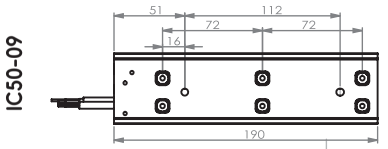


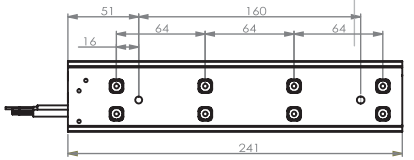
COIL UNITS

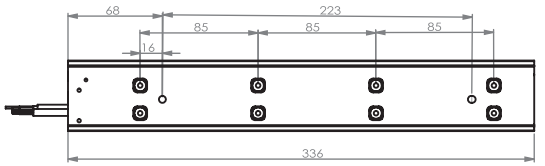












- Middle force applications: Force range Fc: 220-1100N, Fp: 496-2480N
- Compact size with extremely high force density and ratio of force/-weight
- Very low attraction force and cogging
- Very good heat dissipation performance
- Air cooling and water cooling are optional
- N windings motors with small 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

Performance

Parameter	Remarks	Symbol	Unit	IC76-06		IC76-09		IC76-12		IC76-15		IC76-18		IC76-24		IC76-30	
Winding Type				N	S	N	S	N	S	N	S	N	S	N	S	N	S
Motor type	3 phases synchronous Ironcore, 380Vacrms (600Vdc)																
Ultimate Force @ 10℃/s ↑	Magnet@25℃	Fu	N	496	496	744	744	992	992	1240	1240	1488	1488	1984	1984	2480	2480
Peak Force@6℃/s ↑	Magnet@25℃	Fp	N	440	440	660	660	880	880	1100	1100	1320	1320	1760	1760	2200	2200
Continuous Force	Coil@110℃	Fc	N	220	220	330	330	440	440	550	550	660	660	880	880	1100	1100
Maximum Speed	@600V	Vmax	m/s	4	8	4	8	4	8	4	8	4	8	4	8	4	8
Motor Force Constant	Mount. Sfc.@20℃	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	46.5
Motor Constant	Coils@25℃	S	N^2/W	380	380	570	570	760	760	950	950	1140	1140	1520	1520	1900	1900

Electrical

Ultimate Current	Magnet@25℃	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	72.1
Peak Current	Magnet@25℃	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	22.7	55.0
Continuous Current	Coil@110℃	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	9.8	23.7
Back EMF	Phase-Phase peak	Bemf	V/M/S	76	38	114	38	76	38	92	38	76	38	76	38	92	38
Resistance Per Phase	Coil@25℃	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	2.17	0.37
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	16.3	2.8
Electrical Time Constant	Coil@25℃	τe	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	7.5
Power Loss	All coils	Pc	W	171	171	256	256	341	341	427	427	512	512	683	683	853	853

Thermal

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	0.12	0.1	0.1
Temp. Sensor				PTC 1kΩ/NTC													

Mechanical

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
Coil Unit Length	ex.cables	L	mm	146	146	194	194	244	244	290	290	336	336	468	468	562	562
Motor Attraction Force	Rms@0A	Fa	N	950	950	1325	1325	1700	1700	2075	2075	2450	2450	3400	3400	4150	4150
Magnet Pitch	N-N	τ	mm	24	24	24	24	24	24	24	24	24	24	24	24	24	24
Power Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm^2)	7.4(4G1mm^2 AWG18)											10.1(4G2.5mm^2 AWG14)		
Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm^2)	4.9(4*0.14mm^2 AWG26)													
Cable life	Minimum		Cycles	>5,000,000													
Bending Radius Static	Minimum		mm	≥4x Φ													
Bending Radius Dynamic	Minimum		mm	≥7.5x Φ													

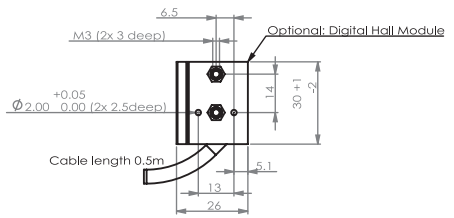
Magnet Plate Mounting Dimensions			
Length (mm)	144	192	288
M5 Bolts	6	8	12
Weight (Kg/m)	3.75		
Magnet Plates can be jointed together without limits			

Dig. Hall sensor connections		
1	0V	Gray
2	5~28V	Brown
3	Hall A	White
4	Hall B	Green
5	Hall C	Yellow

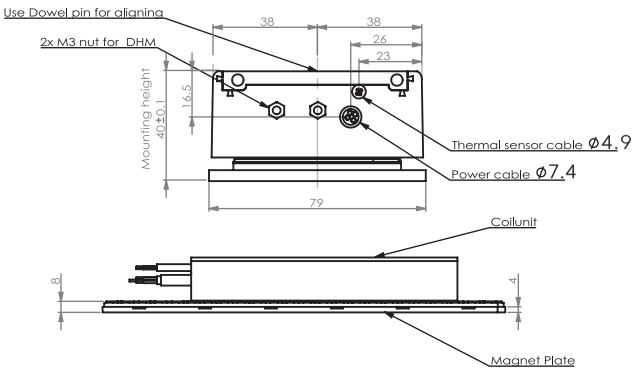
Motor connections		
1	Phase U	Phase 1
2	Phase V	Phase 2
3	Phase W	Phase 3
4	PE	Yellow-Green

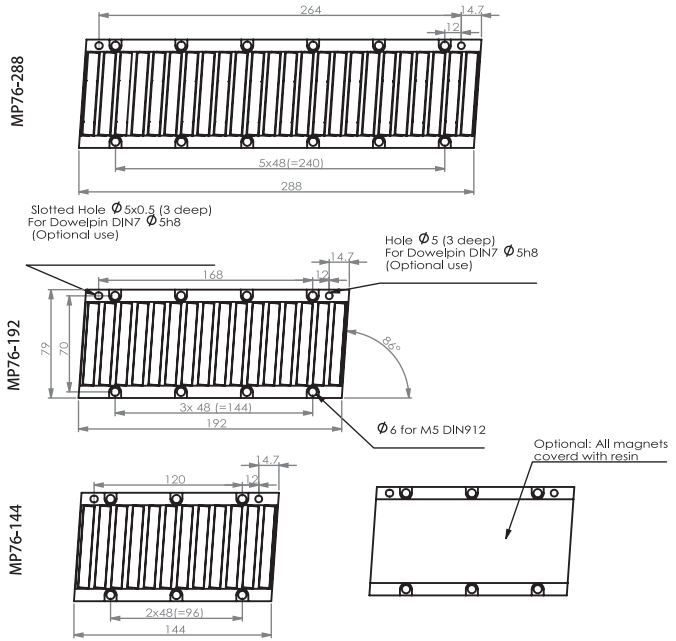
Temperature Sensor connections		
1	PTC 1KΩ	Brown
2	PTC 1KΩ	White
3	NTC	Yellow
4	NTC	Green

MAGNET PLATES

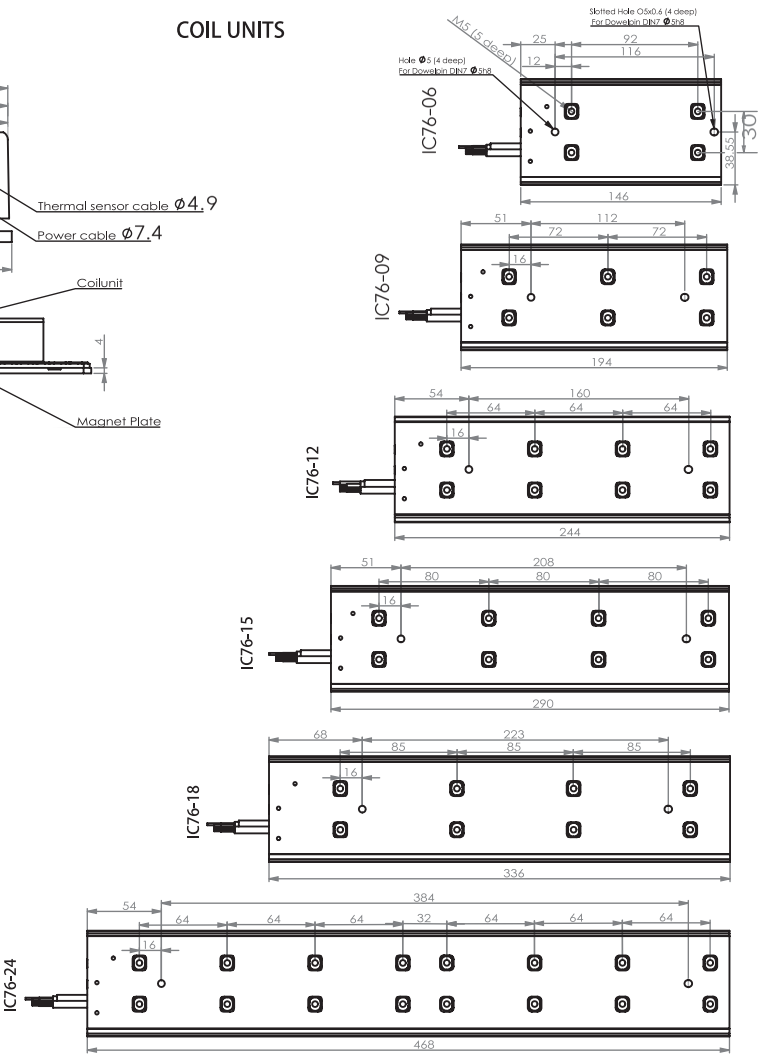


DHM IC24mm





COIL UNITS



- 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

Performance															
Parameter	Remarks	Symbol	Unit	IC124-12		IC124-15		IC124-18		IC124-24		IC124-30		IC124-45	
Winding Type				N	S	N	S	N	S	N	S	N	S	N	S
Motor type	3 phases synchronous Ironcore, 380Vacrms (600Vdc)														
Ultimate Force @ 10℃/s ↑	Magnet@25℃	Fu	N	1900	1900	2375	2375	2850	2850	3800	3800	4750	4750	7125	7125
Peak Force@6℃/s ↑	Magnet@25℃	Fp	N	1680	1680	2100	2100	2520	2520	3360	3360	4200	4200	6300	6300
Continuous Force	Coil@110℃	Fc	N	800	800	1000	1000	1200	1200	1600	1600	2000	2000	3000	3000
Maximum Speed	@600V	Vmax	m/s	3	6	3	6	3	6	3.0	6.0	3	6	3	6
Motor Force Constant	Mount. Sfc.@20℃	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
Motor Constant	Coils@25℃	S	N^2/W	1760	1760	2200	2200	2640	2640	3520	3520	4400	4400	6600	6600
Electrical															
Ultimate Current	Magnet@25℃	Iu	Arms	14	28	14	35	21	43	28	56	29	69	43	104
Peak Current	Magnet@25℃	Ip	Arms	11	21	11	26	16	33	21	42	22	53	33	79
Continuous Current	Coil@110℃	Ic	Arms	4	9	4	11	6	13	9	18	9	22	13	32
Back EMF	Phase-Phase peak	Bemf	V/M/S	152	76	183	76	152	73	152	76	183	76	183	76
Resistance Per Phase	Coil@25℃	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
Induction Per Phase	I<0.63Ip	Lph	mh	51	13	60	10	34	8	25.4	6.4	30	5	20	3
Electrical Time Constant	Coil@25℃	τe	ms	8	8	8	8	8	8	8	8	8	8	8	8
Power Loss	All coils	Pc	W	487	487	609	609	731	731	853	853	1218	1218	1827	1827
Thermal															
Thermal R.	Coils to mount. Sfc.	Rth	℃/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
Temp. Sensor				PTC 1kΩ/NTC											
Mechanical															
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
Coil Unit Length	ex.cables	L	mm	244	244	290	290	338	338	468	468	562	562	847	847
Motor Attraction Force	Rms@0A	Fa	N	3400	3400	4150	4150	4900	4900	6800	6800	8300	8300	12450	12450
Magnet Pitch	N-N	τ	mm	24	24	24	24	24	24	24	24	24	24	24	24
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)	
Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	$mm(mm^2)$	4.9(4*0.14mm^2 AWG26)											
Cable life	Minimum		Cycles	>5,000,000										>3-5millions	
Bending Radius Static	Minimum		mm	≥4x Φ										≥5xφ	
Bending Radius Dynamic	Minimum		mm	≥7.5x Φ										≥10xφ	

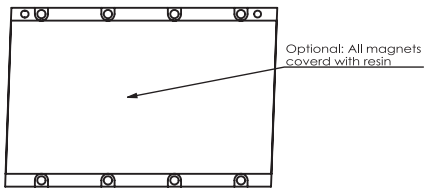
Magnet Plate Mounting Dimensions		
Length (mm)	192	288
M5 Bolts	8	12
Weight (Kg/m)	10.45	
Magnet Plates can be jointed together without limits		

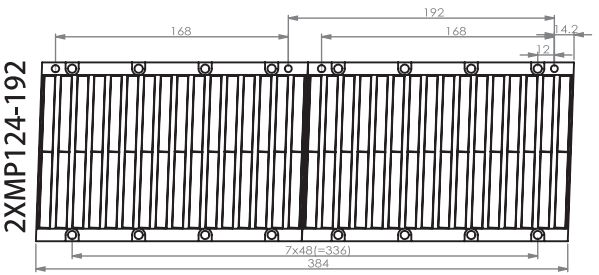
Dig. Hall sensor connections		
1	0V	Gray
2	5~28V	Brown
3	Hall A	White
4	Hall B	Green
5	Hall C	Yellow

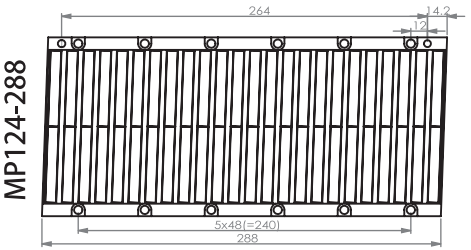
Motor connections		
1	Phase U	Phase 1
2	Phase V	Phase 2
3	Phase W	Phase 3
4	PE	Yellow-Green

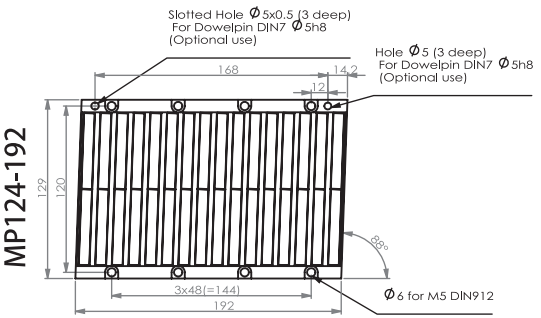
Temperature Sensor connections		
1	PTC 1KΩ	Brown
2	PTC 1KΩ	White
3	NTC	Yellow
4	NTC	Green

Magnet plates

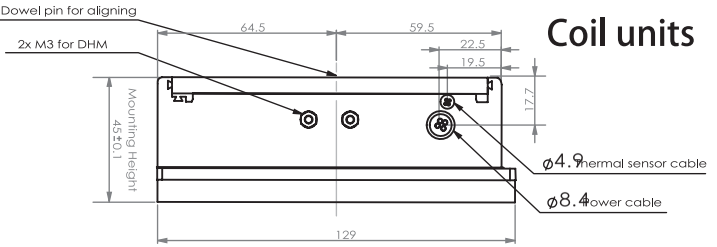


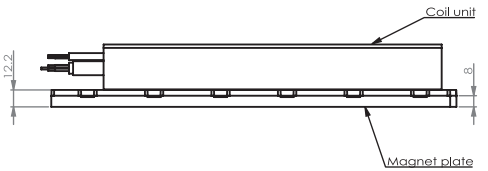


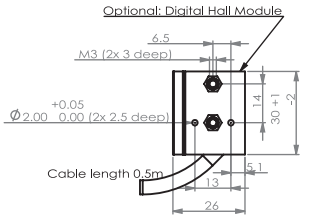




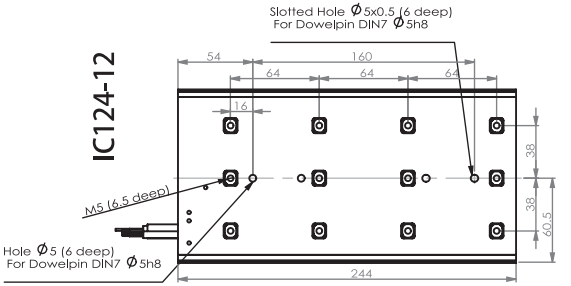
Coil units

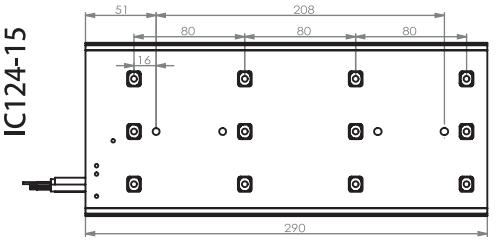


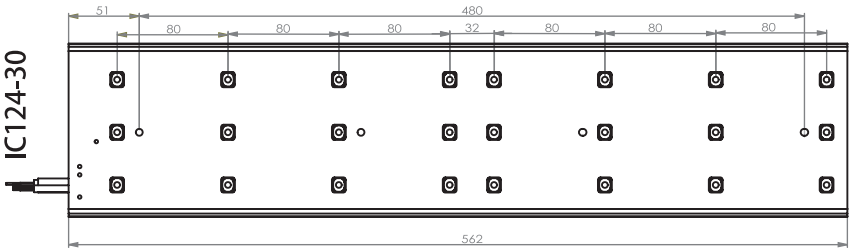




DHM IC24mm







- 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

Performance														
Parameter	Remarks	Symbol	Unit	IC124WC-12		IC124WC-15		IC124WC-18		IC124WC-30		IC124WC-45	
Winding Type				N	S	N	S	N	S	N	S	N	S
Motor type	3 phases synchronous Ironcore,380Vacrms (600Vdc)												
Ultimate Force @ 10℃/s ↑	Magnet@25℃	Fu	N	1900	1900	2375	2375	2850	2850	4750	4750	7125	7125
Peak Force@6℃/s ↑	Magnet@25℃	Fp	N	1680	1680	2100	2100	2520	2520	4200	4200	6300	6300
Continuous Force (water cooling)	Coil@110℃	Fcw	N	1040	1040	1300	1300	1560	1560	2600	2600	3900	3900
Maximum Speed	@600V	Vmax	m/s	3	6	3	6	3	6	3	6	3	6
Motor Force Constant	Mount. Sfc.@20℃	K	N/Arms	186.0	93.0	224.5	93.0	186.0	90.0	224.5	93.0	224.5	93.0
Motor Constant	Coils@25℃	S	N^2/W	1760	1760	2200	2200	2640	2640	4400	4400	6600	6600
Electrical													
Ultimate Current	Magnet@25℃	Iu	Arms	14	28	14	35	21	43	29	69	43	104
Peak Current	Magnet@25℃	Ip	Arms	11	21	11	26	16	33	22	53	33	79
Continuous Current Water cooled	Coil@110℃	Icw	Arms	6	11	6	14	8	17	12	28	17	42
Back EMF	Phase-Phase peak	Bemf	V/M/S	152	76	183	76	152	73	183	76	183	76
Resistance Per Phase	Coil@25℃	Rph	Ω	6.35	1.59	7.55	1.27	4.24	1.02	3.78	0.64	2.53	0.43
Induction Per Phase	I<0.63Ip	Lph	mh	51	13	60	10	34	8	30	5	20	3
Electrical Time Constant	Coil@25℃	τe	ms	8	8	8	8	8	8	8	8	8	8
Power Loss	All coils	Pc	W	487	487	609	609	731	731	1218	1218	1827	1827
Thermal													
Thermal R.	Coils to mount. Sfc.	Rth	℃/W	0.17	0.17	0.13	0.13	0.11	0.11	0.07	0.07	0.04	0.04
Temp. Sensor				PTC 1kΩ/NTC									
Mechanical													
Coil Unit Weight	ex.cables	W	kg	4.8	4.8	6	6	7.2	7.2	12	12	18	18
Coil Unit Length	ex.cables	L	mm	244	244	290	290	338	338	568	568	847	847
Motor Attraction Force	Rms@0A	Fa	N	3400	3400	4150	4150	4900	4900	8300	8300	12450	12450
Magnet Pitch	N-N	τ	mm	24	24	24	24	24	24	24	24	24	24
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)	
Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	$mm(mm^2)$	4.9(4*0.14mm^2 AWG26)									
Cable life	Minimum		Cycles	>5,000,000							>3-5millions		
Bending Radius Static	Minimum		mm	≥4x Φ							≥5x Φ		
Bending Radius Dynamic	Minimum		mm	≥7.5x Φ							≥10x Φ		

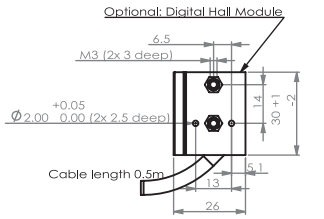
Magnet Plate Mounting Dimensions		
Length (mm)	192	288
M5 Bolts	8	12
Weight (Kg/m)	10.45	
Magnet Plates can be jointed together without limits		

Dig. Hall sensor connections		
1	0V	Gray
2	5~28V	Brown
3	Hall A	White
4	Hall B	Green
5	Hall C	Yellow

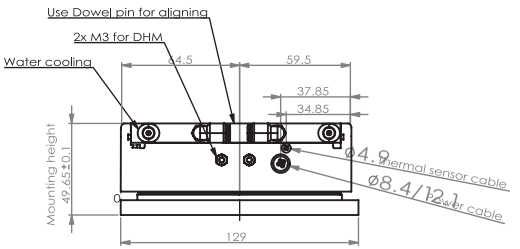
Motor connections		
1	Phase U	Phase 1
2	Phase V	Phase 2
3	Phase W	Phase 3
4	PE	Yellow-Green

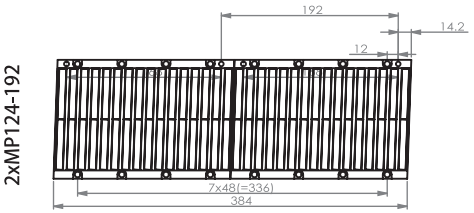
Temperature Sensor connections		
1	PTC 1KΩ	Brown
2	PTC 1KΩ	White
3	NTC	Yellow
4	NTC	Green

