

ASSUN

DRIVING THE FUTURE



TOTAL SOLUTION for Precision
DC Drive System 2023

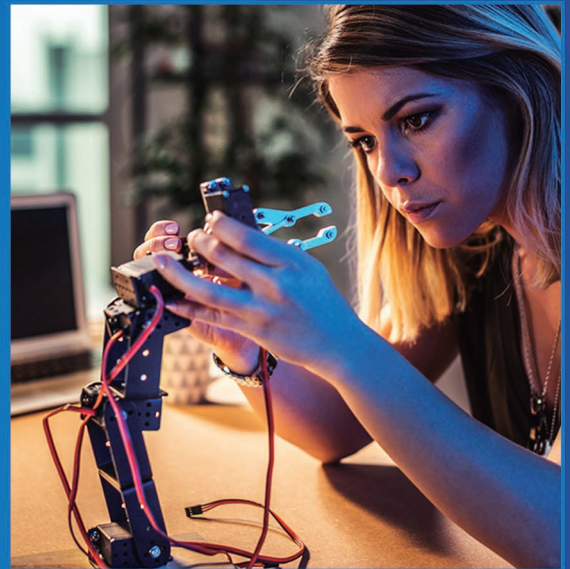
ASSUN

DRIVING THE FUTURE



Assun Motor is an innovative manufacturer for Advanced DC Drive Systems. Products including DC Coreless Brushed Motor, DC Slot-less Brushless Motor, Planetary Gearbox, Servo Motor and Controller, Encoder, and Brake. With state-of-the-art technologies and dedicated engineering spirits, the high precision, reliability and efficiency DC drive systems by ASSUN are perfect for performance critical applications.

With the high automation manufacturing base in Shenzhen, sales offices in China, Singapore and USA, and exclusive agents in Europe, Middle-East and Australia, Assun Motor is able to provide the best sales and services to customers worldwide.

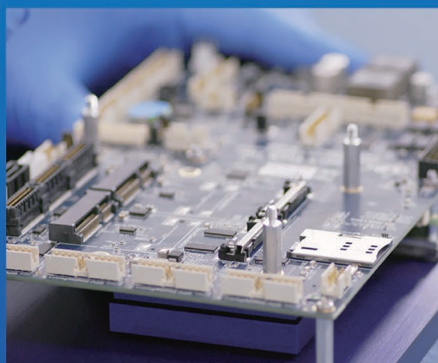


VISION

To provide cutting-edge DC motor drive solutions and redefine possibilities for applications across industries.

MISSION

Drive the future with precision in motion.



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BUSINESS INTRODUCTION

Assun Motor provide total solutions to Precision DC Drive. Started from the basic driving components—motor and gearbox, Assun has developed more enriched product line and now offers systematic DC drive products for motion control industry.

Motors by Assun include DC Coreless Brushed Motor, DC Slot-less Brushless Motor, and electronics-integrated Servo Motor. Special Coreless and Slot-less winding structure enabled the motors to perform much better in every technical aspect. Planetary Gearboxes are made with most advanced production technologies to ensure minor backlash and highest efficiency. Incremental and Absolute Encoders are made to provide reliable and precise feedback information. Servo Controllers by Assun provide bus control and analogue control to choose from, and are built to provide the most precise and reliable motion control to drive systems. Brakes has been developed to complete the whole drive system as the last brick.

Assun Motor has built the online shop inside the official website for customers to shop the standard products and combinations easily. Customers can browse every product with full detail on the website and shop their sample products or combinations for testing or development purposes. Online sales have guaranteed lead time of 12 working days. Shipping time usually within 5 working days for worldwide.

Except for the online sales which was set up mainly for standard products and samples, Assun provides further sales services with global network for vast quantity orders and customized requirements. Flexibility and fast response are the core competence of Assun. We can carry out deep customization based on customers' needs and offer the most suitable solution for specific applications. In close cooperation, we can even develop new products for the customer to satisfy their needs and enrich our product line at the same time. The highly automated and well managed factory supports our customization service perfectly with the shortest lead time possible.



TECHNICAL TERMINOLOGY

Nominal Voltage

The DC power supply voltage value based on the motor design.

No-Load Current

When there is no load applied to the motor shaft, the current value under Nominal Voltage

No-Load Speed

When there is no load applied to the motor shaft, the RPM speed value under Nominal Voltage.

Standard Testing Environment

When motor are installed horizontally to a vertical wood board by front cover screw, and environment temperature at 25°, relevant humidity 30%-60%.

Thermal Resistance

The added-up value of thermal resistances of between winding and housing, and between housing and Standard Testing Environment.

Maximum Winding Temperature

The maximum temperature limit for motor winding to ensure normal motor performance and lifetime.

Rated Torque

Maximum continuous torque applicable to the motor shaft under Nominal Voltage considering the limit of Maximum Winding Temperature.

Rated Speed

The rpm speed for the motor under Nominal Voltage and load of Rated Torque.

Rated Current

The current through motor winding when operating under Nominal Voltage and load of Rated Torque.

Rated Power

The power output under rated torque and rated speed.

Starting Current

The current through motor winding when powered by Nominal Voltage and motor speed is 0 rpm.

Stall Torque

The motor torque output under Starting Current and motor speed is 0 rpm.

DC BRUSHLESS MOTOR

Assun DC Brushless Motors are manufactured with slot-less structure to achieve highest efficiency and top-notch dynamic performance. With 4 sub-categories and different sizes, Assun BLDC product line can offer DC drive solutions to various industries with precision drive needs.

Power rating from 3 watts to 500 watts, diameter from 16mm to 65mm, temperature level include 85°C, 125°C and 155°C, Assun BLDC motors have been made to fit for all kinds of applications. Speed driver can be integrated inside motor for more application convenience.



AM-BL1632AN	AM-B3260AN	AM-BL2051AE	AM-BL2453BF	AM-BL45100BF
AM-BL1640AN	AM-BL3270AN	AM-BL2453AE	AM-BL2845BF	AM-BD2453AN
AM-BL2032AN	AM-BL3660AN	AM-BL2845AE	AM-BL3260BF	AM-BD2845AN
AM-BL2040AN	AM-BL45100AN	AM-BL3260AE	AM-BL3270BF	AM-BD3260AN
AM-BL2051AN	AM-BL65110DN	AM-BL3270AE	AM-BL3675BF	AM-BD3270AN
AM-BL2453AN	AM-BL1640AE	AM-BL3660AE	AM-BL3690BF	AM-BD3660AN
AM-BL2845AN	AM-BL2040AE	AM-BL45100AE	AM-BL4060BF	AM-BD4500AN

Company Name Abbreviation

AM - BL 1640 AE - 2420

Motor Type

BL - Brushless Motor
CL - Brushed Motor

Motor Dimension
16 - Diameter (mm)
40 - Length (mm)

Number of Pole Pairs

A - 1 Pole Pair
B - 2 Pole Pairs
C - 3 Pole Pairs
D - 4 Pole Pairs

Temp. Level

N - 85°C
E - 125°C
F - 155°C
H - 180°C

**Nominal Voltage &
No Load Speed**

24 - Nominal Voltage (V)
20 - No Load Speed (x1000 RPM)

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DC BRUSHLESS MOTOR
STANDARD SERIES

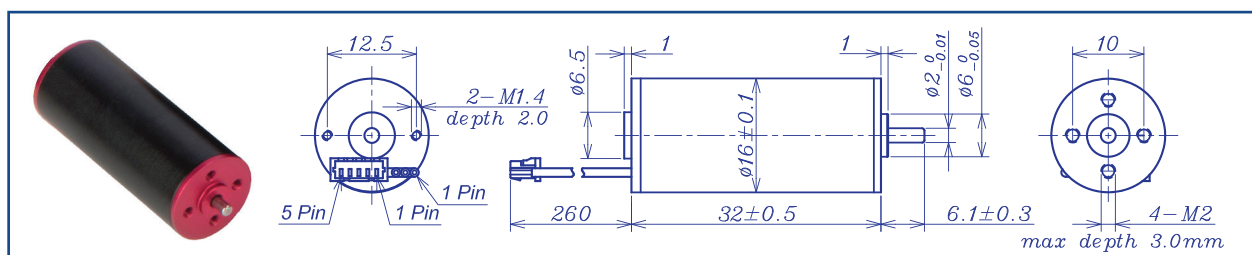
Assun standard series BLDC motors were designed with slot-less winding structure for highest efficiency and smooth operation. High quality hardware and sintered NdFeB magnets were adopted to ensure the performance, reliability and lifetime.

Standard series BLDC products are equipped with hall sensor, which customers may choose to remove in customized service. These motors are widely used and are suitable for most applications with normal operation conditions.



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AM-BL1632AN Series



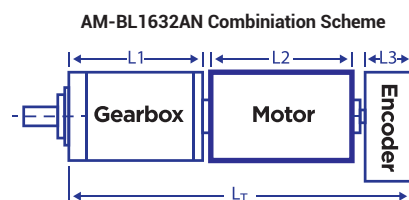
		Brushless Motor		Ball Bearings			
Motor Model		1220	1214	1827	1817	2420	2416
Nominal voltage	V	12	12	18	18	24	24
No load speed $\pm 12\%$	rpm	19822	13840	26874	17253	19613	16063
No load current $\text{Max} \leq 50\%$	mA	85	60	77	49	42	35
Recommend limit for continuous operating	Max cont. torque	mN.m	3.0	3.2	2.2	3.1	3.1
	Rated Speed	rpm	16809	10528	24516	14233	16854
	Rated Current	mA	600	450	420	360	280
	Rated Power	W	5.26	3.56	5.63	4.61	4.91
Starting current	mA	3947	1881	4787	2050	1990	1371
Stall Torque	mN.m	23	16	31	20	23	20
Maximum power output	W	11.8	5.6	21.5	9.2	11.9	8.2
Maximum Efficiency	%	73	67	76	71	73	71
Terminal resistance $\pm 12\%$	Ω	3.04	6.38	3.76	8.78	12.06	17.5
Inductance (1KHz)	mH	0	0	0	0	0	0
Mechanical time constant	ms	2.73	2.79	2.76	2.65	2.65	2.58
Moment of inertia	gcm ²	0.3	0.3	0.3	0.3	0.3	0.3
Torque constant	mN.m/A	5.78	8.28	6.40	9.96	11.69	14.27
Speed constant	rpm/V	1652	1153	1493	958	843.5	820.9
Speed/torque gradient	rpm/mN.m	868.6	888.7	877.7	844.7	254.0	232.0
Weight	g	32.6	32.6	32.6	32.6	32.6	32.6

ADDITIONAL INFORMATION

Motor thermal resistance:	22.5 K/W	Motor thermal time constant:	407 S
Axial (dynamic):	1.5 N	Radial (5mm from mounting face):	6.0 N
Press-fit force (static):	40 N	Max allowable screw depth into flange:	3.0 mm
Maximum radial play (5mm from mounting face):	≤ 0.02 mm	Axial play:	0 (<2.0N)
Maximum winding temperature:	85°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	2 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 26#)	Total Length: $L_T = L_1 + L_2 + L_3$				
	L1:16GP	L1:19GP	L2:BL16	L3:EN16S	L3:EN16T
Cable 1: Yellow Winding A	15.9	18.8	32.0	10.7	12.0
Cable 2: Red Winding B	19.6	23.6			
Cable 3: Blue Winding C	23.3	28.4			
Plug definition (AWG 28#) Molex: 51021-0500	27	33.2			
Plug 1: Brown Hall 3~16V					
Plug 2: Black Hall GND					
Plug 3: Yellow Hall A					
Plug 4: Red Hall B					
Plug 5: Blue Hall C					

Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.



Recommended Gearbox:
Planetary Gearbox:
AM-19GP
AM-20GP

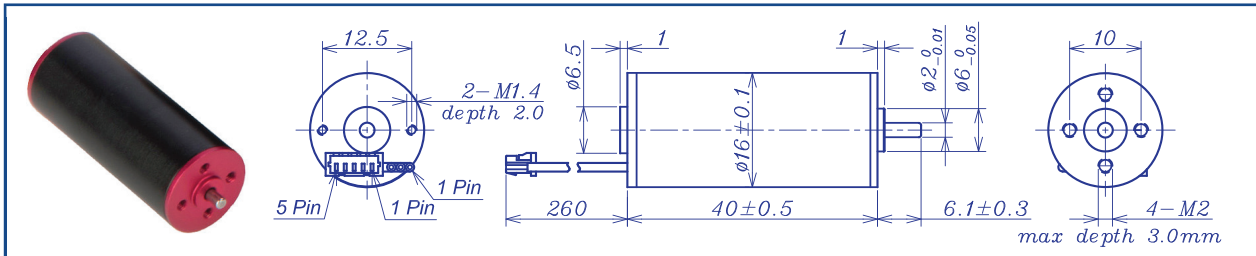
Recommended Encoder:
Encoder S: AM-EN1611S***
2~3 Channels
Encoder T: AM-EN1612T***
2~3 Channels

Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage. At elevated ambient temperatures, load current must be reduced.

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AM-BL1640AN Series

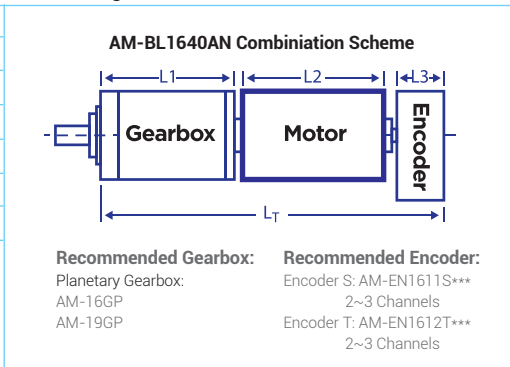


		Brushless Motor				Ball Bearings			
Motor Model		1234	1221	1216	1836	1821	1816	2419	2413
Nominal voltage	V	12	12	12	18	18	18	24	24
No load speed ±12%	rpm	34200	21000	16400	36300	20900	16160	19400	12600
No load current Max150%	mA	200	120	80	150	75	60	50	40
Recommend limit for continuous operating	Max cont. torque	mN.m	4.6	5.8	6.3	3.5	5.7	6.2	6.4
	Rated Speed	rpm	31782	17888	13242	34513	17874	13027	9133
	Rated Current	mA	1600	1200	1000	900	780	650	400
	Rated Power	W	15.5	10.9	8.8	12.7	10.7	8.4	10.4	6.1
Starting current	mA	20000	7407	4858	15385	4945	3103	3200	1348
Stall torque	mN.m	66	39	33	71	39	32	37	23
Maximum power output	W	58.8	21.5	14.1	67.9	21.6	13.4	18.6	7.6
Maximum Efficiency	%	81	76	76	81	77	74	77	69
Terminal resistance ±12%	Ω	0.6	1.62	2.47	1.17	3.64	5.8	7.5	17.8
Inductance (1KH ₂)	mH	0.032	0.1	0.16	0.017	0.24	0.38	0.49	1.05
Mechanical time constant	ms	2.2	2.3	2.1	2.2	2.3	2.2	2.3	2.3
Moment of inertia	gcm ²	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
Torque constant	mN.m/A	3.3	5.4	6.9	4.7	8.1	10.4	11.6	17.6
Speed constant	rpm/V	2879	1779	1390	2037	1179	915	821	541
Speed/torque gradient	rpm/mN.m	520.7	536.8	499.4	508.2	529.8	509.0	529.6	545.7
Weight	g	42.2	42.1	41.8	42.1	42.2	41.8	41.9	41.8

ADDITIONAL INFORMATION

Motor thermal resistance:	17.9K/W	Motor thermal time constant:	439S
Axial (dynamic):	1.5 N	Radial (5mm from mounting face):	6.0 N
Press-fit force (static):	40 N	Max allowable screw depth into flange:	3.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<2.0N)
Maximum winding temperature:	85°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	2 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 26#)	Total Length: L _T =L ₁ +L ₂ +L ₃				
Cable 1: Yellow Winding A	L1:16GP	L1:19GP	L2:BL16	L3:EN16S	L3:EN16T
Cable 2: Red Winding B	15.9	18.8	40.0	10.7	12.0
Cable 3: Blue Winding C	19.6	23.6			
Plug definition (AWG 28#) Molex:51021-0500	23.3	28.4			
	27.0	33.2			
Plug 1: Brown Hall 3~16V					
Plug 2: Black Hall GND					
Plug 3: Yellow Hall A					
Plug 4: Red Hall B					
Plug 5: Blue Hall C					

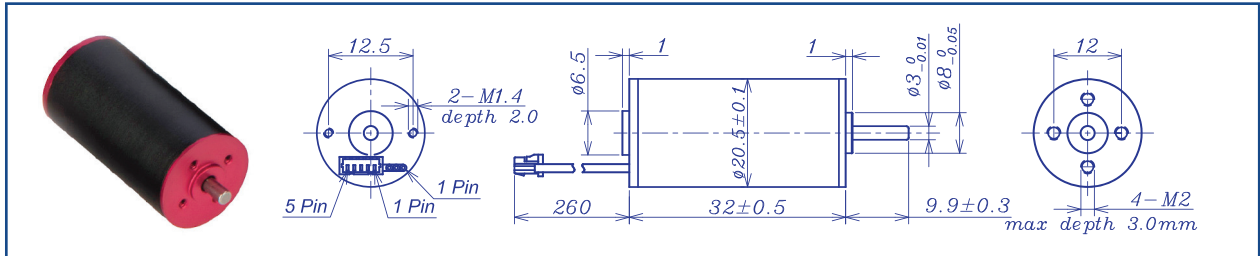


Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage. At elevated ambient temperatures, load current must be reduced.

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AM-BL2032AN Series

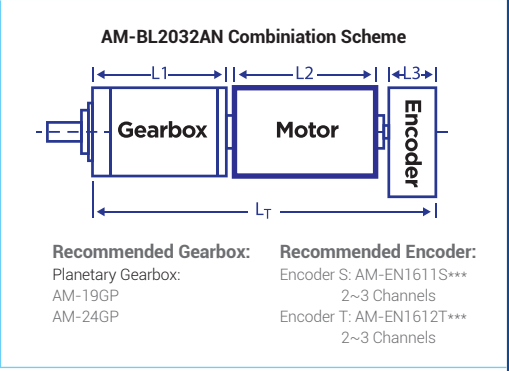


		Brushless Motor		Ball Bearings				
Motor Model			1225	1220	1822	1819	2419	2415
Nominal voltage		V	12	12	18	18	24	24
No load speed ±12%		rpm	24525	19908	22265	18634	19339	14850
No load current Max150%		mA	200	150	120	100	90	70
Recommend limit for continuous operating	Max cont. torque	mN.m	2.3	4.2	2.9	4.5	3.6	4.6
	Rated Speed	rpm	23581	18096	21080	16679	17806	12731
	Rated Current	mA	700	900	500	600	400	380
	Rated Power	W	5.7	8.0	6.4	7.9	6.7	6.2
Starting current		mA	13187	8392	7258	4865	4000	2243
Stall torque		mN.m	60	47	54	43	45	32
Maximum power output		W	38.4	24.3	31.6	21.0	22.9	12.6
Maximum Efficiency		%	77	75	76	73	72	68
Terminal resistance ±12%		Ω	0.91	1.43	2.48	3.7	6.0	10.7
Inductance (1KHz)		mH	0.07	0.11	0.19	0.29	0.47	0.86
Mechanical time constant		ms	3.0	3.1	3.0	3.1	3.1	3.3
Moment of inertia		gcm ²	0.69	0.69	0.69	0.69	0.69	0.69
Torque constant		mN.m/A	4.6	5.7	7.6	9.0	11.6	15.0
Speed constant		rpm/V	2075	1689	1258	1057	824	639
Speed/torque gradient		rpm/mN.m	410.4	427.3	410.8	432.9	427.0	457.1
Weigh		g						

ADDITIONAL INFORMATION

Motor thermal resistance:	22.8K/W	Motor thermal time constant:	552S
Axial (dynamic):	2.5 N	Radial (5mm from mounting face):	16.0 N
Press-fit force (static):	50 N	Max allowable screw depth into flange:	3.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<4.0N)
Maximum winding temperature:	85°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	3 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 24#)	Total Length: L _T =L1+L2+L3				
Cable 1:Yellow Winding A	L1:19GP	L1:24GP	L2:BL20	L3:EN16S	L3:EN16T
Cable 2:Red Winding B	18.8	24	32.0	10.7	12.0
Cable 3:Blue Winding C	23.6	34.3			
Plug definition (AWG 28#) Molex:51021-0500	28.4	42.8			
	33.2	51.3			
Plug 1: Brown Hall 3~16V					
Plug 2: Black Hall GND					
Plug 3:Yellow Hall A	Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.				
Plug 4: Red Hall B					
Plug 5:Blue Hall C					

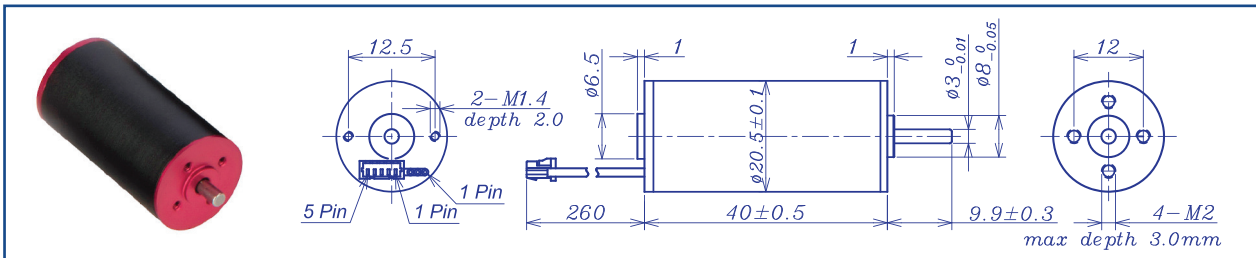


Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage. At elevated ambient temperatures, load current must be reduced.

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AM-BL2040AN Series



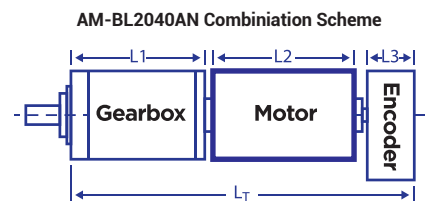
		Brushless Motor				Ball Bearings			
Motor Model		1226	1220	1216	1820	1817	2420	2417	
Nominal voltage	V	12	12	12	18	18	24	24	
No load speed ±12%	rpm	26000	20360	16260	19500	17350	20000	16600	
No load current Max 150%	mA	350	190	180	150	140	110	95	
Recommend limit for continuous operating	Max cont. torque	mN.m	5.4	7.3	8.5	7.4	6.4	7.5	
	Rated Speed	rpm	24682	18605	14445	17760	15721	18454	
	Rated Current	mA	1600	1500	1400	1000	800	700	
	Rated Power	W	14.0	14.2	12.8	13.7	10.6	12.9	
Starting current	mA	25000	15385	11111	9677	7171	7742	5530	
Stall torque	mN.m	107	84	76	83	68	86	74	
Maximum power output	W	72.9	45.0	32.3	42.2	31.0	45.1	32.0	
Maximum Efficiency	%	78	79	76	77	74	78	76	
Terminal resistance ±12%	Ω	0.48	0.78	1.08	1.86	2.51	3.1	4.34	
Inductance (1KHz)	mH	0.034	0.061	0.097	0.17	0.22	0.29	0.42	
Mechanical time constant	ms	2.9	2.9	2.5	2.8	3.0	2.7	2.7	
Moment of inertia	gcm ²	1.13	1.13	1.13	1.13	1.13	1.13	1.13	
Torque constant	mN.m/A	4.6	5.6	6.9	8.7	9.7	11.3	13.6	
Speed constant	rpm/V	2197	1718	1377	1100	983	845	704	
Speed/torque gradient	rpm/mN.m	242.7	241.1	214.5	235.8	254.0	232.0	225.1	
Weight	g	65.9	66.2	66.6	65.7	65.4	65.1	65.9	

ADDITIONAL INFORMATION

Motor thermal resistance:	15 K/W	Motor thermal time constant:	673 S
Axial (dynamic):	2.5 N	Radial (5mm from mounting face):	16.0 N
Press-fit force (static):	50 N	Max allowable screw depth into flange:	3.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<4.0N)
Maximum winding temperature:	85°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	3 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 24#)	Total Length: L _T =L ₁ +L ₂ +L ₃				
Cable 1: Yellow Winding A	L1:19GP	L1:24GP	L2:BL20	L3:EN16S	L3:EN16T
Cable 2: Red Winding B	18.8	24	40.0	10.7	12.0
Cable 3: Blue Winding C	23.6	34.3			
Plug definition (AWG 28#) Molex:51021-0500	28.4	42.8			
	33.2	51.3			
Plug 1: Brown Hall 3~16V					
Plug 2: Black Hall GND					
Plug 3: Yellow Hall A					
Plug 4: Red Hall B					
Plug 5: Blue Hall C					

Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.



Recommended Gearbox:
Planetary Gearbox:
AM-19GP
AM-24GP

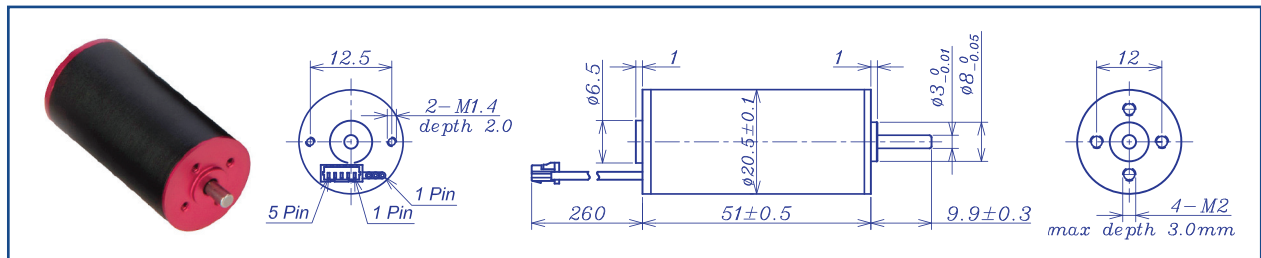
Recommended Encoder:
Encoder S: AM-EN1611S***
2~3 Channels
Encoder T: AM-EN1612T***
2~3 Channels

Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage.
At elevated ambient temperatures, load current must be reduced.

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AM-BL2051AN Series



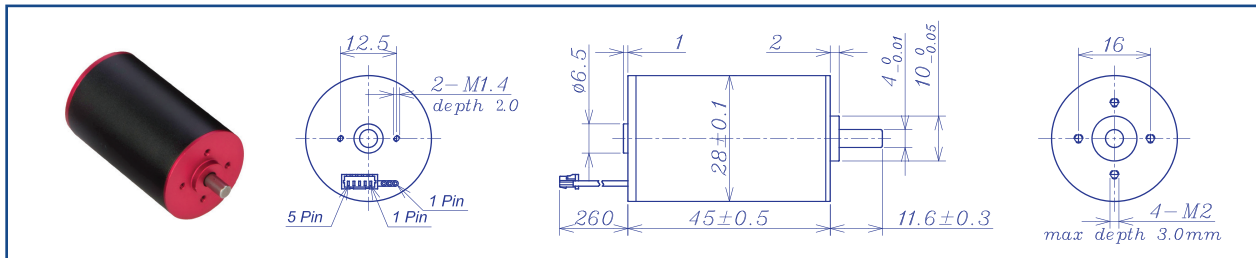
		Brushless Motor				Ball Bearings		
Motor Model		1221	1216	2426	2421	3619	3624	
Nominal voltage	V	12	12	24	24	36	36	
No load speed ±12%	rpm	20604	15670	25800	21400	19297	24781	
No load current Max 150%	mA	250	185	155	126	65	90	
Recommend limit for continuous operating	Max cont. torque	mN.m	6.9	9.5	3.0	6.6	5.6	
	Rated Speed	rpm	19520	14156	25336	20309	17917	23899
	Rated Current	mA	1500	1500	500	750	620	500
	Rated Power	W	14.1	14.1	8.1	14.1	18.4	14.1
Starting current	mA	24000	13793	19355	12371	7826	11613	
Stall torque	mN.m	131	98	169	130	137	159	
Maximum power output	W	70.5	40.3	114.3	72.7	69.3	102.9	
Maximum Efficiency	%	81	78	83	81	83	83	
Terminal resistance ±12%	Ω	0.5	0.87	1.24	1.94	4.6	3.1	
Inductance (1KH _z)	mH	0.04	0.07	0.1	0.16	0.47	0.29	
Mechanical time constant	ms	2.4	2.4	2.3	2.5	2.1	2.3	
Moment of inertia	gcm ²	1.43	1.43	1.43	1.43	1.43	1.43	
Torque constant	mN.m/A	5.5	7.2	8.8	10.6	17.7	13.8	
Speed constant	rpm/V	1735	1324	1084	901	541	694	
Speed/torque gradient	rpm/mN.m	157.6	159.6	152.5	164.9	140.7	156.2	
Weight	g							

ADDITIONAL INFORMATION							
Motor thermal resistance:	15 K/W	Motor thermal time constant:	720 S				
Axial (dynamic):	2.5 N	Radial (5mm from mounting face):	16.0 N				
Press-fit force (static):	50 N	Max allowable screw depth into flange:	3.0 mm				
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<4.0N)				
Maximum winding temperature:	85°C	Ambient temperature range:	-30 to 65°C				
Standard rear shaft diameter:	3 mm	Standard rear shaft length "L":	0/3.7/5.5 mm				
Connection (AWG 24#)	Total Length: L _T =L ₁ +L ₂ +L ₃						
Cable 1:Yellow Winding A	L1:19GP	L1:24GP	L2:BL20	L3:EN16S	L3:EN16T		
Cable 2:Red Winding B	18.8	24	51.0	10.7	12.0		
Cable 3: Blue Winding C	23.6	34.3					
Plug definition (AWG 28#)	28.4	42.8					
Molex:51021-0500	33.2	51.3					
Plug 1: Brown Hall 3~16V							
Plug 2: Black Hall GND							
Plug 3 :Yellow Hall A							
Plug 4: Red Hall B							
Plug 5 :Blue Hall C							
Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.							
				AM-BL2051AN Combination Scheme Recommended Gearbox: Planetary Gearbox: AM-19GP, AM-24GP Recommended Encoder: Encoder S: AM-EN1611S*** (2~3 Channels), Encoder T: AM-EN1612T*** (2~3 Channels)			
Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage. At elevated ambient temperatures, load current must be reduced.							

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AM-BL2845AN Series

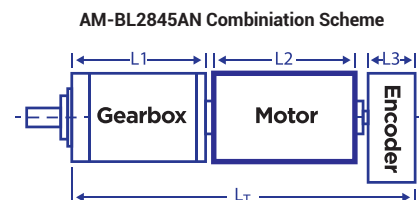


		Brushless Motor				Ball Bearings		
Motor Model		1215	1210	1813	1810	2412	2409	
Nominal voltage	V	12	12	18	18	24	24	
No load speed ±12%	rpm	14800	10000	12520	9680	11680	9080	
No load current Max 150%	mA	300	190	170	120	120	85	
Recommend limit for continuous operating	Max cont. torque	mN.m	28.4	34.2	30.4	33.1	28.8	35.4
	Rated Speed	rpm	13374	8455	11222	8282	10401	7593
	Rated Current	mA	4000	3200	2400	2000	1600	1500
	Rated Power	W	39.8	30.2	35.7	28.7	31.4	28.1
Starting current	mA	60000	19672	21687	13139	13636	8727	
Stall torque	mN.m	295	221	293	229	263	216	
Maximum power output	W	114.3	57.9	96.1	58.0	80.4	51.3	
Maximum Efficiency	%	83	81	83	82	82	81	
Terminal resistance ±12%	Ω	0.31	0.61	0.83	1.37	1.76	2.75	
Inductance (1KHz)	mH	0.034	0.086	0.126	0.22	0.27	0.46	
Mechanical time constant	ms	3.3	2.9	2.8	2.7	2.9	2.7	
Moment of inertia	gcm ²	6.19	6.19	6.19	6.19	6.19	6.19	
Torque constant	mN.m/A	7.7	11.3	13.6	17.6	19.4	25.0	
Speed constant	rpm/V	1243	841	701	543	491	382	
Speed/torque gradient	rpm/mN.m	50.2	45.2	42.7	42.3	44.4	42.0	
Weight	g	138.8	138.7	139.1	140.1	138.4	139.2	

ADDITIONAL INFORMATION

Motor thermal resistance:	10.2 K/W	Motor thermal time constant:	822 S
Axial (dynamic):	4.0 N	Radial (5mm from mounting face):	16.0 N
Press-fit force (static):	110 N	Max allowable screw depth into flange:	3.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<4.0N)
Maximum winding temperature:	85°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	4 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 22#)		Total Length: L _T =L ₁ +L ₂ +L ₃				
Cable 1:Yellow	Winding A	L1:28GP	L1:32GP	L2:BL28	L3:EN16S	L3:EN16T
Cable 2:Red	Winding B	26.1	27.4	45.0	10.7	12.0
Cable 3:Blue	Winding C	33.3	35.9			
Plug definition (AWG 28#) Molex:51021-0500		40.5	44.4			
		47.7	52.9			
Plug 1: Brown	Hall 3~16V					
Plug 2: Black	Hall GND					
Plug 3: Yellow	Hall A	Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.				
Plug 4: Red	Hall B					
Plug 5: Blue	Hall C					



Recommended Gearbox:
Planetary Gearbox:
AM-28GP
AM-32GP

Recommended Encoder:
Encoder S: AM-EN1611S***
2~3 Channels
Encoder T: AM-EN1612T***
2~3 Channels

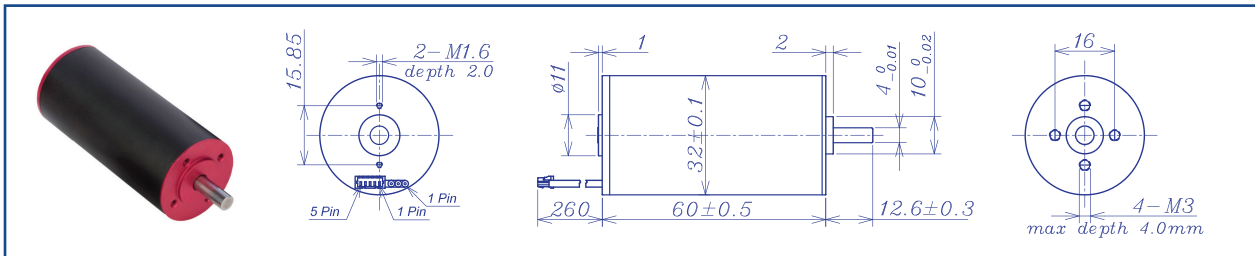
For more combination specs, visit Assun Motor website.

Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage. At elevated ambient temperatures, load current must be reduced.

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AM-BL3260AN Series

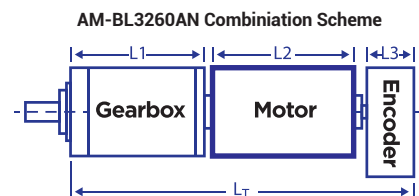


		Brushless Motor			Ball Bearings			
Motor Model		1212	1208	2413	2409	3613	3610	
Nominal voltage	V	12	12	24	24	36	36	
No load speed ±12%	rpm	12191	8127	12832	9752	12611	10449	
No load current Max 150%	mA	355	192	190	127	125	94	
Recommend limit for continuous operating	Max cont. torque	mN.m	31.3	42.1	28.6	34.4	29.1	36.2
	Rated Speed	rpm	11507	7245	12243	9305	12001	9690
	Rated Current	mA	3700	3200	1800	1600	1200	1200
	Rated Power	W	37.7	32.0	36.7	32.5	36.6	36.7
Starting current	mA	60000	27907	35294	120168	22360	15319	
Stall torque	mN.m	557	388	624	468	603	498	
Maximum power output	W	177.9	82.6	209.5	119.5	199.0	136.2	
Maximum Efficiency	%	85	84	86	85	86	85	
Terminal resistance ±12%	Ω	0.2	0.43	0.68	1.19	1.61	2.35	
Inductance (1KHz)	mH							
Mechanical time constant	ms	3.0	2.9	2.9	2.9	2.9	2.9	
Moment of inertia	gcm ²	13.3	13.3	13.3	13.3	13.3	13.3	
Torque constant	mN.m/A	9.3	14.0	17.8	23.4	27.1	32.7	
Speed constant	rpm/V	1022	682	538	409	352	292	
Speed/torque gradient	rpm/mN.m	21.9	20.9	20.6	20.8	20.9	21.0	
Weight	g	240	240	240	240	240	240	

ADDITIONAL INFORMATION

Motor thermal resistance:	7.8 K/W	Motor thermal time constant:	1089 S
Axial (dynamic):	6.0 N	Radial (5mm from mounting face):	28.0 N
Press-fit force (static):	110 N	Max allowable screw depth into flange:	4.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<6.0N)
Maximum winding temperature:	85°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	4 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 20#)	Total Length: L _T =L ₁ +L ₂ +L ₃				
Cable 1: Yellow Winding A	L1:32GP	L1:36GP	L2:BL32	L3:EN22S	L3:EN24T
Cable 2: Red Winding B	27.4	30.6	60.0	10.7	12.0
Cable 3: Blue Winding C	35.9	39.6			
Plug definition (AWG 28#) Molex:51021-0500	44.4	48.6			
	52.9	57.6			
Plug 1: Brown Hall 3~16V					
Plug 2: Black Hall GND					
Plug 3: Yellow Hall A	Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.				
Plug 4: Red Hall B					
Plug 5: Blue Hall C					



Recommended Gearbox: Planetary Gearbox: AM-32GP, AM-36GP
Recommended Encoder: Encoder S: AM-EN221S*** 2~3 Channels, Encoder T: AM-EN2412T*** 2~3 Channels

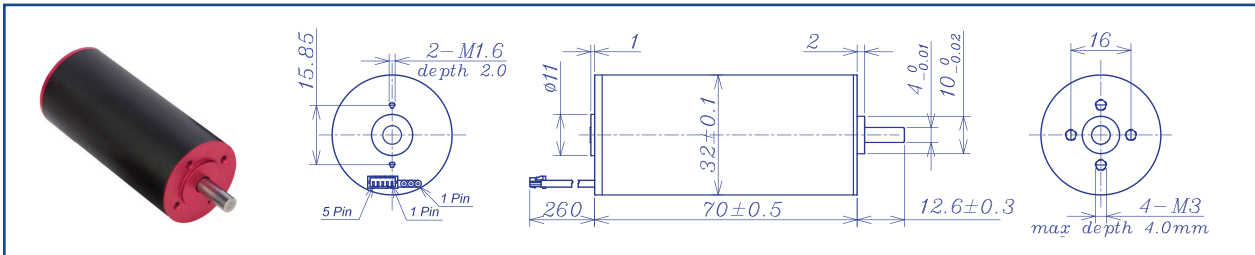
For more combination specs, visit Assun Motor website.

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AM-BL3270AN Series

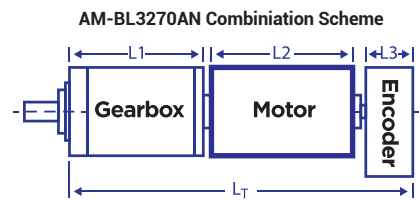


		Brushless Motor			Ball Bearings		
Motor Model		1210	1207	2412	2409	3611	3609
Nominal voltage		V	12	12	24	24	36
No load speed ±12%		rpm	9794	6529	11523	8904	10882
No load current Max 150%		mA	355	192	190	127	94
Recommend limit for continuous operating	Max cont. torque	mN.m	40.0	52.4	35.8	47.9	44.2
	Rated Speed	rpm	9143	5721	10982	8184	10225
	Rated Current	mA	3800	3200	2000	2000	1500
	Rated Power	W	38.3	31.4	41.2	41.1	47.4
Starting current		mA	52174	24490	38710	23301	23377
Stall torque		mN.m	602	423	762	593	733
Maximum power output		W	154.4	72.3	230.0	138.3	208.7
Maximum Efficiency		%	84	83	86	86	88
Terminal resistance ±12%		Ω	0.23	0.49	0.62	1.03	1.54
Inductance (1KHz)		mH		0.047		\$"	0.21
Mechanical time constant		ms	2.6	2.5	2.4	2.4	2.4
Moment of inertia		gcm ²	15.3	15.3	15.3	15.3	15.3
Torque constant		mN.m/A	11.6	17.4	19.8	25.6	31.5
Speed constant		rpm/V	822	548	482	373	303
Speed/torque gradient		rpm/mN.m	16.3	15.4	15.1	15.0	14.9
Weight		g	280	280	280	280	280

ADDITIONAL INFORMATION			
Motor thermal resistance:	8.2 K/W	Motor thermal time constant:	822 S
Axial (dynamic):	6.0 N	Radial (5mm from mounting face):	28.0 N
Press-fit force (static):	110 N	Max allowable screw depth into flange:	4.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<6.0N)
Maximum winding temperature:	85°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	4 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 20#)	Total Length: L _T =L1+L2+L3				
Cable 1: Yellow Winding A	L1:32GP	L1:36GP	L2:BL32	L3:EN22S	L3:EN24T
Cable 2: Red Winding B	27.4	30.6	70.0	10.7	12.0
Cable 3: Blue Winding C	35.9	39.6			
Plug definition (AWG 28#) Molex: 51021-0500	44.4	48.6			
	52.9	57.6			
Plug 1: Brown Hall 3~16V					
Plug 2: Black Hall GND					
Plug 3: Yellow Hall A					
Plug 4: Red Hall B					
Plug 5: Blue Hall C					

Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.



Recommended Gearbox:
Planetary Gearbox:
AM-32GP
AM-36GP

Recommended Encoder:
Encoder S: AM-EN2211S***
2~3 Channels
Encoder T: AM-EN2412T***
2~3 Channels

For more combination specs, visit Assun Motor website.

Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage.
At elevated ambient temperatures, load current must be reduced.

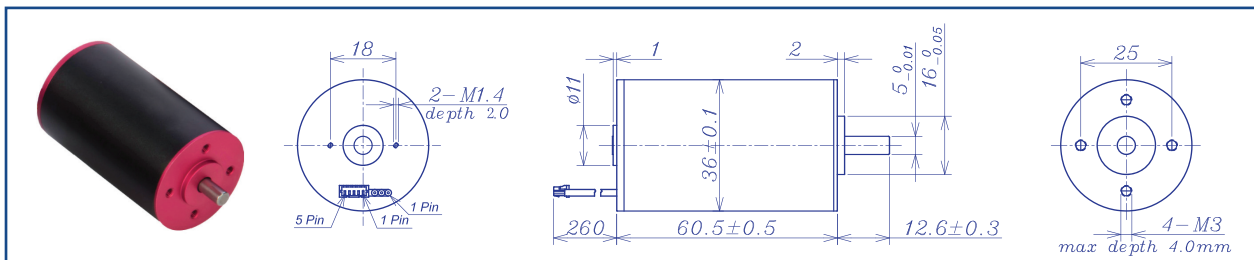
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AM-BL3660AN Series



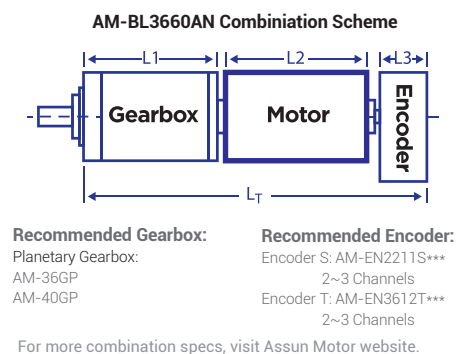
		Brushless Motor			Ball Bearings		
Motor Model		1211	1209	2413	2410	3612	3610
Nominal voltage		V	12	12	24	24	36
No load speed ±12%		rpm	11200	8840	12500	10200	12300
No load current Max 150%		mA	400	230	220	165	120
Recommend limit for continuous operating	Max cont. torque	mN.m	47.6	51.2	36.1	43.2	41.2
	Rated Speed	rpm	10322	7928	11940	9489	11650
	Rated Current	mA	5000	4200	2200	2100	1600
	Rated Power	W	51.5	42.8	45.2	42.9	50.2
Starting current		mA	60000	38710	44444	27907	28125
Stall torque		mN.m	607	496	807	620	779
Maximum power output		W	178.1	114.8	264.0	165.5	251.0
Maximum Efficiency		%	86	85	86	85	87
Terminal resistance ±12%		Ω	0.2	0.31	0.54	0.86	1.28
Inductance (1KHz)		mH	0.027	0.051	0.11	0.17	0.27
Mechanical time constant		ms	3.2	3.1	2.7	2.9	2.8
Moment of inertia		gcm ²	16.75	16.75	16.75	16.75	16.75
Torque constant		mN.m/A	10.2	12.9	18.2	22.3	27.8
Speed constant		rpm/V	938	741	523	428	343
Speed/torque gradient		rpm/mN.m	18.4	17.8	15.5	16.5	15.8
Weight		g	325.8	325.9	326.8	326.9	326.5

ADDITIONAL INFORMATION

Motor thermal resistance:	6.9 K/W	Motor thermal time constant:	1188S
Axial (dynamic):	6.0 N	Radial (5mm from mounting face):	28.0 N
Press-fit force (static):	110 N	Max allowable screw depth into flange:	4.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<6.0N)
Maximum winding temperature:	85°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	5 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 20#)	Total Length: $L_T = L_1 + L_2 + L_3$				
Cable 1: Yellow Winding A	L1:36GP	L1:40GP	L2:BL36	L3:EN22S	L3:EN36T
Cable 2: Red Winding B	39.6	46.8	60.5	10.7	12.0
Cable 3: Blue Winding C	48.6	58.3			
Plug definition (AWG 28#) Molex: 51021-0500	57.6	69.8			
Plug 1: Brown Hall 3~16V					
Plug 2: Black Hall GND					
Plug 3: Yellow Hall A					
Plug 4: Red Hall B					
Plug 5: Blue Hall C					

Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

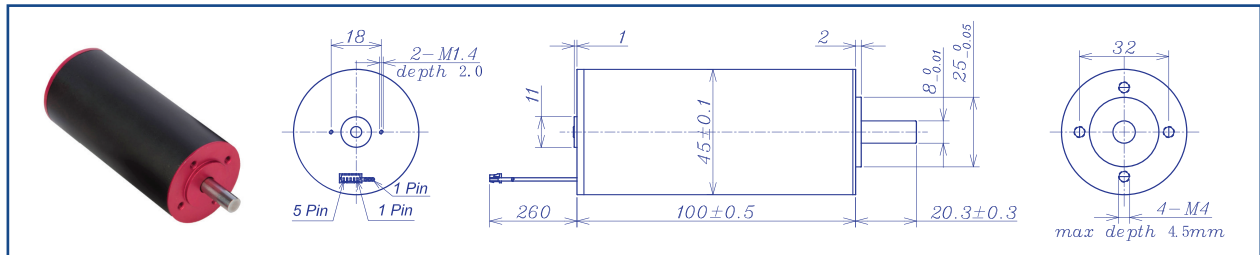


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At elevated ambient temperatures, load current must be reduced.

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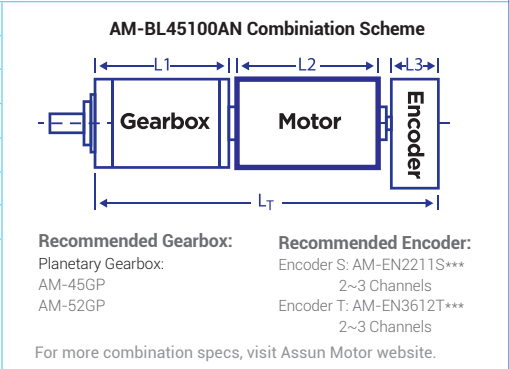
AM-BL45100AN Series



		Brushless Motor			Ball Bearings			
Motor Model		2411	2406	3610	3606	4810	4806	
Nominal voltage	V	24	24	36	36	48	48	
No load speed ±12%	rpm	11240	5900	10340	6380	10360	6450	
No load current Max 150%	mA	600	320	390	200	370	190	
Recommend limit for continuous operating	Max cont. torque	mN.m	69.0	161.5	69.9	123.4	49.8	120.8
	Rated Speed	rpm	10984	5466	10127	6032	10215	6108
	Rated Current	mA	4000	4500	2500	2500	1500	1900
	Rated Power	W	79.4	92.4	74.1	77.9	53.2	77.3
Starting current	mA	150000	57143	102857	42353	81356	32432	
Stall torque	mN.m	3034	2195	3394	2261	3567	2278	
Maximum power output	W	892.8	339.0	918.7	377.6	967.4	384.6	
Maximum Efficiency	%	88	86	88	87	87	85	
Terminal resistance ±12%	Ω	0.16	0.42	0.35	0.85	0.59	1.48	
Inductance (1KHz)	mH	0.035	0.14	0.11	0.31	0.21	0.55	
Mechanical time constant	ms	4.3	3.1	3.5	3.2	3.3	3.3	
Moment of inertia	gcm ²	109.8	109.8	109.8	109.8	109.8	109.8	
Torque constant	mN.m/A	20.3	38.6	33.1	53.6	44.0	70.6	
Speed constant	rpm/V	470	247	288	178	217	135	
Speed/torque gradient	rpm/mN.m	3.7	2.7	3.0	2.8	2.9	2.8	
Weight	g	846.5	850.2	852.5	841.5	847.5	840.3	

ADDITIONAL INFORMATION			
Motor thermal resistance:	3.6 K/W	Motor thermal time constant:	1286 S
Axial (dynamic):	8.0 N	Radial (5mm from mounting face):	180.0 N
Press-fit force (static):	170 N	Max allowable screw depth into flange:	4.5 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<8.0N)
Maximum winding temperature:	85°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	8 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 18#)	Total Length: L _T =L ₁ +L ₂ +L ₃				
Cable 1: Yellow Winding A	L1:45GP	L1:52GP	L2:BL45	L3:EN22S	L3:EN36T
Cable 2: Red Winding B	36.1	46.3	100.0	10.7	12.0
Cable 3: Blue Winding C	48.1	62.8			
Plug definition (AWG 28#) Molex: 51021-0500	60.1	79.3			
	72.1	95.8			
Plug 1: Brown Hall 3~16V					
Plug 2: Black Hall GND					
Plug 3: Yellow Hall A	Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.				
Plug 4: Red Hall B					
Plug 5: Blue Hall C					

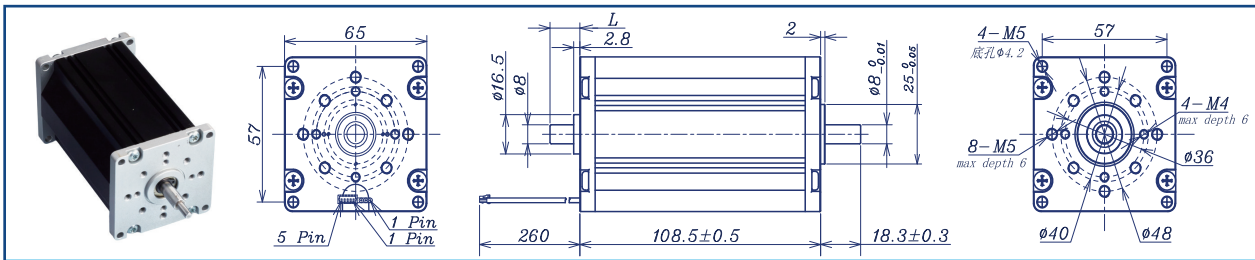


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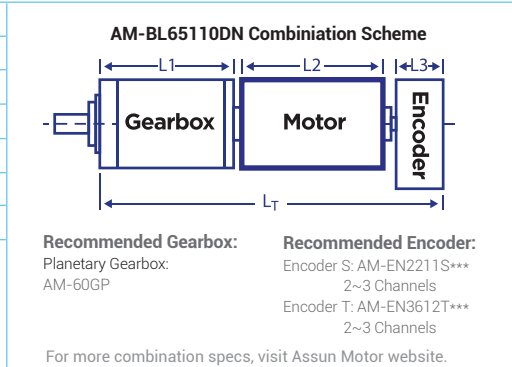
AM-BL65110DN Seires



		Brushless Motor		Ball Bearings	
Motor Model		2404	4004		
Nominal voltage		V	24	40	
No Load Speed ±12%		rpm	3550	3600	
No load current Max 150%		mA	225	135	
Recommend Limit for continuous operating	Max cont. torque	mN.m	403.0	403.5	
	Rated Speed	rpm	3037	2922	
	Rated Current	mA	6500	3800	
	Rated Power	W	128.2	123.5	
Starting current		mA	43636	24096	
Stall torque		mN.m	2788	2638	
Maximum power output		W	259.1	238.3	
Maximum Efficiency		%	86	86	
Terminal resistance ±12%		Ω	0.55	1.66	
Inductance (1KHz)		mH		0.44	
Mechanical time constant		ms	19.8	20.4	
Moment of inertia		gcm ²	1486	1486	
Torque constant		mN.m/A	64.2	110.1	
Speed constant		rpm/V	149	87	
Speed/torque gradient		rpm/mN.m	1.3	1.3	
Weight		g	1300	1308	

ADDITIONAL INFORMATION			
Motor thermal resistance:	2.6 K/W	Motor thermal time constant:	2025 S
Axial (dynamic):	30.0 N	Radial (5mm from mounting face):	180.0 N
Press-fit force (static):	150 N	Max allowable screw depth into flange:	6.0mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<12.0N)
Maximum winding temperature:	85°C	Ambient temperature range:	-30 to 65°C
Standard Rear Shaft Diameter:	8 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 18#)		减速电机总长: L _T =L ₁ +L ₂ +L ₃			
Cable 1: Yellow	Winding A	L1:60GP	L2:BL65	L3:EN22S	L3:EN36T
Cable 2: Red	Winding B	73.5	108.5	10.7	12.0
Cable 3: Blue	Winding C				
Plug definition (AWG 28#) Molex: 51021-0500					
Plug 1: Brown	Hall 3~16V				
Plug 2: Black	Hall GND				
Plug 3: Yellow	Hall A	Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.			
Plug 4: Red	Hall B				
Plug 5: Blue	Hall C				



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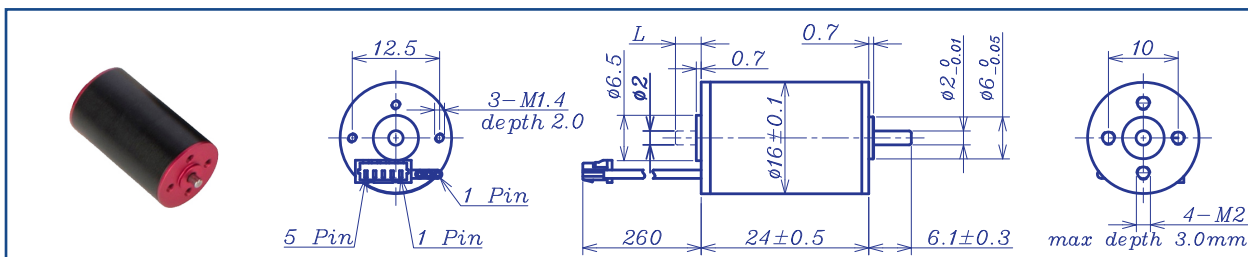
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DC BRUSHLESS MOTOR
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AM-BL1624AE Series



		Brushless Motor			Ball Bearings		
Motor Model		0514	0614	0914	1213	1215	
Nominal voltage	V	4.5	6	9	12	12	
No load speed	±12% rpm	13550	14098	13550	13426	14800	
No load current	Max 150% mA	150	125	75	65	60	
Recommend limit for continuous operating	Max cont. torque	mN.m	2.5	2.5	2.5	2.6	
	Rated Speed	rpm	7771	8288	7992	7880	9382
	Rated Current	mA	1000	780	500	380	420
	Rated Power	W	2	2.1	2.1	2.0	2.6
Starting current	mA	2143	1714	1111	828	1043	
Stall torque	mN.m	6	6	6	6	7	
Maximum power output	W	2.1	2.2	2.2	2.1	2.8	
Maximum Efficiency	%	54	53	55	52	58	
Terminal resistance	±12% Ω	2.1	3.5	8.1	14.5	11.5	
Inductance (1KHz)	mH	Null	Null	Null	Null	0.5	
Mechanical time constant	ms	4.6	4.7	4.4	4.5	4.1	
Moment of inertia	gcm ²	0.19	0.19	0.19	0.19	0.19	
Torque constant	mN.m/A	2.9	3.8	5.9	7.9	7.3	
Speed constant	rpm/V	3238	2534	1615	1214	1309	
Speed/torque gradient	rpm/mN.m	2305.3	2354.4	2211.1	2238.6	2062.2	
Weight	g	31	31	31	31	31	

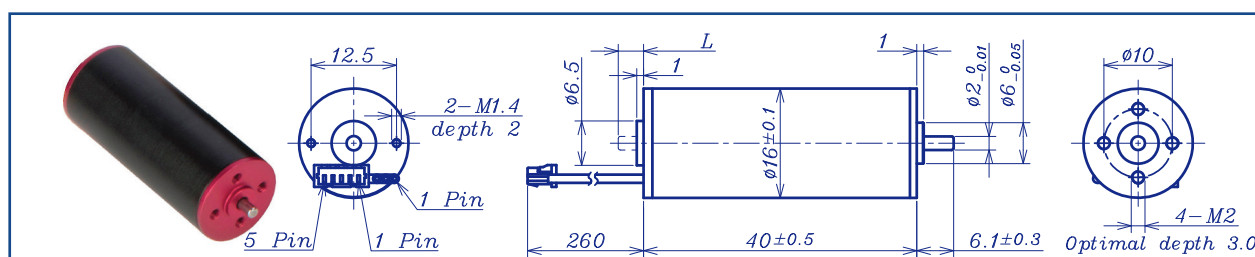
ADDITIONAL INFORMATION						
Motor thermal resistance:	**** K/W		Motor thermal time constant:	**** S		
Axial (dynamic):	1.5 N		Radial (5mm from mounting face):	6.0 N		
Press-fit force (static):	40 N		Max allowable screw depth into flange:	3.0 mm		
Maximum radial play (5mm from mounting face):	≤0.02 mm		Axial play:	0 (<2.0N)		
Maximum winding temperature:	125°C		Ambient temperature range:	-40 to 85°C		
Standard rear shaft diameter:	2 mm		Standard rear shaft length "L":	No mm		
Connection (AWG 26#)	Total Length: $L_T = L_1 + L_2 + L_3$					
Cable 1: Yellow Winding A	L1:16GP	L1:19GP	L2:BL16	L3:EN16S	L3:EN16T	
Cable 2: Red Winding B	15.9	18.8	24.0	10.7	12.0	
Cable 3: Blue Winding C	19.6	23.6				
Plug definition (AWG 28#) Molex: 51021-0500	23.3	28.4				
	27.0	33.2				
Plug 1: Brown Hall 3~16V						
Plug 2: Black Hall GND						
Plug 3: Yellow Hall A						
Plug 4: Red Hall B						
Plug 5: Blue Hall C						
Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.						
			AM-BL1624AE Combination Scheme Recommended Gearbox: Planetary Gearbox: AM-16GP AM-19GP Recommended Encoder: Encoder S: AM-EN1611S*** 2~3 Channels Encoder T: AM-EN1612T*** 2~3 Channels For more combination specs, visit Assun Motor website.			

Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage.
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AM-BL1640AE Series



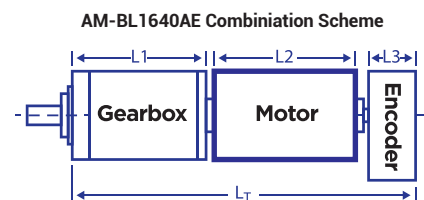
		Brushless Motor				Ball Bearings			
Motor Model		1234	1221	1216	1836	1821	1816	2419	2413
Nominal voltage	V	12	12	12	18	18	18	24	24
No load speed ±12%	rpm	34200	21000	16400	36300	20900	16160	19400	12600
No load current Max 150%	mA	200	120	80	150	75	60	50	40
Recommend limit for continuous operating	Max cont. torque	mN.m	7	7.9	8.7	6.3	7.9	8.2	8.1
	Rated Speed	rpm	30573	16735	12041	33083	16716	11965	15089
	Rated Current	mA	2300	1600	1350	1500	1050	850	750
	Rated Power	W	22.3	13.9	11	21.9	13.8	10.3	12.9
Starting current	mA	20000	7407	4858	15385	4945	3103	3200	1348
Stall torque	mN.m	66	39	33	71	39	32	37	23
Maximum power output	W	58.8	21.5	14.1	67.9	21.6	13.4	18.6	7.6
Maximum Efficiency	%	81	76	76	81	77	74	77	69
Terminal resistance ±12%	Ω	0.6	1.62	2.47	1.17	3.64	5.8	7.5	17.8
Inductance (1KHz)	mH	0.032	0.1	0.16	0.017	0.24	0.38	0.49	1.05
Mechanical time constant	ms	2.2	2.3	2.1	2.2	2.3	2.2	2.3	2.3
Moment of inertia	gcm ²	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
Torque constant	mN.m/A	3.3	5.4	6.9	4.7	8.1	10.4	11.6	17.6
Speed constant	rpm/V	2879	1779	1390	2037	1179	915	821	541
Speed/torque gradient	rpm/mN.m	520.7	536.8	499.4	508.2	529.8	509	529.6	545.7
Weight	g	42.2	42.1	41.8	42.1	42.2	41.8	41.9	41.8

ADDITIONAL INFORMATION

Motor thermal resistance:	17.9 K/W	Motor thermal time constant:	439 S
Axial (dynamic):	1.5 N	Radial (5mm from mounting face):	6.0 N
Press-fit force (static):	40 N	Max allowable screw depth into flange:	3.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<2.0N)
Maximum winding temperature:	125°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	2 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 26#)	Total Length: $L_T = L_1 + L_2 + L_3$				
Cable 1: Yellow Winding A	L1:16GP	L1:19GP	L2:BL16	L3:EN16S	L3:EN16T
Cable 2: Red Winding B	15.9	18.8	40.0	10.7	12.0
Cable 3: Blue Winding C	19.6	23.6			
Plug definition (AWG 28#) Molex: 51021-0500	23.3	28.4			
	27	33.2			
Plug 1: Brown Hall 3~16V					
Plug 2: Black Hall GND					
Plug 3: Yellow Hall A					
Plug 4: Red Hall B					
Plug 5: Blue Hall C					

Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.



Recommended Gearbox:
Planetary Gearbox:
AM-16GP
AM-19GP

Recommended Encoder:
Encoder S: AM-EN1611S***
2~3 Channels
Encoder T: AM-EN1612T***
2~3 Channels

For more combination specs, visit Assun Motor website.

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AM-BL2032AE Series

Brushless Motor		Ball Bearings					
Motor Model		1225	1220	1822	1819	2419	2415
Nominal voltage	V	12	12	18	18	24	24
No load speed $\pm 12\%$	rpm	24525	19908	22265	18634	19339	14850
No load current Max 150%	mA	200	150	120	100	90	70
Recommend limit for continuous operating	Max cont. torque	mN.m	6.0	7.1	6.7	7.0	6.5
	Rated Speed	rpm	22070	16889	19520	15584	16569
	Rated Current	mA	1500	1400	1000	880	650
	Rated Power	W	13.8	12.5	13.7	11.5	11.3
Starting current	mA	13187	8392	7258	4865	4000	2243
Stall torque	mN.m	60	47	54	43	45	32
Maximum power output	W	38.4	24.3	31.6	21.0	22.9	12.6
Maximum Efficiency	%	77	75	76	73	72	68
Terminal resistance $\pm 12\%$	Ω	0.91	1.43	2.48	3.7	6.0	10.7
Inductance (1KHz)	mH	0.07	0.11	0.19	0.29	0.47	0.86
Mechanical time constant	ms	3.0	3.1	3.0	3.1	3.1	3.3
Moment of inertia	gcm ²	0.69	0.69	0.69	0.69	0.69	0.69
Torque constant	mN.m/A	4.6	5.7	7.6	9.0	11.6	15.0
Speed constant	rpm/V	2075	1689	1258	1057	824	639
Speed/torque gradient	rpm/mN.m	410.4	427.3	410.8	432.9	427.0	457.1
Weight	g						

ADDITIONAL INFORMATION			
Motor thermal resistance:	22.8 K/W	Motor thermal time constant:	552S
Axial (dynamic):	2.5 N	Radial (5mm from mounting face):	16.0 N
Press-fit force (static):	50 N	Max allowable screw depth into flange:	3.0 mm
Maximum radial play (5mm from mounting face):	≤ 0.02 mm	Axial play:	0 (<4.0N)
Maximum winding temperature:	125°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	3 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 24#)	Total Length: $L_T = L_1 + L_2 + L_3$				
Cable 1: Yellow Winding A	L1:19GP	L1:24GP	L2:BL20	L3:EN16S	L3:EN16T
Cable 2: Red Winding B	18.8	24.0	32.0	10.7	12.0
Cable 3: Blue Winding C	23.6	34.3			
Plug definition (AWG 28#) Molex: 51021-0500	28.4	42.8			
Plug 1: Brown Hall 3~16V					
Plug 2: Black Hall GND					
Plug 3: Yellow Hall A					
Plug 4: Red Hall B					
Plug 5: Blue Hall C					

AM-BL2032AE Combination Scheme

Recommended Gearbox:
Planetary Gearbox:
AM-19GP
AM-24GP

Recommended Encoder:
Encoder S: AM-EN1611S***
2~3 Channels
Encoder T: AM-EN1612T***
2~3 Channels

For more combination specs, visit Assun Motor website.

