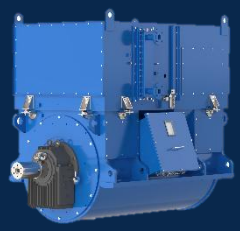
RELIABLE BY DESIGN.
EFFICIENT IN OPERATION.

MARITIME APPLICATIONS

ALTERNATOR RATINGSBOOK

From shipyard integration to open-sea uptime:
marine power you can trust.



BEM

EN
2026

BEM Ratings Book – EN 2026

QUICK REFERENCE

GL05 – GL12 | GH10 – GH100 | 50/60 Hz

EXPERTISE
Engineered by BEM

PROVED TECHNOLOGY
Industrial and Marine class options

COST EFFECTIVE
Low total cost of ownership

RATING* DEFINITIONS

PRP – Prime Power – Variable load, unlimited yearly operating hours.

ESP – Emergency Standby Power
Up to 200 h/year, variable load.

COP – Continuous Power
Constant load, unlimited operating hours.

* Rating at 40 °C to 50 °C / 1 000 m a.s.l.; for higher temperature or altitude apply derating factors (see derating chapter).

QUICK-SELECTOR – LV & HV FRAMES

Frame groups: kVA range, voltages, poles, protection, cooling, typical use

LV small frames

GL05–06 400-1250 kVA

Voltages: 400 V–690V	Poles: 4 / 6
Protection: IP23/44/54/55	Class: H

Applications: maritime, small stationary and standby gensets, emergency and auxiliary power.

LV medium frames

GL07–08 650-3500 kVA

Voltages: 400 V–690V	Poles: 4 / 6 / 8 / 10
Protection: IP23/44/54/55	Class: H

Applications: Industrial and marine standby and prime power generation, CHP, emergency and auxiliary power.

LV large frames

GL09–10 1200-6000 kVA

Voltages: 400 V–690 V	Poles: 4/6/8/10/12
Protection: IP23/44/54/55	Class: H

Applications: Heavy industrial loads, larger CHP plants, marine propulsion and auxiliary power.

LV extra large frames

GL11–12 2500–9000 kVA

Voltages: 400 V–690 V	Poles: 8 / 10 / 12
Protection: IP23/44/54/55	Class: H

Applications: Large industrial complexes, utility and IPP plants, marine propulsion and auxiliary power.

HV medium frame

GH10-30 500–4000 kVA

Voltages: 3.3 kV– 15 kV	Poles: 4 / 6 / 8 / 10
Protection: IP23/44/54/55	Class: H / F

Applications: Industrial and utility power generation, small power plants.

HV upper medium frame

GH40-60 1200–11000 kVA

Voltages: 3.3 kV–15 kV	Poles: 2/4/6/8/10/12
Protection: IP23/44/54/55	Class: F

Applications: Large industrial sites, marine propulsion and auxiliary power.

HV large frame

GH70-90 5000–25000 kVA

Voltages: 3.3 kV–15 kV	Poles: 6/8/9/10/12/14
Protection: IP23/44/54/55	Class: F

Applications: Power plants, offshore and demanding marine duty.

HV extra large frame

GH100 30000 kVA

Voltages: 10.5 kV–11 kV	Poles: 4 / 6 / 8
Protection: IP54	Class: F

Applications: Large utility and IPP plants, grid-connected baseload and peak-shaving units.

COMMON OPTIONS & APPLICATIONS (ALL FRAMES)

MECHANICAL & PROTECTION OPTIONS

- → Sleeve or antifriction bearings
- → IP23 with filters/ IP44 / IP54 / IP55 enclosed versions
- → Cooling: IC01, IC31, CACA / CACW
- → Design: customized

TYPICAL APPLICATIONS

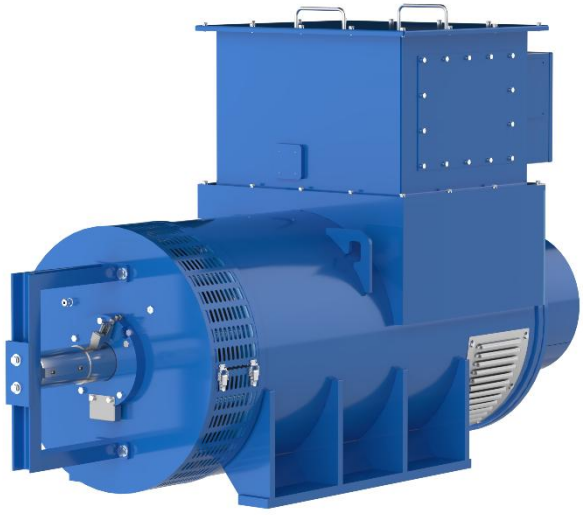
- → Power plants (peaking, baseload) and CHP / cogeneration units
- → Grid-code compliant generation and parallel operation with public grids
- → Oil & Gas installations onshore/offshore and marine propulsion / auxiliary power
- → Continuous duty and standby power for industrial and commercial sites

