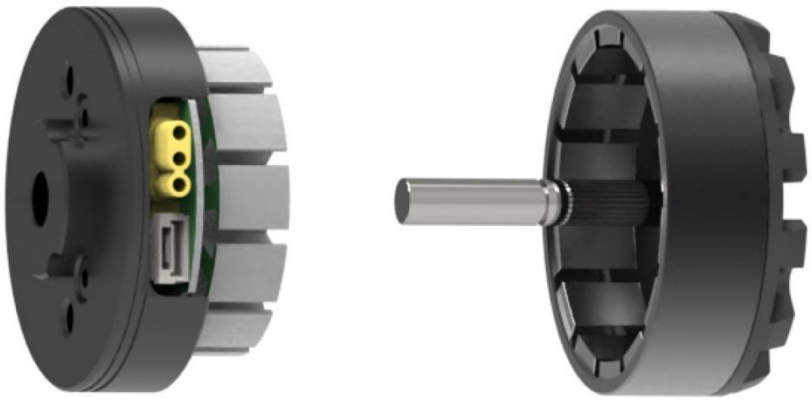
CATALOG

OUTRUNNER MOTOR 外转子无刷电机
GEAR MOTOR 减速电机



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OUTRUNNER BLDC MOTOR



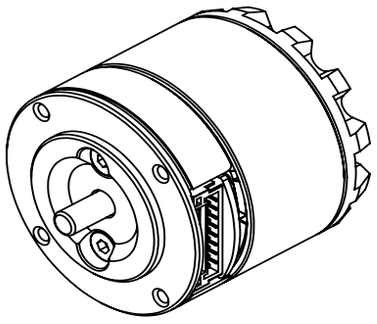
stator rotor

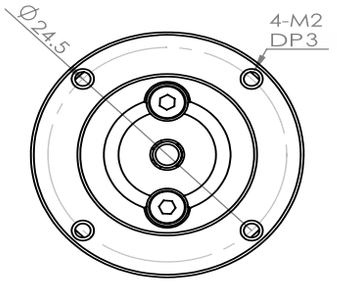
Naming rule:

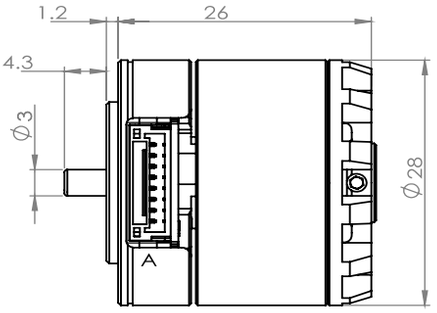
MX 22 10 KV 360 H A

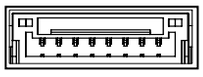
- MX: Motor eXternal rotor
- 22: Stator Diameter
- 10: Effective Height
- 360: KV value
- H: Hall sensor
- A: Variant

MX2210KV360HA









Unit:mm

Connector:	GH1.25-F-8P
Cable：	GH8P-M-28AWG-15cm

Pin definition(left to right):

1.HW 2.HV 3.HU 4.GND 5.VCC 6.W 7.V 8.U

General Characteristics :

Motor Configuration

	Unit	
Mechanical structure		outrunner
Number of pole pairs		7
Number of phases		3
Winding connection		star
Total weight	g	52
Rotor inertia	$uNm*s^2$	0.75

	Unit	
Ingress protection		IP 54
Speed constant	KV	360
Torque constant	mNm/A	23
Single phase resistance	mOhm	750
DQ inductance	uH	100
Friction	uN*m*s	0.5

Thermal Data

Thermal resistance houing -ambient	6.1K/W
Thermal resistance winding-housing	9.4K/W
Ambient temperature	-40 ºC - 100 ºC
Maximal winding temperature	120 ºC

Sensoric

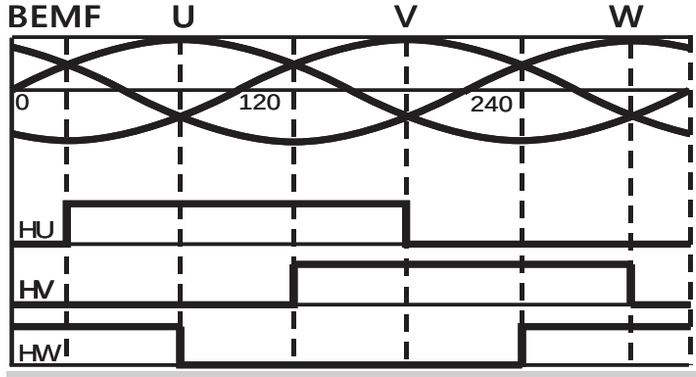
Sensor type	bipolar self-locking hall
Number of halls	3
Supply voltage	5V
Electrical angle	120 degrees

Nominal & Stall

	Unit		
Nominal voltage	V	12	24
No load speed	rpm	4300	8600
No load current	mA	150	260
Nominal speed	rpm	3300	7200
Nominal torque	mNm	33	45
Nominal current	A	1.3	1.7
Maximal power	W	15	45
Maximal efficiency		83%	84%
Stall torque	mNm	105	210
Stall current	A	4.5	8

Hall sequence regards to back EMF

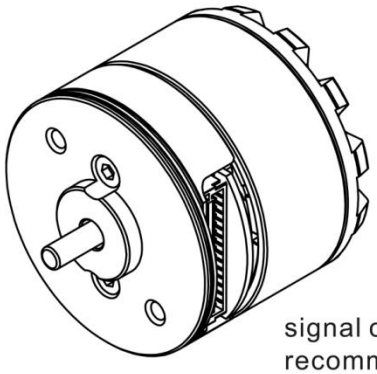
tested in CCW direction

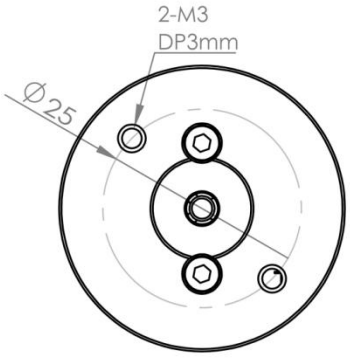


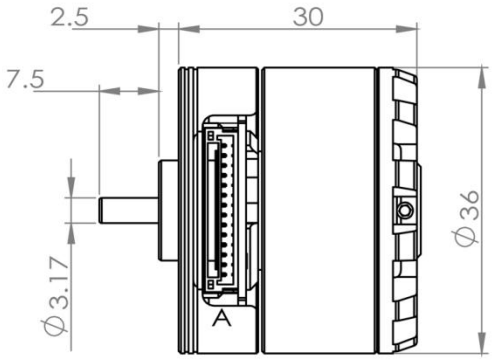
Pull-up resistance	yes

ATTENTION: Stall operation is not recommended, please do necessary protection to avoid irreparable damage.

MX2810KV150HA







signal connector : GH1.25-F-14P
recommended signal cable :
GH14P-M-28AWG-15CM



General Characteristics:

Motor Configuration

Mechanical structure		outrunner	Ingress protection		IP 44
Number of pole pairs		7	Speed constant	KV	150
Number of phases		3	Torque constant	mN/A	52
Winding connection		star	Single phase resist.	Ohm	2
Total weight		gram 90	DQ inductance	uH	400
Rotor inertia		$uNm*s^2$ 1.6	Friction	uN*m*s	0.5

Thermal Data

Thermal resistance housing-ambient	5.4K/W
Thermal resistance winding-housing	7.9K/W
Ambient temperature	-40~100 °C
Max. winding temperature	120 °C

Sensoric

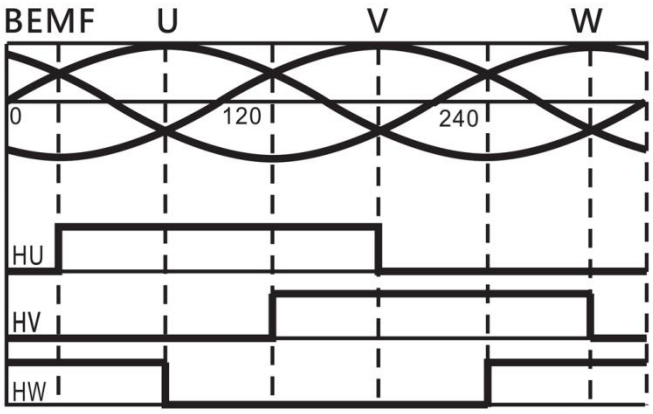
Sensor type	bipolar self-locking hall
Number of halls	3
Supply voltage	5V
Electrical angle	120 degrees

Nominal & Stall

Nominal voltage	V	12	24
No load speed	rpm	1800	3600
Noload current	mA	110	120
Nominal speed	rpm	1150	2400
Nominal torque	mNm	47	77
Nominal current	A	0.9	1.4
Max. power	W	6	22
Max. efficiency		63%	70%
Stall torque	mNm	120	180
Stall current	A	2.2	3.5

Hall sequence regards to back EMF

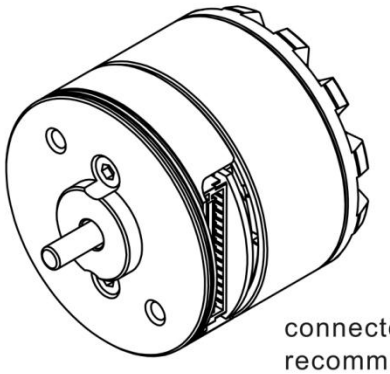
Tested in CCW direction

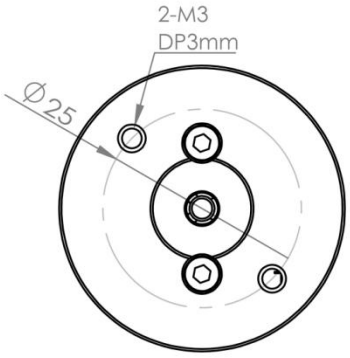


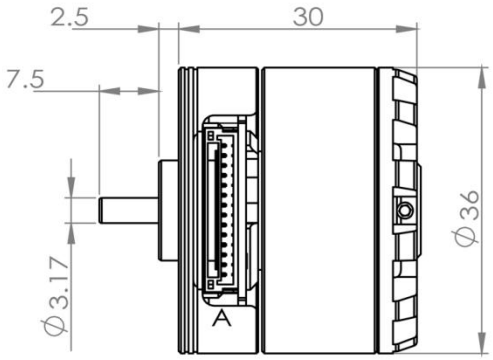
Pull-up resistance	yes

ATTENTION: Stall operation is not recommended. Please do necessary protection to avoid irreparable damage.