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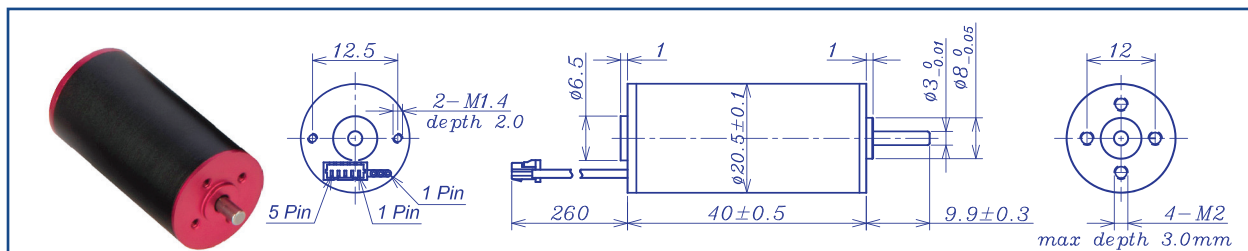
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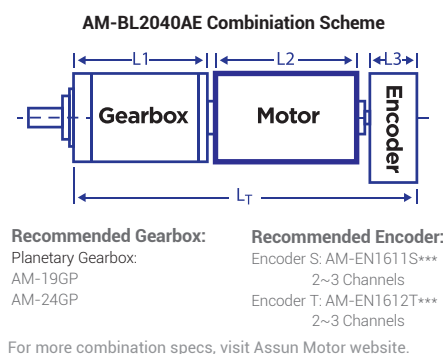


		Brushless Motor			Ball Bearings				
Motor Model			1226	1220	1216	1820	1817	2420	2417
Nominal voltage		V	12	12	12	18	18	24	24
No load speed ±12%		rpm	26000	20360	16260	19500	17350	20000	16600
No load current Max 150%		mA	350	190	180	150	140	110	95
Recommend limit for continuous operating	Max cont. torque	mN.m	8.5	12.3	13.3	11.7	11.9	12.3	12.3
	Rated Speed	rpm	23943	17399	13404	16737	14340	17144	13836
	Rated Current	mA	2300	2400	2100	1500	1360	1200	1000
	Rated Power	W	21.2	22.4	18.7	20.5	17.8	22.1	17.8
Starting current		mA	25000	15385	11111	9677	7171	7742	5530
Stall torque		mN.m	107	84	76	83	68	86	74
Maximum power output		W	72.9	45.0	32.3	42.2	31.0	45.1	32.0
Maximum Efficiency		%	78	79	76	77	74	78	76
Terminal resistance ±12%		Ω	0.48	0.78	1.08	1.86	2.51	3.1	4.34
Inductance (1KHz)		mH	0.04	0.061	0.097	0.17	0.22	0.29	0.42
Mechanical time constant		ms	2.9	2.9	2.5	2.8	3.0	2.7	2.7
Moment of inertia		gcm ²	1.13	1.13	1.13	1.13	1.13	1.13	1.13
Torque constant		mN.m/A	4.3	5.6	6.9	8.7	9.7	11.3	13.6
Speed constant		rpm/V	2197	1718	1377	1100	983	845	704
Speed/torque gradient		rpm/mN.m	4242.7	241.1	214.5	235.8	254.0	232.0	225.1
Weight		g	65.9	66.2	66.6	65.7	65.4	65.1	65.9

ADDITIONAL INFORMATION

Motor thermal resistance:	15 K/W	Motor thermal time constant:	637S
Axial (dynamic):	2.5 N	Radial (5mm from mounting face):	16.0 N
Press-fit force (static):	50 N	Max allowable screw depth into flange:	3.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<4.0N)
Maximum winding temperature:	125°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	3 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 24#)		Total Length: $L_T=L_1+L_2+L_3$				
Cable	Winding	L1:16GP	L1:19GP	L2:BL16	L3:EN16S	L3:EN16T
Cable 1: Yellow	Winding A	18.8	22.2	40.0	10.7	12.0
Cable 2: Red	Winding B	23.6	27.4			
Cable 3: Blue	Winding C	28.4	32.6			
Plug definition (AWG 28#) Molex: 51021-0500						
Plug 1: Brown	Hall 3~16V	Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.				
Plug 2: Black	Hall GND					
Plug 3: Yellow	Hall A					
Plug 4: Red	Hall B					
Plug 5: Blue	Hall C					

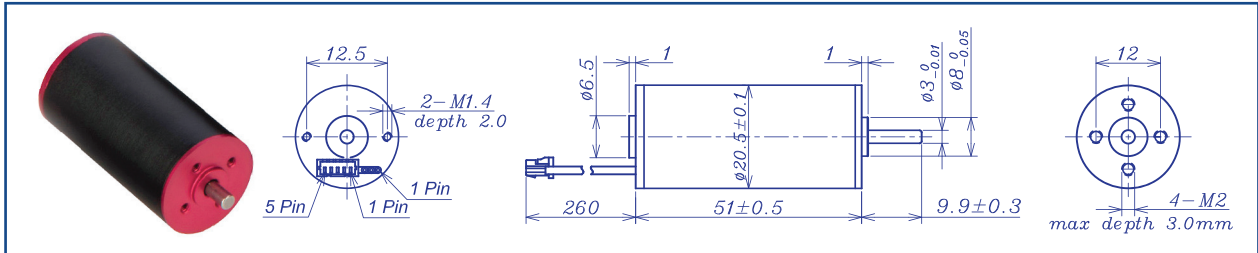


Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage.
At elevated ambient temperatures, load current must be reduced.

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AM-BL2051AE Series



Brushless Motor			Ball Bearings					
Motor Model			1221	1216	2426	2421	3619	3625
Nominal voltage	V		12	12	24	24	36	36
No load speed	±12%	rpm	20604	15670	25800	21400	19297	24781
No load current	Max 150%	mA	250	185	155	126	65	90
Recommend limit for continuous operating	Max cont. torque	mN.m	14.0	14.5	10.6	12.0	14.8	12.0
	Rated Speed	rpm	18392	13350	24181	19418	17221	22910
	Rated Current	mA	2800	2200	1360	1260	900	960
	Rated Power	W	27.0	20.3	26.9	24.4	26.6	28.7
Starting current	mA		24000	13793	19355	12371	7826	11613
Stall torque	mN.m		131	98	169	130	137	159
Maximum power output	W		70.5	40.3	114.3	72.7	69.3	102.9
Maximum Efficiency	%		81	78	83	81	83	83
Terminal resistance	±12%	Ω	0.5	0.87	1.24	1.94	4.6	3.1
Inductance (1KHz)	mH		0.04	0.07	0.1	0.16	0.47	0.29
Mechanical time constant	ms		2.4	2.4	2.3	2.5	2.1	2.3
Moment of inertia	gcm ²		1.43	1.43	1.43	1.43	1.43	1.43
Torque constant	mN.m/A		5.5	7.2	8.8	20.6	17.7	13.8
Speed constant	rpm/V		1735	1324	1084	901	541	694
Speed/torque gradient	rpm/mN.m		157.6	159.6	152.5	164.9	140.7	156.2
Weight	g		87	87	87	87	87	87

ADDITIONAL INFORMATION

Motor thermal resistance:	15 K/W	Motor thermal time constant:	720S
Axial (dynamic):	2.5 N	Radial (5mm from mounting face):	16.0 N
Press-fit force (static):	50 N	Max allowable screw depth into flange:	3.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<4.0N)
Maximum winding temperature:	125°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	3 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 24#)	Total Length: L _T =L1+L2+L3				
Cable 1: Yellow Winding A	L1:19GP	L1:24GP	L2:BL20	L3:EN16S	L3:EN16T
Cable 2: Red Winding B	18.8	24.0	51.0	10.7	12.0
Cable 3: Blue Winding C	23.6	34.3			
Plug definition (AWG 28#) Molex: 51021-0500	28.4	42.8			
Plug 1: Brown Hall 3~16V					
Plug 2: Black Hall GND					
Plug 3: Yellow Hall A					
Plug 4: Red Hall B					
Plug 5: Blue Hall C					

AM-BL2051AE Combination Scheme

Recommended Gearbox:
Planetary Gearbox:
AM-19GP
AM-24GP

Recommended Encoder:
Encoder S: AM-EN1611S***
2~3 Channels
Encoder T: AM-EN1612T***
2~3 Channels

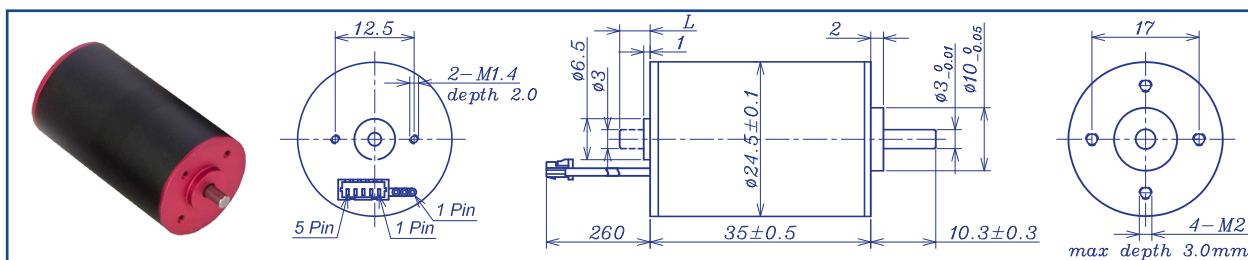
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AM-BL2435AE Series



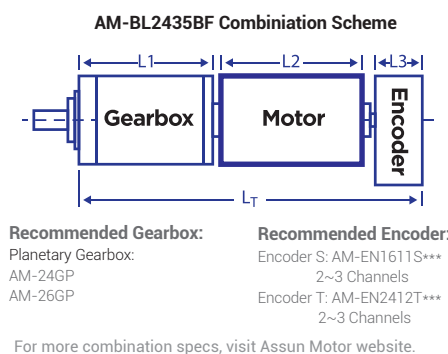
Motor Model	Brushless Motor				Ball Bearings			
		0915	1215	1815	2414	2412	2410	2809
Nominal voltage	V	9	12	18	24	24	24	28
No load speed ±12%	rpm	15350	15050	15350	14450	12040	10230	9700
No load current Max 150%	mA	95	90	85	80	60	50	40
Recommend limit for continuous operating	Max cont. torque	mN.m	14.2	14.8	14.6	14.4	14.8	16.5
	Rated Speed	rpm	12056	12073	12628	11862	9298	7165
	Rated Current	mA	2650	2050	1400	1000	850	800
	Rated Power	W	17.9	18.7	19.3	17.8	14.4	12.4
Starting current	mA	12000	10000	7500	5217	3529	2553	1958
Stall torque	mN.m	66	75	82	80	65	55	52
Maximum power output	W	26.6	29.5	33	30.4	20.5	14.7	13.2
Maximum Efficiency	%	83	82	80	77	76	74	73
Terminal resistance ±12%	Ω	0.75	1.2	2.4	4.6	6.8	9.4	14.3
Inductance (1KHz)	mH	Null	Null	Null	Null	Null	Null	Null
Mechanical time constant	ms	4.7	4.0	3.8	3.6	3.7	3.7	3.8
Moment of inertia	gcm ²	1.92	1.92	1.92	1.92	1.92	1.92	1.92
Torque constant	mN.m/A	5.6	7.5	11.1	15.6	18.7	22	27
Speed constant	rpm/V	1719	1266	863	611	510	435	354
Speed/torque gradient	rpm/mN.m	232.1	201.3	187	180.1	185.5	186.1	187.3
Weight	g	84	84	84	84	84	84	84

ADDITIONAL INFORMATION

Motor thermal resistance:	K/W	Motor thermal time constant:	S
Axial (dynamic):	2.5 N	Radial (5mm from mounting face):	16.0 N
Press-fit force (static):	50 N	Max allowable screw depth into flange:	3.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<4.0N)
Maximum winding temperature:	125°C	Ambient temperature range:	-40 to 85°C
Standard rear shaft diameter:	3 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 22#)	Total Length: L _T =L ₁ +L ₂ +L ₃				
Cable 1: Yellow Winding A	L1:24GP	L1:26GP	L2:BL16	L3:EN16S	L3:EN24T
Cable 2: Red Winding B	24	25.7	35	10.7	12.0
Cable 3: Blue Winding C	34.3	36			
Plug definition (AWG 28#) Molex: 51021-0500	42.8	44.5			
	51.3	53			
Plug 1: Brown Hall 3~16V					
Plug 2: Black Hall GND					
Plug 3: Yellow Hall A					
Plug 4: Red Hall B					
Plug 5: Blue Hall C					

Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.



Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage.
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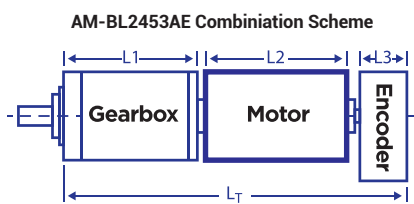
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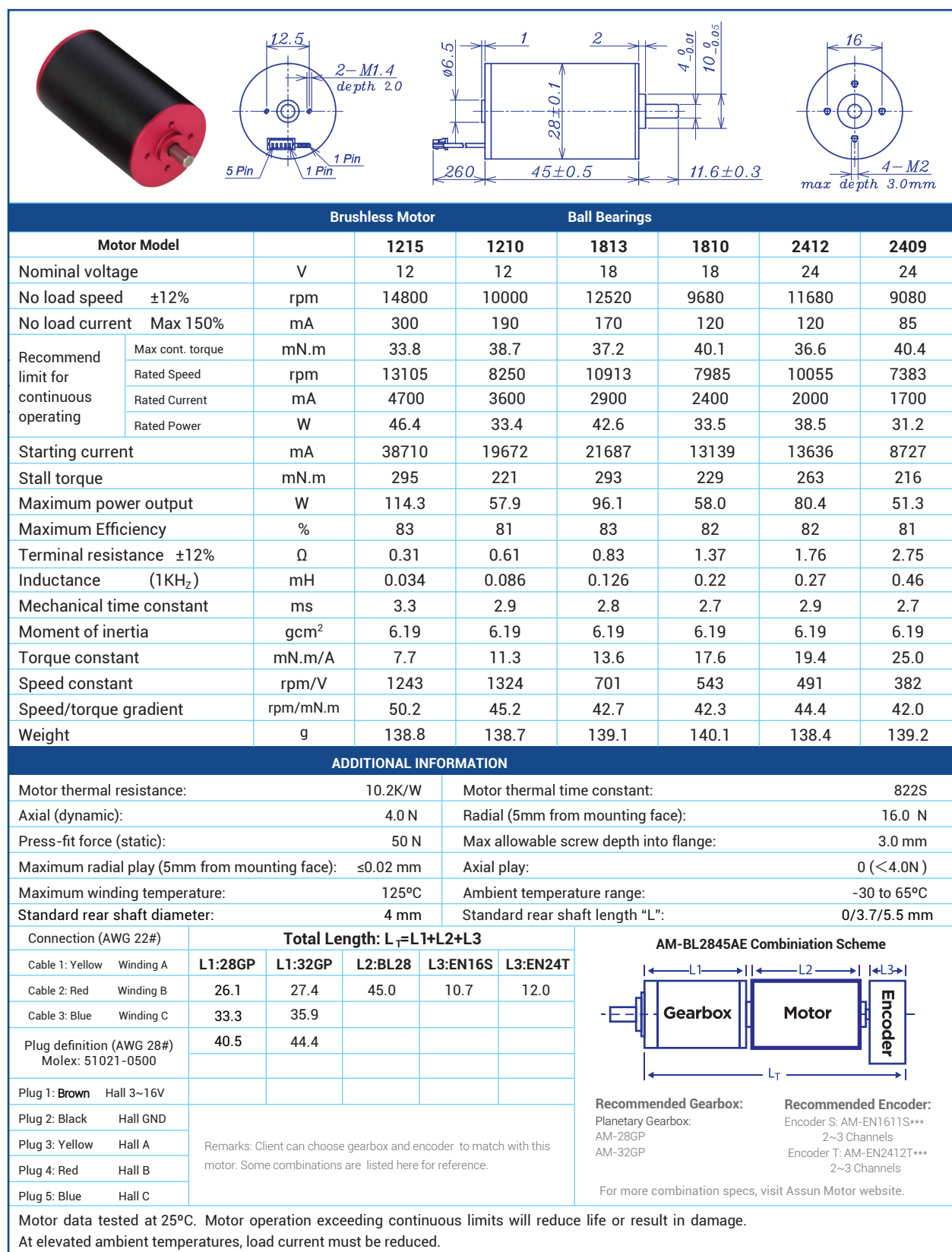
AM-BL2453AE Series

Brushless Motor		Ball Bearings					
Motor Model		1213	1210	1829	1813	2414	2410
Nominal voltage	V	12	12	18	18	24	24
No load speed $\pm 12\%$	rpm	13010	10460	28715	12920	13625	9770
No load current Max 150%	mA	180	140	420	115	100	75
Recommend limit for continuous operating	Max cont. torque	mN.m	30.3	31.6	12.4	27.5	33.1
	Rated Speed	rpm	10962	8308	27679	10775	11668
	Rated Current	mA	3650	3050	2500	2200	1900
	Rated Power	W	34.8	27.5	35.8	31.0	36.7
Starting current	mA	22222	14286	58065	12676	12632	7273
Stall torque	mN.m	193	153	343	166	209	167
Maximum power output	W	65.6	40.2	257.5	56.0	74.6	42.7
Maximum Efficiency	%	83	81	84	82	83	81
Terminal resistance $\pm 12\%$	Ω	0.54	0.84	0.31	1.42	1.9	3.3
Inductance (1KHz)	mH	0.055	0.092	0.02	0.14	0.23	0.45
Mechanical time constant	ms	2.4	2.5	3.0	2.8	2.4	2.1
Moment of inertia	gcm ²	3.45	3.45	3.45	3.45	3.45	3.45
Torque constant	mN.m/A	8.7	10.8	5.9	13.2	16.7	23.2
Speed constant	rpm/V	1093	880	1607	724	572	411
Speed/torque gradient	rpm/mN.m	67.6	68.2	83.8	78.0	65.2	58.5
Weight	g	126.7	126.8	126.7	125.7	126.3	127.5
ADDITIONAL INFORMATION							
Motor thermal resistance:	10.5 K/W	Motor thermal time constant:	768 S				
Axial (dynamic):	2.5 N	Radial (5mm from mounting face):	16.0 N				
Press-fit force (static):	50 N	Max allowable screw depth into flange:	3.0 mm				
Maximum radial play (5mm from mounting face):	≤ 0.02 mm	Axial play:	0 (<4.0N)				
Maximum winding temperature:	125°C	Ambient temperature range:	-30 to 65°C				
Standard rear shaft diameter:	3 mm	Standard rear shaft length "L":	0/3.7/5.5 mm				
Connection (AWG 22#)	Total Length: $L_T = L_1 + L_2 + L_3$						
Cable 1: Yellow Winding A	L1:24GP	L1:26GP	L2:BL24	L3:EN16S	L3:EN24T		
Cable 2: Red Winding B	24.0	25.7	53.0	10.7	12.0		
Cable 3: Blue Winding C	34.3	36					
Plug definition (AWG 28#) Molex: 51021-0500	42.8	44.5					
Plug 1: Brown Hall 3~16V							
Plug 2: Black Hall GND							
Plug 3: Yellow Hall A	Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.						
Plug 4: Red Hall B							
Plug 5: Blue Hall C							
 <p>AM-BL2453AE Combination Scheme</p> <p>Recommended Gearbox: Planetary Gearbox: AM-24GP, AM-26GP</p> <p>Recommended Encoder: Encoder S: AM-EN1611S*** (2~3 Channels), Encoder T: AM-EN2412T*** (2~3 Channels)</p> <p>For more combination specs, visit Assun Motor website.</p>							
Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage. At elevated ambient temperatures, load current must be reduced.							

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AM-BL2845AE Series



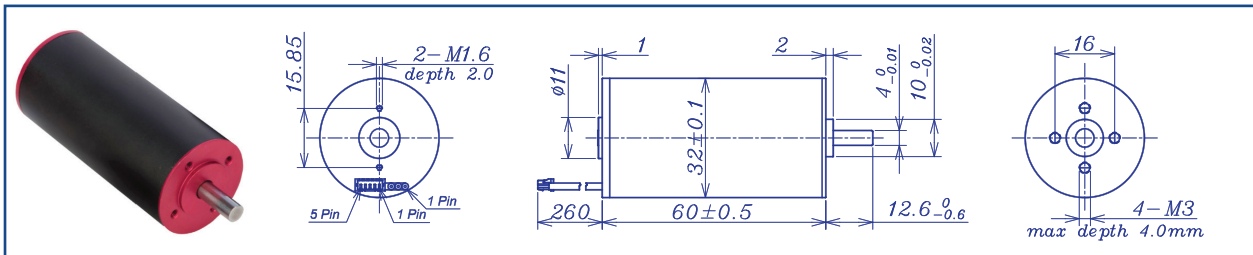
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DC BRUSHLESS MOTOR HIGH TEMPERATURE SERIES

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AM-BL3260AE Series



		Brushless Motor			Ball Bearings			
Motor Model		1212	1208	2413	2409	3613	3610	
Nominal voltage	V	12	12	24	24	36	36	
No load speed ±12%	rpm	12191	8127	12832	9680	12311	10449	
No load current Max 150%	mA	355	192	190	127	125	94	
Recommend limit for continuous operating	Max cont. torque	mN.m	52.7	60.3	49.9	57.8	55.8	
	Rated Speed	rpm	11037	6864	11805	8549	11548	9278
	Rated Current	mA	6000	4500	3000	2600	2000	1800
	Rated Power	W	61.0	43.4	61.7	51.7	61.5	54.2
Starting current	mA	60000	27907	35294	20168	22360	15319	
Stall torque	mN.m	557	388	624	468	603	438	
Maximum power output	W	177.9	82.6	209.5	119.5	80.4	136.2	
Maximum Efficiency	%	85	84	86	85	86	85	
Terminal resistance ±12%	Ω	0.2	0.43	0.68	1.19	1.61	2.35	
Inductance (1KH ₂)	mH							
Mechanical time constant	ms	3.0	2.9	2.9	2.9	2.9	2.9	
Moment of inertia	gcm ²	13.3	13.3	13.3	13.3	13.3	13.3	
Torque constant	mN.m/A	9.3	14.0	17.8	23.4	27.1	32.7	
Speed constant	rpm/V	1022	682	538	409	352	292	
Speed/torque gradient	rpm/mN.m	21.9	20.9	20.6	20.8	20.9	21.0	
Weight	g	240	240	240	240	240	240	

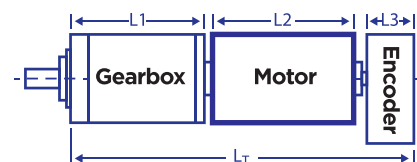
ADDITIONAL INFORMATION

Motor thermal resistance:	7.8 K/W	Motor thermal time constant:	1089 S
Axial (dynamic):	6.0 N	Radial (5mm from mounting face):	28.0 N
Press-fit force (static):	110N	Max allowable screw depth into flange:	4.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<6.0N)
Maximum winding temperature:	125°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	4 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 20#)	Total Length: L _T =L ₁ +L ₂ +L ₃				
Cable 1: Yellow Winding A	L1:32GP	L1:36GP	L2:BL32	L3:EN22S	L3:EN24T
Cable 2: Red Winding B	27.4	39.6	60.0	10.7	12.0
Cable 3: Blue Winding C	35.9	48.6			
Plug definition (AWG 28#) Molex: 51021-0500	44.4	57.6			
Plug 1: Brown Hall 3~16V					
Plug 2: Black Hall GND					
Plug 3: Yellow Hall A					
Plug 4: Red Hall B					
Plug 5: Blue Hall C					

Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

AM-BL3260AE Combination Scheme



Recommended Gearbox:

Planetary Gearbox:
AM-28GP
AM-32GP

Recommended Encoder:

Encoder S: AM-EN221TS***
2~3 Channels
Encoder T: AM-EN2412T***
2~3 Channels

For more combination specs, visit Assun Motor website.

Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage.
At elevated ambient temperatures, load current must be reduced.

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AM-BL3270AE Series

		Brushless Motor			Ball Bearings		
Motor Model		1210	1207	2412	2409	3611	3609
Nominal voltage	V	12	12	24	24	36	36
No load speed	±12% rpm	9794	6529	11523	8904	10882	9182
No load current	Max 150% mA	355	192	190	127	94	80
Recommend limit for continuous operating	Max cont. torque	mN.m	64.4	75.0	65.5	73.5	71.5
	Rated Speed	rpm	8746	5371	10533	7800	9804
	Rated Current	mA	5900	4500	3500	3000	2400
	Rated Power	W	59.0	42.2	72.3	60.1	74.5
Starting current	mA	52174	24490	38710	23301	23377	16981
Stall torque	mN.m	602	423	762	593	733	630
Maximum power output	W	154.4	72.3	230.0	138.3	208.7	151.4
Maximum Efficiency	%	84	83	86	56	88	87
Terminal resistance	±12% Ω	0.23	0.49	0.62	1.03	1.54	2.12
Inductance (1KHz)	mH		0.047				0.21
Mechanical time constant	ms	2.6	2.5	2.4	2.4	2.4	2.3
Moment of inertia	gcm ²	15.3	15.3	15.3	15.3	15.3	15.3
Torque constant	mN.m/A	11.6	17.4	19.8	25.6	31.5	37.3
Speed constant	rpm/V	822	548	482	373	303	256
Speed/torque gradient	rpm/mN.m	16.3	15.4	15.1	15.0	14.9	14.6
Weight	g	280	280	280	280	280	280

ADDITIONAL INFORMATION			
Motor thermal resistance:	7.0 K/W	Motor thermal time constant:	1163 S
Axial (dynamic):	6.0 N	Radial (5mm from mounting face):	28.0 N
Press-fit force (static):	110N	Max allowable screw depth into flange:	4.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<6.0N)
Maximum winding temperature:	125°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	4 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 20#)	Total Length: L _T =L ₁ +L ₂ +L ₃				
Cable 1: Yellow Winding A	L1:32GP	L1:36GP	L2:BL32	L3:EN22S	L3:EN24T
Cable 2: Red Winding B	27.4	39.6	70.0	10.7	12.0
Cable 3: Blue Winding C	35.9	48.6			
Plug definition (AWG 28#) Molex: 51021-0500	44.4	57.6			
Plug 1: Brown Hall 3~16V					
Plug 2: Black Hall GND					
Plug 3: Yellow Hall A					
Plug 4: Red Hall B					
Plug 5: Blue Hall C					

AM-BL3270AE Combination Scheme

Recommended Gearbox:
Planetary Gearbox:
AM-32GP
AM-36GP

Recommended Encoder:
Encoder S: AM-EN2211S***
2~3 Channels
Encoder T: AM-EN2412T***
2~3 Channels

For more combination specs, visit Assun Motor website.

Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage.
At elevated ambient temperatures, load current must be reduced.

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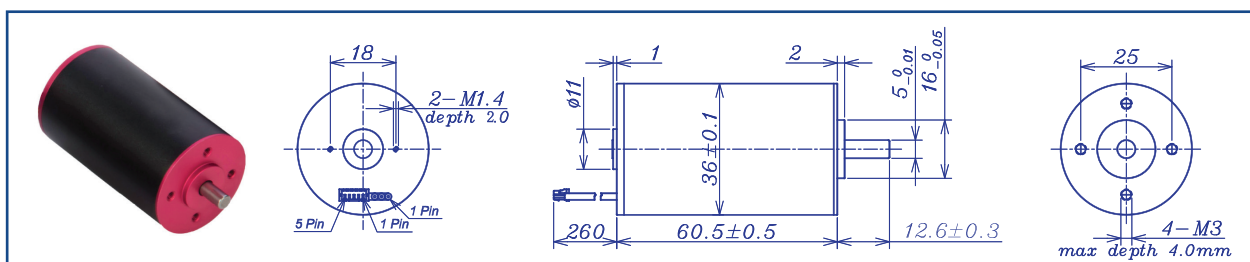
DC BRUSHLESS MOTOR

HIGH TEMPERATURE SERIES

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AM-BL3660AE Series



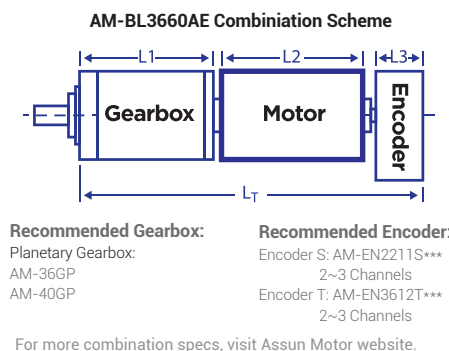
		Brushless Motor			Ball Bearings			
Motor Model		1211	1209	2413	2410	3612	3610	
Nominal voltage	V	12	12	24	24	36	36	
No load speed ±12%	rpm	11200	8840	12500	10200	12300	10450	
No load current Max 150%	mA	320	230	220	165	120	105	
Recommend limit for continuous operating	Max cont. torque	mN.m	70.0	74.4	70.8	74.5	78.4	
	Rated Speed	rpm	9909	7504	11403	8974	11123	9262
	Rated Current	mA	7200	6000	4100	3500	2800	2500
	Rated Power	W	72.7	58.5	84.5	70.0	86.9	76.0
Starting current	mA	60000	38710	44444	27907	28125	21176	
Stall torque	mN.m	607	496	807	620	779	690	
Maximum power output	W	178.1	114.8	264.0	165.5	251.0	188.7	
Maximum Efficiency	%	86	85	85	85	87	86	
Terminal resistance ±12%	Ω	0.2	0.31	0.54	0.86	1.28	1.7	
Inductance (1KH ₂)	mH	0.027	0.051	0.11	0.17	0.27	0.38	
Mechanical time constant	ms	3.2	3.1	2.7	2.9	2.8	2.7	
Moment of inertia	gcm ²	16.75	16.75	16.75	16.75	16.75	16.75	
Torque constant	mN.m/A	10.2	12.9	18.2	22.3	27.8	32.7	
Speed constant	rpm/V	938	741	523	428	343	292	
Speed/torque gradient	rpm/mN.m	18.4	17.8	15.5	16.5	15.8	15.2	
Weight	g	325.8	325.9	326.8	326.9	326.5	327.5	

ADDITIONAL INFORMATION

Motor thermal resistance:	6.9K/W	Motor thermal time constant:	1188S
Axial (dynamic):	6.0 N	Radial (5mm from mounting face):	28.0 N
Press-fit force (static):	110N	Max allowable screw depth into flange:	4.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<6.0N)
Maximum winding temperature:	125°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	5 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 20#)	Total Length: L _T =L ₁ +L ₂ +L ₃				
Cable 1: Yellow Winding A	L1:36GP	L1:40GP	L2:BL36	L3:EN22S	L3:EN36T
Cable 2: Red Winding B	39.6	46.8	60.5	10.7	12.0
Cable 3: Blue Winding C	48.6	58.3			
Plug definition (AWG 28#) Molex: 51021-0500	57.6	69.8			
Plug 1: Brown Hall 3~16V					
Plug 2: Black Hall GND					
Plug 3: Yellow Hall A					
Plug 4: Red Hall B					
Plug 5: Blue Hall C					

Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

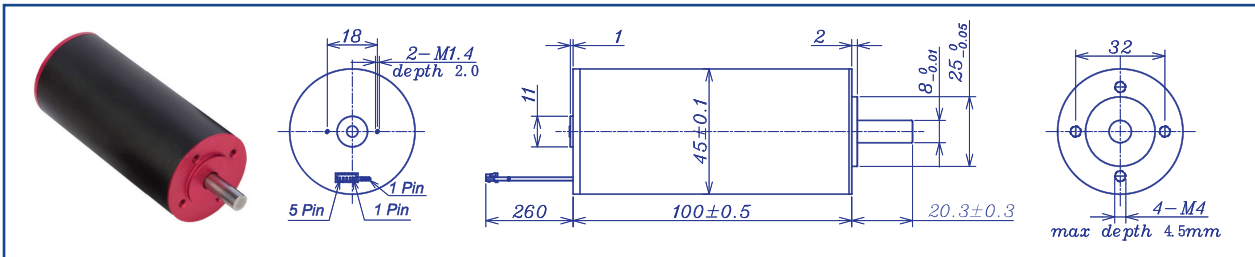


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At elevated ambient temperatures, load current must be reduced.

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AM-BL45100AE Series



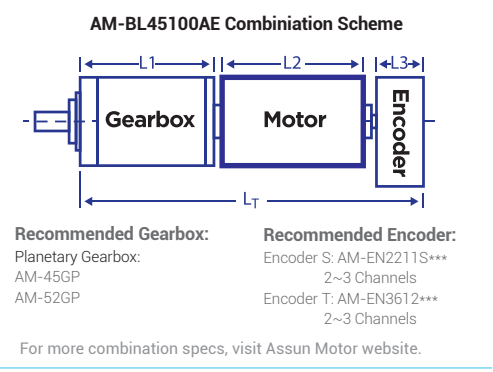
		Brushless Motor			Ball Bearings		
Motor Model		2411	2406	3610	3606	4810	4806
Nominal voltage		V	24	24	36	36	48
No load speed ±12%		rpm	11240	5900	10340	6380	10360
No load current Max 150%		mA	600	320	390	200	370
Recommend limit for continuous operating	Max cont. torque	mN.m	160.4	238.7	179.2	246.7	151.1
	Rated Speed	rpm	10646	5258	9794	5684	9921
	Rated Current	mA	8500	6500	5800	4800	3800
	Rated Power	W	178.9	131.4	183.8	146.8	156.9
Starting current		mA	150000	57143	102857	42353	81356
Stall torque		mN.m	3034	2195	3394	2261	3567
Maximum power output		W	892.8	1339.0	918.7	377.6	967.4
Maximum Efficiency		%	88	86	88	87	85
Terminal resistance ±12%		Ω	0.16	0.42	0.35	0.85	0.59
Inductance (1KH ₂)		mH	0.035	0.14	0.11	0.31	0.21
Mechanical time constant		ms	4.3	3.1	3.5	3.2	3.3
Moment of inertia		gcm ²	109.8	109.8	109.8	109.8	109.8
Torque constant		mN.m/A	20.3	38.6	33.1	53.6	44.0
Speed constant		rpm/V	470	247	288	178	217
Speed/torque gradient		rpm/mN.m	3.7	2.7	3.0	2.8	2.9
Weight		g	846.5	850.0	852.5	841.5	840.3

ADDITIONAL INFORMATION

Motor thermal resistance:	3.6K/W	Motor thermal time constant:	1286S
Axial (dynamic):	8.0 N	Radial (5mm from mounting face):	180.0 N
Press-fit force (static):	170N	Max allowable screw depth into flange:	4.5mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<8.0N)
Maximum winding temperature:	125°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	8 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 18#)		Total Length: L _T =L ₁ +L ₂ +L ₃				
Cable 1: Yellow	Winding A	L1:45GP	L1:52GP	L2:BL45	L3:EN22S	L3:EN36T
Cable 2: Red	Winding B	60.1	79.3	100.0	10.7	12.0
Cable 3: Blue	Winding C	72.1				
Plug definition (AWG 28#) Molex: 51021-0500						
Plug 1: Brown	Hall 3~16V					
Plug 2: Black	Hall GND					
Plug 3: Yellow	Hall A					
Plug 4: Red	Hall B					
Plug 5: Blue	Hall C					

Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.



Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage. At elevated ambient temperatures, load current must be reduced.

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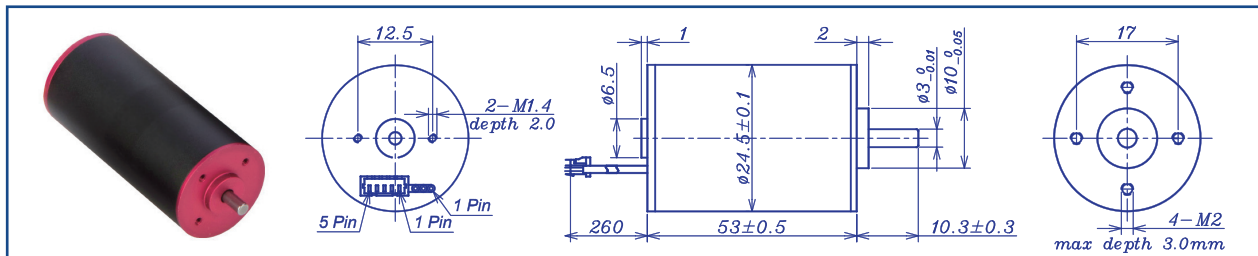
DC BRUSHLESS MOTOR

HIGH POWER SERIES (155°C)

Assun high power series BLDC motors are designed with multi-pole (4 poles) structure. Together with the high power and high torque output, these motors have also been upgraded to cope with high winding temperatures up to 155 °C. Applications with heavy duty requirements now have the perfect choice to their best satisfaction.



AM-BL2453BF Series



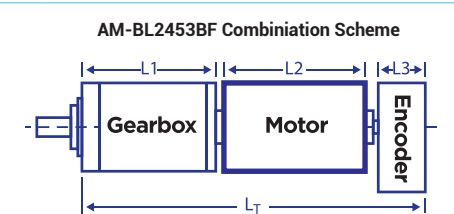
		Brushless Motor			Ball Bearings		
Motor Model		1212	1209	1812	1809	2412	2409
Nominal voltage		V	12	12	18	18	24
No load speed ±12%		rpm	11937	9182	11937	8952	11937
No load current Max 150%		mA	358	300	239	200	179
Recommend limit for continuous operating	Max cont. torque	mN.m	46.48	51.17	54.16	53.76	46.48
	Rated Speed	rpm	10799	8037	10769	7818	10954
	Rated Current	mA	5200	4400	4000	3000	2600
	Rated Power	W	52.56	43.07	61.08	44.02	53.32
Starting current		mA	54545	35294	40909	23684	31579
Stall torque		mN.m	524	440	589	455	606
Maximum power output		W	163.6	105.9	174.1	106.6	189.5
Maximum Efficiency		%	84	82	85	82	86
Terminal resistance ±12%		Ω	0.22	0.34	0.44	0.76	0.76
Inductance (1KHz)		mH	2.38	2.18	2.12	2.06	2.73
Mechanical time constant		ms	2.38	2.18	2.12	2.06	2.08
Moment of inertia		gcm ²	9.97	9.97	9.97	9.97	9.97
Torque constant		mN.m/A	9.60	12.48	14.40	19.20	19.20
Speed constant		rpm/V	995	765	663	497	497
Speed/torque gradient		rpm/mN.m	22.8	20.8	20.3	19.7	20.1
Weight		g	180	180	180	180	180

ADDITIONAL INFORMATION

Motor thermal resistance:	10.2 K/W	Motor thermal time constant:	768 S
Axial (dynamic):	2.5 N	Radial (5mm from mounting face):	16.0 N
Press-fit force (static):	50 N	Max allowable screw depth into flange:	3.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<4.0N)
Maximum winding temperature:	155°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	3 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 22#)	Total Length: L _T =L ₁ +L ₂ +L ₃				
Cable 1: Yellow Winding A	L1:24GP	L1:26GP	L2:BL24	L3:EN16S	L3:EN16T
Cable 2: Red Winding B	24	25.7	53.0	10.7	12.0
Cable 3: Blue Winding C	34.3	36			
Plug definition (AWG 28#) Molex: 51021-0500	42.8	44.5			
	51.3	53			
Plug 1: Brown Hall 3~16V					
Plug 2: Black Hall GND					
Plug 3: Yellow Hall A					
Plug 4: Red Hall B					
Plug 5: Blue Hall C					

Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.



Recommended Gearbox:
Planetary Gearbox:
AM-24GP
AM-26GP

Recommended Encoder:
Encoder S: AM-EN1611S***
2~3 Channels
Encoder T: AM-EN1612T***
2~3 Channels

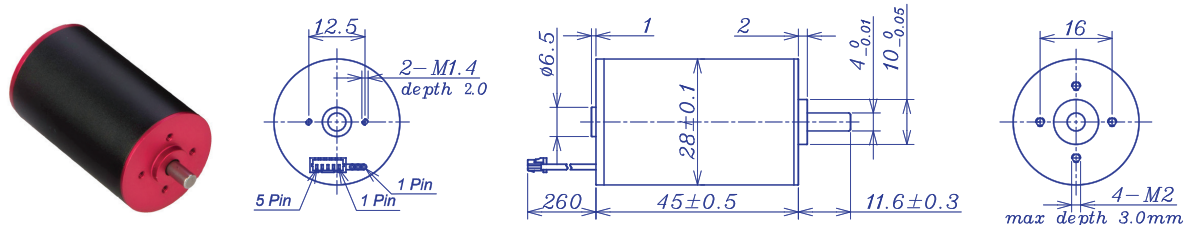
For more combination specs, visit Assun Motor website.

Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage.
At elevated ambient temperatures, load current must be reduced.

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AM-BL2845BF Series

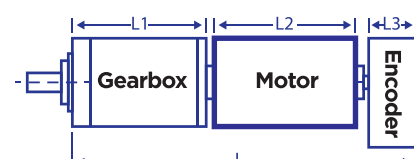


		Brushless Motor			Ball Bearings		
Motor Model		1210	1208	1810	1808	2410	2408
Nominal voltage	V	12	12	18	18	24	24
No load speed ±12%	rpm	10370	7930	10111	7995	10370	8171
No load current Max 150%	mA	417	333	278	222	208	167
Recommend limit for continuous operating	Max cont. torque	mN.m	61.69	61.66	59.87	64.03	65.44
	Rated Speed	rpm	9126	6684	8916	6801	9217
	Rated Current	mA	6000	4600	3800	3200	2900
	Rated Power	W	58.96	43.16	55.90	45.60	57.43
Starting current	mA	50000	29268	32143	21429	26087	17391
Stall torque	mN.m	553	523	546	455	577	488
Maximum power output	W	150.0	87.8	144.6	96.4	156.5	104.3
Maximum Efficiency	%	83	80	82	81	83	81
Terminal resistance ±12%	Ω	0.24	0.41	0.56	0.84	0.92	1.38
Inductance (1KHz)	mH	0.014				0.078	
Mechanical time constant	ms	2.28	2.28	2.25	2.11	2.19	2.03
Moment of inertia	gcm ²	11.6	11.6	11.6	11.6	11.6	11.6
Torque constant	mN.m/A	11.06	14.45	17.00	21.50	22.10	28.05
Speed constant	rpm/V	864	661	562	444	432	340
Speed/torque gradient	rpm/mN.m	22.8	20.8	20.3	19.7	26.2	20.1
Weight	g	180	180	180	180	180	180

ADDITIONAL INFORMATION			
Motor thermal resistance:	10.2 K/W	Motor thermal time constant:	822 S
Axial (dynamic):	4.0 N	Radial (5mm from mounting face):	16.0 N
Press-fit force (static):	50 N	Max allowable screw depth into flange:	3.0mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<4.0N)
Maximum winding temperature:	155°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	4 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 22#)		Total Length: L _T =L ₁ +L ₂ +L ₃				
Cable 1: Yellow	Winding A	L1:28GP	L1:32GP	L2:BL28	L3:EN16S	L3:EN16T
Cable 2: Red	Winding B	26.1	27.4	45.0	10.7	12.0
Cable 3: Blue	Winding C	33.3	35.9			
Plug definition (AWG 28#) Molex: 51021-0500		40.5	44.4			
Plug 1: Brown	Hall 3~16V					
Plug 2: Black	Hall GND					
Plug 3: Yellow	Hall A					
Plug 4: Red	Hall B					
Plug 5: Blue	Hall C					

AM-BL2845BF Combination Scheme



Recommended Gearbox:
Planetary Gearbox:
AM-28GP
AM-32GP

Recommended Encoder:
Encoder S: AM-EN1611S***
2~3 Channels
Encoder T: AM-EN1612T***
2~3 Channels

For more combination specs, visit Assun Motor website.

Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage. At elevated ambient temperatures, load current must be reduced.

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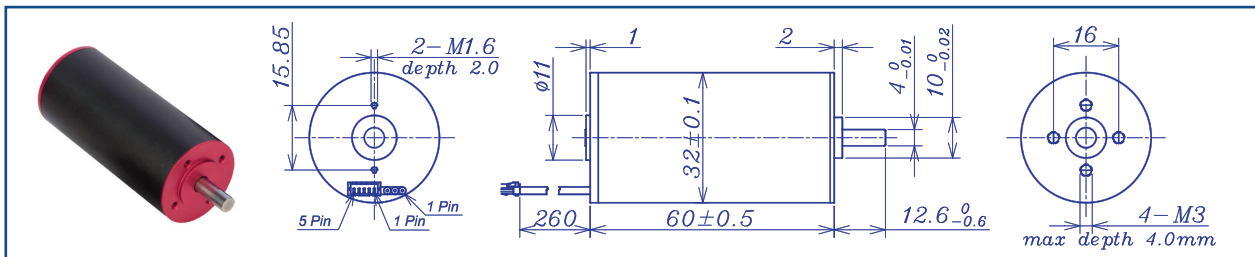
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DC BRUSHLESS MOTOR HIGH POWER SERIES

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AM-BL3260BF Series



		Brushless Motor			Ball Bearings			
Motor Model		1208	1207	2409	2407	3609	3607	
Nominal voltage	V	12	12	24	24	36	36	
No load speed $\pm 12\%$	rpm	8244	6870	9160	7495	8833	7274	
No load current Max 150%	mA	400	300	210	180	150	140	
Recommend limit for continuous operating	Max cont. torque	mN.m	119.54	121.76	114.84	116.82	110.92	116.26
	Rated Speed	rpm	7378	6000	8372	6708	8104	6523
	Rated Current	mA	9000	7600	4800	4000	3000	2600
	Rated Power	W	92.36	76.50	100.69	82.05	94.14	79.41
Starting current	mA	85714	60000	55814	38095	36364	25175	
Stall torque	mN.m	1191	1001	1396	1165	1415	1190	
Maximum power output	W	257.1	180.0	334.9	228.6	327.3	226.6	
Maximum Efficiency	%	87	86	88	87	88	86	
Terminal resistance $\pm 12\%$	Ω	0.14	0.20	0.43	0.63	0.99	1.43	
Inductance (1KHz)	mH	0.013		0.056				
Mechanical time constant	ms	1.11	1.10	1.05	1.03	1.00	0.98	
Moment of inertia	gcm ²	15.3	15.3	15.3	15.3	15.3	15.3	
Torque constant	mN.m/A	13.9	16.68	25.02	30.58	38.92	47.26	
Speed constant	rpm/V	687	572	382	312	245	202	
Speed/torque gradient	rpm/mN.m	6.9	6.9	6.6	6.4	6.2	6.1	
Weight	g	240	240	240	240	240	240	

ADDITIONAL INFORMATION			
Motor thermal resistance:	7.8 K/W	Motor thermal time constant:	1089 S
Axial (dynamic):	6.0 N	Radial (5mm from mounting face):	28.0 N
Press-fit force (static):	110 N	Max allowable screw depth into flange:	4.0mm
Maximum radial play (5mm from mounting face):	≤ 0.02 mm	Axial play:	0 (<6.0N)
Maximum winding temperature:	155°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	4 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 20#)	Total Length: $L_T = L_1 + L_2 + L_3$				
Cable 1: Yellow Winding A	L1:32GP	L1:36GP	L2:BL28	L3:EN22S	L3:EN124T
Cable 2: Red Winding B	27.4	39.6	60.0	10.7	12.0
Cable 3: Blue Winding C	35.9	48.6			
Plug definition (AWG 28#) Molex: 51021-0500	44.4	57.6			
Plug 1: Brown Hall 3~16V					
Plug 2: Black Hall GND					
Plug 3: Yellow Hall A					
Plug 4: Red Hall B					
Plug 5: Blue Hall C					

AM-BL3260BF Combination Scheme

Recommended Gearbox:
Planetary Gearbox:
AM-32GP
AM-36GP

Recommended Encoder:
Encoder S: AM-EN221S***
2~3 Channels
Encoder T: AM-EN2412T***
2~3 Channels

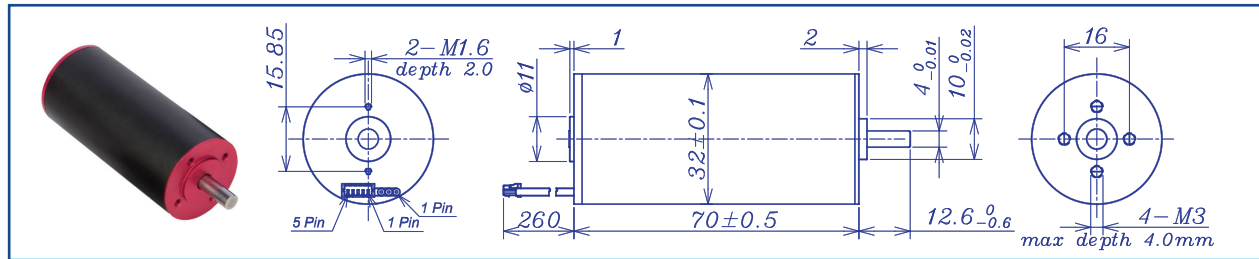
For more combination specs, visit Assun Motor website.

Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage.
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AM-BL3270BF Series



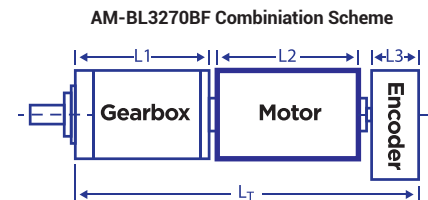
		Brushless Motor			Ball Bearings		
Motor Model		1208	1207	2409	2407	3609	3607
Nominal voltage		V	12	12	24	24	36
No load speed ±12%		rpm	8426	6741	8988	7095	8792
No load current Max 150%		mA	750	500	375	250	167
Recommend limit for continuous operating	Max cont. torque	mN.m	125.8	139.4	123.0	140.5	123.2
	Rated Speed	rpm	7653	5959	8325	6347	8128
	Rated Current	mA	10000	8700	5200	4600	3400
	Rated Power	W	100.83	86.99	107.27	93.39	104.83
Starting current		mA	109091	750000	70588	43636	45000
Stall torque		mN.m	1484	1275	1800	1409	1760
Maximum power output		W	327.3	225.0	423.5	261.8	405.0
Maximum Efficiency		%	84	84	86	85	86
Terminal resistance ±12%		Ω	0.11	0.15	0.34	0.55	0.80
Inductance (1KHz)		mH		0.01	0.048	0.12	
Mechanical time constant		ms	1.12	1.05	0.99	1.00	0.99
Moment of inertia		gcm ²	18.9	18.9	18.9	18.9	18.9
Torque constant		mN.m/A	13.6	17.0	25.5	32.3	39.1
Speed constant		rpm/V	702	562	374	296	244
Speed/torque gradient		rpm/mN.m	5.7	5.3	5.0	5.0	4.8
Weight		g	280	280	280	280	280

ADDITIONAL INFORMATION

Motor thermal resistance:	7.0 K/W	Motor thermal time constant:	1163 S
Axial (dynamic):	6.0 N	Radial (5mm from mounting face):	28.0 N
Press-fit force (static):	110 N	Max allowable screw depth into flange:	4.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<6.0 N)
Maximum winding temperature:	155°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	4 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 20#)	Total Length: L _T =L ₁ +L ₂ +L ₃				
Cable 1: Yellow Winding A	L1:32GP	L1:36GP	L2:BL28	L3:EN22S	L3:EN24T
Cable 2: Red Winding B	27.4	39.6	70.0	10.7	12.0
Cable 3: Blue Winding C	35.9	48.6			
Plug definition (AWG 28#) Molex: 51021-0500	44.4	57.6			
Plug 1: Brown Hall 3~16V					
Plug 2: Black Hall GND					
Plug 3: Yellow Hall A					
Plug 4: Red Hall B					
Plug 5: Blue Hall C					

Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.



Recommended Gearbox:

Planetary Gearbox:
AM-32GP
AM-36GP

Recommended Encoder:

Encoder S: AM-EN2211S***
2~3 Channels
Encoder T: AM-EN2412T***
2~3 Channels

For more combination specs, visit Assun Motor website.

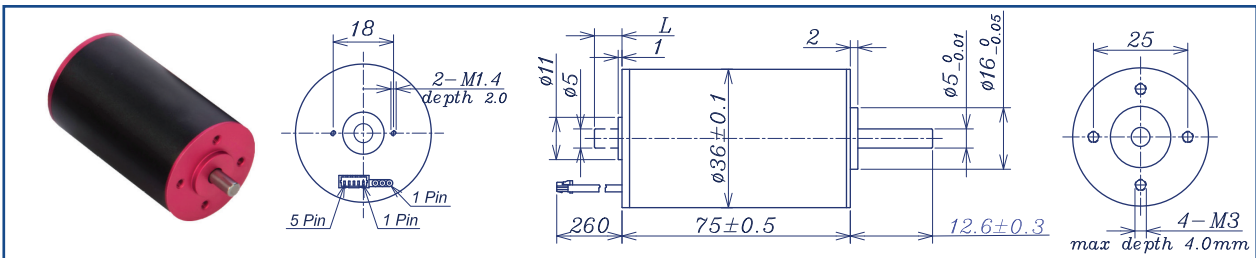
Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage.

At elevated ambient temperatures, load current must be reduced.

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AM-BL3675BF Series



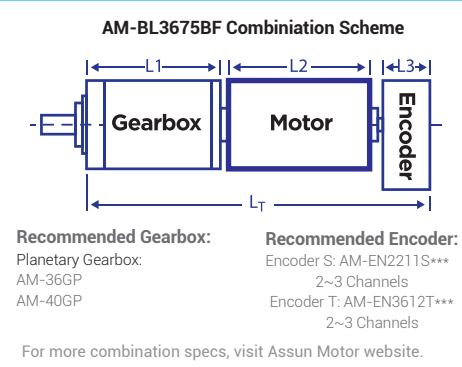
		Brushless Motor			Ball Bearings			
Motor Model		2408	2406	3609	3606	4808	4806	
Nominal voltage	V	24	24	36	36	48	48	
No load speed $\pm 12\%$	rpm	8013	6128	9192	6250	8334	5953	
No load current Max 150%	mA	454	338	339	225	227	169	
Recommend limit for continuous operating	Max cont. torque	mN.m	187.22	211.76	174.32	207.63	185.52	220.26
	Rated Speed	rpm	7452	5530	8694	5674	7815	5394
	Rated Current	mA	7000	6000	5000	4000	3600	2800
	Rated Power	W	146.11	122.64	158.71	123.37	151.83	114.43
Starting current	mA	100000	61538	92308	43373	57831	29814	
Stall torque	mN.m	2860	2302	3452	2386	3181	2296	
Maximum power output	W	600.0	369.2	830.8	390.4	694.30	357.7	
Maximum Efficiency	%	87	86	88	86	88	86	
Terminal resistance $\pm 12\%$	Ω	0.24	0.39	0.39	0.83	0.83	1.61	
Inductance (1KHz)	mH		0.068				0.33	
Mechanical time constant	ms	1.85	1.76	1.76	1.73	1.73	1.72	
Moment of inertia	gcm ²	63.21	63.21	63.21	63.21	63.21	63.21	
Torque constant	mN.m/A	28.6	37.4	37.4	55	55	77	
Speed constant	rpm/V	334	255	255	174	174	120	
Speed/torque gradient	rpm/mN.m	2.8	2.7	2.7	2.6	2.6	2.6	
Weight	g	400	400	400	400	400	400	

ADDITIONAL INFORMATION

Motor thermal resistance:	5.4 K/W	Motor thermal time constant:	1273 S
Axial (dynamic):	6.0 N	Radial (5mm from mounting face):	28.0 N
Press-fit force (static):	110 N	Max allowable screw depth into flange:	4.0 mm
Maximum radial play (5mm from mounting face):	≤ 0.02 mm	Axial play:	0 (<6.0N)
Maximum winding temperature:	155°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	5 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 20#)	Total Length: $L_T = L_1 + L_2 + L_3$				
Cable 1: Yellow Winding A	L1:36GP	L1:40GP	L2:BL36	L3:EN22S	L3:EN36T
Cable 2: Red Winding B	39.6	46.8	75	10.7	12.0
Cable 3: Blue Winding C	48.6	58.3			
Plug definition (AWG 28#) Molex: 51021-0500	57.6	69.8			
Plug 1: Brown Hall 3~16V					
Plug 2: Black Hall GND					
Plug 3: Yellow Hall A					
Plug 4: Red Hall B					
Plug 5: Blue Hall C					

Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

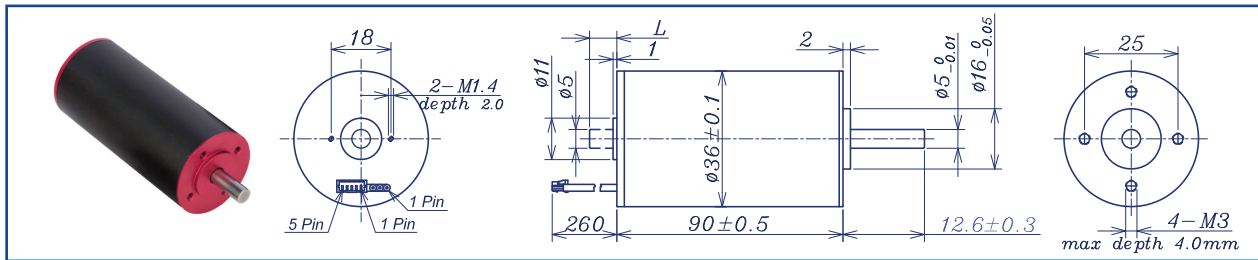


Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage.
At elevated ambient temperatures, load current must be reduced.

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AM-BL3690BF Series



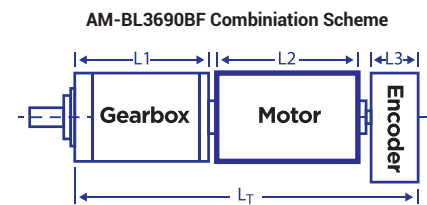
		Brushless Motor		Ball Bearings				
Motor Model		2408	2406	3609	3610	4809	4805	
Nominal voltage		V	24	24	36	36	48	48
No load speed ±12%		rpm	8488	6063	9095	5093	8935	4993
No load current Max 150%		mA	521	358	375	178	281	125
Recommend limit for continuous operating	Max cont. torque	mN.m	207.33	235.65	205.07	257.99	201.04	263.93
	Rated Speed	rpm	7995	5529	8626	4533	8474	4425
	Rated Current	mA	8200	6600	5800	4000	4200	3000
	Rated Power	W	173.59	136.62	185.23	122.46	178.40	122.30
Starting current		mA	141176	75000	112500	36364	81356	26374
Stall torque		mN.m	3812	2835	4253	2455	4174	2421
Maximum power output		W	847.1	450.0	1012.5	327.3	976.3	316.5
Maximum Efficiency		%	88	87	89	86	89	87
Terminal resistance ±12%		Ω	0.17	0.32	0.32	0.99	0.59	1.82
Inductance (1KHz)		mH	0.02	0.068				0.37
Mechanical time constant		ms	1.76	1.69	1.69	1.64	1.69	1.63
Moment of inertia		gcm ²	74.56	74.56	74.56	74.56	74.56	74.56
Torque constant		mN.m/A	27	37.8	37.8	67.5	51.3	91.8
Speed constant		rpm/V	354	253	253	141	186	104
Speed/torque gradient		rpm/mN.m	2.2	2.1	2.1	2.1	2.1	2.1
Weight		g	480	480	480	480	480	480

ADDITIONAL INFORMATION

Motor thermal resistance:	K/W	Motor thermal time constant:	S
Axial (dynamic):	6.0 N	Radial (5mm from mounting face):	28.0 N
Press-fit force (static):	110 N	Max allowable screw depth into flange:	4.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<6.0N)
Maximum winding temperature:	155°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	5 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 20#)		Total Length: $L_T=L_1+L_2+L_3$				
Cable 1: Yellow	Winding A	L1:36GP	L1:40GP	L2:BL36	L3:EN22S	L3:EN36T
Cable 2: Red	Winding B	39.6	46.8	90	10.7	12.0
Cable 3: Blue	Winding C	48.6	58.3			
Plug definition (AWG 28#) Molex: 51021-0500		57.6	69.8			
Plug 1: Brown	Hall 3~16V					
Plug 2: Black	Hall GND					
Plug 3: Yellow	Hall A					
Plug 4: Red	Hall B					
Plug 5: Blue	Hall C					

Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.



Recommended Gearbox:
Planetary Gearbox:
AM-36GP
AM-40GP

Recommended Encoder:
Encoder S: AM-EN2211S***
2~3 Channels
Encoder T: AM-EN3612T***
2~3 Channels

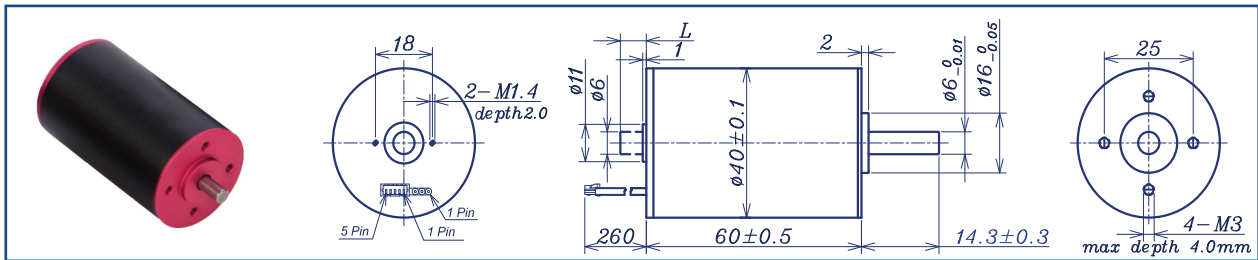
For more combination specs, visit Assun Motor website.

Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage.
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AM-BL4060BF Series

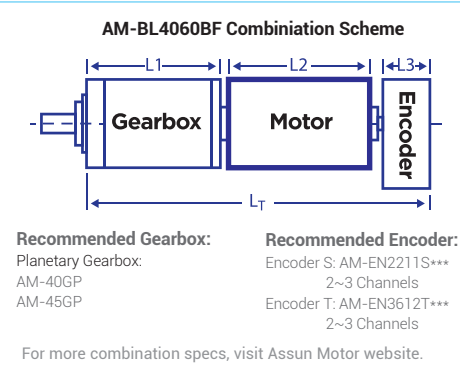


		Brushless Motor			Ball Bearings			
Motor Model		2409	2407	3609	3607	4809	4807	
Nominal voltage	V	24	24	36	36	48	48	
No load speed ±12%	rpm	9095	7074	9095	7074	9095	7074	
No load current Max 150%	mA	375	292	250	150	188	146	
Recommend limit for continuous operating	Max cont. torque	mN.m	177.03	184.94	171.99	184.97	182.04	191.42
	Rated Speed	rpm	8534	6425	8573	6539	8569	6530
	Rated Current	mA	7400	6000	4800	4000	3800	3100
	Rated Power	W	158.2	126.38	154.41	126.66	163.36	130.89
Starting current	mA	120000	77419	83721	52941	65753	40336	
Stall torque	mN.m	3024	2508	3165	2573	3314	2614	
Maximum power output	W	720.0	464.5	753.5	476.5	789.0	484.0	
Maximum Efficiency	%	89	88	89	88	90	88	
Terminal resistance ±12%	Ω	0.22	0.31	0.43	0.68	0.7319	1.17	
Inductance (1KHz)	mH	0.032	0.057	Null	Null	0.43	0.23	
Mechanical time constant	ms	2.72	2.55	2.60	2.49	2.49	2.45	
Moment of inertia	gcm ²	86.51	86.51	86.51	86.51	86.51	86.51	
Torque constant	mN.m/A	25.2	32.4	37.8	48.6	50.4	64.8	
Speed constant	rpm/V	379	295	253	196	189	147	
Speed/torque gradient	rpm/mN.m	3.0	2.8	2.9	2.7	2.7	2.7	
Weight	g	356	356	356	356	356	356	

ADDITIONAL INFORMATION			
Motor thermal resistance:	5.6 K/W	Motor thermal time constant:	1163 S
Axial (dynamic):	6.0 N	Radial (5mm from mounting face):	28.0 N
Press-fit force (static):	110 N	Max allowable screw depth into flange:	4.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<6.0N)
Maximum winding temperature:	155°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	5 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 20#)	Total Length: L _T =L ₁ +L ₂ +L ₃				
Cable 1: Yellow Winding A	L1:40GP	L1:45GP	L2:BL40	L3:EN22S	L3:EN36T
Cable 2: Red Winding B	35.3	36.1	60	10.7	12.0
Cable 3: Blue Winding C	46.8	48.1			
Plug definition (AWG 28#) Molex: 51021-0500	58.3	60.1			
Plug 1: Brown Hall 3~16V					
Plug 2: Black Hall GND					
Plug 3: Yellow Hall A					
Plug 4: Red Hall B					
Plug 5: Blue Hall C					

Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

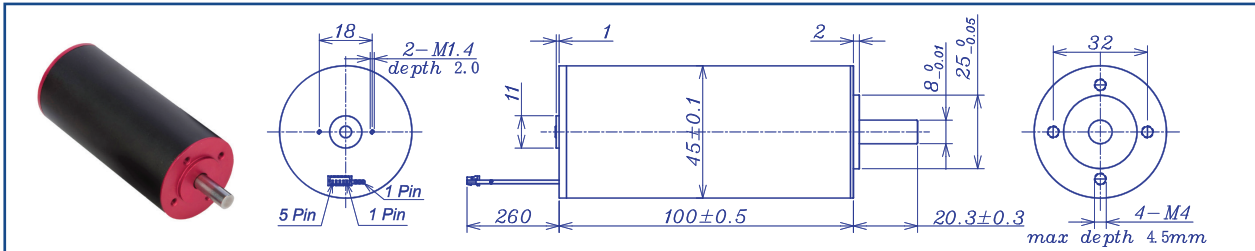


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AM-BL45100BF Series



		Brushless Motor		Ball Bearings				
Motor Model		2407	2406	' * \$,	3606	4808	4807	
Nominal voltage	V	24	24	' *	36	48	48	
No load speed ±12%	rpm	7569	5823	- &\$\$	5684	7579	7075	
No load current Max 150%	mA	670	500	+ \$\$	289	367	350	
Recommend limit for continuous operating	Max cont. torque	mN.m	354.79	358.2	&' ("	381.69	280.20	230
	Rated Speed	rpm	6397	5427	, , %&	5382	7350	6804
	Rated Current	mA	11000	9600	+ \$\$\$	6600	5000	3890
	Rated Power	W	237.68	203.55	&%* "&	215.12	215.67	163.86
Starting current	mA	218182	141176	% ( -- \$(	124138	165517	111628
Stall torque	mN.m	7423	5557	) ) (-	7508	10010	7258
Maximum power output	W	1390.1	847.1	% ' ***	1117.2	1986.2	1339.5	
Maximum Efficiency	%	90	88	, +	91	91	89	
Terminal resistance ±12%	Ω	0.11	0.17	\$%*	0.29	0.29	0.43	
Inductance (1KHz)	mH	0.023	0.043			0.082	0.13	
Mechanical time constant	ms	2.16	2.49	' "-	1.8	1.8	1.71	
Moment of inertia	gcm ²	227.14	227.14	&&+-%(	227.14	227.14	227.14
Torque constant	mN.m/A	34.02	39.36	' + "&	60.48	60.48	65.02	
Speed constant	rpm/V	281	243	&) +	158	158	147	
Speed/torque gradient	rpm/mN.m	0.9	1.0	%+	0.8	0.8	1	
Weight	g	757	757	+)+	757	757	757	

ADDITIONAL INFORMATION			
Motor thermal resistance:	3.3 K/W	Motor thermal time constant:	1740 S
Axial (dynamic):	8.0 N	Radial (5mm from mounting face):	180.0 N
Press-fit force (static):	170 N	Max allowable screw depth into flange:	4.5 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<8.0N)
Maximum winding temperature:	155°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	8 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 18#)		Total Length: L _T =L1+L2+L3				
Cable 1: Yellow	Winding A	L1:45GP	L1:52GP	L2:BL45	L3:EN22S	L3:EN36T
Cable 2: Red	Winding B	60.1	79.3	100.0	10.7	12.0
Cable 3: Blue	Winding C	72.1				
Plug definition (AWG 28#) Molex: 51021-0500						
Plug 1: Brown	Hall 3~16V					
Plug 2: Black	Hall GND					
Plug 3: Yellow	Hall A					
Plug 4: Red	Hall B					
Plug 5: Blue	Hall C					

Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

AM-BL45100BF Combination Scheme

Recommended Gearbox:
Planetary Gearbox:
AM-45GP
AM-52GP

Recommended Encoder:
Encoder S: AM-EN2211S***
2~3 Channels
Encoder T: AM-EN3612T***
2~3 Channels

For more combination specs, visit Assun Motor website.

Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage. At elevated ambient temperatures, load current must be reduced.

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DC BRUSHLESS MOTOR
SPEED DRIVER INTEGRATED SERIES

Assun driver integrated series BLDC motors are equipped with the speed driver inside of the motor for easier installation and more convenient use. Basic functions like speed control, rotation control and signal feedback can be achieved by the integrated driver.

