

# ASSUN

DRIVING THE FUTURE



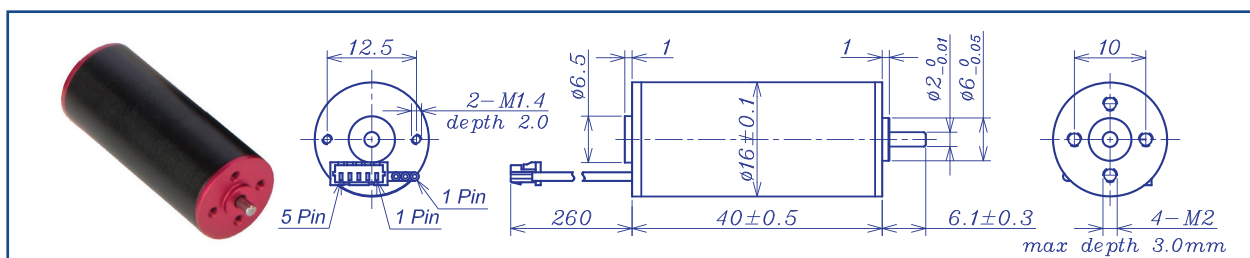
TOTAL SOLUTION for Precision  
DC Drive System 2020

DC BRUSHLESS MOTOR  
HIGH TEMPERATURE SERIES (125C)

Assun high temperature series BLDC motors have been upgraded from the standard series in material and magnets to fit for higher power and operation temperature. Applications with bad thermal dissipation environments or higher power demands could chose the high temperature series products for a safer and more guaranteed overall performance.



AM-BL1640AE Series



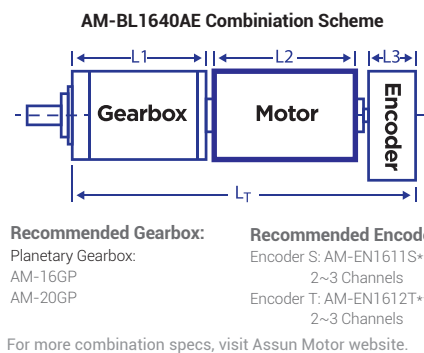
		Brushless Motor				Ball Bearings			
Motor Model		1231	1219	1216	1834	1819	1815	2417	2412
Nominal voltage	V	12	12	12	18	18	18	24	24
No load speed ±12%	rpm	30890	19320	15750	34300	18900	15210	17380	11690
No load current Max 150%	mA	150	90	70	120	65	55	45	38
Recommend limit for continuous operating	Max cont. torque	mN.m	7.9	8.8	8.8	7.4	8.8	9.2	9.2
	Rated Speed	rpm	27094	14984	11405	30688	14883	11034	13391
	Rated Current	mA	2300	1600	1300	1600	1050	850	750
	Rated Power	W	22.4	13.9	10.5	23.6	13.8	10.2	12.8
Starting current	mA	17647	6818	4528	14173	4700	2951	3117	1277
Stall torque	mN.m	64	39	32	70	42	32	40	24
Maximum power output	W	52.0	19.9	13.2	62.7	20.6	12.8	18.2	7.2
Maximum Efficiency	%	82	78	77	82	78	75	77	68
Terminal resistance ±12%	Ω	0.68	1.76	2.65	1.27	3.83	6.1	7.7	18.8
Inductance (1KHz)	mH	0.036	0.11	0.17	0.075	0.27	0.42	0.58	1.25
Mechanical time constant	ms	2.1	2.1	2.1	2.1	2.0	2.0	1.9	2.1
Moment of inertia	gcm <sup>2</sup>	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
Torque constant	mN.m/A	3.7	5.9	7.2	5.0	9.0	11.1	13.0	19.0
Speed constant	rpm/V	2596	1632	1333	1922	1065	861	735	505
Speed/torque gradient	rpm/mN.m	480.0	490.6	493.2	491.2	454.7	473.6	435.5	496.2
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 <sub>T</sub> =L1+L2+L3				
Cable 1: Yellow Winding A	L1:16GP	L1:20GP	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	23.3	23.6			
Plug definition (AWG 28#) Molex: 51021-0500	27.0	28.4			
Plug 1: Red Hall 3~16V					
Plug 2: Black Hall GND					
Plug 3: Yellow Hall A					
Plug 4: Red Hall B					
Plug 5: Blue Hall C					