MX2810KV200HA







connector : GH1.25-F-14P
recommended signal cable :
GH14P-M-28AWG-15CM



General Characteristics:

Motor Configuration

Mechanical structure		outrunner	Ingress protection		IP 44
Number of pole pairs		7	Speed constant	KV	200
Number of phases		3	Torque constant	mN/A	48
Winding connection		star	Single phase resist.	Ohm	1.3
Total weight	gram	90	DQ inductance	uH	260
Rotor inertia	$uNm*s^2$	1.6	Friction	uN*m*s	0.5

Thermal Data

Thermal resistance housing-ambient	5.4K/W
Thermal resistance winding-housing	7.9K/W
Ambient temperature	-40~100 °C
Max. winding temperature	120 °C

Sensoric

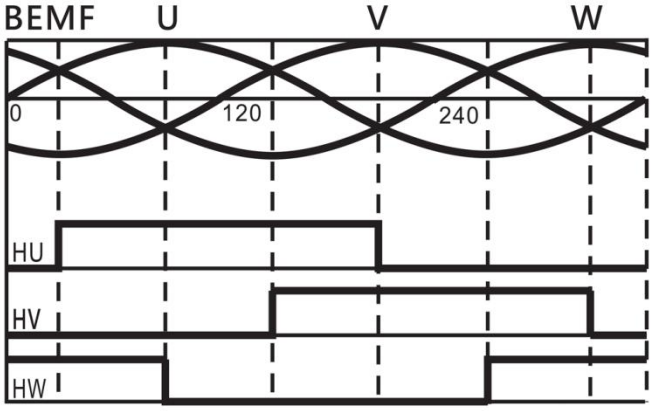
Sensor type	bipolar self-locking hall
Number of halls	3
Supply voltage	5V
Electrical angle	120 degrees

Nominal & Stall

Nominal voltage	V	12	24
No load speed	rpm	2400	4800
Noload current	mA	150	180
Nominal speed	rpm	1800	3400
Nominal torque	mNm	47	92
Nominal current	A	1	1.9
Max. power	W	12	38
Max. efficiency		83%	86%
Stall torque	mNm	160	230
Stall current	A	3.5	5.5

Hall sequence regards to back EMF

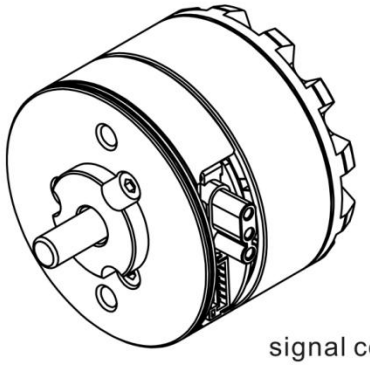
Tested in CCW direction

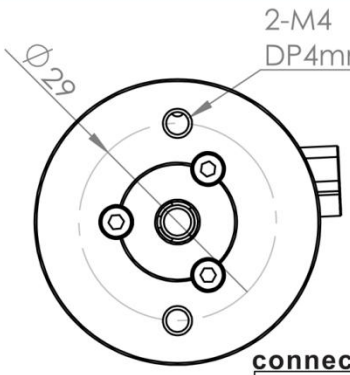


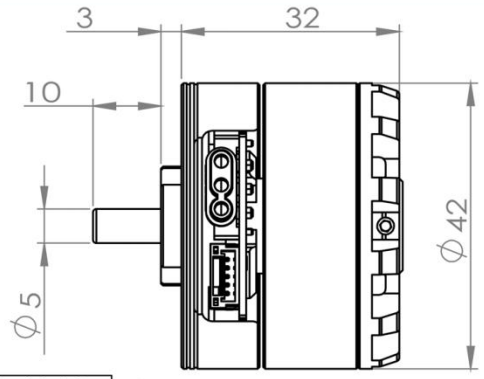
Pull-up resistance	yes

ATTENTION: Stall operation is not recommended. Please do necessary protection to avoid irreparable damage.

MX3310KV125HA







signal connector : GH1.25-F-5P
recommended signal cable :
GH5P-M-28AWG-15CM

connector:



phase connector : MR30PW-F
recommended power cable :
MR30-M-22AWG-15CM

General Characteristics:

Motor Configuration

Mechanical structure		outrunner	Ingress protection		IP 44
Number of pole pairs		7	Speed constant	KV	125
Number of phases		3	Torque constant	mN/A	45
Winding connection		star	Single phase resist.	Ohm	1.75
Total weight	gram	130	DQ inductance	uH	450
Rotor inertia	$uNm*s^2$	2.7	Friction	uN*m*s	0.5

Thermal Data

Thermal resistance housing-ambient	4.8K/W
Thermal resistance winding-housing	7.1K/W
Ambient temperature	-40~100 °C
Max. winding temperature	120 °C

Sensoric

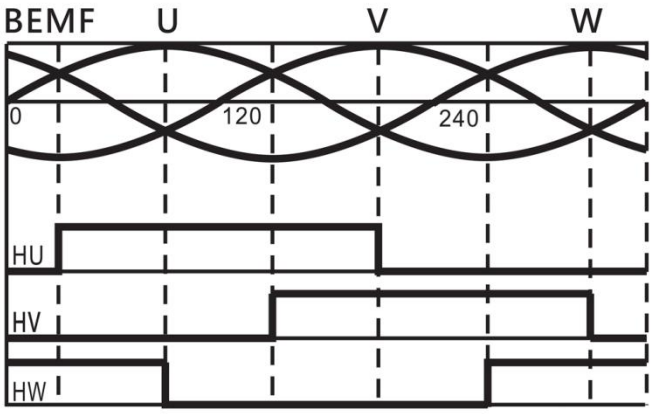
Sensor type	bipolar self-locking hall
Number of halls	3
Supply voltage	5V
Electrical angle	120 degrees

Nominal & Stall

Nominal voltage	V	12	24	48
No load speed	rpm	1500	3000	6000
Noload current	mA	90	150	300
Nominal speed	rpm	1100	2100	4200
Nominal torque	mNm	54	117	200
Nominal current	A	0.8	1.6	3
Max. power	W	8	30	110
Max. efficiency		80%	82%	85%
Stall torque	mNm	300	320	500
Stall current	A	3.5	4.5	8.4

Hall sequence regards to back EMF

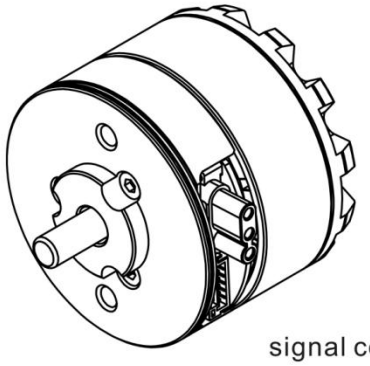
Tested in CCW direction

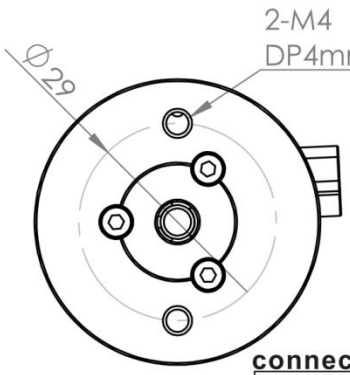


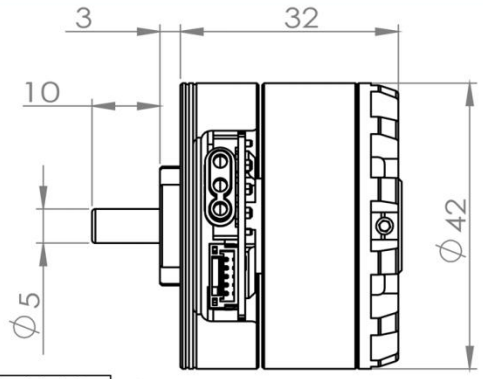
Pull-up resistance	yes

ATTENTION: Stall operation is not recommended. Please do necessary protection to avoid irreparable damage.

MX3310KV200HA







signal connector : GH1.25-F-5P
recommended signal cable :
GH5P-M-28AWG-15CM

connector:



phase connector : MR30PW-F
recommended power cable :
MR30-M-22AWG-15CM

General Characteristics:

Motor Configuration

Mechanical structure	outrunner	Ingress protection	IP 44
Number of pole pairs	7	Speed constant KV	200
Number of phases	3	Torque constant mN/A	45
Winding connection	star	Single phase resist. mOhm	600
Total weight	gram 130	DQ inductance uH	140
Rotor inertia	uNm*s^2 2.7	Friction uN*m*s	0.5

Thermal Data

Thermal resistance housing-ambient	4.8K/W
Thermal resistance winding-housing	7.1K/W
Ambient temperature	-40~100 °C
Max. winding temperature	120 °C

Sensoric

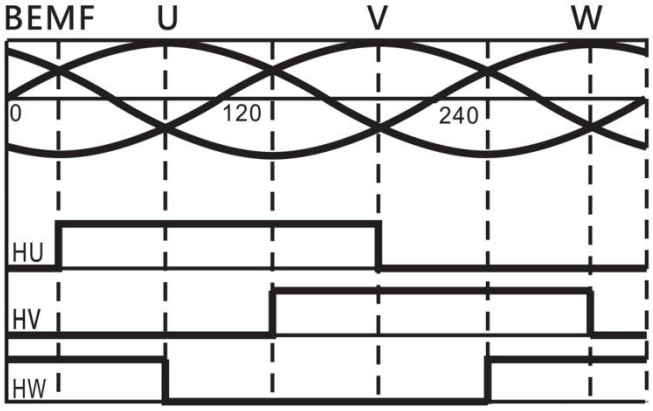
Sensor type	bipolar self-locking hall
Number of halls	3
Supply voltage	5V
Electrical angle	120 degrees

Nominal & Stall

Nominal voltage	V	12	24	48
No load speed	rpm	2400	4800	9600
Noload current	mA	150	270	320
Nominal speed	rpm	1500	3400	7800
Nominal torque	mNm	100	180	350
Nominal current	A	2.2	3.7	7.2
Max. power	W	20	70	240
Max. efficiency		80%	86%	86%
Stall torque	mNm	300	400	740
Stall current	A	3.5	5.5	9.8

Hall sequence regards to back EMF

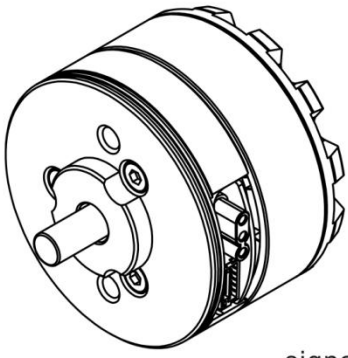
Tested in CCW direction

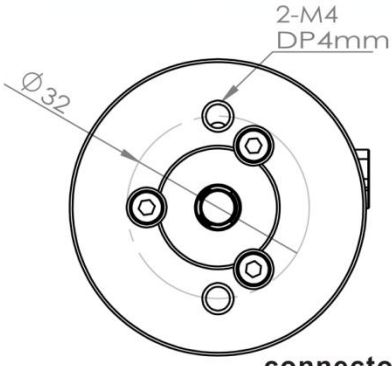


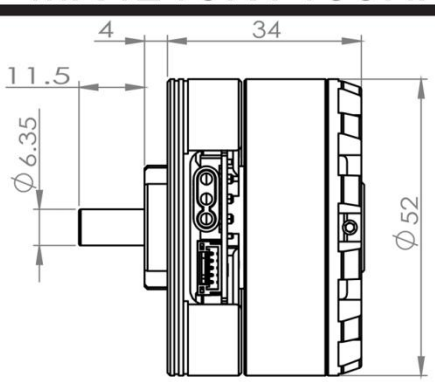
Pull-up resistance	yes

ATTENTION: Stall operation is not recommended. Please do necessary protection to avoid irreparable damage.