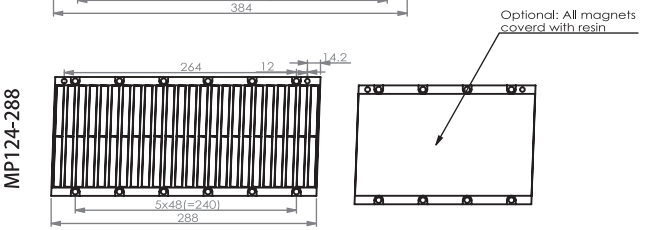
Magnet plates

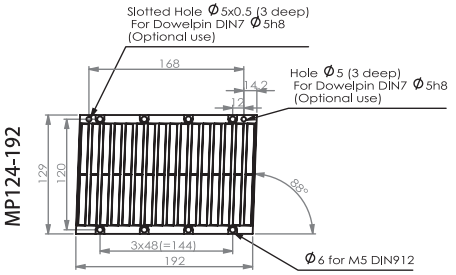


DHM IC24mm

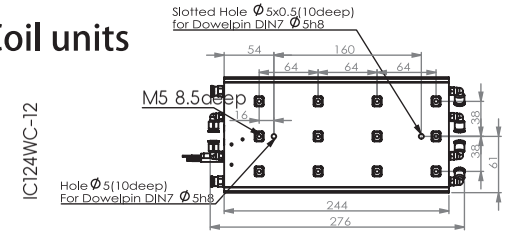


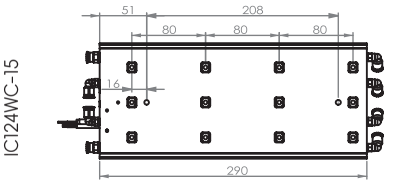


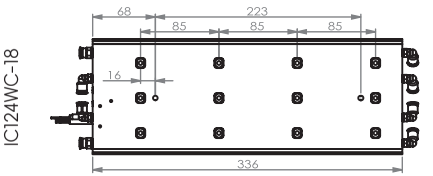


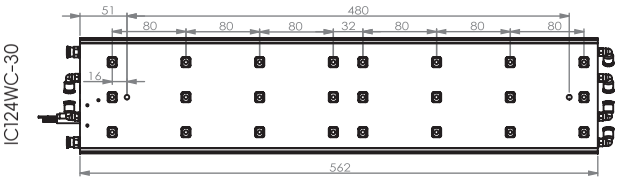


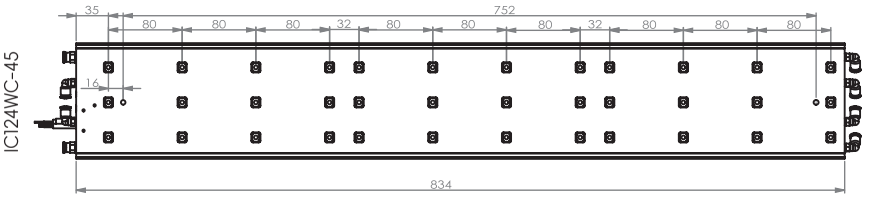
Coil units











- 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

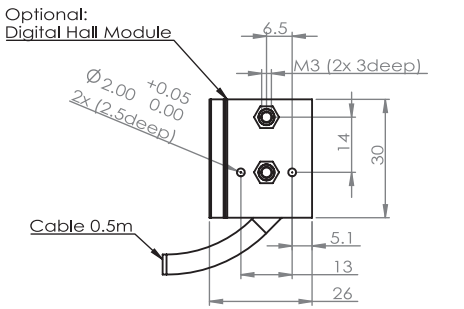
Performance															
Parameter	Remarks	Symbol	Unit	IC177WC-12		IC177WC-15		IC177WC-18		IC177WC-24		IC177WC-30		IC177WC-45	
Winding Type				N	S	N	S	N	S	N	S	N	S	N	S
Motor type	3 phases synchronous Ironcore,380Vacrms (600Vdc)														
Ultimate Force @ 10℃/s ↑	Magnet@25℃	Fu	N	2700	2700	3375	3375	4050	4050	5400	5400	6750	6750	10125	10125
Peak Force@6℃/s ↑	Magnet@25℃	Fp	N	2400	2400	3000	3000	3600	3600	4800	4800	6000	6000	9000	9000
Continuous Force (water cooling)	Coil@110℃	Fcw	N	1500	1500	1950	1950	2340	2340	3000	3000	3900	3900	5850	5850
Continuous Force (self-cooling)	Coil@110℃	Fc	N	1200	1200	1500	1500	1800	1800	2400	2400	3000	3000	4500	4500
Maximum Speed	@600V	Vmax	m/s	2	4	1.5	4	2	4	2	4	1.5	4	1.5	4
Motor Force Constant	Mount. Sfc.@20℃	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
Motor Constant	Coils@25℃	S	N^2/W	2864	2864	3580	3580	4296	4296	5728	5728	7160	7160	10740	10740
Electrical															
Ultimate Current	Magnet@25℃	Iu	Arms	13.1	26	13.5	33	20	41	27	52	28	66	41	98
Peak Current	Magnet@25℃	Ip	Arms	10	20	11	25	15	31	20	40	21	50	31	75
Continuous Current Water cooled	Coil@110℃	Icw	Arms	5.5	11	6	14	8	17	11	22	12	29	18	42
Continuous Current Air cooled	Coil@110℃	Ic	Arms	4.3	9	4.3	11	6.5	13.4	9	18	9	22	13.4	32
Back EMF	Phase-Phase peak	Bemf	V/M/S	228	114	274	114	228	110	228	114	274	114	274	114
Resistance Per Phase	Coil@25℃	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
Induction Per Phase	I<0.63Ip	Lph	mh	77.35	19	92	15	52	12	39	10	46	8	31	5
Electrical Time Constant	Coil@25℃	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
Power Loss	All coils	Pc	W	713	713	891	891	1011	1011	1347	1347	1684	1684	2527	2527
Thermal															
Thermal Resistance	Coils to mount. Sfc.	Rth	℃/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
Temp. Sensor				PTC 1kΩ/NTC											
Mechanical															
Coil Unit Weight	ex.cables	W	kg	7	7	9	9	12	12	16	16	18	18	27	27
Coil Unit Length	ex.cables	L	mm	248	248	296	296	336	336	440	440	568	568	840	840
Motor Attraction Force	Rms@0A	Fa	N	5100	5100	6225	6225	7350	7350	6800	6800	12450	12450	18675	18675
Magnet Pitch	N-N	τ	mm	24	24	24	24	24	24	24	24	24	24	24	24
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)
Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	$mm(mm^2)$	4.9(4*0.14mm^2 AWG26)											
Cable life	Minimum		Cycles	>5,000,000									>3-5millions		
Bending Radius Static	Minimum		mm	≥4x Φ									≥5x Φ		
Bending Radius Dynamic	Minimum		mm	≥7.5x Φ									≥10x Φ		

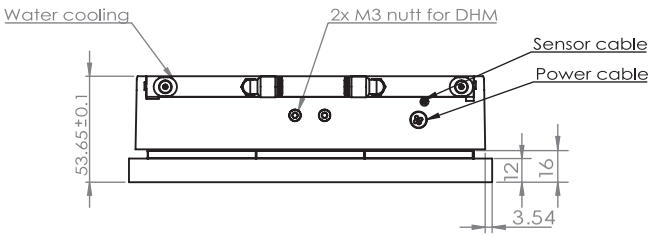
Magnet Plate Mounting Dimensions		
Length (mm)	192	288
M5 Bolts	8	12
Weight (Kg/m)	17	
Magnet Plates can be jointed together without limits		

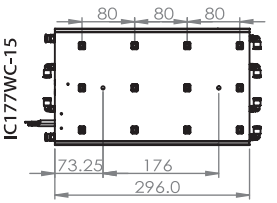
Dig. Hall sensor connections		
1	0V	Gray
2	5~28V	Brown
3	Hall A	White
4	Hall B	Green
5	Hall C	Yellow

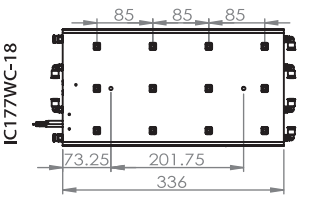
Motor connections		
1	Phase U	Phase 1
2	Phase V	Phase 2
3	Phase W	Phase 3
4	PE	Yellow-Green

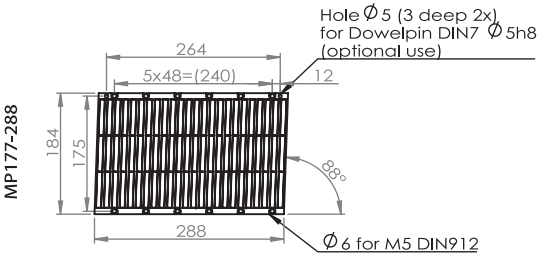
Temperature Sensor connections		
1	PTC 1KΩ	Brown
2	PTC 1KΩ	White
3	NTC	Yellow
4	NTC	Green

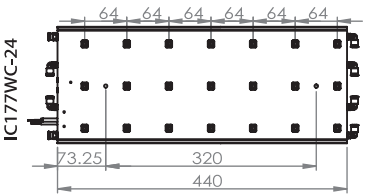


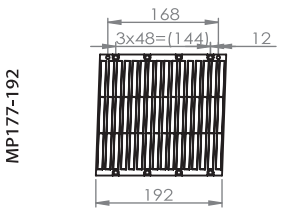


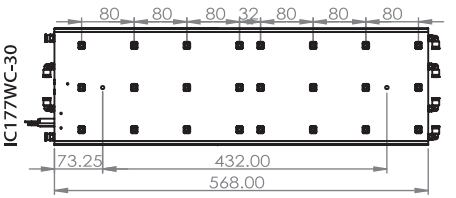


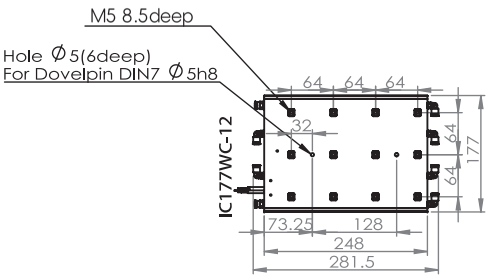


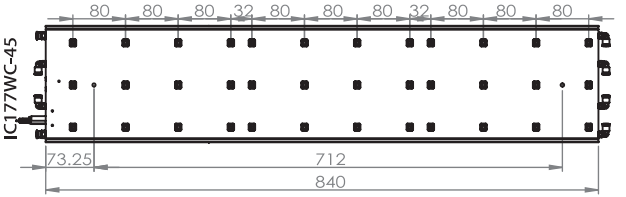












- Water cooled/Air cooled are optional, width of motor setup≤230mm
- Extremely large force applications: Force range Fc_wc:2080-7800N, Fp_wc:3360-12600N
- Very compact size, and with extremely high force density
- High acceleration, high speed, submicron positioning accuracy and low power consumption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

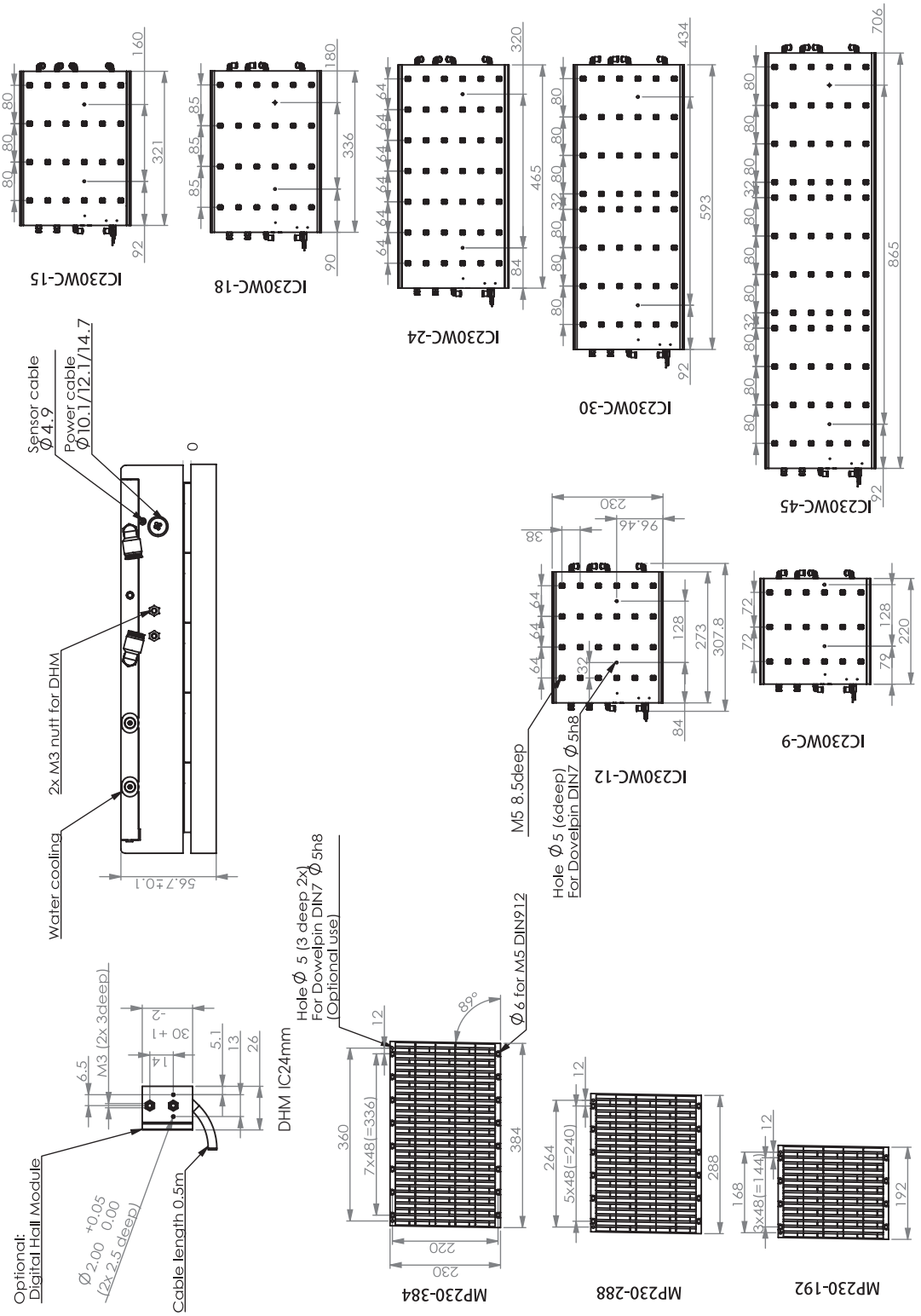
Performance									
Parameter	Remarks	Symbol	Unit	IC230WC-12	IC230WC-15	IC230WC-18	IC230WC-24	IC230WC-30	IC230WC-45
Winding Type				S	S	S	S	S	S
Motor type	3 phases synchronous Ironcore, 380Vacrms (600Vdc)								
Ultimate Force @ 10℃/s ↑	Magnet@25℃	Fu	N	3360	4200	5040	6720	8400	12600
Peak Force@6℃/s ↑	Magnet@25℃	Fp	N	3200	4000	4800	6400	8000	12000
Continuous Force (water cooling)	Coil@110℃	Fcw	N	2080	2600	3120	4160	5200	7800
Continuous Force (self-cooling)	Coil@110℃	Fc	N	1600	2000	2400	3200	4000	6000
Maximum Speed	@600V	Vmax	m/s	3.0	3.0	3.0	3.0	3.0	3.0
Motor Force Constant	Mount. Sfc.@20℃	K	N/Arms	174	174	174	174	174	174
Motor Constant	Coils@25℃	S	N^2/W	1802	2243	2883	3604	4485	12615
Electrical									
Ultimate Current	Magnet@25℃	Iu	Arms	26.0	34.0	40.0	52.0	65.0	98
Peak Current	Magnet@25℃	Ip	Arms	21	27	32	43	53	80
Continuous Current Water cooled	Coil@110℃	Icw	Arms	12	15	18	24	30	45
Continuous Current Air cooled	Coil@110℃	Ic	Arms	9.2	12.0	14.0	18.5	23.0	35.0
Back EMF	Phase-Phase peak	Bemf	V/M/S	142	142	142	142	142	142
Resistance Per Phase	Coil@25℃	Rph	Ω	2.8	2.25	1.75	1.4	1.125	0.8
Induction Per Phase	I<0.63Ip	Lph	mh	28.0	22.5	17.5	14.0	11.3	8.0
Electrical Time Constant	Coil@25℃	τe	ms	10	10	10	10	10	10
Power Loss	All coils	Pc	W	1847	2319	2597	3693	4638	6957
Thermal									
Thermal R.	Coils to mount. Sfc.	Rth	℃/W	0.08	0.06	0.05	0.04	0.03	0.01
Temp. Sensor	Temperature Cut-off	PTC 1kΩ/NTC							
Mechanical									
Coil Unit Weight	ex.cables	W	kg	9	12	15	20	25	38
Coil Unit Length	ex.cables	L	mm	273	321	336	465	593	865
Motor Attraction Force	Rms@0A	Fa	N	7200	9000	10800	14400	18000	27000
Magnet Pitch	N-N	τ	mm	24	24	24	24	24	24
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)
Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm^2)	4.9(4*0.14mm^2 AWG26)					
Cable life	Minimum		Cycles	>5,000,000		>3-5millions			
Bending Radius Static	Minimum		mm	≥4x Φ		≥5x Φ			
Bending Radius Dynamic	Minimum		mm	≥7.5x Φ		≥10x Φ			

Magnet Plate Mounting Dimensions			
Length (mm)	192	288	384
M5 Bolts	8	12	16
Weight (Kg/m)	34		
Magnet Plates can be jointed together without limits			

Dig. Hall sensor connections			
1	0V	Gray	
2	5~28V	Brown	
3	Hall A	White	
4	Hall B	Green	
5	Hall C	Yellow	

Motor connections			
1	Phase U	Phase 1	
2	Phase V	Phase 2	
3	Phase W	Phase 3	
4	PE	Yellow-Green	

Temperature Sensor connections			
1	PTC 1KΩ	Brown	
2	PTC 1KΩ	White	
3	NTC	Yellow	
4	NTC	Green	

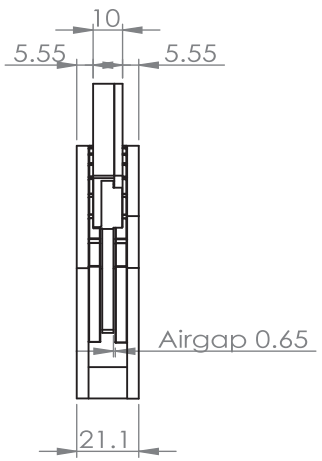


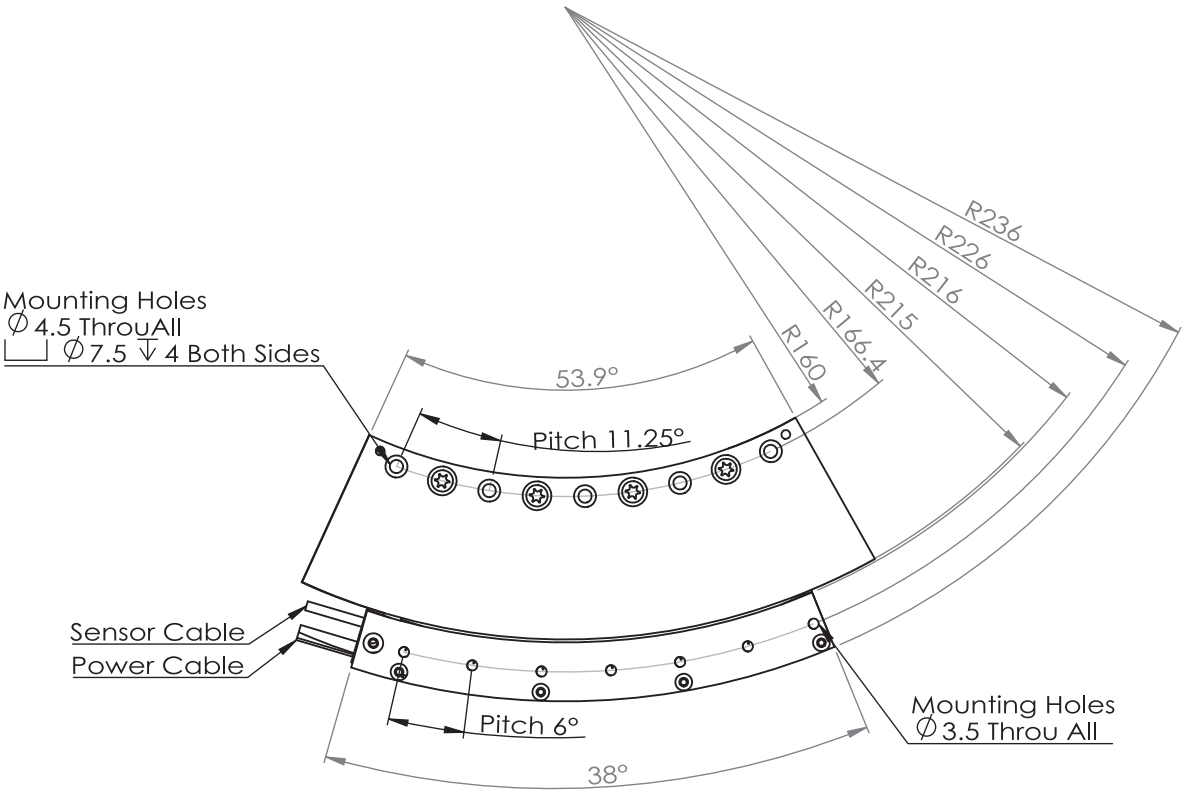
- Small middle toque ironless curve motor, continuous torque range from 5.5N.m to 22N.m
- Curve coil unit can be customized from 3 coils to 12 coils
- Small Current N winding type or high speed S winding type are optional
- Curve magnet yokes are available for assembling together freely
- Compact size, 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

Performance				
Parameter	Remarks	Symbol	Unit	Type IL59C-6
Winding Type				S
Motor type	3 phases synchronous Ironless, 230Vacrms (320Vdc)			
Peak Force@6℃/s ↑	Magnet@25℃	Tp	N.m	40
Continuous Force	Coil@110℃	Tc	N.m	11
Electrical				
Current@Tp		Ip	Amps	10.5
Max.Current@Tc		Ic	Amps	3
Maximum Speed	@Tc@320Vrms	nmax	Rmp	576
Motor Torque Constant		Kt	Nm/Arms	3.67
Motor Constant	Coil@25℃	Km	Nm^2/W	1.6
Back EMF Constant	25℃+/-10%	Bemf	V/(rad/sec)	2.12
Resistance Per Phase	Coil@25℃		Ohm	2.75
Inductance Per Phase	I<0.63Ip	Lph	milli-Henry	0.9
Electrical Time Constant	Coil@25℃	τe	ms	0.33
Max. Continuous Power Loss	All Coils	Pc	W	98
Mechanical				
Coil Unit Weight	ex.cables	Wc	Kg	0.16
Magnet Yoke 72°Weight		Wm	Kg	0.98
Magnet Pitch	N-N	τ	Degree	9

Cable Definition
Defualted 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 outter diameter of power cable: Φ6.5

Motor connections		
1	Phase U	Phase 1
2	Phase V	Phase 2
3	Phase W	Phase 3
4	PE	Yellow-Green





IL59C-6+MY59C-54°

No.	Magnet Yoke Ordering Type	Remark
1	MY59C-45°	Existed
2	MY59C-54°	Existed
3	MY59C-63°,72°……360°	Can be customized

No.	Coilunit Ordering Type	Remark
1	IL59C-6	Existed
2	L59C-3,9,12	Can be customized

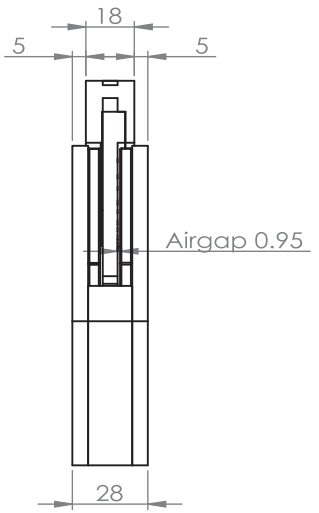
- Middle toque ironless curve motor, continuous torque range from 11.9N.m to 59.3N.m
- Curve coil unit can be customized from 3 coils to 15 coils
- Small Current N winding type or high speed S winding type are optional
- Curve magnet yoke type can be assembled together freely
- Compact size, light weight 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

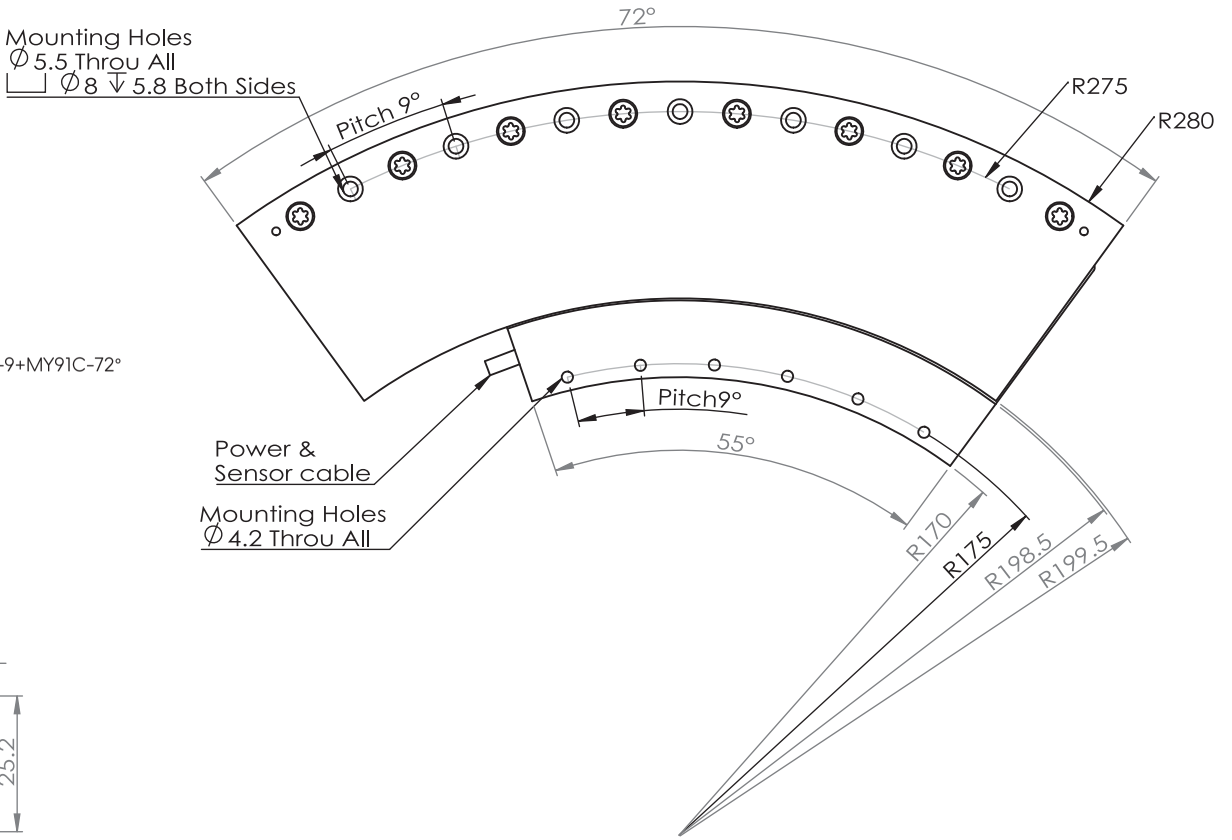
Performance				
Parameter	Remarks	Symbol	Unit	Type IL91C-9
Winding Type				N
Motor type	3 phases synchronous Ironless, 230Vacrms (320Vdc)			
Peak Force@6℃/s ↑	Magnet@25℃	Tp	N.m	142
Continuous Force	Coil@110℃	Tc	N.m	35.6
Electrical				
Current@Tp		Ip	Amps	12
Max.Current@Tc		Ic	Amps	3
Maximum Speed	@Tc@320Vrms	nmax	Rmp	456
Motor Torque Constant		Kt	Nm/Arms	11.3
Motor Constant	Coil@25℃	Km	Nm^2/W	10.64
Back EMF Constant	25℃+/-10%	Bemf	V/(rad/sec)	6.5
Resistance Per Phase	Coil@25℃		Ohm	4.2
Inductance Per Phase	I<0.63Ip	Lph	milli-Henry	4
Electrical Time Constant	Coil@25℃	τe	ms	0.95
Max. Continuous Power Loss	All Coils	Pc	W	155
Mechanical				
Coil Unit Weight	ex.cables	Wc	Kg	0.6
Magnet Yoke 72ºWeight		Wm	Kg	3.2
Magnet Pitch	N-N	τ	Degree	9

