

Technical Manual

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1. Executive standards

We comply with the following Chinese standards

Q/321088JFJ1-2004

GB/T10760.1-2003

Also we have CE certificate

2. Academic power capacity

Power per year(kWh)

Wind Speed (m/s)	Model							
	AEOLUS 300	500w	1kw	2kw	3kw	5kw	10kw	20kw
4	149	1051	1472	2943	3092	5151	5606	10100
4.5	184	1279	1787	3574	3697	6158	7980	12071
5	219	1498	2102	4205	4415	7358	10950	14428
5.5	263	1822	2558	5107	5282	8795	14577	17248
6	307	2146	3005	6009	6307	10512	18922	20612
6.5	377	2610	3653	7297	7542	12571	24055	24633
7	438	3066	4292	8585	9014	15023	30047	29442
7.5	534	3723	5212	10424	10775	17958	36958	35198
8	631	4380	6132	12264	12877	21462	44851	42066
8.5	771	4669	7446	14892	15391	25649	53795	50274
9	902	4949	8760	17520	18396	30660	63860	60094
9.5	1095	5274	9373	18746	21988	36643	75108	71823
10	1288	5589	9986	19973	26280	43800	87600	85848
10.5	1568	5326	10687	21374	29915	48749	96150	102606
11	1840	5055	11388	22767	32412	51500	102580	122640
11.5	2234	4555	12185	24362	34164	53637	106951	146581
12	2628	4047	12982	25956	35040	54408	107573	175200
12.5	2865	3644	10643	21287	24633	42775	68433	198029
13	3101	3232	8304	16609	27717	45648	76983	222749
13.5	3381	2917	7481	14953	30161	48565	83588	127221
14	3662	2593	6649	13289	32412	50116	87390	141886
14.5	3995	2330	5983	11966	33288	51439	89299	157636
15	4319	2067	5317	10635	15076	29565	59130	174517
15.5	3539	1822	4783	9575	16635	32622	65244	192554
16	2759	1577	4249	8506	18300	35881	70886	91367
16.5	2488	1183	3749	7499	20069	39350	75196	100197
17	2208	788	3241	6491	21953	43038	79068	109588
17.5	1989	596	2435	4871	23941	46945	81634	119548
18	1770	394	1621	3241	0	0	0	130086
18.5	1594	298	1218	2435	0	0	0	141229
19	1419	201	815	1621	0	0	0	152993
19.5	1139	105	613	1218	0	0	0	165389
20	858	0	403	815	0	0	0	0

Power (w)@wind speed (m/s)

Wind Speed (m/s)	Model							
	AEOLUS 300	500w	1kw	2kw	3kw	5kw	10kw	20kw
4	17	120	168	336	353	588	640	1153
4.5	21	146	204	408	422	703	911	1378
5	25	171	240	480	504	840	1250	1647
5.5	30	208	292	583	603	1004	1664	1969
6	35	245	343	686	720	1200	2160	2353
6.5	43	298	417	833	861	1435	2746	2812
7	50	350	490	980	1029	1715	3430	3361
7.5	61	425	595	1190	1230	2050	4219	4018
8	72	500	700	1400	1470	2450	5120	4802
8.5	88	533	850	1700	1757	2928	6141	5739
9	103	565	1000	2000	2100	3500	7290	6860
9.5	125	602	1070	2140	2510	4183	8574	8199
10	147	638	1140	2280	3000	5000	10000	9800
10.5	179	608	1220	2440	3415	5565	10976	11713
11	210	577	1300	2599	3700	5879	11710	14000
11.5	255	520	1391	2781	3900	6123	12209	16733
12	300	462	1482	2963	4000	6211	12280	20000
12.5	327	416	1215	2430	2812	4883	7812	22606
13	354	369	948	1896	3164	5211	8788	25428
13.5	386	333	854	1707	3443	5544	9542	14523
14	418	296	759	1517	3700	5721	9976	16197
14.5	456	266	683	1366	3800	5872	10194	17995
15	493	236	607	1214	1721	3375	6750	19922
15.5	404	208	546	1093	1899	3724	7448	21981
16	315	180	485	971	2089	4096	8092	10430
16.5	284	135	428	856	2291	4492	8584	11438
17	252	90	370	741	2506	4913	9026	12510
17.5	227	68	278	556	2733	5359	9319	13647
18	202	45	185	370	0	0	0	14850
18.5	182	34	139	278				16122
19	162	23	93	185				17465
19.5	130	12	70	139				18880
20	98	0	46	93				0