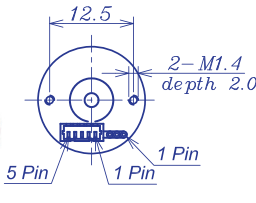
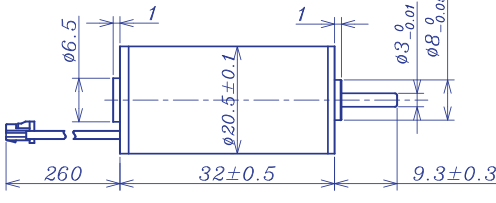
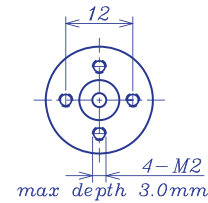
Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.



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-BL2032AE Series

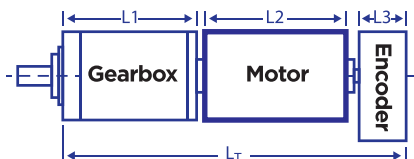





		Brushless Motor			Ball Bearings		
Motor Model		1225	1220	1822	1819	2419	2415
Nominal voltage	V	12	12	18	18	24	24
No load speed ±12%	rpm	24525	19908	22265	18634	19339	14850
No load current Max 150%	mA	200	150	120	100	90	70
Recommend limit for continuous operating	Max cont. torque	mN.m	6.0	7.1	6.7	7.0	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 ±12%	Ω	0.91	1.43	2.48	3.7	6.0	10.7
Inductance (1KH <sub>2</sub> )	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 <sup>2</sup>	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 <sub>T</sub> =L1+L2+L3				
Cable 1: Yellow Winding A	L1:20GP	L1:24GP	L2:BL20	L3:EN16S	L3:EN16T
Cable 2: Red Winding B	18.8	22.2	32.0	10.7	12.0
Cable 3: Blue Winding C	23.6	27.4			
Plug definition (AWG 28#) Molex: 51021-0500	28.4	32.6			
Plug 1: Red 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-20GP  
AM-24GP

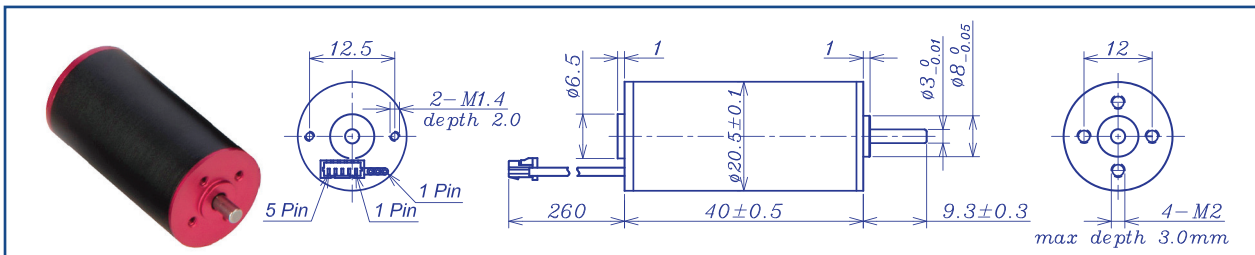
**Recommended Encoder:**  
Encoder S: AM-EN1611S\*\*\*  
2~3 Channels  
Encoder T: AM-EN1612T\*\*\*  
2~3 Channels

For more combination specs, visit Assun Motor website.