PRIME MOVER COMPATIBILITY

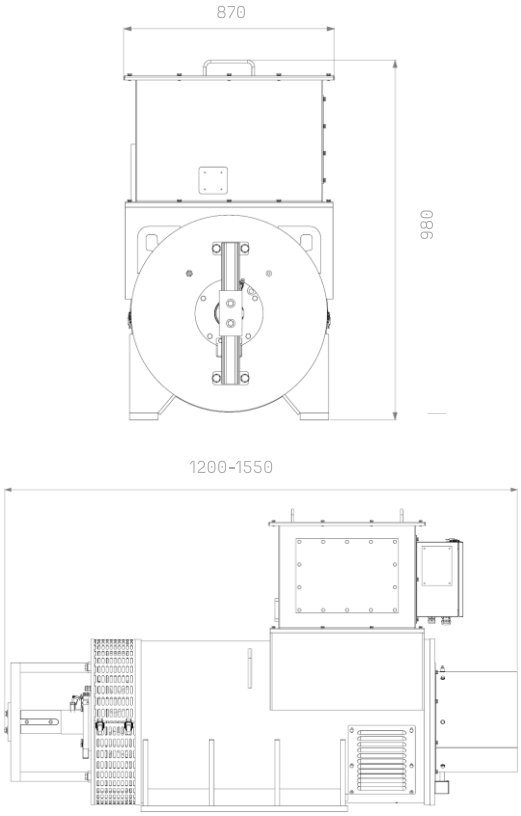
- → Diesel engines – prime movers for standby and continuous duty
- → Gas engines – natural gas and biogas CHP applications
- → Gas turbines – compact high-power solutions for industrial and utility plants
- → Steam turbines – integration into process and waste-heat recovery cycles

* All ratings refer to standard conditions at 1 000 m altitude, cos φ 0.8 and IP23 (unless otherwise specified). For higher ambient temperatures, higher altitudes, air inlet filters, special voltages or converter operation, appropriate derating factors must be applied. Detailed derating curves and tables are provided in the derating chapter of this Ratings Book or can be supplied by BEM applications engineering on request.

GL05



400–690 V · 4/6/8/10 poles · IP23



Standard design dimensions (all values in mm)

GL05 Specifications

ELECTRICAL CORE	
Voltage Range [V]	400 – 690
Poles	4, 6
Coil and insulation	Wire-wound
AVR	Analogue/Digital
Bearing type	Sleeve-/Antifriction bearing

MECHANICAL & PROTECTION	
Bearing Arrangement	Single/Double
Insulation Class	H
Protection	IP23/44/54/55//totally enclosed

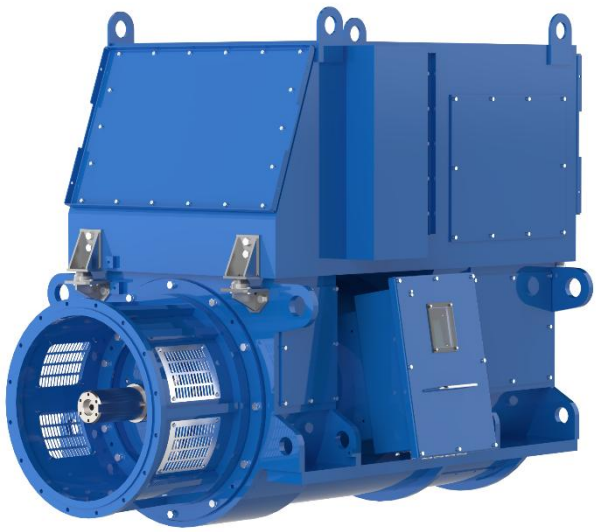
INTERFACES & MONITORING	
SAE Adaptors	1, 1/2, 0, 00
Excitation Power Supply	PMG
Cooling method	IC01, IC31, CACA/CACW
Connection with other machines	Paralleling capability

Ratings referenced at 1 000 m. Apply derating outside reference conditions (see Derating chapter).

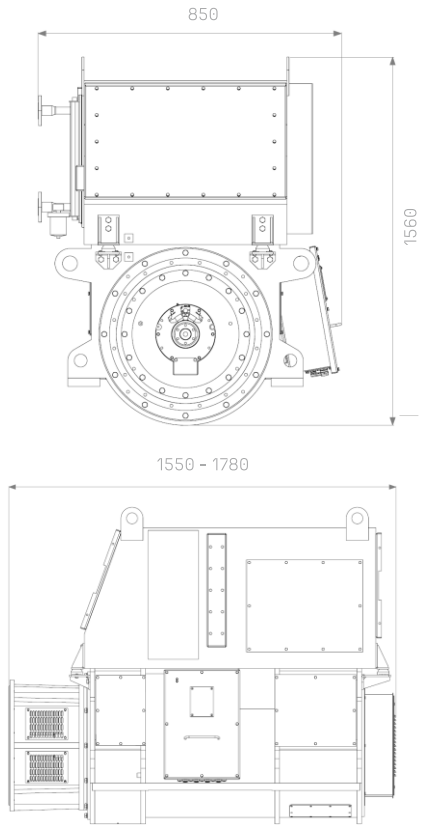
MODEL	CORE LENGTH	Power at cos ϕ=0.8 [kVA/kW]			VOLTAGE [kV]	FREQUENCY [Hz]	ROTATING SPEED [rpm]
		Temperature rise running Mode at 50 °C					
		110 K/Continuous	90 K/Continuous	70 K/Continuous			
GL05-4-Pole	F2	390/312	370/296	340/270	0.4	50	1500
	G1	435/348	415/332	375/300	0.4	50	1500
	H1	530/424	490/392	445/355	0.4	50	1500
	H2	585/468	525/420	485/380	0.4	50	1500
	F2	520/416	481/384.8	440/350	0.48	60	1800
	G1	570/456	531/424.8	480/385	0.48	60	1800
	H1	650/520	606/484.8	550/440	0.48	60	1800
	H2	725/580	663/530.4	600/480	0.48	60	1800