MX4210KV150HA







signal connector : GH1.25-F-5P
recommended signal cable :
GH5P-M-28AWG-15CM

connector:



phase connector : MR30PW-F
recommended power cable :
MR30-M-20AWG-15CM

General Characteristics:

Motor Configuration

Mechanical structure		outrunner	Ingress protection		IP 44
Number of pole pairs		7	Speed constant	KV	150
Number of phases		3	Torque constant	mN/A	65
Winding connection		star	Single phase resist.	mOhm	410
Total weight	gram	220	DQ inductance	uH	200
Rotor inertia	$uNm*s^2$	6.5	Friction	uN*m*s	0.5

Thermal Data

Thermal resistance housing-ambient	4.5K/W
Thermal resistance winding-housing	6.8K/W
Ambient temperature	-40~100 °C
Max. winding temperature	120 °C

Sensoric

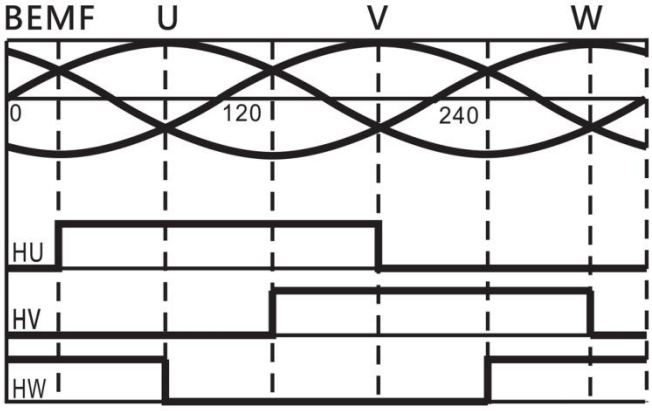
Sensor type	bipolar self-locking hall
Number of halls	3
Supply voltage	5V
Electrical angle	120 degrees

Nominal & Stall

Nominal voltage	V	24	48
No load speed	rpm	3600	7200
Noload current	mA	225	300
Nominal speed	rpm	2550	3100
Nominal torque	mNm	280	560
Nominal current	A	4.2	8.4
Max. power	W	74	256
Max. efficiency		85%	86%
Stall torque	mNm	670	1300
Stall current	A	11.5	25

Hall sequence regards to back EMF

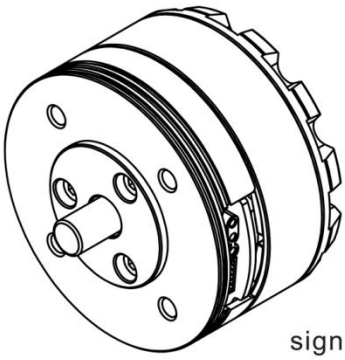
Tested in CCW direction

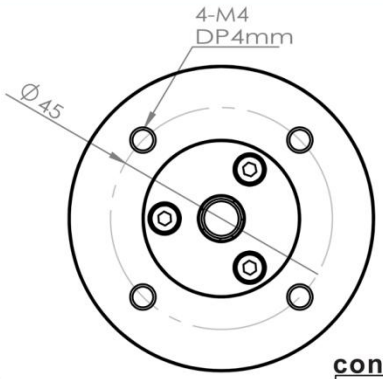


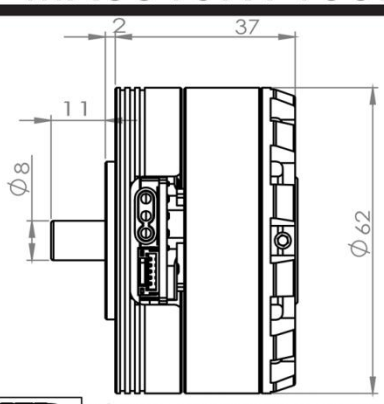
Pull-up resistance	yes

ATTENTION: Stall operation is not recommended. Please do necessary protection to avoid irreparable damage.

MX5310KV100HA







signal connector : GH1.25-F-5P
recommended signal cable :
GH5P-M-28AWG-15CM

connector:



phase connector : MR30PW-F
recommended power cable :
MR30-M-18AWG-15CM

General Characteristics:

Motor Configuration

Mechanical structure		outrunner	Ingress protection		IP 44
Number of pole pairs		7	Speed constant	KV	100
Number of phases		3	Torque constant	mN/A	44
Winding connection		star	Single phase resist.	mOhm	400
Total weight	gram	300	DQ inductance	uH	200
Rotor inertia	$uNm*s^2$	8.2	Friction	uN*m*s	0.6

Thermal Data

Thermal resistance housing-ambient	4.9K/W
Thermal resistance winding-housing	3.8K/W
Ambient temperature	-40~100 °C
Max. winding temperature	120 °C

Sensoric

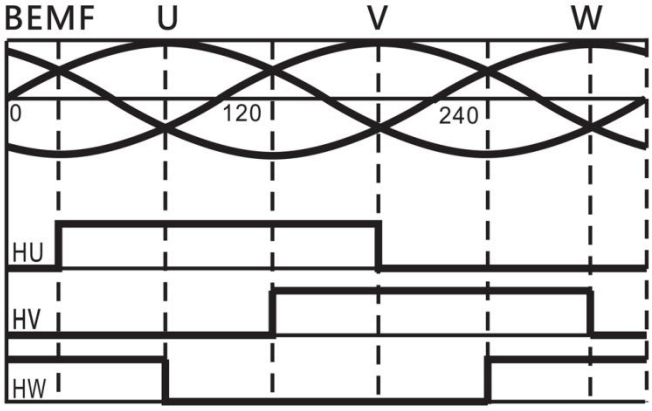
Sensor type	bipolar self-locking hall
Number of halls	3
Supply voltage	5V
Electrical angle	120 degrees

Nominal & Stall

Nominal voltage	V	24	48
No load speed	rpm	2450	4900
Noload current	mA	230	500
Nominal speed	rpm	3600	7200
Nominal torque	mNm	500	1000
Nominal current	A	1.2	2.4
Max. power	W	100	380
Max. efficiency		82%	83%
Stall torque	N	1.45	2.8
Stall current	A	14	30

Hall sequence regards to back EMF

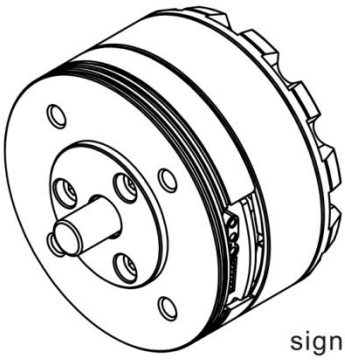
Tested in CCW direction

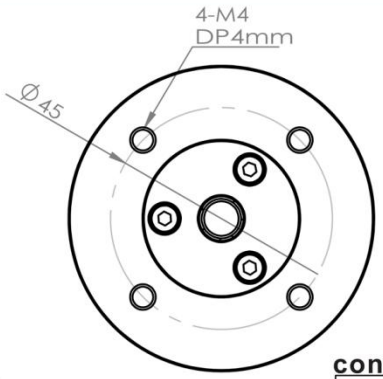


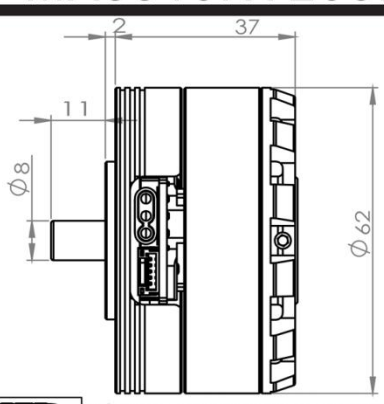
Pull-up resistance	yes

ATTENTION: Stall operation is not recommended. Please do necessary protection to avoid irreparable damage.

MX5310KV200HA







signal connector : GH1.25-F-5P
recommended signal cable :
GH5P-M-28AWG-15CM

connector:



phase connector : MR30PW-F
recommended power cable :
MR30-M-18AWG-15CM

General Characteristics:

Motor Configuration

Mechanical structure		outrunner	Ingress protection		IP 44
Number of pole pairs		7	Speed constant	KV	200
Number of phases		3	Torque constant	mN/A	44
Winding connection		star	Single phase resist.	mOhm	200
Total weight	gram	300	DQ inductance	uH	1000
Rotor inertia	$uNm*s^2$	8.2	Friction	uN*m*s	0.6

Thermal Data

Thermal resistance housing-ambient	4.9K/W
Thermal resistance winding-housing	3.8K/W
Ambient temperature	-40~100 °C
Max. winding temperature	120 °C

Sensoric

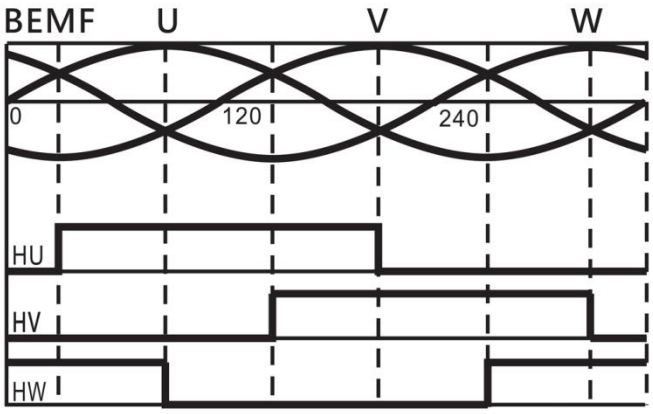
Sensor type	bipolar self-locking hall
Number of halls	3
Supply voltage	5V
Electrical angle	120 degrees

Nominal & Stall

Nominal voltage	V	24	48
No load speed	rpm	4800	9600
Noload current	mA	550	700
Nominal speed	rpm	3600	7200
Nominal torque	mNm	500	1000
Nominal current	A	1.2	2.4
Max. power	W	400	1500
Max. efficiency		82%	85%
Stall torque	N	1.2	2.3
Stall current	A	22	45

Hall sequence regards to back EMF

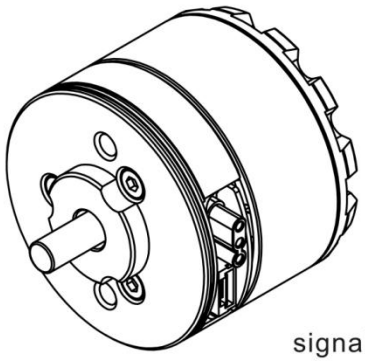
Tested in CCW direction

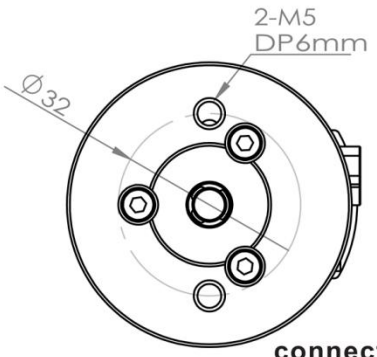


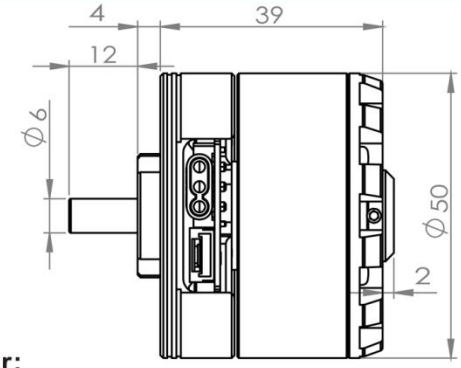
Pull-up resistance	yes

ATTENTION: Stall operation is not recommended. Please do necessary protection to avoid irreparable damage.

MX4115KV90HA







signal connector : GH1.25-F-5P
recommended signal cable :
GH5P-M-28AWG-15CM

connector:



phase connector : MR30PW-F
recommended power cable :
MR30-M-20AWG-15CM

General Characteristics:

Motor Configuration

Mechanical structure		outrunner	Ingress protection		IP 44
Number of pole pairs		7	Speed constant	KV	90
Number of phases		3	Torque constant	mN/A	100
Winding connection		star	Single phase resist.	mOhm	
Total weight	gram	250	DQ inductance	uH	200
Rotor inertia	$uNm*s^2$	7.8	Friction	uN*m*s	0.6

Thermal Data

Thermal resistance housing-ambient	4.3K/W
Thermal resistance winding-housing	6.2K/W
Ambient temperature	-40~100 °C
Max. winding temperature	120 °C

Sensoric

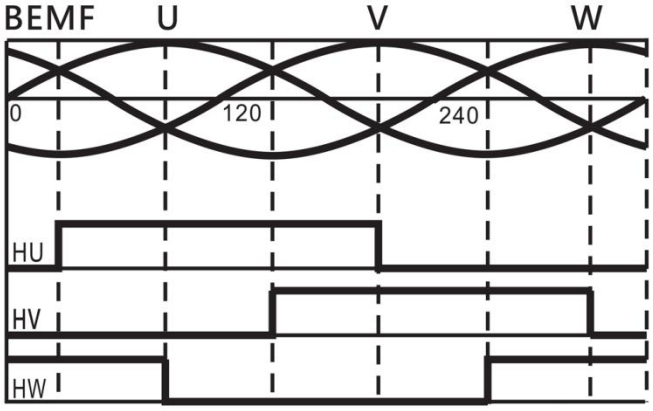
Sensor type	bipolar self-locking hall
Number of halls	3
Supply voltage	5V
Electrical angle	120 degrees

Nominal & Stall

Nominal voltage	V	24
No load speed	rpm	2160
Noload current	mA	250
Nominal speed	rpm	1700
Nominal torque	mNm	210
Nominal current	A	2.2
Max. power	W	57
Max. efficiency		73%
Stall torque	mNm	800
Stall current	A	7

Hall sequence regards to back EMF

Tested in CCW direction



Pull-up resistance	yes

ATTENTION: Stall operation is not recommended. Please do necessary protection to avoid irreparable damage.