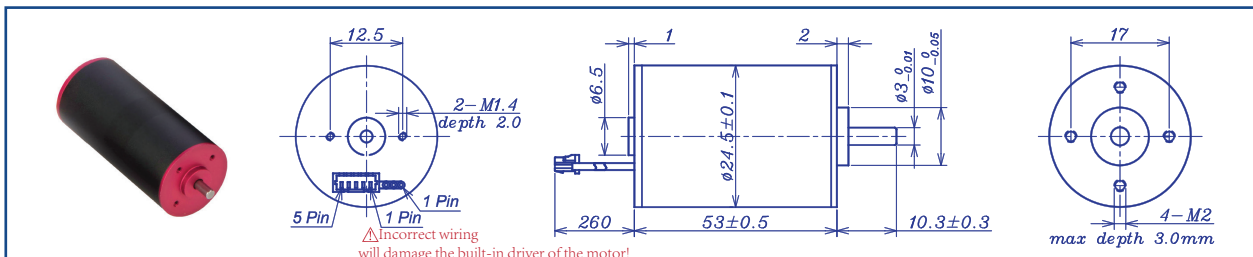


DC BRUSHLESS MOTOR

SPEED DRIVER INTEGRATED SERIES

ASSUN
DRIVING THE FUTURE

AM-BD2453AN Series



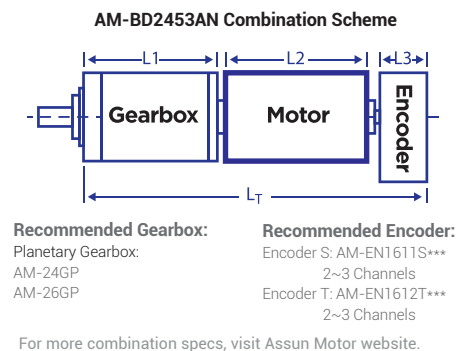
		Brushless Motor			Ball Bearings		
Motor Model		1213	1210	1813	2414	2410	
Nominal voltage	V	12	12	18	24	24	
No load speed $\pm 12\%$	rpm	13010	10460	12920	13625	9770	
No load current Max 150%	mA	180	140	115	100	75	
Recommend limit for continuous operating	Max cont. torque	mN.m	17.6	18.7	18.3	21.5	
	Rated Speed	rpm	11818	9188	11495	12429	8514
	Rated Current	mA	2200	1860	1500	1200	1000
	Rated Power	W	21.8	18.0	22.0	23.9	19.1
Starting current	mA	22222	14286	12676	12632	7273	
Stall torque	mN.m	193	153	166	209	167	
Maximum power output	W	65.6	40.2	56.0	74.6	42.7	
Maximum Efficiency	%	83	81	82	83	81	
Operating Range	V	10~28	10~28	10~28	10~28	10~28	
Type of Current		Controlled	Controlled	Controlled	Controlled	Controlled	
Mechanical time constant	ms	2.4	2.5	2.8	2.4	2.1	
Moment of inertia	gcm ²	3.45	3.45	3.45	3.45	3.45	
Torque constant	mN.m/A	8.7	10.8	13.2	16.7	23.2	
Speed constant	rpm/V	1093	880	724	572	411	
Speed/torque gradient	rpm/mN.m	67.6	68.2	78.0	65.2	58.5	
Weight	g	126.7	126.8	125.7	126.3	127.5	

ADDITIONAL INFORMATION

Motor thermal resistance:	10.5 K/W	Motor thermal time constant:	768S
Axial (dynamic):	2.5 N	Radial (5mm from mounting face):	16.0 N
Press-fit force (static):	50 N	Max allowable screw depth into flange:	3.0 mm
Maximum radial play (5mm from mounting face):	≤ 0.02 mm	Axial play:	0 (<4.0N)
Maximum winding temperature:	85°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	3 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 22#)	Total Length: $L_T = L_1 + L_2 + L_3$				
	L1:24GP	L1:26GP	L2:BD24	L3:EN16S	L3:EN16T
Cable 1: Red +Vcc	24	25.7	53.0	10.7	12.0
Cable 2: Blue GND	34.3	36			
Plug definition (AWG 28#) Molex: 51021-0500	42.8	44.5			
	51.3	53			
Plug 1: Brown GND					
Plug 2: Black FG Pulse					
Plug 3: Yellow CW/CCW					
Plug 4: Red PWM					
Plug 5: Blue Brake					

Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.



Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage.
At elevated ambient temperatures, load current must be reduced.

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AM-BD2845AN Series

⚠️ Incorrect wiring will damage the built-in driver of the motor!

		Brushless Motor			Ball Bearings				
Motor Model		1203	1215	1210	1813	1810	2412	2409	
Nominal voltage		V	12	12	12	18	18	24	24
No load speed ±12%		rpm	3300	14800	10000	12520	9680	11680	9080
No load current Max 150%		mA	55	300	190	170	120	120	85
Recommend limit for continuous operating	Max cont. torque	mN.m	25.2	20.7	26.2	23.8	26.0	24.1	27.9
	Rated Speed	rpm	2122	13760	8814	11502	8580	10608	7909
	Rated Current	mA	800	3000	2500	1920	1600	1360	1200
	Rated Power	W	5.6	29.9	24.2	28.7	23.4	26.8	23.1
Starting current		mA	2143	38710	19672	21687	13139	13636	8727
Stall torque		mN.m	71	21	221	293	229	263	216
Maximum power output		W	6.1	114.3	57.9	96.1	58.0	80.4	51.3
Maximum Efficiency		%	71	83	81	83	82	82	81
Operating Range		V	10~28	10~28	10~28	10~28	10~28	10~28	10~28
Type of Current			Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled
Mechanical time constant		ms	3.0	3.3	2.9	2.8	2.7	2.9	2.7
Moment of inertia		gcm ²	6.19	6.19	6.19	6.19	6.19	6.19	6.19
Torque constant		mN.m/A	33.8	7.7	11.3	13.6	17.6	19.4	25.0
Speed constant		rpm/V	282	1243	841	701	543	491	382
Speed/torque gradient		rpm/mN.m	46.7	50.2	45.2	42.7	42.3	44.4	42.0
Weight		g	138.8	138.8	138.7	139.1	140.1	138.4	139.2

ADDITIONAL INFORMATION			
Motor thermal resistance:	10.2 K/W	Motor thermal time constant:	822 S
Axial (dynamic):	4.0 N	Radial (5mm from mounting face):	16.0 N
Press-fit force (static):	50 N	Max allowable screw depth into flange:	3.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<4.0N)
Maximum winding temperature:	85°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	4 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 22#)	Total Length: L _T =L1+L2+L3				
	L1:28GP	L1:32GP	L2:BD28	L3:EN16S	L3:EN16T
Cable 1: Red +Vcc	26.1	25.9	45.0	10.7	12.0
Cable 2: Blue GND	33.3	35.9			
Plug definition (AWG 28#) Molex: 51021-0500	40.5	44.4			
Plug 1: Brown GND					
Plug 2: Black FG Pulse					
Plug 3: Yellow CW/CCW					
Plug 4: Red PWM					
Plug 5: Blue Brake					

AM-BD2845AN Combination Scheme

Recommended Gearbox:
Planetary Gearbox:
AM-28GP
AM-32GP

Recommended Encoder:
Encoder S: AM-EN1611S***
2~3 Channels
Encoder T: AM-EN1612T***
2~3 Channels

For more combination specs, visit Assun Motor website.

Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage. At elevated ambient temperatures, load current must be reduced.

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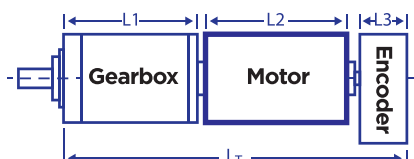
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DC BRUSHLESS MOTOR — SPEED DRIVER INTEGRATED SERIES

ASSUN

DRIVING THE FUTURE

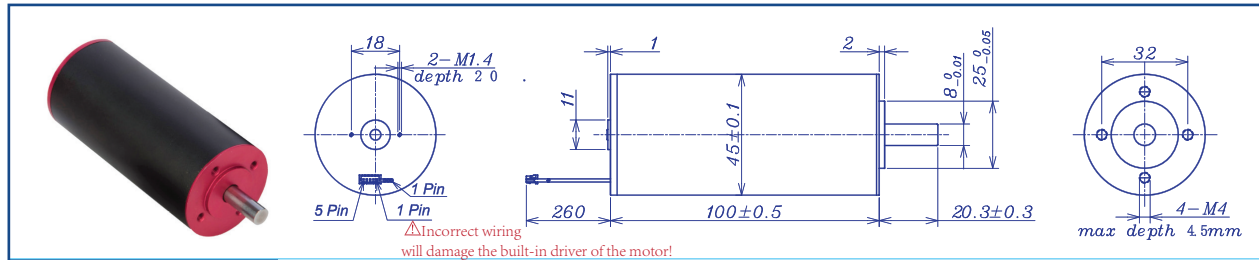
AM-BD3660AN Series

Brushless Motor		Ball Bearings						
Motor Model		1211	1209	2413	2410	2408	2407	
Nominal voltage	V	12	12	24	24	24	24	
No load speed $\pm 12\%$	rpm	11200	8840	12500	10200	8200	6966	
No load current Max 150%	mA	320	230	220	165	100	85	
Recommend limit for continuous operating	Max cont. torque	mN.m	39.5	43.4	32.5	41.0	56.1	
	Rated Speed	rpm	10472	8066	11997	9525	7409	6116
	Rated Current	mA	4200	3600	2000	2000	1900	1800
	Rated Power	W	43.3	36.7	40.8	40.9	38.8	35.9
Starting current	mA	60000	38710	44444	27907	18750	14118	
Stall torque	mN.m	607	496	807	620	518	459	
Maximum power output	W	178.1	114.8	264.0	165.5	111.3	83.7	
Maximum Efficiency	%	86	85	86	85	86	85	
Operating Range	V	10~28	10~28	10~28	10~28	10~28	10~28	
Type of Current		Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	
Mechanical time constant	ms	3.2	3.1	2.7	2.9	2.8	2.7	
Moment of inertia	gcm ²	16.75	16.75	16.75	16.75	16.75	16.75	
Torque constant	mN.m/A	10.2	12.9	18.2	22.3	27.8	32.7	
Speed constant	rpm/V	938	741	523	428	343	292	
Speed/torque gradient	rpm/mN.m	18.4	17.8	15.5	16.5	15.8	15.2	
Weight	g	326.3	326.8	327.4	327.2	328.1	328.4	
ADDITIONAL INFORMATION								
Motor thermal resistance:	6.9 K/W	Motor thermal time constant:	1188 S					
Axial (dynamic):	6.0 N	Radial (5mm from mounting face):	28.0 N					
Press-fit force (static):	110 N	Max allowable screw depth into flange:	4.0 mm					
Maximum radial play (5mm from mounting face):	≤ 0.02 mm	Axial play:	0 (<6.0N)					
Maximum winding temperature:	85°C	Ambient temperature range:	-30 to 65°C					
Standard rear shaft diameter:	5 mm	Standard rear shaft length "L":	0/3.7/5.5 mm					
Connection (AWG 20#)	Total Length: $L_T = L_1 + L_2 + L_3$						AM-BD3660AN Combination Scheme 	
		L1:36GP	L1:40GP	L2:BD36	L3:EN22S	L3:EN36T		
Cable 1: Red	+Vcc	30.6	35.3	60.5	10.7	12.0	Recommended Gearbox: Planetary Gearbox: AM-36GP AM-40GP	
Cable 2: Blue	GND	39.6	46.8					
Plug definition (AWG 28#) Molex: 51021-0500		48.6	58.3				Encoder S: AM-EN2211S*** 2~3 Channels Encoder T: AM-EN3612T*** 2~3 Channels	
		57.6	69.8					
Plug 1: Brown	GND	Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.					For more combination specs, visit Assun Motor website.	
Plug 2: Black	FG Pulse							
Plug 3: Yellow	CW/CCW							
Plug 4: Red	PWM							
Plug 5: Blue	Brake							
Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage. At elevated ambient temperatures, load current must be reduced.								

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AM-BD45100AN Series

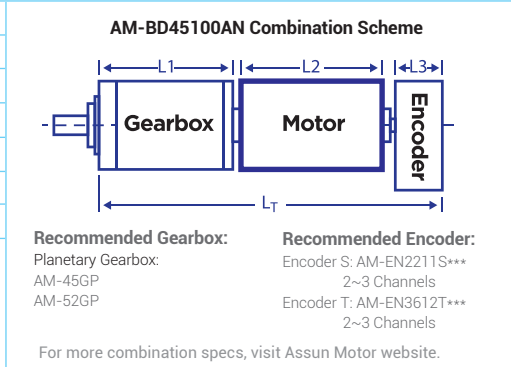


Brushless Motor		Ball Bearings						
Motor Model		2411	2406	2407	2404	2405	2403	
Nominal voltage	V	24	24	24	24	24	24	
No load speed ±12%	rpm	11240	5900	6912	4272	5208	3240	
No load current Max 150%	mA	600	320	320	180	220	160	
Recommend limit for continuous operating	Max cont. torque	mN.m	48.7	134.4	121.4	171.6	170.9	
	Rated Speed	rpm	11059	5539	6539	3782	4747	2748
	Rated Current	mA	3000	3800	4000	3400	3800	2600
	Rated Power	W	56.4	78.0	83.2	68.0	77.9	49.2
Starting current	mA	150000	57143	68571	28235	40678	16216	
Stall torque	mN.m	3034	2195	2252	1496	1771	1125	
Maximum power output	W	892.8	339.0	407.6	167.3	241.4	95.4	
Maximum Efficiency	%	88	86	87	85	86	81	
Operating Range	V	10~28	10~28	10~28	10~28	10~28	10~28	
Type of Current		Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	
Mechanical time constant	ms	4.3	3.1	3.5	3.3	3.4	3.3	
Moment of inertia	gcm ²	109.8	109.8	109.8	109.8	109.8	109.8	
Torque constant	mN.m/A	20.3	38.6	33.0	53.3	43.8	70.0	
Speed constant	rpm/V	470	247	289	179	218	136	
Speed/torque gradient	rpm/mN.m	3.7	2.7	3.1	2.9	2.9	2.9	
Weight	g	846.5	850.2	852.5	841.5	847.5	840.3	

ADDITIONAL INFORMATION			
Motor thermal resistance:	3.6 K/W	Motor thermal time constant:	1286S
Axial (dynamic):	6.0 N	Radial (5mm from mounting face):	28.0 N
Press-fit force (static):	110 N	Max allowable screw depth into flange:	4.5 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	0 (<6.0N)
Maximum winding temperature:	85°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	8 mm	Standard rear shaft length "L":	0/3.7/5.5 mm

Connection (AWG 18#)	Total Length: L _T =L ₁ +L ₂ +L ₃				
	L1:45GP	L1:52GP	L2:BD45	L3:EN22S	L3:EN36T
Cable 1: Red +Vcc	60.1	79.3	100.0	10.7	12.0
Cable 2: Blue GND	72.1				
Plug definition (AWG 28#) Molex: 51021-0500					
Plug 1: Brown GND					
Plug 2: Black FG Pulse					
Plug 3: Yellow CW/CCW					
Plug 4: Red PWM					
Plug 5: Blue Brake					

Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.



Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage. At elevated ambient temperatures, load current must be reduced.

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DC BRUSHED MOTOR

Assun DC Brushed Motors are manufactured with coreless rotors for high efficiency, smooth operation and low inertia. These coreless brushed motors are perfect for applications with high efficiency and precision control needs.

Power rating from less than 1 watt to 490 watts, diameter from 16mm to 40mm, Assun DC brushed motors can be used for various DC drive systems. Graphite and metal brushes are to be chosen for different operation conditions.



AM-CL1623MAN	AM-CL2235MAE	AM-CL2831MAN	AM-CL2235GAE	AM-CL2968GAE
AM-CL1626MAN	AM-CL2248MAE	AM-CL2845MAN	AM-CL2248GAE	AM-CL3570GAN
AM-CL1633MAN	AM-CL2532MAN	AM-CL2847MAE	AM-CL2642GAE	AM-CL3570GAF
AM-CL1642MAN	AM-CL2545MAN	AM-CL2857MAE	AM-CL2657GAE	AM-CL4071GAE
AM-CL1643MAN	AM-CL2642MAE	AM-CL2968MAE	AM-CL2847GAE	
AM-CL1935MAE	AM-CL2657MAE	AM-CL1935GAE	AM-CL2857GAE	

Company Name Abbreviation

Brush Metal
M - Metal Brush
G - Graphite Brush

AM - CL 1643 MAE - 1206

Motor Type
CL - Brushed Motor
BL - Brushless Motor

Motor Dimension
16 - Diameter (mm)
43 - Length (mm)

Number of Pole Pairs
A - 1 Pole Pair
B - 2 Pole Pairs
C - 3 Pole Pairs
D - 4 Pole Pairs

Temp. Level
N - 85°C
E - 125°C
F - 150°C
H - 180°C

Nominal Voltage &
No Load Speed
12 - Nominal Voltage (V)
06 - No Load Speed (x1000 RPM)


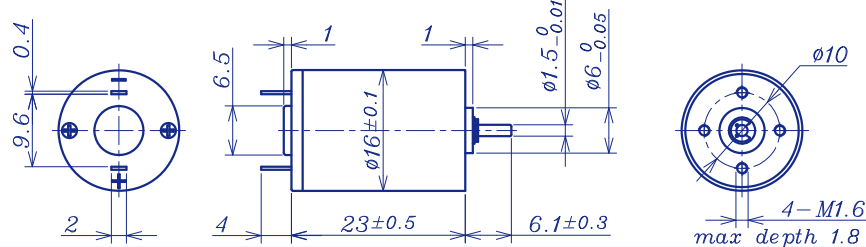
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DC BRUSHED MOTOR
BRUSHED METAL SERIES

Assun Metal Brush Series Coreless motors are manufactured with coreless rotors and metal brush commutators. The high efficiency and precision character of metal brushed coreless motor made it perfect for energy critical and fast responding applications such as medical tools and robotic actuators.



AM-CL1623MAN SERIES

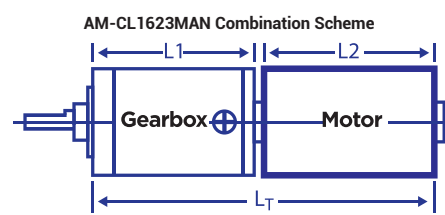



		Precious metal brush			Ball Bearings				
Motor Model		0109	0108	0310	0308	0610	0608	1212	
Nominal voltage	V	1.5	1.5	3	3	6	6	12	
No load speed	±12% rpm	9100	7850	10130	7690	9875	7574	12440	
No load current	Max 150% mA	60	55	35	23	22	18	14	
Recommend limit for continuous operating	Max cont. torque	mN.m	1.2	1.3	1.9	2.1	2.2	2.1	2.1
	Rated Speed	rpm	7596	6106	7674	5142	7202	4861	9839
	Rated Current	mA	850	800	700	600	400	300	250
	Rated Power	W	1.0	0.9	1.5	1.1	1.6	1.1	2.2
Starting current	mA	4839	3409	2778	1765	1418	805	1143	
Stall torque	mN.m	7	6	8	6	8	6	10	
Maximum power output	W	1.8	1.2	2.0	1.3	2.1	1.2	3.3	
Maximum Efficiency	%	79	76	79	78	77	72	79	
Terminal resistance	±12% Ω	0.31	0.44	1.08	1.7	4.23	7.45	10.5	
Inductance (1KHz)	mH	0.001	0.006	0.038	0.058	0.15	0.27	0.41	
Mechanical time constant	ms	17.6	18.7	19.0	17.2	16.9	17.7	16.9	
Moment of inertia	gcm ²	1.37	1.37	1.37	1.37	1.3	1.3	1.33	
Torque constant	mN.m/A	1.6	1.8	2.8	3.7	5.7	7.4	9.1	
Speed constant	rpm/V	6143	5319	3420	2597	1672	1291	1050	
Speed/torque gradient	rpm/mN.m	1225	1304	1323	1201	1238	1301	1211	
Weight	g	18.6	18.6	18.6	18.4	18.4	18.4	18.5	

ADDITIONAL INFORMATION

Motor thermal resistance:	41.7K/W	Motor thermal time constant:	379S
Axial (dynamic):	0.8 N	Radial (5mm from mounting face):	12 N
Press-fit force (static):	26 N	Max allowable screw depth into flange:	1.8 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	Preset
Maximum winding temperature:	85°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	2 mm	Standard rear shaft length "L":	0/3.7 mm

Total Length (Gearbox and Motor): L=L1+L2+L3		
L1:16GP	L1:19GP	L2:CL16
15.9	18.8	22.50
23.3	23.6	
27.0	28.4	



Recommended Gearbox:

Planetary Gearbox:
AM-16GP
AM-19GP

For more combination specs, visit Assun Motor website.

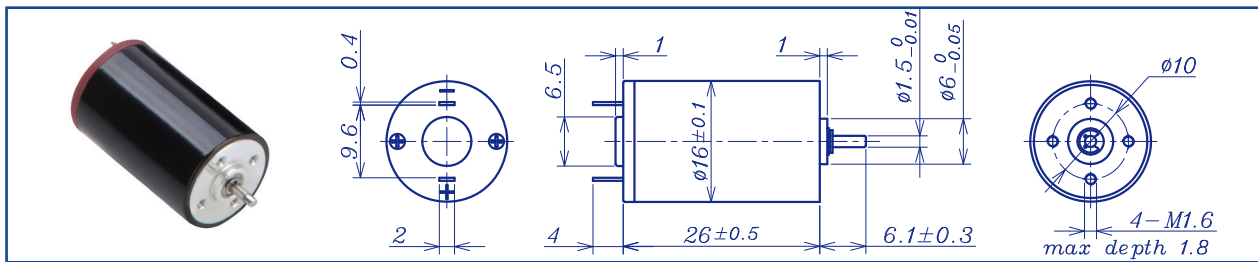
Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage.
At elevated ambient temperatures, load current must be reduced.

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AM-CL1626MAN SERIES

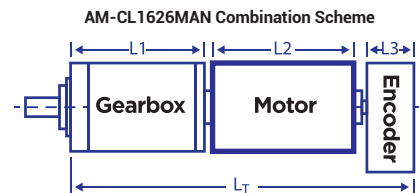


		Precious metal brush				Ball Bearings			
Motor Model		0109	0308	0310	0608	0610	1210	1212	2414
Nominal voltage	V	1.5	3	3	6	6	12	12	24
No load speed ±12%	rpm	9350	8256	10340	8129	10544	10691	12075	14306
No load current Max 150%	mA	68	25	25	10	18	10	9.2	12
Recommend limit for continuous operating	Max cont. torque	mN.m	1.2	2.5	2.1	2.7	1.8	2.5	2.2
	Rated Speed	rpm	8117	5736	8594	6001	9134	8426	10247
	Rated Current	mA	850	750	800	400	350	250	150
	Rated Power	W	1.0	1.5	1.9	1.7	1.7	2.2	2.4
Starting current	mA	6000	2400	4615	1500	2500	1143	1600	1091
Stall torque	mN.m	9	8	13	10	13	12	15	17
Maximum power output	W	2.2	1.8	3.4	2.2	3.7	3.4	4.7	6.4
Maximum Efficiency	%	80	81	86	84	84	82	85	80
Terminal resistance ±12%	Ω	0.25	1.25	0.65	4.0	2.4	10.5	7.5	22
Inductance (1KHz)	mH	0.003	0.031	0.016	0.15	0.095	0.4	0.29	0.85
Mechanical time constant	ms	14.2	12.7	10.3	9.8	9.9	11.2	10.1	10.5
Moment of inertia	gcm ²	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Torque constant	mN.m/A	1.5	3.4	2.8	7.0	5.4	10.6	9.4	15.8
Speed constant	rpm/V	6305	2781	3465	1364	1770	899	1012	603
Speed/torque gradient	rpm/mN.m	1041	1012	817	779	787	888	804	837
Weight	g	22.6	22.4	22.4	22.4	22.4	22.1	22.2	22.4

ADDITIONAL INFORMATION

Motor thermal resistance:	37.6K/W	Motor thermal time constant:	400S
Axial (dynamic):	3.4 N	Radial (5mm from mounting face):	2.6 N
Press-fit force (static):	36 N	Max allowable screw depth into flange:	1.8 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	Preset
Maximum winding temperature:	85°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	2 mm	Standard rear shaft length "L":	0 mm

Total Length (Gearbox and Motor): L=L1+L2+L3			
L1:16GP	L1:19GP	L2:CL16	L3: EN16S
15.9	18.8	26.0	10.7
23.3	23.6		
27.0	28.4		



Recommended Gearbox:
Planetary Gearbox:
AM-16GP
AM-19GP

Recommended Encoder:
Encoder S: AM-EN1611S***
2~3 Channels

For more combination specs, visit Assun Motor website.

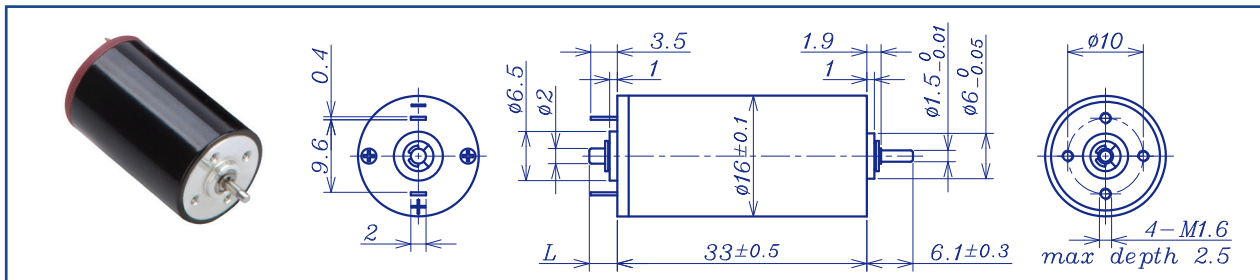
Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

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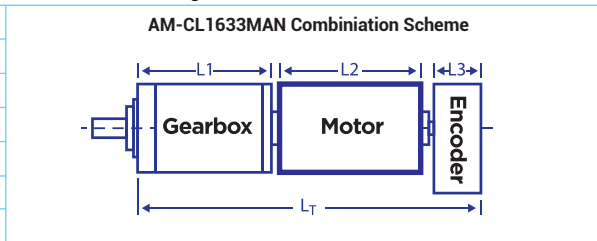
AM-CL1633MAN SERIES



Motor Model		Precious metal brush				Ball bearings			
		0308	0305	0607	0606	0605	1207	1205	
Nominal voltage	V	3	3	6	6	6	12	12	
No load speed	±12% rpm	7700	5370	7250	5790	5280	6600	5200	
No load current	Max 150% mA	50	30	35	22	24	14	12	
Recommend limit for continuous operating	Max cont. torque	mN.m	2.9	3.3	3.5	3.7	3.5	3.2	3.6
	Rated speed	rpm	6204	3931	5775	4354	3813	5165	3683
	Rated current	mA	850	650	480	400	350	200	188
	Rated power	W	1.9	1.3	2.1	1.7	1.4	1.7	1.4
Starting current	mA	4167	2344	2222	1546	1198	870	583	
Stall torque	mN.m	15	12	17	15	1.2	15	12	
Maximum power output	W	3.1	1.7	3.2	2.3	1.7	2.5	1.7	
Maximum efficiency	%	79	79	76	78	74	76	73	
Terminal resistance	±12% Ω	0.72	1.28	2.7	3.88	5.01	13.8	20.6	
Inductance	(1KHZ) mH	0.024	0.061	0.15	0.22	0.28	0.74	1.21	
Mechanical time constant	ms	11.5	10.7	10.4	9.5	10.3	10.5	10.2	
Moment of inertia	gcm ²	2.15	2.32	2.32	2.32	2.32	2.22	2.29	
Torque constant	mN.m/A	3.7	5.3	7.8	9.8	10.6	17.1	21.5	
Speed constant	rpm/V	2598	1813	1228	979	898	559	444	
Speed/ torque gradient	rpm/mN.m	509	441	426	389	423	452	426	
Weight	g	27.9	28.7	28.7	28.6	28.7	28.1	28.6	

ADDITIONAL INFORMATION			
Motor thermal resistance:	25.2K/W	Motor thermal time constant:	1286S
Axial (dynamic):	1.0 N	Radial (5mm from mounting face):	180.0 N
Press-fit force (static):	16 (90)N	Max allowable screw depth into flange:	4.5mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play	0 (<8.0N)
Maximum winding temperature:	85°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	2 mm	Standard rear shaft length "L":	0/3.7 mm

Total Length (Gearbox and Motor): L _T =L1+L2+ L3				
L1:16GP	L1: 19GP		L2:CL16	L3: EN16S
15.9	18.8		33.0	10.7
23.3	23.6			
27.0	28.4			



Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

Recommended Gearbox:
Planetary Gearbox:
AM-16GP
AM-19GP

Recommended Encoder:
Encoder S: AM-EN1611S***
2~3 Channels

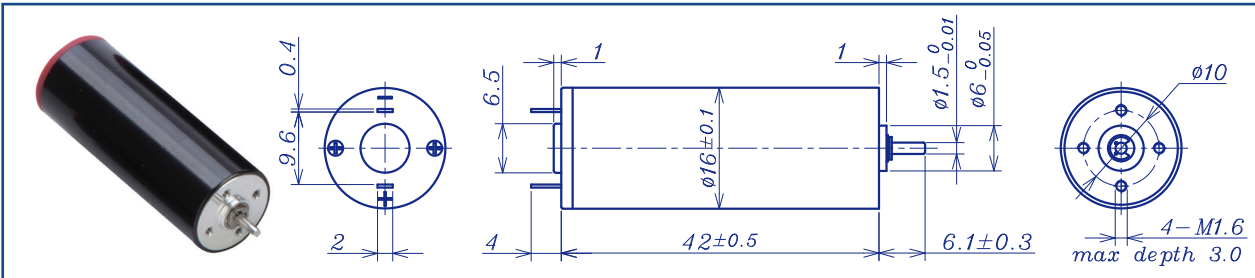
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Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage. At elevated ambient temperatures, load current must be reduced.

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AM-CL1642MAN SERIES

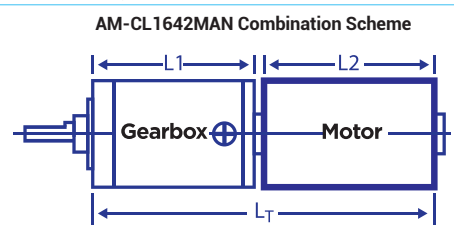


Motor Model		Precious metal brush				Ball bearings				
		0609	1210	2409	2411	3609	3611	4809	4811	
Nominal voltage	V	6	12	24	24	36	36	48	48	
No load speed	±12% rpm	9222	9952	9450	11120	9207	11682	9339	11253	
No load current	Max 150% mA	19	10.5	6.0	7.0	4.5	5.0	3.5	4.2	
Recommend limit for continuous operating	Max cont. torque	mN.m	5.3	5.0	5.2	4.2	5.4	4.3	5.2	4.3
	Rated speed	rpm	8094	8874	8393	10215	8090	10700	8122	10242
	Rated current	mA	850	450	220	210	150	150	110	110
	Rated power	W	4.5	4.7	4.5	4.5	4.6	4.8	4.4	4.6
Starting current	mA	7059	4068	1920	2500	1204	1731	821	1182	
Stall torque	mN.m	44	47	46	51	45	51	40	48	
Maximum power output	W	10.5	12.1	11.4	14.9	10.8	15.5	9.8	14.1	
Maximum efficiency	%	90	90	89	90	88	90	87	88	
Terminal resistance	±12% Ω	0.85	2.95	12.5	9.6	29.9	20.8	58.5	40.6	
Inductance	(1KHZ) mH	0.054	0.2	0.95	0.66	2.22	2.22	3.8	3.8	
Mechanical time constant	ms	7.0	6.7	6.4	6.8	6.1	7.3	7.1	9.6	
Moment of inertia	gcm ²	3.14	3.01	3.01	3.01	2.8	3.01	2.9	3.9	
Torque constant	mN.m/A	6.2	11.5	24.2	20.6	37.2	29.3	48.9	40.6	
Speed constant	rpm/V	1541	831	395	465	257	325	195	235	
Speed/ torque gradient	rpm/mN.m	211	214	204	217	206	231	234	235	
Weight	g	39.0	38.5	38.5	38.5	38.5	38.6	37.9	38.1	

ADDITIONAL INFORMATION

Motor thermal resistance:	K/W	Motor thermal time constant:	S
Axial (dynamic):	3.4 N	Radial (5mm from mounting face):	6.0 N
Press-fit force (static):	36N	Max allowable screw depth into flange:	3.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play	Preset
Maximum winding temperature:	85°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	N/A	Standard rear shaft length "L":	N/A

Total Length (Gearbox and Motor): L _T =L ₁ +L ₂ + L ₃		
L1:16GP	L1: 19GP	L2:CL16
15.9	18.8	42.0
23.3	23.6	
27.0	28.4	



Recommended Gearbox:

- Planetary Gearbox:
- AM-16GP
- AM-19GP

For more combination specs, visit Assun Motor website.

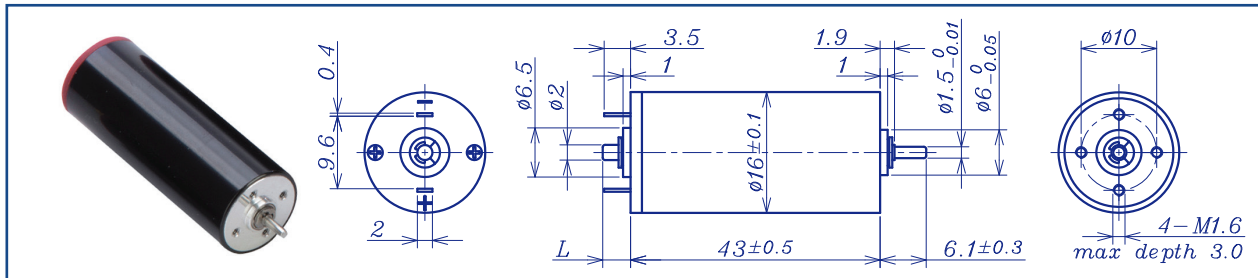
Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage. At elevated ambient temperatures, load current must be reduced.

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AM-CL1643MAN SERIES



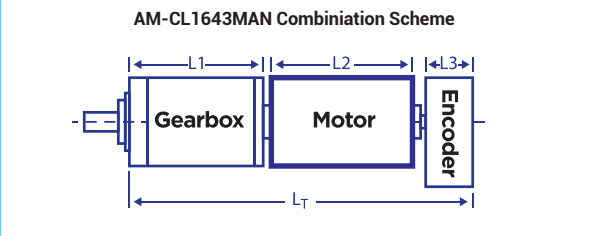
Precious metal brush Ball bearings

Motor Model		0307	0305	0607	0605	0907	1206	1204	2607	
Nominal voltage	V	3	3	6	6	9	12	12	26	
No load speed	±12% rpm	6730	5242	6620	4987	6878	6360	4400	7080	
No load current	Max 150% mA	65	50	32	23	24	16	10	10	
Recommend limit for continuous operating	Max cont. torque	mN.m	3.3	4.0	5.3	5.4	5.3	5.4	6.2	5.2
	Rated speed	rpm	5768	4058	5207	3607	5462	5008	2728	5580
	Rated current	mA	850	800	650	500	450	320	250	160
	Rated power	W	2.0	1.7	2.9	2.0	3.0	2.8	1.8	3.0
Starting current	mA	5556	3371	2927	1754	2093	1446	642	718	
Stall torque	mN.m	23	18	25	20	26	25	16	24	
Maximum power output	W	4.1	2.5	4.3	2.6	4.6	4.2	1.9	4.5	
Maximum efficiency	%	80	77	80	78	80	80	77	78	
Terminal resistance	±12% Ω	0.54	0.89	2.05	3.42	4.3	8.3	18.7	36.7	
Inductance	(1KHZ) mH	0.018	0.037	0.11	0.21	0.24	0.52	1.1	2.01	
Mechanical time constant	ms	9.3	9.0	8.2	8.2	8.7	7.7	8.3	8.7	
Moment of inertia	gcm ²	3.04	2.94	2.94	3.11	3.07	2.94	2.91	2.87	
Torque constant	mN.m/A	4.2	5.4	8.6	11.4	12.4	17.8	25.6	34.6	
Speed constant	rpm/V	2270	1774	1116	841	773	536	372	276	
Speed/ torque gradient	rpm/mN.m	291	293	267	253	269	250	272	289	
Weight	g	38.9	38.6	38.7	40.1	40.1	38.7	38.5	38.4	

ADDITIONAL INFORMATION

Motor thermal resistance:	24.9K/W	Motor thermal time constant:	412 S
Axial (dynamic):	1.0 N	Radial (5mm from mounting face):	1.8 N
Press-fit force (static):	16(70)N	Max allowable screw depth into flange:	3.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play	Preset
Maximum winding temperature:	85°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	2 mm	Standard rear shaft length "L":	0/3.7 mm

Total Length (Gearbox and Motor): L _T =L1+L2+L3			
L1:16GP	L1: 19GP	L2:CL16	L3: EN16S
15.9	18.8	43.0	10.7
23.3	23.6		
27.0	28.4		



Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

Recommended Gearbox:
Planetary Gearbox:
AM-16GP
AM-19GP

Recommended Encoder:
Encoder S: AM-EN1611S***
2~3 Channels

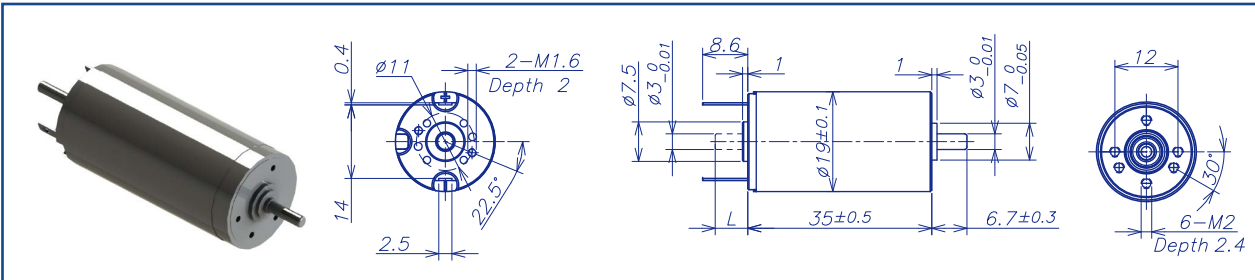
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AM-CL1935MAE Series

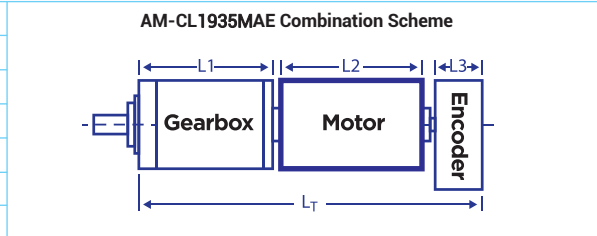


		Precious metal brush			Ball bearings			
Motor Model		0506	0607	0907	1206	1807	2406	
Nominal voltage		V	4.5	6	9	12	18	24
No load speed ±12%		rpm	5900	6620	6600	6480	6600	6450
No load current Max 150%		mA	60	51	34	26	18	12.5
Recommend limit for continuous operating	Max cont. torque	mN.m	8.9	10.7	11.2	11.1	11.1	11.2
	Rated speed	rpm	4502	4949	4835	4749	4911	4725
	Rated current	mA	1300	1300	900	660	450	330
	Rated power	W	4.2	5.5	5.7	5.5	5.7	5.5
Starting current		mA	5294	5000	3273	2400	1706	1200
Stall torque		mN.m	38	42	42	42	44	42
Maximum power output		W	5.8	7.3	7.2	7	7.5	7.1
Maximum efficiency		%	80	81	81	80	81	81
Terminal resistance ±12%		Ω	0.85	1.2	2.75	5	10.55	20
Inductance (1KHZ)		mH	Null	0.11	Null	Null	Null	1.86
Mechanical time constant		ms	5.4	5.4	5.5	5.4	5.2	5.3
Moment of inertia		gcm ²	3.3	3.3	3.3	3.3	3.3	3.3
Torque constant		mN.m/A	7.2	8.6	12.9	17.5	25.8	35.2
Speed constant		rpm/V	1326	1115	741	546	371	272
Speed/torque gradient		rpm/mN.m	156.5	156.1	158.1	156	151.7	154.5
Weight		g	53	53	53	53	53	53

ADDITIONAL INFORMATION

Motor thermal resistance:	19.5 K/W	Motor thermal time constant:	643 S
Axial (dynamic):	2.5N	Radial (5mm from mounting face):	16.0 N
Press-fit force (static):	16(90)N	Max allowable screw depth into flange:	2.4 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	Preset
Maximum winding temperature:	125°C	Ambient temperature range:	-40 to 85 °C

Total Length (Gearbox and Motor): L _T =L ₁ +L ₂ +L ₃			
L1:19GP	L1:24GP	L2:CL19	L3: EN16S
18.8	24	35.0	10.7
23.6	34.3		L3: EN16T
28.4	42.8		12
33.2	51.3		



Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

Recommended Gearbox:
Planetary Gearbox:
AM-19GP
AM-24GP

Recommended Encoder:
Encoder S: AM-EN1611S***
3 Channels
Encoder T: AM-EN1612T***
3 Channels

For more combination specs, visit Assun Motor website.

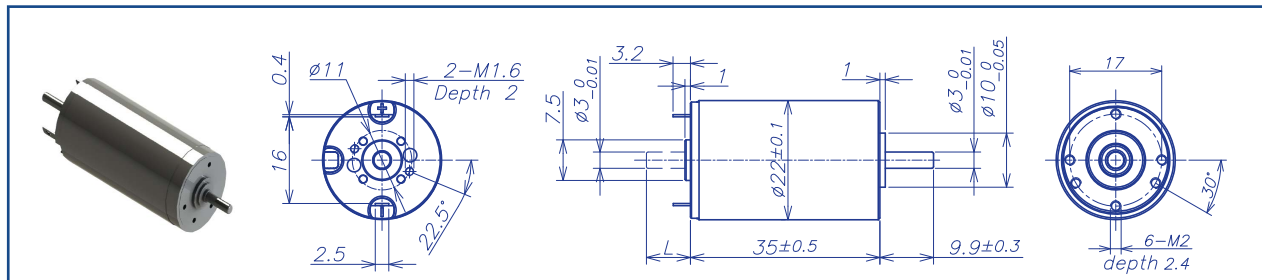
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DC BRUSHED CORELESS MOTOR —
METAL Brush

AM-CL2235MAE Series



		Precious metal brush			Ball bearings				
Motor Model		0606	0906	1206	1806	2406	3606	4806	
Nominal voltage	V	6	9	12	18	24	36	48	
No load speed	±12% rpm	5700	6000	5800	5950	6020	6000	6400	
No load current	Max 150% mA	55	36	28	18	15	11	9	
Recommend limit for continuous operating	Max cont. torque	mN.m	11.4	15.1	15.1	15.3	14.5	14.4	13.6
	Rated speed	rpm	4746	4714	4540	4675	4774	4757	5247
	Rated current	mA	1200	1100	800	550	400	265	200
	Rated power	W	5.7	7.5	7.2	7.5	7.3	7.2	7.5
Starting current	mA	6897	5000	3582	2500	1875	1237	1069	
Stall torque	mN.m	68.2	70.6	69.7	71.2	70.2	69.6	75.3	
Maximum power output	W	10.2	11.1	10.6	11.1	11.1	10.9	12.6	
Maximum efficiency	%	83	84	83	84	83	82	82	
Terminal resistance	±12% Ω	0.87	1.8	3.35	7.2	12.8	29.1	44.9	
Inductance	(1KHZ) mH	0.11	Null	Null	Null	1.54	Null	Null	
Mechanical time constant	ms	5.3	5.4	5.3	5.3	5.5	5.5	6.4	
Moment of inertia	gcm ²	6.1	6.1	6.1	6.1	6.1	6.1	6.1	
Torque constant	mN.m/A	10	14.2	19.6	28.7	37.8	56.8	71.0	
Speed constant	rpm/V	958	672	487	333	253	168	134	
Speed/ torque gradient	rpm/mN.m	83.6	85	83.2	83.6	85.7	86.2	85.0	
Weight	g	75	75	75	75	75	75	75	

ADDITIONAL INFORMATION

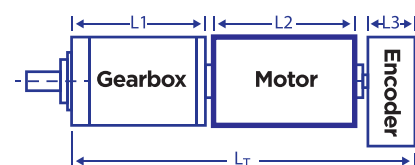
Motor thermal resistance:	15.7 K/W	Motor thermal time constant:	709 S
Axial (dynamic):	2.5 N	Radial (5mm from mounting face):	16.0 N
Press-fit force (static):	16 (90)N	Max allowable screw depth into flange:	2.4mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play	Preset
Maximum winding temperature:	125°C	Ambient temperature range:	-40 to 85°C

Total Length (Gearbox and Motor): L_T=L₁+L₂+L₃

L1:24GP	L1:26GP	L2:CL22	L3: EN16S
24.0	25.7	35.0	10.7
34.3	36.0		L3: EN16T
42.8	44.5		12.0
51.3	53.0		

Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

AM-CL2235MAE Combination Scheme



Recommended Gearbox:
Planetary Gearbox:
AM-24GP
AM-26GP

Recommended Encoder:
Encoder S: AM-EN1611S***
3 Channels
Encoder T: AM-EN1612T***
3 Channels

For more combination specs, visit Assun Motor website.

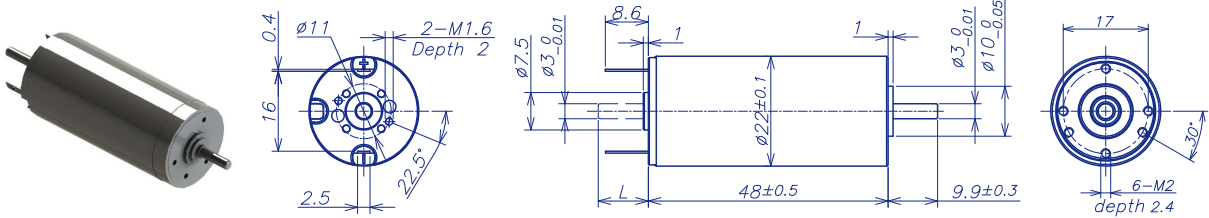
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DC BRUSHED CORELESS MOTOR _
METAL Brush

AM-CL2248MAE Series

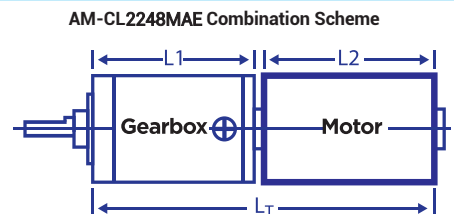


		Precious metal brush			Ball bearings					
Motor Model			0606	0906	1206	1806	2406	2806	3606	4806
Nominal voltage	V		6	9	12	18	24	28	36	48
No load speed	±12% rpm		6160	6160	6160	6160	6160	6210	6180	6180
No load current	Max 150% mA		70	60	50	35	25	20	18	10
Recommend limit for continuous operating	Max cont. torque	mN.m	14.1	21.4	29.5	29.8	29.2	29.2	29.2	27.8
	Rated speed	rpm	5650	5630	5100	5080	5060	5050	5070	5180
	Rated current	mA	1520	1540	1580	1040	800	720	550	400
	Rated power	W	8.3	12.6	15.8	15.9	15.5	15.4	15.1	15.1
Starting current	mA		17600	16360	8000	6000	4000	4000	3000	2000
Stall torque	mN.m		170	248	171.6	171	163	157	163	171.4
Maximum power output	W		27	40	27.8	27.5	26.3	25.4	26.3	27.8
Maximum efficiency	%		91	90	90	89	89	89	89	91
Terminal resistance	±12% Ω		0.34	0.55	1.5	3.06	6.5	8	12.8	21.5
Inductance (1KHZ)	mH		0.053	Null	Null	Null	Null	Null	Null	3.6
Mechanical time constant	ms		3.9	2.9	4.3	3.9	4.6	4.3	4.1	3.9
Moment of inertia	gcm ²		10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
Torque constant	mN.m/A		9.73	14.4	19.5	29.2	39	44.9	58	77.3
Speed constant	rpm/V		1026	684	513	342	257	222	172	128.7
Speed/ torque gradient	rpm/mN.m		36.2	24.8	35.9	36	37.8	39.6	37.8	36
Weight	g		102	102	102	102	102	102	102	102

ADDITIONAL INFORMATION

Motor thermal resistance:	12.2 K/W	Motor thermal time constant:	835 S
Axial (dynamic):	2.5 N	Radial (5mm from mounting face):	16 N
Press-fit force (static):	16(90) N	Max allowable screw depth into flange:	2.4 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play	Preset
Maximum winding temperature:	125°C	Ambient temperature range:	-40 to 85°C

Total Length (Gearbox and Motor): L _T =L ₁ +L ₂ + L ₃				
L1:24GP	L1:26GP	L2:CL22	L3:EN16S	L3:EN16T
24.0	25.7	48.0	10.7	12.0
34.3	36.0			
42.8	44.5			
51.3	53.0			



Recommended Gearbox:
Planetary Gearbox:
AM-24GP
AM-26GP

Recommended Encoder:
Encoder S: AM-EN1611S***
3 Channels
Encoder T: AM-EN1612T***
3 Channels

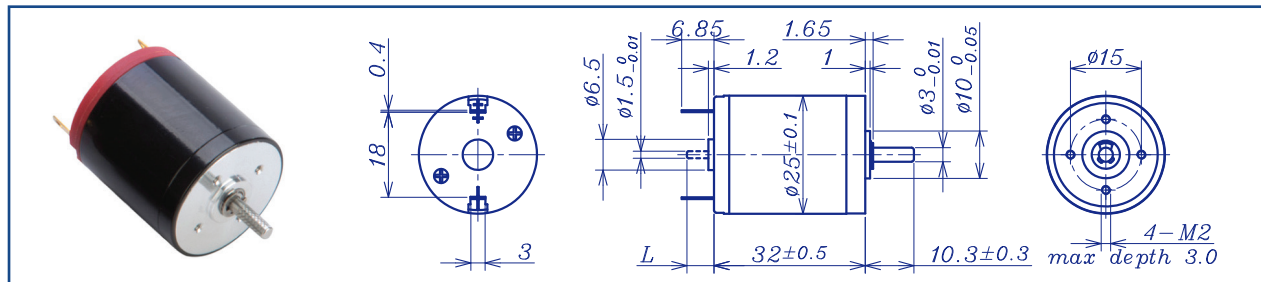
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AM-CL2532MAN SERIES

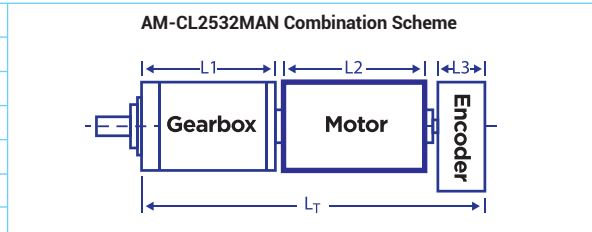


		Precious metal brush				Ball bearings				
Motor Model		0306	0304	0606	0604	1206	1204	2408	2406	2405
Nominal voltage		V	3	3	6	6	12	12	24	24
No load speed ±12%		rpm	6010	3993	6073	4155	6592	4070	8280	6166
No load current Max 150%		mA	120	74	53	37	24	20	20	15
Recommend limit for continuous operation	Max cont. torque	mN.m	3.9	6.2	6.0	7.6	6.5	7.7	6.7	7.5
	Rated speed	rpm	5420	3162	5279	3125	5717	3035	7385	5110
	Rated current	mA	950	950	700	600	400	300	262	220
	Rated power	W	2.2	2.0	3.3	2.5	3.9	2.5	5.8	4.0
Starting current		mA	8571	4286	5000	2308	2857	1121	2242	1212
Stall torque		mN.m	40	30	46	31	49	30	60	44
Maximum power output		W	6.2	3.1	7.3	3.4	8.4	3.2	6.4	7.1
Maximum efficiency		%	78	75	80	76	83	75	82	79
Terminal resistance ±12%		Ω	0.35	0.7	1.2	2.6	4.2	10.7	10.7	19.8
Inductance (1KHZ)		mH	0.014	0.048	0.086	0.02	0.34	0.87	0.87	1.48
Mechanical time constant		ms	17.1	14.8	13.9	15.0	14.4	14.1	14.1	14.8
Moment of inertia		gcm ²	10.8	10.5	10.1	10.6	10.2	10.1	10.1	9.28
Torque constant		mN.m/A	4.7	7.1	9.3	13.6	17.2	27.7	27.7	36.7
Speed constant		rpm/V	2032	1354	1023	704	554	345	345	260
Speed/torque gradient		rpm/mN.m	151.3	134.5	131.5	134.9	135.0	133.6	133.6	140.3
Weight		g	73.3	72.9	72.4	73.0	72.6	72.4	72.4	72.2

ADDITIONAL INFORMATION

Motor thermal resistance:	16.6 K/W	Motor thermal time constant:	780 S
Axial (dynamic):	7.3 N	Radial (5mm from mounting face):	8.0N
Press-fit force (static):	16(120)N	Max allowable screw depth into flange:	3.0mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play	Preset
Maximum winding temperature:	85°C	Ambient temperature range:	-30 to °C65
Standard rear shaft diameter:	1.5 mm	Standard rear shaft length "L":	0/3.7 mm

Total Length (Gearbox and Motor) L _T =L1+L2+L3			
L1: 24GP	L1: 26GP	L2:CL25	L3: EN16S
24.0	25.7	32.0	10.7
34.3	36		
42.8	44.5		



Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

Recommended Gearbox: Planetary Gearbox: AM-24GP, AM-26GP
Recommended Encoder: Encoder S: AM-EN1611S*** 2~3 Channels

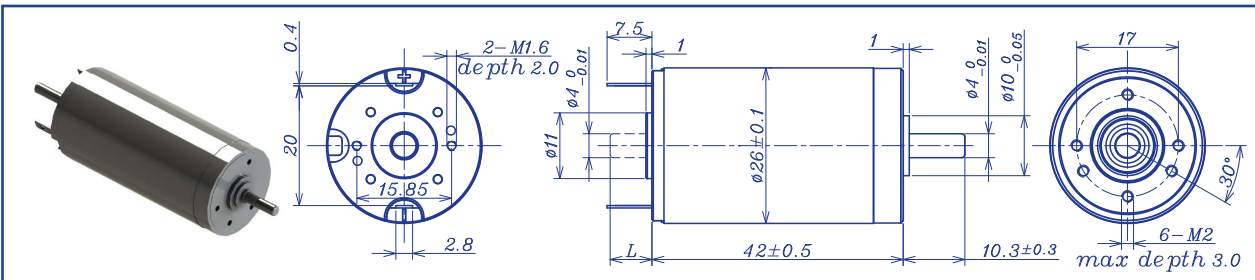
For more combination specs, visit Assun Motor website.

Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage. At elevated ambient temperatures, load current must be reduced.

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AM-CL2642MAE Series



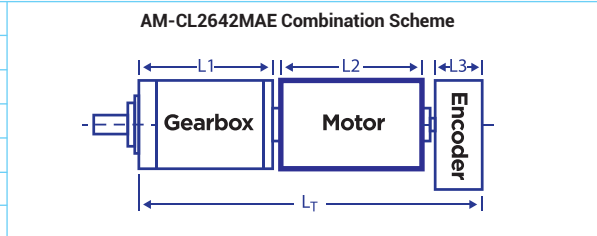
Precious metal brush Ball bearings

Motor Model		0605	0905	1205	1805	2405	3605	4805	
Nominal voltage	V	6	9	12	18	24	36	48	
No load speed	±12% rpm	5000	5000	5100	4950	4900	5100	5250	
No load current	Max 150% mA	65	43	32	22	16	12	9	
Recommend limit for continuous operating	Max cont. torque	mN.m	24.3	25.2	26.1	24.8	25.3	25	25.3
	Rated speed	rpm	4034	3985	4127	3937	3917	4116	4283
	Rated current	mA	2200	1520	1200	740	560	385	300
	Rated power	W	10.3	10.5	11.3	10.2	10.4	10.8	11.3
Starting current	mA	11111	7317	6154	3529	2727	1946	1589	
Stall torque	mN.m	125.8	124.3	136.8	121	126.1	129.6	137.2	
Maximum power output	W	16.5	16.3	18.3	15.7	16.2	17.3	18.9	
Maximum efficiency	%	85	85	86	85	85	85	86	
Terminal resistance	±12% Ω	0.54	1.23	1.95	5.1	8.8	18.5	30.2	
Inductance	(1KHZ) mH	Null	Null	0.293	Null	Null	Null	4.56	
Mechanical time constant	ms	5.7	5.8	5.4	5.9	5.6	5.7	5.5	
Moment of inertia	gcm ²	13.8	13.8	13.8	13.8	13.8	13.8	13.8	
Torque constant	mN.m/A	11.4	17.1	22.4	34.5	46.5	67	86.8	
Speed constant	rpm/V	838	559	427	277	205	143	110	
Speed/torque gradient	rpm/mN.m	39.7	40.2	37.3	40.9	38.9	39.4	38.3	
Weight	g	122	122	122	122	122	122	122	

ADDITIONAL INFORMATION

Motor thermal resistance:	16.5 K/W	Motor thermal time constant:	**** S
Axial (dynamic):	7.3 N	Radial (5mm from mounting face):	28.0 N
Press-fit force (static):	60(120)N	Max allowable screw depth into flange:	3.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	预压
Maximum winding temperature:	125°C	Ambient temperature range:	-40 to 85°C

Total Length (Gearbox and Motor): L _T =L ₁ +L ₂ +L ₃				
L1:26GP	L1: 28GP	L2:CL26	L3: EN22S	L3: EN24T
25.7	26.1	42	10.7	12.0
36	33.3			
44.5	40.5			
53	47.7			



Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

Recommended Gearbox:
Planetary Gearbox:
AM-26GP
AM-28GP

Recommended Encoder:
Encoder S: AM-EN221S***
2~3 Channels
Encoder T: AM-EN241T***
2~3 Channels

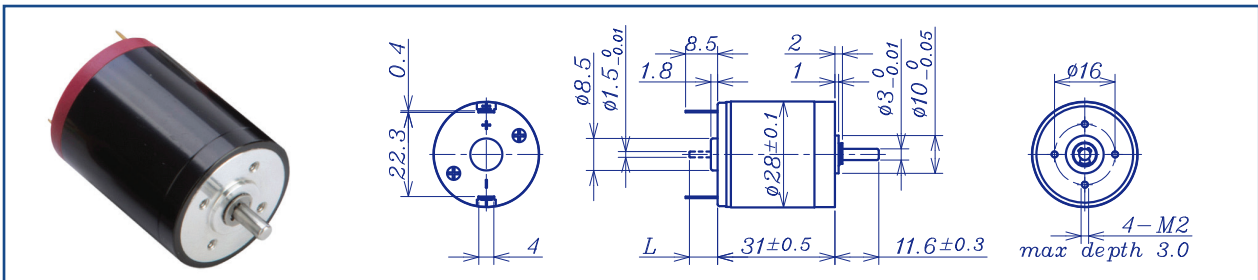
For more combination specs, visit Assun Motor website.

Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage.
At elevated ambient temperatures, load current must be reduced.

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AM-CL2831MAN SERIES

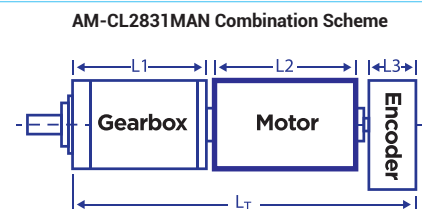


Motor Model	Precious metal brush				Ball bearings					
		0606	0604	1207	1204	2406	2404	4806	4805	
Nominal voltage	V	6	6	12	12	24	24	48	48	
No load speed	±12% rpm	6276	3960	7437	4000	6050	4288	6430	5704	
No load current	Max 150% mA	45	25	30	13	10	6.5	6.5	5.3	
Recommend limit for continuous operation	Max cont. torque	mN.m	5.9	8.3	5.7	8.1	9.0	11.3	10.2	9.1
	Rated speed	rpm	5690	3195	6860	3199	5186	3130	5731	4742
	Rated current	mA	700	600	400	300	250	220	150	120
	Rated power	W	3.5	2.8	4.1	2.7	4.9	3.7	5.7	4.5
Starting current	mA	7059	3000	4800	1446	1690	797	878	686	
Stall torque	mN.m	64	43	73	41	63	42	62	54	
Maximum power output	W	10.5	4.4	14.2	4.3	10.0	4.7	10.4	8.1	
Maximum efficiency	%	85	83	85	82	85	83	84	83	
Terminal resistance	±12% Ω	0.85	2.0	2.5	8.3	14.2	30.1	54.7	70	
Inductance	(1KHZ) mH	0.063	0.17	0.19	0.69	1.2	2.4	4.1	5.1	
Mechanical time constant	ms	17.1	16.1	16.1	16.1	15.6	16.4	17.3	17.7	
Moment of inertia	gcm ²	16.6	16.6	15.6	15.6	15.6	15.3	15.8	16.1	
Torque constant	mN.m/A	9.1	14.3	15.3	28.4	37.7	53.0	70.8	79.7	
Speed constant	rpm/V	1053	666	624	336	254	180	135	120	
Speed/torque gradient	rpm/mN.m	98.6	92.8	101.8	98.3	95.6	102.3	104.3	105.1	
Weight	g	86.2	86.2	85.3	85.3	85.3	85	85.3	85.2	

ADDITIONAL INFORMATION

Motor thermal resistance:	19.3 K/W	Motor thermal time constant:	817.2 S
Axial (dynamic):	7.3 N	Radial (5mm from mounting face):	24.0 N
Press-fit force (static):	60(120)N	Max allowable screw depth into flange:	3.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play	Preset
Maximum winding temperature:	85°C	Ambient temperature range:	-30 to °C65
Standard rear shaft diameter:	1.5 mm	Standard rear shaft length "L":	0/3.7 mm

Total Length (Gearbox and Motor): $L_T = L_1 + L_2 + L_3$			
L1: 28GP	L1: 32GP	L2: CL28	L3: EN16S
26.1	27.4	31.0	10.7
33.3	35.9		
40.5	44.4		



Recommended Gearbox: Planetary Gearbox: AM-28GP, AM-32GP
Recommended Encoder: Encoder S: AM-EN1611S*** 2~3 Channels

For more combination specs, visit Assun Motor website.

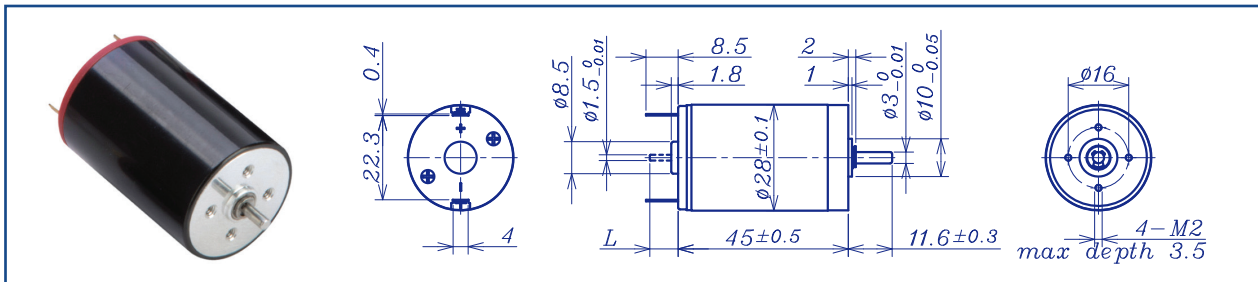
Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage. At elevated ambient temperatures, load current must be reduced.

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AM-CL2845MAN SERIES



Motor Model	Precious metal brush					Ball bearings				
		0606	0604	1206	1204	2406	2404	4806	4805	
Nominal voltage	V	6	6	12	12	24	24	48	48	
No load speed	±12% rpm	6150	4450	6240	4350	5960	4536	6520	4900	
No load current	Max 150% mA	91	59	53	35	25	12	14	9	
Recommend limit for continuous operating	Max cont. torque	mN.m	8.0	11.4	16.4	21.6	22.8	24.6	29.1	29.9
	Rated speed	rpm	5911	4151	5837	3794	5396	3944	5834	4097
	Rated current	mA	950	950	950	860	620	500	430	330
	Rated power	W	4.9	5.0	10.0	8.6	12.9	10.2	17.8	12.8
Starting current	mA	22222	13333	13953	6486	6316	3750	3967	1967	
Stall torque	mN.m	205.3	170.2	254.3	169.0	240.9	188.3	276.9	182.3	
Maximum power output	W	33.1	19.8	41.5	19.3	37.6	22.4	47.3	23.4	
Maximum efficiency	%	88	87	88	86	88	89	88	87	
Terminal resistance	±12% Ω	0.27	0.45	0.86	1.85	3.80	6.4	12.1	24.4	
Inductance	(1KHZ) mH	0.02	0.05	0.11	0.21	0.47	0.77	1.47	3.00	
Mechanical time constant	ms	6.3	6.0	5.2	5.3	5.1	5.0	4.8	5.3	
Moment of inertia	gcm ²	20.1	21.8	20.4	19.8	19.5	19.8	19.5	19.0	
Torque constant	mN.m/A	9.3	12.8	18.3	26.2	38.3	50.4	70.1	93.1	
Speed constant	rpm/V	1029	745	522	364	249	190	136	103	
Speed/torque gradient	rpm/mN.m	30.0	26.2	24.5	25.7	24.7	24.1	23.5	26.9	
Weight	g	140	140	136	136	136	136	136	136	

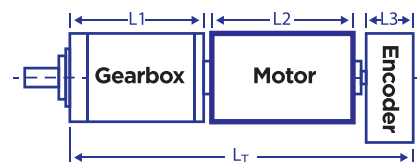
ADDITIONAL INFORMATION

Motor thermal resistance:	15.6 K/W	Motor thermal time constant:	1086 S
Axial (dynamic):	7.3 N	Radial (5mm from mounting face):	28.0 N
Press-fit force (static):	60(120)N	Max allowable screw depth into flange:	3.5 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	Preset
Maximum winding temperature:	85°C	Ambient temperature range:	-30 to °C65
Standard rear shaft diameter:	1.5 mm	Standard rear shaft length "L":	0/3.7 mm

Total Length (Gearbox and Motor): L_T=L1+L2+ L3

L1:28GP	L1: 32GP	L2:CL28	L3: EN16S
26.1	27.4	45.0	10.7
33.3	35.9		
40.5	44.4		

AM-CL2845MAN Combination Scheme



Recommended Gearbox:
Planetary Gearbox:
AM-28GP
AM-32GP

Recommended Encoder:
Encoder S: AM-EN1611S***
2~3 Channels

For more combination specs, visit Assun Motor website.

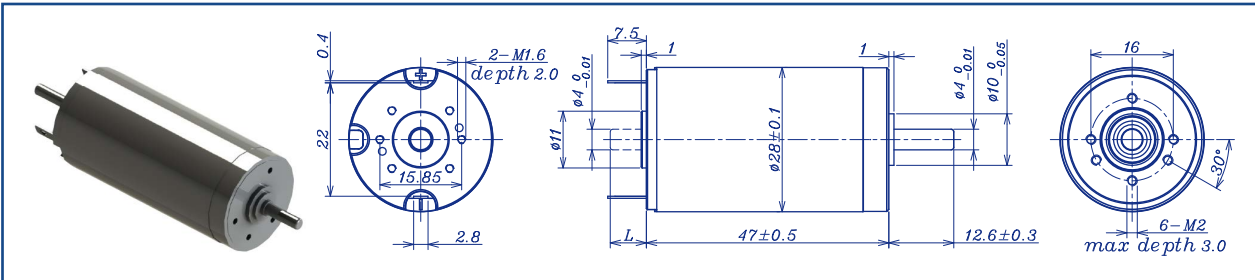
Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage.
At elevated ambient temperatures, load current must be reduced.