1) All products are designed for 50Hz and 60Hz.

GL06



400–690 V · 4/6/8/10 poles · IP23



Standard design dimensions (all values in mm)

GL06 Specifications

ELECTRICAL CORE	
Voltage Range [V]	400 – 690
Poles	4, 6
Coil and insulation	Wire-wound/Bar-wound
AVR	Digital
Bearing type	Sleeve-/Antifriction bearing

MECHANICAL & PROTECTION	
Bearing Arrangement	Single/Double
Insulation Class	H
Protection	IP23/44/54/55//totally enclosed

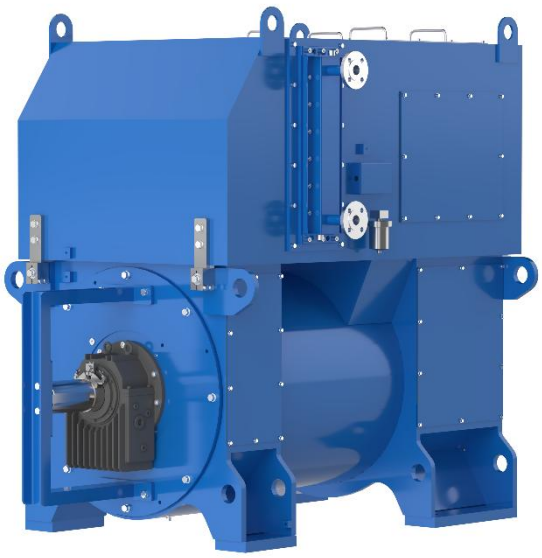
INTERFACES & MONITORING	
SAE Adaptors	1, 1/2, 0, 00
Excitation Power Supply	Auxiliary winding/PMG
Cooling method	IC01, IC31, CACA/CACW
Connection with other machines	Paralleling capability

Ratings referenced at 1 000 m. Apply derating outside reference conditions (see Derating chapter).

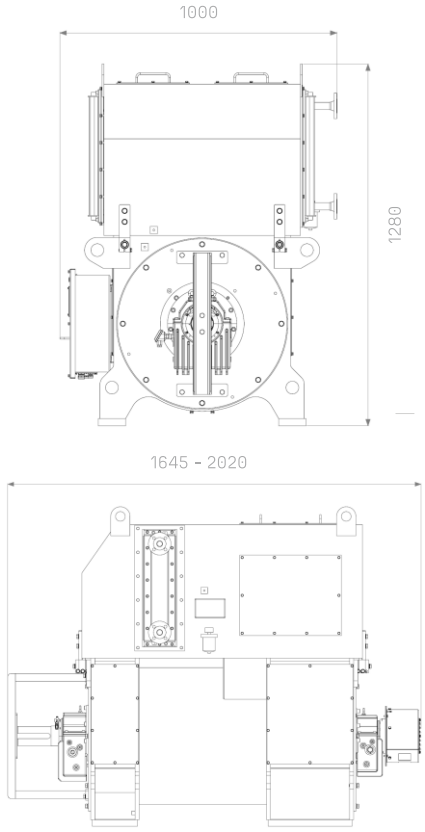
MODEL	CORE LENGTH	Power at cos ϕ=0.8 [kVA/kW]			VOLTAGE [kV]	FREQUENCY [Hz]	ROTATING SPEED [rpm]
		Temperature rise running Mode at 50 °C					
		110 K/Continuous	90 K/Continuous	70 K/Continuous			
GL06-4-Pole	G1	650/520	610/488	550/440	0.4	50	1500
	G2	785/628	720/576	656/524.8	0.4	50	1500
	H2	850/680	830/664	750/600	0.4	50	1500
	I1	950/760	920/736	800/640	0.4	50	1500
	G1	875/700	819/655.2	712/569.6	0.48	60	1800
	G2	994/795.2	925/740	800/640	0.48	60	1800
	H2	1150/920	1063/850.4	925/740	0.48	60	1800
	I1	1275/1020	1181/944.8	1010/808	0.48	60	1800
	G1	680/544	630/504	530/424	0.69	50	1500
	G2	765/612	700/560	638/510.4	0.69	50	1500
	H2	830/664	810/648	735/588	0.69	50	1500
	I1	900/720	850/680	740/592	0.69	50	1500
GL06-6-pole	G1	250/200	250/200	220/176	0.4	50	1000
	G2	330/264	330/264	290/232	0.4	50	1000
	H2	400/320	400/320	350/280	0.4	50	1000
	I1	505/404	505/404	440/352	0.4	50	1000
	G1	313/250	313/250	270/216	0.48	60	1200
	G2	415/332	413/330	350/280	0.48	60	1200
	H2	500/400	500/400	430/344	0.48	60	1200
	I1	625/500	625/500	535/428	0.48	60	1200
	G1	N/A	313/250	270/216	0.69	60	1200
	G2	N/A	413/330.4	350/280	0.69	60	1200
	H2	N/A	500/400	430/344	0.69	60	1200
	I1	N/A	625/500	535/428	0.69	60	1200