OUTRUNNER BLDC GEARMOTOR







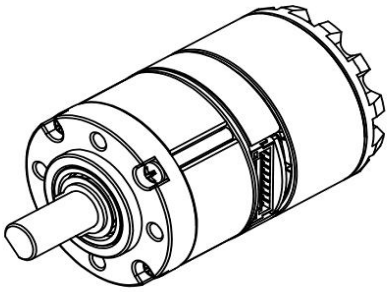
outrunner motor

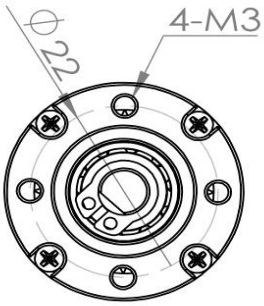
planetary gearbox

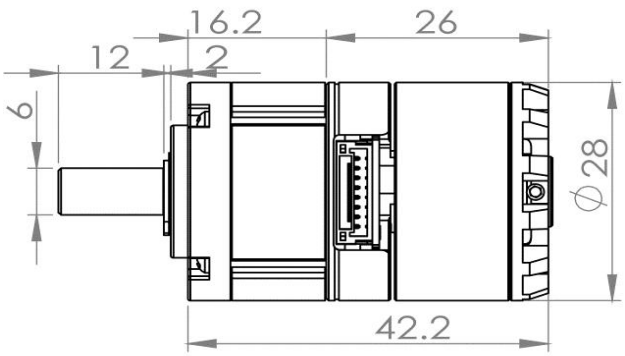
Naming rule:

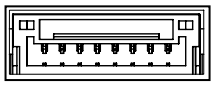
MX2210KV360HA - **GP** **28** **L1** **A** **3.3**

- MX2210KV360HA: Motor Model
- GP: Gearbox Planetary
- 28: Diameter
- L1: Gearbox Levels
- A: Variant
- 3.3: Gear ratio









Connector:	GH1.25-F-8P
Cable：	GH8P-M-28AWG-15cm

Pin definition(left to right):

1.HW 2.HV 3.HU 4.GND 5.VCC 6.W 7.V 8.U

General Characteristics :

Basic Dimensions	Unit	
Diametier		28
Body length	mm	42.2
Output shaft diameter	mm	6
Output shaft lenghth	mm	12

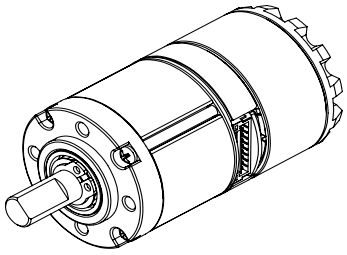
Motor Features	Unit	
Motor type		BLDC outrunner
Motor model		MX2210KV360HA
Pole pairs		7
Number of phases		3

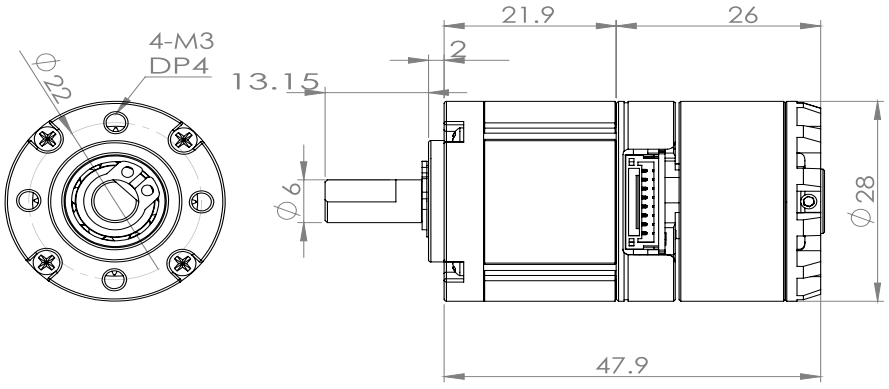
*For more motor features please refer datasheet "MX2210KV360HA"

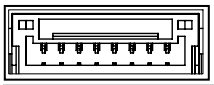
Gearbox Features	Unit	
Gearbox model		GP28L1A
Gearbox type		Planetary
Gearbox ratio	K	3.3
Gearbox levels		1
Gearbox diameter	mm	28
Gearbox length	mm	16.2
Gearbox efficiency		90%
Operating torque	kg*cm	5
Brakeing torque	kg*cm	15

Nominal & Stall	Unit		
Gearbox ratio	K	3.3	3.3
Nominal voltage	V	12	24
Noload speed	rpm	1303	2606
Nominal speed	rpm	1000	2182
Nominal torque	mNm	109	149
Nominal current	A	1.4	1.9
Maximal power	W	15	45
Maximal efficiency		75%	76%
Stall torque	mNm	347	693
Stall current	A	4.5	8

*Attention: Stall operation is not recommended, please do necessary protection to avoid irreparable damage!







Connector:	GH1.25-F-8P
Cable：	GH8P-M-28AWG-15cm

Pin definition(left to right):

1.HW 2.HV 3.HU 4.GND 5.VCC 6.W 7.V 8.U

General Characteristics :

Basic Dimensions	Unit	
Diameter	mm	28
Body length	mm	47.9
Output shaft diameter	mm	6
Output shaft length	mm	13.15

Motor Features	Unit
Motor type	BLDC outrunner
Motor model	MX2210KV360HA
Pole pairs	7
Number of phases	3

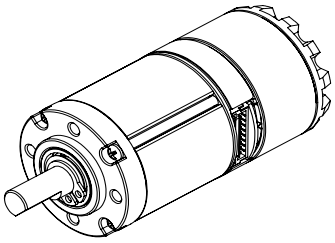
*For more motor features please refer datasheet "MX2210KV360HA"

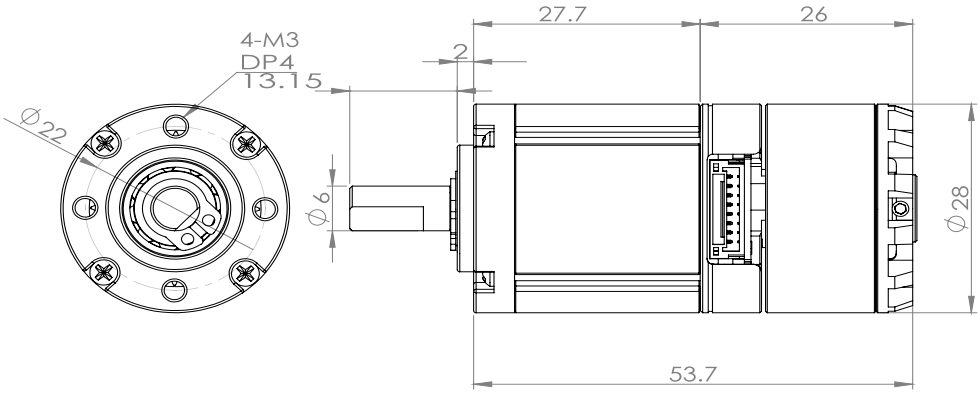
Gearbox Features	Unit	
Gearbox model		GP28L2A
Gearbox type		Planetary
Gearbox ratio	K	11.2/15.5/21.5*
Gearbox levels		2
Gearbox diameter	mm	28
Gearbox length	mm	21.9
Gearbox efficiency		90%
Operating torque	kg*cm	10
Braking torque	kg*cm	30

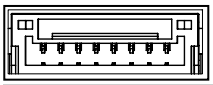
Nominal & Stall	Unit				*			*
Gearbox ratio	K	11.2	15.5	21.5	11.2	15.5	21.5
Nominal voltage	V	12	12	12	24	24	24
Noload speed	rpm	384	277	200	768	555	400
Nominal speed	rpm	295	213	153	643	465	335
Nominal torque	mNm	370	512	710	504	698	968
Nominal current	A	1.4	1.4	1.4	1.9	1.9	1.9
Maximal power	W	14.3	14.3	14.3	42.8	42.8	42.8
Maximal efficiency		75%	75%	75%	76%	76%	76%
Stall torque	Nm	1.2	1.6	2.3	2.4	3.3	4.5
Stall current	A	4.5	4.5	4.5	8	8	8

*Ratio 21.5 is in prototype phase.

*Attention: Stall operation is not recommended, please do necessary protection to avoid irreparable damage!







Connector:	GH1.25-F-8P
Cable：	GH8P-M-28AWG-15cm

Pin definition(left to right):

1.HW 2.HV 3.HU 4.GND 5.VCC 6.W 7.V 8.U

General Characteris tics :

Basic Dimensions	Unit	
Diametier	mm	28
Body length	mm	53.7
Output shaft diamete	mm	6
Output shaft lenghth	mm	13.15

Motor Features	Unit
Motor type	BLDC outrunner
Motor model	MX2210KV360HA
Pole pairs	7
Number of phases	3

*For more motor features please refer datasheet "MX2210KV360HA".

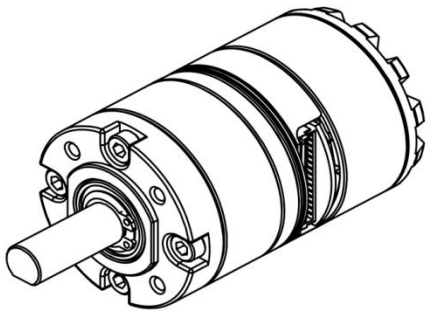
Gearbox Features	Unit	
Gearbox model		GP28L3A
Gearbox type		Planetary
Gearbox ratio	K	37.7/52.1/72*
Gearbox levels		2
Gearbox diameter	mm	28
Gearbox length	mm	27.7
Gearbox efficiency		82%
Operating torque	kg*cm	25
Brakeing torque	kg*cm	75

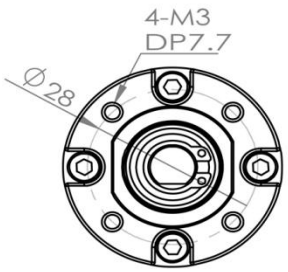
Nominal & Stall	Unit			*			*
Gearbox ratio	K	37.7	52.1	72	37.7	52.1	72
Nominal voltage	V	12	12	12	24	24	24
Noload speed	rpm	114	83	60	228	165	119
Nominal speed	rpm	95	69	50	191	138	100
Nominal torque	mNm	829	1146	1584	1697	2345	3240
Nominal current	A	1.0	1.0	1.0	1.9	1.9	1.9
Maximal power	W	13.5	13.5	13.5	49.5	49.5	49.5
Maximal efficiency		68%	68%	68%	69%	69%	69%
Stall torque	Nm	4.0	5.5	7.6	7.9	10.9	15.1
Stall current	A	1.5	1.5	1.5	3	3	3

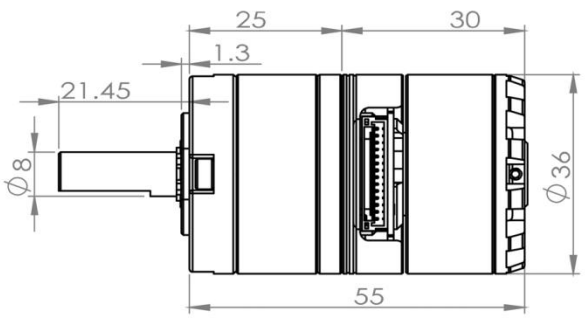
*Ratio 72 is in prototype phase.

*Attention: Stall operation is not recommended, please do necessary protection to avoid irreparable damage!