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AM-CL2847MAE Series



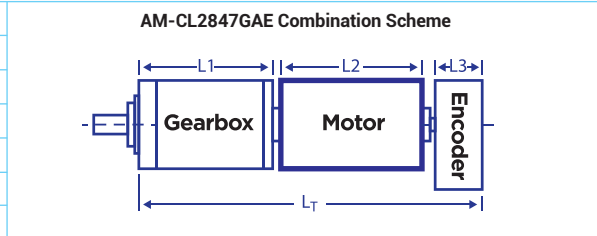
Precious brush Ball bearings

Motor Model		0605	0905	1205	1805	2405	4805
Nominal voltage	V	6	9	12	18	24	48
No load speed	±12% rpm	5110	5200	5100	5220	5100	5200
No load current	Max 150% mA	81	56	40.5	28	20	10.5
Recommend limit for continuous operating	Max cont. torque	mN.m	23.7	35.3	38.3	36.8	39.4
	Rated speed	rpm	4621	4479	4334	4469	4340
	Rated current	mA	2200	2200	1750	1150	900
	Rated power	W	11.5	16.6	17.4	17.2	17.9
Starting current	mA	22222	15517	11429	7826	5926	3200
Stall torque	mN.m	247.4	254.6	255	255.9	264.5	280.2
Maximum power output	W	33.1	34.7	34	35	35.3	38.1
Maximum efficiency	%	88	88	88	88	89	89
Terminal resistance	±12% Ω	0.27	0.58	1.05	2.3	4.05	15
Inductance	(1KHZ) mH	Null	0.087	0.18	Null	Null	2.66
Mechanical time constant	ms	4.9	4.8	4.7	4.8	4.5	4.4
Moment of inertia	gcm ²	22.5	22.5	22.5	22.5	22.5	22.5
Torque constant	mN.m/A	11.2	16.5	22.4	32.8	44.8	87.9
Speed constant	rpm/V	855	580	427	291	213	109
Speed/torque gradient	rpm/mN.m	20.7	20.4	20	20.4	19.3	18.6
Weight	g	158	158	158	158	158	158

ADDITIONAL INFORMATION

Motor thermal resistance:	15.6 K/W	Motor thermal time constant:	1086 S
Axial (dynamic):	7.3 N	Radial (5mm from mounting face):	28.0 N
Press-fit force (static):	60(120)N	Max allowable screw depth into flange:	3.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	Preset
Maximum winding temperature:	125°C	Ambient temperature range:	-40 to 85 °C

Total Length (Gearbox and Motor) L _T =L ₁ +L ₂ +L ₃				
L1:26GP	L1: 28GP	L1:32GP	L2:CL28	L3: EN22S
25.7	26.1	27.4	47.0	10.7
36	33.3	35.9		L3: EN24T
44.5	40.5	44.4		12
53	47.7	52.9		



Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

Recommended Gearbox:
Planetary Gearbox:
AM-26GP
AM-28GP
AM-32GP

Recommended Encoder:
Encoder S: AM-EN221S***
2~3 Channels
Encoder T: AM-EN2412T***
2~3 Channels

For more combination specs, visit Assun Motor website.

Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage.
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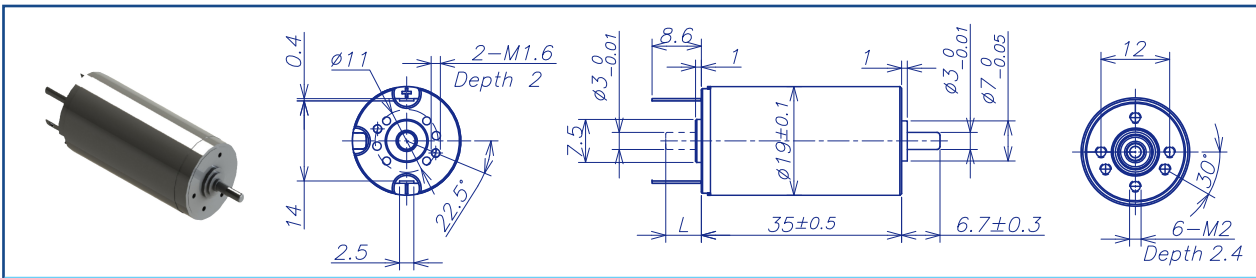
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DC BRUSHED CORELESS MOTOR —
GRAPHITE BRUSH SERIES

Assun Graphite Brush Series Coreless motors are manufactured with coreless rotors and Graphite brush commutators. Benefited from the graphite brushes, these motors are more robust and can operate in higher current which lead to higher torque and power output. It's ideal for applications that need high power output and operate in harsh environments.



AM-CL1935GAE Series



		Graphite brush			Ball bearings				
Motor Model		0613	0913	1213	1813	2413	3613	4813	
Nominal voltage		V	6	9	12	18	24	36	48
No load speed ±12%		rpm	13100	13100	13100	13100	12900	13100	12700
No load current Max 150%		mA	170	110	86	60	45	30	22
Recommend limit for continuous operating	Max cont. torque	mN.m	10.5	11.1	11	11.6	11.5	11.7	11.7
	Rated speed	rpm	10953	11089	11275	11269	11087	11349	10931
	Rated current	mA	2600	1820	1360	950	700	480	350
	Rated power	W	12.1	12.9	13.0	13.7	13.4	13.9	13.4
Starting current		mA	15000	11250	9231	6429	4706	3396	2376
Stall torque		mN.m	64	72	79	83	82	88	84
Maximum power output		W	22.0	24.8	27.2	28.4	27.7	30	28
Maximum efficiency		%	80	81	82	82	81	82	82
Terminal resistance ±12%		Ω	0.4	0.8	1.3	2.8	5.1	10.6	20.2
Inductance (1KHZ)		mH	Null	Null	Null	Null	0.48	Null	Null
Mechanical time constant		ms	7.1	6.3	5.7	5.5	5.4	5.2	5.2
Moment of inertia		gcm ²	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Torque constant		mN.m/A	4.3	6.5	8.7	13	17.6	26	35.8
Speed constant		rpm/V	2208	1470	1102	735	543	367	267
Speed/torque gradient		rpm/mN.m	204.3	181	165.3	158.2	157.3	149.6	150.9
Weight		g	53	53	53	53	53	53	53

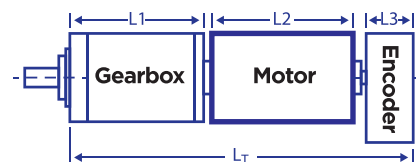
ADDITIONAL INFORMATION

Motor thermal resistance:	26.5 K/W	Motor thermal time constant:	**** S
Axial (dynamic):	2.5 N	Radial (5mm from mounting face):	16.0 N
Press-fit force (static):	16(90)N	Max allowable screw depth into flange:	2.4 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	预压
Maximum winding temperature:	125°C	Ambient temperature range:	-40 to 85°C
Standard rear shaft diameter:	3.0mm	Standard rear shaft length "L":	NO mm

Total Length (Gearbox and Motor): L_T=L₁+L₂+L₃

L1: 19GP	L2: CL19	L3: EN16S	L3: EN16T
18.8	35	10.7	12
23.6			
28.4			
33.2			

AM-CL1935GAE Combination Scheme



Recommended Gearbox:

Planetary Gearbox:
AM-19GP

Recommended Encoder:

Encoder S: AM-EN1611S***
2~3 Channels
Encoder T: AM-EN1612T***
2~3 Channels

For more combination specs, visit Assun Motor website.

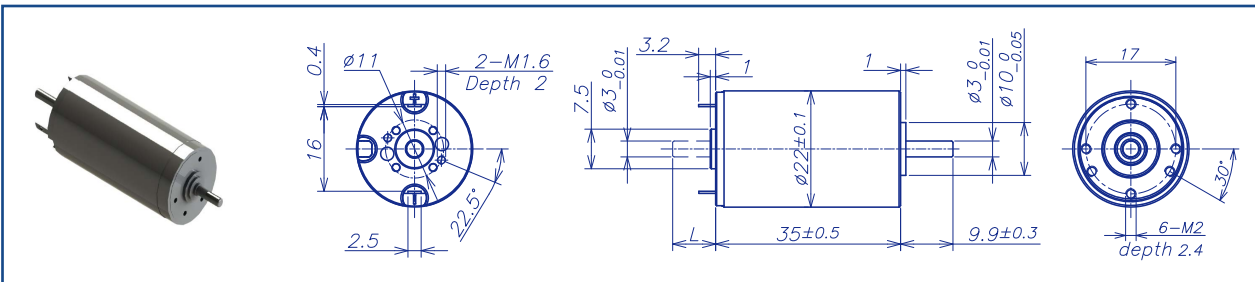
Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage.
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AM-CL2235GAE Series

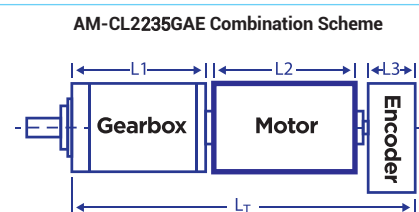


		Graphite brush		Ball bearings				
Motor Model			0612	1212	1812	2412	3612	4812
Nominal voltage		V	6	12	18	24	36	48
No load speed		±12% rpm	12000	11800	12100	12000	12200	12300
No load current		Max 150% mA	330	160	110	80	60	45
Recommend limit for continuous operating	Max cont. torque	mN.m	12.1	13.3	12.5	13.2	12.2	12.7
	Rated speed	rpm	10855	10555	11011	10796	11083	11173
	Rated current	mA	2900	1550	1000	780	500	390
	Rated power	W	13.8	14.7	14.4	14.9	14.2	14.9
Starting current		mA	27273	13333	10000	7059	4865	3810
Stall torque		mN.m	127.1	126.4	138.9	131.8	133.7	138.6
Maximum power output		W	39.9	39	44	41.4	42.7	44.6
Maximum efficiency		%	79	79	80	80	79	79
Terminal resistance		±12% Ω	0.22	0.9	1.8	3.4	7.4	12.6
Inductance (1KHZ)		mH	0.023	0.11	Null	0.35	0.8	1.4
Mechanical time constant		ms	6	6	5.6	5.8	5.8	5.7
Moment of inertia		gcm ²	6.1	6.1	6.1	6.1	6.1	6.1
Torque constant		mN.m/A	4.7	9.6	14	18.9	27.8	36.8
Speed constant		rpm/V	2024	995	680	506	343	259
Speed/torque gradient		rpm/mN.m	94.4	93.4	87.1	91.1	91.2	88.7
Weight		g	75	75	75	75	75	75

ADDITIONAL INFORMATION

Motor thermal resistance:	15.7 K/W	Motor thermal time constant:	709 S
Axial (dynamic):	2.5 N	Radial (5mm from mounting face):	16.0 N
Press-fit force (static):	16(90)N	Max allowable screw depth into flange:	2.4 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	Preset
Maximum winding temperature:	125°C	Ambient temperature range:	-40 to 85 °C

Total Length (Gearbox and Motor): L _T =L1+L2+L3			
L1:24GP	L1:26GP	L2: CL22	L3: EN16S
24	25.7	35	10.7
34.3	36		L3: EN16T
42.8	44.5		12
51.3	53		



Recommended Gearbox:
Planetary Gearbox:
AM-24GP
AM-26GP

Recommended Encoder:
Encoder S: AM-EN1611S***
3 Channels
Encoder T: AM-EN1612T***
3 Channels

For more combination specs, visit Assun Motor website.

Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

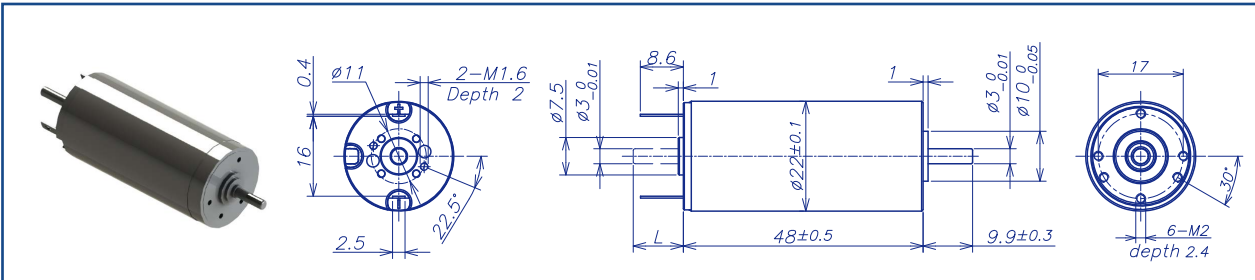
Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage.
At elevated ambient temperatures, load current must be reduced.

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AM-CL2248GAE Series

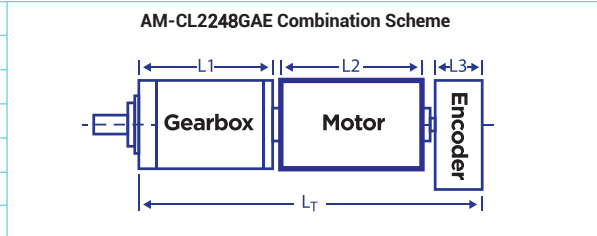
DC BRUSHED MOTOR



		Graphite brush			Ball bearings			
Motor Model		0911	1212	1812	2412	3612	4812	
Nominal voltage		V	9	12	18	24	36	48
No load speed ±12%		rpm	11400	12300	12200	11900	12000	11900
No load current Max 150%		mA	250	210	136	100	65	55
Recommend limit for continuous operating	Max cont. torque	mN.m	19.9	18.4	18.4	18.2	18.9	18.9
	Rated speed	rpm	10657	11582	11510	11189	11287	11183
	Rated current	mA	2900	2200	1450	1050	730	550
	Rated power	W	22.2	22.3	22.2	21.3	22.4	22.2
Starting current		mA	40909	34286	23377	16000	11250	8276
Stall torque		mN.m	304.7	315.5	325.5	304.3	318.6	315
Maximum power output		W	90.9	101.6	104	94.8	100.1	98
Maximum efficiency		%	85	85	85	85	85	84
Terminal resistance ±12%		Ω	0.22	0.35	0.77	1.5	3.2	5.8
Inductance (1KHZ)		mH	0.034	Null	Null	Null	Null	0.94
Mechanical time constant		ms	3.6	3.8	3.6	3.8	3.7	3.7
Moment of inertia		gcm ²	9.3	9.3	9.3	9.3	9.3	9.3
Torque constant		mN.m/A	7.5	9.3	14	19.1	28.5	38.3
Speed constant		rpm/V	1274	1031	682	499	335	250
Speed/torque gradient		rpm/mN.m	37.4	39	37.5	39.1	37.7	38
Weight		g	104	104	104	104	104	104

ADDITIONAL INFORMATION			
Motor thermal resistance:	12.2 K/W	Motor thermal time constant:	835 S
Axial (dynamic):	2.5 N	Radial (5mm from mounting face):	16.0 N
Press-fit force (static):	16(90)N	Max allowable screw depth into flange:	2.4 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	Preset
Maximum winding temperature:	125°C	Ambient temperature range:	-40 to 85 °C

Total Length (Gearbox and Motor): L _T =L ₁ +L ₂ +L ₃			
L1:24GP	L1:26GP	L2:CL22	L3:EN16S
24	25.7	48.0	10.7
34.3	36		L3:EN16T
42.8	44.5		12.0
51.3	53		



Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

Recommended Gearbox:
Planetary Gearbox:
AM-24GP
AM-26GP

Recommended Encoder:
Encoder S: AM-EN1611S***
3 Channels
Encoder T: AM-EN1612T***
3 Channels

For more combination specs, visit Assun Motor website.

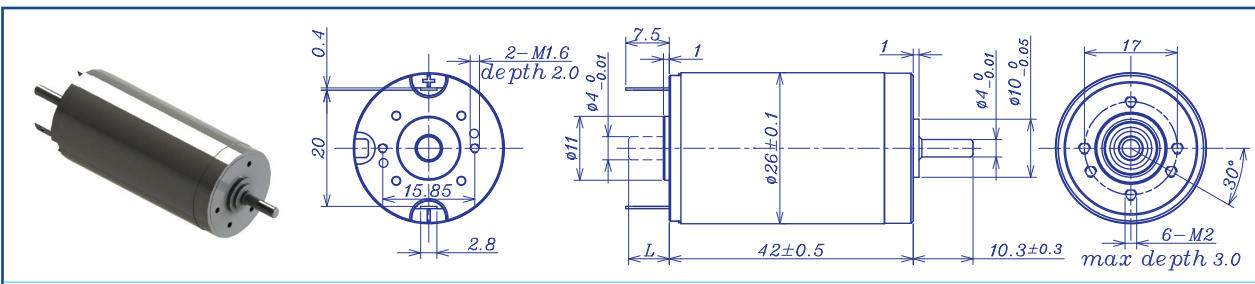
Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage. At elevated ambient temperatures, load current must be reduced.

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AM-CL2642GAE Series

DC BRUSHED MOTOR



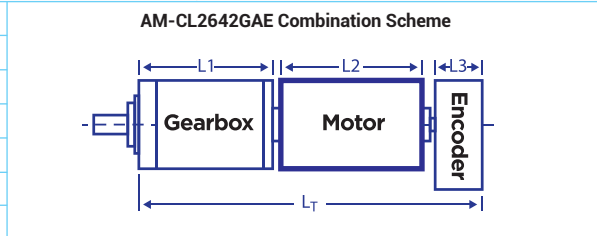
Graphite brush Ball bearings

Motor Model		1210	1810	2410	3610	4810	
Nominal voltage	V	12	18	24	36	48	
No load speed	±12% rpm	10230	10229	9950	10040	10090	
No load current	Max 150% mA	142	95	68	46	35	
Recommend limit for continuous operating	Max cont. torque	mN.m	25.1	25.1	25.2	25.3	25.5
	Rated speed	rpm	9164	9153	8800	8954	9002
	Rated current	mA	2400	1600	1170	790	600
	Rated power	W	24.1	24.1	23.2	23.7	24
Starting current	mA	21818	14400	9600	6923	5275	
Stall torque	mN.m	241.2	238.8	218	233.9	236.4	
Maximum power output	W	64.6	63.9	56.8	61.5	62.5	
Maximum efficiency	%	85	84	84	84	84	
Terminal resistance	±12% Ω	0.55	1.25	2.5	5.2	9.1	
Inductance	(1KHZ) mH	Null	Null	Null	Null	Null	
Mechanical time constant	ms	6.1	6.2	6.6	6.2	6.2	
Moment of inertia	gcm ²	13.8	13.8	13.8	13.8	13.8	
Torque constant	mN.m/A	11.1	16.7	22.9	34	45.1	
Speed constant	rpm/V	858	572	418	281	212	
Speed/torque gradient	rpm/mN.m	42.4	42.8	45.6	42.9	42.7	
Weight	g	122	122	122	122	122	

ADDITIONAL INFORMATION

Motor thermal resistance:	16.5 K/W	Motor thermal time constant:	**** S
Axial (dynamic):	7.3 N	Radial (5mm from mounting face):	28.0 N
Press-fit force (static):	60(120)N	Max allowable screw depth into flange:	3.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	预压
Maximum winding temperature:	125°C	Ambient temperature range:	-40 to 85°C
Standard rear shaft diameter:	4.0 mm	Standard rear shaft length "L":	No mm

Total Length (Gearbox and Motor): L _T =L ₁ +L ₂ +L ₃				
L1:26GP	L1: 28GP	L2:CL26	L3: EN22S	L3:EN24T
25.7	26.1	42	10.7	12.0
36	33.3			
44.5	40.5			
53	47.7			



Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

Recommended Gearbox:
Planetary Gearbox:
AM-26GP
AM-28GP

Recommended Encoder:
Encoder S: AM-EN211S***
2~3 Channels
Encoder T: AM-EN2412T***
2~3 Channels

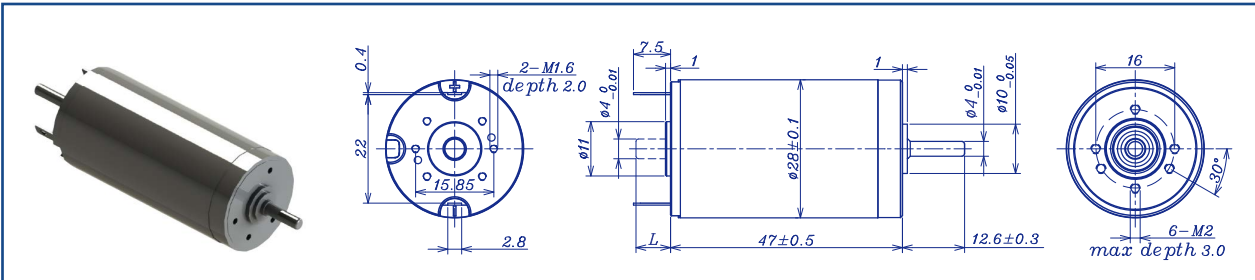
For more combination specs, visit Assun Motor website.

Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage.
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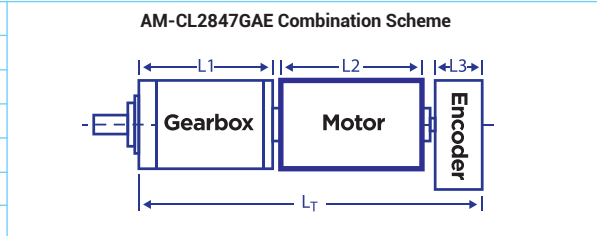
AM-CL2847GAE Series



		Graphite brush			Ball bearings		
Motor Model		1210	1810	2410	3610	4810	6010
Nominal voltage		V	12	18	24	36	60
No load speed ±12%		rpm	9880	10140	10000	10140	10360
No load current Max 150%		mA	165	115	80	60	45
Recommend limit for continuous operating	Max cont. torque	mN.m	27.0	26.8	29.2	25.0	24.2
	Rated speed	rpm	9359	9602	9411	9638	9401
	Rated current	mA	2500	1700	1360	800	600
	Rated power	W	26.4	26.9	28.8	25.2	25.1
Starting current		mA	44444	30000	21818	15000	11429
Stall torque		mN.m	511.7	504.7	496.4	504.5	525.9
Maximum power output		W	132.3	134.0	130.0	133.9	144.0
Maximum efficiency		%	88	88	88	88	88
Terminal resistance ±12%		Ω	0.27	0.6	1.1	2.4	6.2
Inductance (1KHZ)		mH					
Mechanical time constant		ms	4.5	4.7	4.7	4.7	4.6
Moment of inertia		gcm ²	22.5	22.5	22.5	22.5	22.5
Torque constant		mN.m/A	11.6	16.9	22.8	33.8	55.1
Speed constant		rpm/V	826	566	418	283	173
Speed/torque gradient		rpm/mN.m	19.3	20.1	20.1	20.1	19.5
Weight		g	158	158	158	158	158

ADDITIONAL INFORMATION			
Motor thermal resistance:	15.6 K/W	Motor thermal time constant:	1086 S
Axial (dynamic):	7.3 N	Radial (5mm from mounting face):	28.0 N
Press-fit force (static):	60(120)N	Max allowable screw depth into flange:	3.5 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	Preset
Maximum winding temperature:	85°C	Ambient temperature range:	-30 to °C65
Standard rear shaft diameter:	1.5 mm	Standard rear shaft length "L":	0/3.7 mm

Total Length (Gearbox and Motor) L _T =L ₁ +L ₂ +L ₃			
L1:28GP	L1: 32GP	L2:CL28	L3: EN22S
25.9	27.4	47.0	10.7
33.1	35.9		L3: EN24T
40.3	44.4		12



Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

Recommended Gearbox:
Planetary Gearbox:
AM-28GP
AM-32GP

Recommended Encoder:
Encoder S: AM-EN221S***
2~3 Channels
Encoder T: AM-EN241T***
2~3 Channels

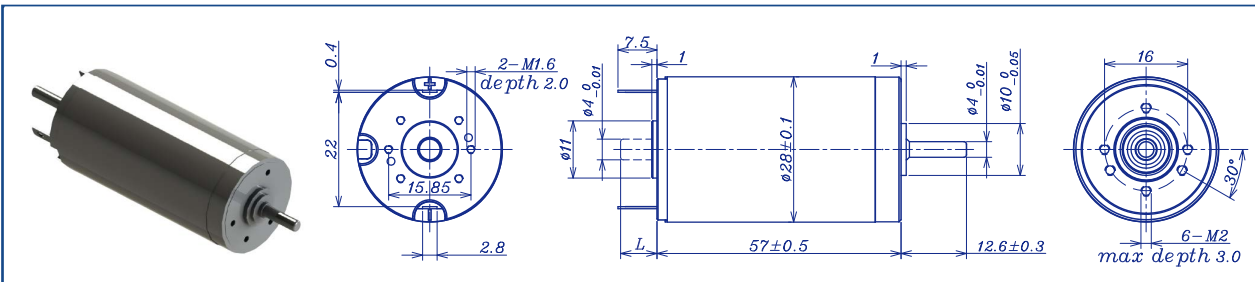
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AM-CL2857GAE Series

DC BRUSHED MOTOR



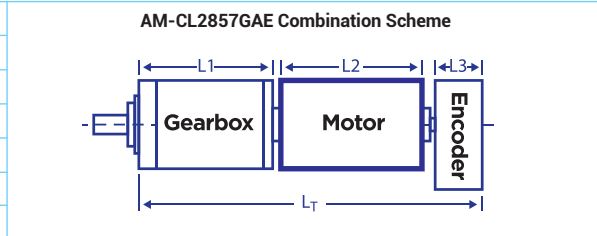
	Graphite brush	Ball bearings					
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Motor Model		1211	1811	2410	3611	4811	6010	
Nominal voltage	V	12	18	24	36	48	60	
No load speed	±12% rpm	10900	11400	10266	10960	10680	10290	
No load current	Max 150% mA	210	155	95	72	53	40	
Recommend limit for continuous operating	Max cont. torque	mN.m	55.5	51.8	55.8	54.1	55.5	54.4
	Rated speed	rpm	10177	10744	9643	10338	10044	9667
	Rated current	mA	5500	3600	2600	1800	1350	1020
	Rated power	W	59.1	58.3	56.3	58.5	58.4	55.1
Starting current	mA	80000	60000	41379	30508	21818	16216	
Stall torque	mN.m	836.6	900	919.5	952.4	931.9	898.5	
Maximum power output	W	238.7	268.6	247.1	273.3	260.5	242	
Maximum efficiency	%	90	90	91	91	90	90	
Terminal resistance	±12% Ω	0.15	0.3	0.58	1.18	2.2	3.7	
Inductance	(1KHZ) mH	Null	Null	0.11	Null	Null	Null	
Mechanical time constant	ms	3.9	3.8	3.3	3.4	3.4	3.4	
Moment of inertia	gcm ²	28.4	28.4	28.4	28.4	28.4	28.4	
Torque constant	mN.m/A	10.5	15.0	22.3	31.3	42.8	55.5	
Speed constant	rpm/V	911	635	429	305	223	172	
Speed/torque gradient	rpm/mN.m	13.0	12.7	11.2	11.5	11.5	11.5	
Weight	g							

ADDITIONAL INFORMATION

Motor thermal resistance:	12.4 K/W	Motor thermal time constant:	**** S
Axial (dynamic):	7.3 N	Radial (5mm from mounting face):	28.0 N
Press-fit force (static):	60(120)N	Max allowable screw depth into flange:	3.5 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	预压
Maximum winding temperature:	125°C	Ambient temperature range:	-40 to 85°C
Standard rear shaft diameter:	4.0 mm	Standard rear shaft length "L":	No mm

Total Length (Gearbox and Motor): L _T =L ₁ +L ₂ + L ₃				
L1:26GP	L1:28GP	L1:32GP	L2: CL28	L3: EN22S
25.7	26.1	27.4	57	10.7
36	33.3	35.9		L3: EN24T
44.5	40.5	44.4		12
53	47.7	52.9		



Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

Recommended Gearbox:
Planetary Gearbox:
AM-26GP
AM-28GP
AM-32GP

Recommended Encoder:
Encoder S: AM-EN221S***
2~3 Channels
Encoder T: AM-EN2412T***
2~3 Channels

For more combination specs, visit Assun Motor website.

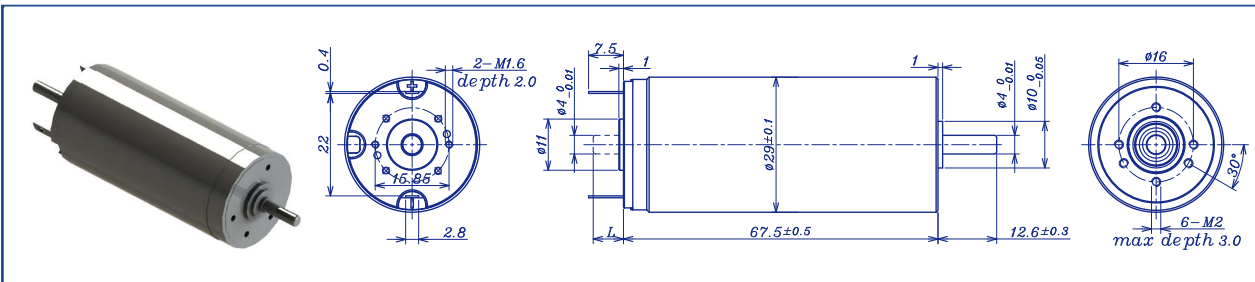
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DC BRUSHED CORELESS MOTOR _
Graphite Brush

AM-CL2968GAE Series



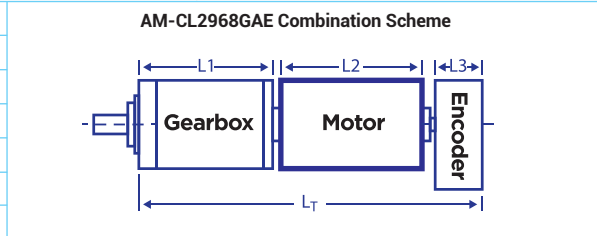
Graphite brush Ball bearings

Motor Model		1210	1810	2410	3610	4810	6010
Nominal voltage	V	12	18	24	36	48	60
No load speed	±12% rpm	9790	9780	9800	9760	9780	9770
No load current	Max 150% mA	240	160	120	80	65	55
Recommend limit for continuous operating	Max cont. torque	mN.m	56.7	62.1	67.2	63.9	64.8
	Rated speed	rpm	9233	9221	9270	9216	9271
	Rated current	mA	5100	3700	3000	1900	1450
	Rated power	W	54.8	59.9	65.2	61.7	62.9
Starting current	mA	85714	62069	53333	32727	26667	20690
Stall torque	mN.m	997.7	1085.3	1241.6	1147.1	1243.7	1206.9
Maximum power output	W	255.7	277.9	318.6	293.1	318.4	308.7
Maximum efficiency	%	90	90	91	90	90	90
Terminal resistance	±12% Ω	0.14	0.29	0.45	1.1	1.8	2.9
Inductance	(1KHZ) mH	0.094					
Mechanical time constant	ms	3.6	3.3	2.9	3.1	2.9	3
Moment of inertia	gcm ²	35.3	35.3	35.3	35.3	35.3	35.3
Torque constant	mN.m/A	11.7	17.5	23.3	35.1	46.8	58.5
Speed constant	rpm/V	818	545	409	272	204	163
Speed/torque gradient	rpm/mN.m	9.8	9	7.9	8.5	7.9	8.1
Weight	g	268	268	268	268	268	268

ADDITIONAL INFORMATION

Motor thermal resistance:	10.6 K/W	Motor thermal time constant:	**** S
Axial (dynamic):	7.3 N	Radial (5mm from mounting face):	28.0 N
Press-fit force (static):	60(120)N	Max allowable screw depth into flange:	3.5 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	预压
Maximum winding temperature:	125°C	Ambient temperature range:	-40 to 85°C
Standard rear shaft diameter:	4.0 mm	Standard rear shaft length "L":	L mm

Total Length (Gearbox and Motor): L _T =L ₁ +L ₂ + L ₃				
L1:26GP	L1:28GP	L1:32GP	L2: CL28	L3: EN22S
25.7	26.1	27.4	57	10.7
36	33.3	35.9		L3: EN24T
44.5	40.5	44.4		12
53	47.7	52.9		



Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

Recommended Gearbox:
Planetary Gearbox:
AM-26GP
AM-28GP
AM-32GP

Recommended Encoder:
Encoder S: AM-EN221S***
2~3 Channels
Encoder T: AM-EN241T***
2~3 Channels

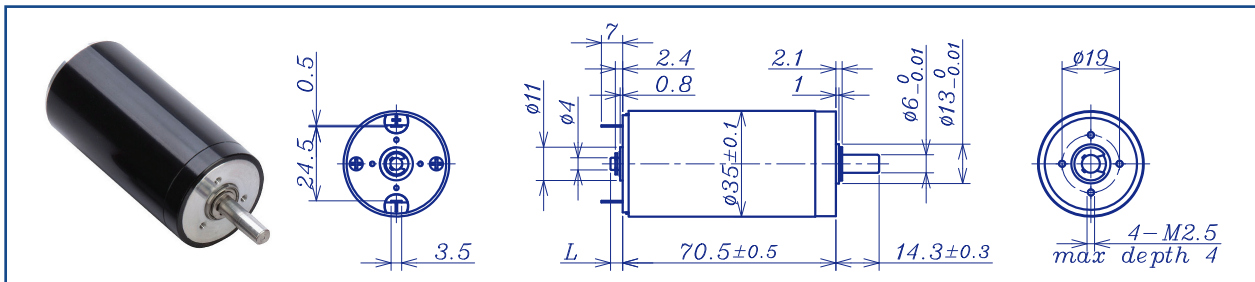
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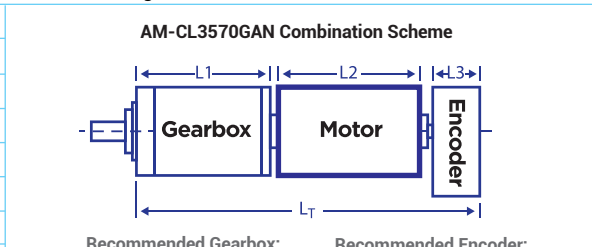
AM-CL3570GAN SERIES



		Graphite brush					Ball Bearings				
Motor Model		1206	1204	2408	2406	2404	4806	4804	4803	4802	
Nominal voltage	V	12	12	24	24	24	48	48	48	48	
No load speed ±12%	rpm	6140	4150	7800	5930	4020	6060	4040	3240	1756	
No load current +150%	mA	190	130	155	100	70	55	33	26	12	
Recommended Limit for Continuous Running	Max cont. torque	mN.m	63.3	73.3	59.9	69.3	81.1	67.4	86.6	100.3	
	Rated Speed	rpm	5632	3695	7433	5506	3541	5686	3573	1223	
	Rated Current	mA	3600	2800	2200	1900	1500	950	800	650	
	Rated Power	W	37.4	28.4	46.6	40.0	30.1	40.2	32.4	25.2	
Starting current	mA	41379	24490	43636	25263	12060	14545	6667	4068	1290	
Stall torque	mN.m	765	669	1274	969	680	1092	749	568	331	
Max power output	W	123.0	72.7	260.2	150.4	71.5	173.2	79.2	48.2	15.2	
Maximum Efficiency	%	87	86	88	88	85	88	86	85	82	
Terminal R ±12%	Ω	0.29	0.49	0.55	0.95	1.99	3.3	7.2	11.8	37.2	
Inductance (1KHz)	mH	0.036	0.11	0.11	0.21	0.45	0.83	1.71	2.75	9.6	
Mech. time constant	ms	8.8	7.1	7.1	6.9	6.5	6.1	6.2	6.4	6.2	
Moment of inertia	gcm ²	105.3	108.7	111	108.4	105.6	104.4	110.5	106.4	110.8	
Torque constant	mN.m/A	18.6	27.5	29.3	38.5	56.7	75.4	112.9	140.6	258.6	
Speed constant	rpm/V	514	348	326	248	168	127	85	68	37	
Speed/torque gradient	rpm/mN.m	8.0	6.2	6.1	6.1	5.9	5.6	5.4	5.7	5.3	
Weight	g	348.3	350.2	350.2	350.5	348.2	347.4	351.4	348.7	351.6	

ADDITIONAL INFORMATION			
Motor thermal resistance:	9.1K/W	Motor thermal time constant:	1352S
Axial (dynamic):	5.5 N	Radial (5mm from mounting face):	28.0 N
Press-fit force (static):	100(1000) N	Max allowable screw depth into flange:	4.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	Preset
Maximum winding temperature:	85°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	4 mm	Standard rear shaft length "L":	3.7/5.5 mm

Total Length (Gearbox and Motor) _T =L1+L2+L3				
L1:36GP	L1:40GP	L1:45GP	L2:CL35	L3:EN225
39.6	46.8	62.8	70.5	10.7
				L3:EN24T
				12.0



Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

Recommended Gearbox:
Planetary Gearbox:
AM-36GP
AM-40GP
AM-45GP

Recommended Encoder:
Encoder S: AM-EN221S***
2~3 Channels
Encoder T: AM-EN241T***
2~3 Channels

For more combination specs, visit Assun Motor website.

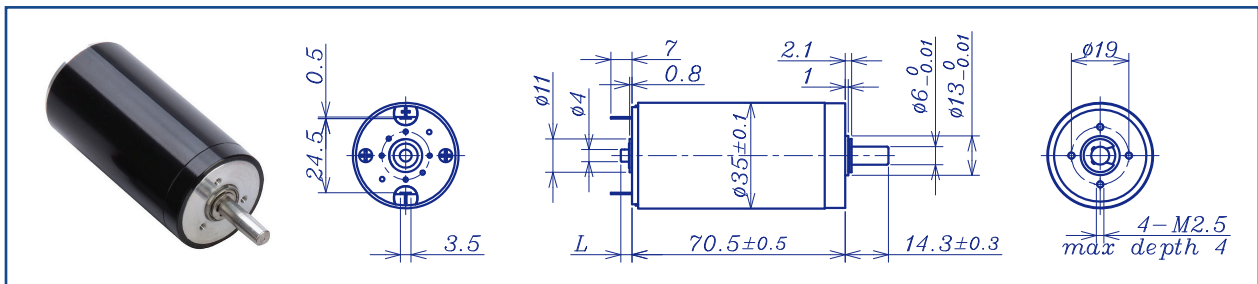
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DC BRUSHED CORELESS MOTOR ____
GRAPHITE BRUSH

AM-CL3570GAF SERIES (155°C)

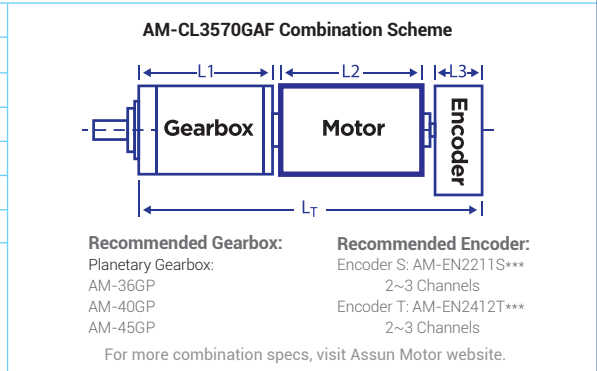


DC BRUSHED MOTOR

		Graphite brush				Ball Bearings				
Motor Model		1206	1204	2408	2406	2404	4806	4804	4803	4802
Nominal voltage	V	12	12	24	24	24	48	48	48	48
No load speed ±12%	rpm	6400	4320	8130	6180	4190	6310	4210	3380	1830
No load current +150%	mA	182	125	130	96	67	53	32	25	12
Recommended Limit for Continuous Running	Max cont. torque	mN.m	96.6	112.8	103.1	107.3	116.0	104.7	115.7	126.1
	Rated Speed	rpm	5558	3562	7444	5467	3445	5584	3532	2648
	Rated Current	mA	5600	4400	3800	3000	2200	1500	1100	900
	Rated Power	W	56.2	42.1	80.4	61.4	41.9	61.2	42.8	32.7
Starting current	mA	41379	24490	43636	25263	12060	12632	6667	4068	1290
Stall torque	mN.m	734	643	1223	930	652	910	719	545	317
Max power output	W	123.0	72.7	260.3	150.4	71.6	150.3	79.2	48.2	15.2
Maximum Efficiency	%	87	86	89	88	86	87	87	85	82
Terminal R ±12%	Ω	0.29	0.49	0.55	0.95	1.99	3.3	7.2	11.8	37.2
Inductance (1KH _z)	mH	0.036	0.11	0.11	0.21	0.45	0.83	1.71	2.75	9.6
Mech. time constant	ms	9.6	7.6	7.7	7.5	7.1	7.6	6.8	6.9	6.7
Moment of inertia	gcm ²	105.3	108.7	111	108.4	105.6	104.4	110.5	106.4	110.8
Torque constant	mN.m/A	17.8	26.4	28.1	36.9	54.4	72.3	108.4	134.8	248.1
Speed constant	rpm/V	536	362	340	258	176	132	88	71	38
Speed/torque gradient	rpm/mN.m	8.7	6.7	6.6	6.6	6.4	6.9	5.9	6.2	5.8
Weight	g	348.3	350.2	350.2	350.5	348.2	347.4	351.4	348.7	351.6

ADDITIONAL INFORMATION			
Motor thermal resistance:	9.1K/W	Motor thermal time constant:	1352S
Axial (dynamic):	5.5 N	Radial (5mm from mounting face):	28.0 N
Press-fit force (static):	100(1000) N	Max allowable screw depth into flange:	4.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	Preset
Maximum winding temperature:	155°C	Ambient temperature range:	-40 to 100°C
Standard rear shaft diameter:	4 mm	Standard rear shaft length "L":	3.7/5.5 mm

Total Length (Gearbox and Motor) _T =L1+L2+L3				
L1:36GP	L1:40GP	L1:45GP	L2:CL35	L3:EN225
39.6	46.8	60.1	70.5	10.7
				L3:EN24T
				12.0



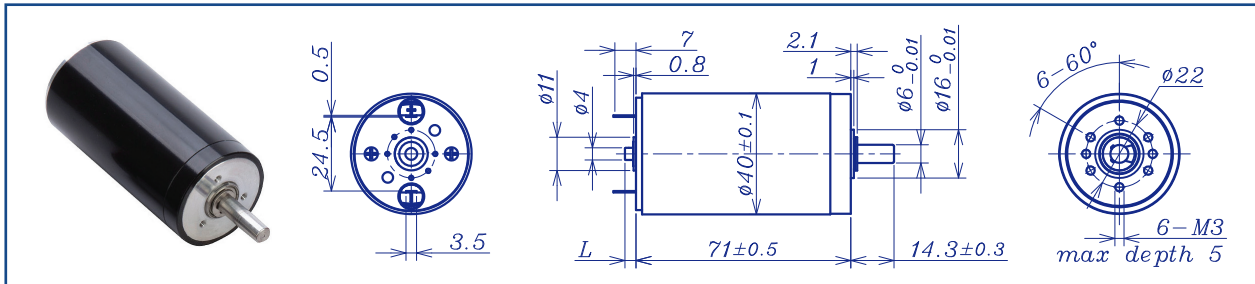
Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage. At elevated ambient temperatures, load current must be reduced.

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AM-CL4071GAE SERIES (125 °C)



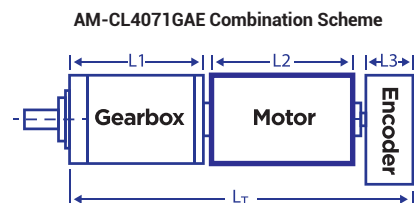
		Graphite brush			Ball Bearings				
Motor Model		1207	2408	4808	4806	4805	4804	4803	4802
Nominal voltage	V	12	24	48	48	48	48	48	48
No load speed ±12%	rpm	6800	8450	8900	6300	5400	(\$\$\$ &,\$\$	2050	
No load current Max 150%	mA	275	170	70	65	56	36	25	22
Recommend limit for continuous operation	Max cont. torque	mN.m	96.1	144.3	150.6	169.5	173.0	90)*	186.0
	Rated Speed	rpm	6312	7905	8235	5747	4823	' '* %	1470
	Rated Current	mA	6000	5500	3000	2400	2100	1400	1000
	Rated Power	W	63.5	119.4	130.4	102.0	87.4	54.,	35.6
Starting current	mA	80000	82759	41206	26667	19200	,) +%	4174	2981
Stall torque	mN.m	1339	2235	2106	1931	1620	- 74	* +)	657
Maximum power output	W	238.4	494.5	490.6	318.4	229.1	%\$&"\$	49.5	35.3
Maximum Efficiency	%	89	91	92	90	89	87	85	84
Terminal resistance ±12%	Ω	0.15	0.29	1.17	1.8	2.5	)**	11.5	16.1
Inductance (1KH ₂)	mH		0.\$,	0.34		0.76			
Mechanical time constant	ms	6.6	4.9	5.3	4.1	4.2	)"	)"&	3.9
Moment of inertia	gcm ²	123.5	122.6	120.8	120.8	120.2	122.2	120.5	120.7
Torque constant	mN.m/A	16.8	27.1	51.4	72.6	84.6	%\$("%	%&"+	221.9
Speed constant	rpm/V	569	353	186	132	113	, (	5-	43
Speed/torque gradient	rpm/mN.m	5.1	3.8	4.2	3.3	3.3	("%	3.2	3.1
Weight	g	495	496	498	495	496	497	495	496

ADDITIONAL INFORMATION

Motor thermal resistance:	K/W	Motor thermal time constant:	S
Axial (dynamic):	5.5 N	Radial (5mm from mounting face):	29.0 N
Press-fit force (static):	100(1000) N	Max allowable screw depth into flange:	5.0 mm
Maximum radial play (5mm from mounting face):	≤0.02 mm	Axial play:	Preset
Maximum winding temperature:	125°C	Ambient temperature range:	-30 to 65°C
Standard rear shaft diameter:	4 mm	Standard rear shaft length "L":	3.7/5.5 mm

Total Length (Gearbox and Motor)_T=L1+L2+L3

L1:40GP	L1:45GP	L2: CL40	L3:EN225	L3:EN24T
46.8	60.1	71	10.7	12.0
58.3	72.1			
69.8				



Recommended Gearbox:
Planetary Gearbox:
AM-40GP
AM-45GP

Recommended Encoder:
Encoder S: AM-EN2211S***
2~3 Channels
Encoder T: AM-EN2412T***
2~3 Channels

For more combination specs, visit Assun Motor website.

Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.

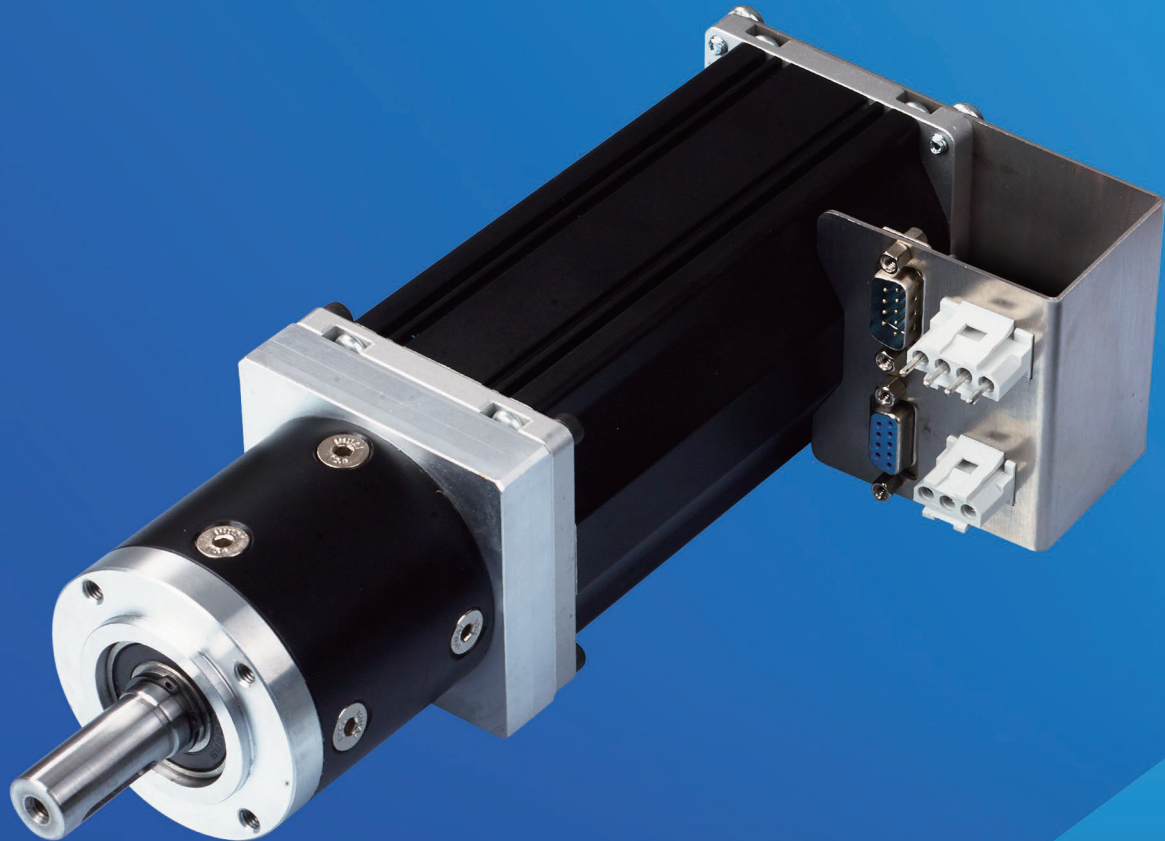
Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage. At elevated ambient temperatures, load current must be reduced.

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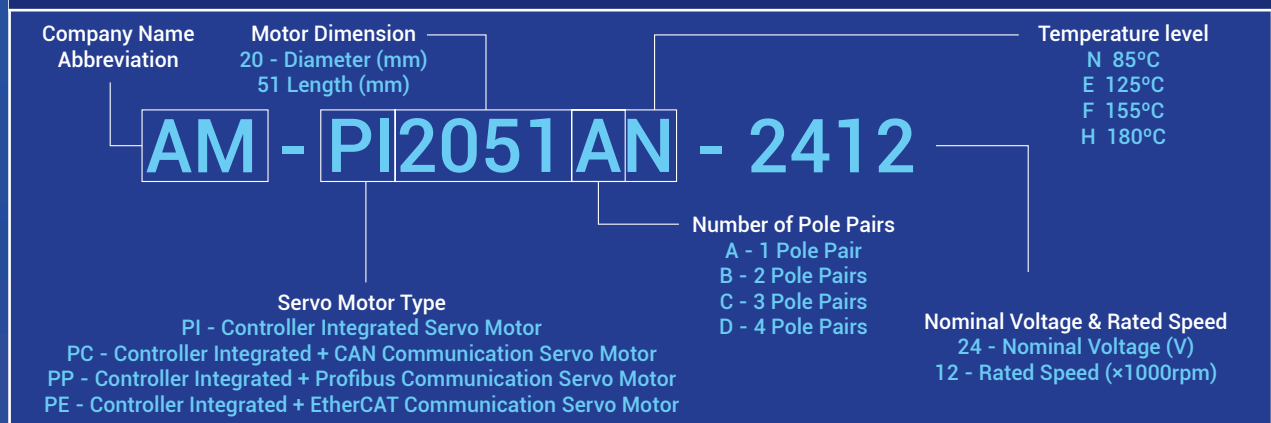
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INTEGRATED SERVO MOTOR

Assun Servo Motors are built with servo controller integrated inside the Assun brushless motor. With diameter from 20mm to 65mm, Assun servo motors can be connected directly to the industrial PLC and are ideal for applications that need simple and precise position control.



AM-PI2051AN AM-PI2466AN AM-PI2858AN AM-PI3273AN
AM-PI3675AN AM-PI45115AN AM-PC65140DN



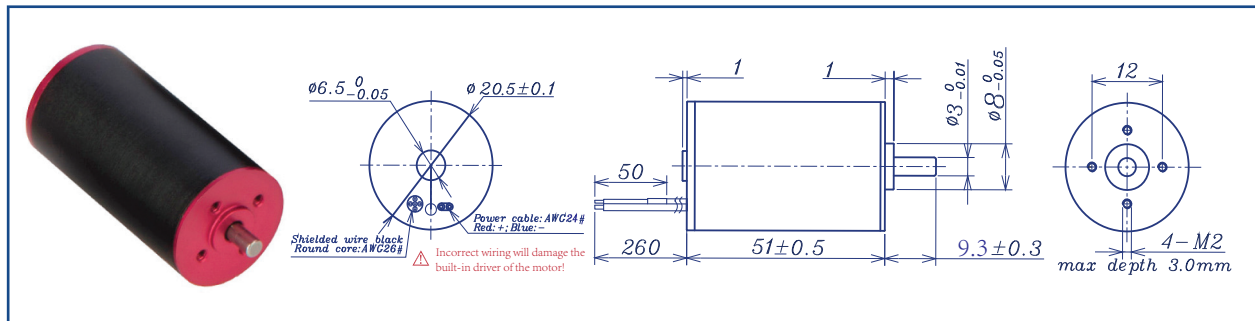
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ASSUN SERVO MOTOR
PULSE & CAN BUS CONTROL

Assun Servo Motor are DC brushless motors with integrated position servo controller. It uses traditional analogue or digital signal input for position control. As feedback function integrated inside, no more encoders are needed and thus achieving compact overall sizes.



AM-PI2051AN SERIES (Built-In Position Control)



	Brushless Servo Motor		Ball Bearing	
Motor Model		2412	1210	
Nominal voltage	V	24	12	
Voltage range	V	21.5~26.5	10.5~13.5	
No-load holding current	mA	45	45	
Static holding torque	mN·m	10.0	10.0	
Static holding current	mA	150	330	
Rated torque	mN·m	10.0	10.0	
Rated speed	rpm	12000	10000	
Pulse number / circle	Pulse / circle	256	256	
Overload torque	mN.m	20.0	20.0	
Maximum overload time	second	3	3	
Moment of inertia	gcm ²	1.13	1.13	
Weight	g	78.5	78.5	

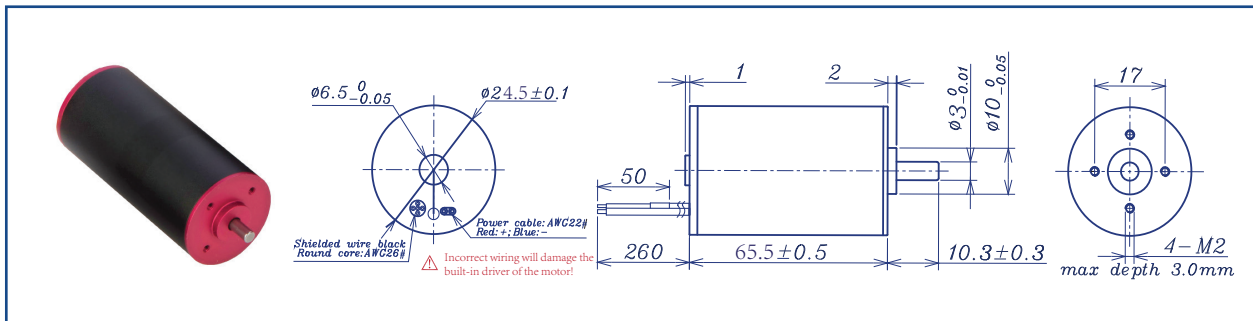
Additional Information			
Note: Excessive shock loads and periodic oscillations can cause the motor to run unsteadily. Stabilize the system by improving the load.			
Motor thermal resistance:	14.6K/W	Motor thermal time constant:	680S
Axial (dynamic):	2.5 N	Radial (5mm from head face):	16.0 N
Press-fit force (static):	50 N	L: Max allowable screw depth info flange:	3.0 mm
Maximum radial runout (5mm from the thread surface):	≤0.02 mm	Axial play:	0 (<4.0N)
Maximum winding temperature	85°C	Ambient temperature range:	-30 to 65 °C

Part Information			
Control function description		<p>Wiring diagram</p>	<p>Recommended pulse control curve</p>
Input level description	VIL max 1.2V ; VIH min 22V		
Pulse input (red)	Falling edge is valid		
Steering input (yellow)	High CW Low CCW		
Input GND (white)	Universal input port		
Total Length: LT=L1+L2+L3			
L1:19GP	L1:24GP	L2 :PI2052	
18.8	22.2	51.5	
23.6	27.4		
28.4	32.6		
<p>Note: The customer can select the gearbox to match the motor. It is recommended to weld motor shaft gears, some of which are listed here for reference.</p>		<p>AM-PI2051AN Combination Scheme</p> <p>Recommended Gearbox: AM-19GP AM-24GP</p> <p>For more combination specs, visit Assun Motor website.</p>	

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AM-PI2466AN SERIES (Built-In Position Control)



	Brushless Servo Motor	Ball Bearing	
Motor Model		2410	1209
Nominal voltage	V	24	12
Voltage range	V	21.5~26.5	10.5~13.5
No-load holding current	mA	45	45
Static holding torque	mN_m	20.0	22.0
Static holding current	mA	250	490
Rated torque	mN_m	20.0	22.0
Rated speed	rpm	10000	9000
Pulse number / circle	Pulse / circle	256	256
Overload torque	mN.m	40.0	40.0
Maximum overload time	second	3	3
Moment of inertia	gcm ²	3.45	3.45
Weight	g	142	142

Additional Information			
Note: Excessive shock loads and periodic oscillations can cause the motor to run unsteadily. Stabilize the system by improving the load.			
Motor thermal resistance:	10.5 K/W	Motor thermal time constant:	768 S
Axial (dynamic):	2.5 N	Radial (5mm from head face):	16.0 N
Press-fit force (static):	50 N	L: Max allowable screw depth into flange:	3.0 mm
Maximum radial runout (5mm from the thread surface):	≤0.02 mm	Axial play:	0 (<4.0N)
Maximum winding temperature	85°C	Ambient temperature range:	-30 to 65 °C

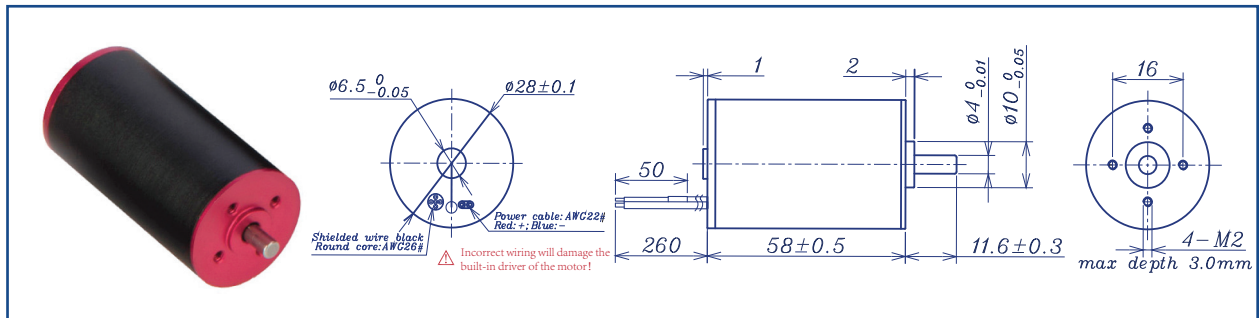
Part Information					
Control function description		<p>Wiring diagram</p>	<p>Recommended pulse control curve</p>		
Input level description	VIL max 1.2V ; VIH min (Vcc-2.0)V				
Pulse input (Red)	Falling edge is valid				
Steering input (White)	High CW Low CCW				
Enable input (Yellow)	Low Voltage Enable				
Feedback Pulse (Green)	32 pulses / rev				
Input GND (black)	Universal input port				
Total Length: LT=L1+L2+L3					
L1:24GP	L1:26GP	L2 :PI2052	L3		
24	25.7	65.5			
34.3	36				
42.8	44.5				
51.3	53				
<p>AM-PI2466AN Combination Scheme</p> <p>Recommended Gearbox: AM-24GP AM-26GP</p> <p>For more combination specs, visit Assun Motor website.</p>					
<p>Note: The customer can select the gearbox to match the motor. It is recommended to weld motor shaft gears, some of which are listed here for reference.</p>					

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SERVO MOTOR

AM-PI2858AN SERIES (Built-In Position Control)



	Brushless Servo Motor	Ball Bearing
Motor Model	2410	
Nominal voltage	V 24	
Voltage range	V 21.5~26.5	
No-load holding current	mA 45	
Static holding torque	mN·m 29.0	
Static holding current	mA 250	
Rated torque	mN·m 29.0	
Rated speed	rpm 10000	
Pulse number / circle	Pulse / circle 256	
Overload torque	mN.m 50.0	
Maximum overload time	second 3	
Moment of inertia	gcm ² 6.19	
Weight	g 155	

Additional Information

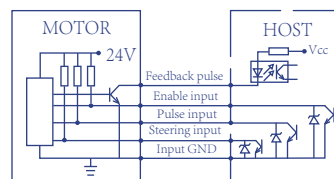
Note: Excessive shock loads and periodic oscillations can cause the motor to run unsteadily. Stabilize the system by improving the load.

Motor thermal resistance:	10.2 K/W	Motor thermal time constant:	822 S
Axial (dynamic):	4.0 N	Radial (5mm from head face):	16.0 N
Press-fit force (static):	50 N	Max allowable screw depth info flange:	3.0 mm
Maximum radial runout (5mm from the thread surface):	≤0.02 mm	Axial play:	0 (<4.0N)
Maximum winding temperature	85°C	Ambient temperature range:	-30 to 65 °C

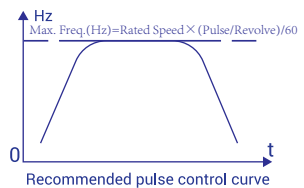
Part Information

Control function description

Input level description	VIL max 1.2V ; VIH min 22V
Pulse input (red)	Falling edge is valid
Direction control (white)	High CW Low CCW
Enable input (yellow)	VIL Enable
Feedback pulse (green)	32 pulse / rev
Input GND (black)	Universal input port



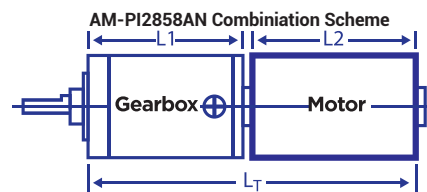
Wiring diagram



Total Length $L_T=L_1+L_2+L_3$

L1:28GP	L1:32GP	L2 :PI28	L3
26.1	27.4	58.0	
33.3	35.9		
40.5	44.4		

Note: The customer can select the gearbox to match the motor. It is recommended to weld motor shaft gears, some of which are listed here for reference.



Recommended Gearbox:

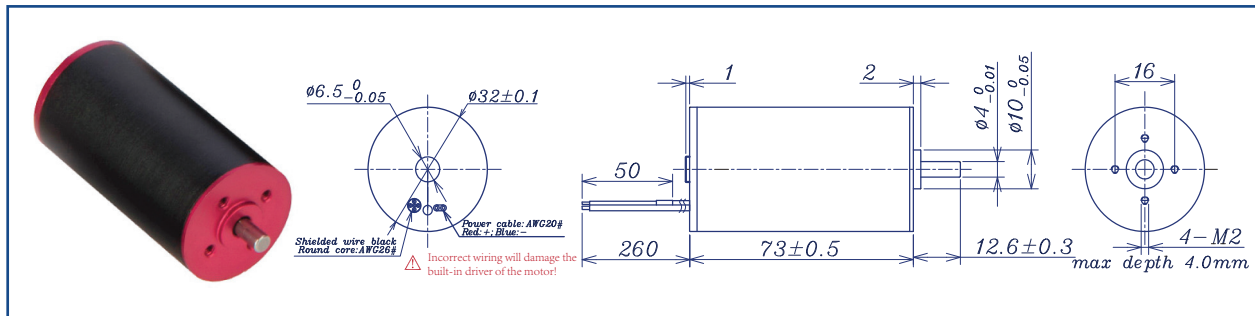
AM-28GP
AM-32GP

For more combination specs, visit Assun Motor website.

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AM-PI3273AN SERIES (Built-In Position Control)



	Brushless Servo Motor	Ball Bearing
Motor Model	2410	
Nominal voltage	V 24	
Voltage range	V 21.5~26.5	
No-load holding current	mA 45	
Static holding torque	mN·m 35.0	
Static holding current	mA 320	
Rated torque	mN·m 35.0	
Rated speed	rpm 10000	
Pulse number / circle	Pulse / circle 256	
Overload torque	mN.m 70.0	
Maximum overload time	second 3	
Moment of inertia	gcm ² 13.3	
Weight	g 270	

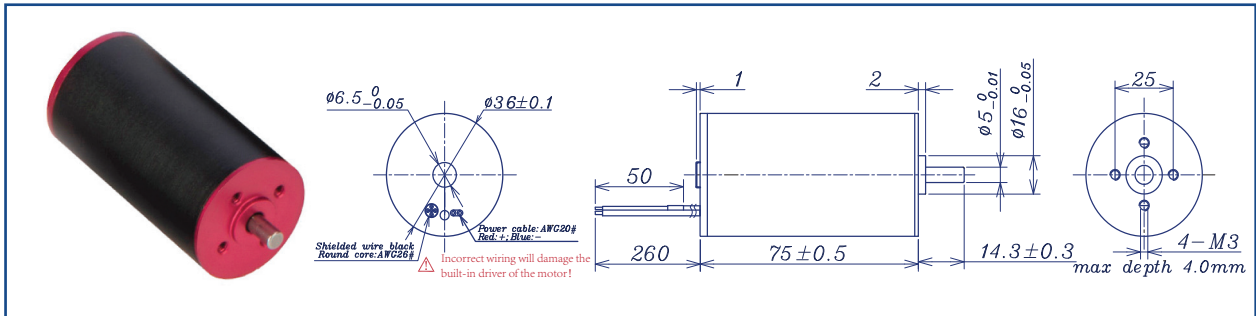
Additional Information			
Note: Excessive shock loads and periodic oscillations can cause the motor to run unsteadily. Stabilize the system by improving the load.			
Motor thermal resistance:	7.8 K/W	Motor thermal time constant:	1089 S
Axial (dynamic):	6.0 N	Radial (5mm from head face):	16.0 N
Press-fit force (static):	50 N	Max allowable screw depth into flange:	4.0 mm
Maximum radial runout (5mm from the thread surface):	≤0.02 mm	Axial play:	0 (<6.0N)
Maximum winding temperature	85°C	Ambient temperature range:	-30 to 65 °C

Part Information				
Control function description		<p>Wiring diagram</p>	<p>Recommended pulse control curve</p>	
Input level description	VIL max 1.2V ; VIH min 22V			
Pulse input (red)	Falling edge is valid			
Direction control (white)	High CW Low CCW			
Enable input (yellow)	VIL Enable			
Feedback pulse (green)	32 pulse / rev			
Input GND (black)	Universal input port			
Total Length LT=L1+L2+L3				
L1:32GP	L1:36GP	L2 :PI32	L3	
27.4	39.6	73.0		
35.9	48.6			
44.4	57.6			
<p>AM-PI3273AN Combination Scheme</p>				<p>Recommended Gearbox:</p> <p>AM-32GP AM-36GP</p> <p>For more combination specs, visit Assun Motor website.</p>
<p>Note: The customer can select the gearbox to match the motor. It is recommended to weld motor shaft gears, some of which are listed here for reference.</p>				

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AM-PI3675AN SERIES (Built-In Position Control)



Brushless Servo Motor		Ball Bearing	
Motor Model		2410	
Nominal voltage	V	24	
Voltage range	V	21.5~26.5	
No-load holding current	mA	45	
Static holding torque	mN·m	52.0	
Static holding current	mA	350	
Rated torque	mN·m	52.0	
Rated speed	rpm	10000	
Pulse number / circle	Pulse / circle	256	
Overload torque	mN.m	80.0	
Maximum overload time	second	3	
Moment of inertia	gcm ²	16.75	
Weight	g	345	

Additional Information

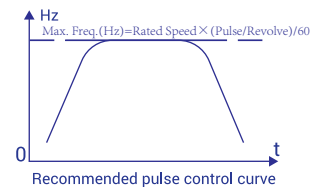
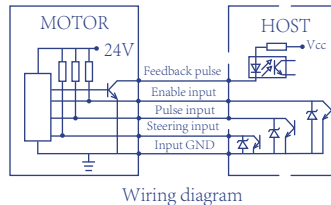
Note: Excessive shock loads and periodic oscillations can cause the motor to run unsteadily. Stabilize the system by improving the load.

