
















MarelliMotori
Inspired solutions



POWER GENERATION

SYNCHRONOUS GENERATORS

FOR POWER GENERATION APPLICATIONS - Overview

APPLICATION		LV		MV /HV		LV	MV /HV
PRIME RATED POWER AND CONTINUOUS OPERATING POWER (PRP AND COP)							
	Enclosure	ODP	ODP	ODP	TEWAC	TEWAC	
	Series	MXB	MJB	MJH	MJR	MJHR	
	Power	up to 300 kVA	up to 6.500 kVA	up to 14.000 kVA	up to 6.000 kVA	up to 12.500 kVA	
UPS STAND-BY TELECOM DATA CENTER							
	Enclosure	ODP	ODP	ODP			
	Series	MXB	MJB	MJH			
	Power	up to 300 kVA	up to 6.500 kVA	up to 14.000 kVA			
EMERGENCY							
	Enclosure	ODP	ODP	ODP	TEAAC	TEAAC	
	Series	MXB	MJB	MJH	MJV	MJHV	
	Power	up to 300 kVA	up to 6.500 kVA	up to 14.000 kVA	up to 4.550 kVA	up to 8.750 kVA	

Key	
TEWAC	Totally Enclosed Water to Air Cooled
ODP	Open Drip Proof
TEAAC	Totally Enclosed Air to Air Cooled

Industry standards

IP Code - Degree of protection (IEC - 60034 - 5)

First number		Second number	
2	Machine protected against solid objects greater than 12 mm	2	Dripping water shall have no harmful effect from the vertical up to an angle up to 15°
3	Machine protected against solid objects greater than 2,5 mm	3	Spraying water shall have no harmful effect from the vertical up to an angle up to 60°
4	Machine protected against solid objects greater than 1 mm	4	Splashing water from any direction shall have no harmful effect
5	Machine protected against dust	5	Jets of water from any direction shall have no harmful effect
6	Machine totally protected against tight dust	6	Jets of water from heavy seas from any direction shall have no harmful effect

Example of designation - IP 44

IP	Code IP
4	First number (protection against dust)
4	Second number (protection against liquid)

IC Code - Cooling (IEC - 60034 - 6)

Typical fluids

A	Air
W	Water

Typical circuit arrangements

0	Free circulation
4	Machine surface - cooled
6	Heat exchanger machine mounted (using the motor surrounding coolant)
7	Heat exchanger built in the machine (not using the motor surrounding coolant)
8	Heat exchanger machine mounted (not using the motor surrounding coolant)

Typical methods of circulation

0	Free circulation
1	Self circulation
6	Circulation with independent device

Example of designation - IC 411

IC	Code IC
4	Circuit arrangement
A	Primary fluid
1	Method of circulation for primary fluid
A	Secondary fluid
1	Method of circulation for secondary fluid



INSPIRED PEOPLE

OUR VISION

To become the global market leader of electric rotating machines in all our core markets.

OUR MISSION

Our mission is to aid the sustainable growth of our customers' businesses.

We will provide innovative solutions inspired by relentless efforts to understand our customers' needs and their specific applications.

We will leverage our extensive technical knowledge, product performance and service to increase the competitiveness, efficiency and productivity of our partners worldwide.

INSPIRED SOLUTIONS

Marelli Motori is a leading designer and manufacturer of generators and electric motors.

Nowadays the company enjoys worldwide brand recognition thanks to our extended sales, distribution and service networks across four continents and two manufacturing facilities, in Italy and Malaysia.

MARELLI MOTORI OPERATES IN SIX CORE INDUSTRIES



Power generation

Generators up to 14.000 kVA

Cogeneration

Generators up to 14.000 kVA

Hydropower

Asynchronous generators up to 3.000 kW

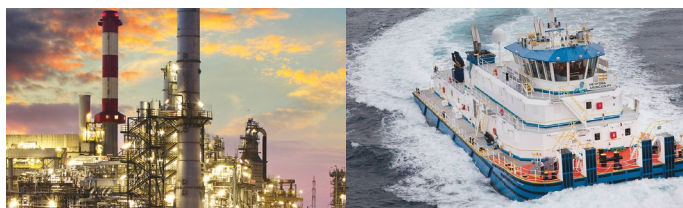
Synchronous generators up to 11.000 kVA



Oil & gas

Generators up to 14.000 kVA

Motors up to 1.600 kW



Industrial motors

Motors up to 10.000 kW

Marine

Generators up to 12.500 kVA

Motors up to 10.000 kW

LOW VOLTAGE

Rating definition

Prime rating

Prime rating is the maximum power available at a variable load for an unlimited number of hours.