MX2810KV200HA-GP36L1A









Unit:mm

Connector：	GH1.25-F-14P
Cable：	GH14P-M-28AWG-15cm

Pin definition(left to right):
HW HV HU 5V GND W W W V V V U U U

General Characteris itcs：

Basic Dimensions	Unit	
Diametier	mm	36
Body length	mm	55
Output shaft diameter	mm	8
Output shaft lenghth	mm	21.45

Motor Features	Unit
Motor type	BLDC outrunner
Motor model	MX2810KV200HA
Pole pairs	7
Number of phases	3

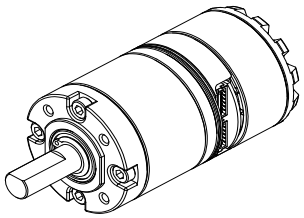
*For more motor features please refer datasheet "MX2810KV200HA".

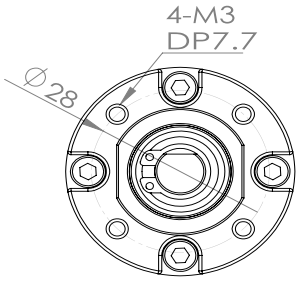
Gearbox Features	Unit	
Gearbox model		GP36L1A
Gearbox type		Planetary
Gear ratio	K	3.7/5.2
Gearbox levels		1
Gearbox diameter	mm	36
Gearbox length	mm	25
Gearbox efficiency		90%
Operating torque	kg*cm	10
Brakeing torque	kg*cm	30

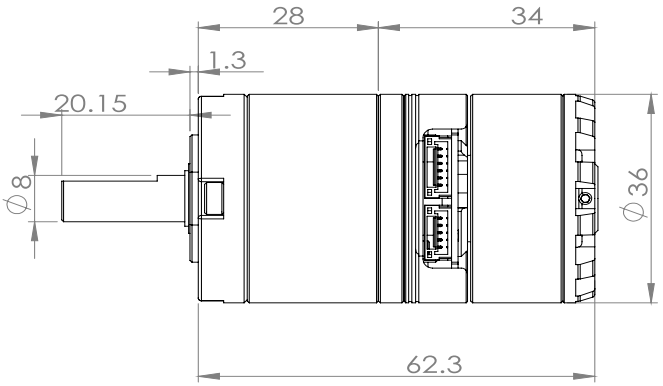
Nominal & Stall Unit

Gear ratio	K	3.7	5.2	3.7	5.2
Nominal voltage	V	12	12	24	24
Noload speed	rpm	649	462	1297	923
Nominal speed	rpm	486	346	919	654
Nominal torque	mNm	174	244	340	478
Nominal current	A	1	1	1.9	1.9
Maximal power	W	12	12	38	38
Maximal efficiency		75%	75%	77%	77%
Stall torque*	mNm	592	832	851	1196
Stall current	A	3.5	3.5	5.5	5.5

Attention: Stall operation is not recommended, please do necessary protection to avoid irreparable damage!

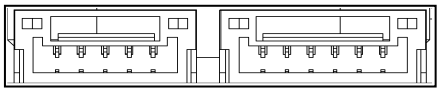






Signal Connector (P1):	GH1.25-F-5P
Signal Cable：	GH5P-M-28AWG-15cm
Phase connector (P2):	GH1.25-F-6P
Cable：	GH6P-M-28AWG-15cm

P1 (5 PIN): P2(6 PIN):



Pin definition(left to right):

P1: 1.HW 2.HV 3.HU 4.VCC 5.GND **P2:** 1.W 2.W 3.V 4.V 5.U 6.U

General Characteristics：

Basic Dimensions	Unit	
Diametier	mm	36
Body length	mm	62.3
Output shaft diameter	mm	8
Output shaft lenghth	mm	13.15

Motor Features	Unit	
Motor type		BLDC outrunner
Motor model		MX2810KV200HA
Pole pairs		7
Number of phases		3

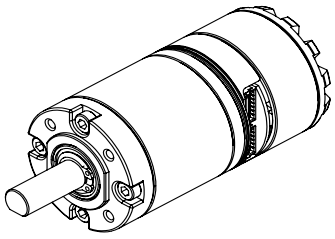
*For more motor features please refer datasheet "MX2210KV360HA".

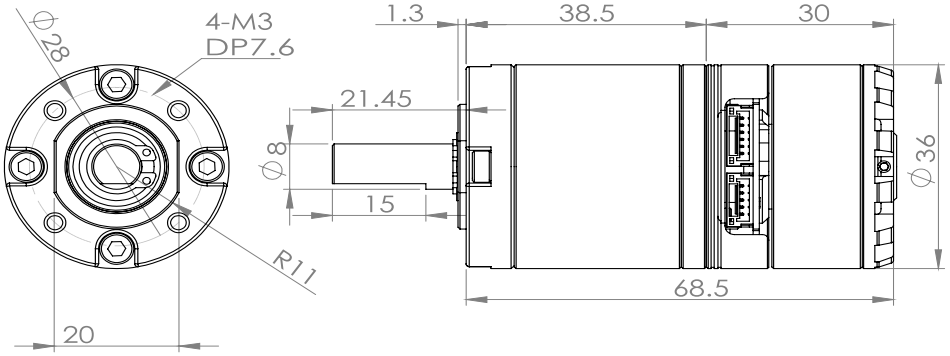
Gearbox Features	Unit	
Gearbox model		GP36L2A
Gearbox type		Planetary
Gearbox ratio	K	3.7/19.2/26.9*
Gearbox levels		2
Gearbox diameter	mm	36
Gearbox length	mm	27.7
Gearbox efficiency		90%
Operating torque	kg*cm	20
Brakeing torque	kg*cm	60

Nominal & Stall	Unit			*			*
Gearbox ratio	K	14	19.2	26.9	13.7	19.2	26.9
Nominal voltage	V	12	12	12	24	24	24
Noload speed	rpm	175	125	89	350	250	178
Nominal speed	rpm	131	94	67	248	177	126
Nominal torque	Nm	0.6	0.9	1.3	1.3	1.8	2.5
Nominal current	A	1.1	1.1	1.1	2.1	2.1	2.1
Maximal power	W	11	10.8	10.8	34.2	34.2	34.2
Maximal efficiency		75%	75%	75%	77%	77%	77%
Stall torque	Nm	2.2	3.1	4.3	3.2	4.4	6.2
Stall current	A	3.5	3.5	3.5	5.5	5.5	5.5

* Ratio 26.9 is prototype. Please contact us before ordering.

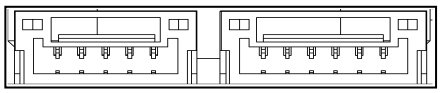
*Attention: Stall operation is not recommended, please do necessary protection to avoid irreparable damage!





Signal Connector (P1):	GH1.25-F-5P
Signal Cable：	GH5P-M-28AWG-15cm
Phase connector (P2):	GH1.25-F-6P
Cable：	GH6P-M-28AWG-15cm

P1 (5 PIN): P2(6 PIN):



Pin definition(left to right):

P1: 1.HW 2.HV 3.HU 4.VCC 5.GND **P2:** 1.W 2.W 3.V 4.V 5.U 6.U

General Characteristics：

Basic Dimensions	Unit	
Diameter	mm	36
Body length	mm	68.5
Output shaft diameter	mm	8
Output shaft length	mm	21.45

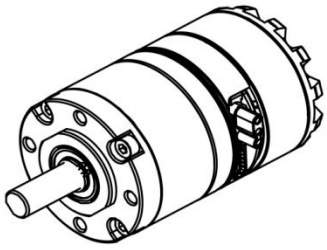
Motor Features	Unit
Motor type	BLDC outrunner
Motor model	MX2810KV200HA
Pole pairs	7
Number of phases	3
*For more motor features please refer datasheet "MX2810KV200HA".	

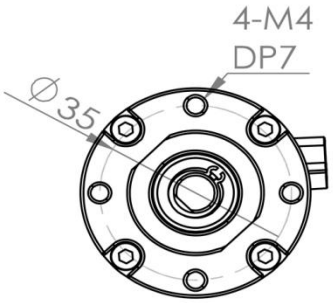
Gearbox Features	Unit	
Gearbox model		GP36L3A
Gearbox type		Planetary
Gearbox ratio	K	50.9/71.2
Gearbox levels		3
Gearbox diameter	mm	36
Gearbox length	mm	38.5
Gearbox efficiency		70%-80
Operating torque	kg*cm	10
Braking torque	kg*cm	30

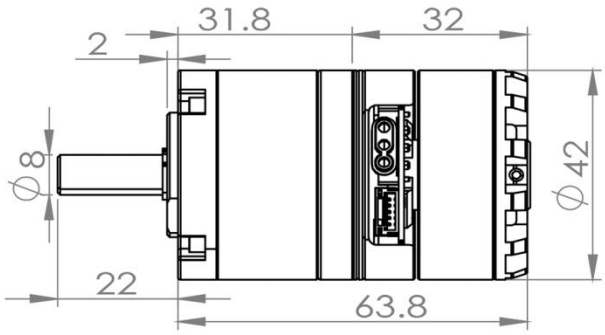
Nominal & Stall	Unit				
Gearbox ratio	K	50.9	71.2	50.9	71.2
Nominal voltage	V	12	12	24	24
Noload speed	rpm	47.2	33.7	94.3	67.4
Nominal speed	rpm	35	25	67	48
Nominal torque	Nm	2.4	3.3	4.7	6.6
Nominal current	A	1.1	1.1	2.1	2.1
Maximal power	W	11	11	34	34
Maximal efficiency		66%	66%	69%	69%
Stall torque*	Nm	8.1	11.4	11.7	16.4
Stall current	A	3.5	3.5	5.5	5.5

*Attention: Stall operation is not recommended, please do necessary protection to avoid irreparable damage!

MX3310KV200HA-GP42L1A







Unit:mm

Signal connector:	GH1.25-F-5P
Signal cable：	GH5P-M-28AWG-15cm
Phase connector：	MR30PW-F
Phase cable:	MR30-M-22AWG-15cm



Pin definition(left to right):

HW HV HU 5V GND W V U

FEATURES：

General Features	Unit	
Diametier	mm	42
Body length	mm	63.8
Output shaft diameter	mm	8
Output shaft lenghth	mm	22

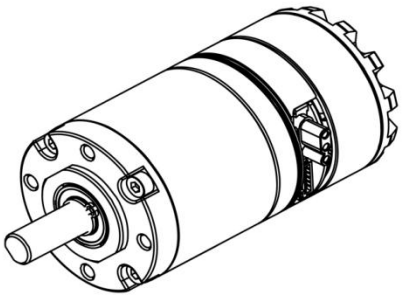
Motor Features	Unit
Motor type	BLDC outrunner
Motor model	MX3310KV200HA
Pole pairs	7
Number of phases	3
*For more motor features please refer datasheet "MX3310KV200HA".	

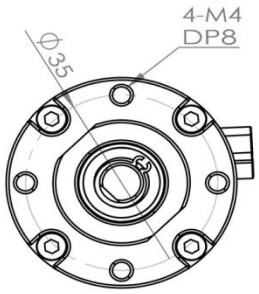
Gearbox Features	Unit	
Gearbox model		GP42L1A
Gearbox type		Planetary
Gear ratio	K	3.7
Gearbox levels		1
Gearbox diameter	mm	42
Gearbox length	mm	31.8
Gearbox efficiency		90%
Operating torque	kg*cm	20
Brakeing torque	kg*cm	60

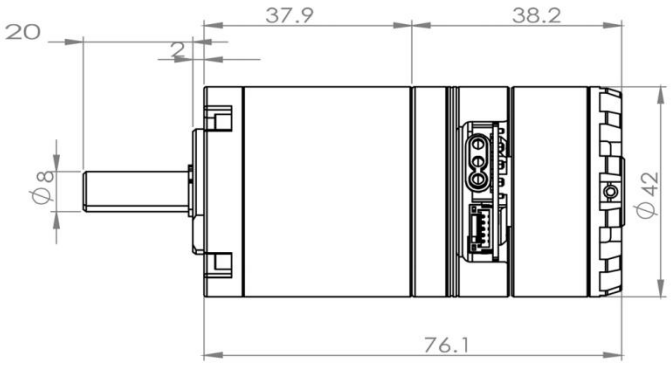
Nominal & Stall	Unit			
Gear ratio	K	3.7	3.7	3.7
Nominal voltage	V	12	24	48
Noload speed	rpm	649	1297	2595
Nominal speed	rpm	405	919	2108
Nominal torque	mNm	370	666	1295
Nominal current	A	2.2	3.7	7.2
Maximal power	W	20	70	240
Maximal efficiency		72%	77%	77%
Stall torque*	mNm	1110	1480	2738
Stall current	A	3.5	5.5	9.8

Attention: Stall operation is not recommended, please do necessary protection to avoid irreparable damage!