Motor thermal resistance:	6.9 K/W	Motor thermal time constant:	1188 S
Axial (dynamic):	6.0 N	Radial (5mm from head face):	16.0 N
Press-fit force (static):	50 N	Max allowable screw depth into flange:	4.0 mm
Maximum radial runout (5mm from the thread surface):	≤0.02 mm	Axial play:	0 (<6.0N)
Maximum winding temperature	85°C	Ambient temperature range:	-30 to 65 °C

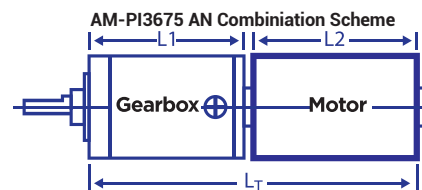
Part Information

Control function description

Input level description	VIL max 1.2V ; VIH min 22V
Pulse input (red)	Falling edge is valid
Direction control (white)	High CW Low CCW
Enable input (yellow)	VIL Enable
Feedback pulse (green)	32 pulse / rev
Input GND (black)	Universal input port



Total Length LT=L1+L2+L3				
L1:36GP	L1:40GP		L2 :PI36	L3
39.6	46.8		75.0	
48.6	58.3			
57.6	69.8			



Recommended Gearbox:

AM-36GP
AM-40GP

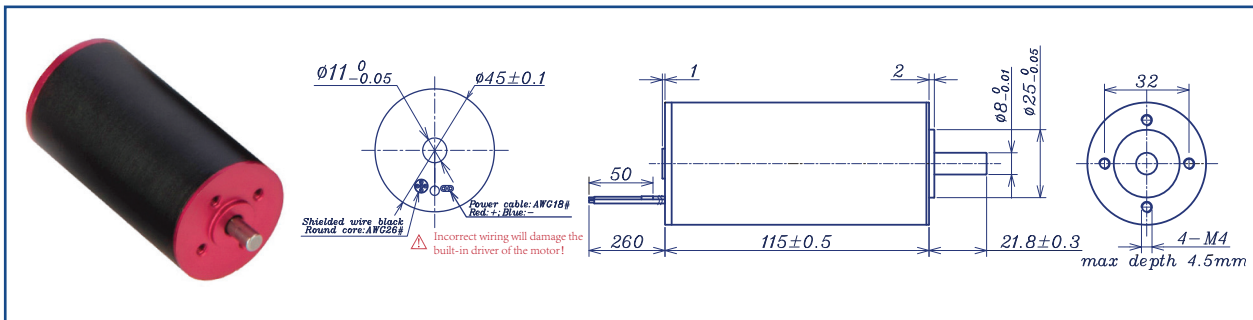
For more combination specs, visit Assun Motor website.

Note: The customer can select the gearbox to match the motor. It is recommended to weld motor shaft gears, some of which are listed here for reference.

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AM-PI45115AN SERIES (Built-In Position Control)



	Brushless Servo Motor	Ball Bearing				
Motor Model		2408				
Nominal voltage	V	24				
Voltage Range	V	21.5~26.5				
No-load holding current	mA	55				
Static holding torque	mN·m	65.0				
Static holding current	mA	550				
Rated torque	mN·m	65.0				
Rated speed	rpm	8000				
Pulse number / circle	Pulse / circle	256				
Overload torque	mN.m	120.0				
Maximum overload time	second	3				
Moment of inertia	gcm ²	109.8				
Weight	g	880				

Additional Information

Note: Excessive shock loads and periodic oscillations can cause the motor to run unsteadily. Stabilize the system by improving the load.

Motor thermal resistance:	3.6 K/W	Motor thermal time constant:	1286 S
Axial (dynamic):	8.0 N	Radial (5mm from head face):	180.0 N
Press-fit force (static):	100 N	Max allowable screw depth into flange:	4.5 mm
Maximum radial runout (5mm from the thread surface):	≤0.02 mm	Axial play:	0 (<6.0N)
Maximum winding temperature	85°C	Ambient temperature range:	-30 to 65 °C

Part Information

Control function description					<p>Wiring diagram</p>	<p>Recommended pulse control curve</p>
Input level description	VIL max 1.2V ; VIH min 22V					
Pulse input (red)	Falling edge is valid					
Direction control (white)	High CW Low CCW					
Enable input (yellow)	VIL Enable					
Feedback pulse (green)	32 pulse / rev					
Input GND (black)	Universal input port					
Total Length LT=L1+L2+L3						
L1:45GP	L1:52GP		L2 :PI45	L3	<p>AM-PI45115AN Combination Scheme</p>	
62.8	81.0		115.0			
74.8						
<p>Note: The customer can select the gearbox to match the motor. It is recommended to weld motor shaft gears, some of which are listed here for reference.</p>					<p>Recommended Gearbox:</p> <p>AM-45GP AM-52GP</p> <p>For more combination specs, visit Assun Motor website.</p>	

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PLANETARY GEARBOX

Assun Planetary Gearbox are made for precision DC drive systems. The high efficiency, small backlash, and wide range of stages and ratios made the gearboxes ideal for various DC drive applications. With diameter from 16mm to 60mm, wide range ratios and various output torques, customers could choose their best fitting gearbox for combination.



AM-16P	AM-32P	AM-16GP	AM-28GP	AM-45GP
AM-22P	AM-36P	AM-19GP	AM-32GP	AM-52GP
AM-26P	AM-45P	AM-22GP	AM-36GP	
AM-28P		AM-24GP	AM-40GP	

Company Name Abbreviation

AM - 16GPA - 5.4:1

Gearbox Dimension
16 - Diameter (mm)

Gearbox Type
GP - Precisions Gearbox
P - Regular Gearbox

Gearbox Stage

A : First Stage
B : Second Stage
C : Three Stage
D : Four Stage

Gear Ratio

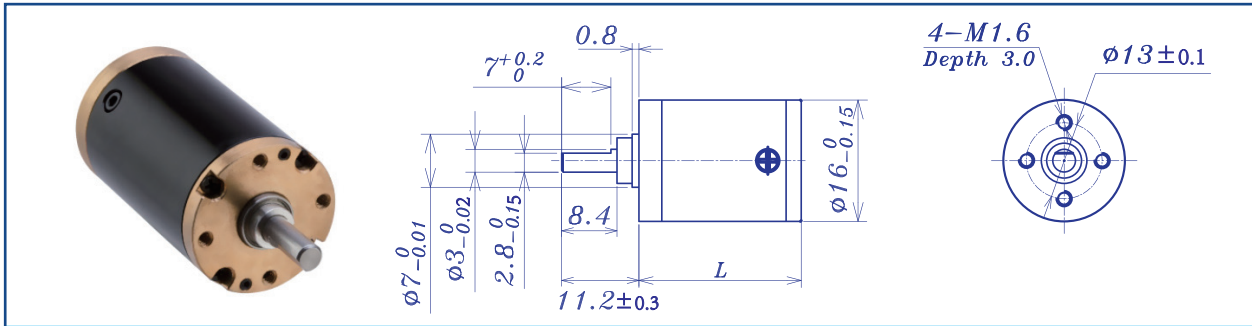
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PLANETARY GEARBOX
REGULAR SERIES

Assun Planetary Gearbox of regular series are most widely used planetary gearbox for DC drive system. With diameter from 16mm to 45mm, these gearboxes made by hobbing gears provide a bunch of choices for customers' applications.



AM-16P Series



GEARBOX CHARACTER			
Gear type	Straight teeth	Average backlash on load	$\leq 3^\circ$
Output shaft	Stainless steel hardened	Radial Play	≤ 0.04
Main gear	Alloy Steel	Permissible axial load	$\leq 10N$
Ring gear	Steel	Permissible force press fits	$\leq 50N$ (5mm from mounting face)
Adapter plate	Copper	Recommended inut speed	$\leq 10000RPM$
Bearing AT output	Ball bearing	Operating temperature range	$-20^\circ C \sim +100^\circ C$
Axial play	0-0.3	Operating humidity range	10-90%RH
Directions	CW/CCW		

GEARBOX DATA											
Number of stage	1		2		3		4		5		
Reduction ratio X:1	3.3	11	19	37	62	97	175	370	591	742	1996
	3.8	12	20	41	64	104	198	410	690	1014	2458
	4.4	14	24	47	72	109	231	455	850	1185	3027
	5.4	16	29	53	76	128	270	522		1386	3728
Reduction ratio absolute	63/19	3969/361	3249/169	250049/6859	1215/16		21625/1216	6561/16		759375/1024	
	15/4	945/76	81/4	59635/1444	185193/2197		50625/256	5000/211/10985		10965375/10816	
	57/13	225/16	1539/65	3375/64	45927/475		192375/832	1240029/2375		41668425/35152	
	27/5	855/52	729/25	14175/304	87723/845		731025/2704	2368521/4225		158340015/114244	
		1701/95		12825/208	2187/20		2777895/8788	59049/100		601692057/371293	
			204687/3211	41553/325		10556001/28561	1121931/625		285012027/142805		
			48735/676	19683/125			531441/625		135005697/54925		
									63950067/21125		
									30292137/8125		
									14348907/3125		
Gearbox length "L" (mm)	18.5	22.4		26.3			30.2			34.0	
Max. continuous torque (N.m)	0.3	0.5		0.6			0.7			0.7	
Max. intermitten torque (N.m)	0.5	0.7		0.9			1			1	
Gearbox efficiency	90%	81%		72%			65%			59%	
Moment of inertia range (g.cm ²)	0.06	0.05		0.05			0.05			0.05	
Gearbox weight approx (g)	23	28		31			36			40	
Gearbox model	AM-16PA-X-01	AM-16PB-X-01		AM-16PC-X-01			AM-16PD-X-01			AM-16PE-X-01	

AM-16P Example of combination

INPUT GEARBOX DATA	
Modulus	0.3
Press angle	20°
Teeth number	10 13 16 19
Max gear hole "A"	1.5 2.0
Max motor shaft	1.5 2.0
Motor dimension "D"	6.0

MOTOR DIMENSION	
Pinion	2.0
Motor dimension "D"	6.0
Motor shaft diameter	$\phi 1.5$
Motor shaft length	$5.9_{-0.15}$


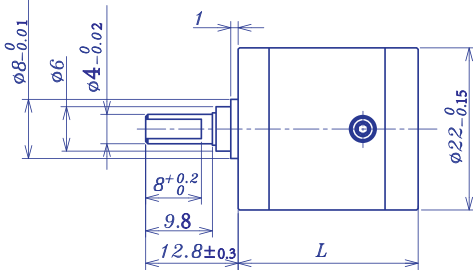
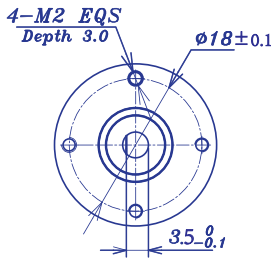
GEARBOX MOTOR LENGTH "LT"				
Gear motor length L_T	52.2	59.1	70	82.2
Gearbox length L_1	18.5	22.4	26.3	30.2
Motor length L_2	23	26	33	40
Encoder length L_3	10.7	10.7	10.7	12

Recommend Motor:	Recommend Encoder:
Coreless Motor: AM-CL1642MA	Suitable for Coreless Motor Encoder S: AM-EN1611S***
Coreless Motor (w/E): AM-CL1623MAN AM-CL1626MAN AM-CL1633MAN AM-CL1643MAN	Suitable for Brushless Motor Encoder S: AM-EN1611S***
Brushless Motor (w/E) AM-BL1640A/B	Encoder T: AM-EN1612T***

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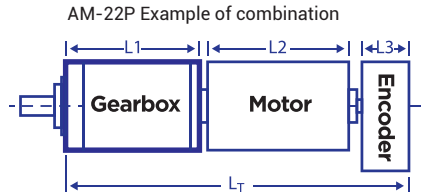
AM-22P Series

GEARBOX CHARACTER	
Gear type	Straight teeth
Output shaft	Stainless steel hardened
Main gear	Alloy Steel
Ring gear	Steel
Adapter plate	Copper
Bearing AT output	Ball bearing
Axial play	0-0.3
Directions	CW/CCW
Average backlash on load	$\leq 2^\circ$
Radial Play	≤ 0.1
Permissible axial load	$\leq 40N$
Permissible force press fits	$\leq 100N$ (5mm from mounting face)
Recommended inut speed	$\leq 10000RPM$
Operating temperature range	$-20^\circ C \sim +100^\circ C$
Operating humidity range	10-90%RH

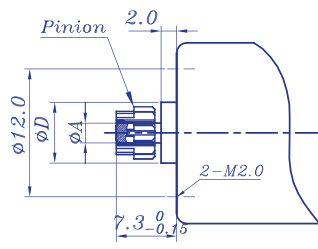
GEARBOX DATA								
Number of stage	1	2	3	4	5			
Reduction ratio X:1	3.3	11 19	37 62 97	175 370 591	742 1996			
	3.8	12 20	41 64 104	198 410 690	1014 2458			
	4.4	14 24	47 72 109	231 455 850	1185 3027			
	5.4	16 29	53 76 128	270 522	1386 3728			
		18	84 158	316 561	1621 4592			
Reduction ratio absolute	63/19	3969/361	3249/169	250047/6859	1215/16	21625/1216	6561/16	759375/1024
	15/4	945/76	81/4	59535/1444	185193/2197	50625/256	5000211/10985	10965375/10816
	57/13	225/16	1639/65	3375/64	45927/475	192375/832	1240029/2375	41668425/35152
	27/5	855/52	729/25	14175/304	87723/845	731025/2704	2368521/4225	158340015/114244
		1701/95		12825/208	2187/20	2777895/8788	59049/100	601692057/371293
			204687/3211	41553/325	10556001/28561	1121931/625	285012027/142805	
			48735/676	19683/125		531441/625	135005697/54925	
							63950067/21125	
							30292137/8125	
							14348907/3125	
Gearbox lenght "L" (mm)	22.3	27.3	32.3	37.3	42.6			
Max. continuous torque (N.m)	0.6	0.8	1	1.2	1.2			
Max. intermitten torque (N.m)	0.9	1.2	1.5	1.8	1.8			
Gearbox efficiency	90%	81%	72%	65%	59%			
Moment of inertia range (g.cm ²)	0.5	0.4	0.5	0.4	0.5			
Gearbox weight approx (g)	56	68	82	92	103			
Gearbox model	AM-22PA-X-01	AM-22PB-X-01	AM-22PC-X-01	AM-22PD-X-01	AM-22PE-X-01			

AM-22P Example of combination



INPUT GEARBOX DATA	
Modulus	0.35
Press angle	20°
Teeth number	10 13 16 19
Max gear hole "A"	2.0 3.0
Max motor shaft	2.0 3.0
Motor dimension "D"	6.15 8.0

MOTOR DIMENSION

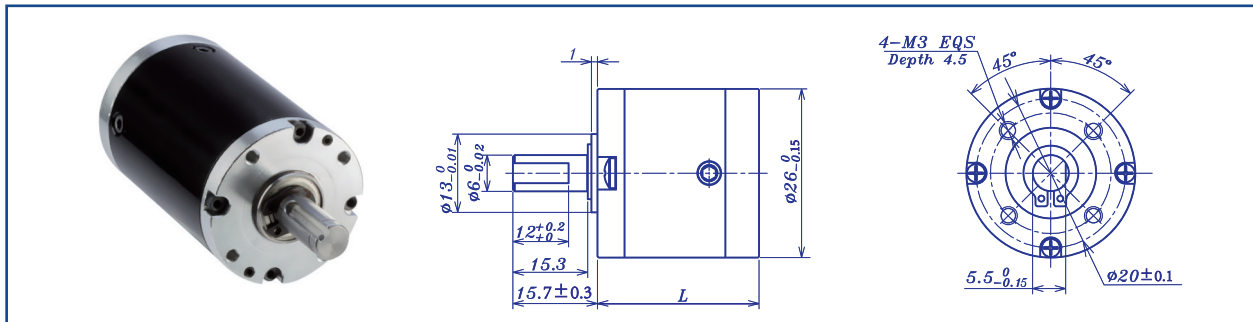


		GEARBOX MOTOR LENGTH "LT"				
Recommend Motor: Coreless Motor: (w/E): AM-CL2232MAN AM-CL2232GAN AM-CL2242MAN AM-CL2242GAN Brushless Motor (w/E): AM-BL2040AN AM-BL2453AN	Recommend Encoder: Suitable for Coreless Motor Encoder S: AM-EN2211S***	Gear motor length L_T	66.5	80.0	80.3	101
	Suitable for Brushless Motor Encoder S: AM-EN1611S*** Encoder T: AM-EN1612T***	Gearbox length L_1	22.3	27.3	32.3	37.3
		Motor length L_2	32.2	42	40	53
		Encoder length L_3	12	10.7	12	10.7

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AM-26P Series

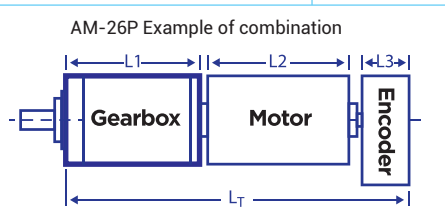


GEARBOX CHARACTER

Gear type	Straight teeth	Average backlash on load	$\leq 2^\circ$
Output shaft	Stainless steel hardened	Radial Play	≤ 0.1
Main gear	Alloy Steel	Permissible axial load	$\leq 80N$
Ring gear	Steel	Permissible force press fits	$\leq 150N$ (5mm from mounting face)
Adapter plate	Alluminium alloy	Recommended input speed	$\leq 8000RPM$
Bearing AT output	Ball bearing	Operating temperature range	$-20^\circ C \sim +100^\circ C$
Axial play	0-0.3	Operating humidity range	10-90%RH
Directions	CW/CCW		

GEARBOX DATA

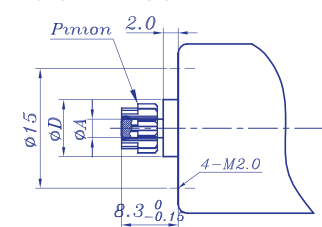
Number of stage	1	2			3			4		
Reduction ratio X:1	3.4	12	18	28	40	74	129	296	534	1016
	3.8	13	19	29	45	85	152	327	637	1136
	4.4	15	20	35	50	95	184	375	760	1304
	5.3	17	23	44	56	106	233	405	860	1556
	6.7		26		65	121	296	447	965	1975
Reduction ratio absolute	24/7	576/49	18/1	441/16	13824/343	189/2		85169/288	194481/256	
	23/6	92/7	484/25	88/3	2208/49	3381/32		122452/375	7744/9	
	22/5	529/36	161/8	35/1	1053/21	4851/40		234256/625	15435/16	
	21/4	253/15	231/10	400/9	12167/2	1936/15		25921/64	64000/63	
	20/3		230/9		5819/90	3200/21		53361/100	92000/81	
					5566/75	735/4		101871/160	35200/27	
					10648/125	700/3			14000/9	
						8000/27			160000/81	
Gearbox length "L" (mm)	28.2	34.5			40.8			47.1		
Max. continuous torque (N.m)	1.3	1.7			2.1			2.6		
Max. intermitten torque (N.m)	1.9	2.6			3.2			3.8		
Gearbox efficiency	90%	81%			72%			65%		
Moment of inertia range (g.cm ²)	1	0.9			0.6			0.6		
Gearbox weight approx (g)	65	85			105			120		
Gearbox model	AM-26PA-X-01	AM-26PB-X-01			AM-26PC-X-01			AM-26PD-X-01		



INPUT GEARBOX DATA

Modulus	0.4				
Press angle	20°				
Teeth number	9	12	15	18	21
Max gear hole "A"	1.5	3.0	4.0		
Max motor shaft	1.5	3.0	4.0		
Motor dimension "D"	10.0				

MOTOR DIMENSION



Recommend Motor:

Coreless Motor (w/E):
AM-CL2532MAN
AM-CL2545MAN

Brushless Motor (w/E)
AM-BL2453AN

Recommend Encoder:

Suitable for Coreless Motor
Encoder S: AM-EN1611S***

Suitable for Brushless Motor

Encoder S: AM-EN1611S***

Encoder T: AM-EN2412T***

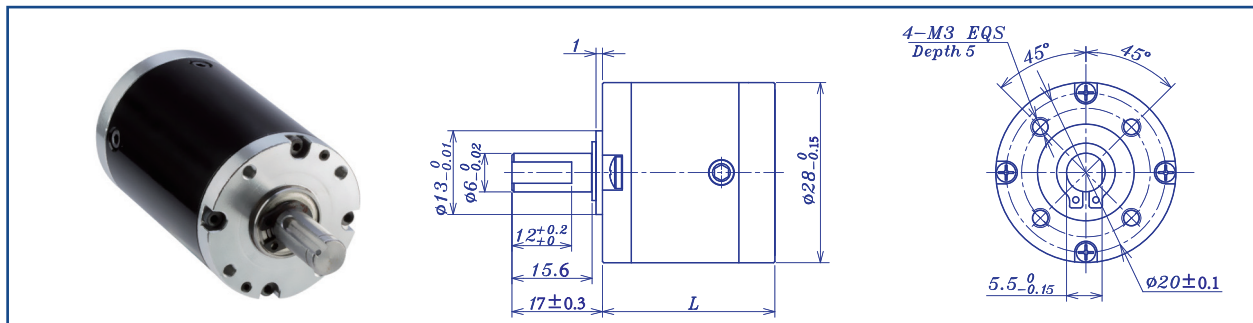
GEARBOX MOTOR LENGTH "LT"

Gear motor length L_T	72.2	90.2
Gearbox length L_1	28.2	34.5
Motor length L_2	32	45
Encoder length L_3	12	10.7

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AM-28P Series

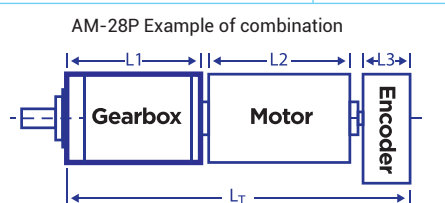


GEARBOX CHARACTER

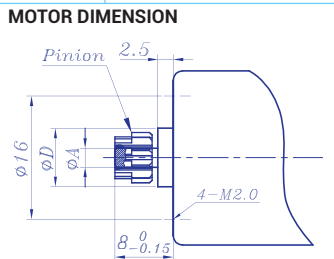
Gear type	Straight teeth	Average backlash on load	≤2°
Output shaft	Stainless steel hardened	Radial Play	≤0.1
Main gear	Alloy Steel	Permissible axial load	≤80N
Ring gear	Steel	Permissible force press fits	≤150N (5mm from mounting face)
Adapter plate	Aluminum Alloy	Recommended inut speed	≤8000RPM
Bearing AT output	Ball bearing	Operating temperature range	-20°C ~ +100°C
Axial play	0-0.3	Operating humidity range	10-90%RH
Directions	CW/CCW		

GEARBOX DATA

Number of stage	1	2			3			4		
Reduction ratio X:1	3.4 3.8 4.4 5.3 6.7	12 13 15 17	18 19 20 23	28 29 35 44	40 45 50 56 65	74 85 95 106 121	129 152 184 233 296	296 327 375 405 447	534 637 760 860 965	1016 1136 1304 1556 1975
Reduction ratio absolute	24/7 23/6 22/5 21/4 20/3	576/49 92/7 529/36 253/15	18/1 484/25 16//18 231/10 230/9	441/16 88/3 35/1 400/9	13824/343 2208/49 1053/21 12167/2 5819/90 5566/75 10648/125	189/2 3381/32 4851/40 1936/15 3200/21 735/4 700/3 8000/27	85169/288 122452/375 234256/625 25921/64 53361/100 101871/160	194481/256 7744/9 15435/16 64000/63 92000/81 35200/27 14000/9 160000/81		
Gearbox length "L" (mm)	26.9	33.2			39.5			45.8		
Max. continuous torque (N.m)	1.3	1.7			2.1			2.6		
Max. intermitten torque (N.m)	1.9	2.6			3.2			3.8		
Gearbox efficiency	90%	81%			72%			65%		
Moment of inertia range (g.cm ²)	1	0.9			0.6			0.6		
Gearbox weight approx (g)	78	102			126			149		
Gearbox model	AM-28PA-X-01	AM-28PB-X-01			AM-28PC-X-01			AM-28PD-X-01		



INPUT GEARBOX DATA	
Modulus	0.4
Press angle	20°
Teeth number	9 12 15 18 21
Max gear hole "A"	1.5 3.0 4.0
Max motor shaft	1.5 3.0 4.0
Motor dimension "D"	10.0



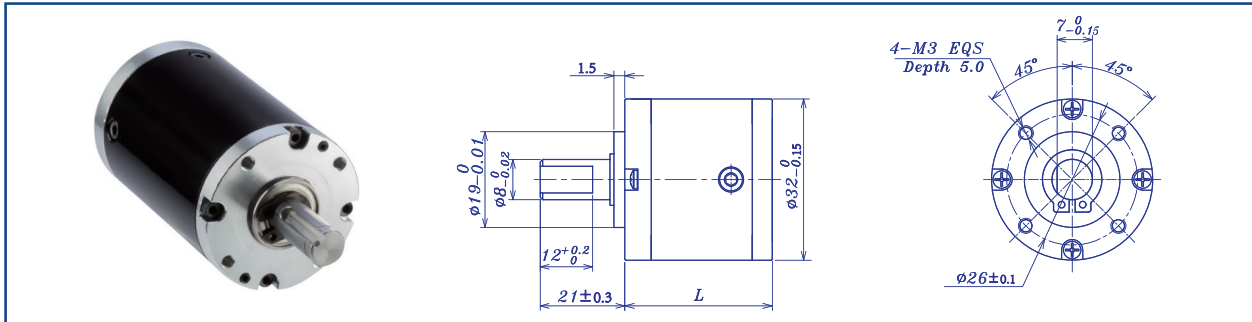
Recommend Motor:	Recommend Encoder:
Coreless Motor: AM-CL2532MAN AM-CL2545MAN AM-CL2831MAN AM-CL2845MAN	Suitable for Coreless Motor Encoder S: AM-EN1611S***
Brushless Motor AM-BL2845AN AM-BL2453AN	Suitable for Brushless Motor Encoder S: AM-EN1611S*** Encoder T: AM-EN2412T***

GEARBOX MOTOR LENGTH "LT"	
Gear motor length L _T	69.6 90.2 81.2 109.5
Gearbox length L ₁	26.9 33.2 39.5 45.8
Motor length L ₂	32 45 31 53
Encoder length L ₃	10.7 12 10.7 10.7

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AM-32P Series



GEARBOX CHARACTER			
Gear type	Straight teeth	Average backlash on load	$\leq 2^\circ$
Output shaft	Stainless steel hardened	Radial Play	≤ 0.1
Main gear	Alloy Steel	Permissible axial load	$\leq 110N$
Ring gear	Steel	Permissible force press fits	$\leq 200N$ (5mm from mounting face)
Adapter plate	Aluminium alloy	Recommended inut speed	$\leq 8000RPM$
Bearing AT output	Ball bearing	Operating temperature range	$-20^\circ C \sim +100^\circ C$
Axial play	0-0.3	Operating humidity range	10-90%RH
Directions	CW/CCW		

GEARBOX DATA										
Number of stage	1	2		3	4					
Reduction ratio X:1	3.4	12	18	28	40	74	129	296	534	1016
	3.8	13	19	29	45	85	152	327	637	1136
	4.4	15	20	35	50	95	184	375	760	1304
	5.3	17	23	44	56	106	233	405	860	1556
	6.7		26		65	121	296	447	965	1975
Reduction ratio absolute	24/7	576/49	18/1	441/16	13824/343	189/2		85169/288	194481/256	
	23/6	92/7	484/25	88/3	2208/49	3381/32		122452/375	7744/9	
	22/5	529/36	16/18	35/1	1053/21	4851/40		234256/625	15435/16	
	21/4	253/15	231/10	400/9	12167/2	1936/15		25921/64	64000/63	
	20/3		230/9		5819/90	3200/21		53361/100	92000/81	
					5566/75	735/4		101871/160	35200/27	
				10648/125	700/3			14000/9		
					8000/27			160000/81		
Gearbox length "L" (mm)	31.2	38.7		46.2		53.7				
Max. continuous torque (N.m)	1.9	2.5		3.2		3.9				
Max. intermitten torque (N.m)	2.9	3.8		4.8		5.7				
Gearbox efficiency	90%	81%		72%		65%				
Moment of inertia range (g.cm ²)	1.5	1		1		1				
Gearbox weight approx (g)	135	168		200		236				
Gearbox model	AM-32PA-X-01	AM-32PB-X-01		AM-32PC-X-01		AM-32PD-X-01				

AM-32P Example of combination

INPUT GEARBOX DATA	
Modulus	0.45
Press angle	20°
Teeth number	9 12 15 18 21
Max gear hole "A"	2.0 3.0 4.0 5.0 6.0
Max motor shaft	2.0 3.0 4.0 5.0 6.0
Motor dimension "D"	10.0 16.0

MOTOR DIMENSION	
Pinion	2.5
Shaft diameter	$\phi 19$
Motor shaft diameter	$\phi 4$
Motor dimension "D"	10.0
Motor length	9.1
Motor screw	4-M2

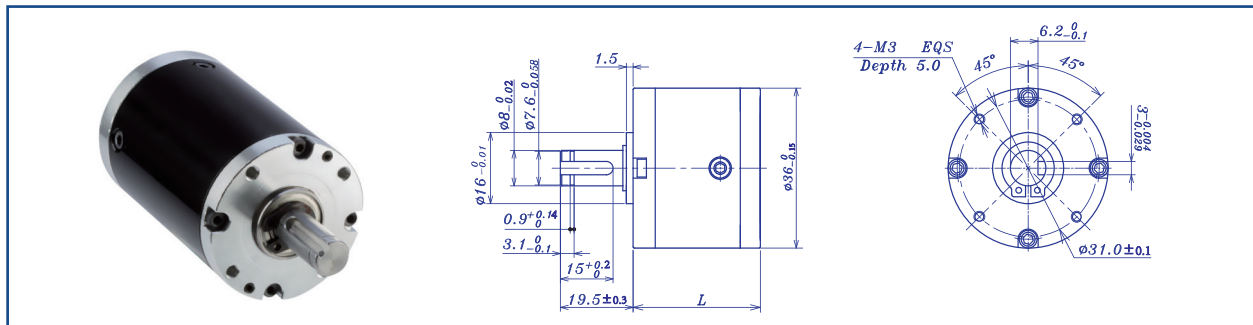
RECOMMEND MOTOR		
Recommend Motor:	Recommend Encoder:	
Coreless Motor: (w/E)	Suitable for Coreless Motor	
AM-CL2831MAN	Encoder S: AM-EN1611S***	
AM-CL2845MAN		
Brushless Motor (w/E)	Suitable for Brushless Motor	
AM-BL2845AN	Encoder S: AM-EN1611S***	
	Encoder T: AM-EN2412T***	

GEARBOX MOTOR LENGTH "LT"		
Gear motor length L_T	72.9	95.7
Gearbox length L_1	31.2	38.7
Motor length L_2	31	45
Encoder length L_3	10.7	12

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AM-36P Series



GEARBOX CHARACTER

Gear type	Straight teeth	Average backlash on load	$\leq 2.5^\circ$
Output shaft	Stainless steel hardened	Radial Play	≤ 0.06
Main gear	Alloy Steel	Permissible axial load	$\leq 150N$
Ring gear	Steel	Permissible force press fits	$\leq 240N$ (5mm from mounting face)
Adapter plate	Aluminium alloy	Recommended inut speed	$\leq 8000RPM$
Bearing AT output	Ball bearing	Operating temperature range	$-20^\circ C \sim +100^\circ C$
Axial play	0-0.3	Operating humidity range	10-90%RH
Directions	CW/CCW		

GEARBOX DATA

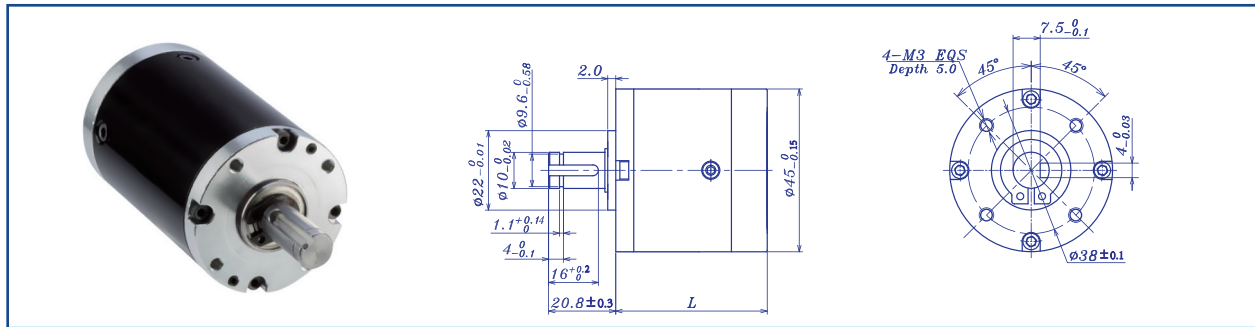
Number of stage	1	2	3	4
Reduction ratio X:1	3.4	12 22	40 83 162	224 399 649 1270
	3.8	13 26	44 98 171	255 421 738
	4.3	14 32	50 111 202	283 446 824
	5.1	16 40	66 131	322 513 948
	6.3	19	75 150	358 570 1078
Reduction ratio absolute	75/22	5625/484 2277/104	421875/10648 75141/676	607500/2717 107163/209
	72/19	2700/209 4356/169	101250/2299 287496/2197	1164375/4576 5143824/9025
	69/16	5814/361 2079/65	388125/7744 71441/475	139725/494 2464749/3800
	66/13	621/38 3969/100	16200/247 137214/845	1071225/3328 18896409/25600
	63/10	4761/256	15525/208 273861/1600	1414017/3952 9056124/10985
			20493/247 130977/650	4499145/11264 2250423/2375
		313632/3211	1352538/3211 17253243/16000	
			980100/2197 8251551/6500	
Gearbox length "L" (mm)	30.7	39.3	47.9	56.5
Max. continuous torque (N.m)	2.7	3.6	4.5	5.4
Max. intermitten torque (N.m)	4	5.3	6.6	7.9
Gearbox efficiency	90%	81%	72%	65%
Moment of inertia range (g.cm ²)	4.9	4.9	6.1	6.1
Gearbox weight approx (g)	162	208	288	323
Gearbox model	AM-36PA-X-01	AM-36PB-X-01	AM-36PC-X-01	AM-36PD-X-01

AM-36P Example of combination		INPUT GEARBOX DATA		MOTOR DIMENSION													
		<table border="1"> <tr> <td>Modulus</td> <td>0.5</td> </tr> <tr> <td>Press angle</td> <td>20°</td> </tr> <tr> <td>Teeth number</td> <td>10 13 16 19 22</td> </tr> <tr> <td>Max gear hole "A"</td> <td>2.5 4.0 5.0 6.0</td> </tr> <tr> <td>Max motor shaft</td> <td>2.5 4.0 5.0 6.0</td> </tr> <tr> <td>Motor dimension "D"</td> <td>13</td> </tr> </table>		Modulus	0.5	Press angle	20°	Teeth number	10 13 16 19 22	Max gear hole "A"	2.5 4.0 5.0 6.0	Max motor shaft	2.5 4.0 5.0 6.0	Motor dimension "D"	13		
Modulus	0.5																
Press angle	20°																
Teeth number	10 13 16 19 22																
Max gear hole "A"	2.5 4.0 5.0 6.0																
Max motor shaft	2.5 4.0 5.0 6.0																
Motor dimension "D"	13																
<p>Recommend Motor:</p> <p>Coreless Motor: (w/E) AM-CL3570GAN</p> <p>Brushless Motor (w/E) AM-BL3660AN AM-BL3675BF AM-BL3690BF</p>		<p>Recommend Encoder:</p> <p>Suitable for Coreless Motor Encoder S: AM-EN2211S*** Encoder T: AM-EN2412T***</p>		<p>Suitable for Brushless Motor Encoder S: AM-EN2211S*** Encoder T: AM-EN3612T***</p>													
GEARBOX MOTOR LENGTH "LT"																	
Gear motor length L_T		113.2	110.5														
Gearbox length L_1		30.7	39.3														
Motor length L_2		70.5	60.5														
Encoder length L_3		12	10.7														

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AM-45P Series



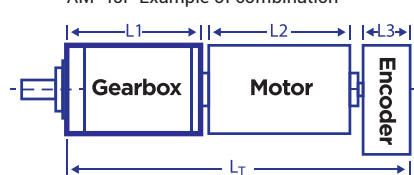
GEARBOX CHARACTER

Gear type	Straight teeth	Average backlash on load	$\leq 1.5^\circ$
Output shaft	Stainless steel hardened	Radial Play	≤ 0.06
Main gear	Alloy Steel	Permissible axial load	$\leq 150N$
Ring gear	Steel	Permissible force press fits	$\leq 280N$ (5mm from mounting face)
Adapter plate	Aluminium alloy	Recommended input speed	$\leq 8000RPM$
Bearing AT output	Ball bearing	Operating temperature range	$-20^\circ C \sim +100^\circ C$
Axial play	0-0.3	Operating humidity range	10-90%RH
Directions	CW/CCW		

GEARBOX DATA

Number of stage	1	2		3			4			
Reduction ratio X:1	3.4	12	22	40	83	162	224	399	649	1270
	3.8	13	26	44	98	171	255	421	738	
	4.3	14	32	50	111	202	283	446	824	
	5.1	16	40	66	131		322	513	948	
	6.3	19		75	150		358	570	1078	
Reduction ratio absolute	75/22	5625/484	2277/104	421875/10648	75141/676		607500/2717	107163/209		
	72/19	2700/209	4356/169	101250/2299	287496/2197		1164375/4576	5143824/9025		
	69/16	5814/361	2079/65	388125/7744	71441/475		139725/494	2464749/3800		
	66/13	621/38	3969/100	16200/247	137214/845		1071225/3328	18896409/25600		
	63/10	4761/256		15525/208	273861/1600		1414017/3952	9056124/10985		
				20493/247	130977/650		4499145/11264	2250423/2375		
				313632/3211			1352538/3211	17253243/16000		
							980100/2197	8251551/6500		
Gearbox length "L" (mm)	38.9	49.7		60.5			71.3			
Max. continuous torque (N.m)	5.4	7.2		9			10.8			
Max. intermitten torque (N.m)	7.9	10.6		13.2			15.9			
Gearbox efficiency	90%	81%		72%			65%			
Moment of inertia range (g.cm ²)	12	14		14			15			
Gearbox weight approx (g)	305	418		520			633			
Gearbox model	AM-45PA-X-01	AM-45PB-X-01		AM-45PC-X-01			AM-45PD-X-01			

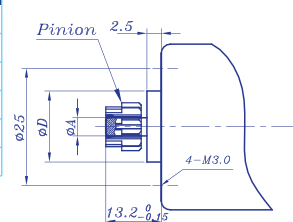
AM-45P Example of combination



INPUT GEARBOX DATA

Modulus	0.6				
Press angle	20°				
Teeth number	10	13	16	19	22
Max gear hole "A"	2.5	5.0	6.0	8.0	
Max motor shaft	2.5	5.0	6.0	8.0	
Motor dimension "D"	13.0			16.0	

MOTOR DIMENSION



Recommend Motor:

Coreless Motor: (w/E)
AM-CL3570GAN
AM-CL4071GAE

Brushless Motor (w/E)
AM-BL3660AN
AM-BL45100AN

Recommend Encoder:

Suitable for Coreless Motor

Encoder S: AM-EN2211S***

Encoder T: AM-EN2412T***

Suitable for Brushless Motor

Encoder S: AM-EN2211S***

Encoder T: AM-EN3612T***

GEARBOX MOTOR LENGTH "LT"

Gear motor length L_T	119.6	121.7	172.5
Gearbox length L_1	38.9	49.7	60.5
Motor length L_2	70	60	100
Encoder length L_3	10.7	12	12

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PLANETARY GEARBOX
PRECISION SERIES

Assun Planetary Gearbox of precision series are manufactured with the latest production technology to achieve very low backlash, higher efficiency, longer lifetime and higher output torque. Diameter from 16mm to 60mm, the precision series planetary gearboxes offer a wide range of high precision choices for DC drive solution.



AM-16P	AM-32P	AM-16GP	AM-28GP	AM-45GP
AM-22P	AM-36P	AM-19GP	AM-32GP	AM-52GP
AM-26P	AM-45P	AM-22GP	AM-36GP	
AM-28P		AM-24GP	AM-40GP	

Company Name Abbreviation

AM - 16GPA - 5.4:1

Gearbox Dimension
16 - Diameter (mm)

Gearbox Type
GP - Precisions Gearbox
P - Regular Gearbox

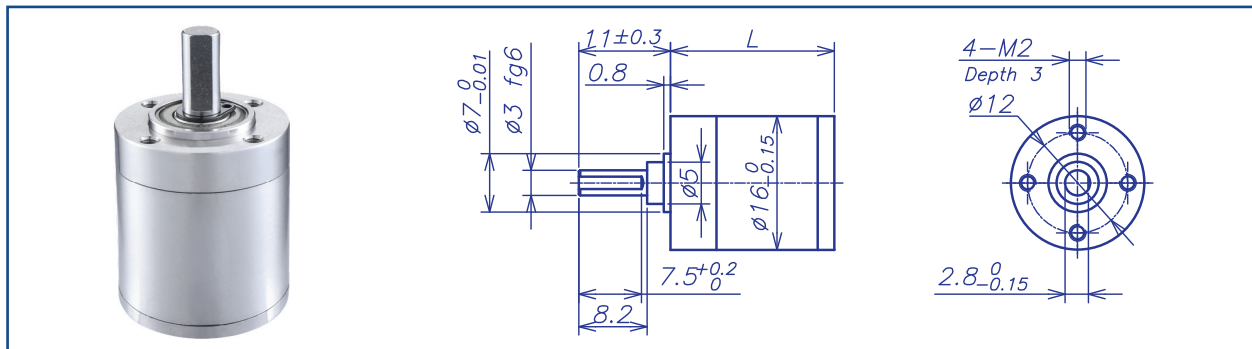
Gearbox Stage

A : First Stage
B : Second Stage
C : Three Stage
D : Four Stage

Gear Ratio

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AM-16GP Series

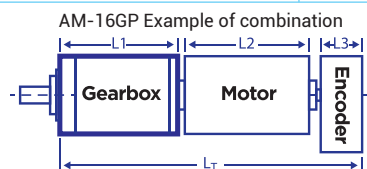


GEARBOX CHARACTER

Gear type	Straight teeth	Radial Play (6mm from flange)	max 0.1mm
Output shaft	Stainless steel hardened	Permissible force press fits	max. 100 N
Main gear	Alloy Steel hardened	Permissible axial load (dynamic)	max. 10N
Ring gear	Stainless steel hardened	Recommended input speed	8000RPM
Adapter plate	Stainless steel	Operating temperature range	-40°C ~ +100°C
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH
Axial play	0-0.3	Number of stages	1 2 3 4
Directions	CW/CCW	Permissible load (6mm from flange)	15N 23N 23N 23N

GEARBOX DATA

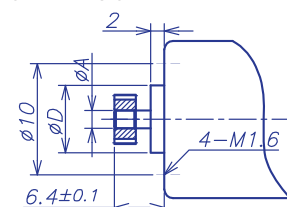
Number of stage	1			2		3			4			
	Reduction ratio X:1	3.8	4.4	5.4	14	29	53	84	157	198	370	590	850
Reduction ratio absolute	15/4	57/13	27/5	225/16	729/25	3375/64	185193/2197	19683/125	50625/256	10556001/28561	531441/625	
				855/52		12825/208	4617/52		192375/832	263169/676		
				3249/169		48735/676	87723/845		731025/2704	6561/16		
				81/4	1539/65	1215/16	2187/20	41551/325	18225/64	5000211/10985	124659/260	59049/100	1121931/1625
Motor shaft max. diameter (mm)	2	1.5	2	1.5	2	1.5	2	1.5	2	1.5	2	1.5
Gearbox length "L" (mm)	15.9			19.6		23.3			27			
Max. continuous torque (N.m)	0.1			0.2		0.25			0.3			
Max. intermittent torque (N.m)	0.15			0.3		0.375			0.45			
Average backlash no load	1.2°			1.4°		1.5°			1.5°			
Gearbox efficiency	90%			81%		73%			65%			
Max. mass inertia (g.cm ²)	0.05			0.06		0.06			0.06			
Gearbox weight approx (g)	20			25		30			35			
gearbox model	AM-16GPA-X			AM-16GPB-X		AM-16GPC-X			AM-16GPD-X			



INPUT GEARBOX DATA

Modulus	0.3		
Press angle	20°		
Teeth number	10	13	16
Max gear hole "A"	1.5	2.0	
Max motor shaft	1.5	2.0	
Motor dimension "D"	6.0		

MOTOR DIMENSION



Recommend Motor:

Coreless Motor (w/E):
AM-CL1623MAN
AM-CL1626MAN
AM-CL1633MAN
AM-CL1643MAN

Brushless Motor (w/E):
AM-BL1632AN
AM-BL1640AN

Recommend Encoder:

Suitable for Coreless Motor
Encoder S: AM-EN1611S***

Suitable for Brushless Motor

Encoder S: AM-EN1611S***
Encoder T: AM-EN1612T***

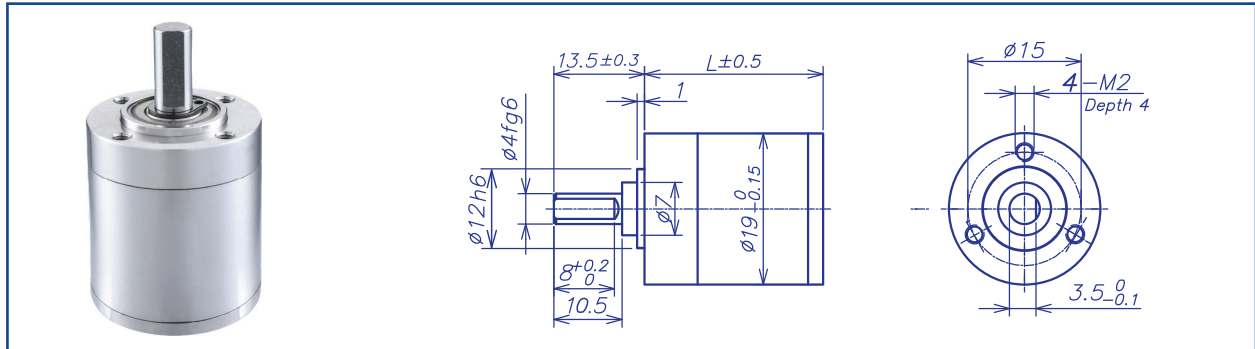
GEARBOX MOTOR LENGTH "LT"

Gear motor length L_T	38.9	67	79
Gear box length L_1	15.9	23.3	27
Motor length L_2	23	33	40
Encoder length L_3	-	10.7	12

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AM-19GP Series

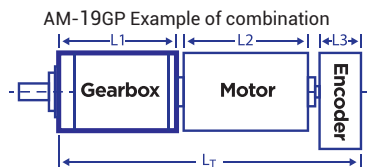


GEARBOX CHARACTER

Gear type	Straight teeth	Radial Play (8mm from flange)	max 0.1mm
Output shaft	Stainless steel hardened	Permissible force press fits	max. 100 N
Main gear	Alloy steel hardened	Permissible axial load (dynamic)	max. 50N
Ring gear	Stainless steel hardened	Recommended inut speed	8000RPM
Adapter plate	Stainless steel	Operating temperature range	-40°C ~ +100°C
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH
Axial play	0-0.3	Number of stages	1 2 3 4
Directions	CW/CCW	Permissible load (8mm from flange)	40N 60N 60N 60N

GEARBOX DATA

Number of stage	1			2			3			4		
	Reduction ratio X:1	3.8	4.4	5.4	14	19	53	89	84	198	316	370
Reduction ratio absolute	15/4	57/13	27/5	225/16	3249/169	3375/64	4617/52	185193/2197	50625/256	2777895/8788	10556001/28561	
				855/52	1539/65	12825/208	2187/20	87723/845	192375/832	263169/676	5000211/10985	
				81/4	729/25	48735/676		41551/325	731025/2704	124659/260	2368521/4225	
						1215/16		19683/125	18225/64	59049/100	1121931/1625	
Motor shaft max. diametre (mm)	3	2		3	2		3	2	3		2	
Gearbox lenght "L" (mm)	18.8			23.6			28.4			33.2		
Max. continuous torque (N.m)	0.2			0.3			0.5			0.6		
Max. intermittent torque (N.m)	0.3			0.45			0.75			0.9		
Average backlash no load	1.2°			1.4°			1.4°			1.4°		
Gearbox efficiency	90%			81%			73%			65%		
Max. mass inertia (g.cm²)	0.1			0.1			0.1			0.1		
Gearbox weight approx (g)	35			45			55			65		
gearbox model	AM-19GPA-X			AM-19GPB-X			AM-19GPC-X			AM-19GPD-X		



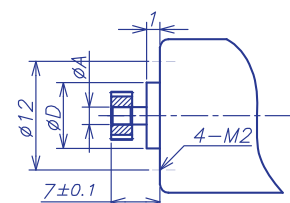
Recommend Motor:
Coreless Motor (w/E): AM-CL1623MAN, AM-CL1626MAN, AM-CL1633MAN, AM-CL1643MAN, AM-CL2232GAN, AM-CL2232MAN, AM-CL2242GAN, AM-CL2242MAN, AM-CL1934GAE
Brushless Motor (w/E): AM-BL1632AN, AM-BL1640AN, AM-BL2032AN, AM-BL2040AN, AM-BL2051AN

Recommend Encoder:
Suitable for Coreless Motor
Encoder S: AM-EN1611S***
AM-EN2211S***
Suitable for Brushless Motor
Encoder S: AM-EN1611S***
Encoder T: AM-EN1612T***

INPUT GEARBOX DATA

Modulus	0.35		
Press angle	20°		
Teeth number	10	13	16
Max gear hole "A"	2	2	3
Max motor shaft	2	2	3
Motor dimension "D"	5	5.5	6.5

MOTOR DIMENSION



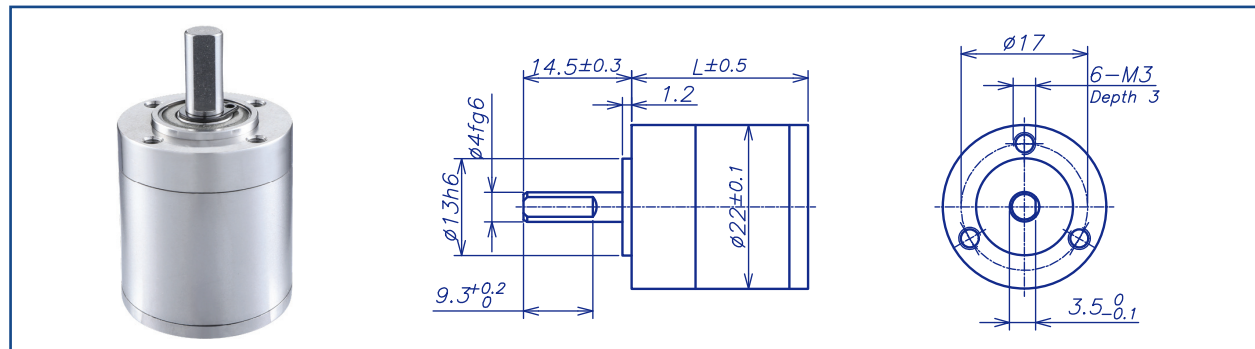
GEARBOX MOTOR LENGTH "LT"

Gear motor length L_T	41.8	74.3	80.4
Gearbox length L_1	18.8	23.6	28.4
Motor length L_2	23	40	40
Encoder length L_3	-	10.7	12

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AM-22GP Series



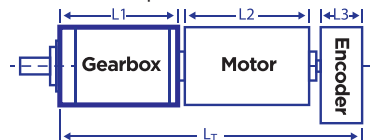
GEARBOX CHARACTER

Gear type	Straight teeth	Radial Play (8mm from flange)	max. 0.1mm
Output shaft	Stainless steel hardened	Permissible force press fits	max. 100 N
Main gear	Alloy Steel hardened	Permissible axial load (dynamic)	max. 40N
Ring gear	Stainless steel hardened	Recommended input speed	12000RPM
Adapter plate	Stainless steel	Operating temperature range	-40°C ~ +100°C
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH
Axial play	0-0.3	Number of stages	1 2 3 4
Directions	CW/CCW	Permissible load (10mm from flange)	55N 75N 100N 100N

GEARBOX DATA

Number of stage	1			2			3			4		
Reduction ratio X:1	3.1	4.0	6.0	10 13 16	19 24 36	31 40 50 59 64	75 96	113 144 216	158 186 201 237 256 302	356 384 453 576	679 864 1296	
Reduction ratio absolute	22/7	4/1	6/1	484/49 88/7 16/1	132/7 24/1 36/1	10648/343 1936/49 352/7 2904/49 64/1	528/7 96/1	792/7 144/1 216/1	7744/49 63888/343 1408/7 11616/49 256/1 2112/7	17424/49 384/1 3168/7 576/1	4752/7 864/1 1296/1	
Motor shaft max. diameter (mm)	3	1.5	3	1.5	3	1.5	3	1.5	3	1.5	3	
Gearbox length "L" (mm)	18.9			23.7			28.5			33.3		
Max. continuous torque (N.m)	0.4			0.7			1.2			1.5		
Max. intermittent torque (N.m)	0.6			0.8			1.4			1.7		
Average backlash no load	1.1°			1.3°			1.3°			1.3°		
Gearbox efficiency	90%			81%			73%			65%		
Max. mass inertia (g.cm ²)	0.28			0.31			0.31			0.31		
Gearbox weight approx (g)	45			55			65			75		
gearbox model	AM-22GPA-X			AM-22GPB-X			AM-22GPC-X			AM-22GPD-X		

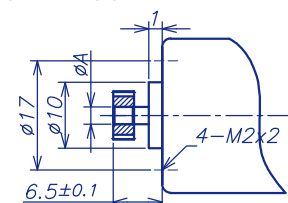
AM-22GP Example of combination



INPUT GEARBOX DATA

Modulus	0.4
Press angle	20°
Teeth number	9 15 21
Max gear hole "A"	1.5 3 3
Max motor shaft	1.5 3 3

MOTOR DIMENSION



Recommend Motor:

Coreless Motor (w/E):
AM-CL16***
AM-CL19***
AM-CL22***

Brushless Motor (w/E):
AM-BL16***
AM-BL20***

Recommend Encoder:

Suitable for Coreless Motor
Encoder S: AM-EN1611S***
AM-EN2211S***

Suitable for Brushless Motor

Encoder S: AM-EN1611S***
Encoder T: AM-EN1612T***

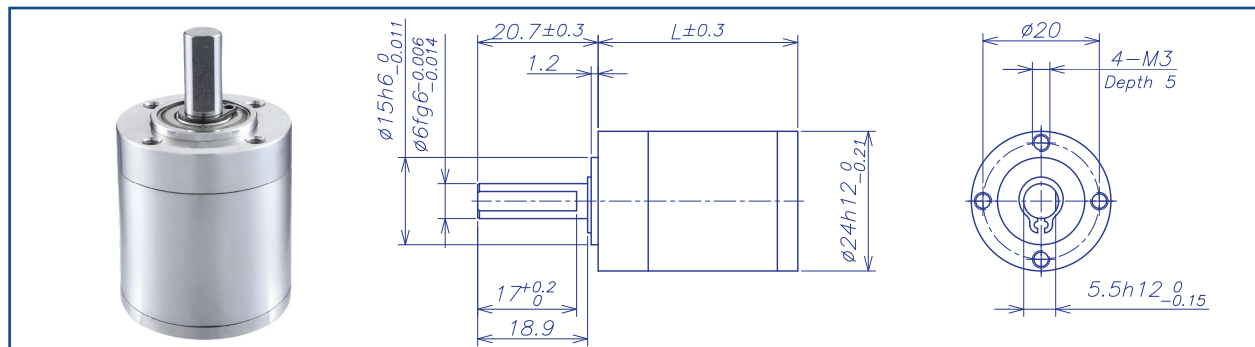
GEARBOX MOTOR LENGTH "LT"

Gear motor length L _T	41.9	74.4	80.5
Gear box length L ₁	18.9	23.7	28.5
Motor length L ₂	23	40	40
Encoder length L ₃	-	10.7	12

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AM-24GP Series

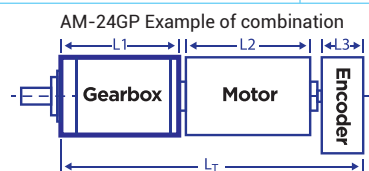


GEARBOX CHARACTER

Gear type	Straight teeth	Radial Play (10mm from flange)	max 0.1mm
Output shaft	Stainless steel hardened	Permissible force press fits	max. 120 N
Main gear	Alloy steel hardened	Permissible axial load (dynamic)	max. 100N
Ring gear	Stainless steel hardened	Recommended inut speed	10000RPM
Adapter plate	Stainless steel	Operating temperature range	-40°C ~ +100°C
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH
Axial play	0-0.3	Number of stages	1 2 3 4
Directions	CW/CCW	Permissible load (12mm from flange)	95N 110N 120N 120N

GEARBOX DATA

Number of stage	1			2		3			4		
Reduction ratio X:1	3.7	4.3	6.0	13	36	49	113	216	181	488	792
				16		58	132		214	572	936
				19		69	156		252	676	1296
				22		81			298		
				26		95			353		
									413		
Reduction ratio absolute	11/3	13/3	6/1	121/9	36/1	1331/27	338/3	216/1	14641/81	4394/9	792/1
				143/9		1573/27	132/1		17303/81	572/1	936/1
				169/9		1859/27	156/1		20449/81	676/1	1296/1
				22/1		2197/27	216/1		24167/81		
				26/1		286/3			28561/81		
									3718/9		
Motor shaft max. diametre (mm)	4	2		4	2		4	2		4	2
Gearbox lenght "L" (mm)	24			34.3		42.8			51.3		
Max. continuous torque (N.m)	1			2.25		4.5			4.5		
Max. intermittent torque (N.m)	1.5			3.4		6			6		
Average backlash no load	1.2°			1.4°		1.5°			1.5°		
Gearbox efficiency	90%			81%		73%			65%		
Max. mass inertia (g.cm ²)	0.58			0.58		0.58			0.58		
Gearbox weight approx (g)	80			110		140			170		
gearbox model	AM-24GPA-X			AM-24GPB-X		AM-24GPC-X			AM-24GPD-X		



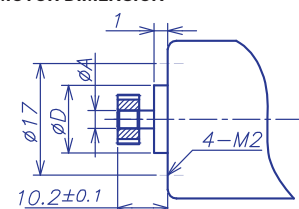
Recommend Motor:
Coreless Motor (w/E) Brushless Motor (w/E)
AM-CL2232GAN AM-BL2032AN
AM-CL2232MAN AM-BL2040AN
AM-CL2242GAN AM-BL2051AN
AM-CL2242MAN AM-BL2453AN
AM-CL2532MAN
AM-CL2545MAN

Recommend Encoder:
Suitable for Coreless Motor
Encoder S: AM-EN1611S***
Encoder S: AM-EN2211S***
Suitable for Brushless Motor
Encoder S: AM-EN1611S***
Encoder T: AM-EN2412T***

INPUT GEARBOX DATA

Modulus	0.5		
Press angle	20°		
Teeth number	8	12	15
Max gear hole "A"	2.5	4	4
Max motor shaft	2.5	4	4
Motor dimension "D"	6	8	8.5

MOTOR DIMENSION



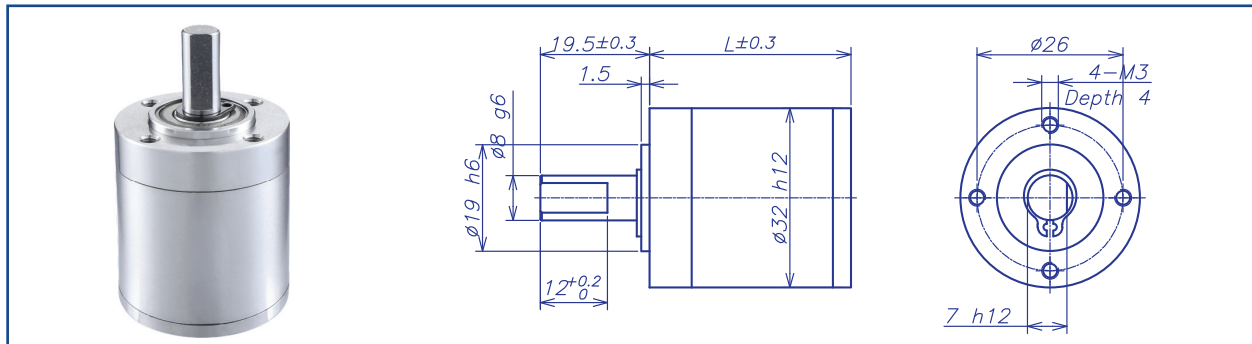
GEARBOX MOTOR LENGTH "LT"

Gear motor length L_T	87	110.5	108.3
Gear box length L_1	34.3	42.8	51.3
Motor length L_2	42	57	45
Encoder length L_3	10.7	10.7	12

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AM-32GP Series



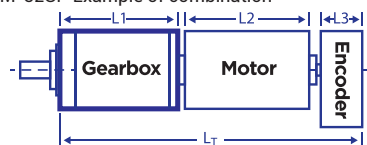
GEARBOX CHARACTER

Gear type	Straight teeth	Radial Play (10mm from flange)	max 0.1mm			
Output shaft	Stainless steel hardened	Permissible force press fits	max. 150 N			
Main gear	Alloy steel hardened	Permissible axial load (dynamic)	max. 120N			
Ring gear	Stainless steel hardened	Recommended input speed	8000RPM			
Adapter plate	Stainless steel	Operating temperature range	-40°C ~ +100°C			
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH			
Axial play	0-0.3	Number of stages	1	2	3	4
Directions	CW/CCW	Permissible load (13mm from flange)	80N	130N	145N	145N

GEARBOX DATA

Number of stage	1			2		3			4			
	Reduction ratio X:1	3.4	4.2	5.8	11	33	38	72	190	130	301	642	1093
Reduction ratio absolute				14		47	81		160	337	792	
				17		59	100		198	377		
				19		65	112		221	416		
				24			138		244	465		
									273	574		
Reduction ratio absolute	27/8	25/6	23/4	729/64	529/16	19683/512	15625/216	12167/64	531441/4096	390625/1296		279841/256
Motor shaft max. diameter (mm)	4	3		4	3		4	3		4		3
Gearbox length "L" (mm)	27.4			35.9		44.4			52.9			
Max. continuous torque (N.m)	0.8			2		3.6			4			
Max. intermittent torque (N.m)	1.2			3		5.4			6			
Average backlash no load	0.8°			1.0°		1.0°			1.0°			
Gearbox efficiency	90%			81%		73%			65%			
Max. mass inertia (g.cm ²)	1.75			1.82		1.82			1.82			
Gearbox weight approx (g)	155			200		245			290			
gearbox model	AM-32GPA-X			AM-32GPB-X		AM-32GPC-X			AM-32GPD-X			

AM-32GP Example of combination



Recommend Motor:
Coreless Motor (w/E)
AM-CL2831MAN
AM-CL2845MAN
Brushless Motor (w/E)
AM-BL2453AN
AM-BL2845AN
AM-BL3260AN
AM-BL3270AN
AM-BD2845AN
AM-BD3260AN
AM-BD3270AN

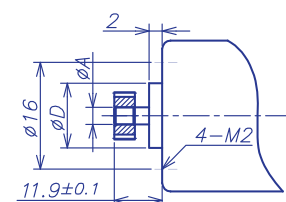
Recommend Encoder:
Suitable for Coreless Motor
Encoder S: AM-EN1611S***
2~3 Channels

Suitable for Brushless Motor
Encoder S: AM-EN1611S***
2~3 Channels
Encoder T: AM-EN2412T***
2~3 Channels
Encoder S: AM-EN2211S***
2~3 Channels

INPUT GEARBOX DATA

Modulus	0.45		
Press angle	20°		
Teeth number	12	18	24
Max gear hole "A"	3	4	4
Max motor shaft	3	4	4
Motor dimension "D"	7	10	12

MOTOR DIMENSION



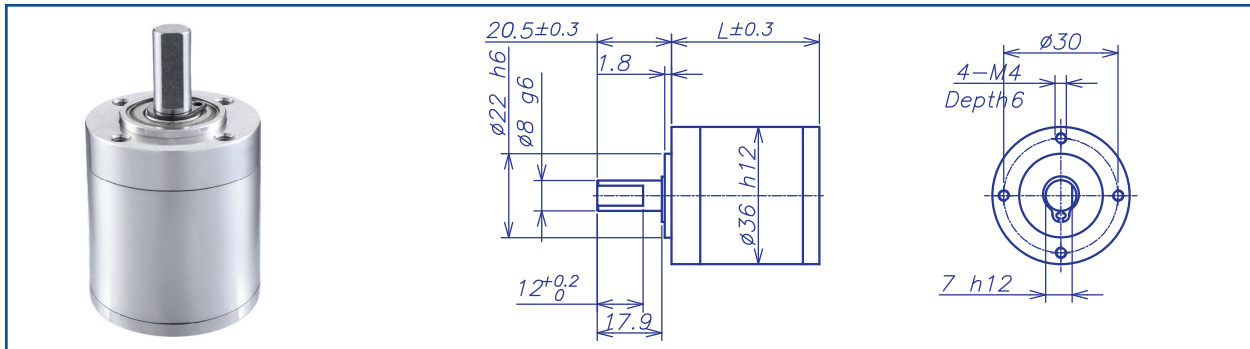
GEARBOX MOTOR LENGTH "LT"

Gear motor length L _T	83.1	106.6	126.4
Gear box length L ₁	27.4	35.9	44.4
Motor length L ₂	45	60	70
Encoder length L ₃	10.7	10.7	12

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AM-36GP Series

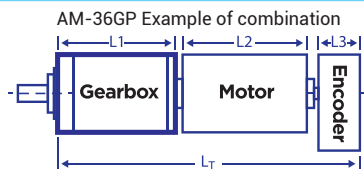


GEARBOX CHARACTER

Gear type	Straight teeth	Radial Play (10mm from flange)	max 0.1mm
Output shaft	Stainless steel hardened	Permissible force press fits	max. 150 N
Main gear	Alloy steel hardened	Permissible axial load (dynamic)	max. 150N
Ring gear	Stainless steel hardened	Recommended inut speed	8000RPM
Adapter plate	Stainless steel	Operating temperature range	-40°C ~ +100°C
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH
Axial play	0-0.3	Number of stages	1 2 3 4
Directions	CW/CCW	Permissible load (14mm from flange)	140N 230N 230N 230N

GEARBOX DATA

Number of stage	1			2		3			4				
	Reduction ratio X:1	3.5	4.3	6.0	12 15 19 21 26	36	43 53 66 74	81 91 113 126 156	216	150 186 230 257 285 319	353 394 441 488 546 676	756 936	1296
Reduction ratio absolute	7/2	13/3	6/1	49/4 91/6 169/9 21/1 26/1	36/1	343/8 637/12 1183/18 147/2	2197/27 91/1 338/3 126/1 156/1	216/1	2401/16 4459/24 8281/36 1029/4 15379/54 637/2	28561/81 1183/3 441/1 4394/9 546/1 676/1 756/1 936/1		1296/1	
Motor shaft max. diametre (mm)	6	4	6	6	4	6	4	6	4	6	4	6	4
Gearbox length "L" (mm)	30.6			39.6		48.6			57.6				
Max. continuous torque (N.m)	1.2			3		5			6				
Max. intermittent torque (N.m)	1.8			4.5		7.5			9				
Average backlash no load	0.7°			0.8°		0.8°			0.8°				
Gearbox efficiency	90%			81%		73%			65%				
Max. mass inertia (g.cm ²)	3			3.17		3.18			3.18				
Gearbox weight approx (g)	210			270		330			360				
gearbox model	AM-36GPA-X			AM-36GPB-X		AM-36GPC-X			AM-36GPD-X				



Recommend Motor:
Coreless Motor (w/E)
AM-CL3570GAN
AM-CL4071GAE
Brushless Motor (w/E)
AM-BL3260AN AM-BD3260AN
AM-BL3270AN AM-BD3270AN
AM-BL3660AN AM-BD3660AN
AM-BL3675BF
AM-BL3690BF

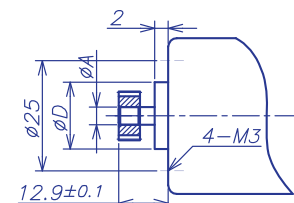
Recommend Encoder:
Suitable for Coreless Motor
Encoder S: AM-EN2211S***
Encoder T: AM-EN2412T***

Suitable for Brushless Motor
Encoder S: AM-EN2211S***
Encoder T: AM-EN2412T***
AM-EN3612T***

INPUT GEARBOX DATA

Modulus	0.5		
Press angle	20°		
Teeth number	12	18	24
Max gear hole "A"	4	6	6
Max motor shaft	4	6	6
Motor dimension "D"	8	11	13.5

MOTOR DIMENSION



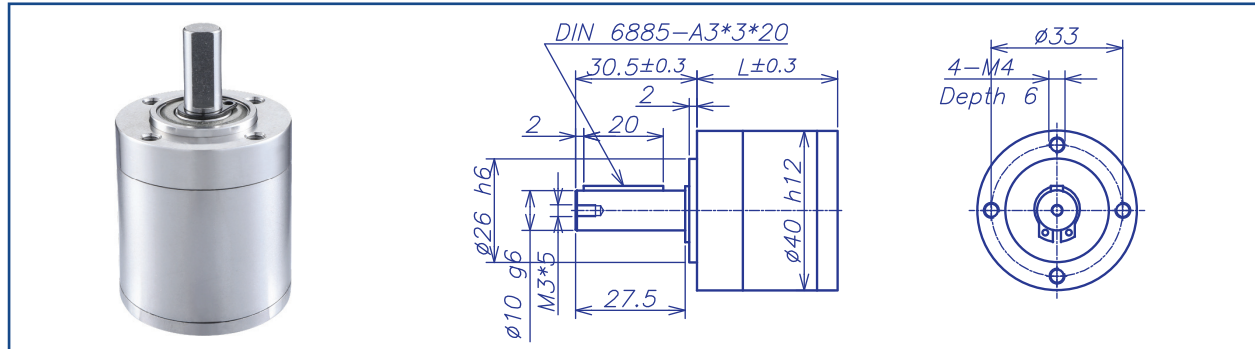
GEARBOX MOTOR LENGTH "LT"

Gear motor length L_T	120.3	119.3	159.6
Gear box length L_1	39.6	48.6	57.6
Motor length L_2	70	60	90
Encoder length L_3	10.7	10.7	12

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AM-40GP Series

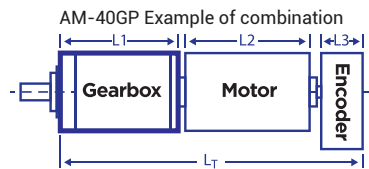


GEARBOX CHARACTER

Gear type	Straight teeth	Radial Play (10mm from flange)	max 0.1mm			
Output shaft	Stainless steel hardened	Permissible force press fits	max. 150 N			
Main gear	Alloy steel hardened	Permissible axial load (dynamic)	max. 150N			
Ring gear	Stainless steel hardened	Recommended input speed	8000RPM			
Adapter plate	Stainless steel	Operating temperature range	-40°C ~ +100°C			
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH			
Axial play	0-0.3	Number of stages	1	2	3	4
Directions	CW/CCW	Permissible load (18mm from flange)	170N	250N	300N	300N

GEARBOX DATA

Number of stage	1			2		3			4			
Reduction ratio X:1	3.3	4	5.5	11	30	34	64	166	112	256	541	915
				13		42	72		137	286	666	
				16		52	88		169	320		
				18		58	98		189	352		
				22			121		208	393		
									232	484		
Reduction ratio absolute	13/4	4/1	11/2	169/16	121/4	2197/64	64/1	1331/8	28561/256	256/1	14641/16	
				13/1		169/4	143/2		2197/16	286/1		
				16/1		52/1	88/1		169/1	20449/64		
				143/8		1859/32	1573/16		24167/128	352/1		
				22/1			121/1		208/1	1573/4		
									1859/8	484/1		
										17303/32		
										1331/2		
Motor shaft max. diameter (mm)	6	5		6	5		6	5		6		5
Gearbox length "L" (mm)	35.3			46.8		58.3			69.8			
Max. continuous torque (N.m)	2			3		7			9			
Max. intermittent torque (N.m)	3			4.5		10.5			13.5			
Average backlash no load	0.7°			0.8°		0.8°			0.8°			
Gearbox efficiency	90%			81%		73%			65%			
Max. mass inertia (g.cm ²)	7.12			7.46		7.49			7.5			
Gearbox weight approx (g)	320			415		510			605			
gearbox model	AM-40GPA-X			AM-40GPB-X		AM-40GPC-X			AM-40GPD-X			



Recommend Motor:
Coreless Motor (w/E)
AM-CL3570GAN
AM-CL4071GAE

Brushless Motor (w/E)
AM-BL3660AN
AM-BL3675BF
AM-BL3690BF
AM-BL4060BF
AM-BD3660AN

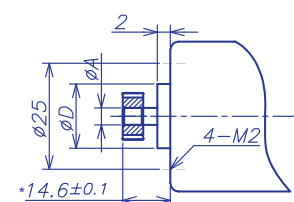
Recommend Encoder:
Suitable for Coreless Motor
Encoder S: AM-EN2211S***
Encoder T: AM-EN2412T***

Suitable for Brushless Motor
Encoder S: AM-EN2211S***
Encoder T: AM-EN2412T***
AM-EN3612T***

INPUT GEARBOX DATA

Modulus	0.6		
Press angle	20°		
Teeth number	12	18	24
Max gear hole "A"	5	6	6
Max motor shaft	5	6	6
Motor dimension "D"	9.5	13	16

MOTOR DIMENSION



GEARBOX MOTOR LENGTH "LT"

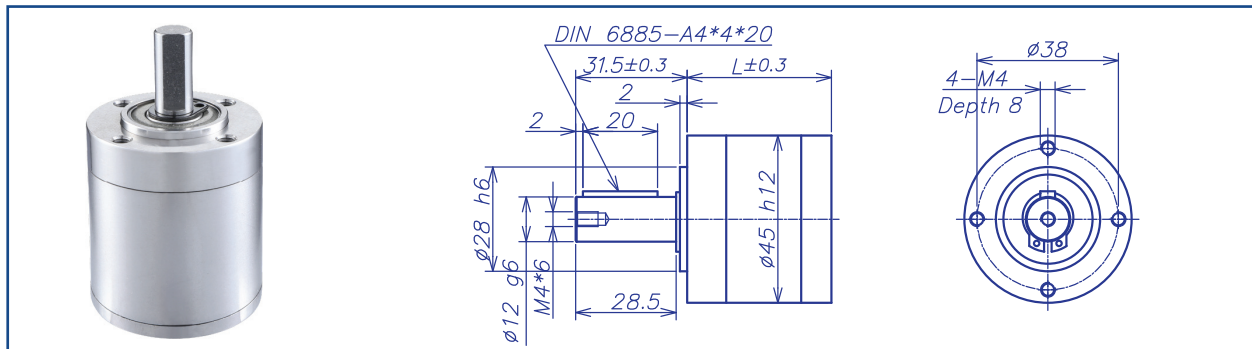
Gear motor length L_T	127.5	129	141.8
Gear box length L_1^*	46.8	58.3	69.8
Motor length L_2	70	60	60
Encoder length L_3	10.7	10.7	12

*Note: If combined with AM-CL3570, $L_1=L+5mm$, distance between gear and motor= $14.6+5mm$.