3. Circumstance

Temperature: -40~+60 Celsius degree

Humidity: less than 95%

4. General data

Protection Level	IP54
Insulation Level	B
Cooling Mode	IC0041
Drive Mode	Direct driven by wheel
Adjust Speed Method	Automatic
Adjust Direction Method	
2000W and under 2000W	Automatic
3000W and over 3000W	Manual and automatic

5. Generator

All generators are three phases permanent magnet (NdFeB) synchronous alternator.

Model	AEOLUS300	500W	1KW
Rated power(W)	300	500	1000
Rated voltage(DCV)	12/24	24	48
Rated voltage(ACV)	8/17	17	34
Rated current(DCA)	25/12	21	21
Rated current(ACA)	35/17	27	27
Magnetic pole count	8	10	10
Rated speed(rpm)	450	400	400
Max speed(rpm)	600	500	500
Weight(kg)	12.5	-	34

Model	2KW	3KW	5KW	10KW	20KW
Rated power(W)	2000	3000	5000	10000	20000
Rated voltage(DCV)	120	240	240	240	360
Rated voltage(ACV)	85	170	170	170	255
Rated current(DCA)	17	13	21	42	56
Rated current(ACA)	24	18	30	59	79
Magnetic pole count	10	16	16	20	40
Rated speed(rpm)	400	220	200	180	90
Max speed(rpm)	500	275	250	225	112
Weight(kg)	39	280	325	387	960

6. Blades

Model	Aeolus 300	500W	1000W	2000W	3000W	5000W	10KW	20KW
Material of blades	Carbon fiber	Fiber glass						
Number of blades	3							
Diameter (m)	1.5	2.5	2.7	3.2	4.5	6.4	8	10
Area(m2)	1.80	4.90	5.70	8.00	15.90	32.20	50.30	78.5
TSR	3	7	6	7	5	7	8	4

7. Off-grid Controller

Model	Aeolus 300	500W	1KW	2KW	3KW	5KW	10KW	20KW
Dump loader power(W)	300	500	1000	2000	5000	5000	10000	18000
Batteries rated voltage(V)	12/24	24	48	120	240	240	240	360
Float charge voltage(V)	15/30	30	60	150	300	300	300	450
Overvoltage(V)	15/30	30	60	150	300	300	300	450
Over charge resume voltage(V)	14/28	28	56	140	280	280	280	420
Undervoltage(V)	10.5/21	21	42	105	210	210	210	315
Under charge resume voltage(V)	12/24	24	48	120	240	240	240	360
Net weight(kg)	-	2	2	2	51	52	67	75
Working	Continuous and intelligent							
Circumstance	Temperature: -10~40 Celsius degree; Humidity: less than 85%							