1) All products are designed for 50Hz and 60Hz.

GL07



400–690 V · 4/6/8/10 poles · IP23



Standard design dimensions (all values in mm)

GL07 Specifications

ELECTRICAL CORE	
Voltage Range [V]	400 – 690
Poles	4, 6
Coil and insulation	Wire-wound/Bar-wound
AVR	Digital
Bearing type	Sleeve-/Antifriction bearing

MECHANICAL & PROTECTION	
Bearing Arrangement	Single/Double
Insulation Class	H
Protection	IP23/44/54/55//totally enclosed

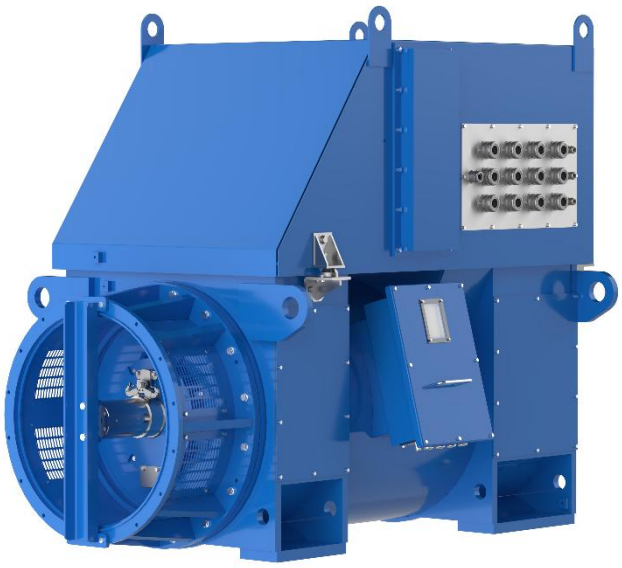
INTERFACES & MONITORING	
SAE Adaptors	0, 00
Excitation Power Supply	Auxiliary winding/PMG
Cooling method	IC01, IC31, CACA/CACW
Connection with other machines	Paralleling capability

Ratings referenced at 1 000 m. Apply derating outside reference conditions (see Derating chapter).

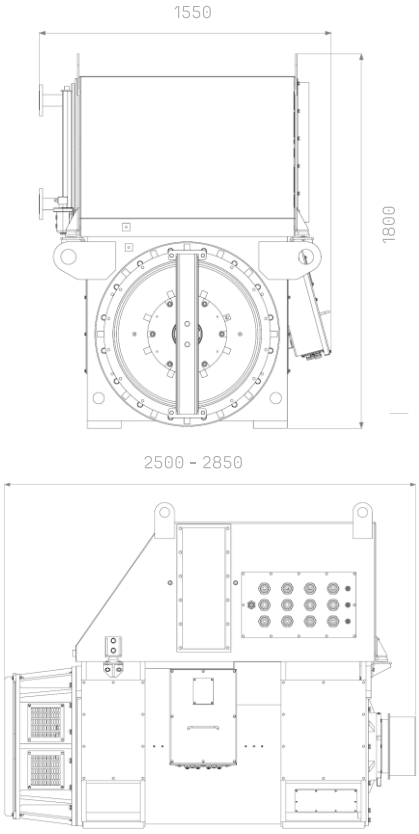
MODEL	CORE LENGTH	Power at cos ϕ=0.8 [kVA/kW]			VOLTAGE [kV]	FREQUENCY [Hz]	ROTATING SPEED [rpm]
		Temperature rise running Mode at 50 °C					
		110 K/Continuous	90 K/Continuous	70 K/Continuous			
GL07-4-Pole	G2	N/A	1005/804	1005/804	0.4	50	1500
	H2	N/A	1240/992	1115/892	0.4	50	1500
	I1	N/A	1320/1056	1190/952	0.4	50	1500
	J1	N/A	1435/1148	1370/1096	0.4	50	1500
	J2	N/A	1580/1264	1495/1196	0.4	50	1500
	K1	N/A	1795/1436	1585/1268	0.4	50	1500
	G2	N/A	1280/1024	1215/972	0.48	60	1800
	H2	N/A	1540/1232	1360/1088	0.48	60	1800
	I1	N/A	1645/1316	1450/1160	0.48	60	1800
	J1	N/A	1875/1500	1655/1324	0.48	60	1800
	J2	N/A	2120/1696	1870/1496	0.48	60	1800
	K1	N/A	2245/1796	1980/1584	0.48	60	1800
	G2	N/A	1140/912	1005/804	0.69	50	1500
	H2	N/A	1230/984	1090/872	0.69	50	1500
	I1	N/A	1345/1076	1190/952	0.69	50	1500
	J1	N/A	1440/1152	1275/1020	0.69	50	1500
	J2	N/A	1690/1352	1495/1196	0.69	50	1500
	K1	N/A	1750/1400	1545/1236	0.69	50	1500
GL07-6-pole	G2	525/420	500/400	480/384	0.4	50	1000
	I1	655/524	655/524	630/504	0.4	50	1000
	J2	900/720	850/680	800/640	0.4	50	1000
	G2	750/600	750/600	650/520	0.48	60	1200
	I1	975/780	975/780	845/676	0.48	60	1200
	J2	1240/992	1200/960	1040/832	0.48	60	1200
	G2	750/600	750/600	650/520	0.69	60	1200
	I1	975/780	975/780	845/676	0.69	60	1200
	J2	1200/960	1200/960	1040/832	0.69	60	1200