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-BL2040AE Series

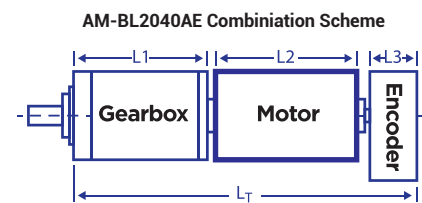


		Brushless Motor			Ball Bearings				
Motor Model		1226	1220	1216	1820	1817	2420	2417	
Nominal voltage		V	12	12	12	18	18	24	24
No load speed ±12%		rpm	26000	20360	16260	19500	17350	20000	16600
No load current Max 150%		mA	350	190	180	150	140	110	95
Recommend limit for continuous operating	Max cont. torque	mN.m	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	0.034	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 <sup>2</sup>	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 <sub>T</sub> =L <sub>1</sub> +L <sub>2</sub> +L <sub>3</sub>				
Cable	Winding	L1:16GP	L1:20GP	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: Red	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-20GP  
AM-24GP

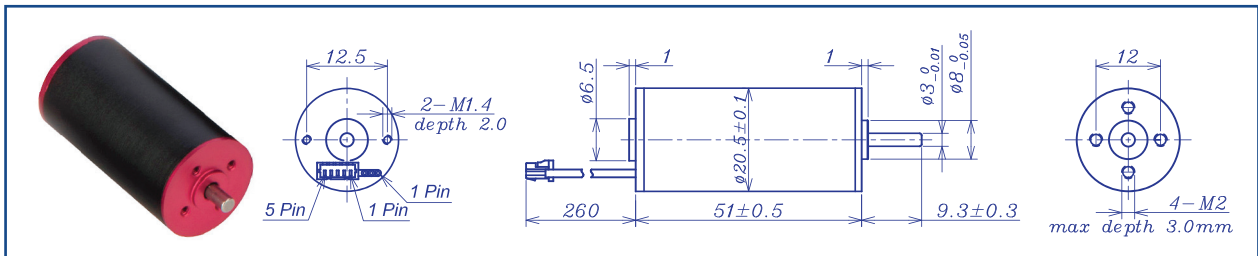
**Recommended Encoder:**  
Encoder S: AM-EN1611S\*\*\*  
2~3 Channels  
Encoder T: AM-EN1612T\*\*\*  
2~3 Channels

For more combination specs, visit Assun Motor website.

Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage.  
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AM-BL2051AE Series

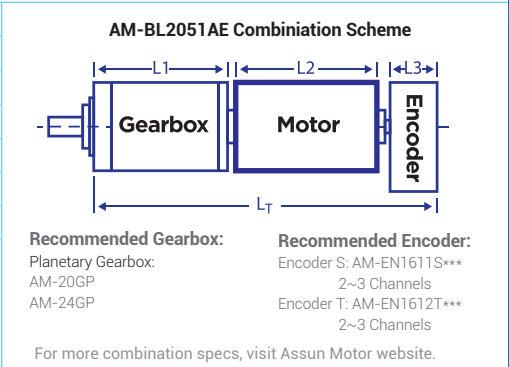


Brushless Motor			Ball Bearings					
Motor Model			1221	1216	2426	2421	3619	3625
Nominal voltage	V		12	12	24	24	36	36
No load speed	±12%	rpm	20604	15670	25800	21400	19297	24781
No load current	Max 150%	mA	250	185	155	126	65	90
Recommend limit for continuous operating	Max cont. torque	mN.m	14.0	14.5	10.6	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 <sup>2</sup>		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							

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 <sub>T</sub> =L1+L2+L3				
Cable 1: Yellow Winding A	L1:20GP	L1:24GP	L2:BL20	L3:EN16S	L3:EN16T
Cable 2: Red Winding B	18.8	22.2	51.0	10.7	12.0
Cable 3: Blue Winding C	23.6	27.4			
Plug definition (AWG 28#) Molex: 51021-0500	28.4	32.6			
Plug 1: Red 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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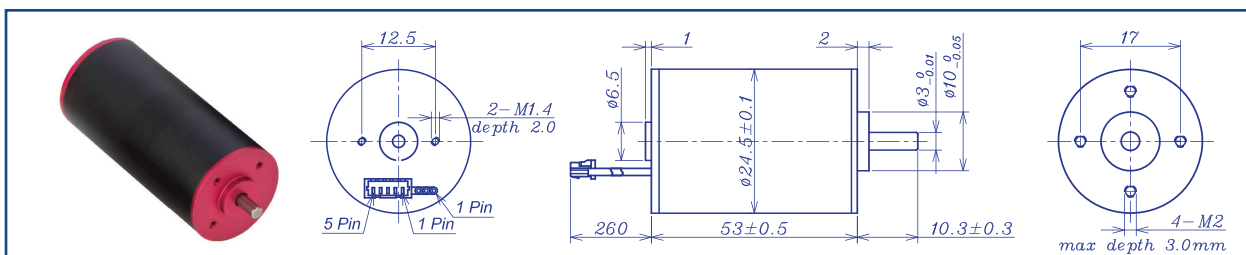
# DC BRUSHLESS MOTOR

