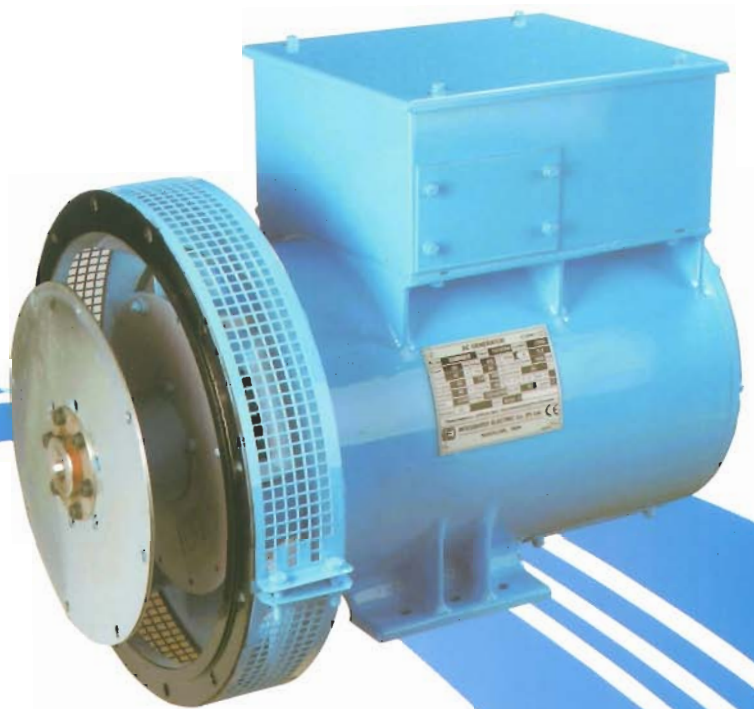


AC Generators

7.5 to 320kVA



INTEGRATED ELECTRIC CO.PVT.LTD.

Bengaluru, India

Established in 1982, Integrated Electric (IE) manufactures high quality electrical rotating machines and drives in a wide range and variety. Its product basket includes DC Motors between 0.37 and 2500kW, AC Motors between 0.12 and 630kW, AC Drives between 0.5 and 300kW, AC Generators between 7.5 and 320kVA and DC & AC Variable Speed Diesel Generator Sets.

IE manufactures Brushless AC Generators in a range extending from 7.5 to 320 kVA in frames sizes 132,160,180,225 and 280.

ELECTRICAL FEATURES

- The standard complied with are IS:13364; IS:4722; IEC:34-1; BS:4999-5000; VDE:530; CEI:2.3; NF:51-100,111; OVEM-10.
- Class H insulation is used with the temperature rise restricted to Class F limits.
- Three phase voltages are 380-415V at 50Hz and 440-480V at 60Hz (with Y connection). Special voltages and connections can be provided on request.
- Single Phase ratings are approximately 60% of three phase ratings.
- Permissible overloads :
10% for 1 hour, 30% for 4 minutes, 15% for 10 minutes & 50% for 2 minutes followed by 1 hour of normal running.
- The total harmonic distortion of the machine on no-load is less than 3%.
- The voltage regulation is 1% for non-distorting loads between 0-100% (when the speed is within $\pm 4\%$ of the rated speed and the power factor is between 0.8 lag and 1)
- Voltage can be adjusted to $\pm 5\%$ at the site.
- The transient voltage drop on application of full load at 0.8 power factor is between 15% and 20%.The output recovers to within +3% in less than 0.6 seconds.
- The short circuit current is greater than 3 times the rated current.
- Motor starting of approximately 1HP per kVA is possible when the AVR is used. The exact values depend on the torque characteristics, moment of inertia of the motor and the maximum acceptable voltage drop.

- The generators have an oversized damper cage and are suitable for parallel operation when equipped with a droop transformer.
- When the prime mover speed drops, the output voltage is reduced to prevent engine over load.
- Initial excitation is built up using permanent magnets. This ensures that machine does not fail to develop voltage due to loss of residual magnetism.