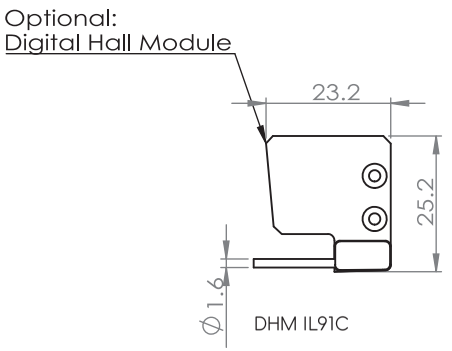
Cable Definition
Defualted Cable Length =0.5M
4-core wire with numbers 1, 2, 3 and yellow-green PE wire
4 wires with Number Phase 1,2,3 and PE wires
4G0.75mm2 AWG19 outter diameter of power cable: Φ7.1

Hall sensor connection definition		
1	+5Vdc	Red
2	-	White
3	U	Green
4	V	Yellow
5	W	Brown

Motor connections		
1	Phase U	Phase 1
2	Phase V	Phase 2
3	Phase W	Phase 3
4	PE	Yellow-Green







No.	Magnet Yoke Ordering Type	Remark
1	MY91C-72°	Existed
2	MY91C-54°,63°·····...360°	Can be customized

No.	Coilunit Ordering Type	Remark
1	IL91C-9	Existed
2	IL91C-3,6,12,15	Can be customized

Mover integration digital hall

- 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

Performance									
Parameter	Remarks	Symbol	Unit	ILS42-03	ILS42-06	ILS42-09	ILS42DHM-03S	ILS42DHM-06S	ILS42DHM-09S
Winding Type				S	S	S	Hall Integrated		
Motor type	3 phases synchronous Ironless, 45Vacrms (60Vdc)								
Peak Force@20℃/s ↑	Magnet@25℃	Fp	N	20	40	60	20	40	60
Continuous Force	Coil@110℃	Fc	N	5	10	15	5	10	15
Maximum Speed	60V	Vmax	m/s	6	6	6	6	6	6
Motor Force Constant	Mount. Sfc.@20℃	K	N/Arms	6	6	6	6	6	6
Motor Constant	Coils@25℃	S	N^2/W	3	6	9	3	6	9
Electrical									
Peak Current	Magnet@25℃	Ip	Arms	3.3	6.7	10.0	3.3	6.7	10.0
Continuous Current	Coil@110℃	Ic	Arms	0.8	1.7	2.5	0.8	1.7	2.5
Back EMF	Phase-Phase peak	Bemf	V/M/S	5	5	5	5	5	5
Resistance Per Phase	Coil@25℃	Rph	Ω	4.75	2.38	1.58	4.75	2.38	1.58
Induction Per Phase	I<0.63Ip	Lph	mh	0.8	0.4	0.3	0.8	0.4	0.3
Electrical Time Constant	Coil@25℃	τe	ms	0.16	0.16	0.16	0.16	0.16	0.16
Power Loss	All coils	Pc	W	11.2	22.4	33.6	11.2	22.4	33.6
Thermal									
Thermal R.	Coils to mount. Sfc.	Rth	°C/W	1.6	0.8	0.53	1.6	0.8	0.53
Temp. Sensor	Temperature Cut-off			None					
Mechanical									
Coil Unit Weight	ex.cables	W	Kg	0.03	0.055	0.085	0.035	0.06	0.09
Coil Unit Length	ex.cables	L	mm	45	78	111	56	89	122
Motor Attraction Force	Rms@0A	Fa	N	0	0	0	0	0	0
Magnet Pitch	N-N	τ	mm	16.5	16.5	16.5	16.5	16.5	16.5
Power Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm^2)	Leadwires 3*0.3mm^2			5.6(3*0.3mm^2+5*0.08)		
Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm^2)	NA					
Cable life	Minimum		Cycles	≥12,000,000					
Bending Radius Static	Minimum		mm	≥4x Φ					
Bending Radius Dynamic	Minimum		mm	≥7.5x Φ					

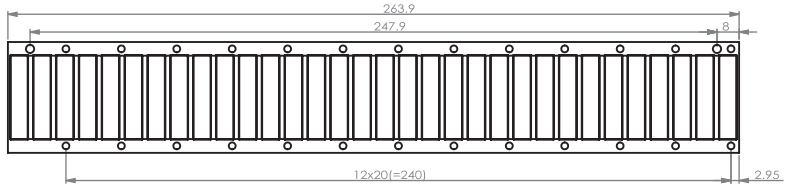
Magnet Plate Mounting Dimensions				
Length (mm)	66	99	115	264
M3 Bolts	8	10	12	26
Weight (Kg/m)	1.06			
Magnet Plates can be jointed together without limits				

Dig. Hall sensor connections		
1	0V	Grey
2	5~28V	Brown
3	Hall A	Blue
4	Hall B	Green
5	Hall C	Yellow

Motor connections		
1	Phase U	Black (Pink)
2	Phase V	Red
3	Phase W	White
4	PE	Housing

MAGNET PLATE

MP42-264



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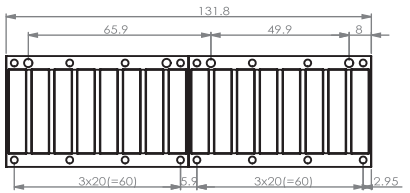

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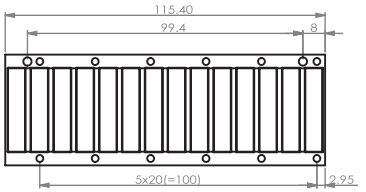

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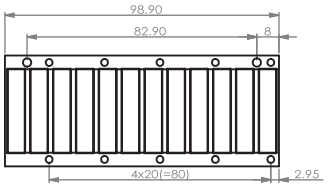

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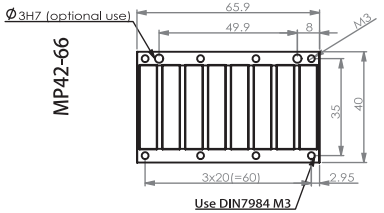
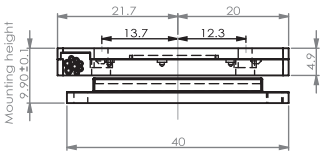
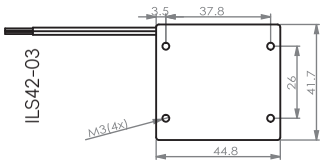


COIL UNIT



ILS42-03



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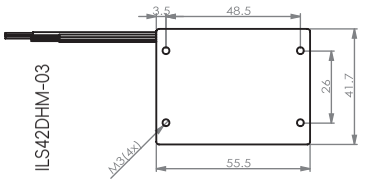
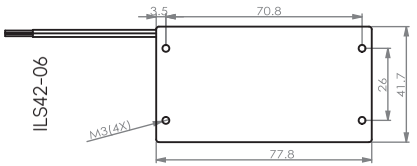
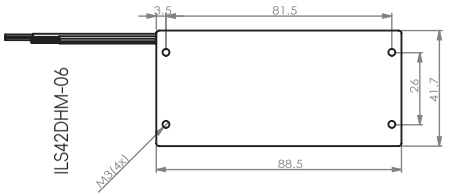


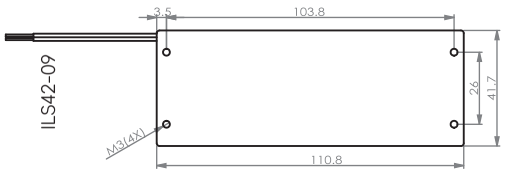
ILS42-06



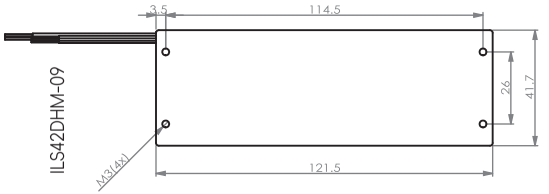
ILS42DHM-06



ILS42-09



ILS42DHM-09



- Low force applications: Force range Fc:11.5-23N, Fp: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

Performance					
Parameter	Remarks	Symbol	Unit	IL32-03	IL32-06
Winding Type				S	S
Motor type	3 phases synchronous Ironless, 45Vacrms (60Vdc)				
Peak Force@20℃/s ↑	Magnet@25℃	Fp	N	46	92
Continuous Force	Coil@120℃	Fc	N	11.5	23
Maximum Speed	@60V	Vmax	m/s	5	5
Motor Force Constant	Mount. Sfc.@20℃	K	N/Arms	7.3	7.3
Motor Constant	Coils@25℃	S	N^2/W	7.5	15
Electrical					
Peak Current	Magnet@25℃	Ip	Arms	6.3	12.6
Continuous Current	Coil@120℃	Ic	Arms	1.6	3.2
Back EMF	Phase-Phase peak	Bemf	V/M/S	6.0	6
Resistance Per Phase	Coil@25℃	Rph	Ω	2.4	1.175
Induction Per Phase	I<0.63Ip	Lph	mh	0.8	0.4
Electrical Time Constant	Coil@25℃	τe	ms	0.355	0.355
Power Loss	All coils	Pc	W	24.0	47
Thermal					
Thermal R.	Coils to mount. Sfc.	Rth	℃/W	3.2	1.6
Temp. Sensor	Temperature Cut-off	NTC Optional			
Mechanical					
Coil Unit Weight	ex.cables	W	kg	0.038	0.075
Coil Unit Length	ex.cables	L	mm	49	97
Motor Attraction Force	Rms@0A	Fa	N	0	0
Magnet Pitch	N-N	τ	mm	24	24
Cable Mass		M	Kg/m	0.065	0.065
Cable Type(Flex.cable flexible line)	length 1m	d	mm(AWG)	4.5(24)	4.5(24)
Power Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	$mm(mm^2)$	4.5(3*0.3mm^2)	
Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	$mm(mm^2)$	customizable	
Cable life	Minimum		Cycles	≥12,000,000	
Bending Radius Static	Minimum		mm	≥4x Φ	
Bending Radius Dynamic	Minimum		mm	≥7.5x Φ	

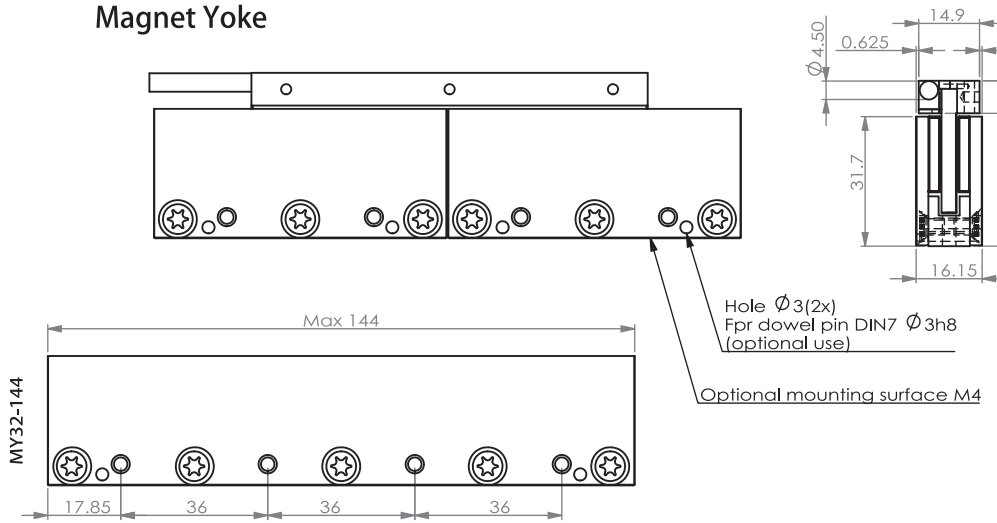
Magnet Plate Mounting Dimensions			
Length (mm)	72	96	144
M4 Bolts	2	3	4
Weight (Kg/m)	2.3		
Magnet Plates can be jointed together without limits			

Dig. Hall sensor connections		
1	0V	White
2	5~28V	Brown
3	Hall A	Green
4	Hall B	Yellow
5	Hall C	Red

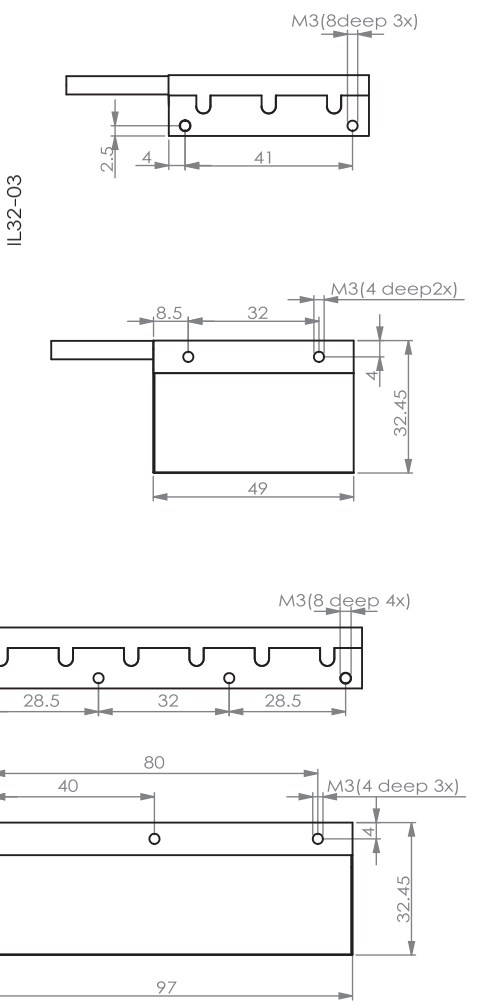
Motor connections		
1	Phase U	Phase 1
2	Phase V	Phase 2
3	Phase W	Phase 3
4	PE	Yellow-Green

Temperature Sensor connections		
1	PTC 1KΩ	Brown
2	PTC 1KΩ	White
3	NTC	Yellow
4	NTC	Green

Magnet Yoke



Coil Unit



Mover integration digital hall (optional)

- Low force applications: Force range Fc: 11-22N, Fp: 40-80N
- Compact size with extremely high force density and ratio of force/weight
- Very Low weight and extremely big force makes the perfect fit for vertical applications
- Coil units with integrated digital hall module are optional
- 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

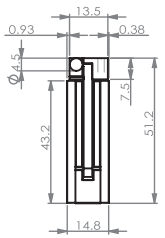
Performance							
Parameter	Remarks	Symbol	Unit	IL42-03	IL42-06	IL42-03S DHM	IL42-06S DHM
Winding Type				S	S	Hall Integrated	
Motor type	3 phases synchronous Ironless, 45Vacrms (60Vdc)						
Peak Force@20℃/s ↑	Magnet@25℃	Fp	N	37	75	37	75
Continuous Force	Coil@110℃	Fc	N	10	20	10	20
Maximum Speed	60V	Vmax	m/s	5.4	5.4	5.4	5.4
Motor Force Constant	Mount. Sfc.@20℃	K	N/Arms	11.5	11.5	11.5	11.5
Motor Constant	Coils@25℃	S	N^2/W	9	19	9	19
Electrical							
Peak Current	Magnet@25℃	Ip	Arms	3.2	6.5	3.2	6.5
Continuous Current	Coil@110℃	Ic	Arms	0.88	1.76	0.88	1.76
Back EMF	Phase-Phase peak	Bemf	V/M/S	9	9	9	9
Resistance Per Phase	Coil@25℃	Rph	Ω	4.75	2.375	4.75	2.375
Induction Per Phase	I<0.63Ip	Lph	mh	0.8	0.4	0.8	0.4
Electrical Time Constant	Coil@25℃	τe	ms	0.16	0.16	0.16	0.16
Power Loss	All coils	Pc	W	14.8	29.6	14.8	29.6
Thermal							
Thermal R.	Coils to mount. Sfc.	Rth	℃/W	3.58	1.79	3.58	1.79
Temp. Sensor	Temperature Cut-off			None (NTC or PTC can be customized)			
Mechanical							
Coil Unit Weight	ex.cables	W	Kg	0.03	0.06	0.035	0.065
Coil Unit Length	ex.cables	L	mm	34	67	52	85
Motor Attraction Force	Rms@0A	Fa	N	0	0	0	0
Magnet Pitch	N-N	τ	mm	16.5	16.5	16.5	16.5
Power Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	$mm(mm^2)$	$4.5(3*0.3mm^2)$		$5.6(3*0.3mm^2+5*0.08)$	
Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	$mm(mm^2)$	Customizable			
Cable life	Minimum		Cycles	≥12,000,000			
Bending Radius Static	Minimum		mm	≥4x Φ			
Bending Radius Dynamic	Minimum		mm	≥7.5x Φ			

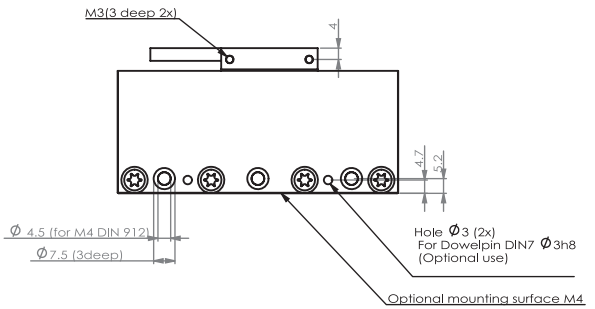
Magnet Plate Mounting Dimensions			
Length (mm)	66	99	264
M4 Bolts	2	3	8
Weight (Kg/m)	2.05		
Magnet Plates can be jointed together without limits			

Dig. Hall sensor connections		
1	0V	White/Gray
2	5~28V	Brown
3	Hall A	Green/Blue
4	Hall B	Red/Green
5	Hall C	Yellow

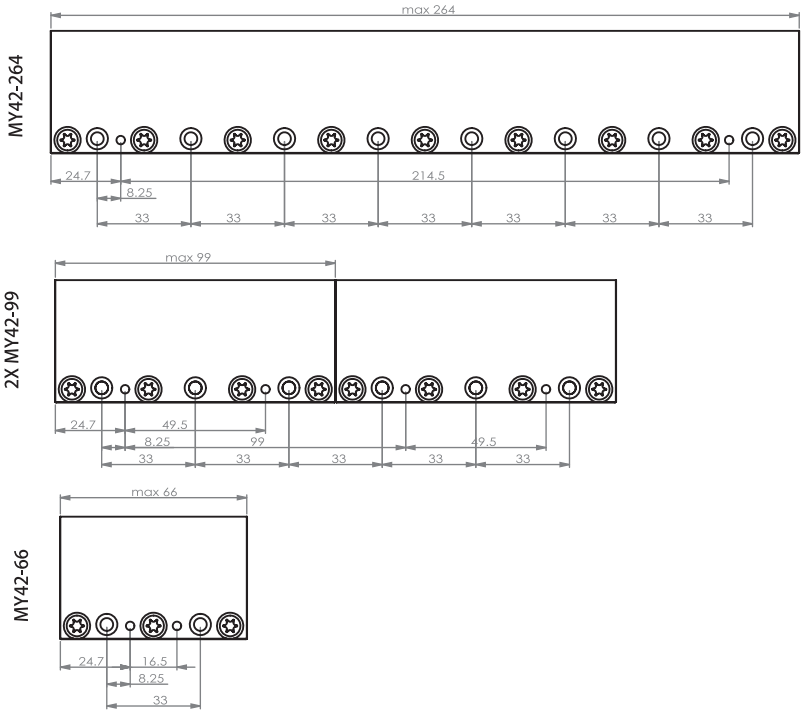
Motor connections		
1	Phase U	Black
2	Phase V	Red
3	Phase W	White
4	PE	Shield

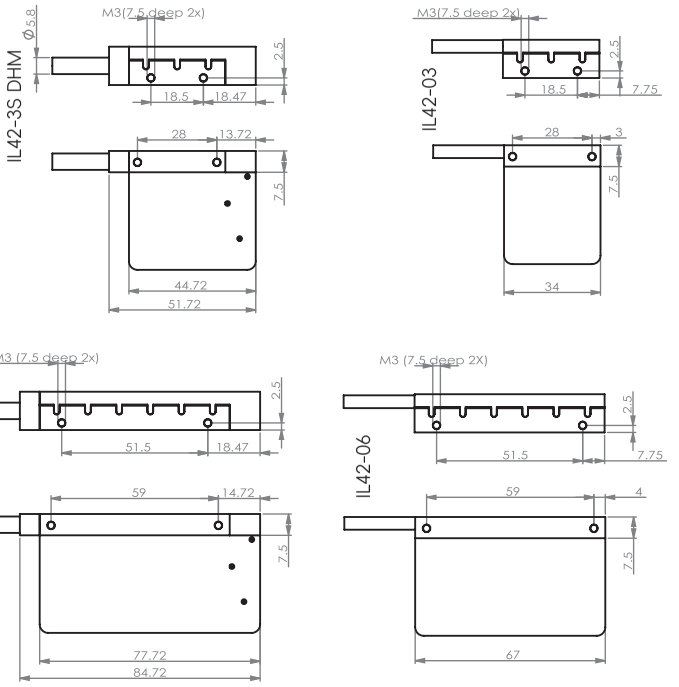
Magnet Yokes





Coil Units





- 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

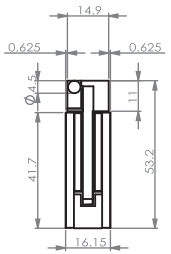
Performance						
Parameter	Remarks	Symbol	Unit	IL44-03	IL44-06	IL44-09
Winding Type				S	S	S
Motor type	3 phases synchronous Ironless, 45Vacrms (60Vdc)					
Peak Force@20℃/s ↑	Magnet@25℃	Fp	N	45	90	135
Continuous Force	Coil@110℃	Fc	N	20	40	60
Maximum Speed	60V	Vmax	m/s	5.0	5.0	5.0
Motor Force Constant	Mount. Sfc.@20℃	K	N/Arms	12.4	12.4	12.4
Motor Constant	Coils@25℃	S	N^2/W	15	29	44
Electrical						
Peak Current	Magnet@25℃	Ip	Arms	3.6	7.3	11.0
Continuous Current	Coil@110℃	Ic	Arms	1.6	3.2	4.8
Back EMF	Phase-Phase peak	Bemf	V/M/S	10	10	10
Resistance Per Phase	Coil@25℃	Rph	Ω	3.5	1.75	1.17
Induction Per Phase	I<0.63Ip	Lph	mh	1.2	0.6	0.4
Electrical Time Constant	Coil@25℃	τe	ms	0.355	0.355	0.355
Power Loss	All coils	Pc	W	37	74	74
Thermal						
Thermal R.	Coils to mount. Sfc.	Rth	℃/W	2.35	1.175	0.5875
Temp. Sensor	Temperature Cut-off			None (NTC or PTC can be customized)		
Mechanical						
Coil Unit Weight	ex.cables	W	Kg	0.05	0.1	0.15
Coil Unit Length	ex.cables	L	mm	49	97	145
Motor Attraction Force	Rms@0A	Fa	N	0	0	0
Magnet Pitch	N-N	τ	mm	24	24	24
Power Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	$mm(mm^2)$	$4.5(3*0.3mm^2)$		
Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	$mm(mm^2)$	Customizable		
Cable life	Minimum		Cycles	≥12,000,000		
Bending Radius Static	Minimum		mm	≥4x Φ		
Bending Radius Dynamic	Minimum		mm	≥7.5x Φ		

