

TECHNICAL NOTE

Compact medium and high voltage generators for data centers



Data centers are extremely demanding in terms of the reliability and quality of their power supplies. High reliability and excellent harmonic performance make ABB's compact medium and high voltage generators for diesel and gas engines an ideal solution for standby power at data centers. In some cases, these generators are also being used for continuous power at data centers.

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01 ABB compact medium and high voltage synchronous generators offer maximum reliability for data centers

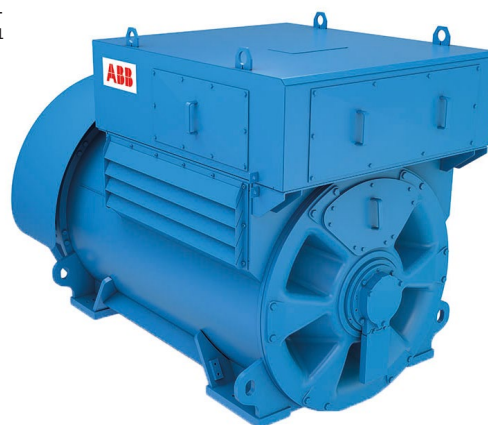
Reliability and low harmonics

Reliability is essential for data centers, and for maximum reliability ABB's compact medium and high voltage synchronous generators feature form wound windings and vacuum pressure impregnation (VPI) for both the stator and rotor. The advanced VPI insulation system gives the windings added strength to withstand vibration, and mechanical and electrical stresses. Since the mid-1970s VPI has proven itself in tens of thousands of generators that are operating successfully all over the world. High performance PMG excitation, supplied as standard, further boosts reliability by ensuring sufficient magnet power at power-up.

A key way to improve the quality of an electricity supply is to reduce its harmonic content. As standard, ABB supplies the generators with a 5/6 winding pitch, which reduces the most significant (5th and 7th) harmonics to minimal levels. At the same time the 5/6 winding pitch increases the generators' overall efficiency, which enables them to be built in a smaller size for each given output level. ABB can also supply generators with a 2/3 winding pitch for cases where the neutral point is direct earthed. This eliminates the 3rd harmonic.

The generators are compact and easy to install. The exciter and PMG are built in, and the main and auxiliary terminals and AVR are all integrated.

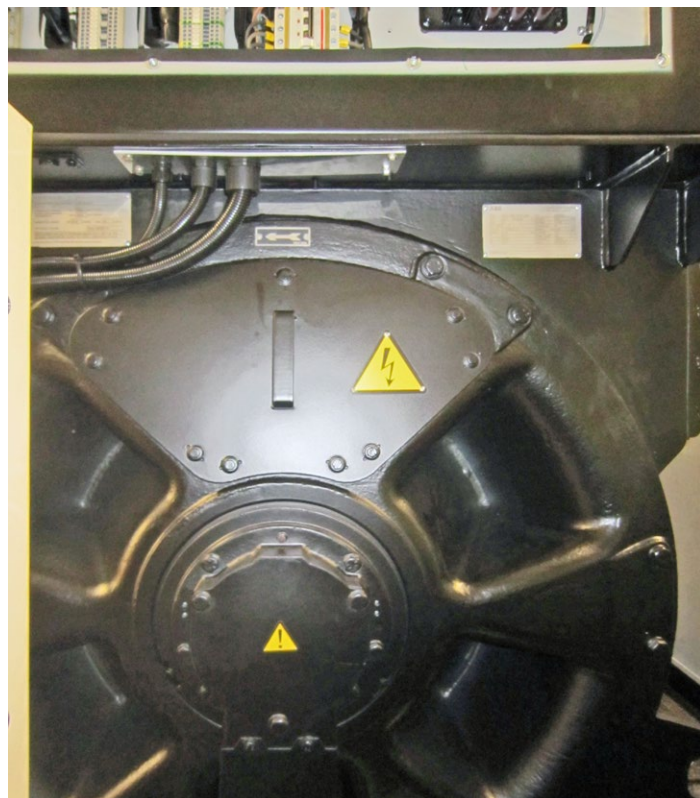
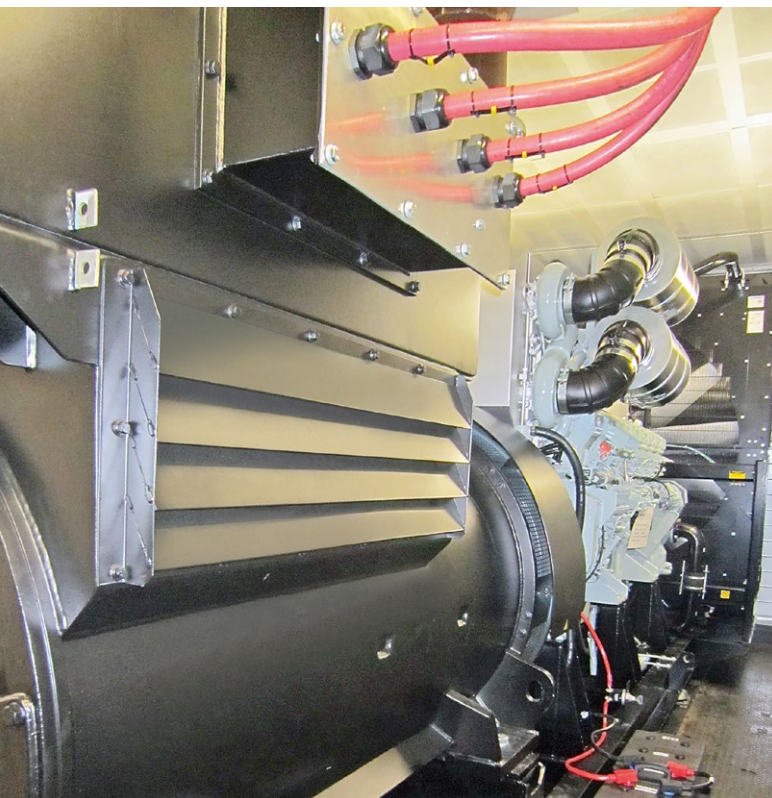
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An analog AVR is provided as standard, with ABB's advanced Unitrol digital AVR available as an option for optimal stability.