MECHANICAL FEATURES

- The machines have B3/B14 mounting, IP21 enclosure and IC01 cooling.
- The bodies are of cast iron or fabricated sheet steel and end-cover are made of cast iron.
- A large terminal box with 4 outgoing leads are provided for easy connections.
- All winding are vacuum pressure impregnated and are tropical treated.
- The rotor is dynamically balanced on two planes to minimize vibrations.
- Generously rated re-greaseable/sealed bearings are used.
- Efficiently designed fabricated sheet steel or cast aluminium fans are used.
- Optional accessories include thermistors, thermitech relays and space heaters.

AVR

- The AVR derives its power from independent auxiliary windings that are designed to provide a stable source of supply even during short circuit conditions. This ensures that the excitation is stable and largely independent of the load.
- The excitation is controlled using PWM switching. This results in excellent output control and stability even while supplying 100% thyristor loads, furnace loads and other distorting loads.
- The AVR combines a high field forcing capacity with low voltage excitation windings to ensure fast response to sudden excitation demands.
- The components are all over-rated and design is very safe. This makes the AVR inherently reliable.

RATING CHART

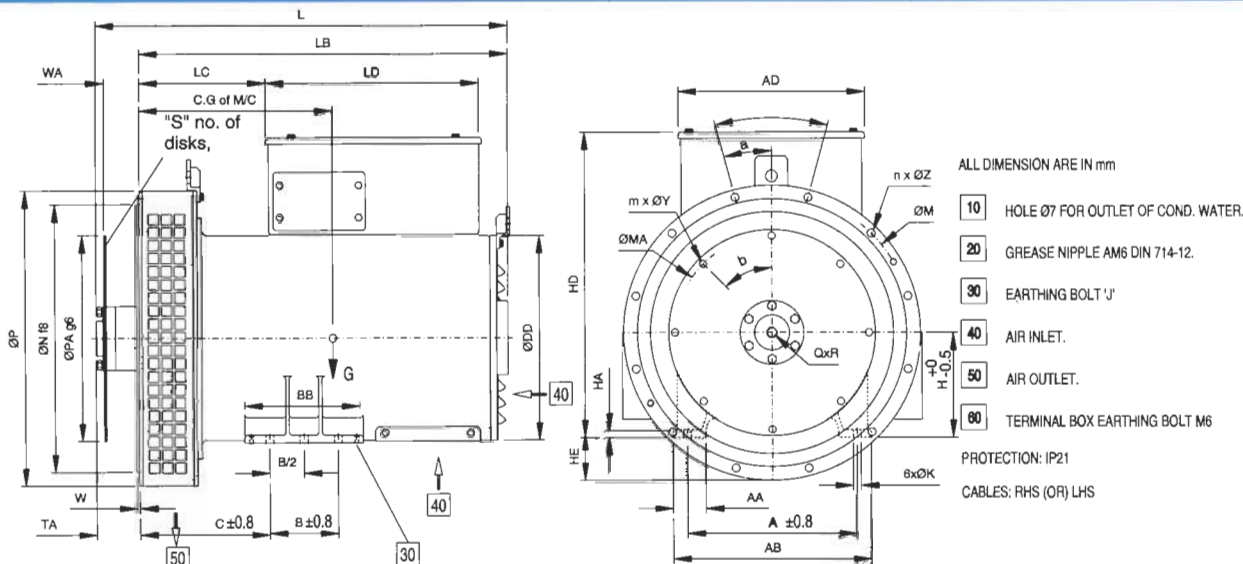
Frame	kVA 3Ph	kW 3Ph	kVA 1Ph	kW 1Ph	GD ² kGm ²	Nett Weight kG	Gross Weight kG	Shipping Dimensions in mm for 1 Brg. Alternators L x B x H	Bearing DE (2 Bearing Only)	Bearing NDE
IGEBS IGSEBS	7.5	6	4.5	3.6	0.652	121	181	860 x 710 x 785	6210 C3 2Z	6208 C3 2Z
	10	8	6	4.8	0.691	127	186			
	12.5	10	7.5	6.0	0.767	132	192			
	15	12	9	7.2	0.795	138	197			
IGEBM IGSEBM	20	16	12.5	10	0.839	145	205	910 x 710 x 785	6210 C3 2Z	6208 C3 2Z
	25	20	15	12.0	0.934	158	228			
	30	24	18	14.4	0.994	169	240			
IGGBM IGSGBM	33	26	20	16.0	1.075	180	250	1015 x 760 x 810	6213 C3 2Z	6211 C3 2Z
	40	32	25	20.0	1.676	240	323			
	50	40	30	24.0	1.88	263	347			
IGKBM IGSKBM	63	50	40	32.0	2.16	284	367	1300 x 850 x 950	6215 C3 2Z	6310 C3 2Z
	75	60	45	36.0	4.675	414	534			
	83	66	50	40.0	4.948	430	550			
	100	80	60	48.0	5.35	470	590			
IGOBM IGSOBM	110	88	66	52.8	5.753	480	600	1500 x 1100 x 1300	6216 C3	6312 C3
	125	100	75	60.0	6.227	506	626			
	160	128	-	-	11.965	723	873			
IGOBL IGSOBL	180	144	-	-	12.762	754	904	1650 x 1100 x 1300	6216 C3	6312 C3
	200	160	-	-	13.72	792	942			
	225	180	-	-	15.014	877	1057			
IGOBL IGSOBL	250	200	-	-	16.575	940	1120	1650 x 1100 x 1300	6216 C3	6312 C3
	320	256	-	-	18.794	1037	1217			