8. Inverter

Modified wave inverter

Model.....	BJA-M2224 / 2236 / 2248	BJA-M3224 / 3236 / 3248	BJA-M5224 / 5236 / 5248
Input Voltage Range.....type①	<input type="checkbox"/> DC20-28V	<input type="checkbox"/> DC20-28V	<input type="checkbox"/> DC20-28V
Input Voltage Range.....type②	<input type="checkbox"/> DC29-43V	<input type="checkbox"/> DC29-43V	<input type="checkbox"/> DC29-43V
Input Voltage Range.....type③	<input type="checkbox"/> DC38-58V	<input type="checkbox"/> DC38-58V	<input type="checkbox"/> DC38-58V
Output Voltage Range.....	AC210-230V	AC210-230V	AC210-230V
Maximum AC Output Power.....	200W	300W	500W
Long Term Power Output.....	160W	240W	400W
Surge Capacity.....	400W	600W	1000W
Optimum Efficiency.....	>90%	>90%	>90%
No Load Current Draw.....	<0.3A	<0.3A	<0.3A
Output Frequency.....	50±2Hz	50±2Hz	50±2Hz
Output Waveform.....	Modified Sine Wave	Modified Sine Wave	Modified Sine Wave
Short Circuit Protect.....	Yes	Yes	Yes
Under Voltage Alarm.....	Yes	Yes	Yes
Under Voltage Shutdown.....	Yes	Yes	Yes
Over Load Protect.....	Yes	Yes	Yes
Over Voltage Shutdown.....	Yes	Yes	Yes
Over Temperature Shutdown.....	Yes	Yes	Yes
Cooling Fan.....	No	Yes	Yes
Operating Temperature Range..	0° C to 40° C	0° C to 40° C	0° C to 40° C
Dimensions (L x W x H).....	110×105×57mm	143×105×57mm	178×105×57mm
Weight (approx.).....	0.5Kg	0.6Kg	0.9Kg

Model.....	M1002-48	M1202-48	M1502-48
Input Voltage Range.....	38-58VDC	38-58VDC	38-58VDC
Output Voltage Range.....	210-230VAC	210-230VAC	210-230VAC
Maximum AC Output Power.....	1000W	1200W	1500W
Long Term Power Output.....	800W	960W	1200W
Surge Capacity.....	2000W	2400W	3000W
Optimum Efficiency.....	>90%	>90%	>90%
No Load Current Draw.....	<0.5A	<0.5A	<0.5A
Output Frequency.....	50±2Hz	50±2Hz	50±2Hz
Output Waveform.....	Modified Sine Wave	Modified Sine Wave	Modified Sine Wave
Short Circuit Protect.....	Yes	Yes	Yes
Under Voltage Alarm.....	Yes	Yes	Yes
Under Voltage Shutdown.....	Yes	Yes	Yes
Over Load Protect.....	Yes	Yes	Yes
Over Voltage Shutdown.....	Yes	Yes	Yes
Over Temperature Shutdown....	Yes	Yes	Yes
Cooling Fan.....	Yes	Yes	Yes
Operating Temperature Range..	0° C to 40° C	0° C to 40° C	0° C to 40° C
Dimensions (L x W x H).....	250×165×70mm	250×165×70mm	250×165×70mm
Weight (approx.).....	2.2Kg	2.2Kg	2.3Kg

Sine wave inverter

Model		1KVA	2KVA	3KVA	5KVA	10KVA	20KVA	
output	wave model	sine wave, THD<3%						
	voltage stability	220V±2% 110V±2%						
	frequency	50Hz, 60Hz±0.5%						
	overload capacity	120% rated current, automatically swtich to bypass after 5 seconds 150% rated current, automatically swtich to bypass after 10 cycles						
	load power factor	0.8 lagging						
	wave crest ratio	3: 1						
DC output voltage		48V±20%	120V±20%	240V±15%	240V±15%	240V±15%	360V±15%	
efficiency (fully loaded)		>65%	>80%	>80%	>86%	>86%	>86%	
Noise		50db	55db	55db	60db	60db	60db	
protection		limited output when over load over load/short circuit protection inhibiting capacity of off- communication reaching FCCA						
Indicator light		inverter under normal state(green light) low voltage of battery(rend light) over load(red light) breakdown(red light)						
Alarm		alarm once per 4 seconds when main is cut down alarm once per second when battery is almost empty continuing alarm when breakdown or running out of battery						
computer interface		9PinD Type connector (Option)						
Environ ment	temperature	0~40°C						
	humidity	reaching 95% if not freezing						
size (W×H×Dmm)		560×280×365	555×265×570	635×270×690	550×450×1000			
input device		Power line			terminal row			
Remark		all the above data are for reference. Please see the physical goods if there is any change.						