Marelli Motori low voltage generators are class H insulated as a standard feature. Under these conditions three different classes of temperature rise are allowed and are here below represented as over-temperature above the reference ambient temperature (ref. amb. Temp. is 40°C as defined in IEC 60034):

Class B temperature rise: generator can reach a temperature rise of 80° above 40° ambient temperature. Class F temperature rise: generator can reach a rise temperature of 105° over 40° ambient temperature.

Class H temperature rise: generator can reach a rise temperature of 125° over 40° ambient temperature.

In all the above conditions an extra 10% overload for 1 hour over 6 hours is allowed.

Over-temperatures are measured by resistance method.

Stand-by rating

Stand-by rating is selected for emergency supply in the event of normal power interruption. This duty service is typically limited to the duration of power cut.

By referring to the continuous duty service, all Marelli Motori generators are able to supply an extra 10% of power for 1 hour without any derating (see Overloads under Operating conditions).

When the emergency power is required continuously for more than one hour, our generators can work in accordance with stand-by rating defined as 150/40 or 163/27 (temperature rise/ambient temperature):

- 150/40 refers to peak continuous ratings and it is according to ISO8528-3.
- 163/27 refers to emergency peak continuous rating. ISO standards do not include this specific rating which is suitable for emergency operations.

Any extra overload over the stand-by ratings is not allowed.

Operating conditions

Altitude

The rated outputs refer to installation up to 1.000 m a.s.l. Above this level the following derating factors must be applied.

Altitude (m asl)	< 1.000	< 1.500	< 2.000	< 2.500	< 3.000
K factor	1,00	0,96	0,93	0,90	0,86

Ambient temperature

The rated outputs given in this catalogue are based on a maximum ambient temperature of 40°C.

When operating at different ambient temperatures the output rating can be obtained by applying the factors as in the following table.

Ambient temperature (°C)	30	35	40	45	50	55
K factor	1,04	1,00	1,00	0,96	0,93	0,9

Power factor

The nominal power factor is 0,8 lagging. For different power factor values the following derating factors must be applied.

Power factor	1,0	0,8	0,7	0,6	0,5	0,3	0
K factor	1,00	1,00	0,93	0,88	0,84	0,82	0,80

Overloads

The nominal power factor is 0,8 lagging. For different power factor values the following derating factors must be applied. This overloads must be occasional and followed by one hour of running at normal load or less. Stand-by ratings are based on continuous supply of loads for any utility power failure. No overloads are allowed in stand-by duty.

Overload during S1 continuous duty	10% for 1 hour 15% for 10 minutes 30% for 4 minutes 50% for 2 minutes
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Single phase operation

MXB

The rated outputs of MXB three-phase (12-wire) wound generators, when reconnected for single phase operation, can be obtained by applying the following derating factors.

	K factor (L-L)				K factor (L-N)			
	Connection				Connection			
MXB Model	Star series	Delta series	Star parallel	Zig - zag	Star series	Delta series	Star parallel	Zig - zag
160 SA4	0,59	0,59	0,59	0,66	0,33	-	0,33	0,33
160 SB4	0,59	0,59	0,59	0,66	0,33	-	0,33	0,33
160 MA4	0,59	0,59	0,59	0,66	0,33	-	0,33	0,33
160 MB4	0,59	0,59	0,59	0,66	0,33	-	0,33	0,33
180 XA4	0,59	0,59	0,59	0,66	0,33	-	0,33	0,33
180 SA4	0,59	0,59	0,59	0,66	0,33	-	0,33	0,33
180 SB4	0,59	0,59	0,59	0,66	0,33	-	0,33	0,33
180 SC4	0,59	0,59	0,59	0,66	0,33	-	0,33	0,33
180 MA4	0,59	0,59	0,59	0,66	0,33	-	0,33	0,33
180 MC4	0,56	0,56	0,56	0,62	0,31	-	0,31	0,31
180 LA4	0,54	0,54	0,54	0,60	0,30	-	0,30	0,30
180 LB4	0,50	0,50	0,50	0,55	0,28	-	0,28	0,28
225 SA4	0,54	0,54	0,54	0,60	0,30	-	0,30	0,30
225 SB4	0,54	0,54	0,54	0,60	0,30	-	0,30	0,30
225 MA4	0,54	0,54	0,54	0,60	0,30	-	0,30	0,30
225 MB4	0,54	0,54	0,54	0,60	0,30	-	0,30	0,30
225 LA4	0,50	0,50	0,50	0,55	0,28	-	0,28	0,28
225 LB4	0,50	0,50	0,50	0,55	0,28	-	0,28	0,28
225 LC4	0,46	0,46	0,46	0,51	0,26	-	0,26	0,26

MJB

Three phase (12-wire) wound generators can be reconnected and derated to 66% for single phase operation (with zig-zag connection). The following derating factors must be applied to the corresponding configurations.