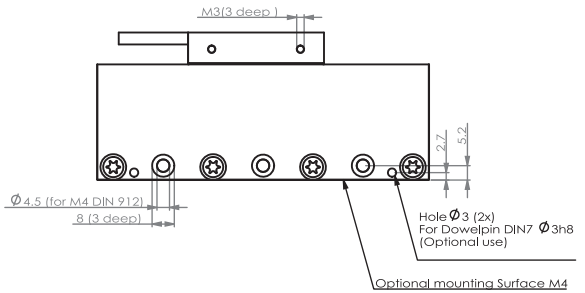
Magnet Plate Mounting Dimensions		
Length (mm)	72	120
M4 Bolts	2	3
Weight (Kg/m)	3.3	
Magnet Plates can be jointed together without limits		

Dig. Hall sensor connections		
1	0V	White
2	5~28V	Brown
3	Hall A	Green
4	Hall B	Yellow
5	Hall C	Red

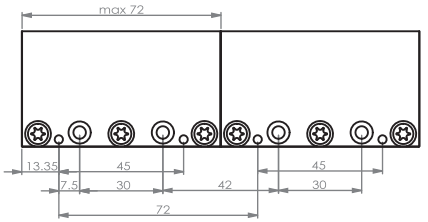
Motor connections		
1	Phase U	Black
2	Phase V	Red
3	Phase W	White
4	PE	Shield

Magnet Yokes

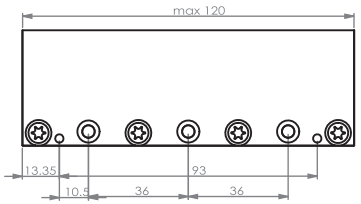




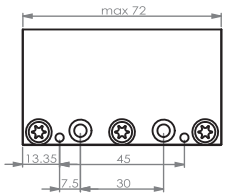
2X MY44-72

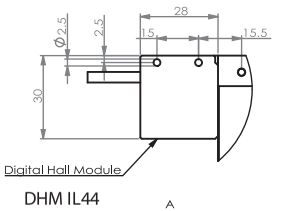


MY44-120



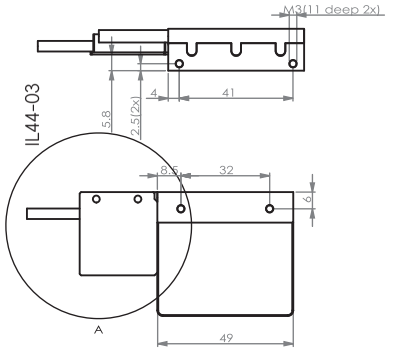
MY44-72



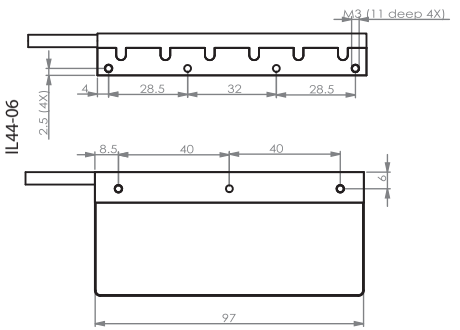


Coil Units

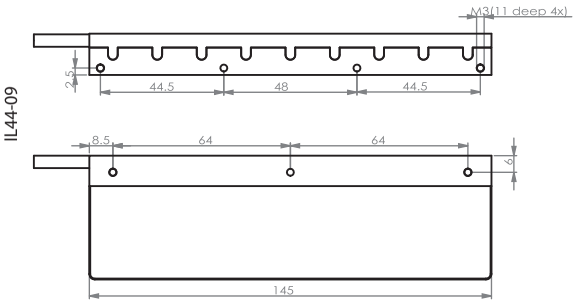
IL44-03



IL44-06



IL44-09



- Low force applications: Force range Fc: 30-120N, Fp: 105-420N
- 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
- Very Unique winding technology makes coil unit extremely light and thin
- 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

Performance												
Parameter	Remarks	Symbol	Unit	IL59-03		IL59-06		IL59-09		IL59-12	
Winding Type				N	S	N	S	N	S	N	S
Motor type	3 phases synchronous Ironless, 230Vacrms (320Vdc)										
Peak Force@20℃/s ↑	Magnet@25℃	Fp	N	105	105	210	210	315	315	420	420
Continuous Force	Coil@120℃	Fc	N	30	30	60	60	90	90	120	120
Maximum Speed	@320V	Vmax	m/s	9.2	16.7	9.2	16.7	9.2	16.7	9.2	16.7
Motor Force Constant	Mount. Sfc.@20℃	K	N/Arms	36.3	20	36.3	20	36.3	20	36.3	20
Motor Constant	Coils@25℃	S	N^2/W	24	24	47	47	71	71	95	95
Electrical											
Peak Current	Magnet@25℃	Ip	Arms	2.9	5.3	5.8	10.5	8.7	15.8	11.6	21.0
Continuous Current	Coil@120℃	Ic	Arms	0.8	1.5	1.7	3.0	2.5	4.5	3.3	6.0
Back EMF	Phase-Phase peak	Bemf	V/M/S	30	16	30	16	30	16	30	16
Resistance Per Phase	Coil@25℃	Rph	Ω	18.55	5.45	9.29	2.74	6.19	1.82	4.65	1.36
Induction Per Phase	I<0.63Ip	Lph	mh	6.5	1.9	3.3	1.0	2.2	0.6	1.6	0.5
Electrical Time Constant	Coil@25℃	τe	ms	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Power Loss	All coils	Pc	W	51	51	102	102	153	153	204	204
Thermal											
Thermal R.	Coils to mount. Sfc.	Rth	℃/W	1.79	1.79	0.9	0.9	0.59	0.59	0.44	0.44
Temp. Sensor	Temperature Cut-off			PTC 1KΩ/NTC							
Mechanical											
Coil Unit Weight	ex.cables	W	kg	0.082	0.082	0.16	0.16	0.24	0.24	0.32	0.32
Coil Unit Length	ex.cables	L	mm	78	78	138	138	198	198	258	258
Motor Attraction Force	Rms@0A	Fa	N	0	0	0	0	0	0	0	0
Magnet Pitch	N-N	τ	mm	30	30	30	30	30	30	30	30
Power Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	$mm(mm^2)$	6.6(4G0.5mm^2 AWG21)							
Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	$mm(mm^2)$	3.2(4*0.14mm^2 AWG26)							
Cable life	Minimum		Cycles	≥5,000,000							
Bending Radius Static	Minimum		mm	≥4x Φ							
Bending Radius Dynamic	Minimum		mm	≥7.5x Φ							

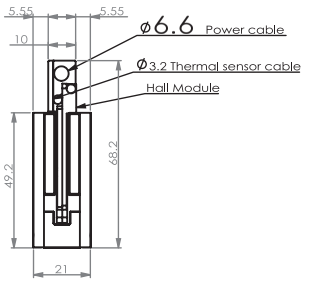
Magnet Plate Mounting Dimensions				
Length (mm)	90	120	150	390
M4 Bolts	2	4	6	13
Weight (Kg/m)	4.75			
Magnet Plates can be jointed together without limits				

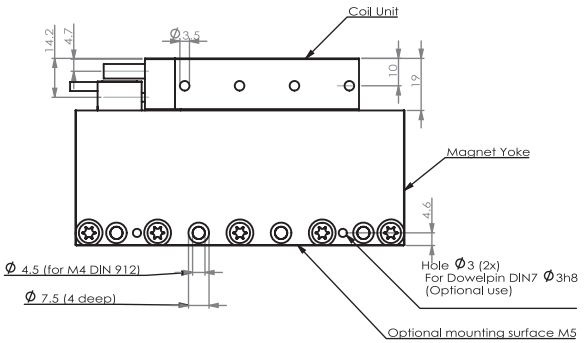
Dig. Hall sensor connections		
1	0V	White
2	5~28V	Brown
3	Hall A	Green
4	Hall B	Yellow
5	Hall C	Red

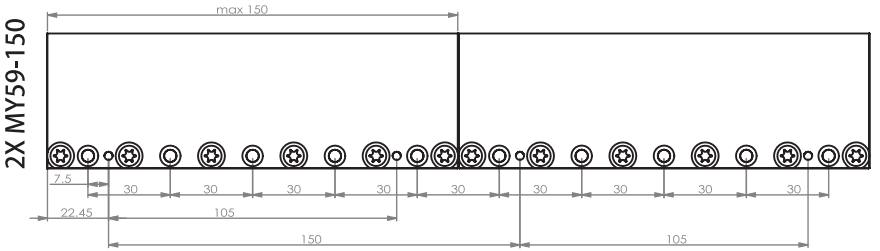
Motor connections		
1	Phase U	Phase 1
2	Phase V	Phase 2
3	Phase W	Phase 3
4	PE	Yellow-Green

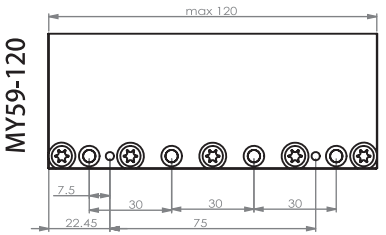
Temperature Sensor connections		
1	PTC 1KΩ	Brown
2	PTC 1KΩ	White
3	NTC	Yellow
4	NTC	Green

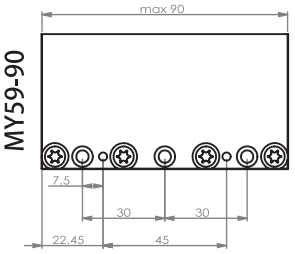
Magnet Yokes



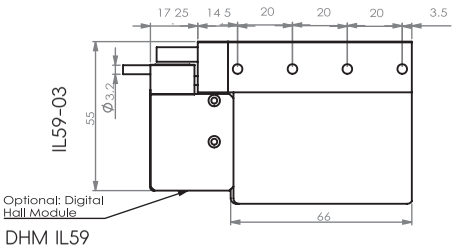


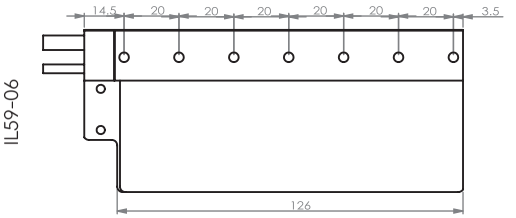


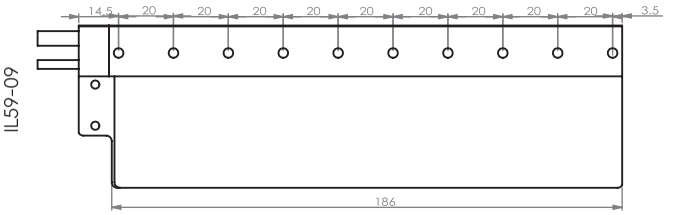


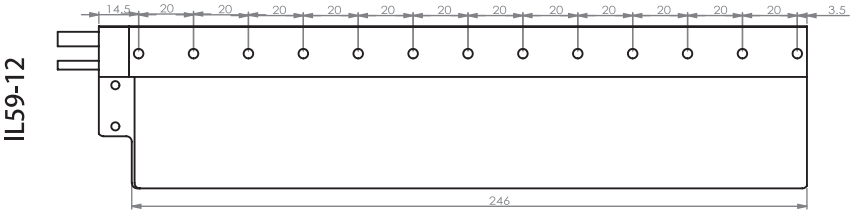


Coil units









- 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

Performance													
Parameter	Remarks	Symbol	Unit	IL91-03		IL91-06		IL91-09		IL91-12		IL91-15	
Winding Type				N	S	N	S	N	S	N	S	N	S
Motor type	3 phases synchronous Ironless, 230Vacrms (320Vdc)												
Peak Force@20℃/s ↑	Magnet@25℃	Fp	N	250	250	500	500	750	750	1000	1000	1250	1250
Continuous Force	Coil@120℃	Fc	N	73	73	146	146	219	219	292	292	365	365
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
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
Motor Constant	Coils@25℃	S	N^2/W	93	93	186	186	279	279	372	372	465	465
Electrical													
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
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
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
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
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
Electrical Time Constant	Coil@25℃	τe	ms	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Power Loss	All coils	Pc	W	77	77	154	154	231	231	308	308	385	385
Thermal													
Thermal R.	Coils to mount. Sfc.	Rth	℃/W	1.2	1.2	0.6	0.6	0.4	0.4	0.3	0.3	0.24	0.24
Temp. Sensor	Temperature Cut-off			PTC 1KΩ/NTC									
Mechanical													
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
Coil Unit Length	ex.cables	L	mm	106	106	190	190	274	274	358	358	442	442
Motor Attraction Force	Rms@0A	Fa	N	0	0	0	0	0	0	0	0	0	0
Magnet Pitch	N-N	τ	mm	42	42	42	42	42	42	42	42	42	42
Power Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm^2)	7.2(4G0.75mm^2 AWG19)									
Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm^2)	4.9(4*0.14mm^2 AWG26)									
Cable life	Minimum		Cycles	>5,000,000									
Bending Radius Static	Minimum		mm	≥4x Φ									
Bending Radius Dynamic	Minimum		mm	≥7.5x Φ									

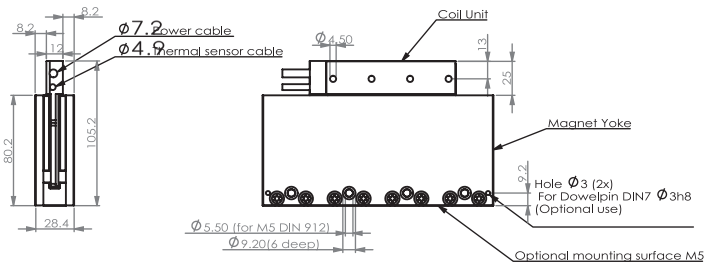
Magnet Plate Mounting Dimensions				
Length (mm)	126	168	210	546
M5 Bolts	3	4	5	13
Weight (Kg/m)	11.25			
Magnet Plates can be jointed together without limits				

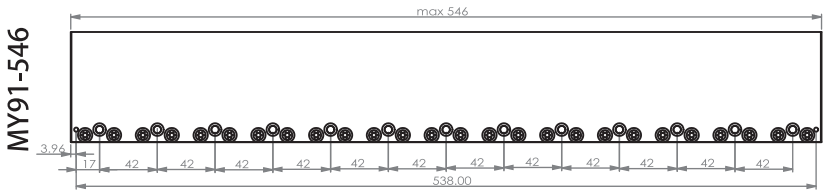
Dig. Hall sensor connections		
1	0V	White
2	5~28V	Brown
3	Hall A	Green
4	Hall B	Red
5	Hall C	Yellow

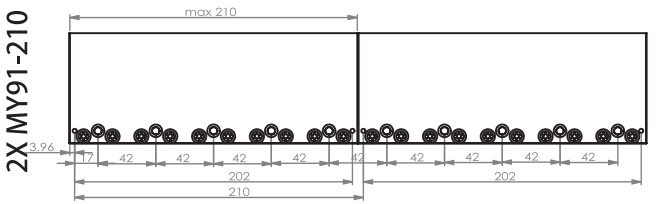
Motor connections		
1	Phase U	Phase 1
2	Phase V	Phase 2
3	Phase W	Phase 3
4	PE	Yellow-Green

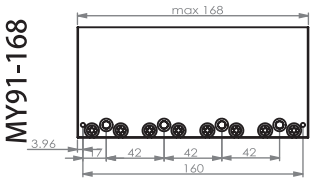
Temperature Sensor connections		
1	PTC 1KΩ	Brown
2	PTC 1KΩ	White
3	NTC	Yellow
4	NTC	Green

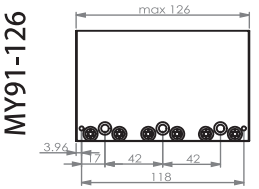
Magnet Yoke

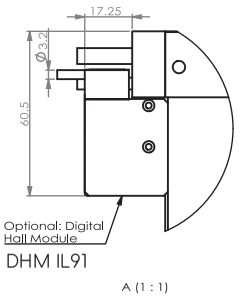




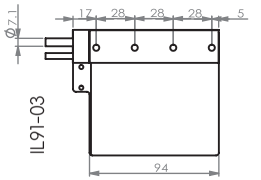


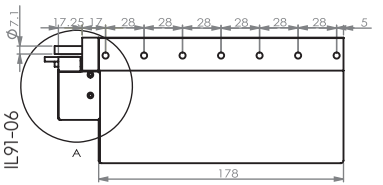


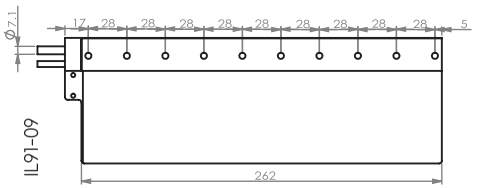


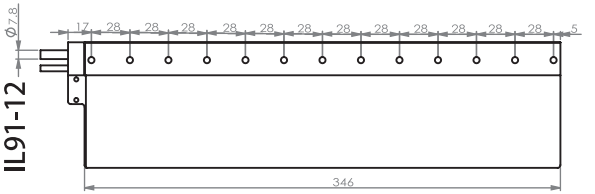


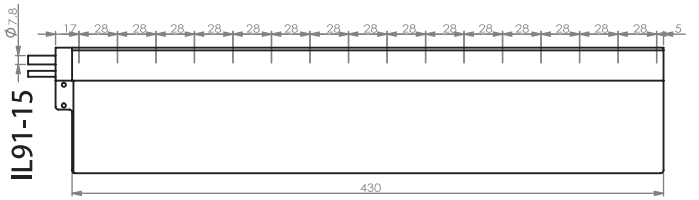
Coil Unit











- 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

Performance														
Parameter	Remarks	Symbol	Unit	IL109-03		IL109-06		IL109-09		IL109-12		IL109-18	
Winding Type				N	S	N	S	N	S	N	S	N	S
Motor type	3 phases synchronous Ironless, 230Vacrms (320Vdc)												
Peak Force@20℃/s ↑	Magnet@25℃	Fp	N	645	645	1290	1290	1935	1935	2580	2580	3870	3870
Continuous Force	Coil@120℃	Fc	N	125	125	250	250	375	375	500	500	750	750
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
Motor Force Constant	Mount. Sfc.@20℃	K	N/Arms	107	43.4	107	43.4	107	43.4	107	43.4	107	43.4
Motor Constant	Coils@25℃	S	N^2/W	244	244	488	488	732	732	976	976	1464	1464
Electrical													
Peak Current	Magnet@25℃	Ip	Arms	6.0	14.9	12.1	29.7	18.1	44.6	24.1	59.4	36.2	89.2
Continuous Current	Coil@120℃	Ic	Arms	1.2	2.9	2.3	5.8	3.5	8.6	4.7	11.5	7.0	17.3
Back EMF	Phase-Phase peak	Bemf	V/M/S	87	35	87	35	87	35	87	35	87	35
Resistance Per Phase	Coil@25℃	Rph	Ω	15.8	2.6	7.9	1.29	5.3	0.86	3.95	0.65	2.6	0.43
Induction Per Phase	I<0.63Ip	Lph	mh	28.4	4.7	14.2	2.3	9.5	1.5	7.1	1.2	4.7	0.8
Electrical Time Constant	Coil@25℃	τe	ms	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Power Loss	All coils	Pc	W	86	86	172	172	258	258	344	344	516	516
Thermal													
Thermal R.	Coils to mount. Sfc.	Rth	℃/W	1.03	1.03	0.52	0.52	0.34	0.34	0.25	0.25	0.18	0.18
Temp. Sensor	Temperature Cut-off			PTC 1KΩ/NTC									
Mechanical													
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
Coil Unit Length	ex.cables	L	mm	134	134	248	248	362	362	476	476	704	704
Motor Attraction Force	Rms@0A	Fa	N	0	0	0	0	0	0	0	0	0	0
Magnet Pitch	N-N	τ	mm	57	57	57	57	57	57	57	57	57	57
Power Cable Type	length 0.5m(3m,5m,10m optional	Diameter	$mm(mm^2)$	7.4(4G1mm² AWG18)									8.4(4G1.5mm2 AWG16)
Sensor Cable Type	length 0.5m(3m,5m,10m optional	Diameter	$mm(mm^2)$	4.9(4*0.14mm² AWG26)									
Cable life	Minimum		Cycles	>5,000,000									
Bending Radius Static	Minimum		mm	≥4x Φ									
Bending Radius Dynamic	Minimum		mm	≥7.5x Φ									

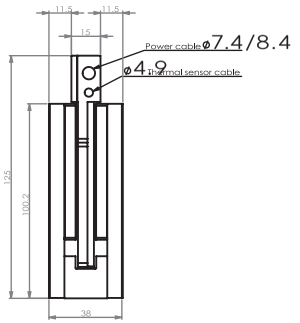
Magnet Plate Mounting Dimensions			
Length (mm)	114	171	456
M6 Bolts	2	3	8
Weight (Kg/m)	19.1		
Magnet Plates can be jointed together without limits			

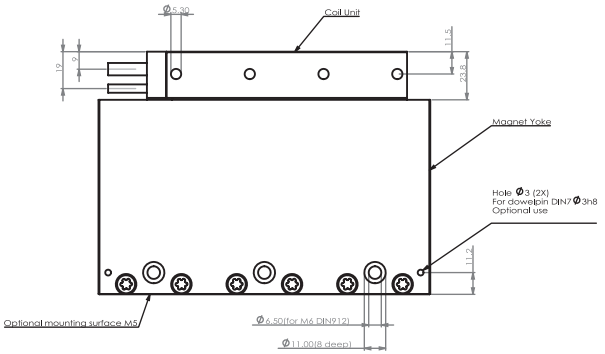
Dig. Hall sensor connections		
1	0V	White
2	5~28V	Brown
3	Hall A	Green
4	Hall B	Red
5	Hall C	Yellow

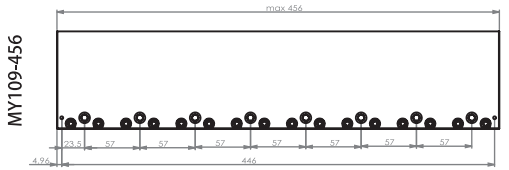
Motor connections		
1	Phase U	Phase 1
2	Phase V	Phase 2
3	Phase W	Phase 3
4	PE	Yellow-Green

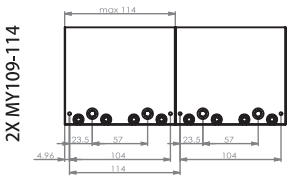
Temperature Sensor connections		
1	PTC 1KΩ	Brown
2	PTC 1KΩ	White
3	NTC	Yellow
4	NTC	Green