1) All products are designed for 50Hz and 60Hz.

GL08



400–690 V · 4/6/8/10 poles · IP23



Standard design dimensions (all values in mm)

GL08 Specifications

ELECTRICAL CORE	
Voltage Range [V]	400 – 690
Poles	4, 6, 8, 10
Coil and insulation	Bar-wound
AVR	Digital
Bearing type	Sleeve-/Antifriction bearing

MECHANICAL & PROTECTION	
Bearing Arrangement	Single/Double
Insulation Class	H
Protection	IP23/44/54/55//totally enclosed

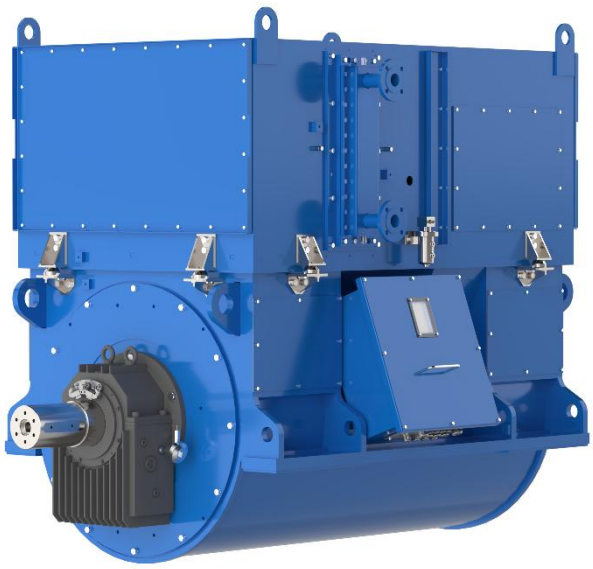
INTERFACES & MONITORING	
SAE Adaptors	0, 00
Excitation Power Supply	Auxiliary winding/PMG
Cooling method	IC01, IC31, CACA/CACW
Connection with other machines	Paralleling capability

Ratings referenced at 1 000 m. Apply derating outside reference conditions (see Derating chapter).

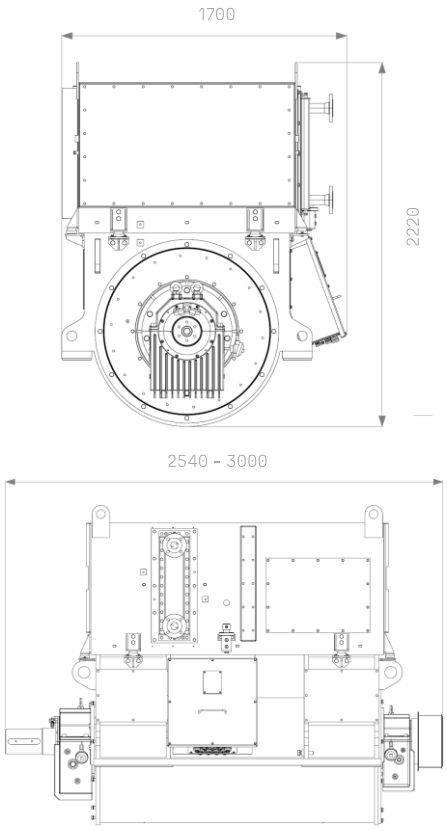
MODEL	CORE LENGTH	Power at cos ϕ=0.8 [kVA/kW]			VOLTAGE [kV]	FREQUENCY [Hz]	ROTATING SPEED [rpm]
		Temperature rise running Mode at 45 °C					
		125 K/Continuous	105 K/Continuous	80 K/Continuous			
GL08-4-Pole	I2	1957/1566	1781/1350	1648/1318	04	50	1500
	L1	2698/2158	2455/1965	2272/1818	0.4	50	1500
	I2	2347/1877	2138/1710	1976/1580	0.48	60	1800
	L1	3230/2584	2945/2356	2720/2176	0.48	60	1800
	I1	1919/1535	1746/1397	1616/1293	0.69	50/60	1500/1800
	L1	2840/2272	2585/2068	2392/1914	0.69	50/60	1500/1800
GL08-6-pole	H2	1425/1140	1297/1037	1200/960	0.4	50	1000
	K1	1805/1444	1644/1321	1520/1220	0.4	50	1000
	H2	1710/1368	1556/1245	1440/1152	0.48	60	1200
	K1	2176/1741	1981/1584	1833/1467	0.48	60	1200
	H2	1178/942	1072/858	992/794	0.69	50/60	1000/1200
	K1	1815/1452	1651/1321	1528/1222	0.69	50/60	1000/1200
GL08-8-pole	H1	855/684	778/622	720/576	0.4	50	750
	J2	1283/1026	1168/934	1080/864	0.4	50	750
	H1	1178/943	1073/859	993/792	0.48	60	900
	J2	1691/1353	1539/1231	1424/1139	0.48	60	900
	H1	855/684	778/622	720/576	0.69	50/60	750/900
	K2	1359/1087	1236/989	1144/915	0.69	50/60	750/900
GL08-10-pole	H1	637/509	580/464	536/429	0.4	50	600
	J2	1055/844	960/768	888/710	0.4	50	600
	H1	760/608	692/553	640/512	0.48	60	720
	K2	1264/1011	1150/920	1064/851	0.48	60	720
	H1	684/547	622/498	576/461	0.69	50/60	600/720
	K2	1055/844	960/768	888/710	0.69	50/60	600/720