Connection	Star series	Delta series	Star parallel	Zig - zag
K factor (L-L)	0,60	0,50	0,60	0,66
K factor (L-N)	0,33	-	0,33	0,33

Air filters

When dust or moisture are present in the environment, it is strongly recommended to install air filters on the generator. When air filters are used, consider the following derating factors to determinate the maximum output available:

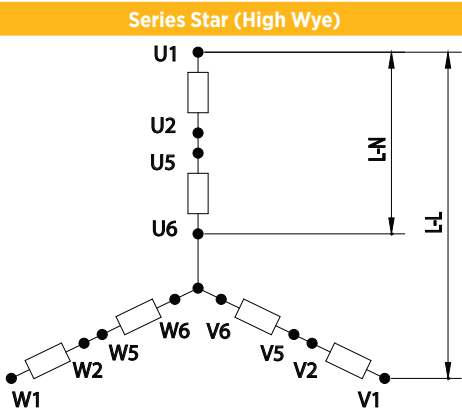
	MXB Model	MJB Model
Inlet air filter	0,97	0,92
Inlet and outlet air filters (IP 43)	0,95	0,85
Inlet and outlet air filters (IP 44)	0,92	0,80

Connections

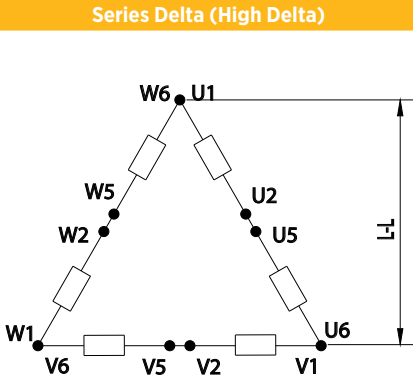
4 Poles

12 Leads / Winding code M0

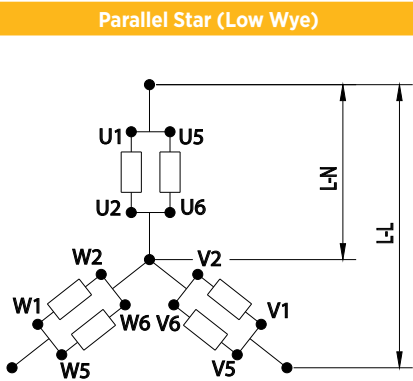
Voltages		
Frequency	L-L	L-N
50 Hz	380	220
	400	230
	415	240
	440	254
60 Hz	380*	220*
	416	240
	440	254
	460	266
	480	277



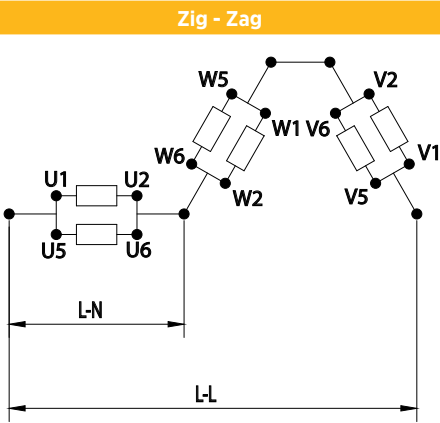
Voltages		
Frequency	L-L	L-N
50 Hz	220	-
	230	-
	240	-
	254	-
60 Hz	220*	-
	240	-
	254	-
	266	-
	277	-



Voltages		
Frequency	L-L	L-N
50 Hz	190	110
	200	115
	208	120
	220	127
60 Hz	190*	110*
	208	120
	220	127
	230	133
	240	138



Voltages		
Frequency	L-L	L-N
50 Hz	220	110
	230	115
	240	120
60 Hz	220*	110*
	240	120
	254	127
	266	133