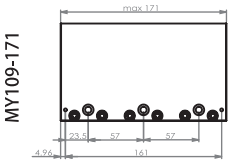
Magnet Yokes

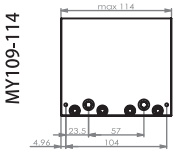


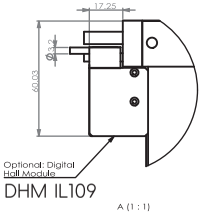




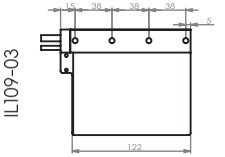


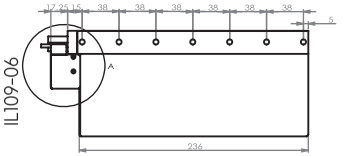


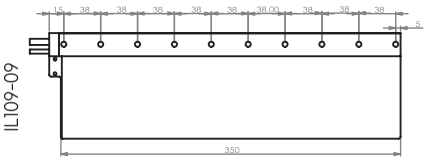


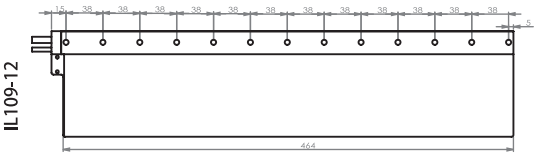


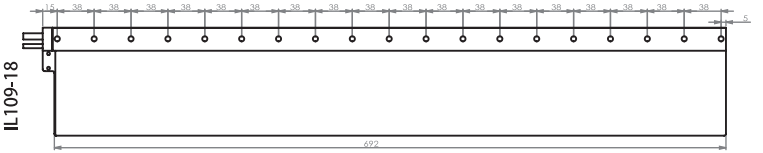
Coil Units











- 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

Performance														
Parameter	Remarks	Symbol	Unit	IL109X-03		IL109X-06		IL109X-09		IL109X-12		IL109X-18	
Winding Type				N	S	N	S	N	S	N	S	N	S
Motor type	3 phases synchronous Ironless, 230Vacrms (320Vdc)												
Peak Force@20℃/s ↑	Magnet@25℃	Fp	N	730	730	1460	1460	2190	2190	2920	2920	4380	4380
Continuous Force	Coil@120℃	Fc	N	145	145	290	290	435	435	580	580	870	870
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
Motor Force Constant	Mount. Sfc.@20℃	K	N/Arms	124	50	124	50	124	50	124	50	124	50
Motor Constant	Coils@25℃	S	N^2/W	323	323	646	646	969	969	1292	1292	1938	1938
Electrical													
Peak Current	Magnet@25℃	Ip	Arms	5.9	14.6	11.8	29.5	17.7	43.8	23.5	58.4	35.3	87.6
Continuous Current	Coil@120℃	Ic	Arms	1.2	2.9	2.3	5.8	3.5	8.7	4.7	11.6	7.0	17.4
Back EMF	Phase-Phase peak	Bemf	V/M/S	101	41	101	41	101	41	101	41	101	41
Resistance Per Phase	Coil@25℃	Rph	Ω	15.82	2.6	7.9	1.29	5.3	0.86	3.95	0.65	2.6	0.43
Induction Per Phase	I<0.63Ip	Lph	mh	28.5	4.7	14.2	2.3	9.5	1.5	7.1	1.2	4.7	0.8
Electrical Time Constant	Coil@25℃	τe	ms	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Power Loss	All coils	Pc	W	87	87	174	174	262	262	349	349	523	523
Thermal													
Thermal R.	Coils to mount. Sfc.	Rth	℃/W	1.03	1.03	0.52	0.52	0.34	0.34	0.25	0.25	0.18	0.18
Temp. Sensor	Temperature Cut-off			PTC 1KΩ/NTC									
Mechanical													
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
Coil Unit Length	ex.cables	L	mm	134	134	248	248	362	362	476	476	704	704
Motor Attraction Force	Rms@0A	Fa	N	0	0	0	0	0	0	0	0	0	0
Magnet Pitch	N-N	τ	mm	57	57	57	57	57	57	57	57	57	57
Power Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm^2)	7.4(4G1mm² AWG18)								8.4 (4G1.5mm2 AWG16)	
Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm^2)	4.9(4*0.14mm² AWG26)									
Cable life	Minimum		Cycles	>5,000,000									
Bending Radius Static	Minimum		mm	≥4x Φ									
Bending Radius Dynamic	Minimum		mm	≥7.5x Φ									

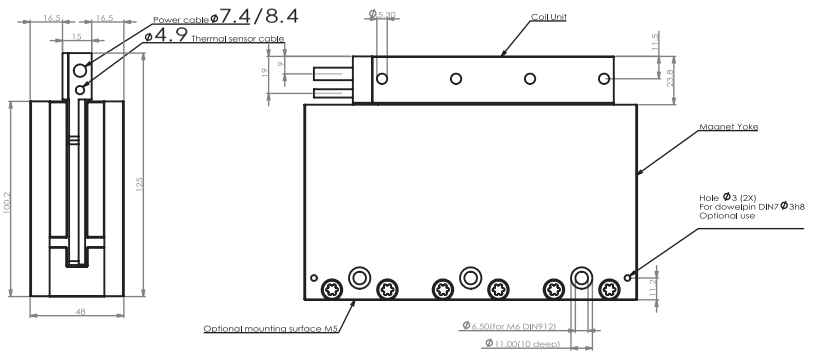
Magnet Plate Mounting Dimensions			
Length (mm)	114	171	456
M6 Bolts	2	3	8
Weight (Kg/m)	23.5		
Magnet Plates can be jointed together without limits			

Dig. Hall sensor connections		
1	0V	White
2	5~28V	Brown
3	Hall A	Green
4	Hall B	Red
5	Hall C	Yellow

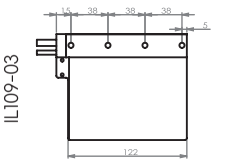
Motor connections		
1	Phase U	Phase 1
2	Phase V	Phase 2
3	Phase W	Phase 3
4	PE	Yellow-Green

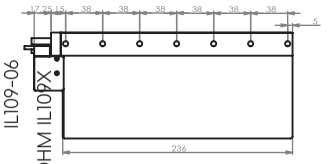
Temperature Sensor connections		
1	PTC 1KΩ	Brown
2	PTC 1KΩ	White
3	NTC	Yellow
4	NTC	Green

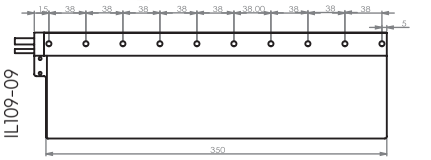
Magnet Yokes

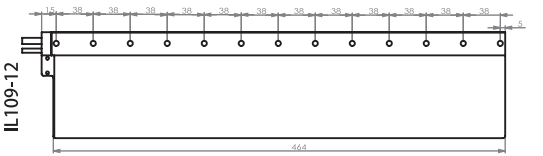


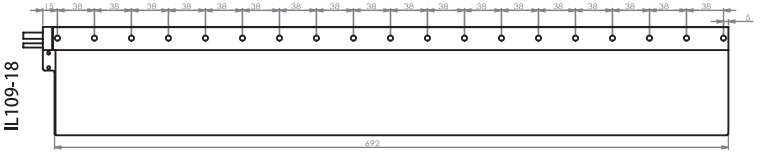
Coil Units

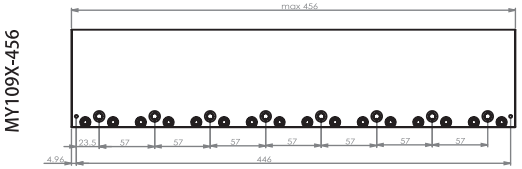


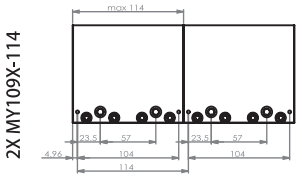


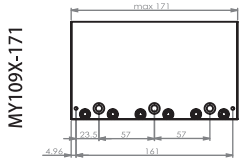


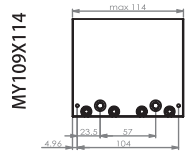












- Extremely large force applications: Force range Fc:250-1500N, Fp:1250-7500N
- The length of coil unit is very short, which is suitable for applications with limited space and big force requirements
- No attraction force and cogging, high dynamic motion performances
- High acceleration, high speed,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

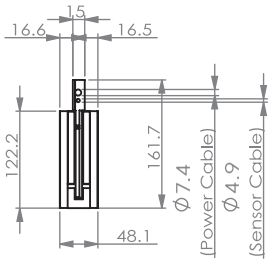
Performance													
Parameter	Remarks	Symbol	Unit	IL150-03		IL150-06		IL150-09		IL150-12		IL150-15
Winding Type				N	S	N	S	N	S	N	S	N
Motor type	3 phases synchronous Ironless, 230Vacrms (320Vdc)											
Peak Force@20℃/s ↑	Magnet@25℃	Fp	N	1000	1000	2000	2000	3000	3000	4000	4000	5000
Continuous Force	Coil@120℃	Fc	N	250	250	500	500	750	750	1000	1000	1250
Maximum Speed	@320V	Vmax	m/s	1.6	3.2	1.6	3.2	1.6	3.2	1.6	3.2	1.6
Motor Force Constant	Mount. Sfc.@20℃	K	N/Arms	177	84	177	84	177	84	177	84	177
Motor Constant	Coils@25℃	S	N^2/W	913		1826		2739		3652		4565
Electrical												
Peak Current	Magnet@25℃	Ip	Arms	5.6	11.9	11.3	23.8	16.9	35.7	22.6	47.6	28.2
Continuous Current	Coil@120℃	Ic	Arms	1.5	3.0	3.0	6.0	4.5	9.0	6.0	12.0	7.2
Back EMF	Phase-Phase peak	Bemf	V/M/S	145	69	126	60	145	69	145	69	145
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
Induction Per Phase	I<0.63Ip	Lph	mh	34.5	8.5	17.3	4.4	11.4	2.9	8.7	2.3	6.9
Electrical Time Constant	Coil@25℃	τe	ms	3	3	3	3	3	3	3	3	3
Power Loss	All coils	Pc	W	92	92	183	183	275	275	367	367	459
Thermal												
Thermal R.	Coils to mount. Sfc.	Rth	℃/W	0.8	0.8	0.4	0.4	0.3	0.3	0.2	0.2	0.15
Temp. Sensor	Temperature Cut-off			PTC 1KΩ/NTC								
Mechanical												
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
Coil Unit Length	ex.cables	L	mm	163	163	302.5	302.5	442	442	581.5	581.5	721
Motor Attraction Force	Rms@0A	Fa	N	0	0	0	0	0	0	0	0	0
Magnet Pitch	N-N	τ	mm	70	70	70	70	70	70	70	70	70
Power Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm^2)	7.4(4G1mm^2 AWG18)								
Sensor Cable Type	length 0.5m(3m,5m,10m optional)	Diameter	mm(mm^2)	4.9(4*0.14mm^2 AWG26)								
Cable life	Minimum		Cycles	>5,000,000								
Bending Radius Static	Minimum		mm	≥4x Φ								
Bending Radius Dynamic	Minimum		mm	≥7.5x Φ								

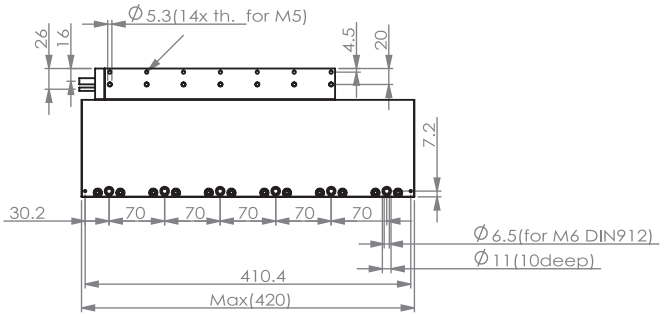
Magnet Plate Mounting Dimensions			
Length (mm)	140	210	420
M6 Bolts	2	3	6
Weight (Kg/m)	32		
Magnet Plates can be jointed together without limits			

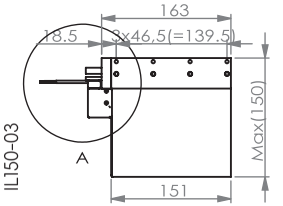
Dig. Hall sensor connections		
1	0V	White
2	5~28V	Brown
3	Hall A	Green
4	Hall B	Red
5	Hall C	Yellow

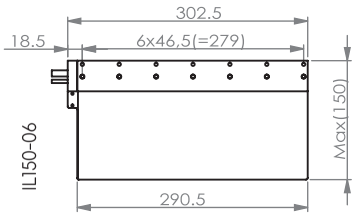
Motor connections		
1	Phase U	Phase 1
2	Phase V	Phase 2
3	Phase W	Phase 3
4	PE	Yellow-Green

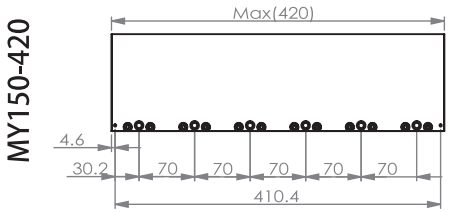
Temperature Sensor connections		
1	PTC 1KΩ	Brown
2	PTC 1KΩ	White
3	NTC	Yellow
4	NTC	Green

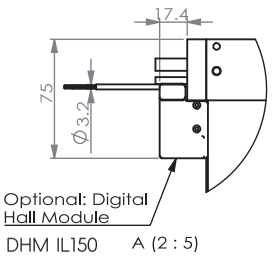


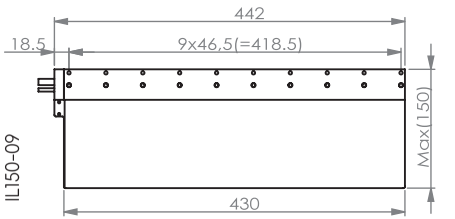


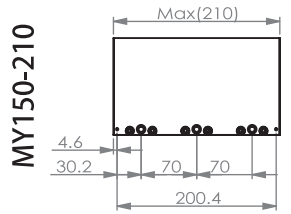


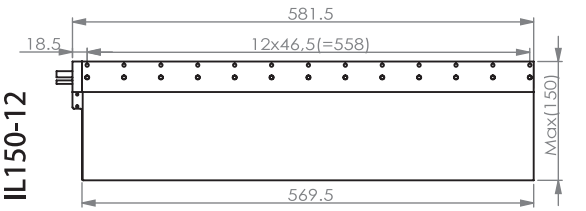


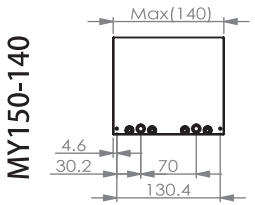


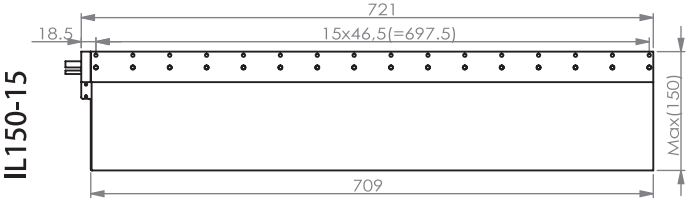




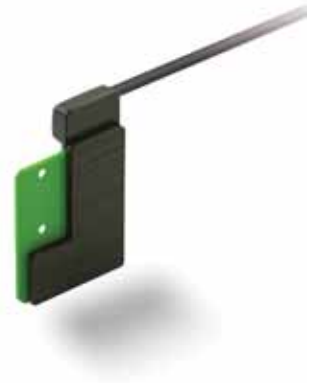








Hall Modules



Analog Hall Module
Power supply 5Vdc
Absolute accuracy +/- 0.05mm
Repeatable accuracy+/-0.015mm
Output 1Vpp
Sincos signal Output 1Vpp Sincos signal
Signal period Signal period 24mm

Digital Hall Module
Power supplier 5 Vdc-28Vdc
For Communication
Phase shifted 120°
3 Digital outputs

Custom Linear Motors

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.

Customer: _____ Project Name: _____

Projector: _____ Tel.: _____

Email: _____ Fax.: _____

Movement

Motion Direction: _____ ☐Horizontal ☐Vertical ☐With Angle

Motion Distance: _____ mm

Motion Time: _____ sec.

Speed requirement: _____ m/s

Acc. Requirement: _____ m/s^2

Or Acc. And Dec. Time: _____ sec.

Dwell: _____ sec.

Motion Curve: _____ ☐Trapezoid ☐Triangle ☐Others

Load

Max. Load: _____ Kg

External Force?: _____ N

Friction force: _____ N

Environment

Environment Temperature: _____ ℃

Max. Temperature Allowed: _____ ℃

Cooling Way: _____ ☐Water Cooled ☐Air Cooled

If Dust Free Condition: _____ ☐Yes ☐No.

Space Assembly Requirements: _____

Amplifier and Power Supplier

Max. Voltage: _____ Vdc

Max. Current: _____ A

Power Supplier: _____ ☐DC ☐AC

Voltage: _____ V ☐50HZ ☐60HZ

Additional Conditions

Required Quantity: _____ Sets

Capacity Requirement: _____ Sets/month

Other Instructions: _____

Budget Price: _____

ROTOR

Rotor ring

NdFeB magnets

Outer diameter

65, 78, 105, 133, 160, 190, 210, 230, 290, 310…

Strain relief

Cable clamp is enclosed in casting

Encapsulated design

PU-resin

Enhanced thermal Management

STATOR

Five build heights

Ranging from 17mm up to 92mm

High torque density

What is a Torque Motor

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 "frameless" 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

- Inroncore 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

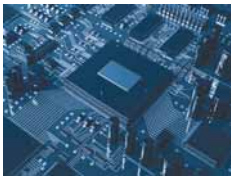
Mechanical processing

Finishing/grinding

Workbench/
milling head

Stamping/
Laser cutting

Electronic



Semiconductor

Packaging

Print/Scan

Robot

Torque motor index

Naming of the torque motors:

TM(X)65-17-N

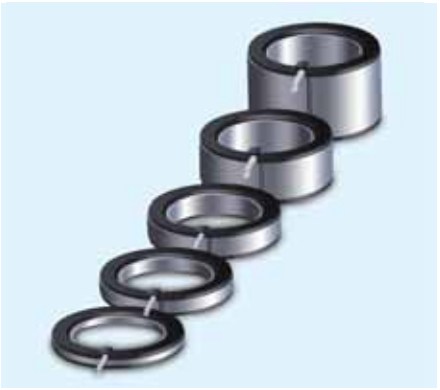
- Winding type: N, S, Y and Z
- Axial height of the stator 17, 25, 34, 60, 92...
- Outter diameter of stator 65,78,105,133,160,190...
- X type for improved torque specs and rotor with mounting thread holes
- Iron-core torque motors

TMXSL65-17-N

- Winding type: N, S, Y and Z
- Axial height of the stator 17, 25, 34, 60, 92...
- Outter diameter of stator 65,78,105,133,160,190...
- Slot-less torque motors with X magnet type

TM-A 65 and 78 series

- 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

- 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 210-290 series

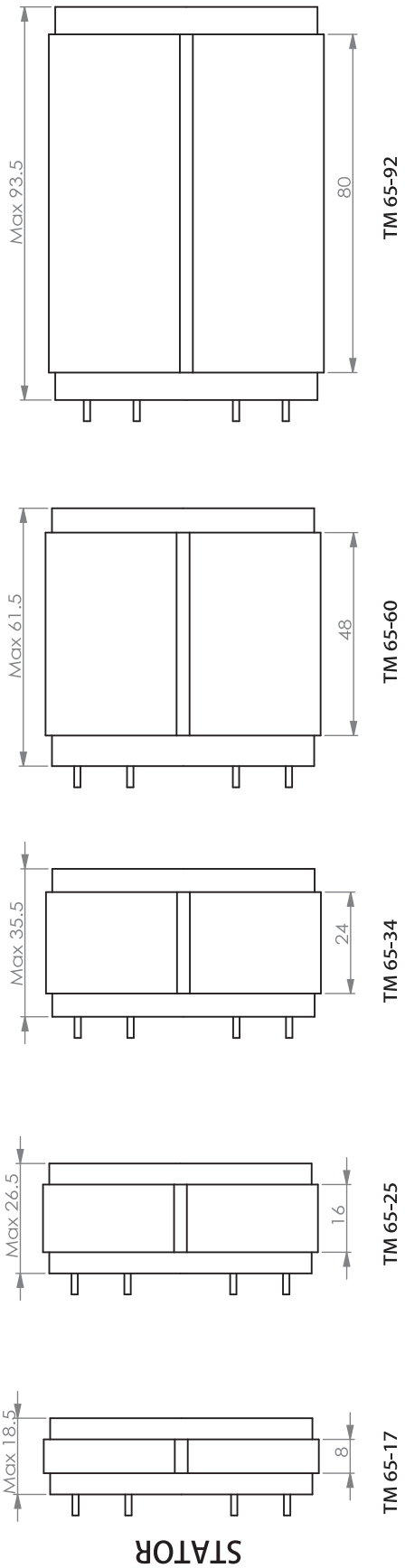
- Large motor in our torque motor family
- Multiple winding types are available with optimized back EMF
- Various applications can be used.
- High dynamics and accuracy
- Optimal speed control
- TMSL-X is the slot-less torque motor with improved torque specs

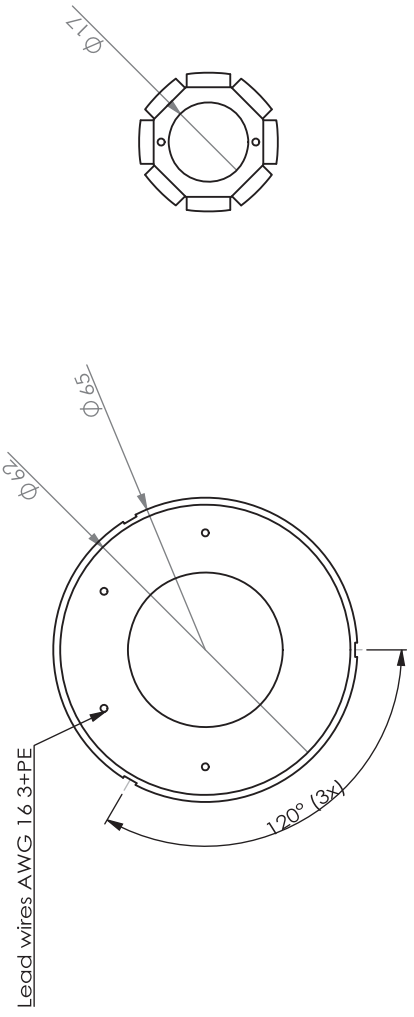
Torque motor power range

		Peak torque Tp (N.m)	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
	TM210 Series	175-350	68-145
	TM290 Series	400-800	145-315

Performance								
Parameter	Remarks	Symbol	Unit	TM65-17	TM65-25	TM65-34	TM65-60	TM65-92
Winding Type				N	N	Y	Y	Y
Motor type	3 phases synchronous Ironcore 220-380Vac rms (48V-600Vdc)							
Peak torque@20℃/s increase	Magnet@25℃	Tp	Nm	0.77	1.54	2.70	6.60	11.00
Continuous torque	Coil@110℃	Tc	Nm	0.36	0.85	1.30	2.78	4.60
Maximum Speed	@Tc	nmax	rpm	28000	28000	28000	13000	10000
Motor Torque Constant	Up to Ic	Kt	Nm/Arms	0.072	0.140	0.118	0.320	0.418
Motor Constant	Coils@25℃	Km	Nm^2/W	0.002	0.006	0.012	0.036	0.046
Electrical								
Peak Current	Magnet@25℃	Ip	Arms	14.5	14.9	30.9	27.9	35.6
Max.Continuous Current	Coil@110℃	Ic	Arms	5.0	6.1	11.0	8.7	11.0
Back EMF Phase to Phase peak	25℃+/-10%	Kep	V/krpm	6	12	10	28	36
Back EMF Phase to Phase RMS	25℃+/-10%	Ke	V/krpm	4	9	7	19	25
Resistance Per Phase	Coil@25℃	Rph	Ω	0.73	1.02	0.38	0.95	1.28
Induction Per Phase	I<0.63Ip	Lph	mh	1.10	2.04	0.94	2.66	4.86
Electrical Time Constant	Coil@25℃	τe	ms	1.5	2.0	2.5	2.8	3.8
Max. Continuous Power Loss	All coils	Pc	W	71.2	146.6	177.5	279.6	604.6
Poles		Nmag.	nr	8.0	8.0	8.0	8.0	8.0
Thermal								
Thermal Resistance	Coils to mount. Sfc.	Rth	℃/W	1.5	0.8	0.58	0.37	0.11
Temperature Sensor				Optional PTC 1KΩ/NTC				
Mechanical								
Stator OD		Ods	mm	65				
Rotor ID		Idr	mm	17				
Rotor inertia		JR	$Kg*m^2$	4.00E-06	7.80E-06	1.30E-06	2.50E-05	4.20E-05
Total Mass	Rotor+stator ex.cables	W	kg	0.18	0.32	0.46	0.95	1.6
Power Cable Type	length 0.5m	Diameter	$mm(mm^2)$	Leadwires (4*1.5mm^2)				