PARAMETERS

Frame	kVA	Amps	% η at 0.8 PF & 100% load	R _{Stator-Ph} (22°C)	R _{Rotor} (22°C)	x _d	x _q	SCR	x _d '	x _q '	x _d ''	x _q ''	T _{d0}
IGEBS IGSEBS	7.5	10	80.40	2.6560	0.215	2.470	1.150	0.480	0.279	1.150	0.151	0.198	0.342
	10	14	81.60	1.9080	0.230	2.270	1.060	0.520	0.280	1.060	0.154	0.200	0.304
	12.5	17	83.30	1.0220	0.260	2.330	1.090	0.540	0.240	1.090	0.129	0.169	0.387
	15	21	84.50	0.7600	0.284	2.250	1.060	0.596	0.219	1.060	0.117	0.153	0.420
IGEBM IGSEBM	20	28	85.70	0.5000	0.312	2.360	1.110	0.590	0.214	1.100	0.113	0.147	0.465
	25	35	87.30	0.3290	0.351	2.250	1.080	0.619	0.195	1.080	0.102	0.133	0.513
	30	42	87.40	0.2510	0.390	2.350	1.101	0.593	0.189	1.101	0.099	0.129	0.550
IGGBM IGSGBM	32.5	45	88.00	0.2020	0.402	2.216	1.037	0.670	0.173	1.037	0.090	0.117	0.573
	40	56	89.20	0.1780	0.600	2.696	1.271	0.458	0.185	1.270	0.141	0.225	0.672
	50	70	90.20	0.1250	0.680	2.452	1.155	0.503	0.161	1.156	0.121	0.195	0.762
IGKBM IGSKBM	63	88	91.00	0.0840	0.820	2.528	1.191	0.492	0.152	1.192	0.117	0.196	0.802
	75	104	91.20	0.0730	0.910	2.077	1.014	0.731	0.203	1.014	0.097	0.124	0.749
	82.5	115	91.40	0.0600	0.960	2.034	0.994	0.753	0.192	0.993	0.091	0.117	0.790
	100	139	92.00	0.0450	1.060	2.049	1.000	0.737	0.183	1.000	0.087	0.111	0.857
IGOBM IGSOBM	110	153	92.00	0.0388	1.130	2.032	0.992	0.738	0.177	0.992	0.084	0.106	0.895
	125	174	92.10	0.0320	1.180	2.047	0.999	0.731	0.173	0.999	0.082	0.104	0.935
	160	223	92.60	0.0205	1.780	2.764	1.326	0.452	0.272	1.326	0.176	0.231	1.259
IGOBL IGSOBL	180	250	92.70	0.0178	1.890	2.824	1.355	0.442	0.270	1.355	0.174	0.229	1.307
	200	278	92.90	0.0150	2.010	2.816	1.352	0.444	0.261	1.352	0.168	0.222	1.358
	225	313	93.00	0.0127	2.170	2.813	1.350	0.445	0.253	1.350	0.162	0.216	1.414
IGOBL IGSOBL	250	348	93.30	0.0102	2.380	2.732	1.311	0.457	0.237	1.311	0.152	0.204	1.476
	320	445	93.90	0.0082	2.650	2.993	1.436	0.417	0.251	1.436	0.161	0.216	1.543

All above performance figures are for 415V, 3Ø, 50 HZ, 1500 RPM, 0.8 PF outputs.
Reactances are unsaturated per unit values and time constants are in seconds.