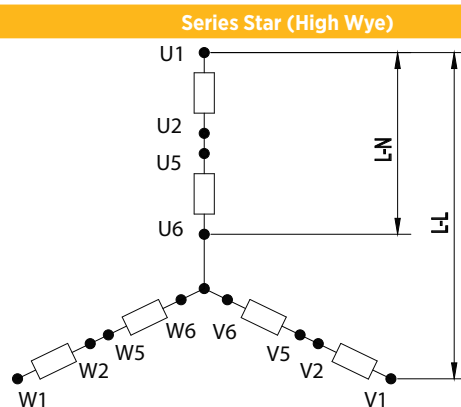


Key
* Voltage not available on MJB 400 frame
- neutral not available

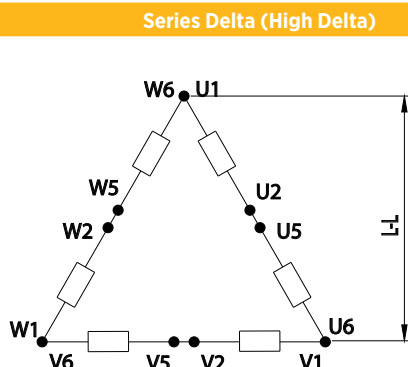
4 Poles

12 Leads / Winding code R3 (60 Hz dedicated)

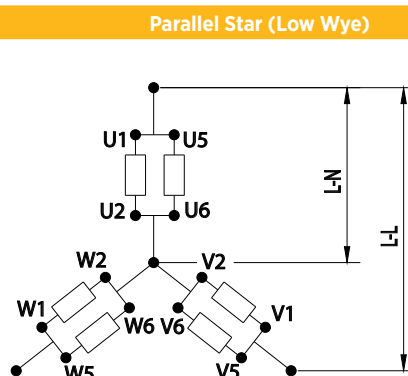
Voltages		
Frequency	L-L	L-N
60 Hz	380	220
	416 ⁽¹⁾	240 ⁽¹⁾
	440* ⁽¹⁾	254* ⁽¹⁾



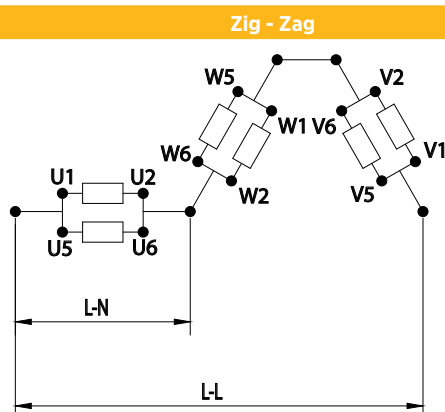
Voltages		
Frequency	L-L	L-N
60 Hz	220	-
	240 ⁽¹⁾	-
	254* ⁽¹⁾	-



Voltages		
Frequency	L-L	L-N
60 Hz	190	110
	208 ⁽¹⁾	120 ⁽¹⁾
	220* ⁽¹⁾	127* ⁽¹⁾



Voltages		
Frequency	L-L	L-N
60 Hz	220	110
	240 ⁽¹⁾	120 ⁽¹⁾
	254* ⁽¹⁾	127* ⁽¹⁾



Key

* voltage not available on MJB355MB4, MJB400MB4

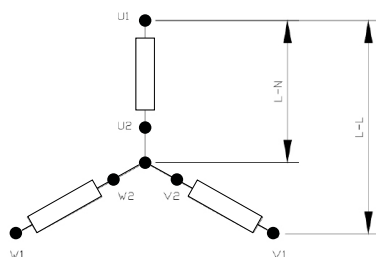
- neutral not available

⁽¹⁾ Voltage not available on MXB generators

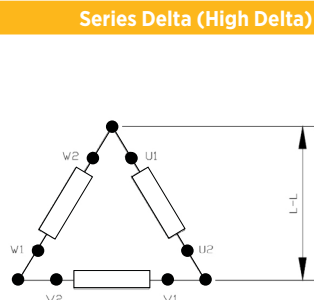
4 Poles

6 Leads / Winding code 17 - 80

Voltages		
Frequency	L-L	L-N
50 Hz	380	220
	400	230
	415	240
60 Hz	416	240
	440	254
	460	266
	480	277



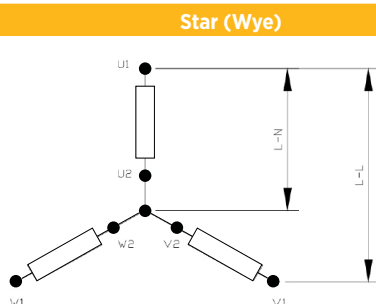
Voltages		
Frequency	L-L	L-N
50 Hz	220	-
	230	-
	240	-
60 Hz	240	-
	254	-
	266	-
	277	-