1) All products are designed for 50Hz and 60Hz.

GL09



400–690 V · 4/6/8/10 poles · IP23



Standard design dimensions (all values in mm)

GL09 Specifications

ELECTRICAL CORE	
Voltage Range [V]	400 – 690
Poles	4, 6, 8, 10
Coil and insulation	Bar-wound
AVR	Digital
Bearing type	Sleeve-/Antifriction bearing

MECHANICAL & PROTECTION	
Bearing Arrangement	Single/Double
Insulation Class	H
Protection	IP23/44/54/55//totally enclosed

INTERFACES & MONITORING	
SAE Adaptors	00
Excitation Power Supply	Auxiliary winding/PMG
Cooling method	IC01, IC31, CACA/CACW
Connection with other machines	Paralleling capability

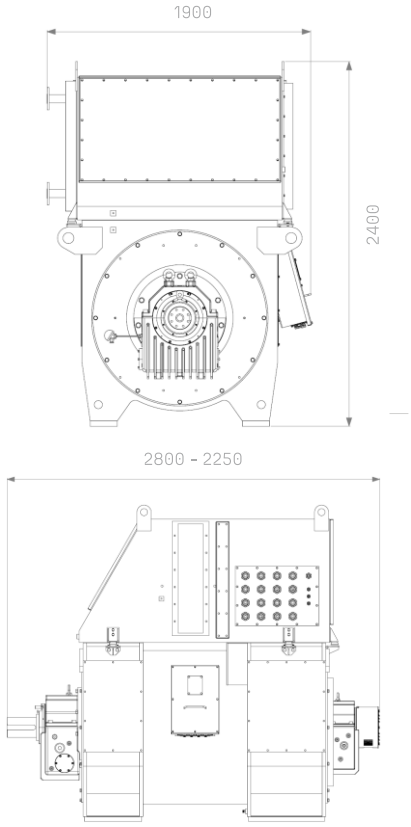
Ratings referenced at 1 000 m. Apply derating outside reference conditions (see Derating chapter).

MODEL	CORE LENGTH	Power at cos ϕ=0.8 [kVA/kW]			VOLTAGE [kV]	FREQUENCY [Hz]	ROTATING SPEED [rpm]
		Temperature rise running Mode at 45 °C					
		125 K/Continuous	105 K/Continuous	80 K/Continuous			
GL09-4-Pole	K1	3278/2622	3240/2386	2760/2208	0.4	50	1500
	K1	3933/3146	3579/2863	3312/2650	0.48	60	1800
	K1	3335/2668	3034/2427	2808/2246	0.69	50/60	1500/1800
	M1	4465/3572	4063/3251	3760/3008	0.69	50/60	1500/1800
GL09-6-pole	H2	2128/1702	1936/1549	1792/1434	0.4	50	1000
	K2	2898/2318	2637/2109	2318/1854	0.4	50	1000
	H2	2554/2043	2324/1859	2043/1634	0.48	60	1200
	K2	3477/2782	3164/2531	2928/2342	0.48	60	1200
	I1	1948/1558	1773/1417	1640/1312	0.69	50/60	1000/1200
	L1	3040/2432	2766/2214	2560/2048	0.69	50/60	1000/1200
GL09-8-pole	I1	1568/1254	1427/1141	1320/1056	0.4	50	750
	L1	2404/1923	2187/1750	1923/1538	0.4	50	750
	I1	1976/1581	1798/1438	1664/1331	0.48	60	900
	L1	3031/2424	2758/2206	2552/2042	0.48	60	900
	J1	1834/1467	1668/1335	1544/1235	0.69	50/60	750/900
	L2	2404/1923	2187/1842	2024/1619	0.69	50/60	750/90
GL09-10-pole	H2	1159/927	1055/844	976/781	0.4	50	600
	L1	1739/1391	1582/1265	1464/1171	0.4	50	600
	H2	1391/1112	1265/1013	1171/937	0.48	60	720
	L1	2086/1669	1898/1519	1757/1405	0.48	60	720
	H2	1159/927	1054/844	927/742	0.69	50/60	600/720
	L2	1900/1520	1729/1383	1520/1216	0.69	50/60	600/720

1) All products are designed for 50Hz and 60Hz.