DIMENSIONS - 1 BEARING



FRAME	A	AA	AB	ØDD	AD	H	HA	ØK	B	BB	C	LD	LC	HD	L	S	W	Q	R	J
IGSEBS	258	50	302	312	284	160	12	12	104	160	145	329	116	468	550	2	4	M16	32	M6
IGSEBM	258	50	302	312	284	160	12	12	104	180	197	329	192	468	626	2	4	M16	32	M6
IGSGBM	279	70	339	350	339	180	14	15	234	282	180	414	245	507	763	3	6	M20	44	M6
IGSKBM	356	90	440	440	450	225	18	19	340	470	301	480	231	646	890	4	6	M20	44	M10

Combination of Flanges & Coupling Disks							
Frame	Flange SAE	Coupling Disk SAE No.					
		6.5	7.5	8	10	11.5	14
IGSEBS IGSEBM	5	o	o	o	x	x	x
	4	o	o	o	x	x	x
	3	✓	✓	✓	✓	✓	x
IGSGBM	2	✓	✓	✓	✓	✓	x
	4	o	o	o	x	x	x
	3	✓	✓	✓	✓	✓	x
IGSKBL	2	✓	✓	✓	✓	✓	x
	1	o	o	o	o	✓	✓
	3	✓	✓	✓	✓	✓	x

✓ = Readily Available, o = On Customer Request, x = Not Possible

Frame	SAE No.	ØP	TA	HE
IGSEBS IGSEBM	5	382	43	31.00
	4	382	43	31.00
	3	452	57	66.00
IGSGBM	2	490	57	85.00
	4	428	42.4	34.00
	3	452	66	46.00
IGSKBM	2	490	66	65.00
	1	553	66	96.50
	3	553	55	51.50
	2	553	55	51.50
	1	553	55	51.50

Flange					
SAE No.	ØN	ØM	NxØZ	α	θ
5	314.32	333.38	8xØ12	22.5°	45°
4	361.95	381.00	12xØ12	15°	30°
3	409.58	428.62	12xØ12	15°	30°
2	447.68	466.72	12xØ12	15°	30°
1	511.18	530.22	12xØ14	15°	30°

Coupling Disk					
DISK No.	ØPA	ØMA	mxØY	β	WA
6.5	215.90	200.02	6xØ9	60°	30.20
7.5	241.30	222.85	8xØ9	45°	30.20
8	263.52	244.48	6xØ11	60°	62.00
10	314.32	295.28	8xØ11	45°	53.80
11.5	352.42	333.38	8xØ11	45°	39.60
14	466.72	438.15	8xØ14	45°	39.60

Since continuous improvements are made on our products, we reserve the right to change specifications without notice. The dimension sheet should not be used for installation purpose unless certified by us against a particular order.



INTEGRATED ELECTRIC COMPANY PVT LTD

PB No. 5888, 497A, IV Phase, Peenya Industrial Area, Bengaluru - 560 058, India
 Tel: +91 80 41391400/41391428/41391437/41391438 Fax: +91 80 41391457
 E-mail: mktbang@int-elec.com Web: www.int-elec.com



BRANCH OFFICE: AHMEDABAD Phone: 079 2664292 Fax: 079 26604297 Email: iecahmedabad@hotmail.com
CHENNAI Phone: 044 42107887 Email: iecche@int-elec.com **GURGAON** Phone: 0124 2347039, 2455230 Fax: 0124 2455082 Email: iecgur@int-elec.com **HYDERABAD** Phone: 040 2330409, 23308781 Fax: 040 23302229 Email: iechyd@int-elec.com **RANCHI** Phone: 0651 2252038, 2252085 Email: iec_ranchi@hotmail.com **KOLKATA** Phone: 033 24630409 Fax: 033 24630409 Email: ieckol@int-elec.com **THANE** Phone: 022 25421355, 25424493 Fax: 022 25421356 Email: iecmum@int-elec.com **UAE- Ras-AI-Khaimah** Phone: +971 72660224 Email: iecrak@int-elec.com