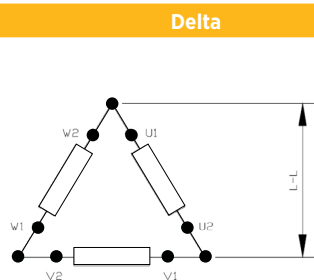
4 Poles

6 Leads / Winding code 08 (60 Hz dedicated)

Voltages		
Frequency	L-L	L-N
60 Hz	380	220
	416	240
	440*	254*



Voltages		
Frequency	L-L	L-N
60 Hz	220	-
	240	-
	254*	-

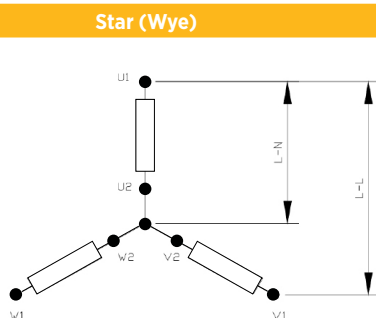


4 Poles

6 Leads / Winding code V5 - Z3

Voltages	
Frequency	L-L
50 Hz	690
60 Hz	690

- neutral available in separate terminal box



Key

* voltage available only on MJB355MA4

- neutral not available

AVR - SELECTION TABLE (LOW VOLTAGE)

		ANALOGUE					DIGITAL			
AVR type		MARK VX	-	MARK V	MGC I	MGC II	-	MEC-20	MEC-100 series	
AVR type for PMG		-	MARK XX	-	-	-	MARK X	MEC-20	MEC-100 series	
Generator frame size	standard	MXB 160 ÷ 225	-	160 ÷ 250	500 ÷ 560	630 ÷ 800	-	315 ÷ 450	-	-
	on request	-	MXB 160 ÷ 225	-	-	-	315 ÷ 560	MXB 160 ÷ 225 MJB 250	400 ÷ 900	400 ÷ 900
AVR supply		Aux winding or mains	PMG	Aux winding or mains	Aux winding or mains	Aux winding or mains	PMG	Aux winding, mains or PMG	Aux winding, mains or PMG	Aux winding, mains or PMG
Voltage sensing		Single phase	Single phase	Single phase	Single phase	Single phase	Three phase	Three phase	Three phase	Three phase
Voltage remote control		Arrangement								
Radio interference suppressor		Internal	Internal	Internal	Internal	Internal	Internal	Internal	Arrangement for external filters	
Over-excitation device		Aux winding	PMG	Aux winding	Aux winding, Arrangement for VARICOMP	Aux winding, Arrangement for VARICOMP	PMG	Aux winding, PMG	Aux winding, PMG, Arrangement for VARICOMP	Aux winding, PMG, Arrangement for VARICOMP
Parallel operation with the mains		-	-	-	Arrangement for external A.P.F.R				Included	
Parallel operation with similar generators		-	-	-	Included	Included	Included	Included	Included	Included
Standard protections		-	-	Field over-current	-	-	Field over-current	Field over-current	Field over-current, field over-voltage, generator over/under voltage, generator over-current, loss of sensing.	
Limiters		Under frequency	Under frequency	Under frequency	Under frequency	Under frequency	Under frequency	Under frequency	Under-frequency, over/under-excitation	
Functions		-	-	-	Auxiliary inputs	Auxiliary inputs	Auxiliary inputs	Auxiliary inputs	PC interface, soft start, auxiliary inputs, contact inputs	PC interface, soft start, auxiliary inputs, contact inputs, DMS

M / H VOLTAGE

Rating definition

Prime rating

Prime rating is the maximum power available at a variable load for an unlimited number of hours.

Marelli Motori low voltage generators are class H insulated as a standard feature. Under these conditions three different classes of temperature rise are allowed and are here below represented as over-temperature above the reference ambient temperature (ref. amb. Temp. is 40°C as defined in IEC 60034):

Class B temperature rise: generator can reach a temperature rise of 80° above 40° ambient temperature. Class F temperature rise: generator can reach a rise temperature of 105° over 40° ambient temperature.

Class H temperature rise: generator can reach a rise temperature of 125° over 40° ambient temperature.