All inverters can be set as AC110V/120V/220V/230V single phase and 50Hz/60Hz output. But only 5kw, 10kw, 20kw have AC380V, three phases output.

9. Tower

Guy cable tower

Model	Aeolus 300	500W	1000W	2000W	3000W	5000W	10KW	20KW
Height(m)	6	6	6	9	9	12	12	18
Diameter (mm)	48	89	114	140	273	273	325	377
Thickness	2.5	3.25	3.25	3.5	6	6	6	8
Sections	3	2	2	3	2	3	3	3
Weight(kg)	23.5	41.8	54	107.5	360.5	480.6	574.2	1328.4

Free stand tower (refer to figure 1)

Model	Symbol in figure 1	500W,1kW,2kW	3KW,5KW,10KW	20KW
Height(m)	-	8	12	18
Sections	-	3	3	3
Specification of Top Section	Height (m)	2	4	6
	Diameter (mm)	114	325	425
	Thickness (mm)	4	6	8
Specification of Middle Section	Height (m)	3	4	6
	Diameter (mm)	219	480	630
	Thickness (mm)	5	8	8
Specification of Bottom Section	Height (m)	3	4	6
	Diameter (mm)	325	630	820
	Thickness (mm)	6	8	8
Sections sketch	-			

Weight(kg)	-	326	1328	2660
Top flange	C1(mm)	150	310	500
	C2(mm)	120	200	460
	C3(mm)	90	160	380
	T1(mm)	M12	M16	Φ24
	N1	6	12	16
Bottom flange	C4(mm)	500	940	1260
	C5(mm)	430	770	1100
	C6(mm)	326	635	820
	T2(mm)	Φ27	Φ40	Φ41
	N2	12	10	16

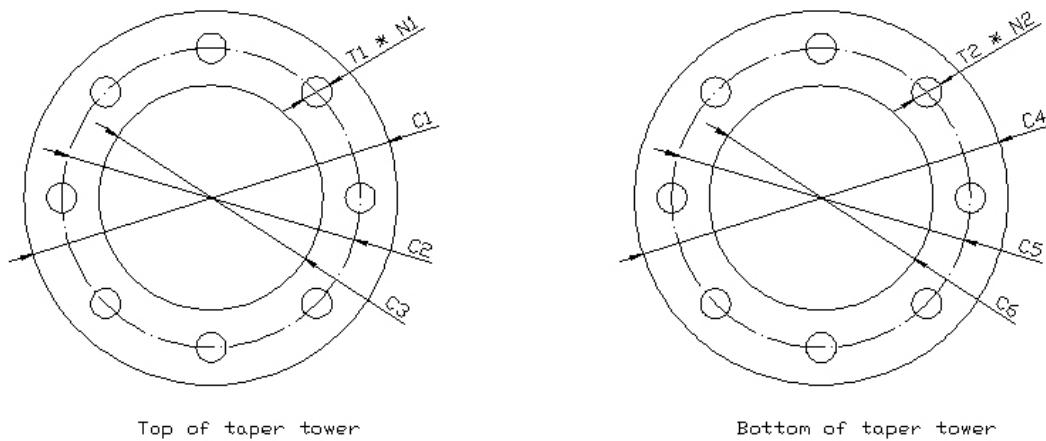


Figure 1

10. Electrical wires

Model	Aeolus 300	500W	1000W	2000W	3000W	5000W	10KW	20KW
Length(m)	20				50			
Cross-Section area(mm ²)	2.5				4	4	6	8

11. Suggested batteries specification

Model	Aeolus 300	500W	1000W	2000W	3000W	5000W	10KW	20KW
Battery voltage(V)	12							
Capacity (AH)	150	200	200	200	200	300	400	600
PCS	2	2	4	10	20	20	20	30
Charging time(h)	14	12	12	15	19	17	12	13

12. Concrete base

For guy cable tower(refer to figure 2)