400–690 V · 4/6/8/10 poles · IP23



Standard design dimensions (all values in mm)

GL10 Specifications

ELECTRICAL CORE	
Voltage Range [V]	400 – 690
Poles	4, 6, 8, 10, 12
Coil and insulation	Bar-wound
AVR	Digital
Bearing type	Sleeve-/Antifriction bearing

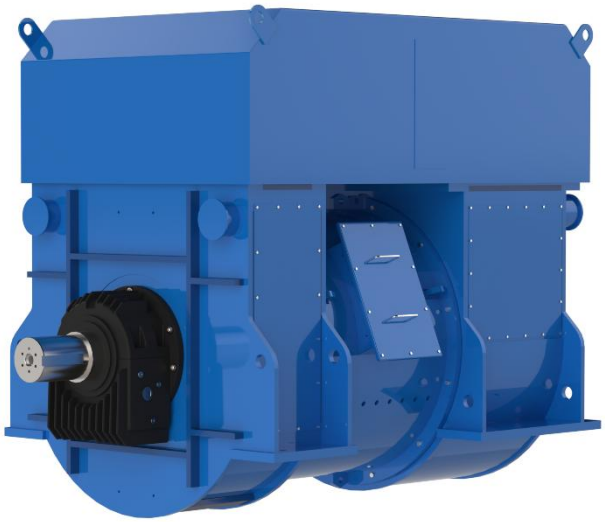
MECHANICAL & PROTECTION	
Bearing Arrangement	Single/Double
Insulation Class	H
Protection	IP23/44/54/55//totally enclosed

INTERFACES & MONITORING	
SAE Adaptors	00
Excitation Power Supply	Auxiliary winding/PMG
Cooling method	IC01, IC31, CACA/CACW
Connection with other machines	Paralleling capability

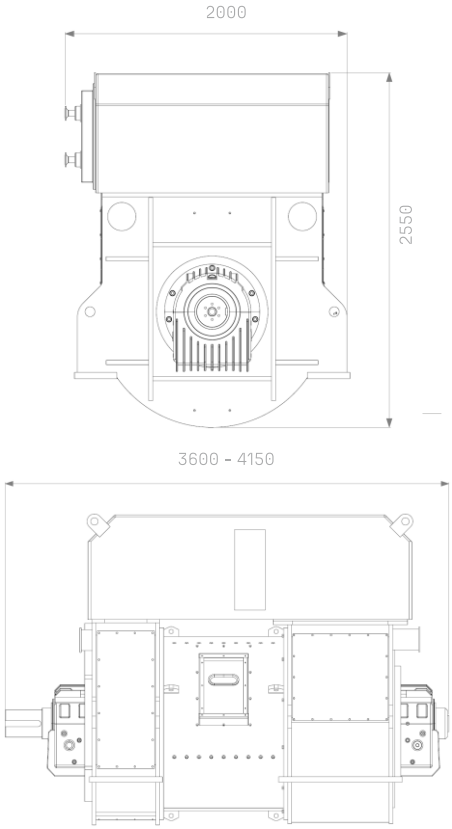
Ratings referenced at 1 000 m. Apply derating outside reference conditions (see Derating chapter).

MODEL	CORE LENGTH	Power at cos ϕ=0.8 [kVA/kW]			VOLTAGE [kV]	FREQUENCY [Hz]	ROTATING SPEED [rpm]
		Temperature rise running Mode at 45 °C					
		125 K/Continuous	105 K/Continuous	80 K/Continuous			
GL10-4-Pole	K1	3800/3040	3534/2827	3280/2624	0.4	50	1500
	K1	4560/3648	4241/2365	3936/3149	0.48	60	1800
GL10-6-pole	J1	3230/2584	2909/2404	2788/2230	0.4	50	1000
	M2	4703/3762	4374/3499	4059/3247	0.4	50	1000
	J1	3876/3101	3604/2884	3346/2676	0.48	60	1200
	M2	5643/4514	5248/4198	4871/3897	0.48	60	1200
	J2	3325/2660	3092/2474	2870/2296	0.69	50/60	1000/1200
	N1	4750/3800	4418/3534	4100/3280	0.69	50/60	1000/1200
GL10-8-pole	J2	2755/2204	2562/2050	2378/1902	0.4	50	750
	M2	3829/3062	3561/2848	3305/2644	0.4	50	750
	J2	3306/2645	3074/2460	2854/2283	0.48	60	900
	M2	4594/3676	4272/3418	3966/3172	0.48	60	900
	K2	2565/2052	2385/1909	2214/1771	0.69	50/60	750/900
	N1	1909/2888	3357/2686	3116/2493	0.69	50/60	750/900
GL10-10-pole	K1	2043/1634	1900/1520	1763/1410	0.4	50	600
	N2	2964/2371	2757/2205	2558/2047	0.4	50	600
	K1	2451/1961	2279/1824	2116/1692	0.48	60	720
	N2	3557/2845	3308/2647	3070/2456	0.48	60	720
	J2	1976/1581	1837/1471	1706/1364	0.69	50/60	600/720
	O1	3088/2470	2872/2297	2665/2132	0.69	50/60	600/720

1) All products are designed for 50Hz and 60Hz.