The open air cooled, 4- and 6-pole generators are supplied in frame sizes 500 – 630. They cover the power range 0.9 – 7.3 MVA at voltages of 3.3 – 13.8 kV, 50 and 60 Hz. The insulation is class H, with utilization as class F in versions optimized for continuous duty at data centers.

The cost-effective generators are pre-engineered, enabling fast delivery. Their high efficiency reduces fuel consumption for a low overall cost of ownership.



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02 Emergency generator set supplying 2,000 kVA / 11kV 2,000 kVA / 11kV

03 Dimensional drawing of medium and high voltage generator for data center applications

Optimized for data center operation

Five 10.5 kV generators have been optimized for data center operations. These generators are available in frame sizes 500 and 560 and cover outputs in the range 1.75 – 2.75 MVA (continuous duty rating) at 10.5 kV, 50 Hz. The insulation class is H and temperature rise F. These generators can be used for both continuous and standby operation. Other voltage and powers are available upon request.

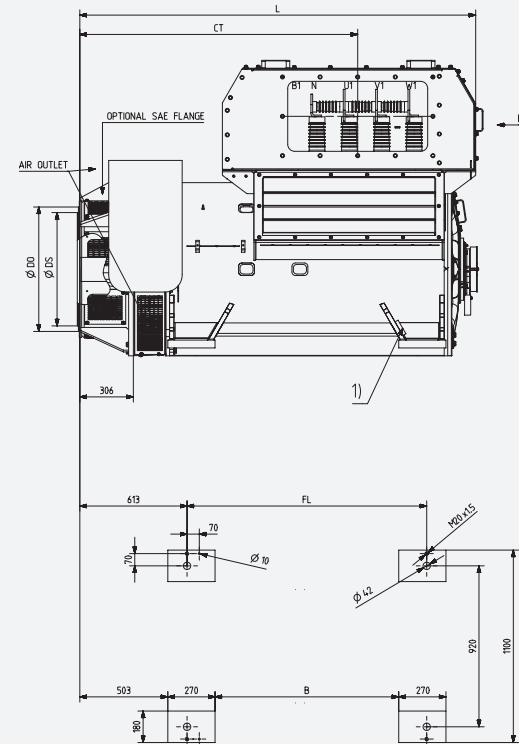
Like all ABB products, the compact medium and high voltage generators are backed by the global ABB support network, which includes over 60 service centers and more than 150 authorized service providers worldwide. Round-the-clock access to spares, repairs and replacements helps customers to minimize downtime and reduce their cost of ownership.