Model	Aeolus 300	500W	1000W	2000W
Radius(m)	3.0	3.0	3.0	4.0
Center base dimension(m)(L*W*D)	0.5*0.5*0.8	0.6*0.6*0.8		0.6*0.6*0.8
Side base dimension(m)(L*W*D)	0.4*0.4*0.6	0.5*0.5*0.7		0.6*0.6*0.7

Model	3000W	5000W	10KW	20KW
Radius(m)	4.0	6.0	6.0	8.0
Center base dimension(m)(L*W*D)	0.9*0.9*1.2			1.0*1.0*1.2
Side base dimension(m)(L*W*D)	0.8*0.8*0.9			0.8*0.8*1.0

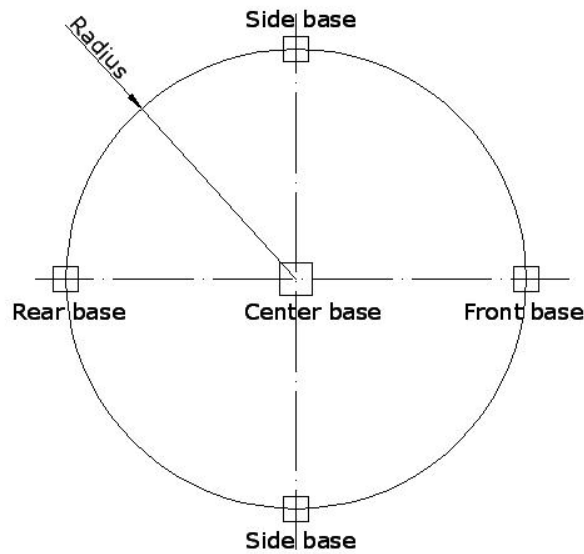


Figure 2

For free stand tower (refer to figure 3)

Model	Symbol in figure 3	500W,1KW,2KW	3KW,5KW,10KW	20KW
Depth(m)	(D1)	1.62	2.21	2.7
Width (m)	(C1)	1	1.6	2.4
Bare part of ground anchor(mm)	(D2)	80	90	100
Ground anchor circle Diameter(mm)	(C2)	400	770	1100
Type of ground bolts	(T)	M22	M32	M32
Ground bolts count	(N)	12	10	16