400–690 V · 4/6/8/10 poles · IP23



Standard design dimensions (all values in mm)

GL11 Specifications

ELECTRICAL CORE	
Voltage Range [V]	400 – 690
Poles	8, 10, 12
Coil and insulation	Bar-wound
AVR	Digital
Bearing type	Sleeve bearing

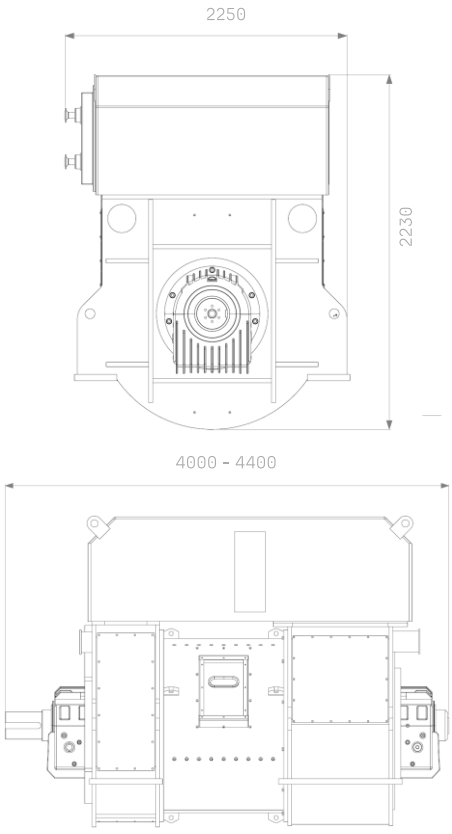
MECHANICAL & PROTECTION	
Bearing Arrangement	Double
Insulation Class	H
Protection	IP23/44/54/55//totally enclosed

INTERFACES & MONITORING	
SAE Adaptors	-
Excitation Power Supply	Auxiliary winding/PMG
Cooling method	IC01, IC31, CACA/CACW
Connection with other machines	Paralleling capability

Ratings referenced at 1 000 m. Apply derating outside reference conditions (see Derating chapter).



400–690 V · 4/6/8/10 poles · IP23



Standard design dimensions (all values in mm)

GL12 Specifications

ELECTRICAL CORE	
Voltage Range [V]	690
Poles	10, 12
Coil and insulation	Bar-wound
AVR	Digital
Bearing type	Sleeve bearing

MECHANICAL & PROTECTION	
Bearing Arrangement	Double
Insulation Class	H
Protection	IP23/44/54/55//totally enclosed

INTERFACES & MONITORING	
SAE Adaptors	-
Excitation Power Supply	Auxiliary winding/PMG
Cooling method	IC01, IC31, CACA/CACW
Connection with other machines	Paralleling capability

Ratings referenced at 1 000 m. Apply derating outside reference conditions (see Derating chapter).

GL05-GL12 300 – 9000kVA

Alternator selection:
Rated load vs Type load (de-rating factors)

To select the right alternator, the following conditions should be taken into consideration:

(1) ENVIRONMENT CONDITIONS

- Derating and uprating for allowable temperature rise compared to allowable temperature rise acc. IEC 60034 or other classification
- Derating regarding altitude above sea level
- Derating due to air inlet filters
- Derating due to non-standard rated voltages
- Derating due to extended voltage zone

(2) DIVERGENT OPERATION MODES

- Derating for power factor range 0.7 to 1.0
- Derating due to converter load
- Uprating for Stand by mode
- Unbalanced load
- Voltage rise due to load switch off
- Wide voltage range
- Wide frequency range
- Stator pitch requirements

* For divergent operation de-rating factors, please contact applications engineering.

Alternator selection: Rated load vs Type load (de-rating factors)

→ AMBIENT TEMPERATURE

If the ambient (alternator air inlet temperature) exceeds 40 °C then the alternator output rating must be reduced using the following tables.

UTILISATION	CLASS H	CLASS F	CLASS B
Temperature °C	Multiplying Factor	Multiplying Factor	Multiplying Factor
45	0.968	0.963	0.955
50	0.935	0.925	0.910
55	0.903	0.888	0.865
60	0.870	0.850	0.820

→ ALTITUDE

All ratings are based on altitude up to 1000 meters above sea level. If the altitude exceeds 1000m then the alternator output ratings must be de-rated using the following table.

ALTITUDE ABOVE SEA LEVEL (in meters)	MULTIPLYING FACTOR
1500	0.95
2000	0.9
2500	0.85
3000	0.8

* For ambient temperatures above 60 °C please consult applications engineering.

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