Technical specifications

Type	AMG 0500BH04 DAP	AMG 0500BK04 DAP	AMG 0500BL04 DAP	AMG 0560AG04 DAP	AMG 0560AG04 DAP
Machine name	2016PE169	2016PE170	2016PY109	2016PY172	2016PE153
Duty type	Continuous	Continuous	Continuous	Continuous	Continuous
Protection	IP23 (Default)	IP23 (Default)	IP23 (Default)	IP23 (Default)	IP23 (Default)
Cooling method	IC0A1	IC0A1	IC0A1	IC0A1	IC0A1
Direction of rotation (facing D-end)	Clockwise	Clockwise	Clockwise	Clockwise	Clockwise
Mounting arrangement	IM1101	IM1101	IM1101	IM1101	IM1101
Number of bearings	2	2	2	2	2
Estimated machine weight	5400 kg	5800 kg	6000 kg	6200 kg	6200 kg
Applicable standard	IEC 60034-1	IEC 60034-1	IEC 60034-1	IEC 60034-1	IEC 60034-1
Temperature rise class	F	F	F	F	F
Insulation class	H	H	H	H	H
Rated output	1750 kVA	2000 kVA	2250 kVA	2500 kVA	2750 kVA
Rated el. power	1400 kWe	1600 kWe	1800 kWe	2000 kWe	2200 kWe
Rated voltage	10500 V \pm 5 %*	10500 V \pm 5 %*	10500 V \pm 5 %*	10500 V \pm 5 %*	10500 V \pm 5 %*
Rated current	96.2 A	110 A	123.7 A	137.5 A	151.2 A
Power factor	0.8	0.8	0.8	0.8	0.8
Frequency	50 Hz \pm 2 %*	50 Hz \pm 2 %*	50 Hz \pm 2 %*	50 Hz \pm 2 %*	50 Hz \pm 2 %*
Rated speed	1500 per minute	1500 per minute	1500 per minute	1500 per minute	1500 per minute
Overspeed	1875 per minute	1875 per minute	1875 per minute	1875 per minute	1875 per minute

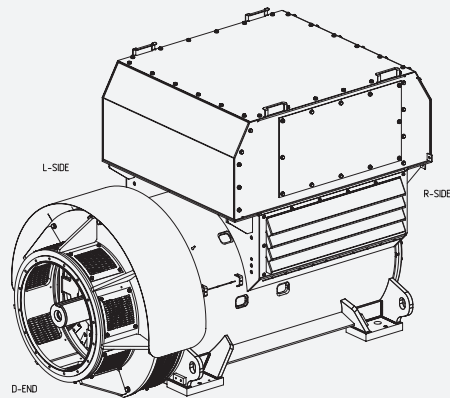
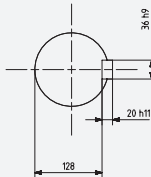
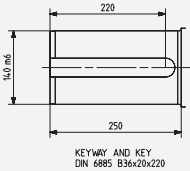
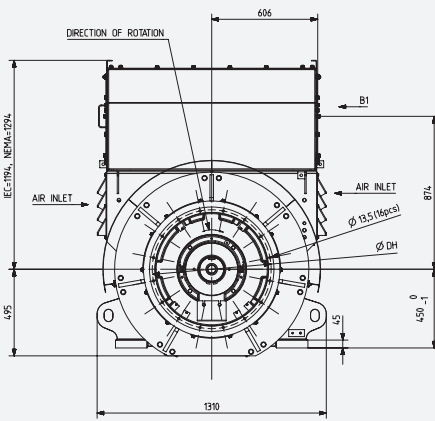
*According to IEC 60034-1