In all the above conditions an extra 10% overload for 1 hour over 6 hours is allowed.

Over-temperatures are measured by resistance method.

Stand-by rating

Stand-by rating is selected for emergency supply in the event of normal power interruption. This duty service is typically limited to the duration of power cut.

By referring to the continuous duty service, all Marelli Motori generators are able to supply an extra 10% of power for 1 hour without any derating (see Overloads under Operating conditions).

When the emergency power is required continuously for more than one hour, our generators can work in accordance with stand-by rating defined as 150/40 or 163/27 (temperature rise/ambient temperature):

- 150/40 refers to peak continuous ratings and it is according to ISO8528-3.
- 163/27 refers to emergency peak continuous rating. ISO standards do not include this specific rating which is suitable for emergency operations.

Any extra overload over the stand-by ratings is not allowed.

Operating conditions

Altitude

The rated outputs refer to installation up to 1.000 m a.s.l. Above this level the following derating factors must be applied.

Altitude (m asl)	< 1.000	< 1.500	< 2.000	< 2.500	< 3.000
K factor	1,00	0,96	0,93	0,90	0,86

Ambient temperature

The rated outputs given in this catalogue are based on a maximum ambient temperature of 40°C.

When operating at different ambient temperatures the output rating can be obtained by applying the factors as in the following table.

Ambient temperature (°C)	30	35	40	45	50	55
K factor	1,04	1,00	1,00	0,96	0,93	0,9

Power factor

The nominal power factor is 0,8 lagging. For different power factor values the following derating factors must be applied.

Power factor	1,0	0,8	0,7	0,6	0,5	0,3	0
K factor	1,00	1,00	0,93	0,88	0,84	0,82	0,80

Overloads

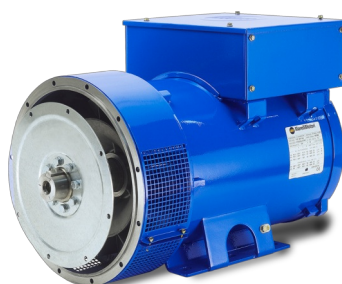
The nominal power factor is 0,8 lagging. For different power factor values the following derating factors must be applied. This overloads must be occasional and followed by one hour of running at normal load or less. Stand-by ratings are based on continuous supply of loads for any utility power failure. No overloads are allowed in stand-by duty.

Overload during S1 continuous duty	10% for 1 hour 15% for 10 minutes 30% for 4 minutes 50% for 2 minutes
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AVR - SELECTION TABLE

1000 - 6900 V							> 6900 V	
		ANALOGUE			DIGITAL		DIGITAL	
AVR type		MGC I	MGC II	-	MEC-100 series		MEC-100 series	
AVR type for PMG		-	-	MARK X	MEC-100 series		-	
Marelli Motori code		10001467	10004378	10005161	10009777	10009784	10009777	10009784
Generator frame size	standard	400 ÷ 560	630 ÷ 800+	-	-		400 ÷ 800+	
	on request	-	-	400 ÷ 560	400 ÷ 800+		-	
AVR supply		Aux winding		PMG	Aux winding, PMG		PMG	
Voltage sensing		Single phase		Three phase *	Three phase *		Three phase *	
Voltage remote control		Arrangement			-		Arrangement	
Radio interference suppressor		Internal			Arrangement for external filters		Arrangement for external filters	
Over-excitation device		Arrangement for VARICOMP		PMG	PMG, Arrangement for VARICOMP		PMG	
Parallel operation with the mains		Arrangement for external A.P.F.R.			Included		Included	
Parallel operation with similar generators		Included			Included		Included	
Standard protections		-	-	Field over-current	Field over-current, field over-voltage, generator over/under voltage, generator over-current, loss of sensing		Field over-current, field over-voltage, generator over/under voltage, generator over-current, loss of sensing	
Limiters		Under-frequency			Under-frequency, over/under-excitation		Under-frequency, over/under-excitation	
Functions		Auxiliary inputs			PC interface, soft start, auxiliary inputs, contact inputs.	PC interface, soft start, auxiliary inputs, contact inputs, DMS	PC interface, soft start, auxiliary inputs, contact inputs.	PC interface, soft start, auxiliary inputs, contact inputs, DMS