## HIGH TEMPERATURE SERIES



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### AM-BL2453AE Series



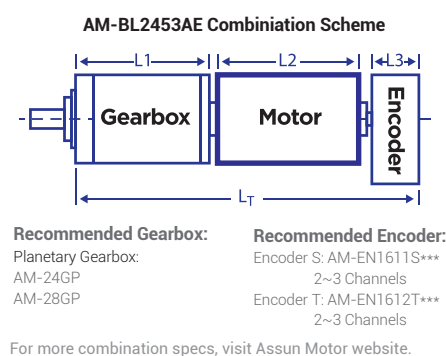
		Brushless Motor			Ball Bearings			
Motor Model		1213	1210	1829	1813	2414	2410	
Nominal voltage	V	12	12	18	18	24	24	
No load speed ±12%	rpm	13010	10460	28715	12920	13625	9770	
No load current Max 150%	mA	180	140	420	115	100	75	
Recommend limit for continuous operating	Max cont. torque	mN.m	30.3	31.6	12.4	27.5	30.0	33.1
	Rated Speed	rpm	10962	8308	27679	10775	11668	7836
	Rated Current	mA	3650	3050	2500	2200	1900	1500
	Rated Power	W	34.8	27.5	35.8	31.0	36.7	27.1
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 ±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 <sup>2</sup>	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	L1:28GP	L2:BL24	L3:EN16S	L3:EN16T
Cable 2: Red Winding B	22.2	25.9	53.0	10.7	12.0
Cable 3: Blue Winding C	27.4	33.1			
Plug definition (AWG 28#) Molex: 51021-0500	32.6	40.3			
Plug 1: Red 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.

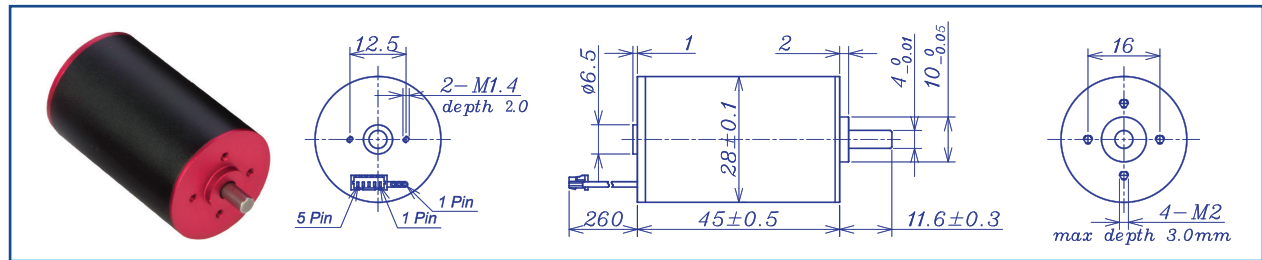


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At elevated ambient temperatures, load current must be reduced.