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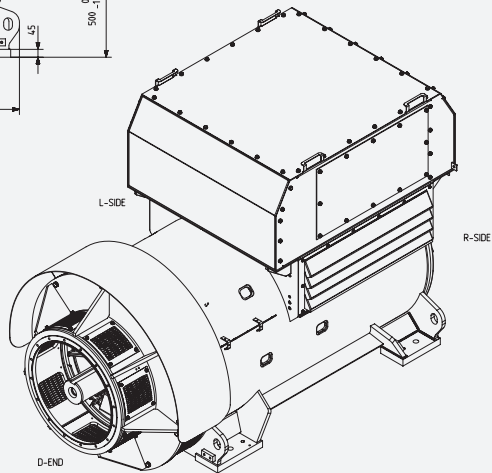
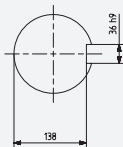
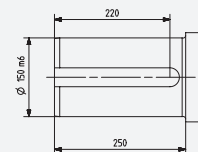
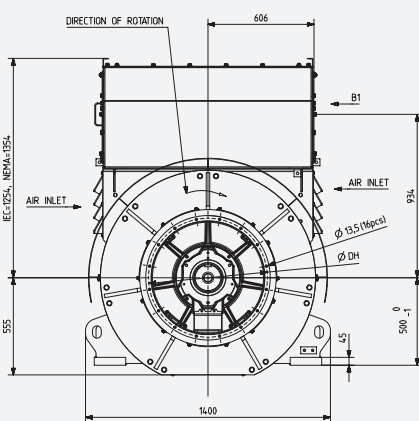
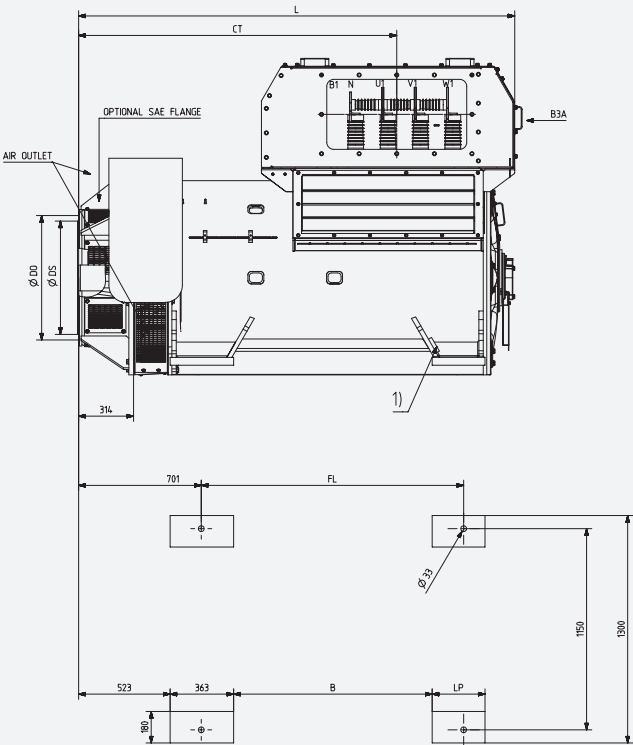


SAE FLANGE	DS	DH	DO
0	647.7	679.45	711.2
00	787.4	850.9	882.65

TYPE	B	FL	CT	L
AMG 0500A..	1050	1370	1588	2253
AMG 0500B..	1250	1570	1788	2453



B1 MAIN TERMINALS
B3A TERMINALS FOR ACCESSORIES
1) EARTHING POINTS ON BOTH SIDES



B1 MAIN TERMINALS
B3A TERMINALS FOR ACCESSORIES
1) EARTHING POINTS ON BOTH SIDES

SAE FLANGE	DS	DH	DO
0	647.7	679.45	711.2
00	787.4	850.9	882.65

TYPE	B	FL	LP	CT	L
AMG 0560A..	1135	1500	302	1818	2493
AMG 0560B..	1235	1600	402	2018	2693

Proven ABB generators enable reliable power production with the lowest life time cost

Your reliable partner

ABB (ABBN: SIX Swiss Ex) is a pioneering technology leader in electrification products, robotics and motion, industrial automation and power grids, serving customers in utilities, industry and transport & infrastructure globally. Continuing more than a 125-year history of innovation, ABB today is writing the future of industrial digitalization and driving the Energy and Fourth Industrial Revolutions. ABB operates in more than 100 countries with about 132,000 employees.

ABB is the technology and market leader in motors and generators for all industrial and marine applications. We have supplied tens of thousands of large motors and generators to customers all over the world, based on more than 120 years of experience in the widest range of solutions.

ABB's global engineering, manufacturing and service network enables our customers to offer reliable and efficient power generation wherever they operate.