MX3310KV200HA-GP42L2A







Unit:mm

Signal connector:	GH1.25-F-5P
Signal cable：	GH5P-M-28AWG-15cm
Phase connector：	MR30PW-F
Phase cable:	MR30-M-22AWG-15cm



Pin definition(left to right):

HW HV HU 5V GND W V U

FEATURES：

General Features

	Unit	
Diametier	mm	42
Body length	mm	76.1
Output shaft diameter	mm	8
Output shaft lenghth	mm	20

Motor Features

	Unit
Motor type	BLDC outrunner
Motor model	MX3310KV200HA
Pole pairs	7
Number of phases	3

*For more motor features please refer datasheet "MX3310KV200HA".

Gearbox Features

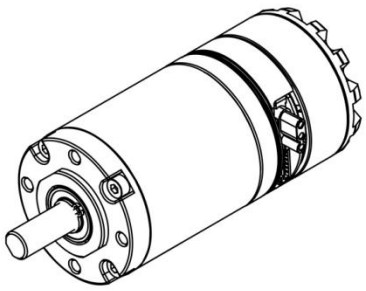
		Unit
Gearbox model		GP42L2A
Gearbox type		Planetary
Gear ratio	K	10.2/13.7/19.2
Gearbox levels		2
Gearbox diameter	mm	42
Gearbox length	mm	37.9
Gearbox efficiency		90%
Operating torque	kg*cm	60
Brakeing torque	kg*cm	180

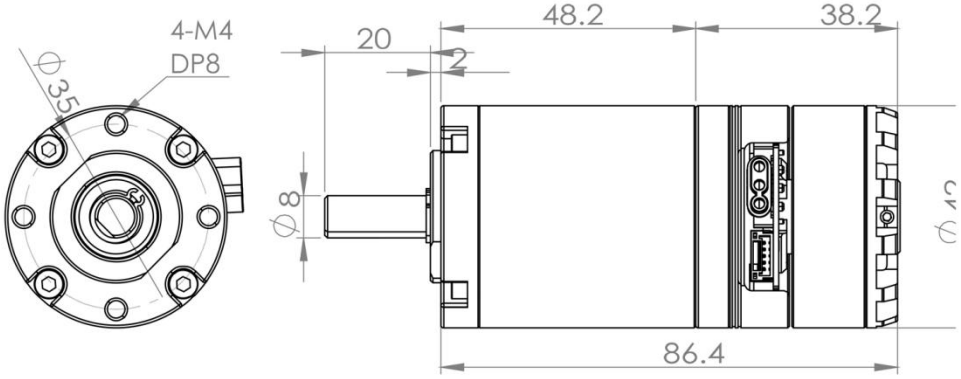
Nominal & Stall

	Unit									
Gearbox ratio	K	10.2	10.2	10.2	13.7	13.7	13.7	19.2	19.2	19.2
Nominal voltage	V	12	24	48	12	24	48	12	24	48
Noload speed	rpm	235	471	941	175	350	701	125	250	500
Nominal speed	rpm	147	333	765	109	248	569	78	177	406
Nominal torque	mNm	1.0	1.8	3.6	1.4	2.5	4.8	1.9	3.5	6.7
Nominal current	A	2.2	2.2	3.7	7.2	2.2	2.2	3.7	7.2	2.2
Maximal power	W	20	20	70	240	20	20	70	240	20
Maximal efficiency		72%	77%	77%	72%	77%	77%	72%	77%	77%
Stall torque*	Nm	3.1	4.1	7.5	4.1	5.5	10	5.8	7.7	14
Stall current	A	3.5	3.5	5.5	9.8	3.5	3.5	5.5	9.8	3.5

Attention: Stall operation is not recommended, please do necessary protection to avoid irreparable damage!

MX3310KV200HA-GP42L3A





Unit:mm



Signal connector:	GH1.25-F-5P
Signal cable：	GH5P-M-28AWG-15cm
Phase connector：	MR30PW-F
Phase cable:	MR30-M-22AWG-15cm

Pin definition(left to right):

HW HV HU 5V GND W V U

FEATURES：

General Features

	Unit	
Diametier	mm	42
Body length	mm	86.4
Output shaft diameter	mm	8
Output shaft lenghth	mm	20

Motor Features

	Unit
Motor type	BLDC outrunner
Motor model	MX3310KV200HA
Pole pairs	7
Number of phases	3

*For more motor features please refer datasheet "MX3310KV200HA".

Gearbox Features

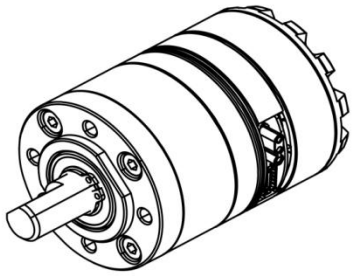
	Unit	
Gearbox model		GP42L2A
Gearbox type		Planetary
Gear ratio	K	32.5/50.9/71.2
Gearbox levels		3
Gearbox diameter	mm	42
Gearbox length	mm	48.2
Gearbox efficiency		90%
Operating torque	kg*cm	120
Brakeing torque	kg*cm	360

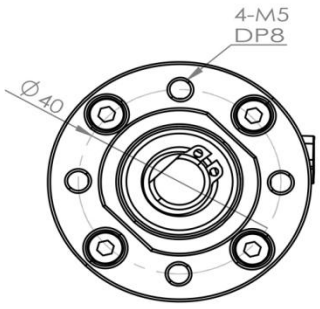
Nominal & Stall

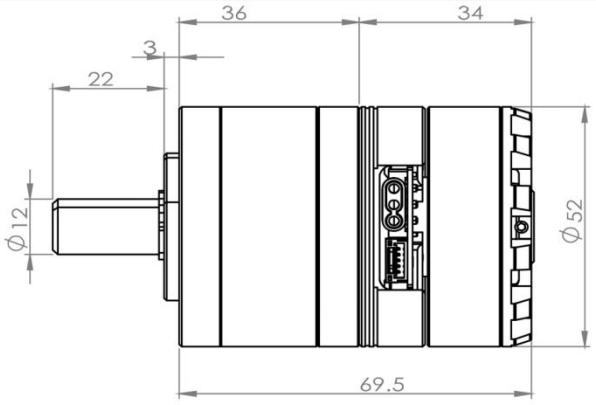
	Unit									
Gear ratio	K	32.5	32.5	32.5	50.9	50.9	50.9	71.2	71.2	71.2
Nominal voltage	V	12	24	48	12	24	48	12	24	48
Noload speed	rpm	74	148	295	47	94	189	34	67	135
Nominal speed	rpm	46	105	240	29	67	153	21	48	110
Nominal torque	mNm	3.3	5.9	###	5.1	9.2	###	7.1	###	###
Nominal current	A	2.2	2.2	3.7	7.2	2.2	2.2	3.7	7.2	2.2
Maximal power	W	20	20	70	240	20	20	70	240	20
Maximal efficiency		72%	77%	77%	72%	77%	77%	72%	77%	77%
Stall torque*	Nm	9.8	13	24	15	20	38	21	28	53
Stall current	A	3.5	3.5	5.5	9.8	3.5	3.5	5.5	9.8	3.5

Attention: Stall operation is not recommended, please do necessary protection to avoid irreparable damage!

MX4210KV150HA-GP52L1A







Unit:mm

Signal connector:	GH1.25-F-5P
Signal cable：	GH5P-M-28AWG-15cm
Phase connector：	MR30PW-F
Phase cable:	MR30-M-18AWG-15cm



Pin definition(left to right):

HW HV HU 5V GND W V U

General Characteristics：

Basic Dimensions

	Unit	
Diametier	mm	52
Body length	mm	69.5
Output shaft diameter	mm	12
Output shaft lenghth	mm	22

Motor Features

	Unit
Motor type	BLDC outrunner
Motor model	MX4210KV150HA
Pole pairs	7
Number of phases	3

*For more motor features please refer datasheet "MX4210KV150HA".

Gearbox Features

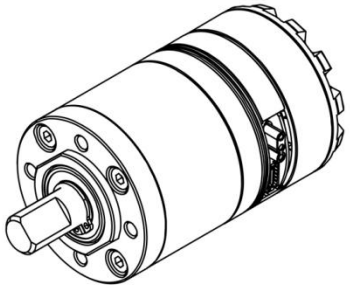
	Unit	
Gearbox model		GP52L1A
Gearbox type		Planetary
Gear ratio	K	3.7/5.2
Gearbox levels		1
Gearbox diameter	mm	52
Gearbox length	mm	36
Gearbox efficiency		90%
Operating torque	kg*cm	30
Brakeing torque	kg*cm	90

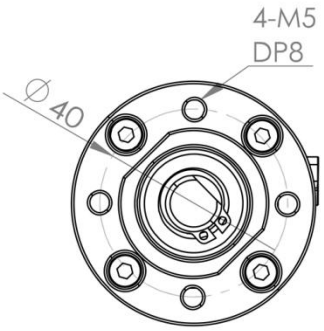
Nominal & Stall

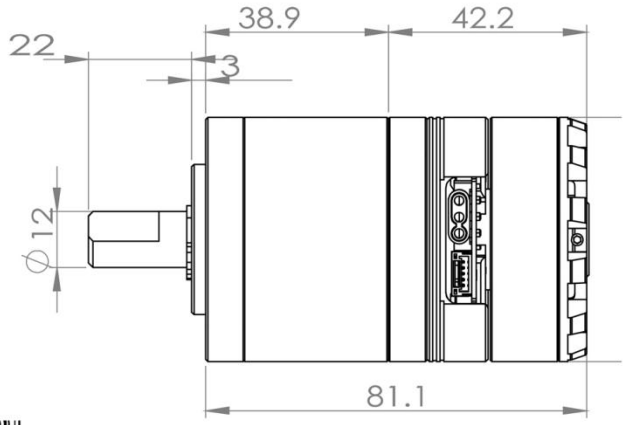
	Unit				
Gear ratio	K	3.7	5.2	3.7	5.2
Nominal voltage	V	24	24	48	48
Noload speed	rpm	973	692	1946	1385
Nominal speed	rpm	689	490	838	596
Nominal torque	mNm	1036	1456	2072	2912
Nominal current	A	4.2	4.2	8.4	8.4
Maximal power	W	74	74	256	256
Maximal efficiency		77%	77%	77%	77%
Stall torque*	mNm	2479	3484	4810	6760
Stall current	A	11.5	11.5	25	25

Attention: Stall operation is not recommended, please do necessary protection to avoid irreparable damage!

MX4210KV150HA-GP52L2A







Signal connector:	GH1.25-F-5P
Signal cable：	GH5P-M-28AWG-15cm
Phase connector：	MR30PW-F
Phase cable:	MR30-M-18AWG-15cm



Pin definition(left to right):

HW HV HU 5V GND W V U

General Characteristics：

Basic Dimensions

	Unit	
Diametier	mm	52
Body length	mm	81.1
Output shaft diamet	mm	12
Output shaft lenghtł	mm	22

Motor Features

	Unit
Motor type	BLDC outrunner
Motor model	MX4210KV150HA
Pole pairs	7
Number of phases	3

*For more motor features please refer datasheet "MX4210KV150HA".