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AM-BL2845AE Series

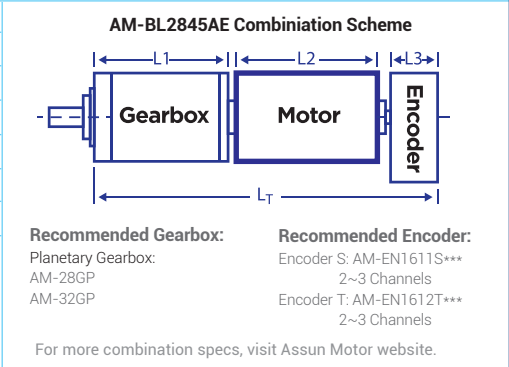


		Brushless Motor			Ball Bearings			
Motor Model		1215	1210	1813	1810	2412	2409	
Nominal voltage	V	12	12	18	18	24	24	
No load speed ±12%	rpm	14800	10000	12520	9680	11680	9080	
No load current Max 150%	mA	300	190	170	120	120	85	
Recommend limit for continuous operating	Max cont. torque	mN.m	33.8	38.7	37.2	40.1	40.4	
	Rated Speed	rpm	13105	8250	10913	7985	10055	7383
	Rated Current	mA	47000	3600	2900	2400	2000	1700
	Rated Power	W	46.4	33.4	42.6	33.5	38.5	31.2
Starting current	mA	38710	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 (1KH <sub>z</sub> )	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 <sup>2</sup>	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	1324	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:	10.2K/W	Motor thermal time constant:	822S
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:	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 22#)	Total Length: L <sub>T</sub> =L1+L2+L3				
	L1:28GP	L1:32GP	L2:BL28	L3:EN16S	L3:EN16T
Cable 1: Yellow Winding A	25.9	27.4	45.0	10.7	12.0
Cable 2: Red Winding B	33.1	35.9			
Cable 3: Blue Winding C	40.3	44.4			
Plug definition (AWG 28#) Molex: 51021-0500					
Plug 1: Red 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.

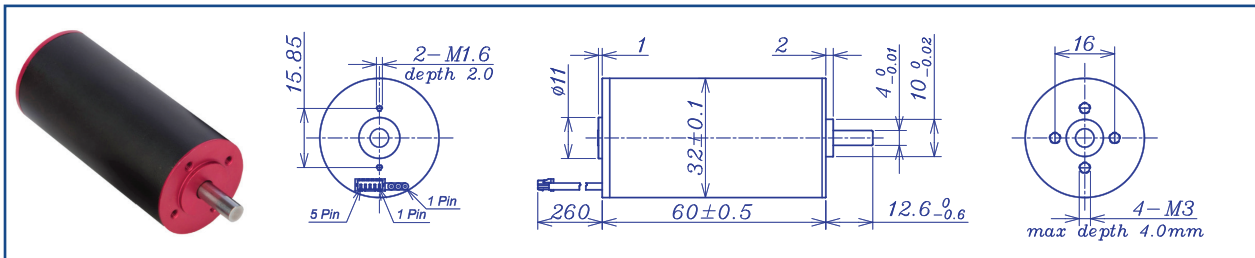


Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage.  
At elevated ambient temperatures, load current must be reduced.

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AM-BL3260AE Series

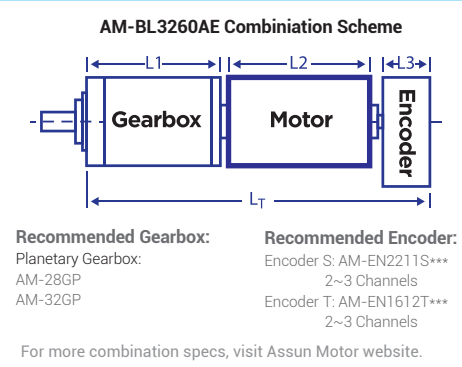


		Brushless Motor			Ball Bearings			
Motor Model		1212	1208	2413	2409	3613	3610	
Nominal voltage	V	12	12	24	24	36	36	
No load speed ±12%	rpm	12191	8127	12832	9680	12311	10449	
No load current Max 150%	mA	355	192	190	127	125	94	
Recommend limit for continuous operating	Max cont. torque	mN.m	52.7	60.3	49.9	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 <sub>2</sub> )	mH							
Mechanical time constant	ms	3.0	2.9	2.9	2.9	2.9	2.9	
Moment of inertia	gcm <sup>2</sup>	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 <sub>T</sub> =L <sub>1</sub> +L <sub>2</sub> +L <sub>3</sub>				
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: Red Hall 3~16V					
Plug 2: Black Hall GND					
Plug 3: Yellow Hall A					
Plug 4: Red Hall B					
Plug 5: Blue Hall C					