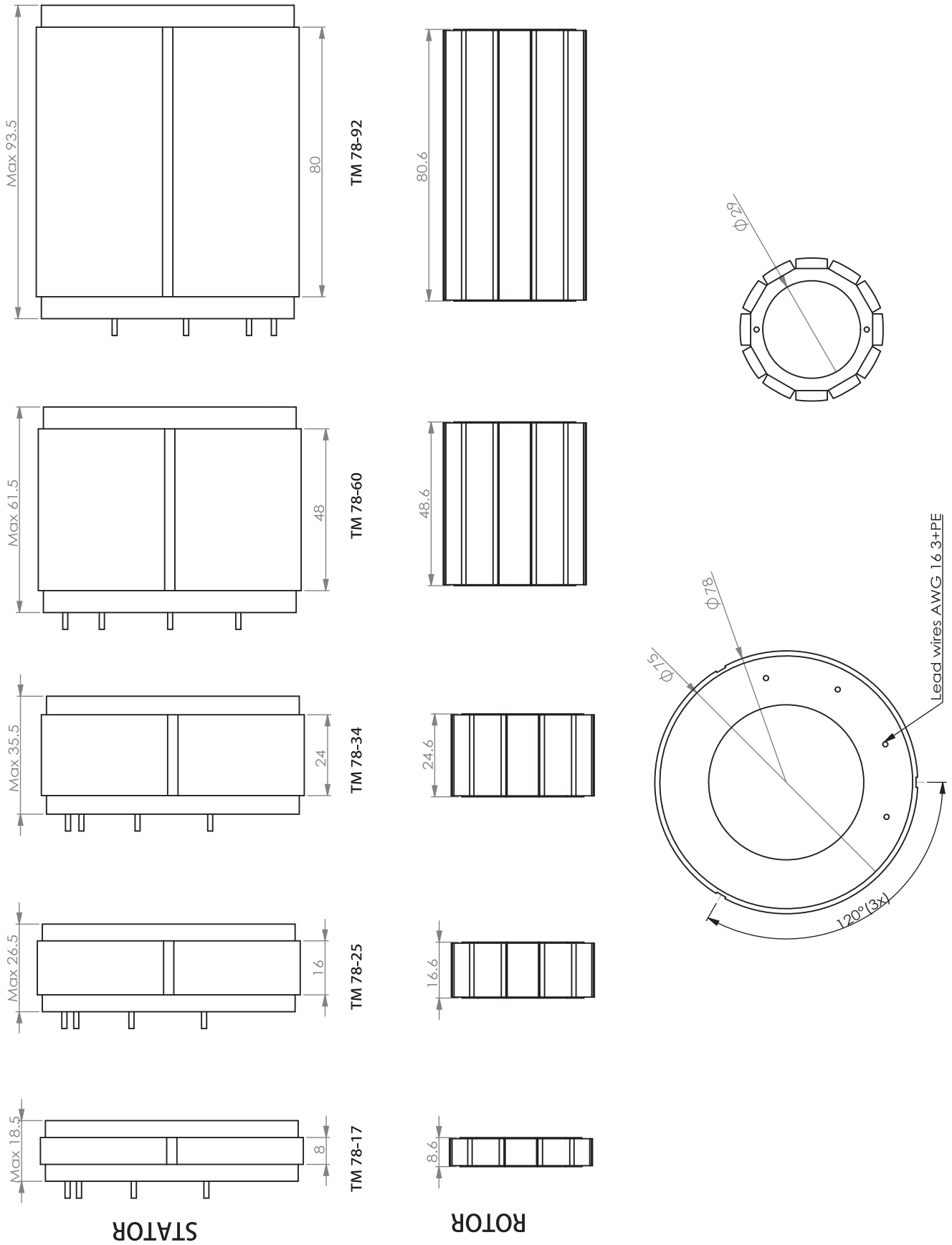
*Remark: Y Z Types can be drivered with low voltage


Max 93.5
80
TM 65-92
Max 61.5
48
TM 65-60
Max 35.5
24
TM 65-34
Max 26.5
16
TM 65-25
Max 18.5
8
TM 65-17
STATOR
80.6
48.6
24.6
16.6
8.6
ROTOR


Φ17
Φ65
Φ29
120° (3x)
Lead wires AWG 16 3+PE

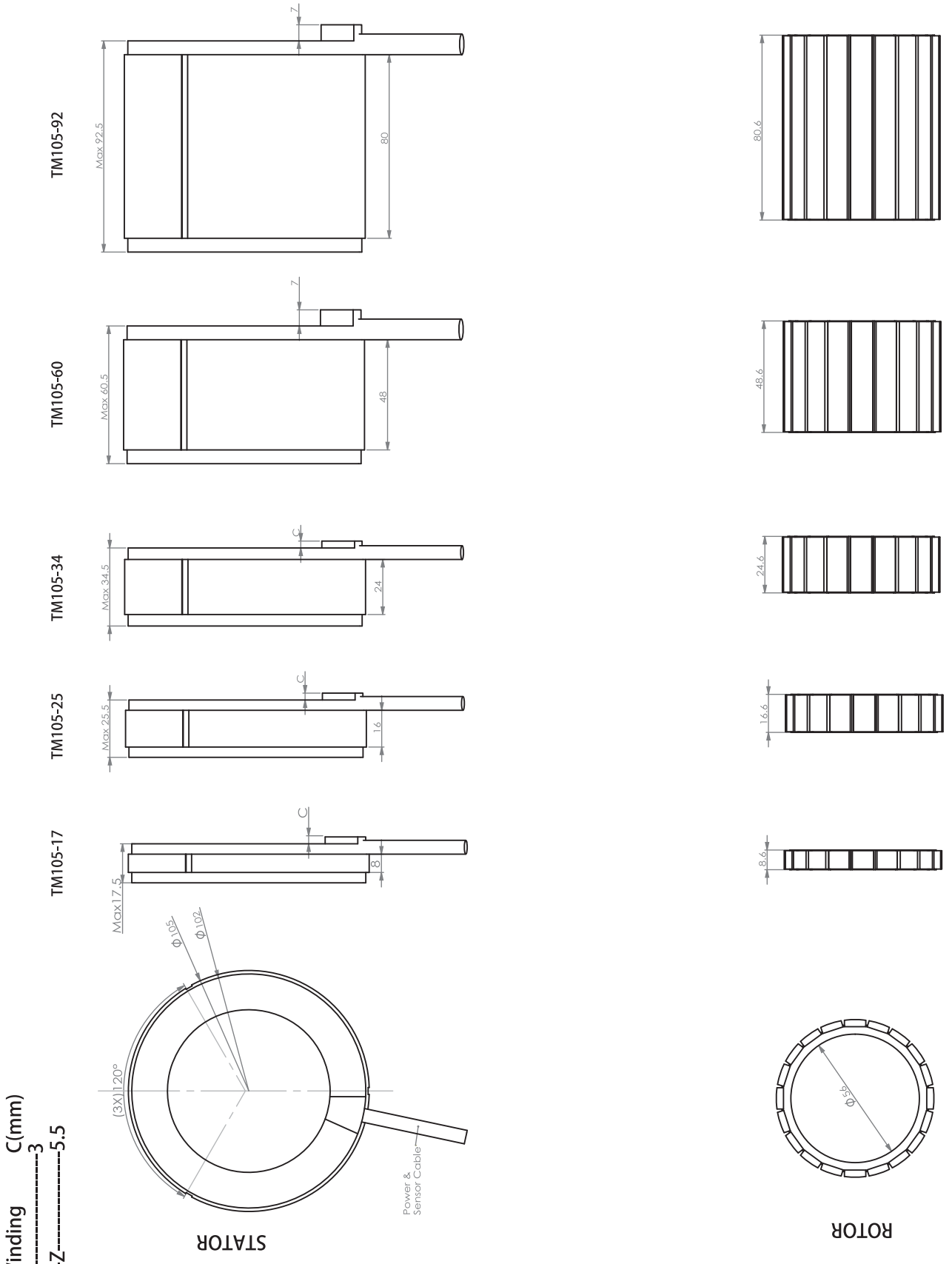
Performance								
Parameter	Remarks	Symbol	Unit	TM78-17	TM78-25	TM78-34	TM78-60	TM78-92
Winding Type				N	Y	Y	Y	Y
Motor type	3 phases synchronous Ironcore 220-380Vac rms (48V-600Vdc)							
Peak torque@20℃/s increase	Magnet@25℃	Tp	Nm	1.5	3.5	5.5	13.0	21.7
Continuous torque	Coil@110℃	Tc	Nm	0.68	1.66	2.63	5.29	8.82
Maximum Speed	@Tc@48V	nmax	rpm	2200	1962	1296	484	220
Maximum Speed	@Tc	nmax	rpm	20000	17500	11500	4300	1900
Motor Torque Constant	Up to Ic	Kt	Nm/Arms	0.14	0.16	0.24	0.64	1.40
Motor Constant	Coils@25℃	Km	Nm^2/W	0.006	0.019	0.034	0.093	0.340
Electrical								
Peak Current	Magnet@25℃	Ip	Arms	14.1	30.1	31.0	27.6	20.9
Max.Continuous Current	Coil@110℃	Ic	Arms	4.9	10.5	11.1	8.3	6.3
Back EMF Phase to Phase peak	25℃+/-10%	Kep	V/krpm	12	14	20	55	121
Back EMF Phase to Phase RMS	25℃+/-10%	Ke	V/krpm	9	10	14	39	85
Resistance Per Phase	Coil@25℃	Rph	Ω	1.11	0.44	0.56	1.44	1.92
Induction Per Phase	I<0.63Ip	Lph	mh	1.78	0.97	1.34	4.48	6.53
Electrical Time Constant	Coil@25℃	τe	ms	1.6	2.2	2.4	3.1	3.4
Max. Continuous Power Loss	All coils	Pc	W	102.5	190.9	266.7	390.0	297.2
Poles		Nmag.	nr	12.0	12.0	12.0	12.0	12.0
Thermal								
Thermal Resistance	Coils to mount. Sfc.	Rth	℃/W	0.99	0.54	0.39	0.26	0.16
Temperature Sensor				Optional PTC 1KΩ/NTC				
Mechanical								
Stator OD		Ods	mm	78				
Rotor ID		Idr	mm	29				
Rotor inertia		JR	$Kg*m^2$	1.30E-05	2.50E-05	3.80E-05	7.60E-05	1.27E-04
Total Mass	Rotor+stator ex.cables	W	kg	0.28	0.44	0.65	1.3	2
Power Cable Type	length 0.5m	Diameter	$mm(mm^2)$	Leadwires ($4*1.5mm^2$)				

*Remark: Y Z Types can be drivered with low voltage


Max 93.5
80
TM 78-92
80.6
Max 61.5
48
TM 78-60
48.6
Max 35.5
24
TM 78-34
24.6
Max 26.5
16
TM 78-25
16.6
Max 18.5
8
TM 78-17
8.6
STATOR
ROTOR
Φ29
Φ78
Φ15
Lead wires AWG 16 3+PE
120°(3x)

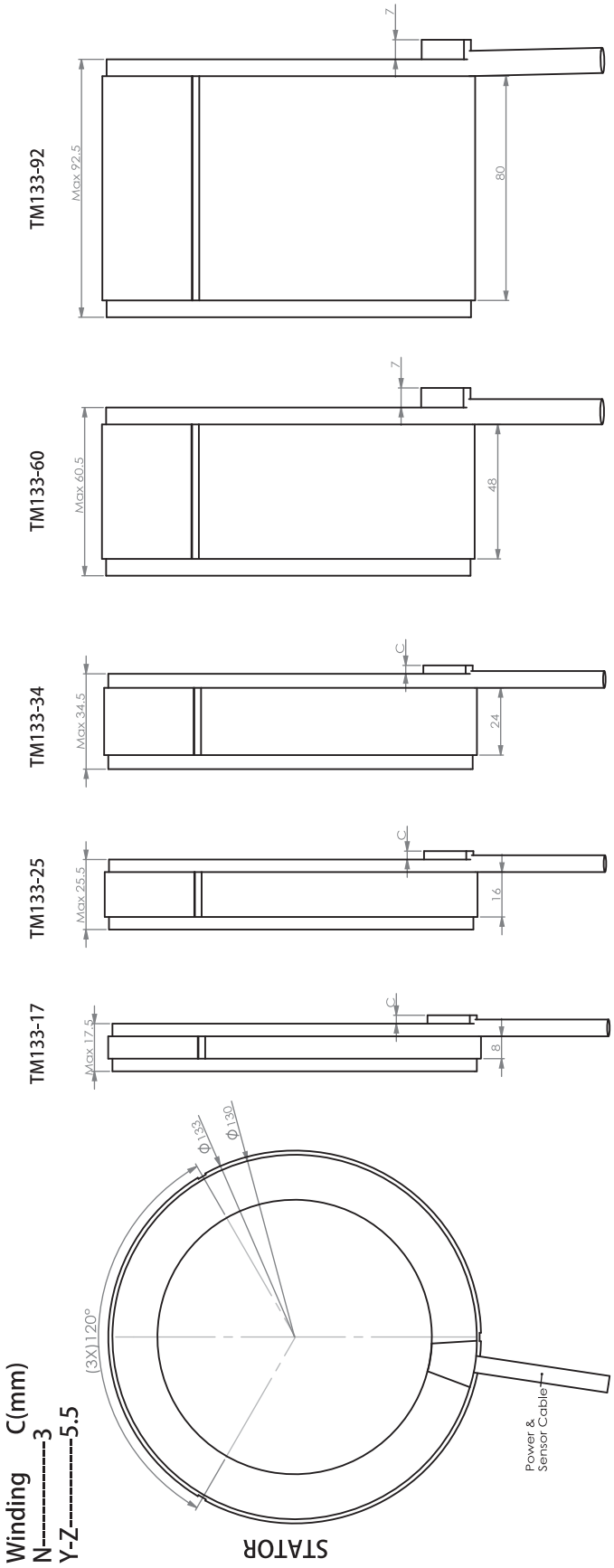
Performance															
Parameter	Remarks	Symbol	Unit	TM105-17			TM105-25			TM105-34			TM105-60	TM105-92	
Winding Type				N	Y	Z	N	Y	Z	N	Y	Z	N	Y	
Motor type	3 phases synchronous Ironcore 230Vac rms (320Vdc)												380Vac rms (600Vdc)		
Peak torque@20℃/s increase	Magnet@25℃	Tp	Nm	3.50	3.96	3.96	7.32	9.00	8.28	12.72	13.56	12.48	34.00	56.00	
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	
Maximum Speed	@Tc	nmax	rpm	5879	10583	17638	2940	5345	9203	1654	3528	6047	1157	1323	
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	
Motor Constant	Coils@25℃	Km	Nm^2/W	0.025	0.024	0.027	0.069	0.070	0.073	0.143	0.125	0.131	0.455	0.493	
Electrical															
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	
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	
Back EMF Phase to Phase peak	25℃+/-10%	Kep	V/krpm	31	17	10	62	34	20	110	52	30	295	258	
Back EMF Phase to Phase RMS	25℃+/-10%	Ke	V/krpm	22	12	7	44	24	14	78	37	21	209	183	
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	
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	
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	
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	
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	
Thermal															
Thermal Resistance	Coils to mount. Sfc.	Rth	℃/W	0.68	0.68	0.68	0.34	0.34	0.34	0.24	0.24	0.24	0.14	0.11	
Temperature Sensor				Optional PTC 1KΩ/NTC											
Mechanical															
Stator OD		Ods	mm	105											
Rotor ID		Idr	mm	56											
Rotor inertia		JR	$Kg*m^2$	8.00E-05			1.50E-04			2.30E-04			4.40E-04	7.40E-04	
Total Mass	Rotor+stator ex.cables	W	kg	0.32			0.62			0.96			1.93	3.12	
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)		7.4(4G1mm^2)		

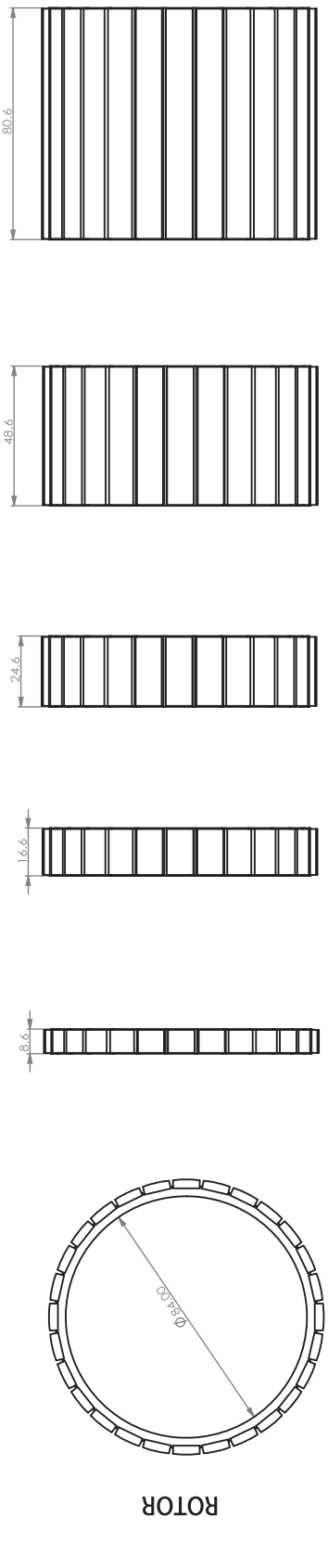
*Remark: Y Z Types can be drivered with low voltage


TM105-92
TM105-60
TM105-34
TM105-25
TM105-17
Max 92.5
Max 60.5
Max 34.5
Max 25.5
Max17.5
7
80
48
24
16
8
C
80.6
48.6
24.6
16.6
8.6
Φ105
Φ102
(3X)120°
Power &
Sensor Cable
Φ56
STATOR
ROTOR
Winding C(mm)
N----------3
Y-Z----------5.5

Performance													
Parameter	Remarks	Symbol	Unit	TM133-17			TM133-25			TM133-34		TM133-60	TM133-92
Winding Type				N	Y	Z	N	Y	Z	N	Z	N	Y
Motor type	3 phases synchronous Ironcore 230Vac rms (320Vdc)											380Vac rms (600Vdc)	
Peak torque@20℃/s increase	Magnet@25℃	Tp	Nm	6.72	7.68	7.68	14.28	16.20	16.20	24.72	24.72	66.60	110.00
Continuous torque	Coil@110℃	Tc	Nm	3.2	3.2	3.2	7.6	7.8	7.8	13.0	12.4	28.0	46.7
Maximum Speed	@Tc	nmax	rpm	3045	5345	9283	1521	2714	4642	843	3150	594	1018
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
Motor Constant	Coils@25℃	Km	Nm^2/W	0.066	0.070	0.067	0.189	0.201	0.203	0.394	0.352	1.236	1.449
Electrical													
Peak Current	Magnet@25℃	Ip	Arms	13.1	26.2	45.5	13.9	28.1	48.0	13.3	49.7	13.5	38.1
Max.Continuous Current	Coil@110℃	Ic	Arms	4.6	8.1	14.0	5.5	10.0	17.1	5.2	17.0	4.0	12.0
Back EMF Phase to Phase peak	25℃+/-10%	Kep	V/krpm	60	34	20	120	67	39	216	58	575	336
Back EMF Phase to Phase RMS	25℃+/-10%	Ke	V/krpm	42	24	14	85	47	28	153	41	407	237
Resistance Per Phase	Coil@25℃	Rph	Ω	2.44	0.75	0.26	3.42	1.01	0.34	5.33	0.43	12.05	4.56
Induction Per Phase	I<0.63Ip	Lph	mh	4.88	1.65	0.55	7.87	2.53	0.82	14.92	1.11	46.98	18.24
Electrical Time Constant	Coil@25℃	τe	ms	2.0	2.2	2.1	2.3	2.5	2.4	2.8	2.6	3.9	4.0
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
Poles		Nmag.	nr	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0
Thermal													
Thermal Resistance	Coils to mount. Sfc.	Rth	℃/W	0.5	0.5	0.5	0.28	0.28	0.28	0.2	0.2	0.13	0.095
Temperature Sensor				Optional PTC 1KΩ/NTC									
Mechanical													
Stator OD		Ods	mm	133									
Rotor ID		Idr	mm	84									
Rotor inertia		JR	$Kg*m^2$	2.10E-04			4.20E-04			6.20E-04		1.20E-03	1.80E-03
Total Mass	Rotor+stator ex.cables	W	kg	0.55			0.955			1.37		2.75	4.3
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)	

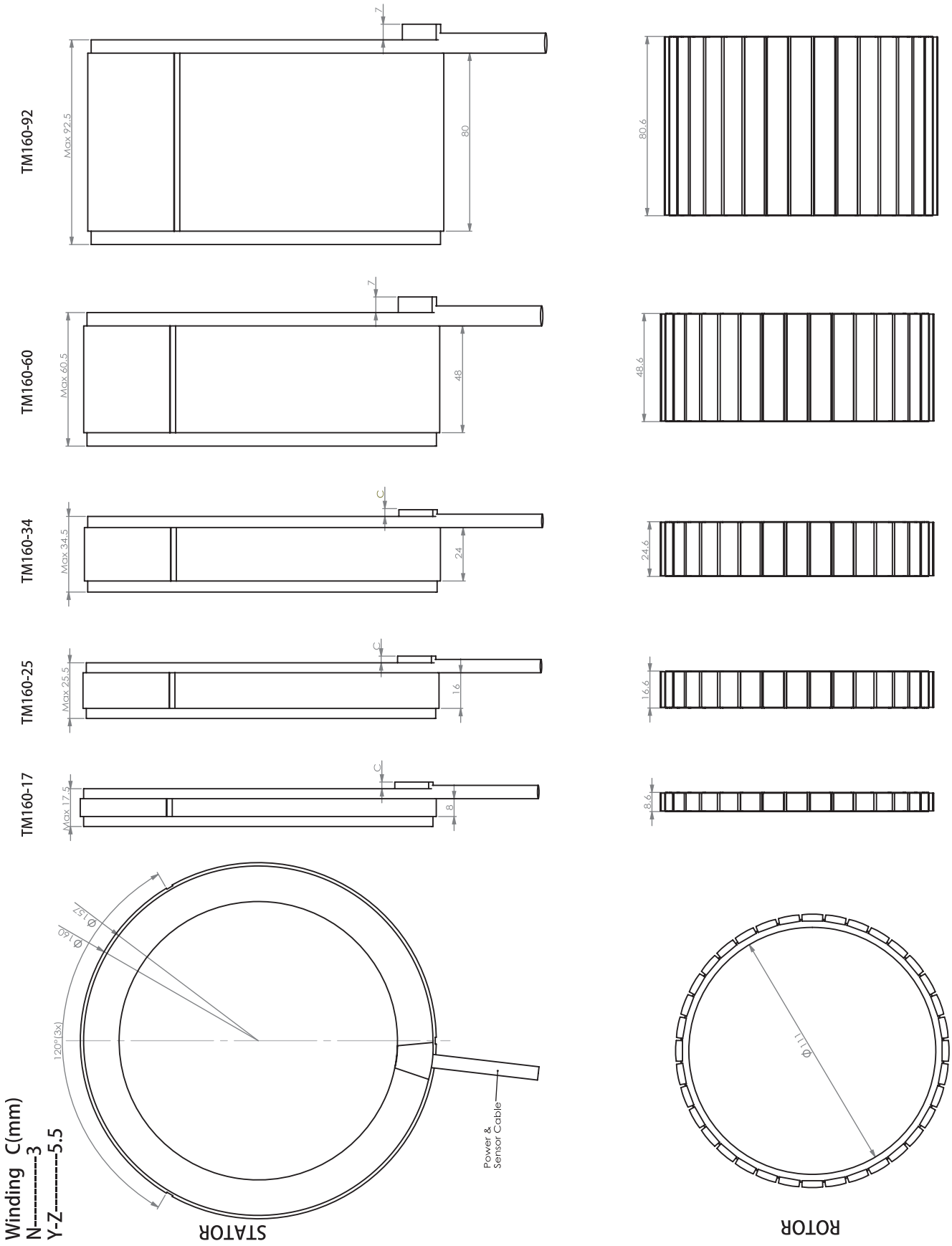
*Remark: Y Z Types can be drivered with low voltage


TM133-92
Max 92.5
80
7
TM133-60
Max 60.5
48
7
TM133-34
Max 34.5
24
C
TM133-25
Max 25.5
16
C
TM133-17
Max 17.5
8
C
Winding C(mm)
N----------3
Y-Z--------5.5
(3X)120°
Φ133
Φ130
Power &
Sensor Cable
STATOR