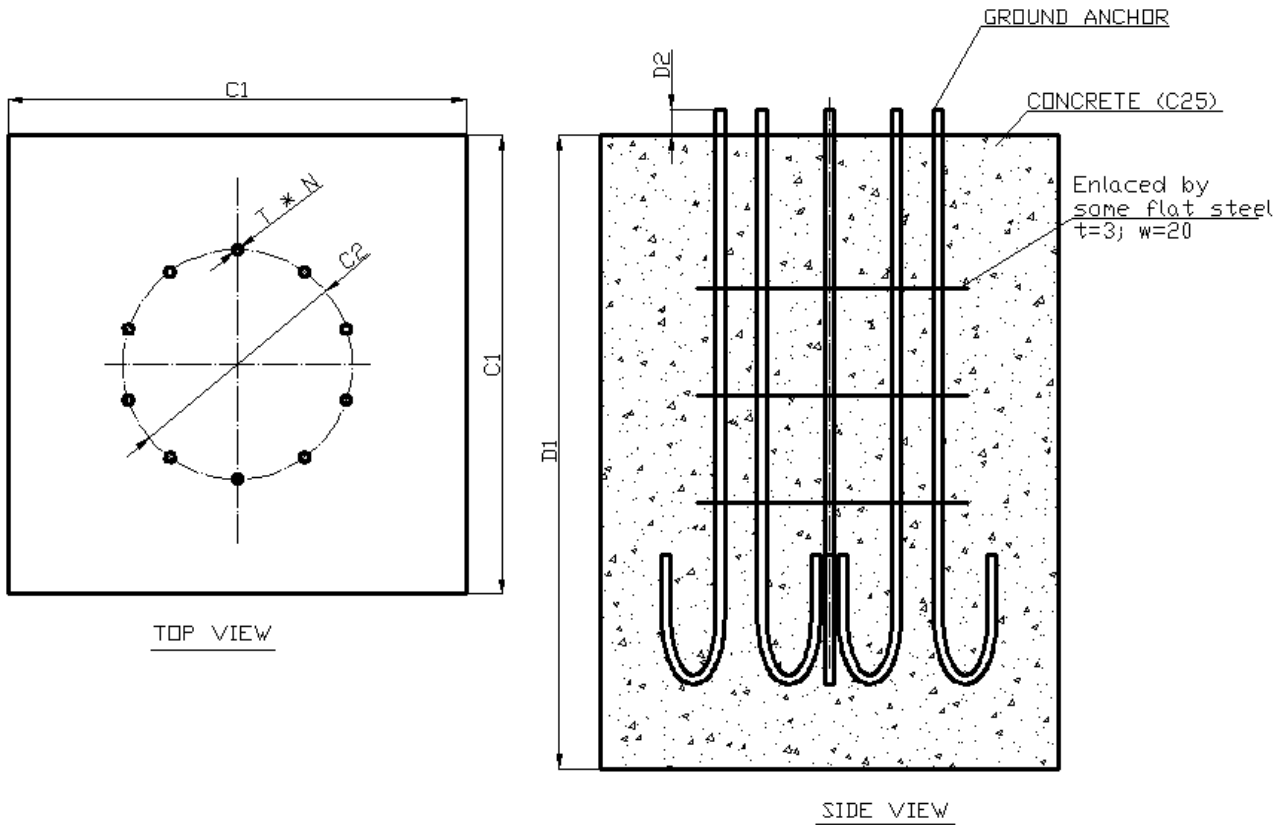


Figure 3

13. Noise report (tested by hand held sound level meter)

Model	20K	10K	5000	3000	2000	1000	500	Aeolus 300
Round Wind Speed(m/s)	Sound(db)							
3	29.7	21.3	20	20.9	24.6	23.3	20.9	20.9
4	34	21.7	22.6	27.8	24.8	24.8	22.7	23.4
5	38.2	29.4	24.5	36.2	29.5	30.9	26.2	28.5
6	40.9	30.6	32.2	40.2	35.2	36.9	33.6	36.7
7	45.1	41.4	35.6	45.8	40.7	42.2	40.3	43.6
8	48	44.5	40.4	46.9	48.2	49	45	49.8
9	51.3	50.3	44.7	48.9	52.6	53.4	52.7	51.6
10	54.6	54.8	48.6	59	61.8	62.4	58.4	61.8
11	57.5	58.4	58.4	62.4	65.8	64	59.5	66.2
12	61.7	59.4	59.3	64.6	70.5	70.7	63.3	69.5

Test position: At 12m away from generator (average value of 3 point-rear, left, right).

Notes: The sound value includes wind noise.

14. Installation

Refer to user's manual

15. Connection

Refer to user's manual

16. Maintenance

	Every Winter	After Storm	Every Year	Every 5 years	Every 10 years
1	Check blades: look for cracks or abnormal bends. If you locate any damage caused by storms or weather, replace the blades as using damaged or unbalanced blades will compromise the efficiency and lifetime of the windmill.	√	√	√	
2	Grease ball bearings	√	√		
3	If tower has cables, check for cable tension and adjust as needed	√	√	√	
4	Check to see if nuts and bolts have remained tight on mill and tower		√	√	
5	Check electric power cables for corrosion and damage. If you detect any abnormal corrosion, replace cables.	√	√		
6	Check state of the rotor for abnormal tear and wear. If needed, replace or retool to ensure proper functioning			√	
7	Replace gaskets				√
8	Paint touch up areas with weather damage		√		
9	Replace blades with new set of blades			√	
10	Replace electric power cables going from windmill to converter/controller			√	

17. Spare parts

No	Component name	Replacement interval	Remark
1	Blades	Replace when broken	
2	Anemoscope	Replace when broken	For 3kw and above
3	Dogvane	Replace when broken	For 3kw and above
4	Slip ring	Three years	For 2kw and below