Gearbox Features

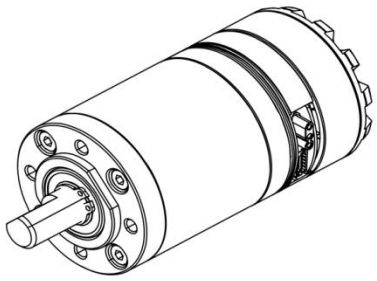
	Unit	
Gearbox model		GP52L2A
Gearbox type		Planetary
Gear ratio	K	13.7/19.2/26.9
Gearbox levels		2
Gearbox diameter	mm	52
Gearbox length	mm	38.9
Gearbox efficiency		90%
Operating torque	kg*cm	80
Brakeing torque	kg*cm	240

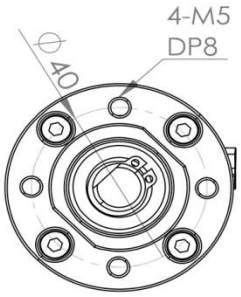
Nominal & Stall

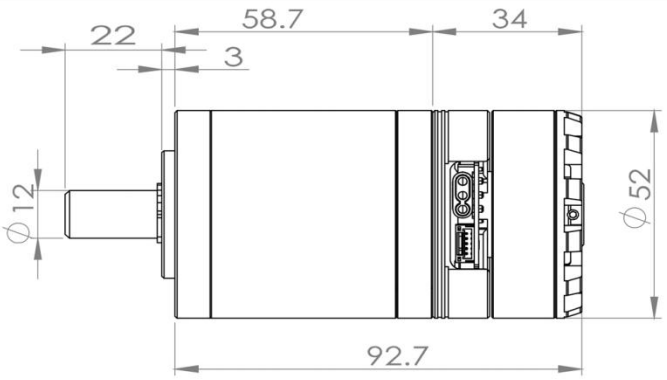
	Unit						
Gear ratio	K	13.7	19.2	26.9	13.7	19.2	26.9
Nominal voltage	V	24	24	24	48	48	48
Noload speed	rpm	263	188	134	526	375	268
Nominal speed	rpm	186	133	95	226	161	115
Nominal torque	Nm	3.8	5.4	7.5	7.7	10.8	15.1
Nominal current	A	4.2	4.2	4.2	8.4	8.4	8.4
Maximal power	W	74	74	74	256	256	256
Maximal efficiency		77%	77%	77%	77%	77%	77%
Stall torque*	Nm	9.2	12.9	18.0	17.8	25.0	35.0
Stall current	A	11.5	11.5	11.5	25	25	25

Attention: Stall operation is not recommended, please do necessary protection to avoid irreparable damage!

MX4210KV150HA-GP52L3A







Signal connector:	GH1.25-F-5P
Signal cable：	GH5P-M-28AWG-15cm
Phase connector：	MR30PW-F
Phase cable:	MR30-M-18AWG-15cm



Pin definition(left to right):

HW HV HU 5V GND W V U

General Characteristics：

Basic Dimensions

	Unit	
Diametier	mm	52
Body length	mm	92.7
Output shaft diameter	mm	12
Output shaft lenghth	mm	22

Motor Features

	Unit
Motor type	BLDC outrunner
Motor model	MX4210KV150HA
Pole pairs	7
Number of phases	3

*For more motor features please refer datasheet "MX4210KV150HA".

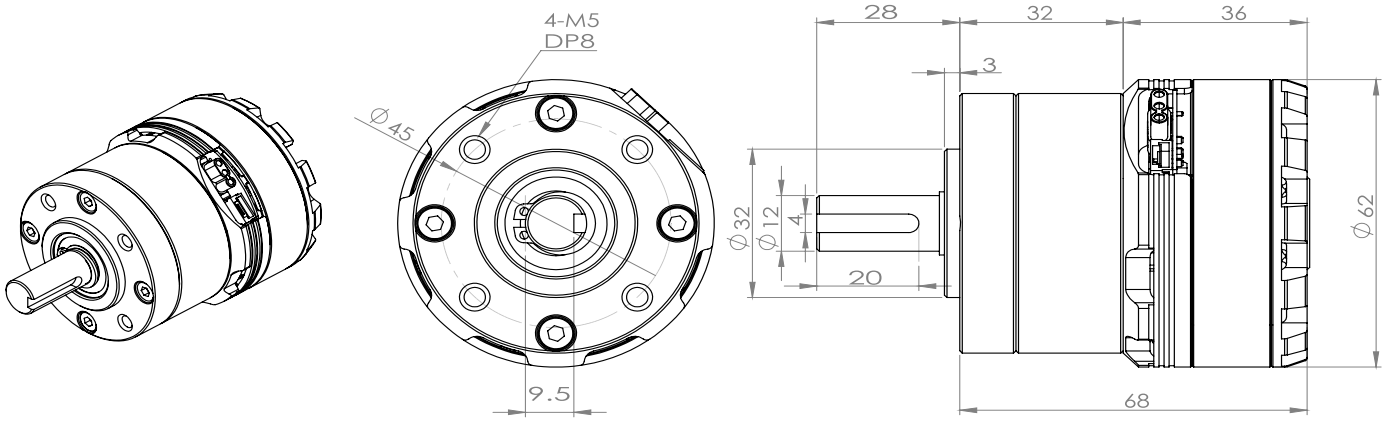
Gearbox Features

	Unit	
Gearbox model		GP52L1A
Gearbox type		Planetary
Gear ratio	K	84.5
Gearbox levels		1
Gearbox diameter	mm	52
Gearbox length	mm	58.7
Gearbox efficiency		90%
Operating torque	kg*cm	30
Brakeing torque	kg*cm	90

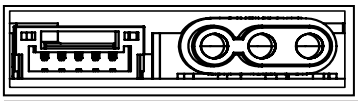
Nominal & Stall

	Unit		
Gear ratio	K	84.5	84.5
Nominal voltage	V	24	48
Noload speed	rpm	43	85
Nominal speed	rpm	30	37
Nominal torque	mNm	23660	47320
Nominal current	A	4.2	8.4
Maximal power	W	74	256
Maximal efficiency		77%	77%
Stall torque*	mNm	56615	109850
Stall current	A	11.5	25

Attention: Stall operation is not recommended, please do necessary protection to avoid irreparable damage!



P1: P2:



Unit：mm

Signal connector:	GH1.25-F-5P
Signal cable：	GH5P-M-28AWG-15cm
Phase connector：	MR30PW-F
Phase cable:	MR30-M-18AWG-15cm

Pin definition(left to right):

P1: 1.HW 2.HV 3.HU 4.VCC 5.GND **P2**: 1.W 2.V 3.U

General Characteristics：

Basic Dimensions

	Unit	
Diameter	mm	56/62
Body length	mm	68
Output shaft diam.	mm	12
Output shaft length	mm	28

Motor Features

	Unit	
Motor type		BLDC outrunner
Motor model		MX5310KV100HA
Pole pairs		7
Number of phases		3

*For more motor features please refer datasheet "MX5310KV100HA".

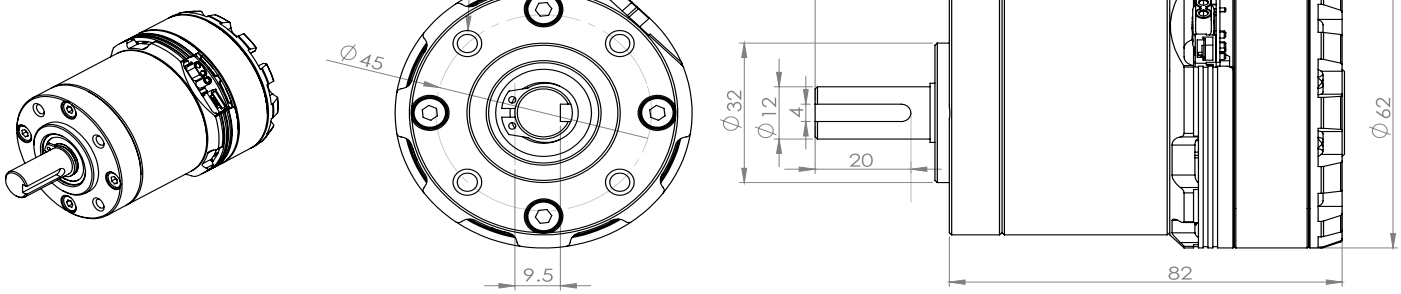
Gearbox Features

	Unit	
Gearbox model		GP56L1A
Gearbox type		Planetary
Gearbox ratio	K	3.6
Gearbox levels		1
Gearbox diameter	mm	56
Gearbox length	mm	32
Gearbox efficiency		90%
Operating torque	kg*cm	40
Brakeing torque	kg*cm	100

Nominal & Stall

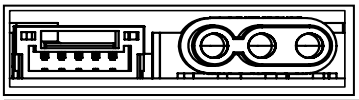
	Unit	
Gearbox ratio	K	3.6
Nominal voltage	V	24
Noload speed	rpm	636
Nominal speed	rpm	475
Nominal torque	Nm	1.5
Nominal current	A	5.3
Maximal power	W	90
Maximal efficiency		73%
Stall torque	Nm	5
Stall current	A	16

*Attention: Stall operation is not recommended, please do necessary protection to avoid irreparable damage!



Signal connector:	GH1.25-F-5P
Signal cable：	GH5P-M-28AWG-15cm
Phase connector：	MR30PW-F
Phase cable:	MR30-M-18AWG-15cm

P1: P2:



Unit：mm

Pin definition(left to right):

P1: 1.HW 2.HV 3.HU 4.VCC 5.GND **P2**: 1.W 2.V 3.U

General Characteristics：

Basic Dimensions

	Unit	
Diameter	mm	56/62
Body length	mm	82
Output shaft diam.	mm	12
Output shaft length	mm	28

Motor Features

	Unit
Motor type	BLDC outrunner
Motor model	MX5310KV100HA
Pole pairs	7
Number of phases	3

*For more motor features please refer datasheet "MX5310KV100HA".

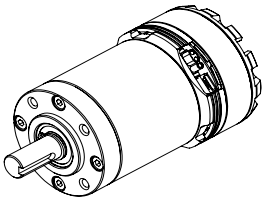
Gearbox Features

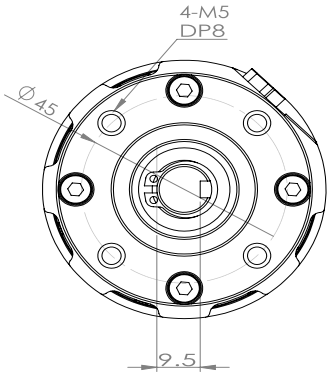
	Unit	
Gearbox model		GP56L2A
Gearbox type		Planetary
Gearbox ratio	K	13/19.2
Gearbox levels		2
Gearbox diameter	mm	56
Gearbox length	mm	46
Gearbox efficiency		80%
Operating torque	kg*cm	200
Brakeing torque	kg*cm	600

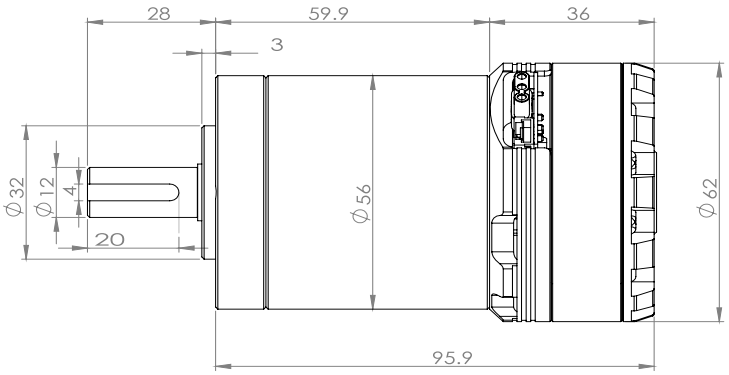
Nominal & Stall

	Unit		
Gearbox ratio	K	13	19.2
Nominal voltage	V	24	24
Noload speed	rpm	176	119
Nominal speed	rpm	132	89
Nominal torque	Nm	5.3	7.8
Nominal current	A	5.3	5.3
Maximal power	W	90	90
Maximal efficiency		73%	73%
Stall torque*	Nm	20	29
Stall current*	A	16	16

*Attention: Stall operation is not recommended, please do necessary protection to avoid irreparable damage!