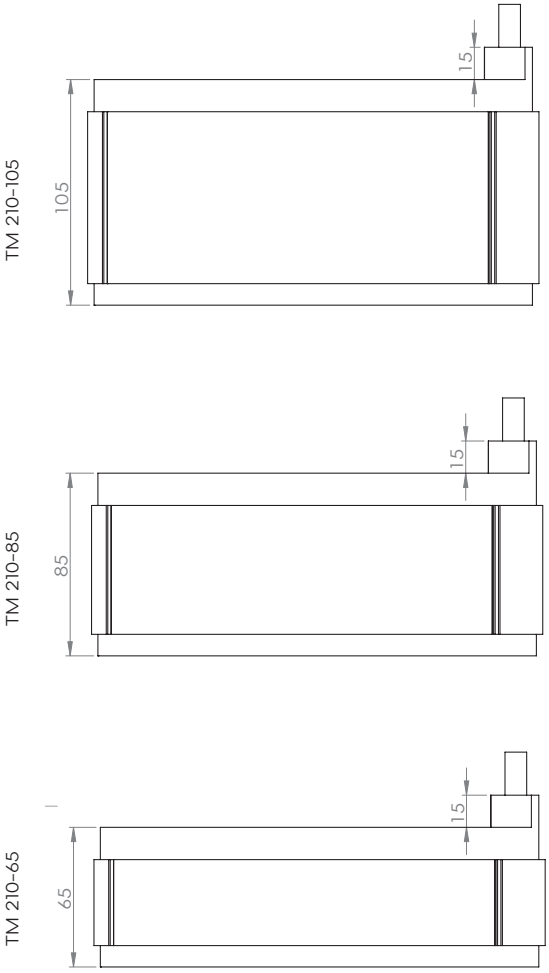

80.6
48.6
24.6
16.6
8.6
Ø84.00
ROTOR

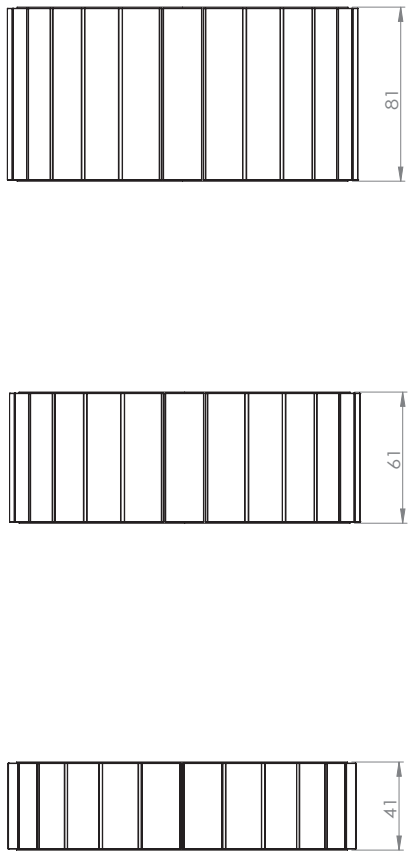
Performance													
Parameter	Remarks	Symbol	Unit	TM160-17			TM160-25			TM160-34		TM160-60	TM160-92
Winding Type				N	Y	Z	N	Y	Z	N	Z	N	Y
Motor type	3 phases synchronous Ironcore 230Vac rms (320Vdc)											380Vac rms (600Vdc)	
Peak torque@20℃/s increase	Magnet@25℃	Tp	Nm	11.16	12.72	12.72	23.52	26.88	26.88	40.92	40.30	110.00	183.20
Continuous torque	Coil@110℃	Tc	Nm	4.92	5.04	5.04	11.28	11.64	11.64	18.84	18.00	43.56	72.00
Maximum Speed	@Tc	nmax	rpm	1837	3266	5690	916	1648	2845	511	1890	361	397
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
Motor Constant	Coils@25℃	Km	Nm^2/W	0.140	0.147	0.149	0.407	0.423	0.418	0.832	0.760	2.605	4.263
Electrical													
Peak Current	Magnet@25℃	Ip	Arms	13.1	26.5	46.2	13.8	28.3	48.8	13.4	48.6	13.5	24.8
Max.Continuous Current	Coil@110℃	Ic	Arms	4.3	7.8	13.5	4.9	9.1	16.0	4.6	16.1	4.0	7.2
Back EMF Phase to Phase peak	25℃+/-10%	Kep	V/krpm	99	56	32	199	111	64	356	96	947	861
Back EMF Phase to Phase RMS	25℃+/-10%	Ke	V/krpm	70	39	23	141	78	45	252	68	670	609
Resistance Per Phase	Coil@25℃	Rph	Ω	3.15	0.95	0.31	4.37	1.30	0.44	6.87	0.55	15.49	5.86
Induction Per Phase	I<0.63Ip	Lph	mh	6.62	2.09	0.68	10.05	3.25	1.10	19.92	1.43	61.94	24.61
Electrical Time Constant	Coil@25℃	τe	ms	2.1	2.2	2.2	2.3	2.5	2.5	2.9	2.6	4.0	4.2
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
Poles		Nmag.	nr	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0
Thermal													
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
Temperature Sensor				Optional PTC 1KΩ/NTC									
Mechanical													
Stator OD		Ods	mm	160									
Rotor ID		Idr	mm	111									
Rotor inertia		JR	$Kg*m^2$	4.60E-04			9.20E-04			1.40E-03		2.60E-03	4.20E-03
Total Mass	Rotor+stator ex.cables	W	kg	0.65			1.15			1.6		3.3	5.5
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)	

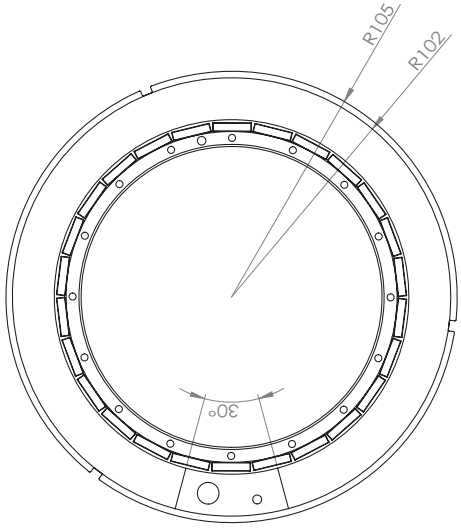
*Remark: Y Z Types can be drivered with low voltage


TM160-92
Max 92.5
80
7
80.6
TM160-60
Max 60.5
48
7
48.6
TM160-34
Max 34.5
24
C
24.6
TM160-25
Max 25.5
16
C
16.6
TM160-17
Max 17.5
8
C
8.6
Winding C(mm)
N----------3
Y-Z---------5.5
Ø152
Ø160
120°(3x)
Power &
Sensor Cable
STATOR
Ø111
ROTOR

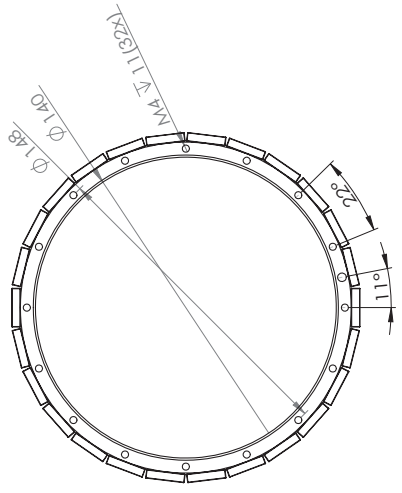
Performance						
Parameter	Remarks	Symbol	Unit	TM210-65	TM210-85	TM210-105
Winding Type				N	N	N
Motor type Max. voltage ph-ph	3 phases synchronous Ironcore >=380Vac rms (560Vdc)					
Peak torque@20°C/s increase	Magnet@25°C	Tp	Nm	175.00	260.00	350.00
Continuous torque	Coil@110°C	Tc	Nm	68.00	105.00	145.00
Stall torque	Coil@110°C	Ts	Nm	48.00	74.00	102.00
Maximum Speed	@Tc@560Vdc	nmax	rpm	426	283	212
Motor Torque Constant	up to Ic	Kt	Nm/Arms	8.70	13.10	17.50
Motor Constant	Coils@25°C	Km	Nm^2/W	6.500	10.896	15.705
Electrical						
Peak Current	Magnet@25°C	Ip	Arms	27.2	26.8	27.0
Max.Continuous Current	Coil@110°C	Ic	Arms	7.8	8.0	8.3
Back EMF Phase to Phase peak	25°C+/-10%	Kep	V/krpm	749	1128	1507
Back EMF Phase to Phase RMS	25°C+/-10%	Ke	V/krpm	530	798	1066
Resistance Per Phase	Coil@25°C	Rph	Ω	3.93	5.25	6.50
Induction Per Phase	I<0.63Ip	Lph	mH	15.50	22.00	28.00
Electrical Time Constant	Coil@25°C	τe	ms	4.0	4.2	4.3
Max. Continuous Power Loss	All coils	Pc	W	924.8	1270.0	1685.0
Poles		Nmag.	nr	26.0	26.0	26.0
Thermal						
Thermal Resistance	Coils to mount.	Rth	°C/W	0.097	0.071	0.053
Temperature Sensor			Optional PTC 110/NTC 10KΩ			
Mechanical						
Stator OD		Ods	mm	210		
Rotor ID		Idr	mm	140		
Rotor inertia		JR	$Kg*m^2$	9.00E-03	1.40E-02	1.90E-02
Rotor Mass		Wr	kg	1.6	2.4	3.2
Total Mass	Excluding cables	Ws	kg	5.8	8.3	10.7







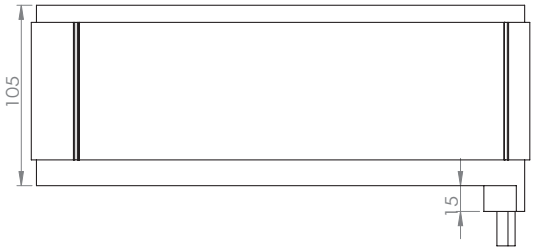
STATOR



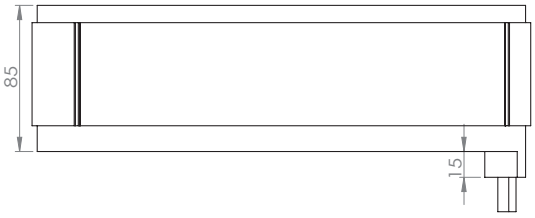
ROTOR

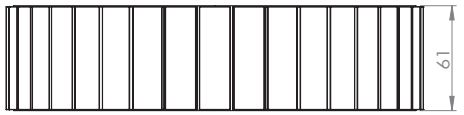
Performance						
Parameter	Remarks	Symbol	Unit	TM290-65	TM290-85	TM290-105
Winding Type				N	N	N
Motor type Max. voltage ph-ph	3 phases synchronous Ironcore >=380Vac rms (560Vdc)					
Peak torque@20▮ /s increase	Magnet@25°C	Tp	Nm	400.00	600.00	800.00
Continuous torque	Coil@110°C	Tc	Nm	145.00	228.00	315.00
Stall torque	Coil@110°C	Ts	Nm	102	160	221
Maximum Speed	@Tc@560Vdc	nmax	rpm	185	123	95
Motor Torque Constant	up to Ic	Kt	Nm/Arms	20.00	30.00	39.50
Motor Constant	Coils@25°C	Km	Nm^2/W	22.599	38.071	52.854
Electrical						
Peak Current	Magnet@25°C	Ip	Arms	27.0	27.0	27.4
Max.Continuous Current	Coil@110°C	Ic	Arms	7.3	7.6	8.0
Back EMF Phase to Phase peak	25°C+/-10%	Kep	V/krpm	1722	2583	3401
Back EMF Phase to Phase RMS	25°C+/-10%	Ke	V/krpm	1218	1827	2405
Resistance Per Phase	Coil@25°C	Rph	Ω	5.90	7.88	9.84
Induction Per Phase	I<0.63Ip	Lph	mH	23.50	34.00	45.00
Electrical Time Constant	Coil@25°C	τe	ms	4.0	4.3	4.6
Max. Continuous Power Loss	All coils	Pc	W	1209	1775	2441
Poles		Nmag.	nr	38.0	38.0	38.0
Thermal						
Thermal Resistance	Coils to mount. Sfc.	Rth	0.074	0.051	0.037	0.053
Temperature Sensor			Optional PTC 110/NTC 10KΩ			
Mechanical						
Stator OD		Ods	mm	290		
Rotor ID		Idr	mm	220		
Rotor inertia		JR	$Kg*m^2$	3.10E-02	4.60E-02	6.10E-02
Rotor Mass		Wr	kg	2.3	3.5	4.7
Total Mass	Excluding cables	Ws	kg	8.3	11.8	15.5

TM 290-105

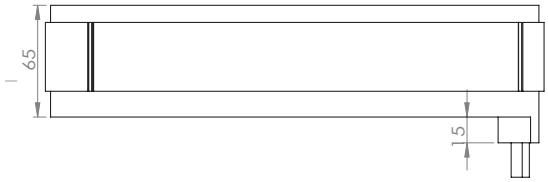


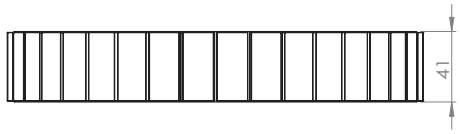
TM 290-85

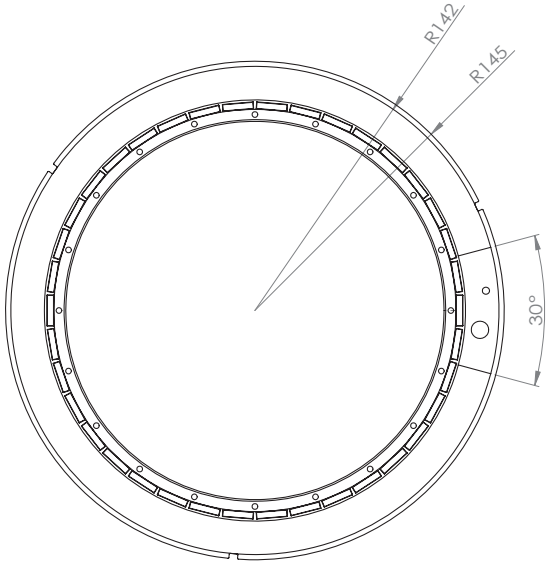




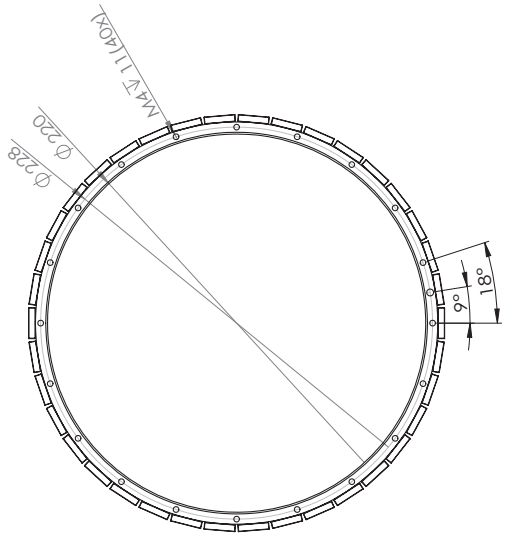
TM 290-65







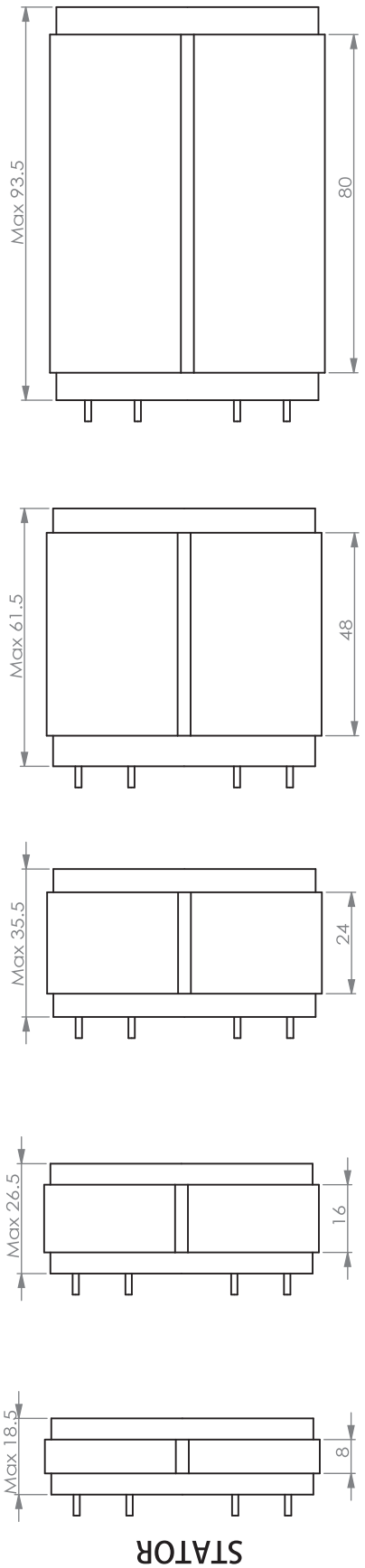
STATOR

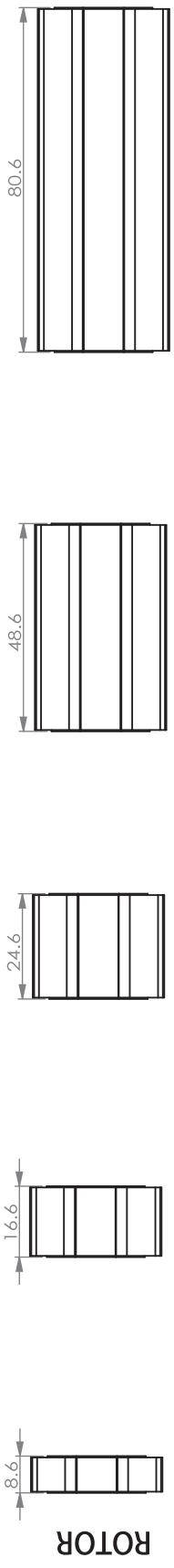


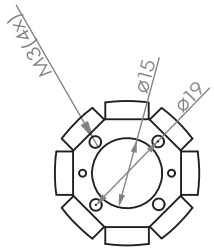
ROTOR

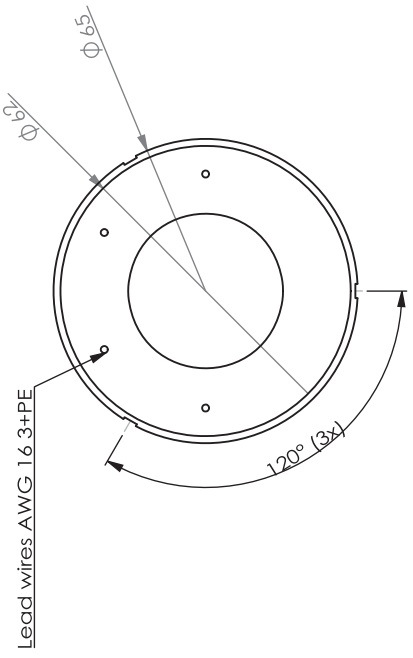
Performance								
Parameter	Remarks	Symbol	Unit	TMXSL65-17	TMXSL65-25	TMXSL65-34	TMXSL65-60	TMXSL65-92
Winding Type				N	N	Y	Y	Y
Motor type	3 Phase synchronous slotless 220V-380Vac rms (48V-600V)							
Peak torque@20℃/s increase	Magnet@25℃	Tp	Nm	0.28	0.85	1.44	3.84	6.40
Continuous torque	Coil@110℃	Tc	Nm	0.07	0.21	0.36	0.96	1.60
Maximum Speed	@Tc	nmax	rpm	30000	30000	30000	30000	30000
Motor Torque Constant	Up to Ic	Kt	Nm/Arms	0.015	0.030	0.025	0.067	0.113
Motor Constant	Coils@25℃	Km	Nm^2/W	0.0001	0.0003	0.0005	0.0016	0.0033
Electrical								
Peak Current	Magnet@25℃	Ip	Arms	18.7	28.4	58.8	57.5	56.6
Max.Continuous Current	Coil@110℃	Ic	Arms	4.7	7.1	14.7	14.4	14.2
Back EMF Phase to Phase peak	25℃+/-10%	Kep	V/krpm	1.29	2.58	2.11	5.75	9.73
Back EMF Phase to Phase RMS	25℃+/-10%	Ke	V/krpm	0.91	1.83	1.49	4.06	6.88
Resistance Per Phase	Coil@25℃	Rph	Ω	0.73	1.02	0.38	0.95	1.28
Induction Per Phase	I<0.63Ip	Lph	mh	0.37	0.67	0.30	1.08	1.72
Electrical Time Constant	Coil@25℃	τe	ms	0.5	0.7	0.8	1.1	1.3
Max. Continuous Power Loss	All coils	Pc	W	62.0	200.5	315.8	766.4	1000.8
Poles		Nmag.	nr	8.0	8.0	8.0	8.0	8.0
Thermal								
Thermal Resistance	Coils to mount. Sfc.	Rth	℃/W	1.5	0.8	0.58	0.37	0.11
Temperature Sensor				Optional PTC 1KΩ/NTC				
Mechanical								
Stator OD		Ods	mm	65				
Rotor ID		Idr	mm	15				
Rotor inertia		JR	$Kg*m^2$	3.12E-06	6.23E-06	9.23E-06	1.8E-05	3.19E-05
Total Mass	Rotor+stator ex.cables	W	kg	0.18	0.32	0.46	0.95	1.6
Power Cable Type	length 0.5m	Diameter	$mm(mm^2)$	Leadwires (4*1.5mm^2)				

*Remark: Y Z Types can be drivered with low voltage


Max 93.5
80
TMXSL 65-92
Max 61.5
48
TMXSL 65-60
Max 35.5
24
TMXSL 65-34
Max 26.5
16
TMXSL 65-25
Max 18.5
8
TMXSL 65-17
STATOR

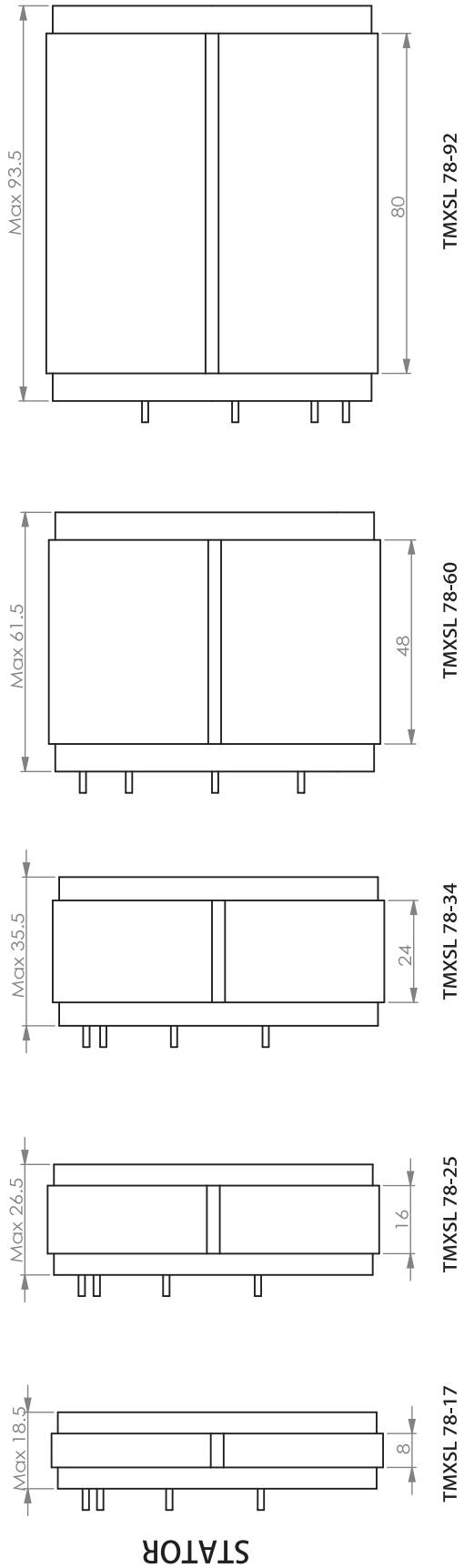

80.6
48.6
24.6
16.6
8.6
ROTOR

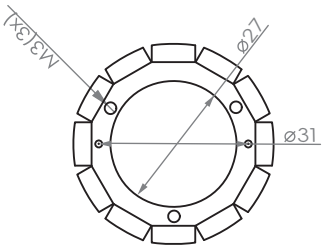

M3(4X)
ø15
ø19

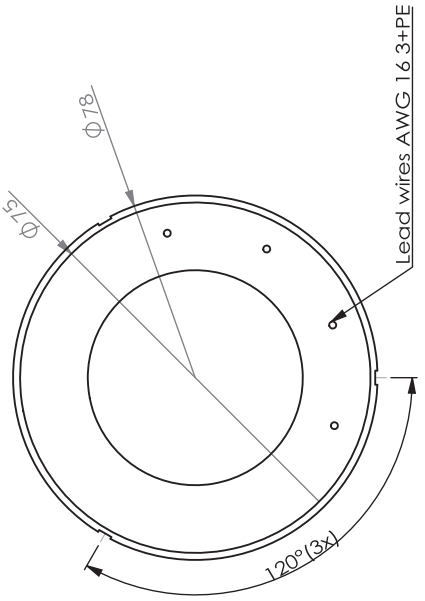

Φ 65
Φ 62
120° (3x)
Lead wires AWG 16 3+PE

Performance								
Parameter	Remarks	Symbol	Unit	TMXSL78-17	TMXSL78-25	TMXSL78-34	TMXSL78-60	TMXSL78-92
Winding Type				N	Y	Y	Y	Y
Motor type	3 Phase synchronous slotless (no iron core) 220V-380Vac rms (48V-600V)							
Peak torque@20℃/s increase	Magnet@25℃	Tp	Nm	0.57	1.38	2.20	4.40	7.33
Continuous torque	Coil@110℃	Tc	Nm	0.14	0.35	0.54	1.10	1.80
Maximum Speed	@Tc@48V	nmax	rpm	3000	3000	3000	3000	3000
Maximum Speed	@Tc	nmax	rpm	25000	25000	25000	25000	25000
Motor Torque Constant	Up to Ic	Kt	Nm/Arms	0.027	0.033	0.05	0.13	0.28
Motor Constant	Coils@25℃	Km	Nm^2/W	0.0002	0.0008	0.0015	0.0039	0.0084
Electrical								
Peak Current	Magnet@25℃	Ip	Arms	21.0	41.8	44.0	33.8	26.0
Max.Continuous Current	Coil@110℃	Ic	Arms	4.9	11.0	11.1	8.3	6.4
Back EMF Phase to Phase peak	25℃+/-10%	Kep	V/krpm	2.3	2.8	4.3	11.2	24.1
Back EMF Phase to Phase RMS	25℃+/-10%	Ke	V/krpm	1.6	2.0	3.0	7.9	17.0
Resistance Per Phase	Coil@25℃	Rph	Ω	1.11	0.44	0.56	1.44	1.92
Induction Per Phase	I<0.63Ip	Lph	mh	0.67	0.40	0.56	1.88	2.88
Electrical Time Constant	Coil@25℃	τe	ms	0.6	0.9	1.0	1.3	1.5
Max. Continuous Power Loss	All coils	Pc	W	116.8	187.6	254.3	403.3	309.5
Poles		Nmag.	nr	12.0	12.0	12.0	12.0	12.0
Thermal								
Thermal Resistance	Coils to mount. Sfc.	Rth	℃/W	0.99	0.54	0.39	0.26	0.14
Temperature Sensor				Optional PTC 1KΩ/NTC				
Mechanical								
Stator OD		Ods	mm	78				
Rotor ID		Idr	mm	27				
Rotor inertia		JR	$Kg*m^2$	1.30E-05	2.49E-05	3.75E-05	7.46E-05	1.27E-04
Total Mass	Rotor+stator ex.cables	W	kg	0.28	0.44	0.65	1.3	2
Power Cable Type	length 0.5m	Diameter	$mm(mm^2)$	Leadwires (4*1.5mm^2)				