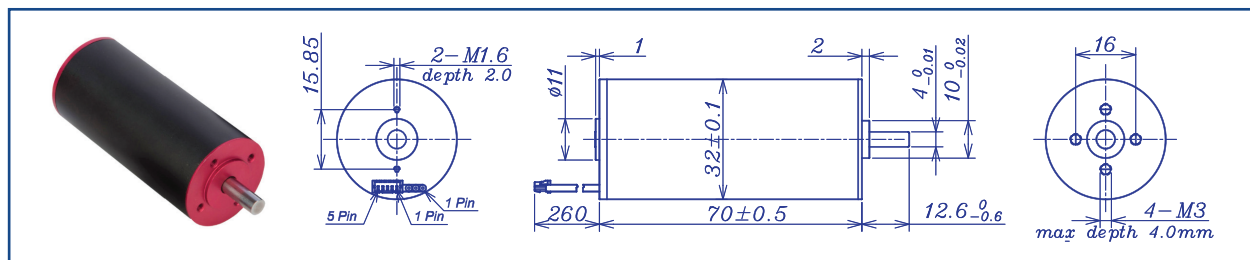
Remarks: Client can choose gearbox and encoder to match with this motor. Some combinations are listed here for reference.



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-BL3270AE Series

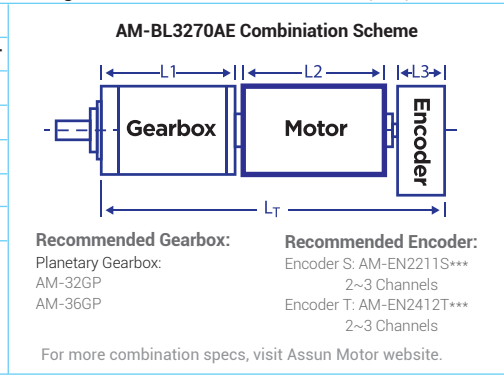


Motor Model	Brushless Motor			Ball Bearings			
		1210	1207	2412	2409	3611	3609
Nominal voltage	V	12	12	24	24	36	36
No load speed ±12%	rpm	9794	6529	11523	8904	10882	9182
No load current Max 150%	mA	355	192	190	127	94	80
Recommend limit for continuous operating	Max cont. torque	mN.m	64.4	75.0	65.5	73.5	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 <sup>2</sup>	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 <sub>T</sub> =L <sub>1</sub> +L <sub>2</sub> +L <sub>3</sub>				
	L1:32GP	L1:36GP	L2:BL32	L3:EN22S	L3:EN24T
Cable 1: Yellow Winding A	27.4	39.6	70.0	10.7	12.0
Cable 2: Red Winding B	35.9	48.6			
Cable 3: Blue Winding C	44.4	57.6			
Plug definition (AWG 28#) Molex: 51021-0500					
Plug 1: Red Hall 3~16V					
Plug 2: Black Hall GND					
Plug 3: Yellow Hall A					
Plug 4: Red Hall B					
Plug 5: Blue Hall C					



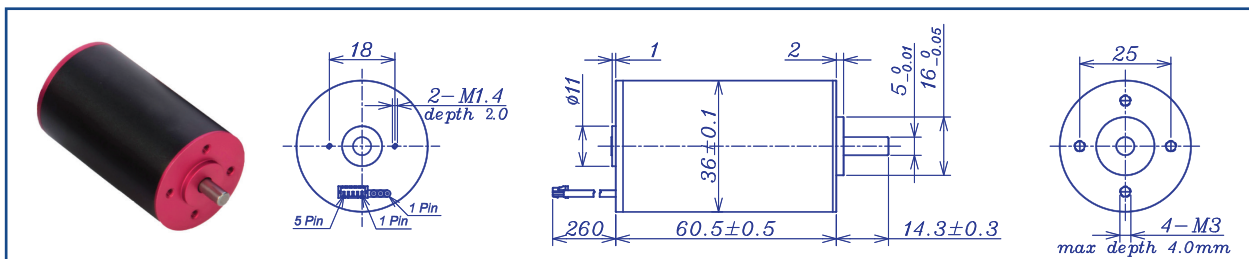
Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage.  
At elevated ambient temperatures, load current must be reduced.