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AM-45GP Series

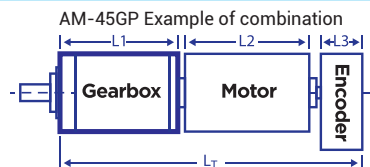


GEARBOX CHARACTER

Gear type	Straight teeth	Radial Play (10mm from flange)	max 0.1mm
Output shaft	Stainless steel hardened	Permissible force press fits	max. 300 N
Main gear	Alloy steel hardened	Permissible axial load (dynamic)	max. 150N
Ring gear	Alloy steel hardened	Recommended input speed	8000RPM
Adapter plate	Stainless steel hardened	Operating temperature range	-40°C ~ +100°C
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH
Axial play	0-0.3	Number of stages	1 2 3 4
Directions	CW/CCW	Permissible load (18mm from flange)	180N 280N 370N 370N

GEARBOX DATA

Number of stage	1			2		3			4			
	Reduction ratio X:1	3.3	4.0	5.2	11	27	37	64	141	123	256	469	731
Reduction ratio absolute	10/3	4/1	26/5	100/9	676/25	1000/27	64/1	17576/125	10000/81	256/1	469/5	456976/625
Motor shaft max. diametre (mm)	8	6	8	6	8	6	8	6	8	6	8	6
Gearbox length "L" (mm)	36.1			48.1		60.1			72.1			
Max. continuous torque (N.m)	3			7		12			14			
Max. intermittent torque (N.m)	4.5			10.5		18			21			
Average backlash no load	0.6°			0.7°		0.7°			0.7°			
Gearbox efficiency	90%			81%		73%			65%			
Max. mass inertia (g.cm ²)	12.85			13.35		13.39			13.4			
Gearbox weight approx (g)	435			560		685			810			
gearbox model	AM-45GPA-X			AM-45GPB-X		AM-45GPC-X			AM-45GPD-X			



Recommend Motor:
Coreless Motor (w/E)
AM-CL3570GAN
AM-CL4071GAE
Brushless Motor (w/E)
AM-BL3660AN AM-BD3660AN
AM-BL3675BF AM-BD45100AN
AM-BL3690BF
AM-BL4060BF
AM-BL45100AN
AM-BL45100BF

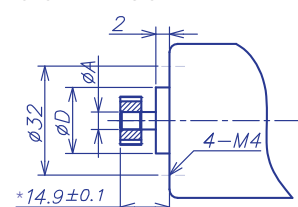
Recommend Encoder:
Suitable for Coreless Motor
Encoder S: AM-EN2211S***
Encoder T: AM-EN2412T***

Suitable for Brushless Motor
Encoder S: AM-EN2211S***
Encoder T: AM-EN3612T***

INPUT GEARBOX DATA

Modulus	0.6		
Press angle	20°		
Teeth number	15	21	27
Max gear hole "A"	6.0	8.0	8.0
Max motor shaft	6.0	8.0	8.0
Motor dimension "D"	11	15	18

MOTOR DIMENSION



GEARBOX MOTOR LENGTH "LT"

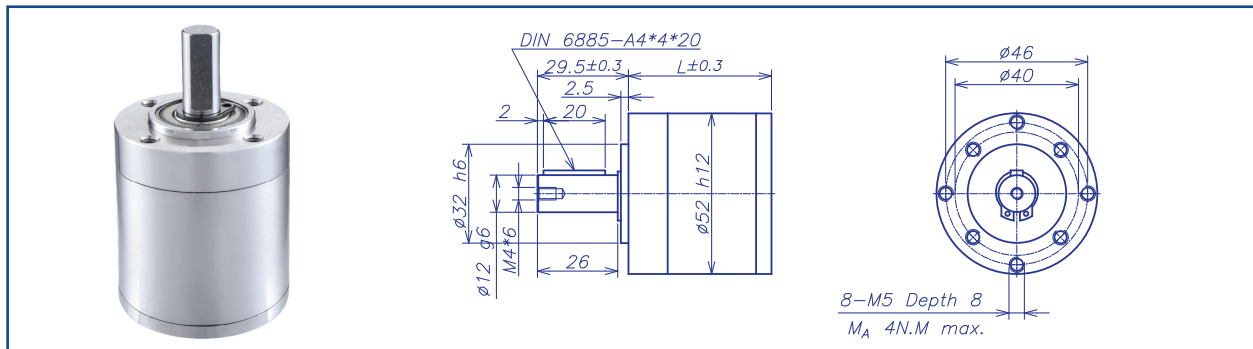
Gear motor length L _T	130.8	184.1
Gear box length L ₁ *	60.1	72.1
Motor length L ₂	60	100
Encoder length L ₃	10.7	12

*Note: If combined with AM-CL3570, L1=L+5mm, distance between gear and motor=14.9+5mm.

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AM-52GP Series



GEARBOX CHARACTER

Gear type	Straight teeth	Radial Play (12mm from flange)	max 0.1mm
Output shaft	Stainless steel hardened	Permissible force press fits	max. 500 N
Main gear	Alloy steel hardened	Permissible axial load (dynamic)	max. 200N
Ring gear	Alloy steel hardened	Recommended inut speed	6000RPM
Adapter plate	Aluminium alloy	Operating temperature range	-40°C ~ +100°C
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH
Axial play	0-0.3	Number of stages	1 2 3 4
Directions	CW/CCW	Permissible load (12mm from flange)	420N 630N 900N 900N

GEARBOX DATA

Number of stage	1		2		3		4		
Reduction ratio X:1	3.5	4.3	12 15 21	19 26	43 53 66 74 126	81 91 113 156	150 186 230 257 285	319 394 441 546 756	353 488 546 676 936
Reduction ratio absolute	7/2	13/3	49/4 91/6 21/1	169/9 26/1	343/8 637/12 1183/18 126/1	2197/27 91/1 338/3 156/1	2401/16 4459/24 8281/36 1029/4 15379/54	637/2 1183/3 441/1 546/1 756/1	28561/81 4394/9 546/1 676/1 936/1
Motor shaft max. diameter (mm)	10	8	10	8	10	8	10	8	
Gearbox length "L" (mm)	46.3		62.8		79.3		95.8		
Max. continuous torque (N.m)	4		15		30		30		
Max. intermittent torque (N.m)	6		22.5		45		45		
Average backlash no load	0.6°		0.7°		0.7°		0.7°		
Gearbox efficiency	90%		81%		73%		65%		
Max. mass inertia (g.cm ²)	19.99		20.98		21.06		21.07		
Gearbox weight approx (g)	510		720		930		1140		
gearbox model	AM-52GPA-X		AM-52GPB-X		AM-52GPC-X		AM-52GPD-X		

<p>AM-52GP Example of combination</p>		<table border="1"> <thead> <tr> <th colspan="2">INPUT GEARBOX DATA</th> </tr> </thead> <tbody> <tr> <td>Modulus</td> <td>0.7</td> </tr> <tr> <td>Press angle</td> <td>20°</td> </tr> <tr> <td>Teeth number</td> <td>12 18 24</td> </tr> <tr> <td>Max gear hole "A"</td> <td>- 8.0 10</td> </tr> <tr> <td>Max motor shaft</td> <td>- 8.0 10</td> </tr> <tr> <td>Motor dimension "D"</td> <td>- 15 19</td> </tr> </tbody> </table>	INPUT GEARBOX DATA		Modulus	0.7	Press angle	20°	Teeth number	12 18 24	Max gear hole "A"	- 8.0 10	Max motor shaft	- 8.0 10	Motor dimension "D"	- 15 19	<table border="1"> <thead> <tr> <th colspan="2">MOTOR DIMENSION</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> <tr> <td>20.6 ± 0.1</td> <td></td> </tr> </tbody> </table>	MOTOR DIMENSION				20.6 ± 0.1	
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MOTOR DIMENSION																							
20.6 ± 0.1																							
<p>Recommend Motor: Coreless Motor (w/E)</p> <p>Brushless Motor (w/E) AM-BL4060BF AM-BD45100AN AM-BL45100AN AM-BL45100BF</p>	<p>Recommend Encoder: Suitable for Coreless Motor -</p> <p>Suitable for Brushless Motor Encoder S: AM-EN2211S*** Encoder T: AM-EN3612T***</p>	<table border="1"> <thead> <tr> <th colspan="2">GEARBOX MOTOR LENGTH "LT"</th> </tr> </thead> <tbody> <tr> <td>Gear motor length L_T</td> <td>190</td> </tr> <tr> <td>Gear box length L₁</td> <td>79.3</td> </tr> <tr> <td>Motor length L₂</td> <td>100</td> </tr> <tr> <td>Encoder length L₃</td> <td>10.7</td> </tr> </tbody> </table>	GEARBOX MOTOR LENGTH "LT"		Gear motor length L _T	190	Gear box length L ₁	79.3	Motor length L ₂	100	Encoder length L ₃	10.7											
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PLANETARY GEARBOX

HIGH PERFORMANCE SERIES

Assun Planetary Gearbox of high performance series are manufactured with the latest production technology to achieve very low backlash, higher output torque, longer lifetime. Diameter from 16mm to 52mm, the high performance series planetary gearboxes offer a wide range of high precision choices for DC drive solution.



AM-16HP

AM-19HP

AM-22HP

AM-26HP

AM-28HP

AM-32HP

AM-36HP

AM-40HP

AM-45HP

AM-52HP

Company Name Abbreviation

AM - 16HPA - 5.4:1

Gearbox Dimension
16 - Diameter (mm)

Gearbox Type
HP - High Performance

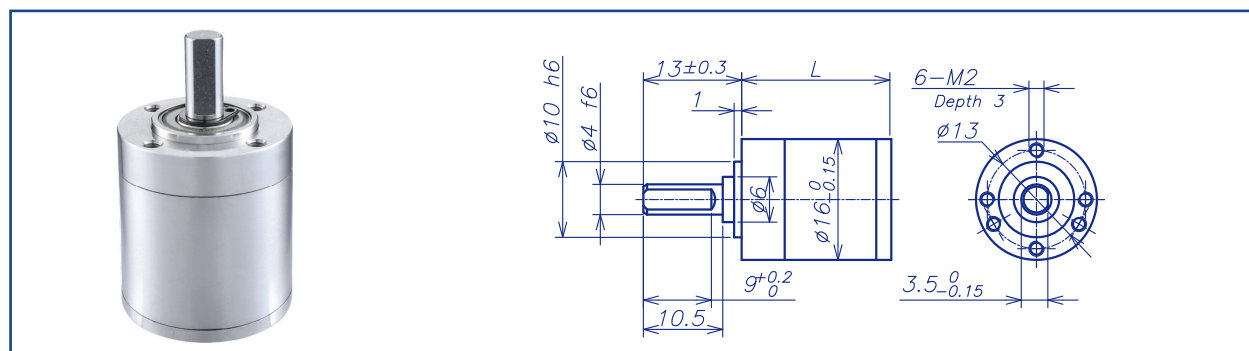
Gearbox Stage

A : First Stage
B : Second Stage
C : Three Stage
D : Four Stage

Gear Ratio

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AM-16HP Series

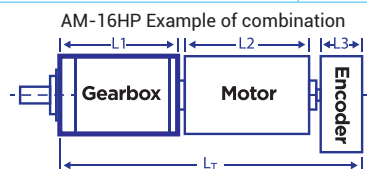


GEARBOX CHARACTER

Gear type	Straight teeth	Radial Play (6mm from flange)	max 0.1mm
Output shaft	Stainless steel hardened	Permissible force press fits	max. 100 N
Main gear	Alloy Steel hardened	Permissible axial load (dynamic)	max. 30N
Ring gear	Stainless steel hardened	Recommended input speed	16000RPM
Adapter plate	Stainless steel	Operating temperature range	-40°C ~ +100°C
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH
Axial play	0-0.3	Number of stages	1 2 3 4
Directions	CW/CCW	Permissible load (6mm from flange)	30N 45N 70N 70N

GEARBOX DATA

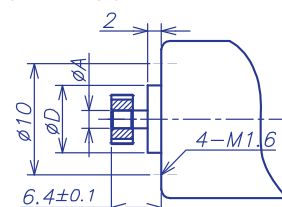
Number of stage	1			2		3			4			
	Reduction ratio X:1	3.8	4.4	5.4	14	29	53	84	157	198	370	590	850
Reduction ratio absolute	15/4	57/13	27/5	225/16	729/25	3375/64	185193/2197	19683/125	50625/256	10556001/28561	531441/625	
				855/52		12825/208	4617/52		192375/832	263169/676		
				3249/169		48735/676	87723/845		731025/2704	6561/16		
				81/4	1539/65	1215/16	2187/20	41551/325	18225/64	5000211/10985	124659/260	59049/100	1121931/1625
Motor shaft max. diameter (mm)	2	1.5	2	1.5	2	1.5	2	1.5	2	1.5		
Gearbox length "L" (mm)	16.1			19.8		23.5			27.2			
Max. continuous torque (N.m)	0.1			0.5		0.8			0.9			
Max. intermittent torque (N.m)	0.12			0.7		1			1.08			
Average backlash no load	1.2°			1.4°		1.5°			1.5°			
Gearbox efficiency	90%			81%		73%			65%			
Max. mass inertia (g.cm ²)	0.04			0.04		0.04			0.04			
Gearbox weight approx (g)	25			30		35			40			
gearbox model	AM-16HPA-X			AM-16HPB-X		AM-16HPC-X			AM-16HPD-X			



INPUT GEARBOX DATA

Modulus	0.3	
Press angle	20°	
Teeth number	10	13 16
Max gear hole "A"	1.5	2.0
Max motor shaft	1.5	2.0
Motor dimension "D"	6.0	

MOTOR DIMENSION



Recommend Motor:

Coreless Motor (w/E):
AM-CL1623MAN
AM-CL1626MAN
AM-CL1633MAN
AM-CL1643MAN

Brushless Motor (w/E):
AM-BL1632AN
AM-BL1640AN

Recommend Encoder:

Suitable for Coreless Motor
Encoder S: AM-EN1611S***

Suitable for Brushless Motor

Encoder S: AM-EN1611S***
Encoder T: AM-EN1612T***

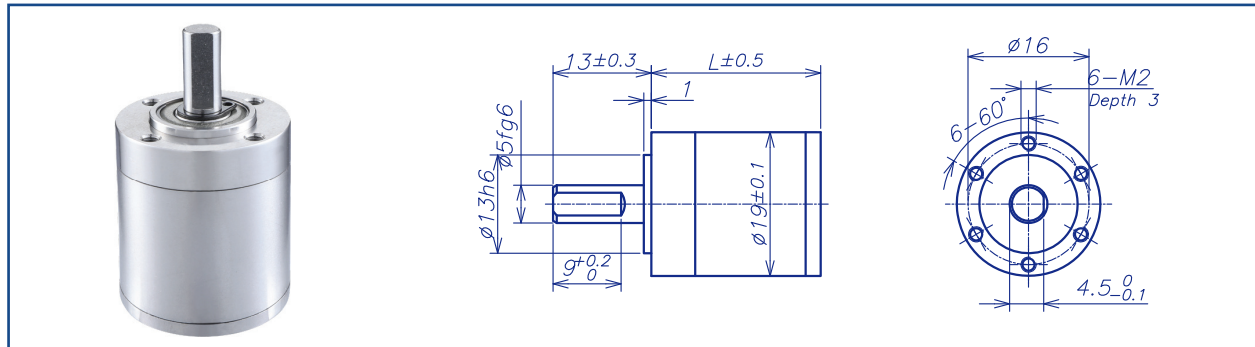
GEARBOX MOTOR LENGTH "LT"

Gear motor length L _T	39.1	67.2	79.2
Gear box length L ₁	16.1	23.5	27.2
Motor length L ₂	23	33	40
Encoder length L ₃	-	10.7	12

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AM-19HP Series

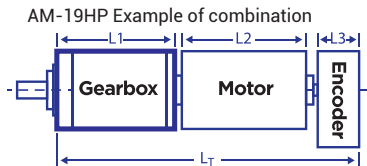


GEARBOX CHARACTER

Gear type	Straight teeth	Radial Play (8mm from flange)	max 0.1mm
Output shaft	Stainless steel hardened	Permissible force press fits	max. 100 N
Main gear	Alloy Steel hardened	Permissible axial load (dynamic)	max. 50N
Ring gear	Stainless steel hardened	Recommended input speed	15000RPM
Adapter plate	Stainless steel	Operating temperature range	-40°C ~ +100°C
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH
Axial play	0-0.3	Number of stages	1 2 3 4
Directions	CW/CCW	Permissible load (5mm from flange)	60N 100N 120N 120N

GEARBOX DATA

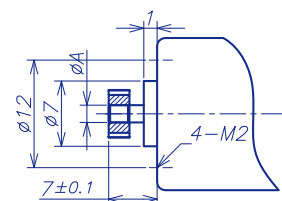
Number of stage	1			2		3		4		
	Reduction ratio X:1	3.8	4.4	5.4	14	19	53	72	198	316	370
Reduction ratio absolute				16	24	62	84	231	389	455
				20	29	76	89	270	479	561
							104	285	590	690
							109	333		
						128	410			
Reduction ratio absolute	15/4	57/13	27/5	225/16	3249/169	3375/64	48735/676	50625/256	2777895/8788	10556001/28561
				855/52	1539/65	12825/208	185193/2197	192375/832	263169/676	5000211/10985
				81/4	729/25	1215/16	4617/52	731025/2704	124659/260	2368521/4225
							87723/845	18225/64	59049/100	1121931/1625
						2187/20	69255/208			
						41553/325	6561/16			
Motor shaft max. diametre (mm)	3	2		3	2		3	2	3	2
Gearbox length "L" (mm)		17.6		22.4			27.2		32	
Max. continuous torque (N.m)		0.2		0.9			1.6		2	
Max. intermittent torque (N.m)		0.3		1.1			2		2.5	
Average backlash no load		1.2°		1.4°			1.4°		1.4°	
Gearbox efficiency		90%		81%			73%		65%	
Max. mass inertia (g.cm²)		0.11		0.11			0.11		0.11	
Gearbox weight approx (g)		40		50			60		70	
gearbox model		AM-19HPA-X		AM-19HPB-X			AM-19HPC-X		AM-19HPD-X	



INPUT GEARBOX DATA

Modulus	0.35		
Press angle	20°		
Teeth number	10	13	16
Max gear hole "A"	2	2	3
Max motor shaft	2	2	3

MOTOR DIMENSION



Recommend Motor:

Coreless Motor (w/E):
AM-CL16***
AM-CL19***
AM-CL22***

Brushless Motor (w/E):
AM-BL16***
AM-BL20***

Recommend Encoder:

Suitable for Coreless Motor
Encoder S: AM-EN1611S***
AM-EN2211S***

Suitable for Brushless Motor
Encoder S: AM-EN1611S***
Encoder T: AM-EN1612T***

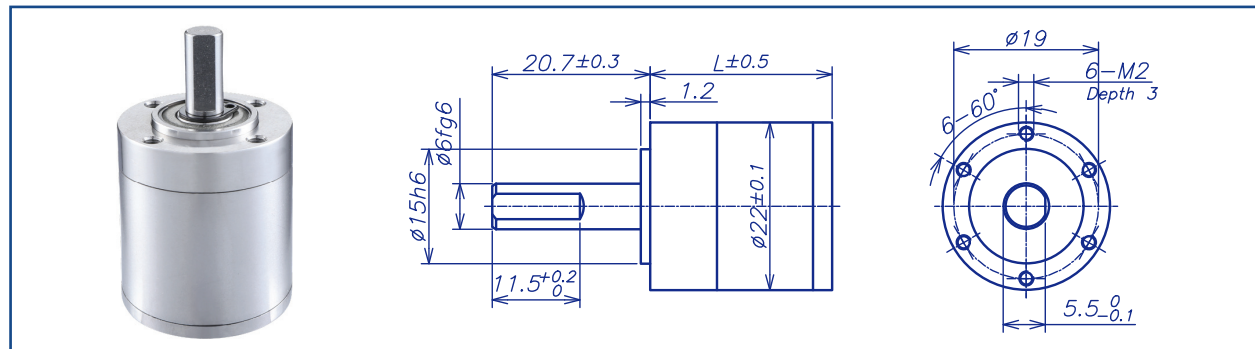
GEARBOX MOTOR LENGTH "LT"

Gear motor length L_T	40.6	73.1	79.2
Gear box length L_1	17.6	22.4	27.2
Motor length L_2	23	40	40
Encoder length L_3	-	10.7	12

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AM-22HP Series

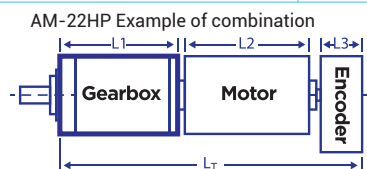


GEARBOX CHARACTER

Gear type	Straight teeth	Radial Play (8mm from flange)	max 0.1mm
Output shaft	Stainless steel hardened	Permissible force press fits	max. 120 N
Main gear	Alloy Steel hardened	Permissible axial load (dynamic)	max. 100N
Ring gear	Stainless steel hardened	Recommended input speed	12000RPM
Adapter plate	Stainless steel	Operating temperature range	-40°C ~ +100°C
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH
Axial play	0-0.3	Number of stages	1 2 3 4
Directions	CW/CCW	Permissible load (10mm from flange)	60N 100N 120N 120N

GEARBOX DATA

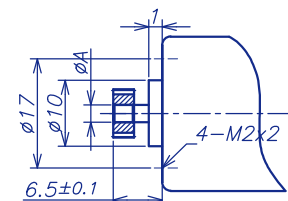
Number of stage	1			2			3			4		
Reduction ratio X:1	3.1	4.0	6.0	10	19	31	75	113	158	356	679	
				13	24	40	96	144	186	384	864	
				16	36	50		216	201	453	1296	
						59			237	576		
						64			256			
									302			
Reduction ratio absolute	22/7	4/1	6/1	484/49	132/7	10648/343	528/7	792/7	7744/49	17424/49	4752/7	
				88/7	24/1	1936/49	96/1	144/1	63888/343	384/1	864/1	
				16/1	36/1	352/7		216/1	1408/7	3168/7	1296/1	
						2904/49			11616/49	576/1		
						64/1			256/1			
									2112/7			
Motor shaft max. diameter (mm)	3	1.5	3	1.5	3	1.5	3	1.5	3	1.5		
Gearbox length "L" (mm)	19.1			23.9			28.7			33.5		
Max. continuous torque (N.m)	0.8			2.5			3.2			3.8		
Max. intermittent torque (N.m)	1			3			3.8			4.5		
Average backlash no load	1.1°			1.3°			1.3°			1.3°		
Gearbox efficiency	90%			81%			73%			65%		
Max. mass inertia (g.cm ²)	0.36			0.36			0.36			0.36		
Gearbox weight approx (g)	55			70			85			100		
gearbox model	AM-22HPA-X			AM-22HPB-X			AM-22HPC-X			AM-22HPD-X		



INPUT GEARBOX DATA

Modulus	0.4
Press angle	20°
Teeth number	9 15 21
Max gear hole "A"	1.5 3 3
Max motor shaft	1.5 3 3

MOTOR DIMENSION



Recommend Motor:
Coreless Motor (w/E):
AM-CL16***
AM-CL19***
AM-CL22***

Recommend Encoder:
Suitable for Coreless Motor
Encoder S: AM-EN1611S***
AM-EN2211S***

Brushless Motor (w/E):
AM-BL16***
AM-BL20***

Suitable for Brushless Motor
Encoder S: AM-EN1611S***
Encoder T: AM-EN1612T***

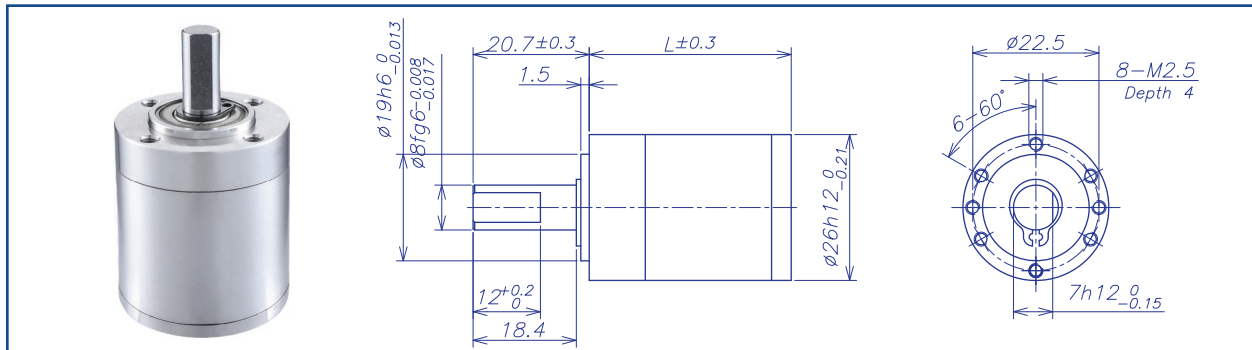
GEARBOX MOTOR LENGTH "LT"

Gear motor length L _T	42.1	74.6	80.7
Gear box length L ₁	19.1	23.9	28.7
Motor length L ₂	23	40	40
Encoder length L ₃	-	10.7	12

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AM-26 HP Series

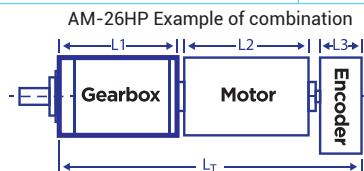


GEARBOX CHARACTER

Gear type	Straight teeth	Radial Play (10mm from flange)	max 0.1mm
Output shaft	Stainless steel hardened	Permissible force press fits	max. 150 N
Main gear	Alloy steel hardened	Permissible axial load (dynamic)	max. 110N
Ring gear	Stainless steel hardened	Recommended input speed	10000RPM
Adapter plate	Stainless steel	Operating temperature range	-40°C ~ +100°C
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH
Axial play	0-0.3	Number of stages	1 2 3 4
Directions	CW/CCW	Permissible load (10mm from flange)	150N 170N 170N 170N

GEARBOX DATA

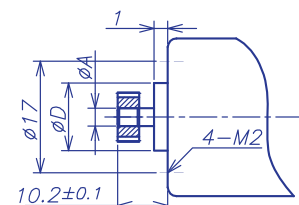
Number of stage	1			2		3			4		
Reduction ratio X:1	3.7	4.3	6.0	13	36	49	113	216	181	488	792
				16		58	132		214	572	936
				19		69	156		252	676	1296
				22		81			298		
				26		95			353		
									413		
Reduction ratio absolute	11/3	13/3	6/1	121/9	36/1	1331/27	338/3	216/1	14641/81	4394/9	792/1
				143/9		1573/27	132/1		17303/81	572/1	936/1
				169/9		1859/27	156/1		20449/81	676/1	1296/1
				22/1		2197/27	216/1		24167/81		
				26/1		286/3			28561/81		
									3718/9		
Motor shaft max. diameter (mm)	4	2		4	2		4	2	4		2
Gearbox length "L" (mm)	25.7			36		44.5			53		
Max. continuous torque (N.m)	1			3		5			6		
Max. intermittent torque (N.m)	1.5			4.5		7.5			9		
Average backlash no load	1.2°			1.4°		1.5°			1.5°		
Gearbox efficiency	90%			81%		73%			65%		
Max. mass inertia (g.cm ²)	0.63			0.58		0.58			0.58		
Gearbox weight approx (g)	110			140		170			200		
gearbox model	AM-26HPA-X			AM-26HPB-X		AM-26HPC-X			AM-26HPD-X		



INPUT GEARBOX DATA

Modulus	0.5
Press angle	20°
Teeth number	8 12 15
Max gear hole "A"	2.5 4 4
Max motor shaft	2.5 4 4
Motor dimension "D"	6 8 8.5

MOTOR DIMENSION



Recommend Motor:
Coreless Motor (w/E) Brushless Motor (w/E)
AM-CL25*** AM-BL20***
AM-CL26*** AM-BL24***
AM-CL28*** AM-BL28***
AM-BD28***

Recommend Encoder:
Suitable for Coreless Motor
Encoder S: AM-EN2211S***

Suitable for Brushless Motor
Encoder S: AM-EN2211S***
Encoder T: AM-EN2412T***

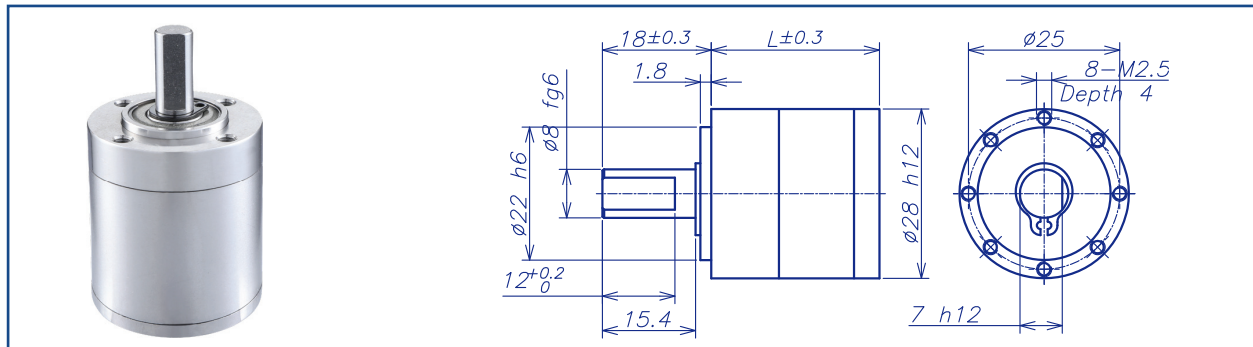
GEARBOX MOTOR LENGTH "LT"

Gear motor length L_T	88.7	112.2	110
Gear box length L_1	36	44.5	53
Motor length L_2	42	57	45
Encoder length L_3	10.7	10.7	12

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AM-28HP Series



GEARBOX CHARACTER			
Gear type	Straight teeth	Radial Play (10mm from flange)	max 0.1mm
Output shaft	Stainless steel hardened	Permissible force press fits	max. 200 N
Main gear	Alloy steel hardened	Permissible axial load (dynamic)	max. 150N
Ring gear	Stainless steel hardened	Recommended input speed	10000RPM
Adapter plate	Stainless steel	Operating temperature range	-40°C ~ +100°C
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH
Axial play	0-0.3	Number of stages	1 2 3 4
Directions	CW/CCW	Permissible load (13mm from flange)	150N 255N 250N 250N

GEARBOX DATA											
Number of stage	1			2		3			4		
Reduction ratio X:1	3.4	4.2	5.8	11 14 17 19 24	33	47 59	72 81 100	138	160 198 244 273 301	337 416 465 574	792
Reduction ratio absolute	27/8	25/6	23/4	729/64 225/16 625/36 621/32 575/24	529/16	6075/128 1875/32	15625/216 5175/64 14375/144	13225/96	164025/1024 50625/256 15625/64 139725/512 390625/1296	43125/128 359375/864 119025/256 330625/576	304175/384
Motor shaft max. diameter (mm)	4	3	4	3	4	3	4	3	4	3	3
Gearbox length "L" (mm)	27.8			35		42.2			49.4		
Max. continuous torque (N.m)	2			3		5			6		
Max. intermittent torque (N.m)	3			4.5		7.5			9		
Average backlash no load	0.8°			1.0°		1.0°			1.0°		
Gearbox efficiency	90%			81%		73%			65%		
Max. mass inertia (g.cm ²)	0.95			0.95		0.95			0.95		
Gearbox weight approx (g)	125			155		185			215		
gearbox model	AM-28HPA-X			AM-28HPB-X		AM-28HPC-X			AM-28HPD-X		

AM-28HP Example of combination

INPUT GEARBOX DATA	
Modulus	0.4
Press angle	20°
Teeth number	12 18 24
Max gear hole "A"	3 4 4
Max motor shaft	3 4 4
Motor dimension "D"	6 8.5 10.5

MOTOR DIMENSION

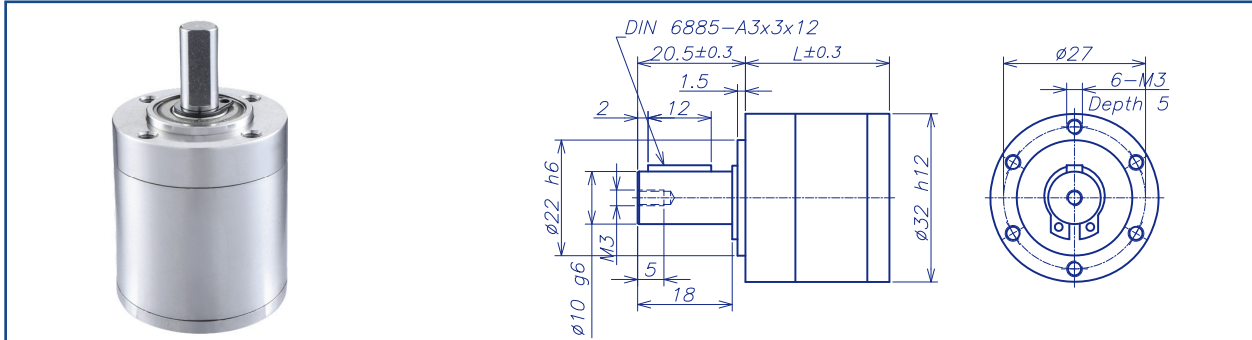
RECOMMEND MOTOR:			
Coreless Motor (w/E)	Brushless Motor (w/E)	Recommend Encoder:	
AM-CL2532MAN	AM-BL2453AN	Suitable for Coreless Motor	
AM-CL2545MAN	AM-BL2845AN	Encoder S: AM-EN1611S***	
AM-CL2831MAN		Suitable for Brushless Motor	
AM-CL2845MAN		Encoder S: AM-EN1611S***	
		Encoder T: AM-EN2412T***	

GEARBOX MOTOR LENGTH "LT"			
Gear motor length L _T	69.5	90.7	107.2
Gear box length L ₁	27.8	35	42.2
Motor length L ₂	31	45	53
Encoder length L ₃	10.7	10.7	12

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AM-32HP Series

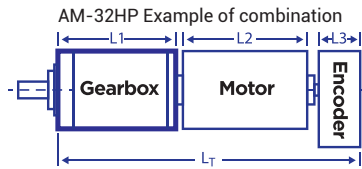


GEARBOX CHARACTER

Gear type	Straight teeth	Radial Play (10mm from flange)	max 0.1mm
Output shaft	Stainless steel hardened	Permissible force press fits	max. 150 N
Main gear	Alloy steel hardened	Permissible axial load (dynamic)	max. 120N
Ring gear	Stainless steel hardened	Recommended input speed	10000RPM
Adapter plate	Stainless steel	Operating temperature range	-40°C ~ +100°C
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH
Axial play	0-0.3	Number of stages	1 2 3 4
Directions	CW/CCW	Permissible load (13mm from flange)	110N 175N 205N 205N

GEARBOX DATA

Number of stage	1			2		3			4		
	Reduction ratio X:1	3.4	4.2	5.8	11 14 17 19 24	33	47 59	72 81 100	138	160 198 244 273	337 416 465 574	792
Reduction ratio absolute	27/8	25/6	23/4	729/64 225/16 625/36 621/32 575/24	529/16	6075/128 1875/32	15625/216 5175/64 14375/144	12167/64 13225/96	164025/1024 50625/256 15625/64 139725/512	43125/128 359375/864 119025/256 330625/576	304175/384
Motor shaft max. diameter (mm)	4	3		4	3		4	3		4	3
Gearbox length "L" (mm)	27.4			35.9		44.4			52.9		
Max. continuous torque (N.m)	3			5		8.5			9.5		
Max. intermittent torque (N.m)	4.5			7.5		12.5			14		
Average backlash no load	0.8°			1.0°		1.0°			1.0°		
Gearbox efficiency	90%			81%		73%			65%		
Max. mass inertia (g.cm ²)	1.6			1.49		1.48			1.48		
Gearbox weight approx (g)	160			240		260			310		
gearbox model	AM-32HPA-X			AM-32HPB-X		AM-32HPC-X			AM-32HPD-X		



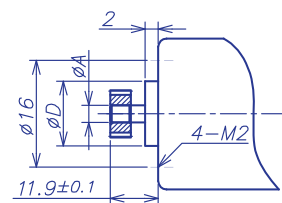
Recommend Motor:
Coreless Motor (w/E)
AM-CL2831MAN
AM-CL2845MAN
Brushless Motor (w/E)
AM-BL2453AN
AM-BL2845AN
AM-BL3260AN
AM-BL3270AN
AM-BD2845AN
AM-BD3260AN
AM-BD3270AN

Recommend Encoder:
Suitable for Coreless Motor
Encoder S: AM-EN1611S***
2~3 Channels
Suitable for Brushless Motor
Encoder S: AM-EN1611S***
2~3 Channels
Encoder T: AM-EN2412T***
2~3 Channels
Encoder S: AM-EN2211S***
2~3 Channels

INPUT GEARBOX DATA

Modulus	0.45		
Press angle	20°		
Teeth number	12	18	24
Max gear hole "A"	3	4	4
Max motor shaft	3	4	4
Motor dimension "D"	7	10	12

MOTOR DIMENSION



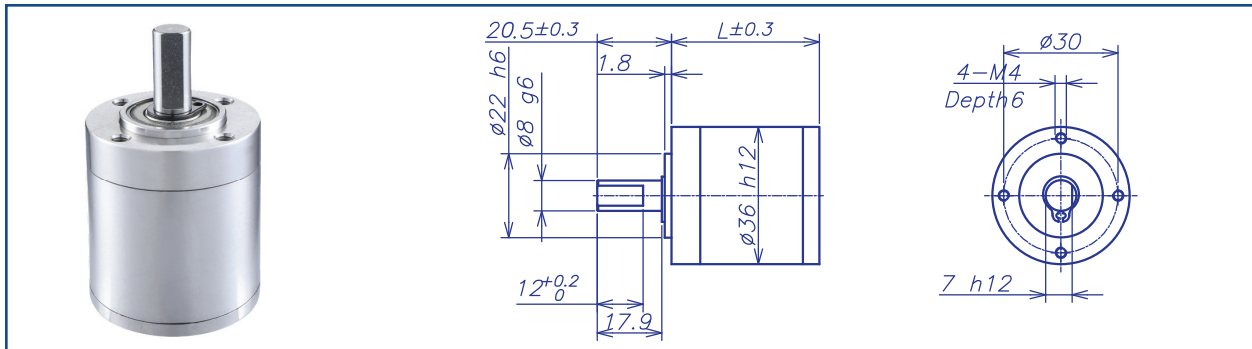
GEARBOX MOTOR LENGTH "LT"

Gear motor length L_T	83.1	106.6	126.4
Gear box length L_1	27.4	35.9	44.4
Motor length L_2	45	60	70
Encoder length L_3	10.7	10.7	12

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AM-36HP Series

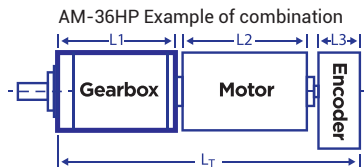


GEARBOX CHARACTER

Gear type	Straight teeth	Radial Play (10mm from flange)	max 0.1mm			
Output shaft	Stainless steel hardened	Permissible force press fits	max. 150 N			
Main gear	Alloy steel hardened	Permissible axial load (dynamic)	max. 150N			
Ring gear	Stainless steel hardened	Recommended inut speed	10000RPM			
Adapter plate	Stainless steel	Operating temperature range	-40°C ~ +100°C			
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH			
Axial play	0-0.3	Number of stages	1	2	3	4
Directions	CW/CCW	Permissible load (14mm from flange)	220N	340N	370N	370N

GEARBOX DATA

Number of stage	1			2		3			4			
Reduction ratio X:1	3.5	4.3	6.0	12	36	43	91	216	150	353	756	1296
				15		53	113		186	394	936	
				19		66	126		230	441		
				21		74	156		257	488		
				26					285	546		
									319	676		
Reduction ratio absolute	7/2	13/3	6/1	49/4	36/1	343/8	91/1	216/1	2401/16	28561/81	756/1	1296/1
				91/6		637/12	338/3		4459/24	1183/3	936/1	
				169/9		1183/18	126/1		8281/36	441/1		
				21/1		147/2	156/1		1029/4	4394/9		
				26/1					15379/54	546/1		
									637/2	676/1		
Motor shaft max. diametre (mm)	6	4		6	4	6	4		6			4
Gearbox length "L" (mm)	32.6			41.6		50.6			59.6			
Max. continuous torque (N.m)	3			5		10			10			
Max. intermittent torque (N.m)	4.5			7.5		15			15			
Average backlash no load	0.7°			0.8°		0.8°			0.8°			
Gearbox efficiency	90%			81%		73%			65%			
Max. mass inertia (g.cm ²)	3.34			3.25		3.24			3.24			
Gearbox weight approx (g)	240			300		360			420			
gearbox model	AM-36HPA-X			AM-36HPB-X		AM-36HPC-X			AM-36HPD-X			



Recommend Motor:
Coreless Motor (w/E)
AM-CL3570GAN
AM-CL4071GAE
Brushless Motor (w/E)
AM-BL3260AN AM-BD3260AN
AM-BL3270AN AM-BD3270AN
AM-BL3660AN AM-BD3660AN
AM-BL3675BF
AM-BL3690BF

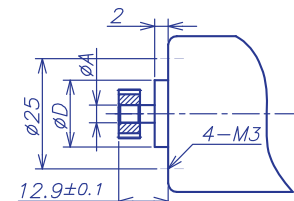
Recommend Encoder:
Suitable for Coreless Motor
Encoder S: AM-EN2211S***
Encoder T: AM-EN2412T***

Suitable for Brushless Motor
Encoder S: AM-EN2211S***
Encoder T: AM-EN2412T***
AM-EN3612T***

INPUT GEARBOX DATA

Modulus	0.5		
Press angle	20°		
Teeth number	12	18	24
Max gear hole "A"	4	6	6
Max motor shaft	4	6	6
Motor dimension "D"	8	11	13.5

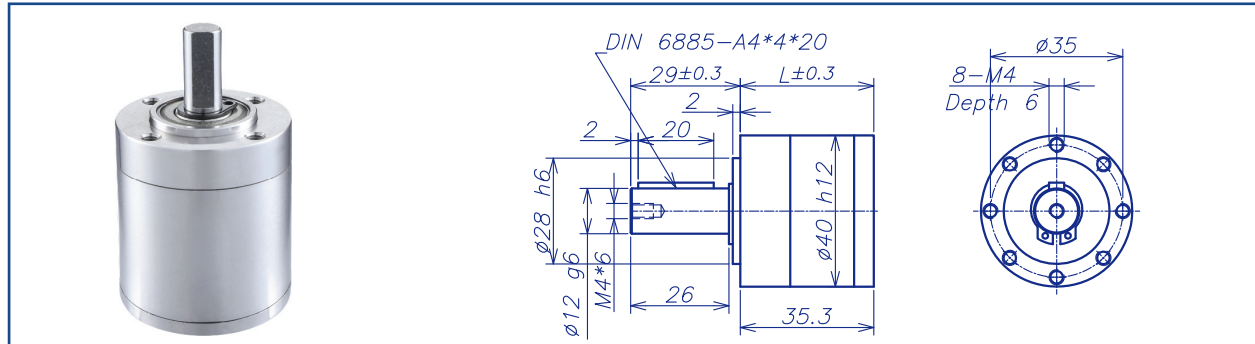
MOTOR DIMENSION



GEARBOX MOTOR LENGTH "LT"

Gear motor length L_T	122.3	121.3	161.6
Gear box length L_1	41.6	50.6	59.6
Motor length L_2	70	60	90
Encoder length L_3	10.7	10.7	12

AM-40HP Series



GEARBOX CHARACTER

Gear type	Straight teeth	Radial Play (10mm from flange)	max 0.1mm			
Output shaft	Stainless steel hardened	Permissible force press fits	max. 150 N			
Main gear	Alloy steel hardened	Permissible axial load (dynamic)	max. 150N			
Ring gear	Stainless steel hardened	Recommended input speed	10000RPM			
Adapter plate	Stainless steel	Operating temperature range	-40°C ~ +100°C			
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH			
Axial play	0-0.3	Number of stages	1	2	3	4
Directions	CW/CCW	Permissible load (18mm from flange)	210N	310N	380N	380N

GEARBOX DATA

Number of stage	1			2		3			4			
Reduction ratio X:1	3.3	4	5.5	11	30	34	64	166	112	256	541	915
				13		42	72		137	286	666	
				16		52	88		169	320		
				18		58	98		189	352		
				22			121		208	393		
									232	484		
Reduction ratio absolute	13/4	4/1	11/2	169/16	121/4	2197/64	64/1	1331/8	28561/256	256/1	17303/32	14641/16
				13/1		169/4	143/2		2197/16	286/1	1331/2	
				16/1		52/1	88/1		169/1	20449/64		
				143/8		1859/32	1573/16		24167/128	352/1		
				22/1			121/1		208/1	1573/4		
									1859/8	484/1		
Motor shaft max. diameter (mm)	6	5		6	5		6	5		6		5
Gearbox length "L" (mm)	35.3			46.8		58.3			69.8			
Max. continuous torque (N.m)	3.5			7		14			15			
Max. intermittent torque (N.m)	5.25			10.5		21			22.5			
Average backlash no load	0.7°			0.8°		0.8°			0.8°			
Gearbox efficiency	90%			81%		73%			65%			
Max. mass inertia (g.cm ²)	8.14			8.58		8.62			8.63			
Gearbox weight approx (g)	320			420		520			620			
gearbox model	AM-40HPA-X			AM-40HPB-X		AM-40HPC-X			AM-40HPD-X			

AM-40HP Example of combination

Recommend Motor:
Coreless Motor (w/E)
AM-CL3570GAN
AM-CL4071GAE
Brushless Motor (w/E)
AM-BL3660AN
AM-BL3675BF
AM-BL3690BF
AM-BL4060BF
AM-BD3660AN

Recommend Encoder:
Suitable for Coreless Motor
Encoder S: AM-EN2211S***
Encoder T: AM-EN2412T***
Suitable for Brushless Motor
Encoder S: AM-EN2211S***
Encoder T: AM-EN2412T***
AM-EN3612T***

INPUT GEARBOX DATA

Modulus	0.6
Press angle	20°
Teeth number	12 18 24
Max gear hole "A"	5 6 6
Max motor shaft	5 6 6
Motor dimension "D"	9.5 13 16

MOTOR DIMENSION

GEARBOX MOTOR LENGTH "LT"

Gear motor length L _T	127.5	129	141.8
Gear box length L ₁ *	46.8	58.3	69.8
Motor length L ₂	70	60	60
Encoder length L ₃	10.7	10.7	12

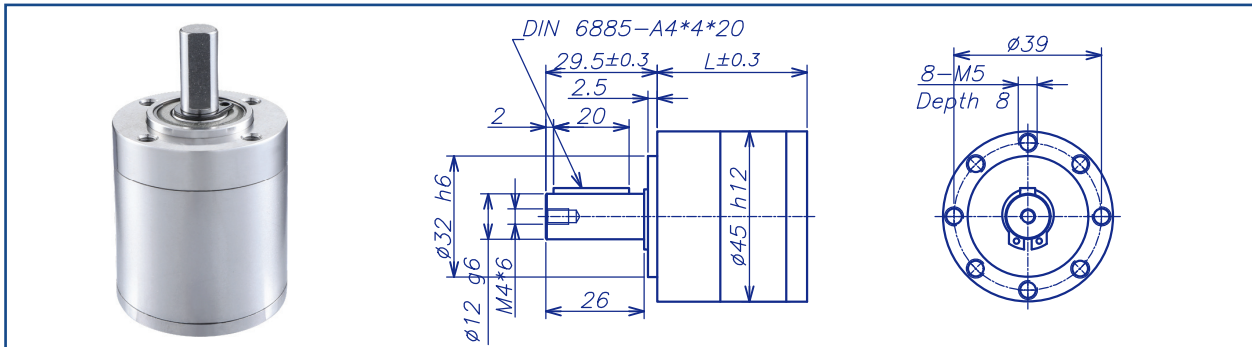
*Note: If combined with AM-CL3570, L₁=L+5mm, distance between gear and motor=14.6+5mm.

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PLANETARY GEARBOX

AM-45HP Series



GEARBOX CHARACTER			
Gear type	Straight teeth	Radial Play (10mm from flange)	max 0.1mm
Output shaft	Stainless steel hardened	Permissible force press fits	max. 500 N
Main gear	Alloy Steel hardened	Permissible axial load (dynamic)	max. 200N
Ring gear	Alloy Steel hardened	Recommended input speed	10000RPM
Adapter plate	Stainless steel hardened	Operating temperature range	-40°C ~ +100°C
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH
Axial play	0-0.3	Number of stages	1 2 3 4
Directions	CW/CCW	Permissible load (18mm from flange)	315N 470N 550N 550N

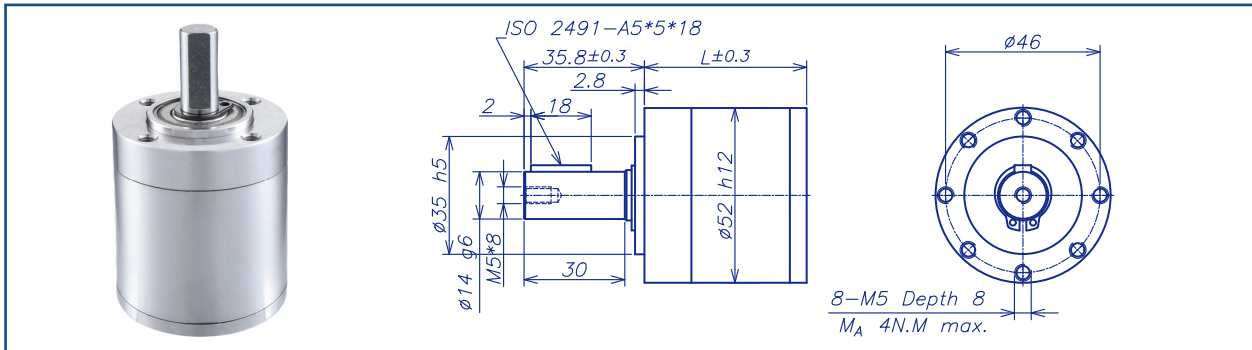
GEARBOX DATA																	
Number of stage	1				2				3				4				
Reduction ratio X:1	3.3	4.0	5.2	8	11	17	32	37	107	178	300	469	853				
					13	27	42	44	139	193	361	721	1109				
					16			53		213	427						
					21			58		231	462						
Reduction ratio absolute	10/3	4/1	26/5	8/1	100/9	52/3	32/1	1000/27	320/3	1600/9	2704/9	35152/75	2560/3				
					40/3	676/25	208/5	400/9	416/3	5200/27	5408/15	10816/15	3328/3				
					16/1			160/3		640/3	1280/3						
					104/5			520/9		2080/9	4160/9						
Motor shaft max. diameter (mm)	8	6	3	8	6	3	8	3	8	6	3						
Gearbox length "L" (mm)	39.6				51.6				63.6				75.6				
Max. continuous torque (N.m)	4				15				30				30				
Max. intermittent torque (N.m)	5				18.75				37.5				37.5				
Average backlash no load	0.7°				0.8°				0.8°				0.8°				
Gearbox efficiency	90%				81%				73%				65%				
Max. mass inertia (g.cm ²)	15.13				15.71				15.77				15.77				
Gearbox weight approx (g)	460				590				730				850				
gearbox model	AM-45HPA-X				AM-45HPB-X				AM-45HPC-X				AM-45HPD-X				

<p>AM-45HP Example of combination</p>		<p>INPUT GEARBOX DATA</p> <table border="1"> <tr><td>Modulus</td><td>0.6</td></tr> <tr><td>Press angle</td><td>20°</td></tr> <tr><td>Teeth number</td><td>9 15 21 27</td></tr> <tr><td>Max gear hole "A"</td><td>3.0 6.0 8.0 8.0</td></tr> <tr><td>Max motor shaft</td><td>3.0 6.0 8.0 8.0</td></tr> </table>	Modulus	0.6	Press angle	20°	Teeth number	9 15 21 27	Max gear hole "A"	3.0 6.0 8.0 8.0	Max motor shaft	3.0 6.0 8.0 8.0	<p>MOTOR DIMENSION</p>		
Modulus	0.6														
Press angle	20°														
Teeth number	9 15 21 27														
Max gear hole "A"	3.0 6.0 8.0 8.0														
Max motor shaft	3.0 6.0 8.0 8.0														
<p>Recommend Motor:</p> <p>Coreless Motor (w/E): AM-CL35***</p>	<p>Recommend Encoder:</p> <p>Suitable for Coreless Motor Encoder S: AM-EN2211S*** Encoder T: AM-EN2412T***</p>	<p>GEARBOX MOTOR LENGTH "LT"</p> <table border="1"> <tr><td>Gear motor length LT</td><td>134.3</td><td>187.6</td></tr> <tr><td>Gear box length L1</td><td>63.6</td><td>75.6</td></tr> <tr><td>Motor length L2</td><td>60</td><td>100</td></tr> <tr><td>Encoder length L3</td><td>10.7</td><td>12</td></tr> </table>		Gear motor length LT	134.3	187.6	Gear box length L1	63.6	75.6	Motor length L2	60	100	Encoder length L3	10.7	12
Gear motor length LT	134.3	187.6													
Gear box length L1	63.6	75.6													
Motor length L2	60	100													
Encoder length L3	10.7	12													
<p>Brushless Motor (w/E): AM-BL36*** AM-BL40*** AM-BL45*** AM-BD36***</p>	<p>Suitable for Brushless Motor Encoder S: AM-EN2211S*** Encoder T: AM-EN3612T***</p>														

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AM-52HP Series



GEARBOX CHARACTER			
Gear type	Straight teeth	Radial Play (12mm from flange)	max 0.1mm
Output shaft	Stainless steel hardened	Permissible force press fits	max. 600 N
Main gear	Alloy Steel hardened	Permissible axial load (dynamic)	max. 200N
Ring gear	Alloy Steel hardened	Recommended input speed	8000RPM
Adapter plate	Aluminum alloy	Operating temperature range	-40°C ~ +100°C
Bearing AT output	Ball bearing	Operating humidity range	10-90%RH
Axial play	0-0.3	Number of stages	1 2 3 4
Directions	CW/CCW	Permissible load (24mm from flange)	340N 520N 590N 590N

GEARBOX DATA												
Number of stage	1			2			3			4		
Reduction ratio X:1	3.5	4.3	6	12 15 21	19 26	36	43 53 74	66 91	126	150 186 230 257 319 441	285 394 546	756
Reduction ratio absolute	7/2	13/3	6/1	49/4 91/6 21/1	169/9 26/1	36/1	343/8 637/12 147/2	1183/18 91/1	126/1	2401/16 4459/24 8281/36 1029/4 637/2 441/1	15379/54 1183/3 546/1	756/1
Motor shaft max. diameter (mm)	10	8	4	10	8	4	10	8	4	10	8	4
Gearbox length "L" (mm)	48.3			64.8			81.3			97.8		
Max. continuous torque (N.m)	6			20			50			50		
Max. intermittent torque (N.m)	9			30			75			75		
Average backlash no load	0.6°			0.7°			0.7°			0.7°		
Gearbox efficiency	90%			81%			73%			65%		
Max. mass inertia (g.cm ²)	25.34			26.75			26.86			26.87		
Gearbox weight approx (g)	520			750			970			1200		
gearbox model	AM-52HPA-X			AM-52HPB-X			AM-52HPC-X			AM-52HPD-X		

AM-52HP Example of combination

INPUT GEARBOX DATA	
Modulus	0.7
Press angle	20°
Teeth number	12 18 24
Max gear hole "A"	4 8.0 10
Max motor shaft	4 8.0 10

MOTOR DIMENSION

RECOMMENDATION	
Recommend Motor:	Recommend Encoder:
Coreless Motor (w/E):	Suitable for Coreless Motor Encoder S: -
Brushless Motor (w/E):	Suitable for Brushless Motor Encoder S: AM-EN2211S*** Encoder T: AM-EN3612T***
AM-BL36***	
AM-BL40***	
AM-BL45***	

GEARBOX MOTOR LENGTH "LT"	
Gear motor length LT	192
Gear box length L1	81.3
Motor length L2	100
Encoder length L3	10.7

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CONTROLLER

Assun controllers include speed drivers and servo controllers. The speed drivers are usually used to drive the motor with several simple control functions, and servo controllers are used to achieve accurate speed, torque and position control.

Assun Servo Controllers are compact and efficient, customer may choose Can Open, Ether Cat and RS485 communication protocols based on their needs.



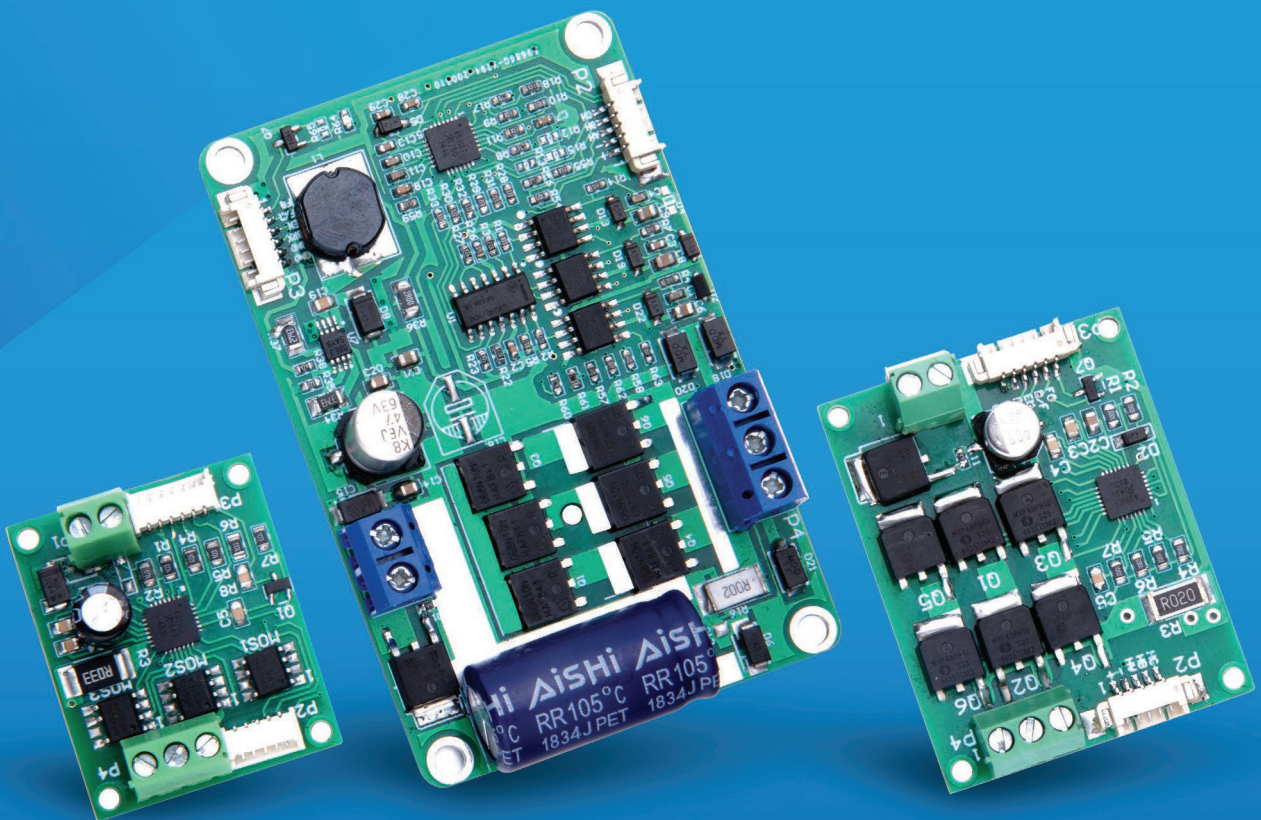
AM-CDN-0305-LAAS	AM-CDN-0815-LAAS	AM-CDN-1525-NAAS	AM-CDR-1224-NAAS
Traditional Controller	CAN Bus Controller	EtherCAT Bus Controller	

Company Name Abbreviation	Feedback Type A - Feedback support: Incremental encoder (differential or single end), SSI absolute encoder, RS 485 absolute encoder, Hall Sensor	Installation S - Standard Installation
AM - CDN	1525	NAAS
Controller Type CD - Speed Driver SO - Servo Controller	Current Level 15 - Rated Current (A) 25 Maximum Current (A)	Voltage Level L - 5V-24V M - 9V-70V N - 12V-48V
Communication Protocols D - CAN Bus Control (RS422, RS485, CAN, USB Commissioning) E - (Direction+pulse, AB Pulse, Analogue Input Control, USB Commissioning) C - EtherCat Bus Control (Include USB Commissioning) N - No Communication (Speed Driver) R - RS 485 Communication ((Speed Driver))		Operation Temperature A -40°C - 85°C B -40°C - 105°C C -40°C - 125°C

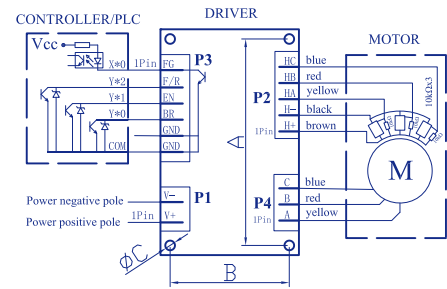
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CONT ROLLER _____
SPEED DRIVER

Assun Speed Drivers are made to drive the brushless DC motors with several potential control functions like speed control, rotation direction control and speed feedback. Customer can choose different models based on the specific current rating.