*Remark: Y Z Types can be drivered with low voltage

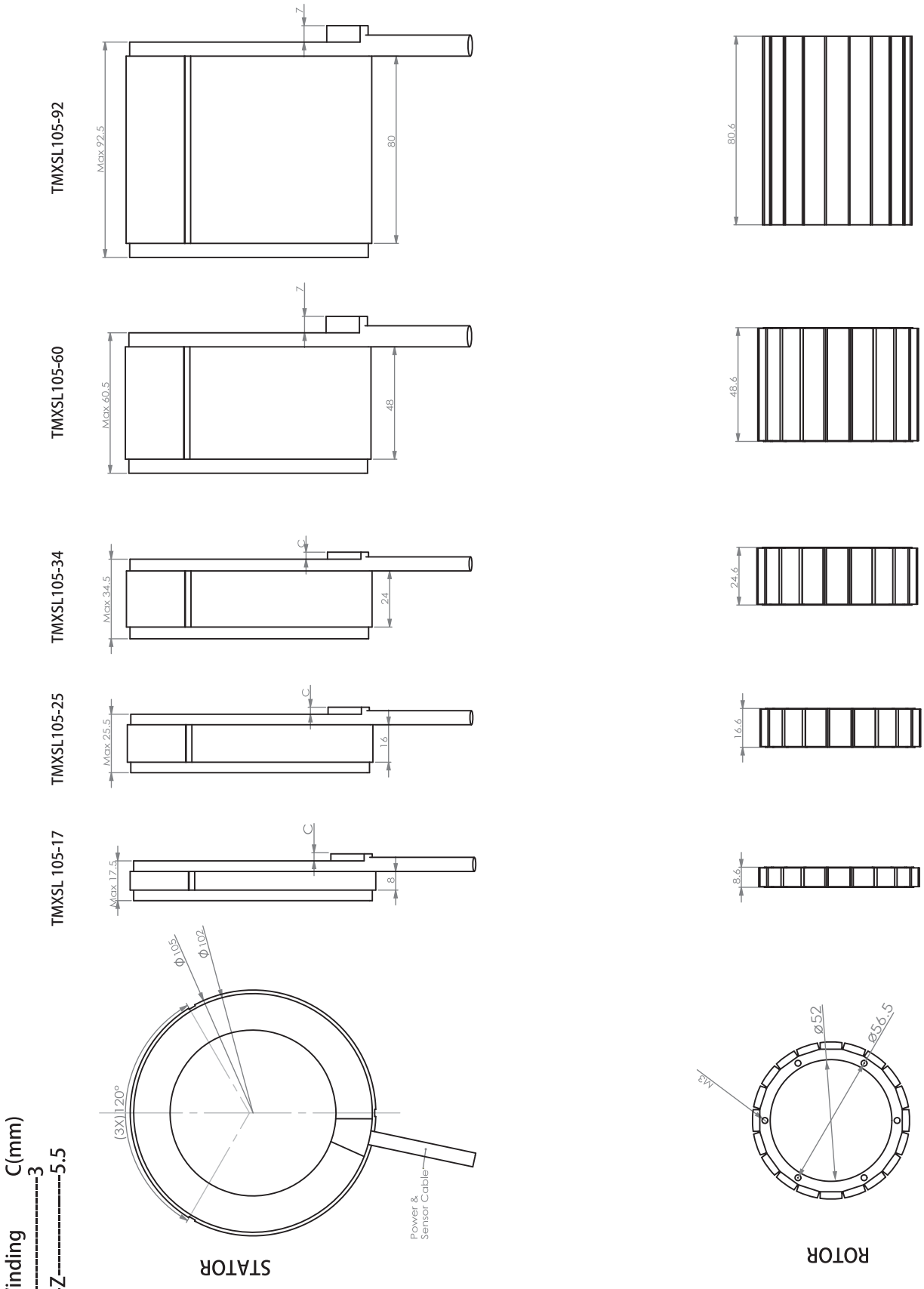

Max 93.5
80
TMXSL 78-92
Max 61.5
48
TMXSL 78-60
Max 35.5
24
TMXSL 78-34
Max 26.5
16
TMXSL 78-25
Max 18.5
8
TMXSL 78-17
STATOR
80.6
48.6
24.6
16.6
8.6
ROTOR


M3(3x)
ø27
ø31


Ø78
Ø75
Lead wires AWG 16 3+PE
120°(3x)

Performance															
Parameter	Remarks	Symbol	Unit	TMXSL105-17			TMXSL105-25			TMXSL105-34			TMXSL105-60	TMXSL105-92
Winding Type				N	Y	Z	N	Y	Z	N	Y	Z	N	Y
Motor type	3 phases synchronous slotless 220Vac rms (320Vdc)												380Vac rms (600Vdc)	
Peak torque@20℃/s increase	Magnet@25℃	Tp	Nm	1.20	1.2	1.2	3.2	3.2	3.2	5.4	5.4	5.4	12.0	20.0
Continuous torque	Coil@110℃	Tc	Nm	0.32	0.32	0.32	0.80	0.80	0.80	1.35	1.35	1.35	3.00	5.00
Maximum Speed	@Tc	nmax	rpm	20000	30000	50000	10000	20000	30000	5000	10000	20000	3000	3000
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
Motor Constant	Coils@25℃	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
Electrical														
Peak Current	Magnet@25℃	Ip	Arms	17.3	31.9	55.1	21.6	40.0	68.0	20.4	43.2	73.6	16.8	33.2
Max.Continuous Current	Coil@110℃	Ic	Arms	4.6	8.5	14.7	5.4	10.0	17.0	5.1	10.8	18.4	4.2	8.3
Back EMF Phase to Phase peak	25℃+/-10%	Kep	V/krpm	6	3	2	13	7	4	23	11	6	62	52
Back EMF Phase to Phase RMS	25℃+/-10%	Ke	V/krpm	4	2	1	9	5	3	16	8	4	43	37
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	6.08
Induction Per Phase	I<0.63Ip	Lph	mh	1.61	0.56	0.16	3.00	0.75	0.25	4.99	1.25	0.37	16.01	12.75
Electrical Time Constant	Coil@25℃	τe	ms	0.9	1.0	0.9	1.2	1.0	1.0	1.2	1.3	1.2	1.8	1.9
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
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
Thermal														
Thermal Resistance	Coils to mount. Sfc.	Rth	℃/W	0.68	0.68	0.68	0.34	0.34	0.34	0.24	0.24	0.24	0.14	0.11
Temperature Sensor				Optional PTC 1KΩ/NTC										
Mechanical														
Stator OD		Ods	mm	105										
Rotor ID		Idr	mm	52										
Rotor inertia		JR	$Kg*m^2$	7.6E-05			1.5E-04			2.2E-04			4.47E-04	7.58E-04
Total Mass	Rotor+stator ex.cables	W	kg	0.32			0.62			0.96			1.93	3.12
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)		7.4(4G1mm^2)	

*Remark: Y Z Types can be drivered with low voltage


TMXSL105-92
TMXSL105-60
TMXSL105-34
TMXSL105-25
TMXSL 105-17
Max 92.5
Max 60.5
Max 34.5
Max 25.5
Max 17.5
80
48
24
16
8
7
C
80.6
48.6
24.6
16.6
8.6
Φ105
Φ102
(3X)120°
Power &
Sensor Cable
STATOR
ROTOR
ø52
ø56.5
M3
Winding C(mm)
N----------3
Y-Z----------5.5

Performance

Parameter	Remarks	Symbol	Unit	TMXSL133-17			TMXSL133-25			TMXSL133-34			TMXSL133-60		TMXSL133-92
Winding Type				N	Y	Z	N	Y	Z	N	Y	Z	N	Z	Y
Motor type	3 phases synchronous slotless (no iron core) 230Vac rms (320Vdc)												380Vac rms (600Vdc)		
Peak torque@20℃/s increase	Magnet@25℃	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
Continuous torque	Coil@110℃	Tc	Nm	0.7	0.7	0.7	1.5	1.5	1.5	2.5	2.4	2.5	5.5	5.5	9.0
Maximum Speed	@Tc	nmax	rpm	14111	25501	44096	7055	12985	22280	4047	8819	15119	2835	11339	3053
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	1.300
Motor Constant	Coils@25℃	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	0.124

Electrical

Peak Current	Magnet@25℃	Ip	Arms	18.0	32.0	58.0	20.0	36.8	63.2	19.1	41.7	71.4	15.7	62.9	27.7
Max.Continuous Current	Coil@110℃	Ic	Arms	4.5	8.0	14.6	5.0	9.2	16.0	4.8	10	17.9	3.9	16.0	7.0
Back EMF Phase to Phase peak	25℃+/-10%	Kep	V/krpm	13	7	4	26	14	8	45	21	12	121	30	112
Back EMF Phase to Phase RMS	25℃+/-10%	Ke	V/krpm	9	5	3	18	10	6	32	15	9	85	21	79
Resistance Per Phase	Coil@25℃	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
Induction Per Phase	I<0.63Ip	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
Electrical Time Constant	Coil@25℃	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
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	852.4
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

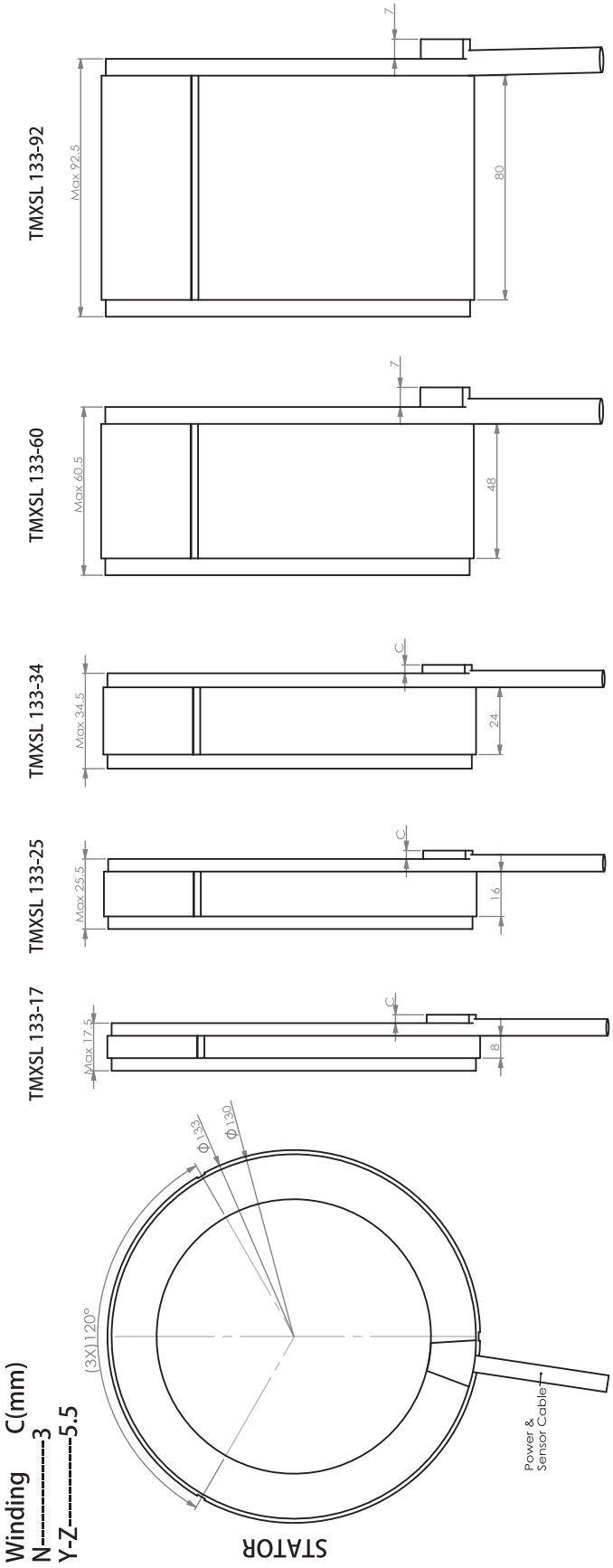
Thermal

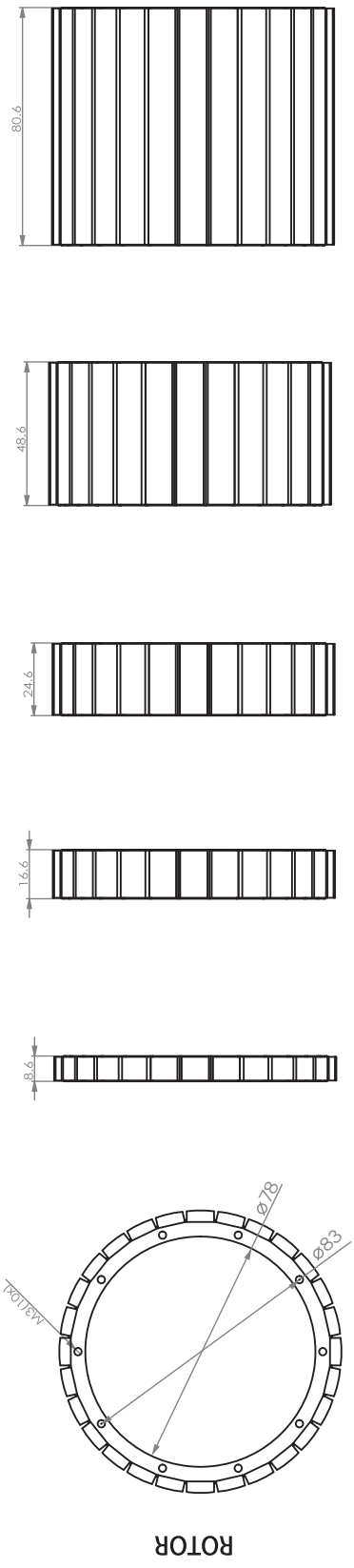
Thermal Resistance	Coils to mount. Sfc.	Rth	℃/W	0.5	0.5	0.5	0.28	0.28	0.28	0.2	0.2	0.2	0.13	0.13	0.099
Temperature Sensor				Optional PTC 1KΩ/NTC											

Mechanical

Stator OD		Ods	mm	133											
Rotor ID		Idr	mm	78											
Rotor inertia		JR	$Kg*m^2$	2.49E-04			4.86E-04			7.2E-04			1.44E-03		2.46E-03
Total Mass	Rotor+stator ex.cables	W	kg	0.55			0.955			1.37			2.75		4.3
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)		

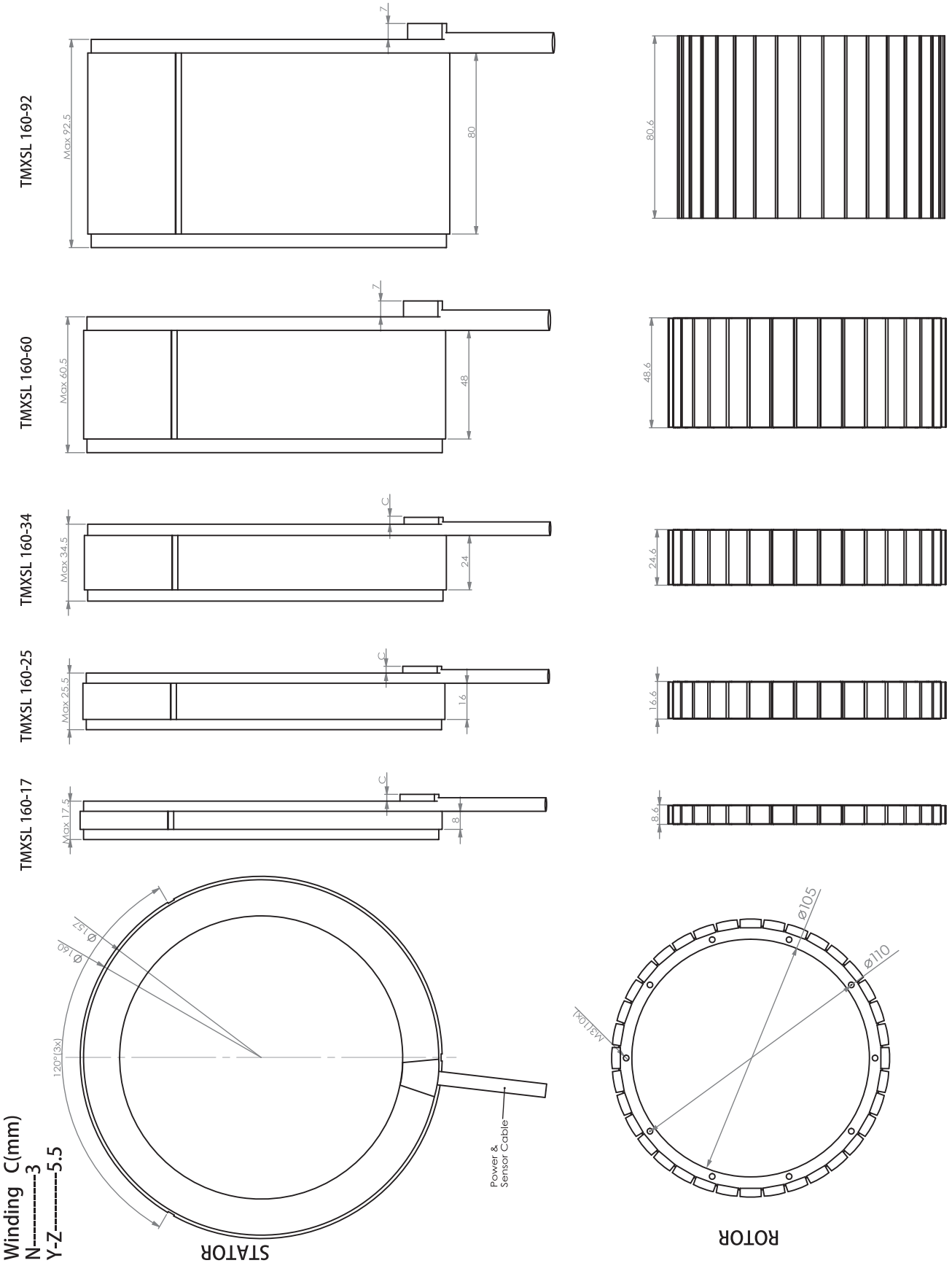
*Remark: Y Z Types can be drivered with low voltage


TMXSL 133-92
Max 92.5
80
7
TMXSL 133-60
Max 60.5
48
7
TMXSL 133-34
Max 34.5
24
C
TMXSL 133-25
Max 25.5
16
C
TMXSL 133-17
Max 17.5
8
C
Winding C(mm)
N----------3
Y-Z--------5.5
(3X)120°
Φ133
Φ130
Power &
Sensor Cable
STATOR


80.6
48.6
24.6
16.6
8.6
M3.1DP1
ø78
ø83
ROTOR

Performance													
Parameter	Remarks	Symbol	Unit	TMXSL160-17			TMXSL160-25			TMXSL160-34		TMXSL160-60	TMXSL160-92
Winding Type				N	Y	Z	N	Y	Z	N	Z	N	Y
Motor type	3 phases synchronous slotless (no iron core) 230Vac rms (320Vdc)											380Vac rms (600Vdc)	
Peak torque@20℃/s increase	Magnet@25℃	Tp	Nm	4.1	4.1	4.1	9.7	9.7	9.7	15.9	15.0	36.4	60.8
Continuous torque	Coil@110℃	Tc	Nm	1.03	1.03	1.03	2.43	2.43	2.43	3.98	3.75	9.10	15.20
Maximum Speed	@Tc	nmax	rpm	8819	15679	26458	4410	7898	13656	2453	9407	1725	1036
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
Motor Constant	Coils@25℃	Km	Nm^2/W	0.006	0.006	0.007	0.018	0.018	0.018	0.036	0.031	0.114	0.625
Electrical													
Peak Current	Magnet@25℃	Ip	Arms	17.2	30.5	51.5	20.3	36.3	62.7	18.4	66.7	15.8	15.9
Max.Continuous Current	Coil@110℃	Ic	Arms	4.3	7.6	12.9	5.1	9.1	15.7	4.6	16.7	4.0	4.0
Back EMF Phase to Phase peak	25℃+/-10%	Kep	V/krpm	21	12	7	41	23	13	74	19	198	330
Back EMF Phase to Phase RMS	25℃+/-10%	Ke	V/krpm	15	8	5	29	16	9	53	14	140	233
Resistance Per Phase	Coil@25℃	Rph	Ω	3.15	0.95	0.31	4.37	1.30	0.44	6.87	0.55	15.49	5.68
Induction Per Phase	I<0.63Ip	Lph	mh	3.78	1.24	0.40	6.12	1.95	0.66	10.99	0.88	26.33	16.47
Electrical Time Constant	Coil@25℃	τe	ms	1.2	1.3	1.3	1.4	1.5	1.5	1.6	1.6	1.7	2.9
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
Poles		Nmag.	nr	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0
Thermal													
Thermal Resistance	Coils to mount. Sfc.	Rth	℃/W	0.43	0.43	0.43	0.23	0.23	0.23	0.17	0.17	0.1	0.06
Temperature Sensor				Optional PTC 1KΩ/NTC									
Mechanical													
Stator OD		Ods	mm	160									
Rotor ID		Idr	mm	105									
Rotor inertia		JR	$Kg*m^2$	5.7E-04			1.1E-03			1.6E-03		3.36E-03	5.75E-03
Total Mass	Rotor+stator ex.cables	W	kg	0.65			1.15			1.6		3.3	5.5
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 drivered with low voltage


TMXSL 160-92
Max 92.5
80
7
80.6
TMXSL 160-60
Max 60.5
48
7
48.6
TMXSL 160-34
Max 34.5
24
C
24.6
TMXSL 160-25
Max 25.5
16
C
16.6
TMXSL 160-17
Max 17.5
8
C
8.6
Ø157
Ø180
120°(3x)
Power &
Sensor Cable
STATOR
ø105
ø110
M3(10X)
ROTOR
Winding C(mm)
N----------3
Y-Z--------5.5

ITG Linear Motor

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