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# DC BRUSHLESS MOTOR HIGH TEMPERATURE SERIES

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## AM-BL3660AE Series



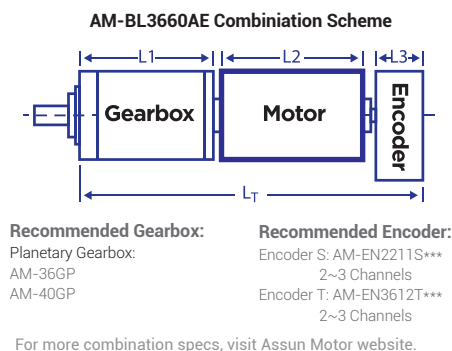
		Brushless Motor			Ball Bearings			
Motor Model		1211	1209	2413	2410	3612	3610	
Nominal voltage	V	12	12	24	24	36	36	
No load speed ±12%	rpm	11200	8840	12500	10200	12300	10450	
No load current Max 150%	mA	320	230	220	165	120	105	
Recommend limit for continuous operating	Max cont. torque	mN.m	70.0	74.4	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 (1KHz)	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 <sup>2</sup>	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: $L_T=L_1+L_2+L_3$				
	L1:36GP	L1:40GP	L2:BL36	L3:EN22S	L3:EN36T
Cable 1: Yellow Winding A	39.6	46.8	60.5	10.7	12.0
Cable 2: Red Winding B	48.6	58.3			
Cable 3: Blue Winding C	57.6	69.8			
Plug definition (AWG 28#) Molex: 51021-0500					
Plug 1: Red 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.

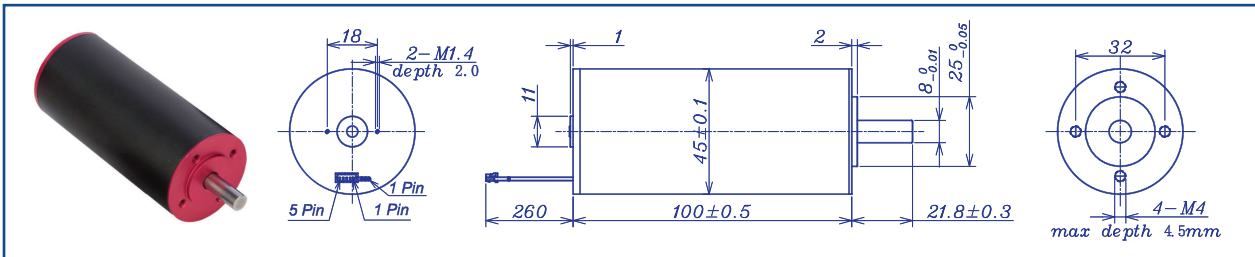


Motor data tested at 25°C. Motor operation exceeding continuous limits will reduce life or result in damage.  
At elevated ambient temperatures, load current must be reduced.

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AM-BL45100AE Series



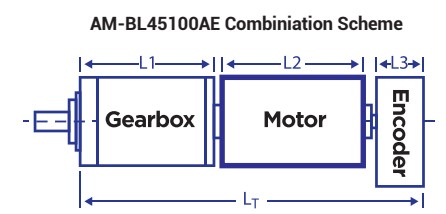
		Brushless Motor			Ball Bearings		
Motor Model		2411	2406	3610	3606	4810	4806
Nominal voltage		V	24	24	36	36	48
No load speed ±12%		rpm	11240	5900	10340	6380	10360
No load current Max 150%		mA	600	320	390	200	370
Recommend limit for continuous operating	Max cont. torque	mN.m	160.4	238.7	179.2	246.7	151.1
	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 <sub>2</sub> )		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 <sup>2</sup>	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 <sub>T</sub> =L <sub>1</sub> +L <sub>2</sub> +L <sub>3</sub>				
Cable	Winding	L1:45GP	L1:52GP	L2:BL45	L3:EN22S	L3:EN36T
Cable 1: Yellow	Winding A	62.8	81.0	100.0	10.7	12.0
Cable 2: Red	Winding B	74.8				
Cable 3: Blue	Winding C					
Plug definition (AWG 28#) Molex: 51021-0500						
Plug 1: Red	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-45GP  
AM-52GP

**Recommended Encoder:**  
Encoder S: AM-EN2211S\*\*\*  
2~3 Channels  
Encoder T: AM-EN3612\*\*\*  
2~3 Channels

For more combination specs, visit Assun Motor website.

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