AM-CDN-0305-LAAS (3 Amps)



SYSTEM CHARACTERISTICS:	INFORMATION:	INSTALLATION NOTES:
Input Voltage: 12~28V DC	Dimension: Length: 34mm. width: 28mm	a) Please install in dry and ventilated place
Continuous Current: 3A	Hole Size: A: 30.0mm; B: 24.0mm; C: 2.1mm	b) Avoid vibration and collision
Temperature - Operation: 0 ~+45°C	Cooling Method: Natural Cooling	c) Do not let metal dust and iron cut falling on controller
Temperature - Storage: -20 ~+85°C	Protective Function: Current limit, Undervoltage	d) Fix installation is needed
Humidity: ≤85% (non-condensing)	Weight: 8.5g	e) Use quality connection cables

INTERFACE & CONTROL SIGNALS

P1: Electric Connections

Number	Name	Note
1	M+	Power Vcc
2	M-(GND)	Power GND

P2: Motor Sensor Connections

Number	Name	Note
1	H+	Hall sensor power supply Vcc
2	H-	Hall sensor power supply GND
3	HA	Hall Sensor Phase A
4	HB	Hall Sensor Phase B
5	HC	Hall Sensor Phase C

P3: Control Signal Connections

Number	Name	Note (Low: 0~0.8VDC; High: 2.2~5.0VDC; Null: Not Connect)
1	FG	Motor Speed Signal Output (3 pul/turn)
2	F/R	Direction port (Low-CW; High/Null-CCW); Direction defined when looking from motor front.
3	EN	Enable port (Low-Motor rotate; High/Null-motor stop). This port can be used as PWM control (PWM requirement: 20KHz, the lower the duty cycle, the higher the speed).
4	BR	Brake port (Low-Brake; High/Null-Release)
5	GND	Control GND
6	GND	Control GND

P4: Motor Electric Connection

Number	Name	Note
1	A	Motor Winding A (U)
2	B	Motor Winding B (V)
3	C	Motor Winding C (W)

NOTE ON USAGE

- Controller should be installed with 20mm space for cooling. The environment should be ventilated
- When using the braking function, please calculate the braking speed. Ensure that the motor speed is lower than the braking speed to avoid high back EMF which will damage the components
- Change direction only when motor stopped completely to prevent damage of electronic components.
- The controller is a two-quadrant operation mode, it cannot be use when speed change is rapid.
- Please read this instruction carefully before installation. Whenever there is problem, please stop the current immediately.

REMARKS

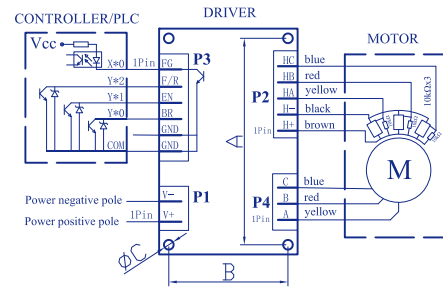
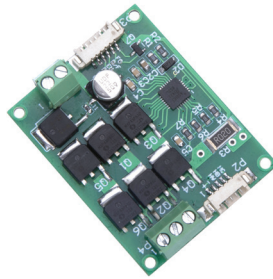
Data Tested at 25°.

Operation exceeds continuous limits of operating range will compromise the life of the device.

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AM-CDN-0815-LAAS (8 Amps w/ optional signal or manual control.)



SYSTEM CHARACTERISTICS:	INFORMATION:	INSTALLATION NOTES:
Input Voltage: 12~48V DC	Dimension: Length: 50mm. width: 35mm	a) Please install in dry and ventilated place
Max. Continuous Current: 8A	Installation Hole Diameter: 2.5mm	b) Avoid vibration and collision
Recommended Operation Temp: -20~+45°C	Cooling Method: Natural Cooling	c) Do not let metal dust and iron cut falling on controller
Recommended Storage Temp: -20 ~+85°C	Protective Function: Current limit, Undervoltage	d) Fix installation is needed
Humidity: ≤85% (non-condensing)	Weight: 25g	e) Use quality connection cables

INTERFACE & CONTROL SIGNALS

P1: Electric Connections

Number	Name	Note
1	M+	Power Vcc
2	M-(GND)	Power GND

P2: Motor Sensor Connections

Number	Name	Note
1	H+	Hall sensor power supply Vcc
2	H-	Hall sensor power supply GND
3	HA	Hall Sensor Phase A
4	HB	Hall Sensor Phase B
5	HC	Hall Sensor Phase C

P5: Manual Controls

Number	Name	Note
1	Potential Meter Knob	Rotate to control speed Manually.
2	Direction Button	Default in CCW; Switch direction for each click of button.

P3: Control Signal Connections

Number	Name	Note (Low: 0~0.8VDC; High:2.2~5.0VDC; Null: Not Connect)
1	FG	Motor Speed Signal Output (1 pulse/turn)
2	F/R	Direction port (Low-CW; High/Null-CCW); Direction defined when looking from motor front.
3	EN	PWM speed control signal input (PWM requirement: 30KHz, the higher the duty cycle, the higher the speed).
4	BR	Brake port (Low-Brake; High/Null-Release)
5	GND	Control GND

P4: Motor Connections

Number	Name	Note
1	A	Motor Winding A (U)
2	B	Motor Winding B (V)
3	C	Motor Winding C (W)

Note:
Manual control knob and buttons will be connected to the board by lead wire;
User must select Signal Control or Manual Control upon order. Choosing one mode will dis-able the other mode.
***Only one model available with end users.**

NOTE ON USAGE

- Controller should be installed with 20mm space for cooling. The environment should be ventilated
- When using the braking function, please calculate the braking speed. Ensure that the motor speed is lower than the braking speed to avoid high back EMF which will damage the components
- Change direction only when motor stopped completely to prevent damage of electronic components.
- The controller is a two-quadrant operation mode, it cannot be use when speed change is rapid.
- Please read this instruction carefully before installation. Whenever there is problem, please stop the current immediately.

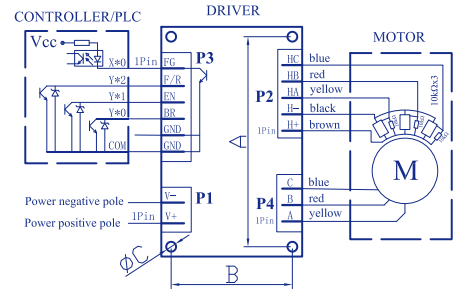
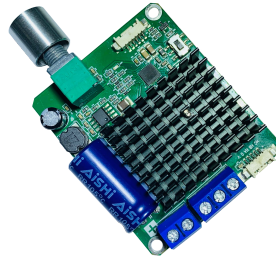
REMARKS

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AM-CDN-1525-NAAS (15 Amps, w/ signal & manual controls.)



SYSTEM CHARACTERISTICS:	INFORMATION:	INSTALLATION NOTES:
Input Voltage: 12~48V DC	Dimension: Length: 60mm. width: 50mm	a) Please install in dry and ventilated place
Max. Continuous Current: 15A	Installation Hole Diameter: 3.4mm	b) Avoid vibration and collision
Recommended Operation Temp: -20~+45°C	Cooling Method: Natural Cooling	c) Do not let metal dust and iron cut falling on controller
Recommended Storage Temp: -20~+85°C	Control: Manual Control/Signal Control	d) Fix installation is needed
Humidity: ≤85% (non-condensing)	Weight: 40g	e) Use quality connection cables

INTERFACE & CONTROL SIGNALS

P1: Electric Connections

Number	Name	Note
1	M+	Power Vcc
2	M-(GND)	Power GND

P2: Motor Sensor Connections

Number	Name	Note
1	H+	Hall sensor power supply Vcc
2	H-	Hall sensor power supply GND
3	HA	Hall Sensor Phase A
4	HB	Hall Sensor Phase B
5	HC	Hall Sensor Phase C

P5: Manual Controls

Number	Name	Note
1	Potential Meter Knob	Rotate to control speed Manually.
2	Direction Button	Default in CCW; Switch direction for each click of button.

P3: Control Signal Connections

Number	Name	Note (Low: 0~0.8VDC; High: 2.2~5.0VDC; Null: Not Connect)
1	FG	Motor Speed Signal Output (1 pulse/turn)
2	F/R	Direction port (Low-CW; High/Null-CCW); Direction defined when looking from motor front.
3	PWM	PWM speed control signal input (PWM requirement: 30KHz, the higher the duty cycle, the higher the speed).
4	BR	Brake port (Low-Brake; High/Null-Release)
5	GND	Control GND

P4: Motor Electric Connection

Number	Name	Note
1	A	Motor Winding A (U)
2	B	Motor Winding B (V)
3	C	Motor Winding C (W)

Note:
User could use the driver either with manual control or with PWM and analogue signal control;
Both control models available with end users.

NOTE ON USAGE

- Controller should be installed with 20mm space for cooling. The environment should be ventilated
- When using the braking function, please calculate the braking speed. Ensure that the motor speed is lower than the braking speed to avoid high back EMF which will damage the components
- Change direction only when motor stopped completely to prevent damage of electronic components.
- The controller is a two-quadrant operation mode, it cannot be use when speed change is rapid.
- Please read this instruction carefully before installation. Whenever there is problem, please stop the current immediately.

REMARKS

Data Tested at 25°.

Operation exceeds continuous limits of operating range will compromise the life of the device.

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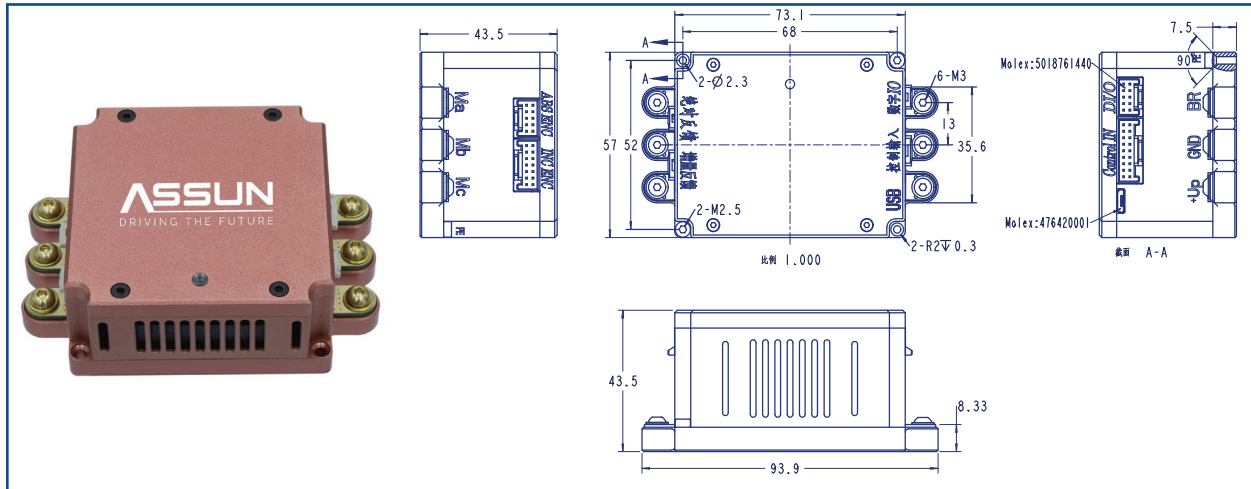
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SERVO CONTROLLER _____
SERVO CONTROLLER

Assun Servo Controllers are produced for close-loop speed, torque and position control of DC brushed and brushless motors. High precision character of the controller is favored by many applications with DC drive control. Models of Traditional Control (without communication) and Bus Control (with communication) have been provided for customer to choose the suitable type. Can Open, Ether Cat and RS485/422 communication protocols are provided for bus control systems.



Traditional Controller



Model		Servo Controller (Traditional Control)				
		AM-SOE-0103-MAAS	AM-SOE-0206-MAAS	AM-SOE-0510-MAAS	AM-SOE-1020-MAAS	AM-SOE-1530-MAAS
Dimension (mm)		73.1*57*43.5				
Weight (g)		225				
Fundamental Specs	Output Rated Current (Continuous, RMS)	1 A	2 A	5 A	10	15 A
	Output Max. Current (Intermittent, RMS)	3 A	6 A	10 A	20	30 A
	Input Power Supply Voltage Range	12 VDC~48 VDC (Usually according to Motor Rated Voltage)				
	Overload Recognition Time	3 s				
	Overload Trip Reset Delay	30 s				
	Temperature Raise	(Under Rated Current) 30min≤40K				
	Working Frequency	6khz ~ 34khz				
Rated Electric Insulation		Under DC voltage 1000V from input/output to housing, current leakage smaller than 3mA				
Total Electric Resistance		≥1MΩ (Temp. 40°C, RH 95%, no condensing water)				
Mean Time Before Failure (MTBF)		≥8000 Hrs				
Power Control		For BLDC & Servo Motor: SVPWM, Square Wave For Brushed Motor: Bipolar PWM				
IP Level		IP20				
Cooling Type		Natural Air Cool				
Connection Portal Info	Analog Voltage Input Portal	2 Channel (±10V)				
	Digital IO Input Portal	4 Channel (5VDC~24VDC), hardware default in high voltage level when not connected. Detail control functions can be set and adjusted by changing parameters.				
	Digital IO Output Portal	4 Channel (All four channels are open collector output, highest voltage at 30V; First three channels have max. continuous current of 0.25A, and last channel has max. continuous current of 2A)				
	Direction + Pulse	1 set of Direction + Pulse (Differential & Non-differential)				
	Feedback Type	Electromagnetic/Optical Incremental Encoder; SSI Absolute Encoder; RS 485 Absolute Encoder				

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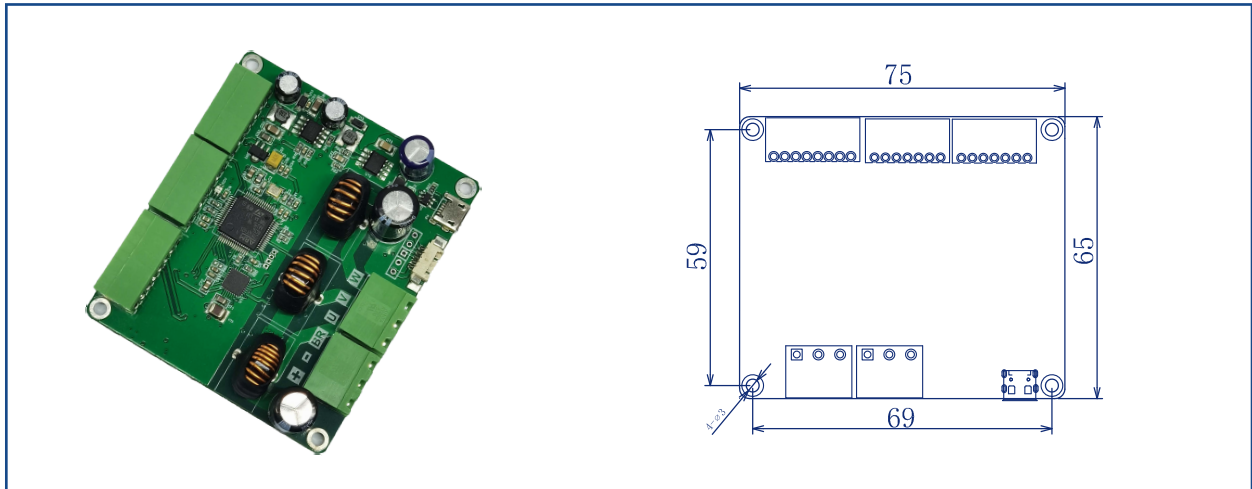
Traditional Controller

Model		Servo Controller (Traditional Control)		
Basic Function	Application Mode	Position Closed-loop Control / Speed Closed-loop Control / Torque Closed-loop Control		
	Preparation Time	Power on and no malfunction, controller ready in 3 seconds		
	Hardware Protection Threshold	Under Voltage	9.5 V	
		Over Voltage	75 V	
		Over Current	Over Current Protection	
		Overheat	85°C Automate Alarm and Shut Down	
		Power Switch	Equipped power switch to turn on or off the motor.	
	Software Protection	Malfunction Lock	Automate slow down and stop when detect malfunction, and lock the malfunction for inspection.	
		Over Load	When current is continuously over Max. continuous current for 10 seconds, default to alarm for malfunction.	
		Over Current	Monitor real time current value, immediate cut off motor output when current over the pre-set value.	
		Differential Protection	Current or speed setting and feedback differential protection	
	Digital IO	Input	Multiplex the following functions by adjusting parameters: Servo start, zero-speed position clamp, emergency shut down, origin point signal, positive position limit, negative position limit.	
		Output	Multiplex the following functions by adjusting parameters: Power supply under voltage, position abnormal, hall feedback abnormal, over current, over load, driver overheat, current differentiate, speed differentiate, power supply over voltage, servo ready, servo operation, zero speed arrival, targeted speed arrival, targeted position arrival, brake output, origin point recover finish, error alarm, negative stall, positive stall, negative indicate.	
	Communication Portal	USB	Usually for Commissioning (also support host computer control)	
		CAN	N/A	
RS422/485		N/A		
Transmission Distance		Based on the hardware connection		
Torque Control	Stop Response	Rise times \leq 1.5ms ; Over tune \leq 5% ; Shock \leq 2 times		
	Current Closed Loop Control	\geq 1KHz		
	Speed Limitation	Parameter Limits		
Speed Control	Speed Feedback	Based on Encoder		
	Encoder Power Supply	+5V \pm 2%/500mA		
	Speed Ratio	\geq 3000 : 1		
	Step Response	Rise times \leq 40ms ; Overtunes \leq 15% ; Shock \leq 2.5 times		
	Sinusoidal Band Response	\geq 500Hz		
	Static Error Rate	\leq 0.4% (In speed 1000RPM, rated torque load)		
	Speed Fluctuation Rate	\leq 0.6%		
	Linearity	\leq 0.45%		
	Position Close-Loop Control	Highest input pulse frequency	Digital Insulation 500K (1 meter cable)	
Pulse commande mode		AB Pulse; Direction + Pulse		
Command control mode		Outer Pulse control, analogue input		
Electronic gear ratio		Electronic Gear N/M, N: 1~65535, M: 1~65535 (parameter setting)		
Torque Limit		(Parameter Setting)		
Environmental Requirements	Operation Temp.	-30°C+60°C		
	Storage Temp.	-30°C+65°C		
	Relative Humidity	0%~90%RH (No condensing)		
	Vibration Requirements	Frequency 5Hz to 25Hz, amplitude with 1.6mm; Frequency 25Hz to 200Hz, Acceleration within 1.2g, time 30min.		

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Traditional Controller +RS-485



Model		Servo Controller (Traditional Control+RS-485) AM-COF-05-10-OBDS
Dimension (mm)		75*65*25
Weight (g)		70
Fundamental Specs	Output Rated Current (Continuous, RMS)	5 A
	Output Max. Current (Intermittent, RMS)	12 A
	Input Power Supply Voltage Range	12 VDC~48 VDC (Usually according to Motor Rated Voltage)
	Overload Recognition Time	3 s
	Overload Trip Reset Delay	60 s
	Temperature Raise	(Under Rated Current) 30min≤40K
	Working Frequency	16khz
Rated Electric Insulation		Under DC voltage 1000V from input/output to housing, current leakage smaller than 3mA
Total Electric Resistance		≥1MΩ (Temp. 40°C, RH 95%, no condensing water)
Mean Time Before Failure (MTBF)		≥8000 Hrs
Power Control		Brushless DC motor, brushless DC motor
Power control mode		SVPWM
IP Level		IP20
Cooling Type		Natural cooling (if the continuous output exceeds the rated current, auxiliary heat dissipation is required)
Connection Portal Info	Analog Voltage Input Portal	1 Channel (±10V)
	Digital IO Input Portal	3 Channel (3.3VDC~24VDC), the hardware defaults to low level , and the effective level control state can be modified through parameters
	Digital IO Output Portal	1 Channel (open collector output, maximum withstand voltage 30V, maximum continuous current 0.22a)
	Direction + Pulse	1 set of Direction + Pulse (Differential & Non-differential)
	Feedback Type	Hall feedback ; Incremental encoder feedback (differential / non differential)

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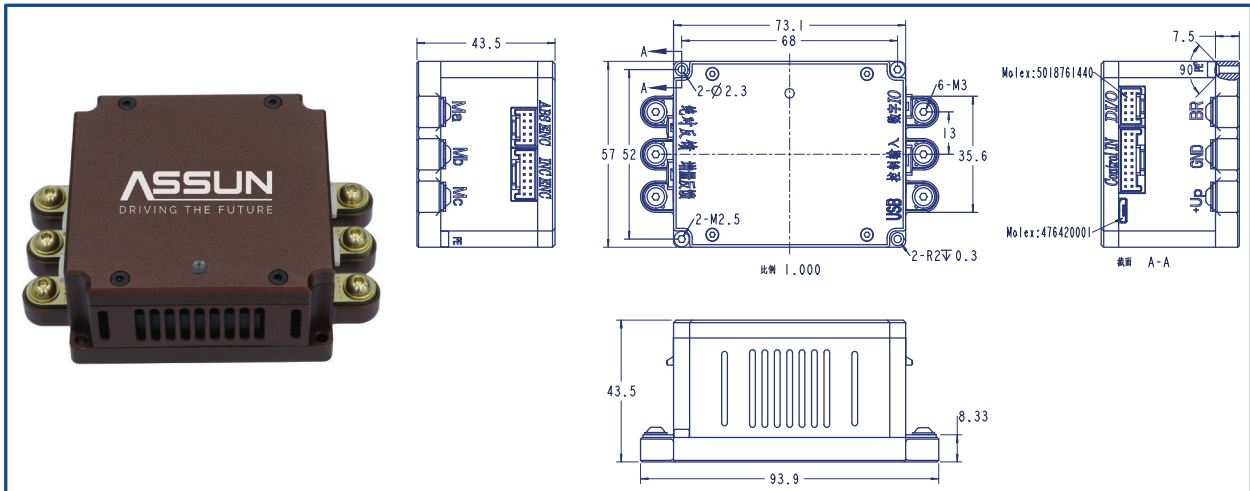
Traditional Controller +RS-485

Model		Servo Controller (Traditional Control+RS-485)	
Basic Function	Application Mode	Position Closed-loop Control / Speed Closed-loop Control / Torque Closed-loop Control	
	Preparation Time	Power on and no malfunction, controller ready in 3 seconds	
	Hardware Protection Threshold	Under Voltage	9 V
		Over Voltage	65 V
		Over Current	Over Current Protection
		Overheat	85°C Automate Alarm and Shut Down
		Power Switch	Equipped power switch to turn on or off the motor.
	Software Protection	Malfunction Lock	Automate slow down and stop when detect malfunction, and lock the malfunction for inspection.
		Over Load	Detect whether the current continuously exceeds the maximum current setting in real time, and the fault alarm will be given after 3S by default
		Over Current	Monitor real time current value, immediate cut off motor output when current over the pre-set value.
		Differential Protection	Current or speed setting and feedback differential protection
	Digital IO	Input	Multiplex the following functions by adjusting parameters: Servo start, zero-speed position clamp, emergency shut down, origin point signal, positive position limit, negative position limit.
		Output	Multiplex the following functions by adjusting parameters: Power supply under voltage, position abnormal, hall feedback abnormal, over current, over load, driver overheat, current differentiate, speed differentiate, power supply over voltage, servo ready, servo operation, zero speed arrival, targeted speed arrival, targeted position arrival, brake output, origin point recover finish, error alarm, negative stall, positive stall, negative indicate.
	Communication Portal	USB	Usually for Commissioning (also support host computer control)
		CAN	N/A
		RS422/485	RS485 communication
Transmission Distance		Based on the hardware connection	
Torque Control	Step Response	Rise times \leq 1.5ms ; Over tune \leq 5% ; Shock \leq 2 times	
	Current Closed Loop Control	\geq 1KHz	
	Speed Limitation	Parameter Limits	
Speed Control	Speed Feedback	Hall feedback Incremental encoder feedback (differential / non differential)	
	Encoder Power Supply	+5V \pm 2%/50mA	
	Speed Ratio	\geq 3000 : 1	
	Step Response	Rise times \leq 40ms ; Overtune \leq 15% ; Shock \leq 2.5 times	
	Sinusoidal Band Response	\geq 500Hz	
	Static Error Rate	\leq 0.4% (In speed 1000RPM, rated torque load)	
	Speed Fluctuation Rate	\leq 0.6%	
	Linearity	\leq 0.45%	
Position Close-Loop Control	Highest input pulse frequency	Digital Insulation 60KHz (1 meter cable)	
	Pulse commande mode	AB Pulse; Direction + Pulse	
	Command control mode	External pulse control, analog input, duty cycle input	
	Electronic gear ratio	Electronic Gear N/M, N: 1 \sim 65535, M: 1 \sim 65535 (parameter setting)	
	Torque Limit	(Parameter Setting)	
Environmental Requirements	Operation Temp.	-30°C+60°C	
	Storage Temp.	-30°C+65°C	
	Relative Humidity	0%~90%RH (No condensing)	
	Vibration Requirements	Frequency 5Hz to 25Hz, amplitude with 1.6mm; Frequency 25Hz to 200Hz, Acceleration within 1.2g, time 30min.	

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CAN BUS CONTROLLER



Model		Servo Controller (CAN Bus Control)				
		AM-SOD-0103-MAAS	AM-SOD-0206-MAAS	AM-SOD-0510-MAAS	AM-SOD-1020-MAAS	AM-SOD-1530-MAAS
Dimension (mm)		73.1*57*43.5				
Weight (g)		225				
Fundamental Specs	Output Rated Current (Continuous, RMS)	1 A	2 A	5 A	10	15 A
	Output Max. Current (Intermittent, RMS)	3 A	6 A	10 A	20	30 A
	Input Power Supply Voltage Range	12 VDC~48 VDC (Usually according to Motor Rated Voltage)				
	Overload Recognition Time	3 s				
	Overload Trip Reset Delay	30 s				
	Temperature Raise	(Under Rated Current) 30min≤40K				
	Working Frequency	6khz ~ 34khz				
Rated Electric Insulation		Under DC voltage 1000V from input/output to housing, current leakage smaller than 3mA				
Total Electric Resistance		≥1MΩ (Temp. 40°C, RH 95%, no condensing water)				
Mean Time Before Failure (MTBF)		≥8000 Hrs				
Power Control		For BLDC & Servo Motor: SVPWM, Square Wave For Brushed Motor: Bipolar PWM				
IP Level		IP20				
Cooling Type		Natural Air Cool				
Connection Portal Info	Analog Voltage Input Portal	N/A				
	Digital IO Input Portal	4 Channel (5VDC~24VDC), hardware default in high voltage level when not connected. Detail control functions can be set and adjusted by changing parameters.				
	Digital IO Output Portal	4 Channel (All four channels are open collector output, highest voltage at 30V; First three channels have max. continuous current of 0.25A, and last channel has max. continuous current of 2A)				
	Direction + Pulse	N/A				
	Feedback Type	Electromagnetic/Optical Incremental Encoder; SSI Absolute Encoder; RS 485 Absolute Encoder				

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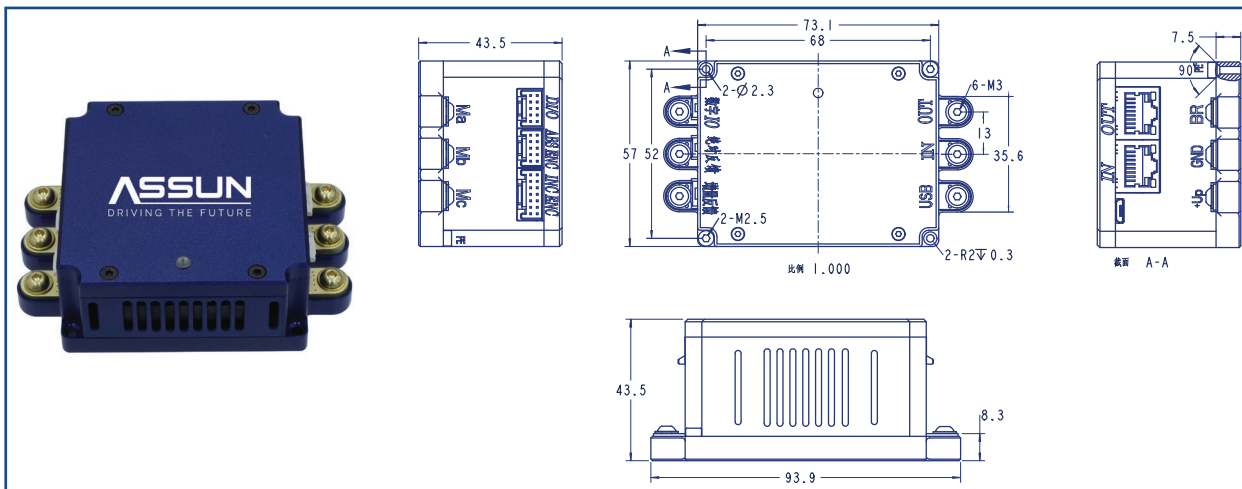
CAN BUS CONTROLLER

Model		Servo Controller (Bus Control)		
Basic Function	Application Mode	Position Closed-loop Control / Speed Closed-loop Control / Torque Closed-loop Control		
	Preparation Time	Power on and no malfunction, controller ready in 3 seconds.		
	Hardware Protection Threshold	Under Voltage	9.5 V	
		Over Voltage	75 V	
		Over Current	Over Current Protection	
		Overheat	85 Automate Alarm and Shut Down	
		Power Switch	Equipped power switch to turn on or off the motor.	
	Software Protection	Malfunction Lock	Automate slow down and stop when detect malfunction, and lock the malfunction for inspection.	
		Over Load	When current is continuously over Max. continuous current for 10 seconds, default to alarm for malfunction.	
		Over Current	Monitor real time current value, immediate cut off motor output when current over the pre-set value.	
		Differential Protection	Current or speed setting and feedback differential protection	
	Digital IO	Input	Multiplex the following functions by adjusting parameters: Servo start, zero-speed position clamp, emergency shut down, origin point signal, positive position limit, negative position limit.	
		Output	Multiplex the following functions by adjusting parameters: Power supply under voltage, position abnormal, hall feedback abnormal, over current, over load, driver overheat, current differentiate, speed differentiate, power supply over voltage, servo ready, servo operation, zero speed arrival, targeted speed arrival, targeted position arrival, brake output, origin point recover finish, error alarm, negative stall, positive stall, negative indicate.	
	Communication Portal	USB	Usually for Commissioning (also support host computer control)	
		CAN	CANOPEN 301 + DS402(Default node id: 0x08,500kbps)	
		RS422/485	MODBUS RS422/485(ASCII/RTU) (Default node id: 0x08,57600bps,8,1,N,N,)	
Transmission Distance		≥100 Meters		
Torque Control	Stop Response	Rise time≤1.5ms ; Over tune≤5% ; Shock ≤2 times		
	Current Closed Loop Control	≥1KHz		
	Speed Limitation	Parameter Limits		
Speed Control	Speed Feedback	Based on Encoder		
	Encoder Power Supply	+5V±2%/500mA		
	Speed Ratio	≥3000 : 1		
	Step Response	Rise time≤40ms ; Overtune≤15% ; Shock≤2.5 times		
	Sinusoidal Band Response	≥500Hz		
	Static Error Rate	≤0.4% (In speed 1000RPM, rated torque load)		
	Speed Fluctuation Rate	≤0.6%		
	Linearity	≤0.45%		
Position Close-Loop Control	Highest input pulse frequency	N/A		
	Pulse commande mode	N/A		
	Command control mode	RS422/485 Modbus Communication; CAN Bus Control		
	Electronic gear ratio	Electronic Gear N/M, N: 1~65535, M: 1~65535 (parameter setting)		
	Torque Limit	(Parameter Setting)		
Environmental Requirements	Operation Temp.	-30°C+60°C		
	Storage Temp.	-30°C+65°C		
	Relative Humidity	0%~90%RH (No condensing)		
	Vibration Requirements	Frequency 5Hz to 25Hz, amplitude with 1.6mm; Frequency 25Hz to 200Hz, Acceleration within 1.2g, time 30min.		

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ETHERCAT BUS CONTROLLER



Model		Servo Controller (EtherCAT Bus Control)				
		AM-SOC0103-MAAS	AM-SOC0206-MAAS	AM-SOC0510-MAAS	AM-SOC1020-MAAS	AM-SOC1530-MAAS
Dimension (mm)		93.9*57*43.5				
Weight (g)		225				
Fundamental Specs	Output Rated Current (Continuous, RMS)	1 A	2 A	5 A	10 A	15 A
	Output Max. Current (Intermittent, RMS)	3 A	6 A	10 A	20 A	30 A
	Input Power Supply Voltage Range	12 VDC~48 VDC (Usually according to Motor Rated Voltage)				
	Overload Recognition Time	3 s				
	Overload Trip Reset Delay	30 s				
	Temperature Raise	(Under Rated Current) 30min≤40K				
	Working Frequency	6khz ~ 34khz				
Rated Electric Insulation		Under DC voltage 1000V from input/output to housing, current leakage smaller than 3mA				
Total Electric Resistance		≥1MΩ (Temp. 40℃, RH 95%, no condensing water)				
Mean Time Before Failure (MTBF)		≥8000 Hrs				
Power Control		For BLDC & Servo Motor: SVPWM, Square Wave For Brushed Motor: Bipolar PWM				
IP Level		IP20				
Cooling Type		Natural Air Cool				
Connection Portal Info	Digital IO Input Portal	4 Channel (5VDC~24VDC), hardware default in high voltage level when not connected. Detail control functions can be set and adjusted by changing parameters.				
	Digital IO Output Portal	4 Channel (All four channels are open collector output, highest voltage at 30V; First three channels have max. continuous current of 0.25A, and last channel has max. continuous current of 2A)				
	Feedback Type	Electromagnetic/Optical Incremental Encoder; SSI Absolute Encoder; RS 485 Absolute Encoder				

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ETHERCAT BUS CONTROLLER

Model		Servo Controller (Traditional Control)		
Basic Function	Application Mode	Position Closed-loop Control / Speed Closed-loop Control / Torque Closed-loop Control		
	Preparation Time	Power on and no malfunction, controller ready in 3 seconds		
	Hardware Protection Threshold	Under Voltage	9.5v	
		Over Voltage	75v	
		Over Current	Over Current Protection	
		Overheat	85°C Automate Alarm and Shut Down	
		Power Switch	Equipped power switch to turn on or off the motor.	
	Software Protection	Malfunction Lock	Automate slow down and stop when detect malfunction, and lock the malfunction for inspection.	
		Over Load	When current is continuously over Max. continuous current for 10 seconds, default to alarm for malfunction.	
		Over Current	Monitor real time current value, immediate cut off motor output when current over the pre-set value.	
		Differential Protection	Current or speed setting and feedback differential protection	
	Digital IO	Input	Multiplex the following functions by adjusting parameters: Servo start, zero-speed position clamp, emergency shut down, origin point signal, positive position limit, negative position limit.	
		Output	Multiplex the following functions by adjusting parameters: Power supply under voltage, position abnormal, hall feedback abnormal, over current, over load, driver overheat, current differentiate, speed differentiate, power supply over voltage, servo ready, servo operation, zero speed arrival, targeted speed arrival, targeted position arrival, brake output, origin point recover finish, error alarm, negative stall, positive stall, negative indicate.	
	Communication Portal	USB	Usually for Commissioning (also support host computer control)	
EtherCAT		1 set of in and out ports		
Torque Control	Step Response	Rise time \leq 1.5ms ; Over tune \leq 5% ; Shock \leq 2 times		
	Current Closed Loop Control	\geq 1KHz		
	Speed Limitation	Parameter Limits		
Speed Control	Speed Feedback	Based on Encoder		
	Encoder Power Supply	+5V \pm 2%/500mA		
	Speed Ratio	\geq 3000 : 1		
	Step Response	Rise time \leq 40ms ; Overtune \leq 15% ; Shock \leq 2.5 times		
	Sinusoidal Band Response	\geq 500Hz		
	Static Error Rate	\leq 0.4% (In speed 1000RPM, rated torque load)		
	Speed Fluctuation Rate	\leq 0.6%		
	Linearity	\leq 0.45%		
Position Close-Loop Control	Command control mode	EtherCAT Bus Control		
	Electronic gear ratio	Electronic Gear N/M, N: 1~65535, M: 1~65535 (parameter setting)		
	Torque Limit	(Parameter Setting)		
Environmental Requirements	Operation Temp.	-30°C+60°C		
	Storage Temp.	-30°C+65°C		
	Relative Humidity	0%~90%RH (No condensing)		
	Vibration Requirements	Frequency 5Hz to 25Hz, amplitude with 1.6mm; Frequency 25Hz to 200Hz, Acceleration within 1.2g, time 30min.		

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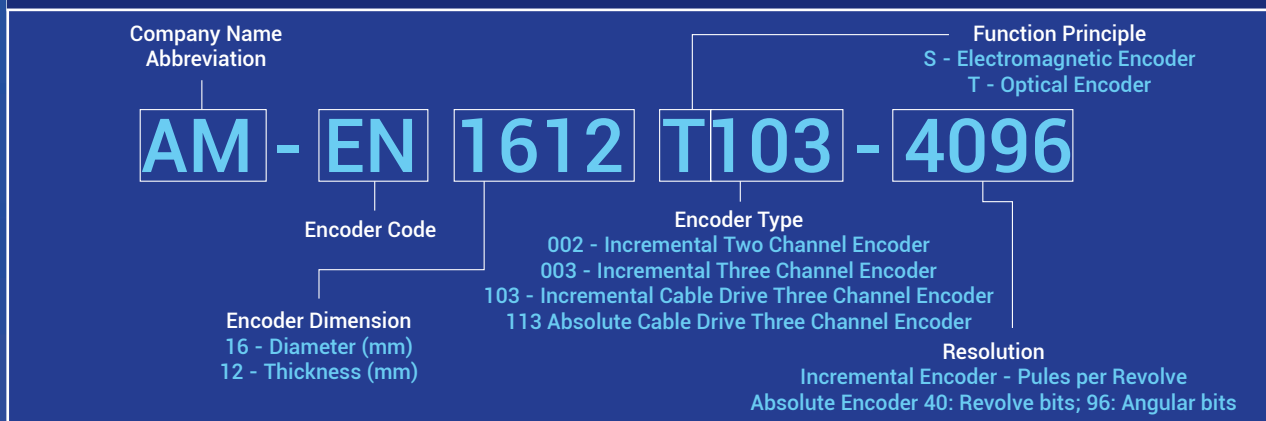
ENCODER

Assun Encoders include incremental and absolute types. For incremental controller, there are models of electromagnetic and optical, and both offers wide ranges of resolution choices. For absolute encoder, customer can choose for single or multi turns and also different resolutions.

High precision (resolution) and high reliability encoders by Assun are perfect for precision DC drive feedback and play an important role in the precision control system.



AM-EN1611S003	AM-EN2211S103	AM-EN2412T003	AM-EN3612T103
AM-EN1611S103	AM-EN1612T003	AM-EN2412T103	AM-EN1611S113
AM-EN2211S003	AM-EN1612T103	AM-EN3612T003	AM-EN2211S113



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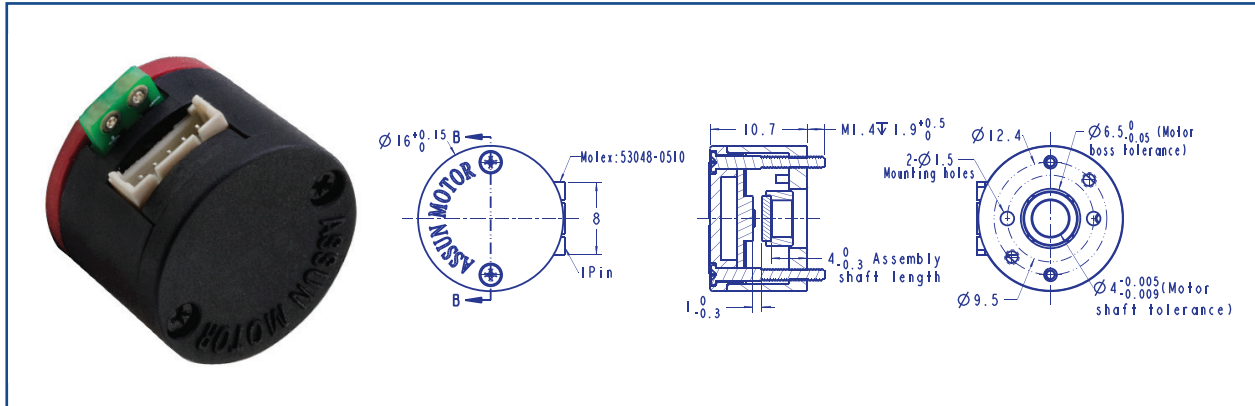
ENCODER

INCREMENTAL ENCODER

Incremental encoders by Assun are used for providing feedback information of motion to controllers and resolutions can be from 32 ppr/turn to 4096 ppr/turn. Cable drive and differential types of encoders can be chosen based on actual needs.



AM-EN1611S003(BL) SERIES



ELECTROMAGNETIC ENCODER

1) Parameters

Parameters/Models	AM-EN1611 S003-0032	AM-EN1611 S003-0064	AM-EN1611 S003-0128	AM-EN1611 S003-0256	AM-EN1611 S003-0512	AM-EN1611 S003-1024
Diameter	16	16	16	16	16	16
PPR/TURN	32	64	128	256	512	1024
Max Channels	3	3	3	3	3	3
Max Working Freq.(KHz)	20	40	100	180	360	512
Direction Signal	no	no	no	no	no	no
Drive (Differential Output)	no	no	no	no	no	no

2) Information

Technical Parameter		Suitable for motor size		Pin definition	Connection Diagram (CW)
Power Vcc	5V±5%	Suitable for shaft diameter	2.0; 3.0; 4.0	1. Vcc	
Vcc=5.0V Signal	TTL compatible	Suitable for shaft length	3.7~4.0	2. GND	
Operating Temperature	-25~85°C	Suitable for boss diameter	6.45~6.5	3. Channel A	
Inertia (max)	0.015 g.cm ²	Suitable for boss thickness	Maximum 1.0	4. Channel B	
Output Current, each channel	1.5mA(max)	Code wheel spacing	0.7~1.0	5. Channel Z (1/4 T)	
Weight	4.5 g	Other fixed size	Drawing		

3) Recommend Combination

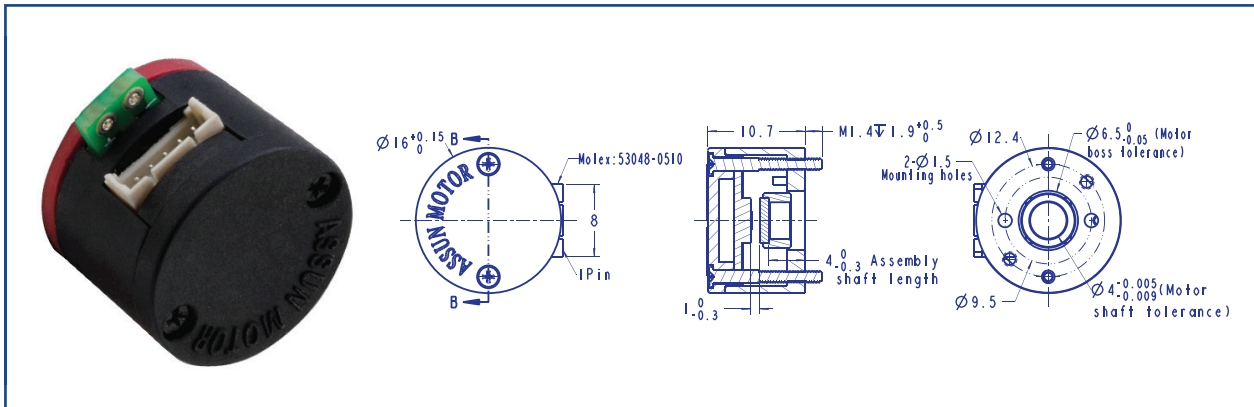
Total Length of Geared Motor System :L _T =L ₁ +L ₂ +(L ₃ =10.7mm)						<p>AM-EN1611S*** Combination Scheme</p>
L1:16GP	L1:19GP	L2:BL16	L1: 19GP	L1: 24GP	L2:BL20	
15.9	18.8	40.0	18.8	24	40.0	<p>Recommended Gearbox: Planetary Gearbox: AM-16GP AM-28GP AM-19GP AM-32GP AM-24GP</p> <p>Recommended Motor: Brushless Motor: AM-BL16** AM-BL20** AM-BL/D24** AM-BL/D28***</p> <p>For more combination specs, visit Assun Motor website.</p> <p>Remarks: Clients can choose gearbox and motor to match with this encoder. Some combinations are listed here for reference.</p>
23.3	23.6		23.6	34.3		
27	28.4		28.4	42.8		
L1:24GP	L1:28GP	L2:BL24	L1: 28GP	L1: 32GP	L2:BL28	
24	26.1	53.0	26.1	27.4	45.0	
34.3	33.3		33.3	35.9		
42.8	40.5		40.5	44.4		

Please tell us if there is vibration in application. Client should pay attention to the integrity and reliability of the transmitted signal.

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AM-EN1611S003(CL) SERIES



ELECTROMAGNETIC ENCODER

1) Parameters

Parameters/Models	AM-EN1611 S003-0032	AM-EN1611 S003-0064	AM-EN1611 S003-0128	AM-EN1611 S003-0256	AM-EN1611 S003-0512	AM-EN1611 S003-1024
Diameter	16	16	16	16	16	16
PPR/TURN	32	64	128	256	512	1024
Max Channels	3	3	3	3	3	3
Max Working Freq.(KHz)	20	40	100	180	360	512
Direction Signal	no	no	no	no	no	no
Drive (Differential Output)	no	no	no	no	no	no

2) Information

Technical Parameter		Suitable for motor size		Pin definition	Connection Diagram (CW)
Power Vcc	5V±5%	Suitable for shaft diameter	1.5; 2.0	1. Vcc	
Vcc=5.0V Signal	TTL compatible	Suitable for shaft length	3.7~4.0	2. GND	
Operating Temperature	-25~85°C	Suitable for boss diameter	6.45~6.5	3. Channel A	
Inertia (max)	0.015 g.cm ²	Suitable for boss thickness	Maximum 1.0	4. Channel B	
Output Current, each channel	1.5mA(max)	Code wheel spacing	0.7~1.0	5. Channel Z (1/4 T)	
Weight	5.0 g	Other fixed size	Drawing		

3) Recommend Combination

Total Length of Geared Motor System :L _T =L ₁ +L ₂ +(L ₃ =10.7mm)					
L1:16GP	L1:19GP	L2:CL16	L1: 24GP	L1: 28GP	L2:CL25
15.9	18.8	33.0	24	26.1	32.0
23.3	23.6	43.0	34.3	33.3	45.3
27	28.4		42.8	40.5	
L1:28GP	L1:32GP	L2:CL28			
26.1	27.4	31.0			
33.3	35.9	45.0			
40.5	44.4				

AM-EN1611S* Combination Scheme**

Recommended Gearbox:
Planetary Gearbox:
AM-16GP AM-28GP
AM-19GP AM-32GP
AM-24GP

Recommended Motor:
Coreless Motor:
AM-CL16**
AM-CL25**
AM-CL28**

For more combination specs, visit Assun Motor website.

Remarks: Clients can choose gearbox and motor to match with this encoder. Some combinations are listed here for reference.

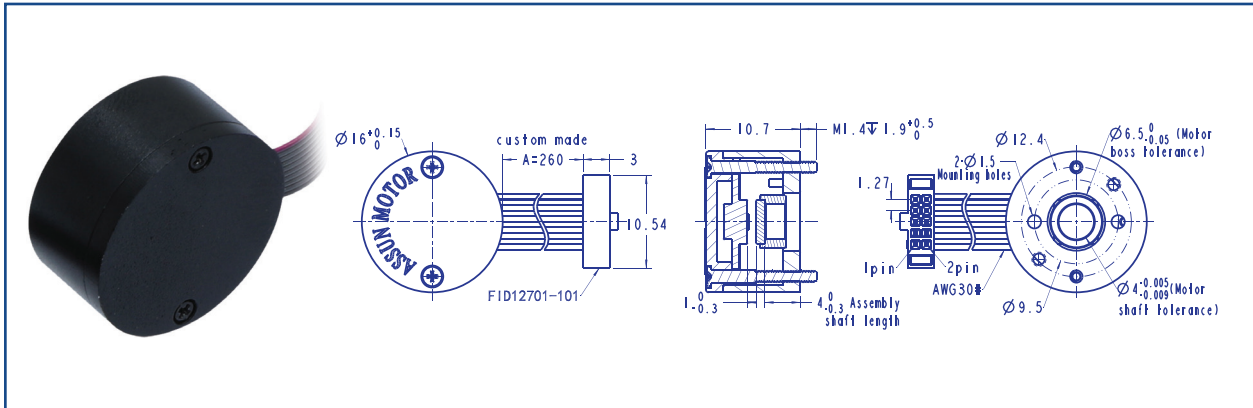
ENCODER

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AM-EN1611S103(BL) SERIES



ELECTROMAGNETIC ENCODER

1) Parameters

Parameters/Models	AM-EN1611 S103-0032	AM-EN1611 S103-0064	AM-EN1611 S103-0128	AM-EN1611 S103-0256	AM-EN1611 S103-0512	AM-EN1611 S103-1024
Diameter	16	16	16	16	16	16
PPR/TURN	32	64	128	256	512	1024
Max Channels	3	3	3	3	3	3
Max Working Freq.(KHz)	20	40	100	180	360	512
Direction Signal	no	no	no	no	no	no
Drive (Differential Output)	yes	yes	yes	yes	yes	yes

2) Information

Technical Parameter	Suitable for motor size			Pin definition		Connection Diagram (CW)
Power Vcc	5V±5%	Suitable for shaft diameter	2.0; 3.0; 4.0	1. NC	2. Vcc	
Vcc=5.0V Signal	ISL32179	Suitable for shaft length	3.7~4.0	3. GND	4. NC	
Operating Temperature	-40~125°C	Suitable for boss diameter	6.45~6.5	5. A-	6. A+	
Inertia (max)	0.015 g.cm ²	Suitable for boss thickness	Maximum 1.0	7. B-	8. B+	
Output Current, each channel	1.5mA(max)	Code wheel spacing	0.7~1.0	9. Z-	10. Z+	
Weight	6.5 g	Other fixed size	Drawing			

3) Recommend Combination

Total Length of Geared Motor System :L _T =L ₁ +L ₂ +(L ₃ =10.7mm)					
L1:16GP	L1:19GP	L2:BL16	L1: 19GP	L1: 24GP	L2:BL20
15.9	18.8	40.0	18.8	24	40.0
23.3	23.6		23.6	34.3	
27	28.4		28.4	42.8	
L1:24GP	L1:28GP	L2:BL24	L1: 28GP	L1: 32GP	L2:BL28
24	26.1	53.0	25.9	27.4	45.0
34.3	33.3		33.1	35.9	
42.8	40.5		40.3	44.4	

AM-EN1611S* Combination Scheme**

Recommended Gearbox:
Planetary Gearbox:
AM-16GP AM-28GP
AM-19GP AM-32GP
AM-24GP

Recommended Motor:
Brushless Motor:
AM-BL16** AM-BL20**
AM-BL/D24**
AM-BL/D28**

For more combination specs, visit Assun Motor website.

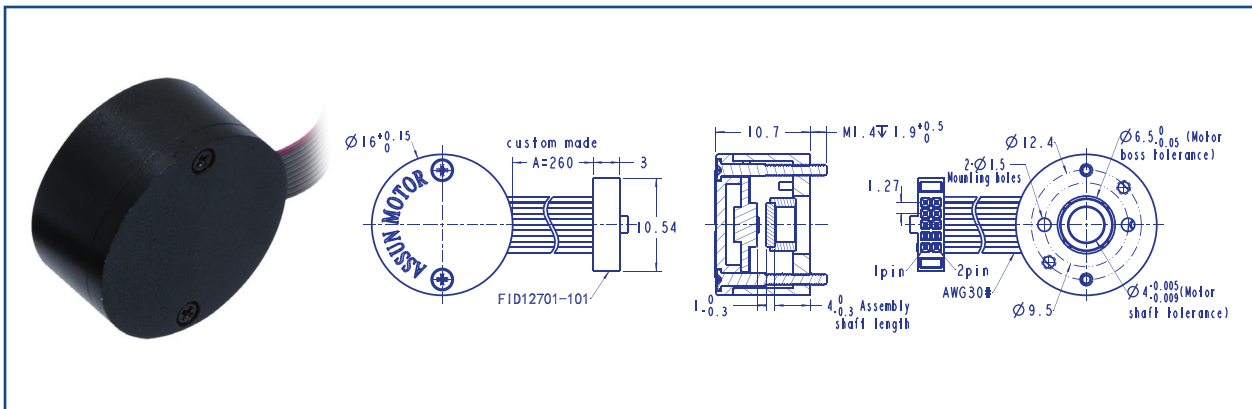
Remarks: Clients can choose gearbox and motor to match with this encoder. Some combinations are listed here for reference.

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AM-EN1611S103(CL) SERIES



ELECTROMAGNETIC ENCODER

1) Parameters

Parameters/Models	AM-EN1611 S103-0032	AM-EN1611 S103-0064	AM-EN1611 S103-0128	AM-EN1611 S103-0256	AM-EN1611 S103-0512	AM-EN1611 S103-1024
Diameter	16	16	16	16	16	16
PPR/TURN	32	64	128	256	512	1024
Max Channels	3	3	3	3	3	3
Max Working Freq.(KHz)	20	40	100	180	360	512
Direction Signal	no	no	no	no	no	no
Drive (Differential Output)	yes	yes	yes	yes	yes	yes

2) Information

Technical Parameter	Suitable for motor size		Pin definition		Connection Diagram (CW)
Power Vcc	5V±5%	Suitable for shaft diameter	1.5; 2.0	1. NC 2. Vcc	
Vcc=5.0V Signal	ISL32179	Suitable for shaft length	3.7~4.0	3. GND 4. NC	
Operating Temperature	-40~125°C	Suitable for boss diameter	6.45~6.5	5. A- 6. A+	
Inertia (max)	0.015 g.cm ²	Suitable for boss thickness	Maximum 1.0	7. B- 8. B+	
Output Current, each channel	1.5mA(max)	Code wheel spacing	0.7~1.0	9. Z- 10. Z+	
Weight	6.5 g	Other fixed size	Drawing		

3) Recommend Combination

Total Length of Geared Motor System :L _T =L ₁ +L ₂ +(L ₃ =10.7mm)					
L1:16GP	L1:19GP	L2:CL16	L1: 24GP	L1: 28GP	L2:CL25
15.9	18.8	33.0	24	26.1	32.0
23.3	23.6	43.0	34.3	33.3	45.3
27	28.4		42.8	40.5	
L1:28GP	L1:32GP	L2:CL28			
26.1	27.4	31.0			
33.3	35.9	45.0			
40.5	44.4				

AM-EN1611S* Combination Scheme**

Recommended Gearbox:
Planetary Gearbox:
AM-16GP AM-28GP
AM-19GP AM-32GP
AM-24GP

Recommended Motor:
Coreless Motor:
AM-CL16**
AM-CL25**
AM-CL28**

For more combination specs, visit Assun Motor website.

Remarks: Clients can choose gearbox and motor to match with this encoder. Some combinations are listed here for reference.

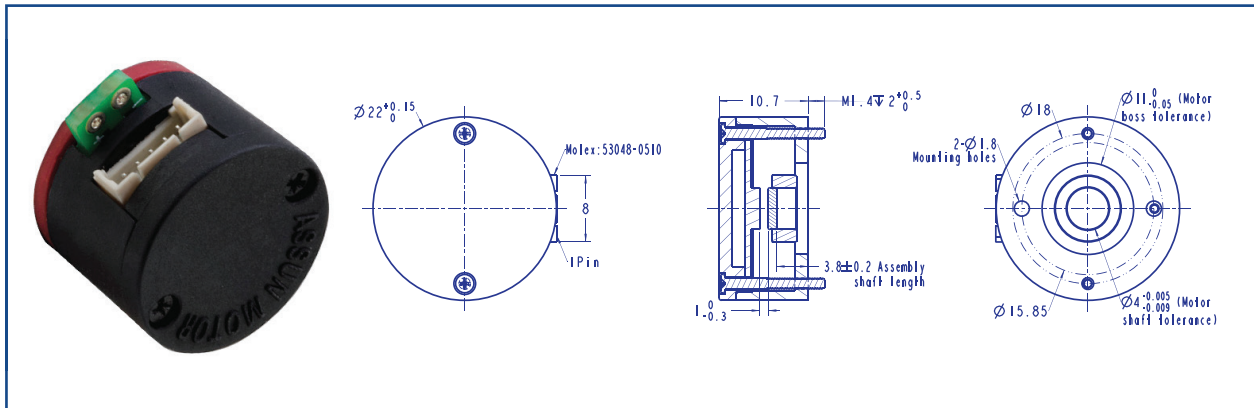
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AM-EN2211S003(BL) SERIES



ELECTROMAGNETIC ENCODER

1) Parameters

Parameters/Models	AM-EN2211 S003-0032	AM-EN2211 S003-0064	AM-EN2211 S003-0128	AM-EN2211 S003-0256	AM-EN2211 S003-0512	AM-EN2211 S003-1024
Diameter	22	22	22	22	22	22
PPR/TURN	32	64	128	256	512	1024
Max Channels	3	3	3	3	3	3
Max Working Freq.(KHz)	20	40	100	180	360	512
Direction Signal	no	no	no	no	no	no
Drive (Differential Output)	no	no	no	no	no	no

2) Information

Technical Parameter		Suitable for motor size		Pin definition	Connection Diagram (CW)
Power Vcc	5V±5%	Suitable for shaft diameter	4.0; 5.0; 8.0	1. Vcc	
Vcc=5.0V Signal	TTL compatible	Suitable for shaft length	3.7~4.0	2. GND	
Operating Temperature	-25~85°C	Suitable for boss diameter	10.95~11.0	3. Channel A	
Inertia (max)	0.015 g.cm ²	Suitable for boss thickness	Maximum 1.0	4. Channel B	
Output Current, each channel	1.5mA(max)	Code wheel spacing	0.7~1.0	5. Channel Z (1/4 T)	
Weight	7.0 g	Other fixed size	Drawing		

3) Recommend Combination

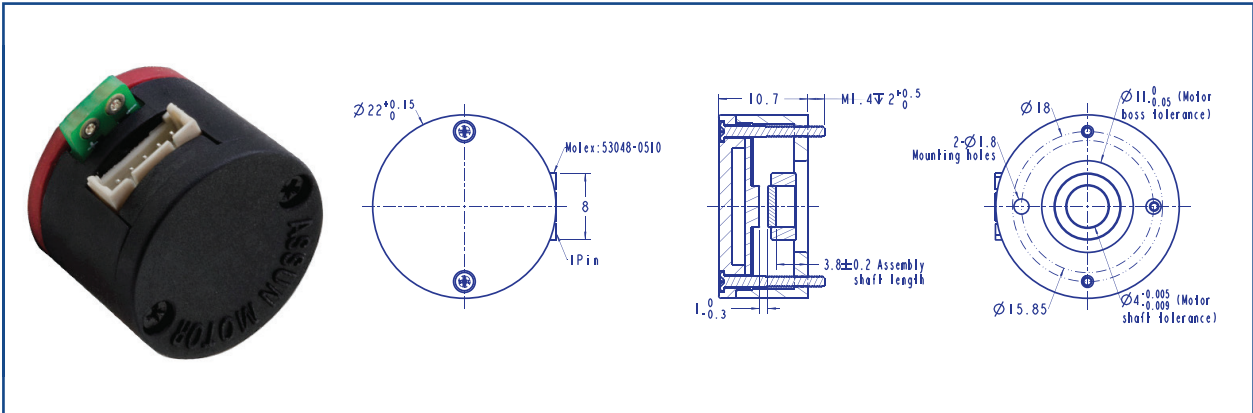
Total Length of Geared Motor System :L _T =L ₁ +L ₂ +(L ₃ =10.7mm)						AM-EN2211S*** Combination Scheme
L1:32GP	L1:36GP	L1: BL32	L1: 36GP	L1: 40GP	L2:BL36	
27.4	39.6	60.0	39.6	46.8	60.5	Recommended Gearbox: Planetary Gearbox: AM-32GP AM-45GP AM-36GP AM-52GP AM-40GP Recommended Motor: BRUSH LESS Motor: AM-BL/D32** AM-BL40** AM-BL/D36** AM-BL/D45*** For more combination specs, visit Assun Motor website.
35.9	48.6	70.0	48.6	58.3		
44.4	57.6		57.6	69.8		
L1:45GP	L1:52GP	L2:BL45	L1:52GP		L2:BL65	Remarks: Clients can choose gearbox and motor to match with this encoder. Some combinations are listed here for reference.
60.1	79.3	100.0	79.3		108.5	
72.1						

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AM-EN2211S003(CL) SERIES



ELECTROMAGNETIC ENCODER

1) Parameters

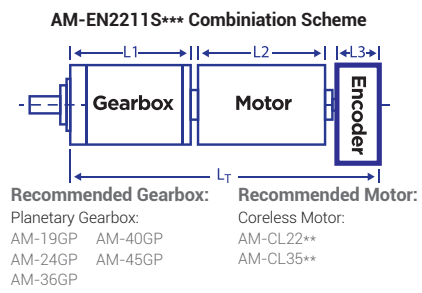
Parameters/Models	AM-EN2211 S003-0032	AM-EN2211 S003-0064	AM-EN2211 S003-0128	AM-EN2211 S003-0256	AM-EN2211 S003-0512	AM-EN2211 S003-1024
Diameter	22	22	22	22	22	22
PPR/TURN	32	64	128	256	512	1024
Max Channels	3	3	3	3	3	3
Max Working Freq.(KHz)	20	40	100	180	360	512
Direction Signal	no	no	no	no	no	no
Drive (Differential Output)	no	no	no	no	no	no

2) Information

Technical Parameter		Suitable for motor size		Pin definition	Connection Diagram (CW)
Power Vcc	5V±5%	Suitable for shaft diameter	4.0; 5.0; 8.0	1. Vcc	
Vcc=5.0V Signal	TTL compatible	Suitable for shaft length	3.7~4.0	2. GND	
Operating Temperature	-25~85°C	Suitable for boss diameter	10.95~11.0	3. Channel A	
Inertia (max)	0.015 g.cm ²	Suitable for boss thickness	Maximum 1.0	4. Channel B	
Output Current, each channel	1.5mA(max)	Code wheel spacing	0.7~1.0	5. Channel Z (1/4 T)	
Weight	7.0 g	Other fixed size	Drawing		

3) Recommend Combination

Total Length of Geared Motor System :L _T =L1+L2+(L3=10.7mm)						<p>AM-EN2211S*** Combination Scheme</p>
L1:19GP	L1:24GP	L2:CL22	L1:36GP	L1:40GP	L2:CL35	
18.8	24	32.2	39.6	46.8	70.5	<p>Recommended Gearbox: Planetary Gearbox: AM-19GP AM-40GP AM-24GP AM-45GP AM-36GP</p> <p>Recommended Motor: Coreless Motor: AM-CL22** AM-CL35**</p>
23.6	34.3	42.0	48.6	58.3		
28.4	42.8		57.6	69.8		
L1:45GP		L2:CL35				
60.1		70.5				
72.1						



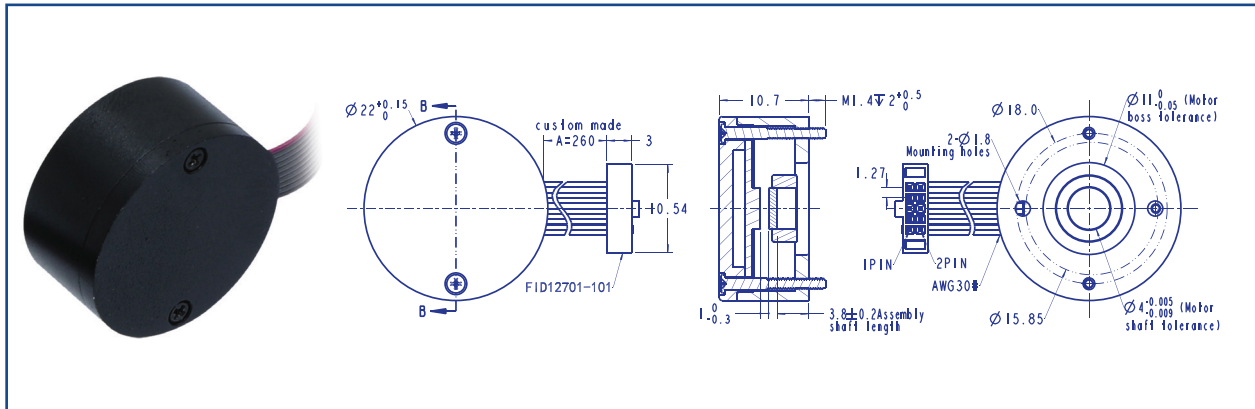
For more combination specs, visit Assun Motor website.
Remarks: Clients can choose gearbox and motor to match with this encoder. Some combinations are listed here for reference.