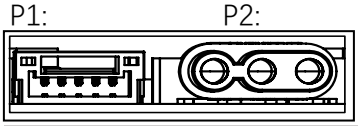






Signal connector:	GH1.25-F-5P
Signal cable：	GH5P-M-28AWG-15cm
Phase connector：	MR30PW-F
Phase cable:	MR30-M-18AWG-15cm

P1: P2:



Unit：mm

Pin definition(left to right):

P1: 1.HW 2.HV 3.HU 4.VCC 5.GND **P2**: 1.W 2.V 3.U

General Characteristics：

Basic Dimensions	Unit	
Diameter	mm	56/62
Body length	mm	95.9
Output shaft diam.	mm	12
Output shaft length	mm	28

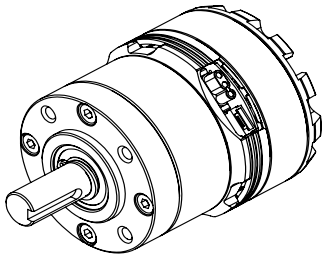
Motor Features	Unit
Motor type	BLDC outrunner
Motor model	MX5310KV100HA
Pole pairs	7
Number of phases	3

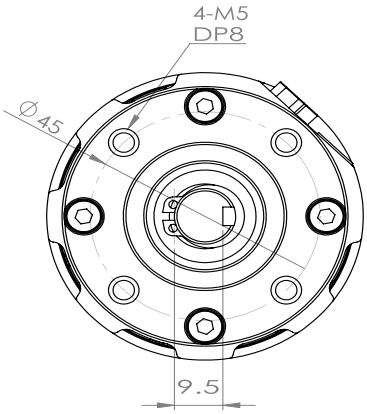
*For more motor features please refer datasheet "MX5310KV100HA".

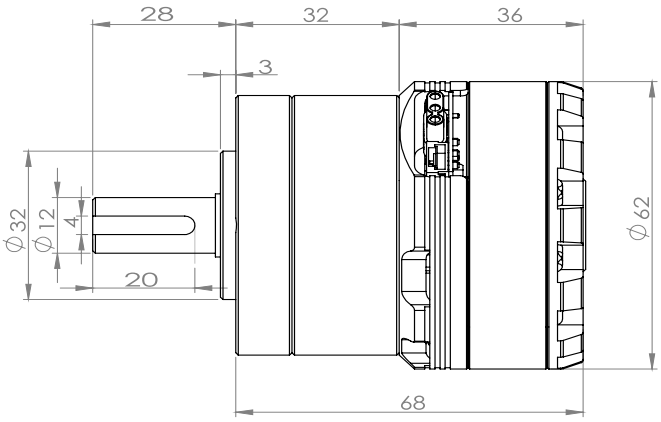
Gearbox Features	Unit	
Gearbox model		GP56L3A
Gearbox type		Planetary
Gearbox ratio	K	46.7/69
Gearbox levels		3
Gearbox diameter	mm	56
Gearbox length	mm	59.9
Gearbox efficiency		80-90%
Operating torque	kg*cm	400
Brakeing torque	kg*cm	1200

Nominal & Stall	Unit		
Gearbox ratio	K	46.7	69
Nominal voltage	V	24	24
Noload speed	rpm	49	33
Nominal speed	rpm	37	25
Nominal torque	Nm	18.9	27.9
Nominal current	A	5.3	5.3
Maximal power	W	90	90
Maximal efficiency		73%	73%
Stall torque	Nm	70	104
Stall current	A	16	16

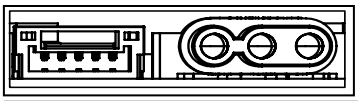
*Attention: Stall operation is not recommended, please do necessary protection to avoid irreparable damage!







P1: P2:



Unit：mm

Signal connector:	GH1.25-F-5P
Signal cable：	GH5P-M-28AWG-15cm
Phase connector：	MR30PW-F
Phase cable:	MR30-M-18AWG-15cm

Pin definition(left to right):

P1: 1.HW 2.HV 3.HU 4.VCC 5.GND **P2**: 1.W 2.V 3.U

General Characteristics：

Basic Dimensions

	Unit	
Diameter	mm	56/62
Body length	mm	68
Output shaft diam.	mm	12
Output shaft length	mm	28

Motor Features

	Unit	
Motor type		BLDC outrunner
Motor model		MX5310KV200HA
Pole pairs		7
Number of phases		3

*For more motor features please refer datasheet "MX5310KV200HA".

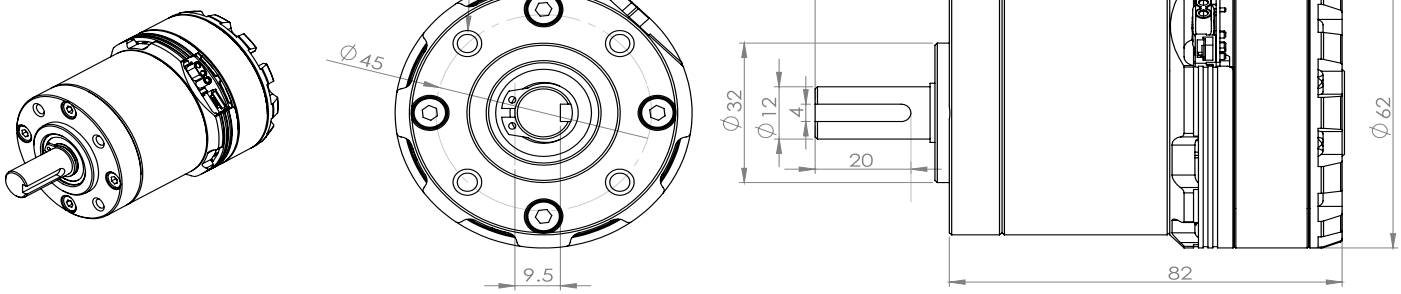
Gearbox Features

	Unit	
Gearbox model		GP56L1A
Gearbox type		Planetary
Gearbox ratio	K	3.6
Gearbox levels		1
Gearbox diameter	mm	56
Gearbox length	mm	32
Gearbox efficiency		90%
Operating torque	kg*cm	40
Brakeing torque	kg*cm	100

Nominal & Stall

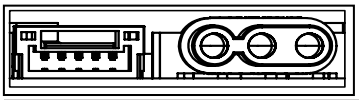
	Unit	
Gearbox ratio	K	3.6
Nominal voltage	V	24
Noload speed	rpm	1227
Nominal speed	rpm	950
Nominal torque	Nm	1.5
Nominal current	A	14.3
Maximal power	W	250
Maximal efficiency		73%
Stall torque*	Nm	6
Stall current*	A	45

*Attention: Stall operation is not recommended, please do necessary protection to avoid irreparable damage!



Signal connector:	GH1.25-F-5P
Signal cable：	GH5P-M-28AWG-15cm
Phase connector：	MR30PW-F
Phase cable:	MR30-M-18AWG-15cm

P1: P2:



Unit：mm

Pin definition(left to right):

P1: 1.HW 2.HV 3.HU 4.VCC 5.GND **P2**: 1.W 2.V 3.U

General Characteristics：

Basic Dimensions	Unit	
Diameter	mm	56/62
Body length	mm	82
Output shaft diam.	mm	12
Output shaft length	mm	28

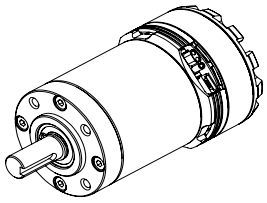
Motor Features	Unit
Motor type	BLDC outrunner
Motor model	MX5310KV200HA
Pole pairs	7
Number of phases	3

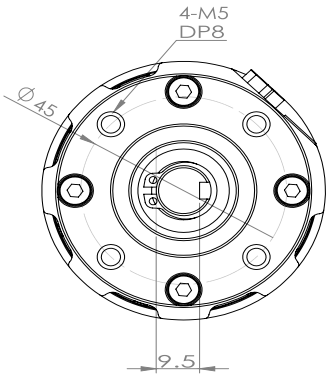
*For more motor features please refer datasheet "MX5310KV200HA".

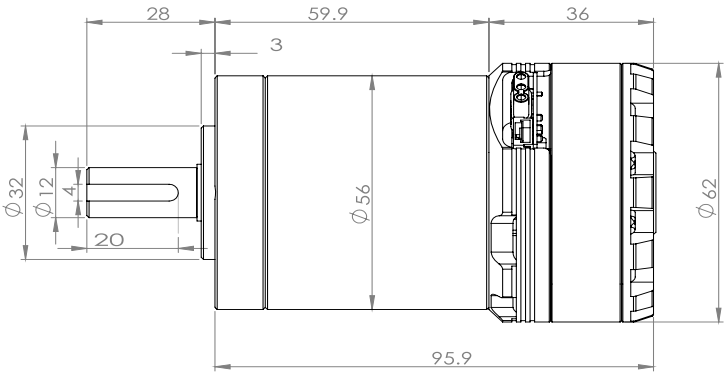
Gearbox Features	Unit	
Gearbox model		GP56L2A
Gearbox type		Planetary
Gearbox ratio	K	13/19.2
Gearbox levels		2
Gearbox diameter	mm	56
Gearbox length	mm	46
Gearbox efficiency		80%
Operating torque	kg*cm	200
Brakeing torque	kg*cm	600

Nominal & Stall	Unit		
Gearbox ratio	K	13	19.2
Nominal voltage	V	24	24
Noload speed	rpm	340	230
Nominal speed	rpm	263	178
Nominal torque	Nm	5.3	7.8
Nominal current	A	14.3	14.3
Maximal power	W	250	250
Maximal efficiency		73%	73%
Stall torque*	Nm	23	35
Stall current*	A	45	45

*Attention: Stall operation is not recommended, please do necessary protection to avoid irreparable damage!

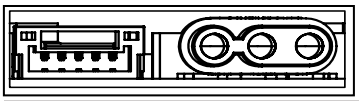






Signal connector:	GH1.25-F-5P
Signal cable：	GH5P-M-28AWG-15cm
Phase connector：	MR30PW-F
Phase cable:	MR30-M-18AWG-15cm

P1: P2:



Unit：mm

Pin definition(left to right):

P1: 1.HW 2.HV 3.HU 4.VCC 5.GND **P2**: 1.W 2.V 3.U

General Characteristics :

Basic Dimensions	Unit	
Diameter	mm	56/62
Body length	mm	95.9
Output shaft diam.	mm	12
Output shaft length	mm	28

Motor Features	Unit
Motor type	BLDC outrunner
Motor model	MX5310KV200HA
Pole pairs	7
Number of phases	3

*For more motor features please refer datasheet "MX5310KV200HA".

Gearbox Features	Unit	
Gearbox model		GP56L3A
Gearbox type		Planetary
Gearbox ratio	K	46.7/69
Gearbox levels		3
Gearbox diameter	mm	56
Gearbox length	mm	59.9
Gearbox efficiency		70%
Operating torque	kg*cm	400
Brakeing torque	kg*cm	1200

Nominal & Stall	Unit		
Gearbox ratio	K	46.7	69
Nominal voltage	V	24	24
Noload speed	rpm	95	64
Nominal speed	rpm	73	50
Nominal torque	Nm	19	27.9
Nominal current	A	14	14.3
Maximal power	W	250	250
Maximal efficiency		60%	60%
Stall torque*	Nm	84	124
Stall current*	A	45	45

*Attention: Stall operation is not recommended, please do necessary protection to avoid irreparable damage!