* Single phase is standard, three-phase sensing is optional



MJB

Model	MJB
Power	Up to 6.500 kVA
Voltages	Up to 690 V
Frame	160 ± 900
Poles	4, 6, 8, 10 and 12 (over contact MM)
Cooling	IC 01
IP	IP 23. Available up to IP 44 with filters.
Enclosure	ODP - Open Drip Proof
Main Applications	Data center, Emergency, PRP and COP, Stand-by, UPS
Sector	Power generation

Poles	4 Poles	6 Poles	8 Poles	10 Poles	12 Poles
kVA 60 Hz	5.000	5.000	6.500	6.000	5.400

Certificates and testing

Applicable standards

Generators are designed in compliance with:

- IEC EN 60034 - 1
- BS 4999 - 5000
- VDE 0530
- NF 51 - 100
- NF 51 - 111
- OVE M - 10
- NEMA MG 1.32

Generators conform to EU rules.

UL/CSA certifications available on request.

Aderence to ISO 8528 group G preformance classes.

Certificate

Test Certificate supplied with the machine.

Material certificates in accordance with EN 10204 : 2001 can be supplied.

Main components

Housing

Rigid frame, rugged welded steel fabrication (EN 10025 - S235 JR).

Frame is provided with side ribs to increase the strength.

Marelli Generators for continuous duty operation are designed to meet vibration levels per IEC 60034-14, ISO 10816-1 and BS 5000-3.

Shield

Made of spheroidal graphite cast-iron (EN 1563) or grey cast-iron (EN 1561) up to 630 frame size.

Made of structural steel (EN 10025 – S235 JR) above.

Shaft

General data

Made in carbon steel and obtained by lamination (EN 10083 – 2 C40 – TN).

Shaft is obtained by forging from 290 mm diameter and above.

The shaft is tested at the manufacturer in order to check it is defect-free.

Shaft design

Double bearing generator: cylindrical shaft with key.

Main terminal box

Mounted on top up to 630 frame size.

Mounted on side from 710 frame size.

Made of formable steels EN 10130.

Fan	Made of aluminum alloy (EN 1706) or structural steel (EN 10025-S235 JR) depending on application requirements.
Construction	
Cooling System	IC 01 as per IEC60034-6
Degree of protection	IP 23 as per IEC60034-5
Mounting	Horizontal - IM 1001 or IM 1101 as per IEC 60034-7. Other mounting available on request.
Technical data	
Stator/Rotor core	Laminated and enamel-insulated on both sides to minimise eddy-current losses
Rotor	<p>Salient pole type.</p> <p>Made by copper flat wire.</p> <p>H class insulated with enamel coating.</p> <p>Winding retaining by pass-through bars of high quality steel.</p> <p>Rotating rectifier: Graetz diode bridge with 6 diodes.</p> <p>Rotors are dynamically balanced with a half key applied to the shaft extension in accordance with IEC 60034-14 to vibration grade normal A.</p> <p>Special vibration level construction are available.</p>

Bearing	<p>General data</p> <p>Single or double antifriction bearing grease lubricated (ball or roller type) or oil lubricated sleeve bearing.</p> <p>The theoretical lifetime of bearings, L10h according to ISO 281/1 standard, of standard horizontal construction generators, without external forces (radial and / or axial) is in excess of 50.000 hours. On request, the lifetime of bearings, L10h can be in excess of 100.000 hours.</p> <p>Locating bearings are on the D end side and floating bearings on the ND end side.</p> <p>Bearing selection</p> <p>Antifriction bearings up to 800 frame size included.</p> <p>Sleeve bearings from 900 frame size included (available for smaller frame sizes).</p> <p>Regreasing system:</p> <p>Up to 250 frame size:</p> <p>D-end bearing is prelubricated with inner bearing cap and without grease nipple</p> <p>ND-end bearing is with shield (2Z) without regreasing system</p> <p>315 - 355 frame size:</p> <p>D-end bearing is prelubricated with inner bearing cap and without grease nipple</p> <p>ND-end bearing is with shield (2Z) without regreasing system</p> <p>400 frame size:</p> <p>D-end bearing is fitted with inner bearing cap and with grease nipple</p> <p>ND-end bearing is prelubricated with inner bearing cap and without grease nipple</p> <p>450 frame size and above: both bearings are fitted with grease nipple.</p> <p>Bearing insulation</p> <p>ND end bearing can be insulated to prevent any harmful circulating current from passing through the bearing surfaces.</p> <p>Insulated antifriction bearings in standard configuration:</p> <p>4, 6 poles: insulated ND end bearing from 630 frame size</p> <p>8 poles: insulated bearing from 400 frame size</p> <p>10 poles: insulated bearing from 500 frame size</p> <p>All ND end sleeve bearings are insulated as standard.</p>
Impregnation system	<p>Stator and rotor are VPI treated with an unsaturated polyester amide resin which is polymerised in an oven.</p>