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AM-EN2211S103(BL) SERIES



ELECTROMAGNETIC ENCODER

1) Parameters

Parameters/Models	AM-EN2211 S103-0032	AM-EN2211 S103-0064	AM-EN2211 S103-0128	AM-EN2211 S103-0256	AM-EN2211 S103-0512	AM-EN2211 S103-1024
Diameter	22	22	22	22	22	22
PPR/TURN	32	64	128	256	512	1024
Max Channels	3	3	3	3	3	3
Max Working Freq.(KHz)	20	40	100	180	360	512
Direction Signal	no	no	no	no	no	no
Drive (Differential Output)	yes	yes	yes	yes	yes	yes

2) Information

Technical Parameter		Suitable for motor size		Pin definition	Connection Diagram (CW)
Power Vcc	5V±5%	Suitable for shaft diameter	4.0; 5.0; 8.0	1. NC 2. Vcc	
Vcc=5.0V Signal	ISL32179	Suitable for shaft length	3.7~4.0	3. GND 4. NC	
Operating Temperature	-40~125°C	Suitable for boss diameter	10.95~11.0	5. A- 6. A+	
Inertia (max)	0.015 g.cm ²	Suitable for boss thickness	Maximum 1.0	7. B- 8. B+	
Output Current, each channel	1.5mA(max)	Code wheel spacing	0.7~1.0	9. Z- 10. Z+	
Weight	9.0 g	Other fixed size	Drawing		

3) Recommend Combination

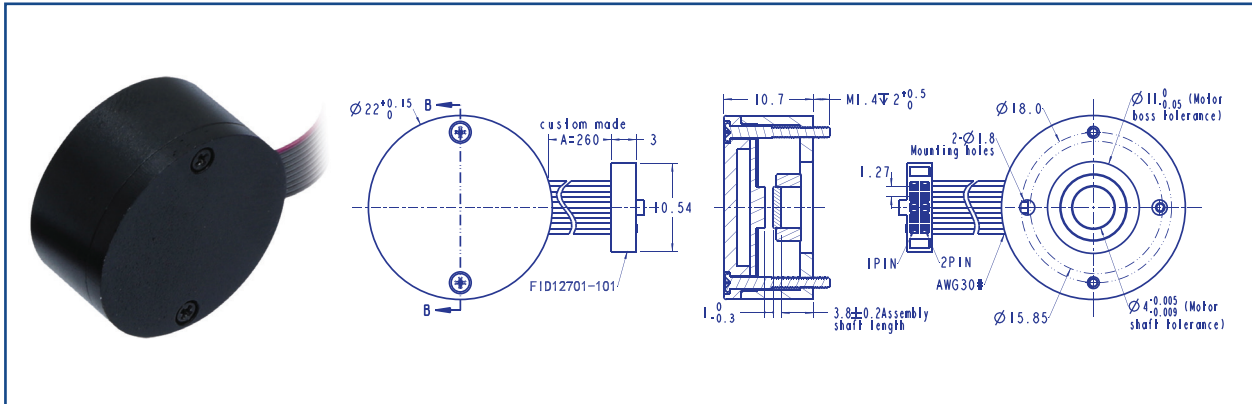
Total Length of Geared Motor System :L _T =L ₁ +L ₂ +(L ₃ =10.7mm)						AM-EN2211S*** Combination Scheme
L1:32GP	L1:36GP	L2:BL32	L1: 36GP	L1: 40GP	L2:BL36	
27.4	39.6	60.0	39.6	46.8	60.5	Recommended Gearbox: Planetary Gearbox: AM-32GP AM-45GP AM-36GP AM-52GP AM-40GP Recommended Motor: BRUSH LESS Motor: AM-BL/D32** AM-BL40** AM-BL/D36** AM-BL/D45*** For more combination specs, visit Assun Motor website.
35.9	48.6	70.0	48.6	58.3		
44.4	57.6		57.6	69.8		
L1:45GP	L1:52GP	L2:BL45	L1:52GP		L2:BL65	
60.1	79.3	100.0	79.3		108.5	
72.1						

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AM-EN2211S103(CL) SERIES



ELECTROMAGNETIC ENCODER

1) Parameters

Parameters/Models	AM-EN2211 S103-0032	AM-EN2211 S103-0064	AM-EN2211 S103-0128	AM-EN2211 S103-0256	AM-EN2211 S103-0512	AM-EN2211 S103-1024
Diameter	22	22	22	22	22	22
PPR/TURN	32	64	128	256	512	1024
Max Channels	3	3	3	3	3	3
Max Working Freq.(KHz)	20	40	100	180	360	512
Direction Signal	no	no	no	no	no	no
Drive (Differential Output)	yes	yes	yes	yes	yes	yes

2) Information

Technical Parameter		Suitable for motor size		Pin definition		Connection Diagram (CW)
Power Vcc	5V±5%	Suitable for shaft diameter	2.0; 4.0	1. NC	1. Vcc	
Vcc=5.0V Signal	ISL32179	Suitable for shaft length	3.7~4.0	3. GND	4. NC	
Operating Temperature	-40~125°C	Suitable for boss diameter	10.95~11.0	5. A-	6. A+	
Inertia (max)	0.015 g.cm ²	Suitable for boss thickness	Maximum 1.0	7. B-	8. B+	
Output Current, each channel	1.5mA(max)	Code wheel spacing	0.7~1.0	9. Z-	10. Z+	
Weight	9.0 g	Other fixed size	Drawing			

3) Recommend Combination

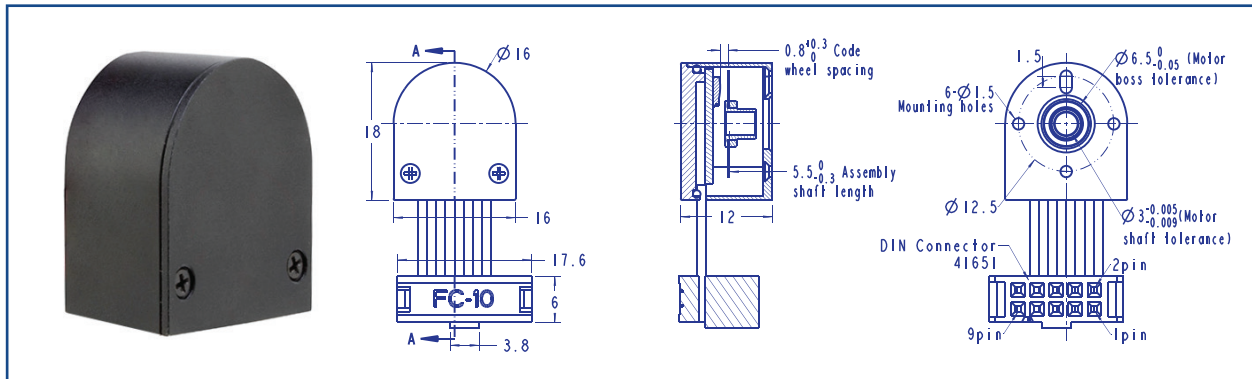
Total Length of Geared Motor System :L _T =L ₁ +L ₂ +(L ₃ =10.7mm)						AM-EN2211S*** Combination Scheme
L1:19GP	L1:24GP	L2:CL22	L2: 36GP	L1:40GP	L2:CL35	
18.8	24	32.2	39.6	46.8	70.5	
23.6	34.3	42.0	48.6	58.3		
28.4	42.8		57.6	69.8		
L1:45GP		L2:CL35				<p>Recommended Gearbox: Planetary Gearbox: AM-19GP AM-40GP AM-24GP AM-45GP AM-36GP</p> <p>Recommended Motor: Coreless Motor: AM-CL22** AM-CL35**</p> <p>For more combination specs, visit Assun Motor website.</p> <p>Remarks: Clients can choose gearbox and motor to match with this encoder. Some combinations are listed here for reference.</p>
60.1		70.5				
72.1						

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AM-EN1612T003 SERIES



OPTICAL ENCODER

1) Parameters

Parameters/Models	AM-EN1612 T003-360	AM-EN1612 T003-720	AM-EN1612 T003-1440			
Diameter	16	16	16			
PPR/TURN	360	720	1440			
Max Channels	3	3	3			
Max Working Freq.(KHz)	55~220	55~220	55~220			
Direction Signal	no	no	no			
Drive (Differential Output)	no	no	no			

2) Information

Technical Parameter		Suitable for motor size		Pin definition		Connection Diagram (CW)
Power Vcc	5V±5%	Suitable for shaft diameter	2.0; 3.0	1. NC	2.Vcc	
Vcc=5.0V Signal	TTL compatible	Suitable for shaft length	5.2~5.5	3. A	4. B	
Operating Temperature	-25~80 °C	Suitable for boss diameter	6.45~6.5	5. GND	6. NC	
Inertia (max)	0.06 g.cm ²	Suitable for boss thickness	Maximum 1.0	7. Z	8. NC	
Output Current, each channel	1.5mA(max)	Code wheel spacing	0.8~1.1	9. NC	10. NC	
Weight	11.0 g	Other fixed size	Drawing			

3) Recommend Combination

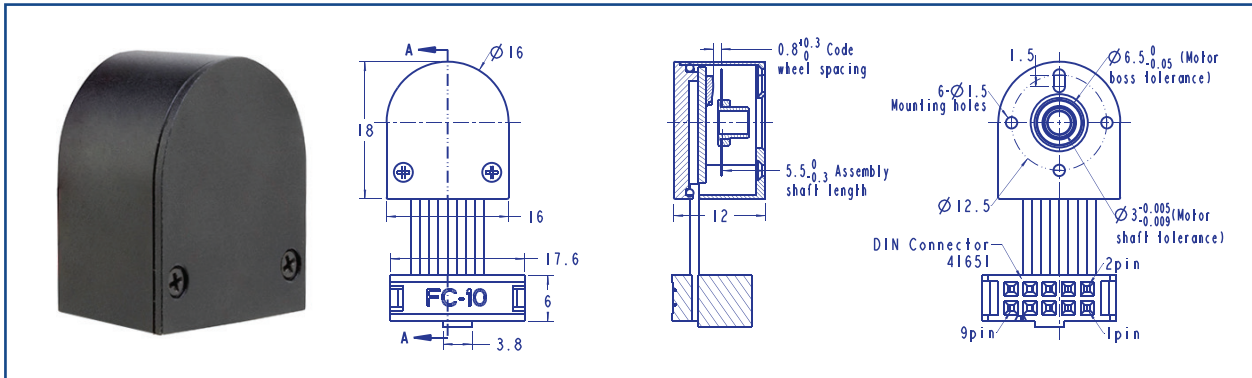
Total Length of Geared Motor System :L _T =L ₁ +L ₂ +(L ₃ =12.0mm)						AM-EN1612T*** Combination Scheme
L1:19GP	L1:24GP	L2:BL20	L1:16GP	L1:19GP	L2:BL16	
18.8	24	40.0	15.9	18.8	40.0	Recommended Gearbox: Planetary Gearbox: AM-16GP AM-19GP AM-24GP Recommended Motor: BRUSH LESS Motor: AM-BL16** AM-BL20** For more combination specs, visit Assun Motor website.
23.6	34.3		23.3	23.6		
28.4	42.8		27.0	28.4		
						Remarks: Clients can choose gearbox and motor to match with this encoder. Some combinations are listed here for reference.

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AM-EN1612T103 SERIES



OPTICAL ENCODER

1) Parameters

Parameters/Models	AM-EN1612 T103-360	AM-EN1612 T103-720	AM-EN1612 T103-1440			
Diameter	16	16	16			
PPR/TURN	360	720	1440			
Max Channels	3	3	3			
Max Working Freq.(KHz)	55~220	55~220	55~220			
Direction Signal	no	no	no			
Drive (Differential Output)	yes	yes	yes			

2) Information

Technical Parameter		Suitable for motor size		Pin definition	Connection Diagram (CW)
Power Vcc	5V±5%	Suitable for shaft diameter	2.0; 3.0	1. NC	2.Vcc
Vcc=5.0V Signal	ISL32179	Suitable for shaft length	5.2~5.5	3. GND	4. NC
Operating Temperature	-25~80 °C	Suitable for boss diameter	6.45~6.5	5. A-	6. A+
Inertia (max)	0.06 g.cm ²	Suitable for boss thickness	Maximum 1.0	7. B-	8. B+
Output Current, each channel	20mA(max)	Code wheel spacing	0.8~1.1	9. Z-	10. Z+
Weight	11.0 g	Other fixed size	Drawing		

3) Recommend Combination

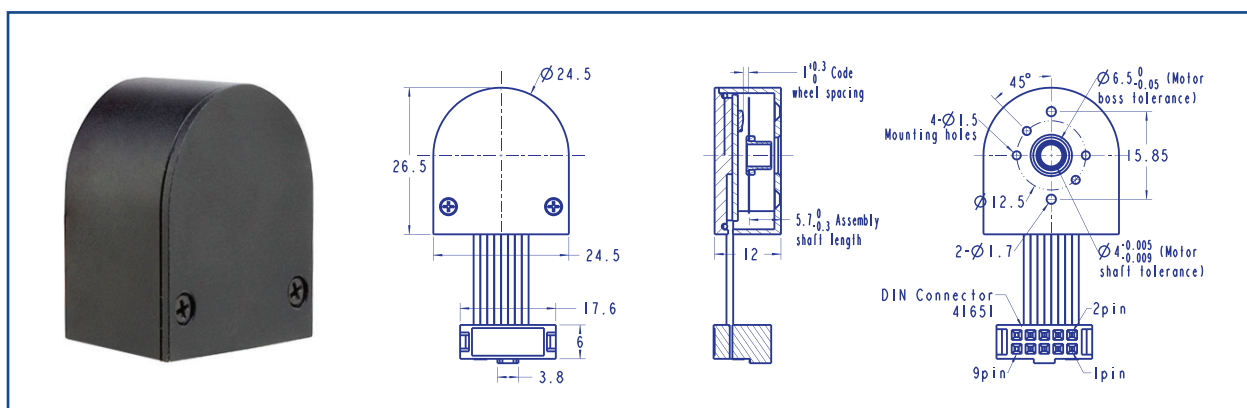
Total Length of Geared Motor System :L _T =L1+L2+(L3=12.0mm)						AM-EN1612T*** Combination Scheme Recommended Gearbox: Planetary Gearbox: AM-16GP AM-19GP AM-24GP Recommended Motor: BRUSH LESS Motor: AM-BL16** AM-BL20** For more combination specs, visit Assun Motor website. Remarks: Clients can choose gearbox and motor to match with this encoder. Some combinations are listed here for reference.
L1:19GP	L1:24GP	L2:BL20	L1:16GP	L1:19GP	L2:BL16	
18.8	24	40.0	15.9	18.8	40.0	
23.6	34.3		23.3	23.6		
28.4	42.8		27.0	28.4		

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AM-EN2412T003 SERIES



OPTICAL ENCODER

1) Parameters

Parameters/Models	AM-EN2412 T003-500	AM-EN2412 T003-512	AM-EN2412 T003-1000	AM-EN2412 T003-1024	AM-EN2412 T003-2000	AM-EN2412 T003-2048
Diameter	24.5	24.5	24.5	24.5	24.5	24.5
PPR/TURN	500	512	1000	1024	2000	2048
Max Channels	3	3	3	3	3	3
Max Working Freq.(KHz)	55~220	55~220	55~220	55~220	55~220	55~220
Direction Signal	no	no	no	no	no	no
Drive (Differential Output)	no	no	no	no	no	no

2) Information

Technical Parameter		Suitable for motor size		Pin definition		Connection Diagram (CW)
Power Vcc	5V±5%	Suitable for shaft diameter	3.0; 4.0	1. NC	.Vcc	
Vcc=5.0V Signal	TTL compatible	Suitable for shaft length	5.2~5.5	3. A	4. B	
Operating Temperature	-25~80 °C	Suitable for boss diameter	6.45~6.5	5. GND	6. NC	
Inertia (max)	0.23 g.cm ²	Suitable for boss thickness	Maximum 1.0	7. Z	8. NC	
Output Current, each channel	1.5mA(max)	Code wheel spacing	0.8~1.1	9. NC	10. NC	
Weight	17.0 g	Other fixed size	Drawing			

3) Recommend Combination

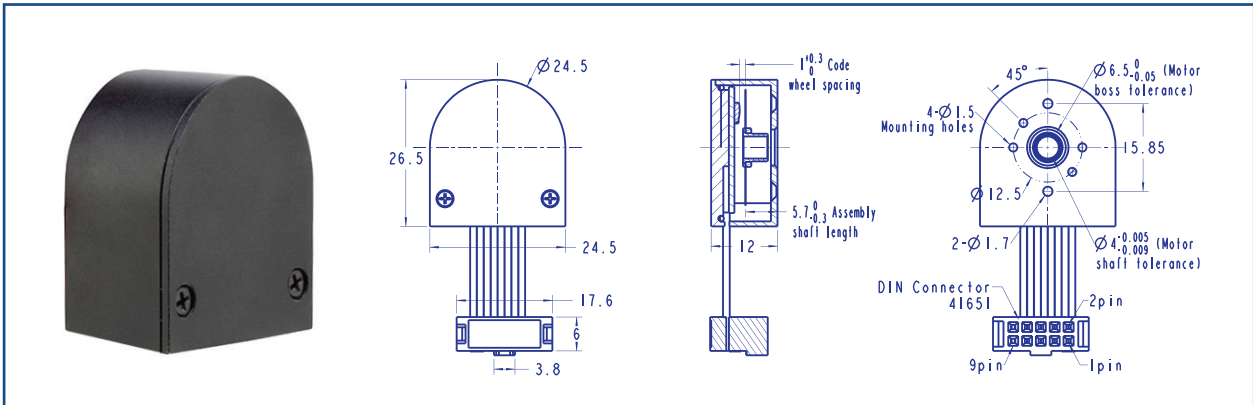
Total Length of Geared Motor System :L _T =L1+L2+(L3=12.0mm)						
L1:24GP	L1:28GP	L2:BL24	L1:28GP	L1:32GP	L2:BL28	
24	26.1	53.0	26.1	27.4	45.0	Recommended Gearbox: Planetary Gearbox: AM-24GP AM-28GP AM-32GP AM-36GP For more combination specs, visit Assun Motor website.
34.3	33.3		33.3	35.9		
42.8	40.5		40.5	44.4		
L1:32GP	L1:36GP	L2:BL32				Recommended Motor: BRUSH LESS Motor: AM-BL/D24** AM-BL/D28** AM-BL/D32**
27.4	39.6	60.0				
35.9	48.6	70.0				
44.4	57.6					

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AM-EN2412T103 SERIES



OPTICAL ENCODER

1) Parameters

Parameters/Models	AM-EN2412 T103-500	AM-EN2412 T103-512	AM-EN2412 T103-1000	AM-EN2412 T103-1024	AM-EN2412 T103-2000	AM-EN2412 T103-2048
Diameter	24.5	24.5	24.5	24.5	24.5	24.5
PPR/TURN	500	512	1000	1024	2000	2048
Max Channels	3	3	3	3	3	3
Max Working Freq.(KHz)	55~220	55~220	55~220	55~220	55~220	55~220
Direction Signal	no	no	no	no	no	no
Drive (Differential Output)	yes	yes	yes	yes	yes	yes

2) Information

Technical Parameter		Suitable for motor size		Pin definition	Connection Diagram (CW)
Power Vcc	5V±5%	Suitable for shaft diameter	3.0; 4.0	1. NC	2.Vcc
Vcc=5.0V Signal	ISL 32179	Suitable for shaft length	5.2~5.5	3. GND	4. NC
Operating Temperature	-25~80 °C	Suitable for boss diameter	6.45~6.5	5. A-	6. A+
Inertia (max)	0.23 g.cm ²	Suitable for boss thickness	Maximum 1.0	7. B-	8. B+
Output Current, each channel	20mA(max)	Code wheel spacing	0.8~1.1	9. Z-	10. Z+
Weight	17.0 g	Other fixed size	Drawing		

3) Recommend Combination

Total Length of Geared Motor System :L _T =L ₁ +L ₂ +(L ₃ =12.0mm)					
L1:24GP	L1:28GP	L2:BL24	L1:28GP	L1:32GP	L2:BL28
24	26.1	53.0	26.1	27.4	45.0
34.3	33.3		33.3	35.9	
42.8	40.5		40.5	44.4	
L1:32GP	L1:36GP	L2:BL32			
27.4	39.6	60.0			
35.9	48.6	70.0			
44.4	57.6				

AM-EN2412T* Combination Scheme**

Recommended Gearbox:
Planetary Gearbox:
AM-24GP
AM-28GP
AM-32GP
AM-36GP

Recommended Motor:
BRUSH LESS Motor:
AM-BL/D24**
AM-BL/D28**
AM-BL/D32**

For more combination specs, visit Assun Motor website.

Remarks: Clients can choose gearbox and motor to match with this encoder. Some combinations are listed here for reference.

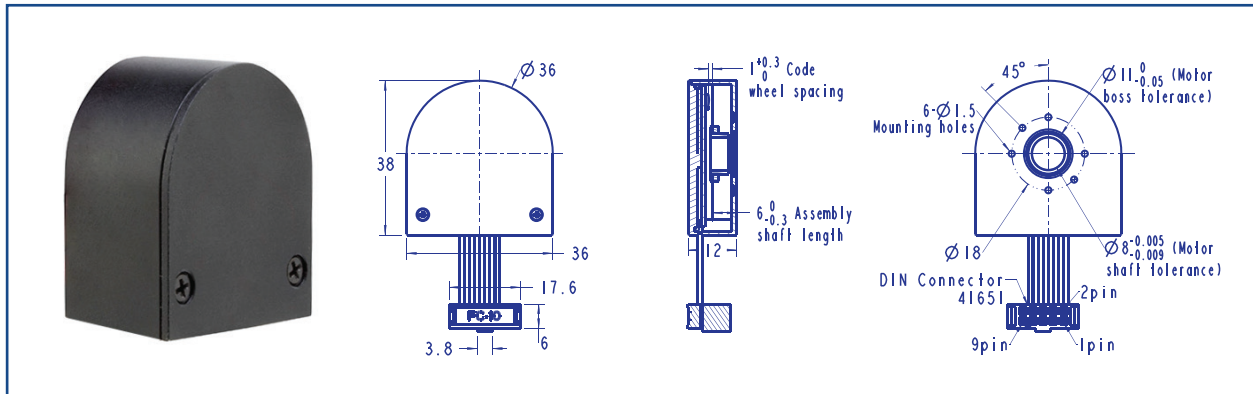
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AM-EN3612T003 SERIES



OPTICAL ENCODER

1) Parameters

Parameters/Models	AM-EN3612 T003-1000	AM-EN3612 T003-1024	AM-EN3612 T003-2000	AM-EN3612 T003-2048	AM-EN3612 T003-4000	AM-EN3612 T003-4096
Diameter	36.0	36.0	36.0	36.0	36.0	36.0
PPR/TURN	1000	1024	2000	2048	4000	4096
Max Channels	3	3	3	3	3	3
Max Working Freq.(KHz)	55~220	55~220	55~220	55~220	55~220	55~220
Direction Signal	no	no	no	no	no	no
Drive (Differential Output)	no	no	no	no	no	no

2) Information

Technical Parameter		Suitable for motor size		Pin definition	Connection Diagram (CW)
Power Vcc	5V±5%	Suitable for shaft diameter	5.0; 8.0	1. NC	2.Vcc
Vcc=5.0V Signal	TTL compatible	Suitable for shaft length	5.2~5.5	3. A	4. B
Operating Temperature	-25~80 °C	Suitable for boss diameter	10.95~11.0	5. GND	6. NC
Inertia (max)	1.18 g.cm ²	Suitable for boss thickness	Maximum 1.0	7. Z	8. NC
Output Current, each channel	1.5mA(max)	Code wheel spacing	0.8~1.1	9. NC	10. NC
Weight	29.0 g	Other fixed size	Drawing		

3) Recommend Combination

Total Length of Geared Motor System : L _T =L ₁ +L ₂ +(L ₃ =12.0mm)					
L1:45GP	L1:52GP	L2:BL45	L1:36GP	L1:40GP	L2: BL36
48.1	79.3	100.0	39.6	46.8	60.5
60.1			48.6	58.3	
72.1			57.6	69.8	
L1:40GP	L1:45GP	L2:BL40	L1:52GP		L2: BL65
46.8	48.1	60.0	79.3		108.5
58.3	60.1				
69.8	72.1				

AM-EN3612T* Combination Scheme**

Recommended Gearbox:
Planetary Gearbox:
AM-36GP
AM-40GP
AM-45GP
AM-52GP

Recommended Motor:
Brushless Motor:
AM-BL/D36**
AM-BL/D45**
AM-BL40**

For more combination specs, visit Assun Motor website.

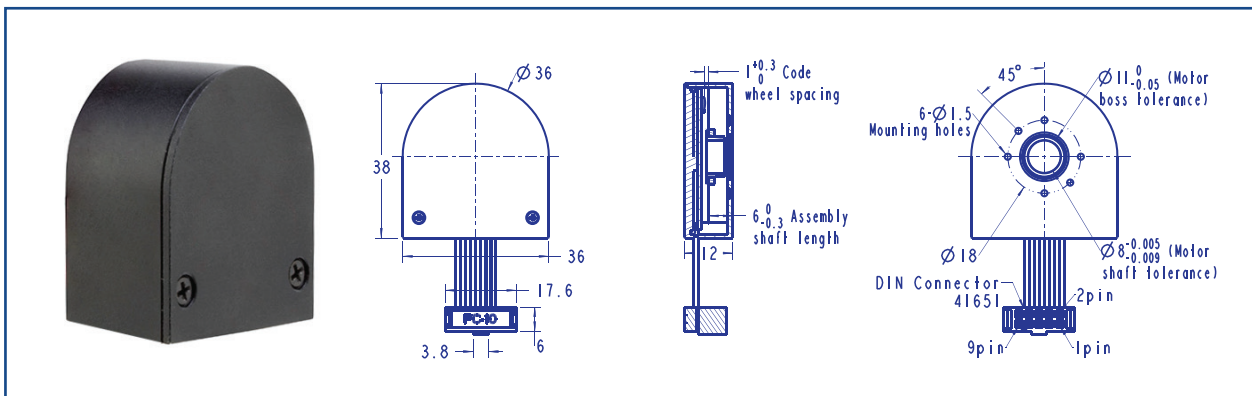
Remarks: Clients can choose gearbox and motor to match with this encoder. Some combinations are listed here for reference.

Please tell us if there is vibration in application. Client should pay attention to the integrity and reliability of the transmitted signal.

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AM-EN3612T103 SERIES



OPTICAL ENCODER

1) Parameters

Parameters/Models	AM-EN3612 T103-1000	AM-EN3612 T103-1024	AM-EN3612 T103-2000	AM-EN3612 T103-2048	AM-EN3612 T103-4000	AM-EN3612 T103-4096
Diameter	36.0	36.0	36.0	36.0	36.0	36.0
PPR/TURN	1000	1024	2000	2048	4000	4096
Max Channels	3	3	3	3	3	3
Max Working Freq.(KHz)	55~220	55~220	55~220	55~220	55~220	55~220
Direction Signal	no	no	no	no	no	no
Drive (Differential Output)	yes	yes	yes	yes	yes	yes

2) Information

Technical Parameter		Suitable for motor size		Pin definition	Connection Diagram (CW)	
Power Vcc	5V±5%	Suitable for shaft diameter	5.0; 8.0	1. NC	2.Vcc	
Vcc=5.0V Signal	ISL 32179	Suitable for shaft length	5.2~5.5	3. GND	4. NC	
Operating Temperature	-25~80 °C	Suitable for boss diameter	10.95~11.0	5. A-	6. A+	
Inertia (max)	1.18 g.cm ²	Suitable for boss thickness	Maximum 1.0	7. B-	8. B+	
Output Current, each channel	20mA(max)	Code wheel spacing	0.8~1.1	9. Z-	10. Z+	
Weight	29.0 g	Other fixed size	Drawing			

3) Recommend Combination

Total Length of Geared Motor System :L _T =L1+L2+(L3=12.0mm)					
L1:45GP	L1:52GP	L2:BL45	L1:36GP	L1: 40GP	L2: BL36
48.1	79.3	100.0	39.6	46.8	60.5
60.1			48.6	58.3	
72.1			57.6	69.8	
L1:40GP	L1:45GP	L2:BL40	L1:52GP		L2: BL65
46.8	48.1	60.0	79.3		108.5
58.3	60.1				140.0
69.8	72.1				

AM-EN3612T* Combination Scheme**

Recommended Gearbox:
Planetary Gearbox:
AM-36GP
AM-40GP
AM-45GP
AM-52GP

Recommended Motor:
Brushless Motor:
AM-BL/D36**
AM-BL/D45**
AM-BL40**

For more combination specs, visit Assun Motor website.

Remarks: Clients can choose gearbox and motor to match with this encoder. Some combinations are listed here for reference.

ENCODER

Please tell us if there is vibration in application. Client should pay attention to the integrity and reliability of the transmitted signal.

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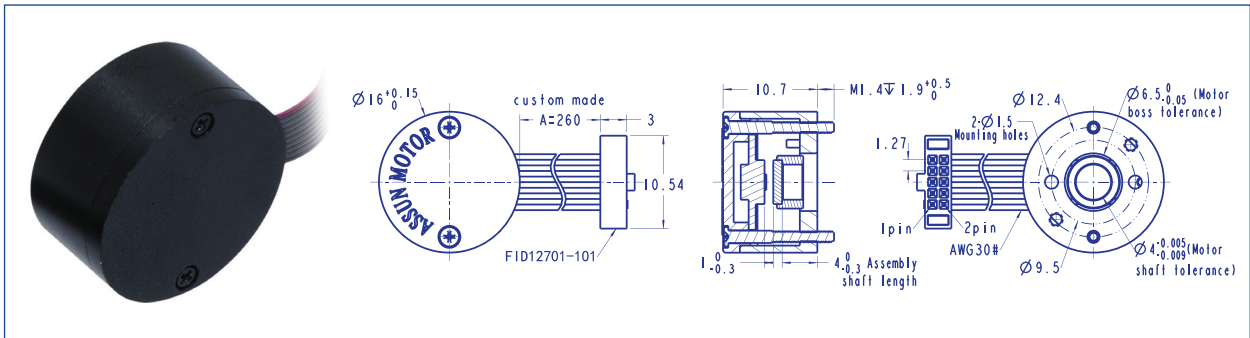
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ENCODER _____
ABSOLUTE ENCODER

Absolute encoders by Assun are used for providing extreme precision feedback information of motion to controllers and are mostly used when there are specific high precision needs in the DC drive applications.

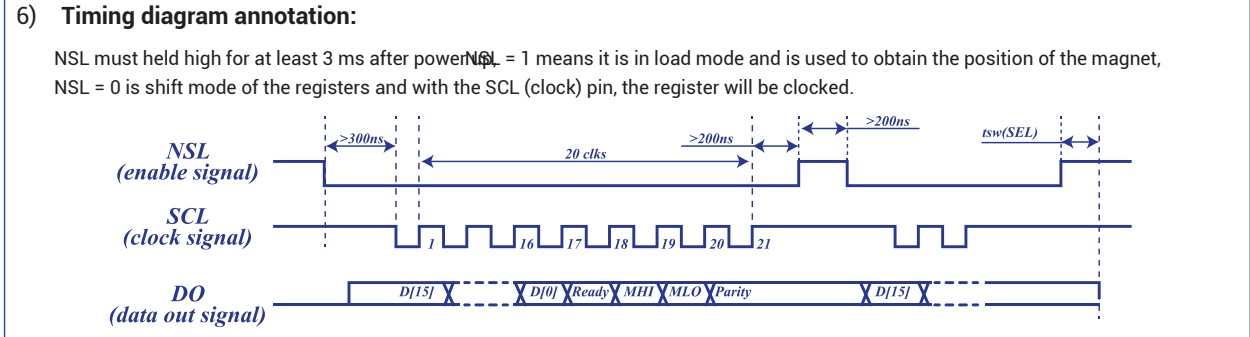
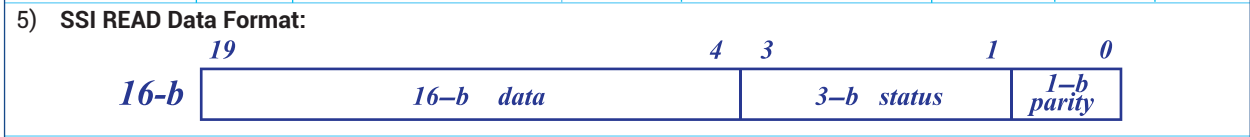


AM-EN1611S113 SERIES



Electromagnetic Encoder

1) Basic parameters		2) Specification		3) Suitable for motor size		4) Pin definition	
Encoder type	absolute	Power Vcc	5V±5%	Suitable for shaft diameter	2.0;3.0;4.0	1. NC	2.Vcc
Multiple circles/bits	NC	Highest clock rate	10MHz	Suitable for shaft length	3.7~4.0	3. GND	4. NC
Angle/bit	16	Operating Temperature	-40~125°C	Suitable for boss diameter	6.45~6.5	5. SCL +	6. SCL -
protocol	SSI	Inertia	0.015g.cm ²	Suitable for boss thickness	Max 1.0	7. NSL +	8. NSL -
Number of channels	3	Output Current, each channel	20mA(max)	Code wheel spacing	0.7~1.0	9. DO +	10. DO -
Differential signal	Yes	Weight	6.5 g	Other fixed size	Drawing		



7) Recommended Combination

Total Length of Geared Motor System: L _T =L1+L2+L3(=10.7mm)					
L1: 16GP	L1: 19GP	L2: BL16	L1: 19GP	L1: 24GP	L2: BL20
15.9	18.8	40.0	18.8	24	40.0
23.3	23.6		23.6	34.3	
27	28.4		28.4	42.8	
L1: 24GP	L1: 28GP	L2: BL24	L1: 28GP	L1: 32GP	L2: BL 28
24	26.1	53.0	26.1	27.4	45.0
34.3	33.3		33.3	35.9	
42.8	40.5		40.5	44.4	

AM-EN1611S* Combination Scheme**

Recommended Gearbox:
Planetary Gearbox:
AM-16GP AM-28GP
AM-19GP AM-32GP
AM-24GP

Recommended Motor:
AM-BL16** AM-BL20***
AM-BL/D24**
AM-BL/D28**

For more combination specs, visit Assun Motor website.

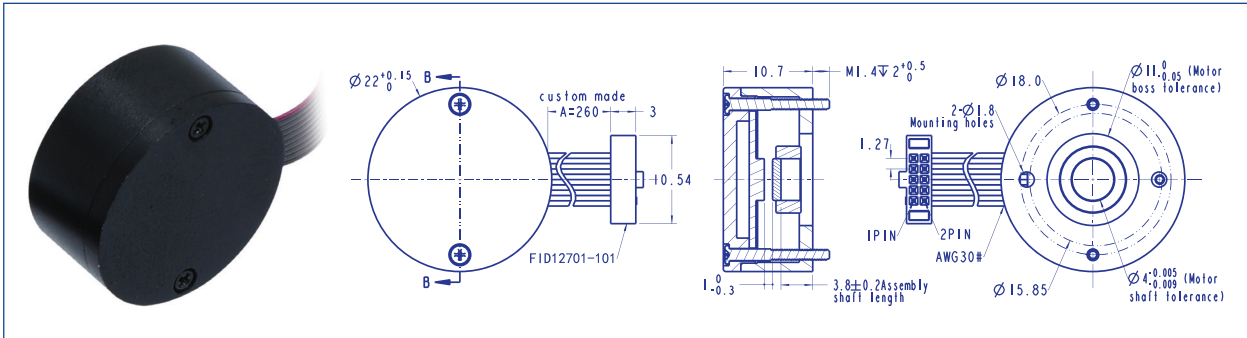
Remarks: Clients can choose gearbox and motor to match with this encoder. Some combinations are listed here for reference.

Please tell us if there is vibration in application. Client should pay attention to the integrity and reliability of the transmitted signal.

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AM-EN2211S113 SERIES



Electromagnetic Encoder

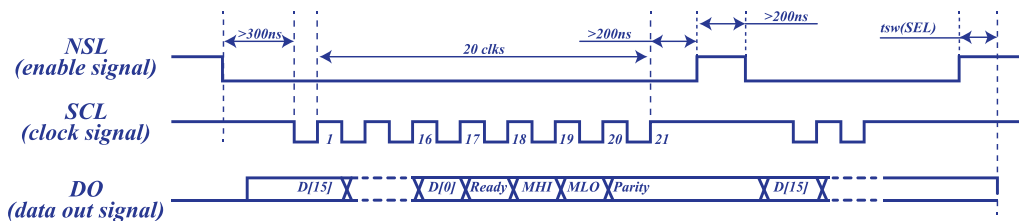
1) Basic parameters		2) Specification		3) Suitable for motor size		4) Pin definition	
Encoder type	absolute	Power Vcc	5V±5%	Suitable for shaft diameter	4.0;5.0;8.0	1. NC	2. Vcc
Multiple circles/bits	NC	Highest clock rate	10MHz	Suitable for shaft length	3.7~4.0	3. GND	4. NC
Angle/bit	16	Operating Temperature	-40~125°C	Suitable for boss diameter	10.95~11.0	5. SCL +	6. SCL -
protocol	SSI	Inertia	0.015g.cm ²	Suitable for boss thickness	Max 1.0	7. NSL +	8. NSL -
Number of channels	3	Output Current, each channel	20mA(max)	Code wheel spacing	0.7~1.0	9. DO +	10. DO -
Differential signal	Yes			Other fixed size	Drawing		

4) SSI READ Data Format:



5) Timing diagram annotation:

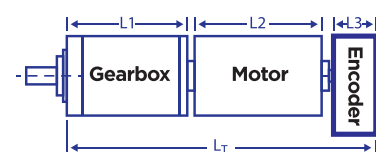
NSL must held high for at least 3 ms after power ON. NSL = 1 means it is in load mode and is used to obtain the position of the magnet, NSL = 0 is shift mode of the registers and with the SCL (clock) pin, the register will be clocked.



6) Recommended Combination

Total Length of Geared Motor System: L _T =L ₁ +L ₂ +L ₃ (L ₃ =10.7mm)					
L1: 32P	L1: 36P	L2: BL32	L1: 36P	L1: 40GP	L2: BL36
27.4	39.6	60.0	39.6	46.8	60.5
35.9	48.6	70.0	48.6	58.3	
44.4	57.6		57.6	69.8	
L1: 45GP	L1: 52GP	L2: BL45	L1: 52GP		L2: BL 65
60.1	79.3	100.0	79.3		108.5
72.1					

AM-EN2211S*** Combination Scheme



Recommended Gearbox:		Recommended Motor:	
Planetary Gearbox:		AM-BL/D32**	AM-BL/D45***
AM-32GP	AM-45GP	AM-BL/D36**	AM-BL65***
AM-36GP	AM-52GP	AM-BL40**	
AM-40GP			

For more combination specs, visit Assun Motor website.

Remarks: Clients can choose gearbox and motor to match with this encoder. Some combinations are listed here for reference.

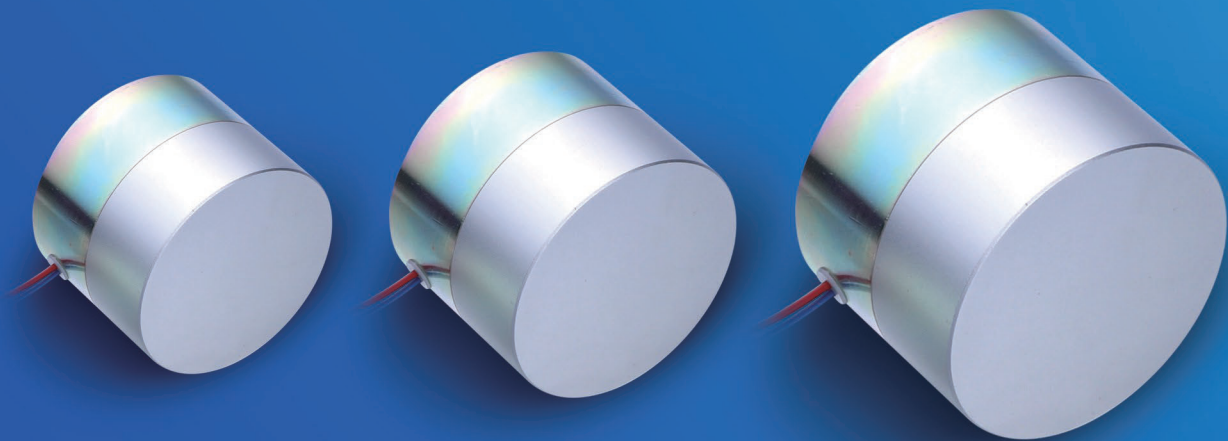
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BRAKES

Assun Brakes are regarded as the final compartments for total solution of DC drive. Brakes are used to clamp the motor shafts and hold it in fixed position when motors stop. Power-on and power-off types are provided to fit for different applications.



AM-BK2420GE

AM-BK3526GE

AM-BK4228GE

AM-BK5032GE

AM-BK2423LE

AM-BK3531LE

AM-BK4235LE

AM-BK5039LE

Company Name Abbreviation

AM - BK 4228 GE - 2410

Code Of Brake

Break Type

Temp. Level

Break Dimension

G - Power-On Brake
L - Power-Off Brake

N - 85°C
E - 120°C
F - 155°C
H - 180°C

42 - Diameter
28 - Thickness

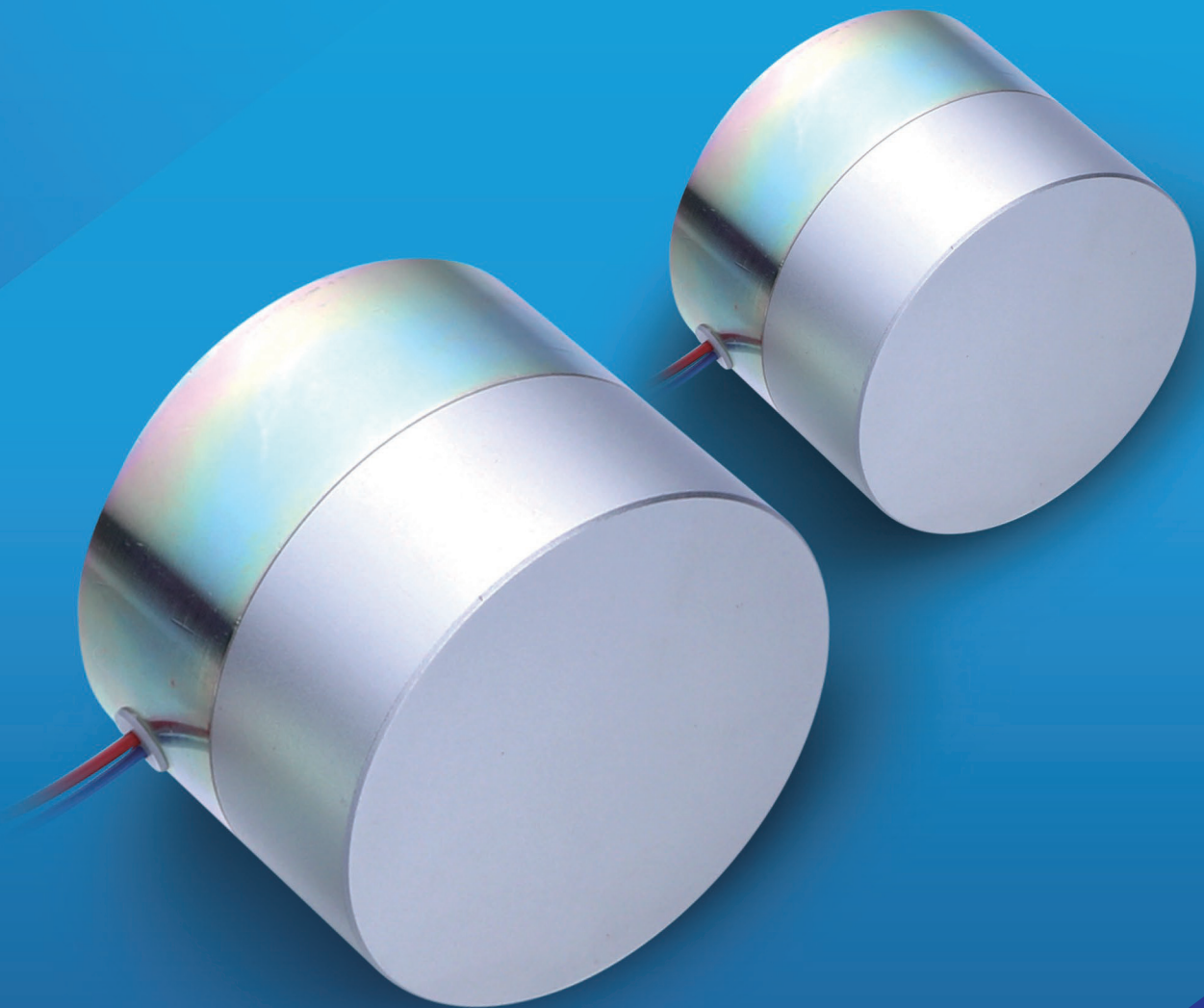
Voltage & Torque
24 - Nominal Voltage (V)
10 - Static Braking Torque (x0.1Nm)

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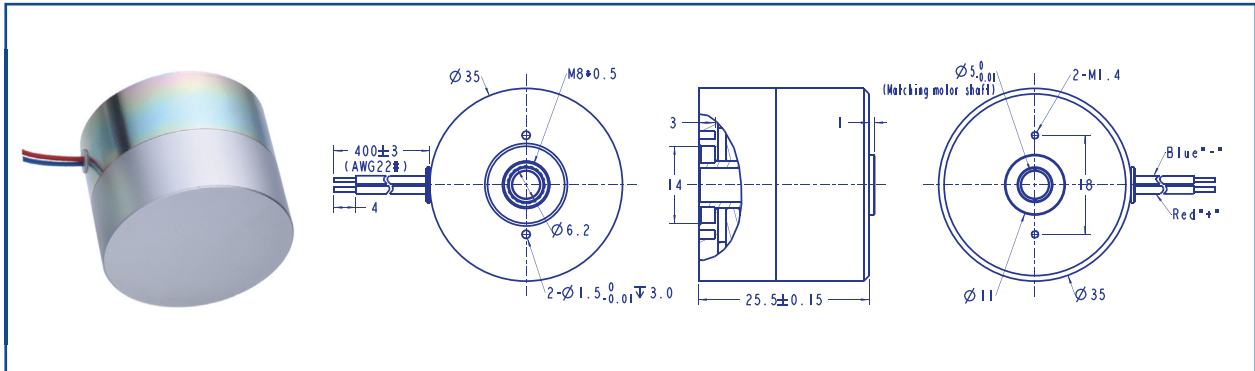
BRAKES

POWER ON AND POWER OFF BRAKES

Power-On and Power-Off brakes by Assun have got diameters of 24mm, 35mm, 42mm and 50mm, static brake torque values of 0.2Nm, 0.5Nm, 1Nm and 1.5 Nm, to fit for different motors and applications.



AM-BK3526GE Series



ELECTROMAGNETIC BRAKE

1) Parameters

Parameters/Models	Static friction torque	Rated voltage	Power	Temperature rating	Maximum speed	Moment of inertia	Weight
AM-BK3526GE-2405	0.5 N.M	24 V	7.7 W	120 °C	8000 rpm	28.44 g.cm ²	106.4 g
AM-BK3526GE-1201	0.5 N.M	12 V	- W	120 °C	8000 rpm	28.44 g.cm ²	106.4 g
Parameters/Models	Life time	Thermal resistance	Thermal time constant	Coil inductance	Electrical time constant	Operating Environment Temperature	
AM-BK3526GE-2405	100000 Times	20.0 K/W	630 s	59.3 mH	0.8 ms	-25~55 °C (Customizable)	
AM-BK3526GE-1201	100000 Times	20.0 K/W	630 s	31.25 mH	0.8 ms	-25~55 °C (Customizable)	

2) Special features

- Fixed accuracy, no backlash
- Small size and high torque
- Low noise, high speed
- Fast response and long life

3) Applications

- Robotic brake
- Z-axis brake
- Servo motor static braking
- General purpose motor

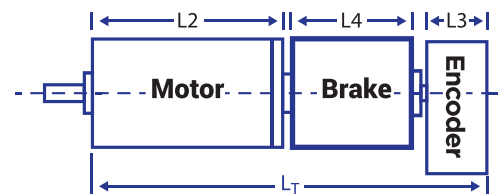
4) Precautions

- Avoid contact with oil or dust, these factors will reduce the torque of the product;
- Please connect with the product with the correct voltage and polarity to avoid damage or abnormal work;
- The initial torque may not reach the rated torque for the first time. Please rotate 50 to 60 times at 40 to 60 rpm in the braking state;
- This product cannot be used as a high-speed dynamic brake.

5) Recommended Combination

Total Length of Geared Motor System: L _T =L ₂ +L ₃ +L ₄ (=25.5mm)				
L2:BL36		L3:EN22S	L2:BL36	L3:EN36T
60.5		10.7	60.5	12.0
			75.0	
			90.0	
L2:BL40		L3:EN22S	L2:BL40	L3:EN36T
60.0		10.7	60.0	12.0

AM-BK3526GE Combination Scheme



Recommended Motor:
Brush less Motor:
AM-BL/D36**
AM-BL40**

Recommended Encoder:
Encoder S: AM-EN2211S***
2~3 Channels
Encoder T: AM-EN3612T***
2~3 Channels

For more combination specs, visit Assun Motor website.

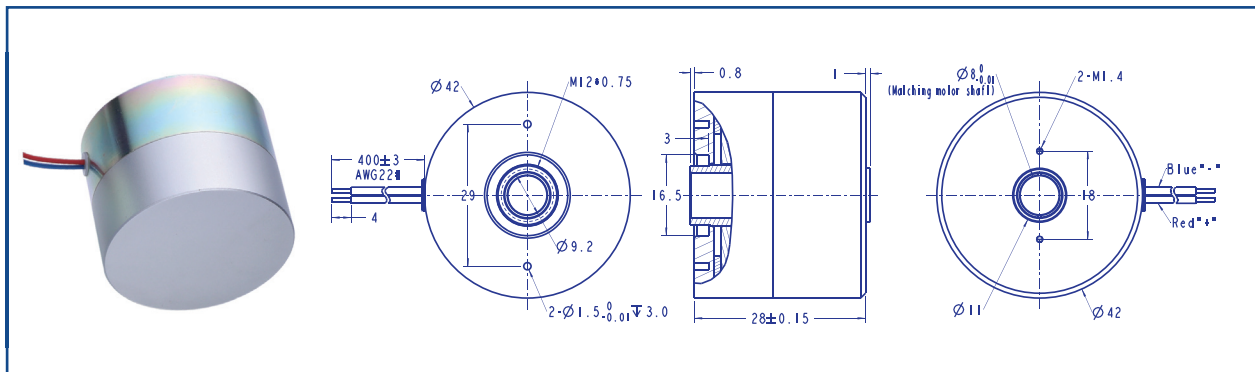
For more Motor and encoder specs, see Assun Motor website.

Please tell us if there is vibration in application. Client should pay attention to the integrity and reliability of the transmitted signal.

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AM-BK4228GE Series



ELECTROMAGNETIC BRAKE

1) Parameters

Parameters/Models	Static friction torque	Rated voltage	Power	Temperature rating	Maximum speed	Moment of inertia	Weight
AM-BK4228GE-2410	1.0 N.M	24 V	10.7 W	120 °C	8000 rpm	77.56 g.cm ²	162 g
Parameters/Models	Life time	Thermal resistance	Thermal time constant	Coil inductance	Electrical time constant	Operating Environment Temperature	
AM-BK4228GE-2410	100000 Times	13.2 K/W	789 s	50.2 mH	0.9 ms	-25~55 °C (Customizable)	

2) Special features

- Fixed accuracy, no backlash
- Small size and high torque
- low noise, high speed
- Fast response and long life

3) Applications

- Robotic brake
- Z-axis brake
- Servo motor static braking
- General purpose motor

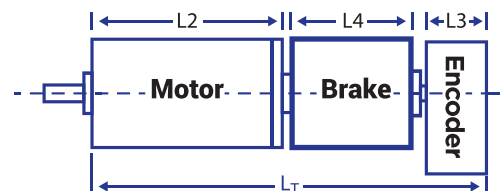
4) Precautions

- Avoid contact with oil or dust, these factors will reduce the torque of the product;
- Please connect with the product with the correct voltage and polarity to avoid damage or abnormal work;
- The initial torque may not reach the rated torque for the first time. Please rotate 50 to 60 times at 40 to 60 rpm in the braking state;
- This product cannot be used as a high-speed dynamic brake.

5) Recommended Combination

Total Length of Geared Motor System: L _T =L ₂ +L ₃ +L ₄ (=28mm)				
L2:BL45	L3:EN22S	L2:BL45	L3:EN36T	
100.0	10.7	100.0	12.0	
L2:BL65	L3:EN22S	L2:BL65	L3:EN36T	
108.5	10.7	108.5	12.0	
140.0		140.0		

AM-BK4228GE Combination Scheme



Recommended Motor:
 Brush less Motor:
 AM-BL/D45***
 AM-BL65***

Recommended Encoder:
 Encoder S: AM-EN2211S***
 2~3 Channels
 Encoder T: AM-EN3612T***
 2~3 Channels

For more combination specs, visit Assun Motor website.

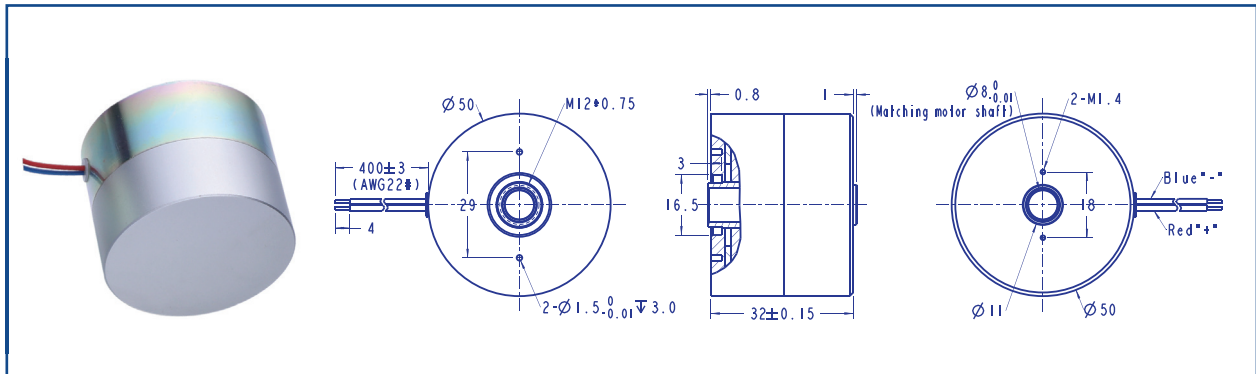
For more Motor and encoder specs, see Assun Motor website.

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AM-BK5032GE Series



ELECTROMAGNETIC BRAKE

1) Parameters

Parameters/Models	Static friction torque	Rated voltage	Power	Temperature rating	Maximum speed	Moment of inertia	Weight
AM-BK5032GE-2415	1.5 N.M	24 V	18.6 W	120 °C	8000 rpm	154.8 g.cm ²	275.2 g
Parameters/Models	Life time	Thermal resistance	Thermal time constant	Coil inductance	Electrical time constant	Operating Environment Temperature	
AM-BK5032GE-2415	100000 Times	7.5 K/W	774 s	51.3 mH	1.7 ms	-25~55 °C (Customizable)	

2) Special features

1. Fixed accuracy, no backlash
2. Small size and high torque
3. low noise, high speed
4. Fast response and long life

3) Applications

1. Robotic brake
2. Z-axis brake
3. Servo motor static braking
4. General purpose motor

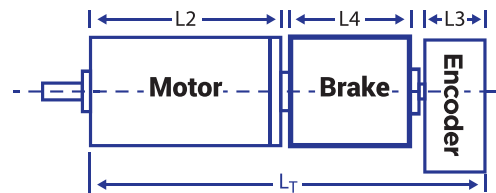
4) Precautions

1. Avoid contact with oil or dust, these factors will reduce the torque of the product;
2. Please connect with the product with the correct voltage and polarity to avoid damage or abnormal work;
3. The initial torque may not reach the rated torque for the first time. Please rotate 50 to 60 times at 40 to 60 rpm in the braking state;
4. This product cannot be used as a high-speed dynamic brake.

5) Recommended Combination

Total Length of Geared Motor System: L _T =L ₂ +L ₃ +L ₄ (=32mm)			
L2:BL65	L3:EN36T	L2:BL65	L3:EN22S
108.5	12.0	108.5	10.7
140.0		140.0	

AM-BK5032GE Combination Scheme



Recommended Motor:
Brushless Motor:
AM-BL65***

Recommended Encoder:
Encoder S: AM-EN211S***
2~3 Channels
Encoder T: AM-EN3612T***
2~3 Channels

For more combination specs, visit Assun Motor website.

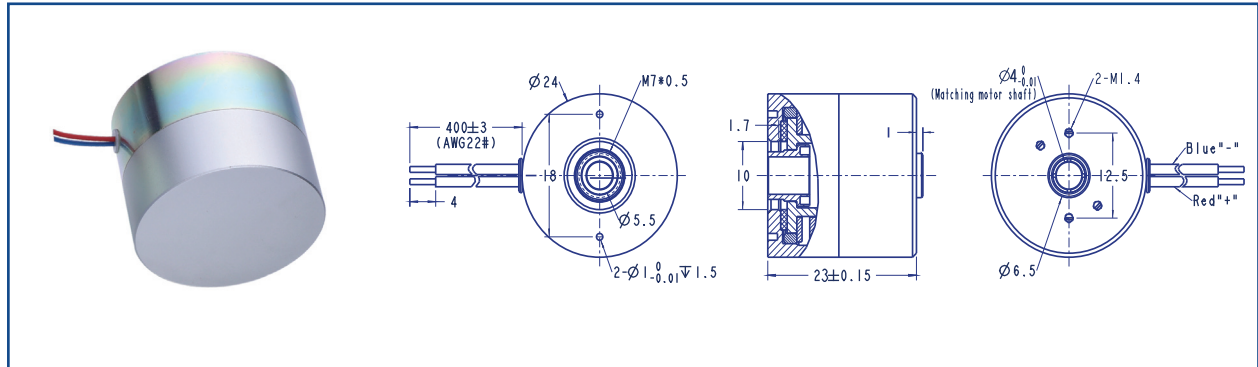
For more Motor and encoder specs, see Assun Motor website.

Please tell us if there is vibration in application. Client should pay attention to the integrity and reliability of the transmitted signal.

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AM-BK2423LE Series



ELECTROMAGNETIC BRAKE

1) Parameters

Parameters/Models	Static friction torque	Rated voltage	Power	Temperature Rating	Maximum speed	Moment of inertia	Weight
AM-BK2423LE-2401	0.1 N.M	24 V	4.0 W	120 °C	10000 rpm	18.0 g.cm ²	80.8 g
AM-BK2423LE-1201	0.1 N.M	12 V	2.1 W	120 °C	10000 rpm	18.0 g.cm ²	80.8 g
Parameters/Models	Life time	Thermal Resostamce	Thermal time constant	Coil Inductance	Electrical time constant	Operating Environment Temperature	
AM-BK2423LE-2401	100000 Times	24.0 K/W	830 s	86.3 mH	0.9 ms	-25~55 °C (Customizable)	
AM-BK2423LE-1201	100000 Times	24.0 K/W	830 s	30.9 mH	0.9 ms	-25~55 °C (Customizable)	

2) Special features

- 1.Fixed accuracy, no backlash
2. Small size and high torque
3. Low noise, high speed
4. Fast response and long life

3) Applications

1. Robotic brake
2. Z-axis brake
3. Servo motor static braking
4. General purpose motor

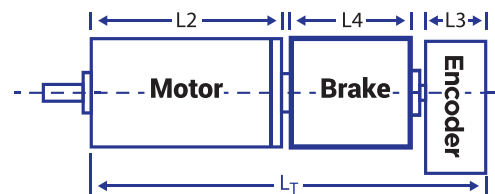
4) Precautions

1. Avoid contact with oil or dust, these factors will reduce the torque of the product;
2. Please connect with the product with the correct voltage and polarity to avoid damage or abnormal work;
3. The initial torque may not reach the rated torque for the first time. Please rotate 50 to 60 times at 40 to 60 rpm in the braking state;
4. This product cannot be used as a high-speed dynamic brake.

5) Recommended Combination

Total Length of Geared Motor System: LT = L1+L3+L4 (L4 = 23mm)					
L2:BL24	L3:EN16S	L3:EN24T	L2:BL28	L3:EN16S	L3:EN24T
53.0	10.7	12.0	45.0	10.7	12.0
L2:BL32	L3:EN22S	L3:EN24T			
60.0	10.7	12.0			
70.0					

AM-BK2423LE Combination Scheme



Recommended Motor:
 Brushless Motor:
 AM-BL/D24**
 AM-BL/D28**
 AM-BL/D32**

Recommended Encoder:
 Encoder S: AM-EN11S***
 AM-EN2211S***
 Encoder T: AM-EN2412T***

For more combination specs, visit Assun Motor website.

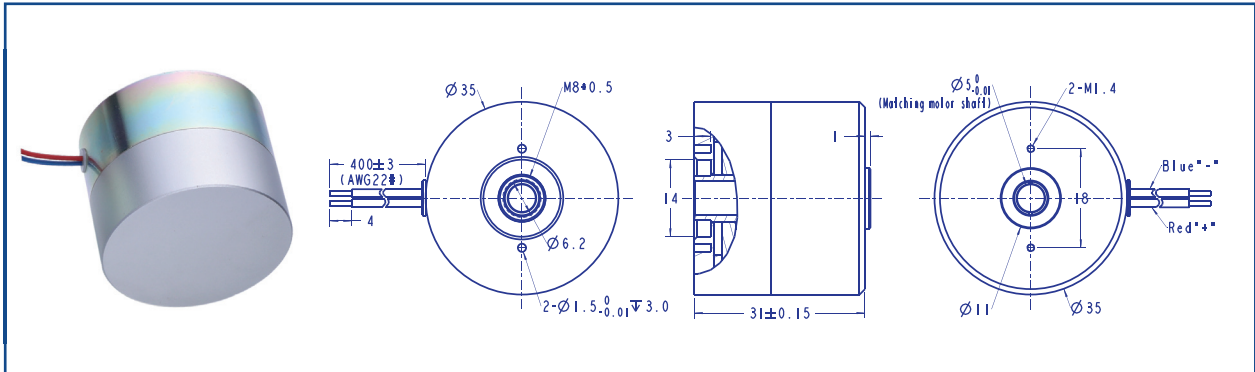
For more Motor and encoder specs, see Assun Motor website.

Please tell us if there is vibration in application. Client should pay attention to the integrity and reliability of the transmitted signal.

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AM-BK3531LE Series



ELECTROMAGNETIC BRAKE

1) Parameters

Parameters/Models	Static friction torque	Rated voltage	Power	Temperature rating	Maximum speed	Moment of inertia	Weight
AM-BK3531LE-2405	0.5 N.M	24 V	5.0 W	120 °C	8000 rpm	28.44 g.cm ²	132.8 g
AM-BK3531LE-1201	0.5 N.M	12 V	- W	120 °C	8000 rpm	28.44 g.cm ²	132.8 g
Parameters/Models	Life time	Thermal resistance	Thermal time constant	Coil inductance	Electrical time constant	Operating Environment Temperature	
AM-BK3531LE-2405	100000 Times	16.0 K/W	700 s	92.7 mH	1.2 ms	-25~55 °C (Customizable)	
AM-BK3531LE-1201	100000 Times	16.0 K/W	700 s	30.9 mH	1.2 ms	-25~55 °C (Customizable)	

2) Special features

1. Fixed accuracy, no backlash
2. Small size and high torque
3. Low noise, high speed
4. Fast response and long life

3) Applications

1. Robotic brake
2. Z-axis brake
3. Servo motor static braking
4. General purpose motor

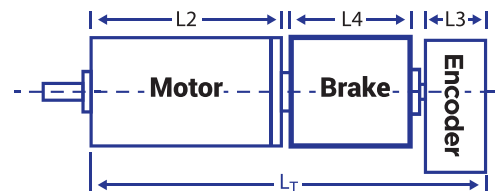
4) Precautions

1. Avoid contact with oil or dust, these factors will reduce the torque of the product;
2. Please connect with the product with the correct voltage and polarity to avoid damage or abnormal work;
3. The initial torque may not reach the rated torque for the first time. Please rotate 50 to 60 times at 40 to 60 rpm in the braking state;
4. This product cannot be used as a high-speed dynamic brake.

5) Recommended Combination

Total Length of Geared Motor System: L _T =L ₂ +L ₃ +L ₄ (=31mm)				
L2:BL36	L3:EN22S	L2:BL36	L3:EN36T	
60.5	10.7	60.5	12.0	
75.0		75.0		
90.0		90.0		
L2:BL40	L3:EN22S	L2:BL40	L3:EN36T	
60.0	10.7	60.0	12.0	

AM-BK3531LE Combination Scheme



Recommended Motor:
 Brush less Motor:
 AM-BL/D36**
 AM-BL40**

Recommended Encoder:
 Encoder S: AM-EN2211S***
 2~3 Channels
 Encoder T: AM-EN3612T***
 2~3 Channels

For more combination specs, visit Assun Motor website.

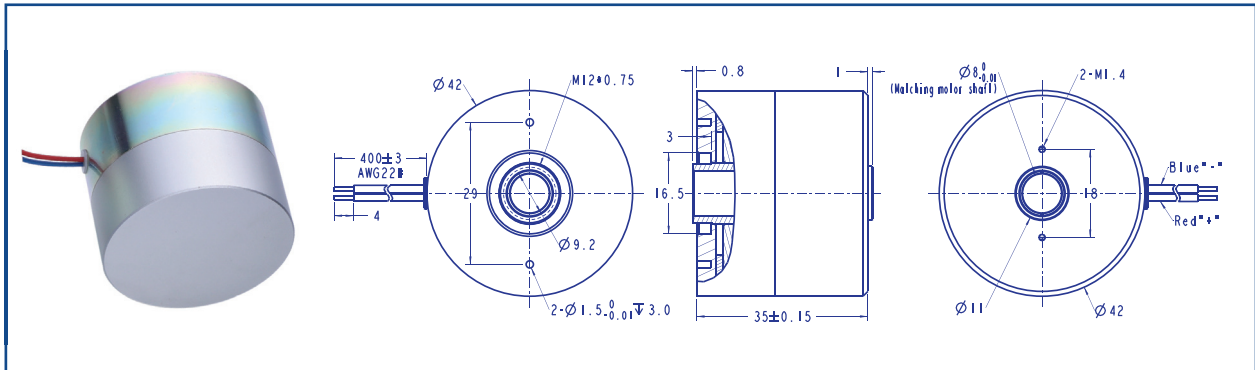
For more Motor and encoder specs, see Assun Motor website.

Please tell us if there is vibration in application. Client should pay attention to the integrity and reliability of the transmitted signal.

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AM-BK4235LE Series



ELECTROMAGNETIC BRAKE

1) Parameters

Parameters/Models	Static friction torque	Rated voltage	Power	Temperature rating	Maximum speed	Moment of inertia	Weight
AM-BK4235LE-2410	1.0 N.M	24 V	7.5 W	120 °C	8000 rpm	77.56 g.cm ²	211.2 g
Parameters/Models	Life time	Thermal resistance	Thermal time constant	Coil inductance	Electrical time constant	Operating Environment Temperature	
AM-BK4235LE-2410	100000 Times	12.6 K/W	908 s	60.9 mH	1.1 ms	-25~55 °C (Customizable)	

2) Special features

- Fixed accuracy, no backlash
- Small size and high torque
- low noise, high speed
- Fast response and long life

3) Applications

- Robotic brake
- Z-axis brake
- Servo motor static braking
- General purpose motor

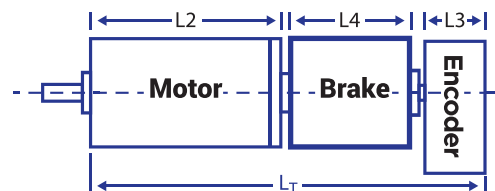
4) Precautions

- Avoid contact with oil or dust, these factors will reduce the torque of the product;
- Please connect with the product with the correct voltage and polarity to avoid damage or abnormal work;
- The initial torque may not reach the rated torque for the first time. Please rotate 50 to 60 times at 40 to 60 rpm in the braking state;
- This product cannot be used as a high-speed dynamic brake.

5) Recommended Combination

Total Length of Geared Motor System: L _T =L ₂ +L ₃ +L ₄ (=35mm)			
L2:BL45	L3:EN22S	L2:BL45	L3:EN36T
100.0	10.7	100.0	12.0
L2:BL65	L3:EN22S	L2:BL65	L3:EN36T
108.5	10.7	108.5	12.0
140.0		140.0	

AM-BK4235LE Combination Scheme



Recommended Motor:
 Brush less Motor:
 AM-BL/D45***
 AM-BL65***

Recommended Encoder:
 Encoder S: AM-EN2211S***
 2~3 Channels
 Encoder T: AM-EN3612T***
 2~3 Channels

For more combination specs, visit Assun Motor website.

For more Motor and encoder specs, see Assun Motor website.

Please tell us if there is vibration in application. Client should pay attention to the integrity and reliability of the transmitted signal.

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