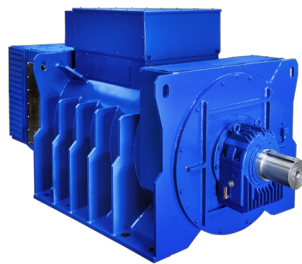
Insulation system	<p>Stator: H class insulated with a synthetic enamel (class F standard for generators with $H \geq 800$ or form wound form $H = 400$. Class H option with BH technology).</p> <p>Rotor: H class insulated with a synthetic enamel.</p>
Protective treatments	<p>Epoxivinilic and polyacrylic. Total minimum thickness 120 micromillimeters.</p> <p>Epoxivinilic: Epoxy two component products, with vinyl change.</p> <p>Polyacrylic: Two components polyurethane product formulated with unmodified hydroxyl acrylic resin.</p>
Operating conditions	
Overloads	<p>During continuous duty (S1), the following overloads are allowed:</p> <p>10% for 1 hour</p> <p>15% for 10 minutes</p> <p>30% for 4 minutes</p> <p>50% for 2 minutes</p> <p>These overloads must be occasional and followed by one hour of running at normal load or less.</p>
Parallel operations	<p>All generators are provided with a amply sized damper cage and are suitable for parallel operations with other generators, when equipped with the paralleling unit. A power factor regulator (to work in parallel with the main) is available on request.</p>
Transient ratings	<p>All generators can be designed to meet specific reactance values ($x'd$ and $x''d$). Values can be confirmed by contacting Marelli Motori.</p>
Three pahse short circuit current	<p>All generators equipped with overboosting device ensure a three phase short circuit current (I_{cc}) higher than 3 times the rated current (I_n): $I_{cc} > 300\% I_n$</p>
Radio interference	<p>All generators are equipped with Class B Group 1 radio interference filters as defined by EN 55011.</p>
THD (Total Harmonic Distortion)	<p>The no-load voltage wave form is sinusoidal with THD content less than 2%.</p>

Vibrations	Vibration level is in accordance with ISO 10816. Measurement, evaluation and limits of vibration severity are in accordance with IEC 60034-14.															
Auxiliary device																
AVR	<p>Automatic voltage regulator mounted on board.</p> <table><tr><td>Size</td><td>Type</td></tr><tr><td>160 - 250</td><td>MARK V analog</td></tr><tr><td>315 - 450</td><td>MEC 20 analog/digital</td></tr><tr><td>500 - 560</td><td>M40FA610A analog</td></tr><tr><td>630 - 710</td><td>M63FA310A analog</td></tr><tr><td>800 - 900</td><td>MEC 100 digital</td></tr></table> <p>Digital AVR available for all sizes on request.</p>	Size	Type	160 - 250	MARK V analog	315 - 450	MEC 20 analog/digital	500 - 560	M40FA610A analog	630 - 710	M63FA310A analog	800 - 900	MEC 100 digital			
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Overboosting device	<p>Low Voltage</p> <table><tr><td></td><td>Size</td><td>Type</td></tr><tr><td>Low voltage</td><td>160 - 450 (4 poles)</td><td>Auxiliary winding</td></tr><tr><td></td><td>160 - 450 (>4 poles)</td><td>Varicomp</td></tr><tr><td></td><td>500 - 710 (all polarities)</td><td>Varicomp</td></tr><tr><td></td><td>800 - 900</td><td>PMG</td></tr></table>		Size	Type	Low voltage	160 - 450 (4 poles)	Auxiliary winding		160 - 450 (>4 poles)	Varicomp		500 - 710 (all polarities)	Varicomp		800 - 900	PMG
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Space heaters	<p>Heaters installed at ND end side.</p> <table><tr><td>Size</td><td>Power(W)</td></tr><tr><td>400 - 560</td><td>400</td></tr><tr><td>630 - 710</td><td>600</td></tr><tr><td>800 - 900</td><td>800</td></tr></table>	Size	Power(W)	400 - 560	400	630 - 710	600	800 - 900	800							
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800 - 900	800															
RTD-PT100	<p>RTD devices in standard configuration: 1+1 RTD on each phase of stator winding 1 RTD on each bearing Terminals in auxiliary terminal box. Other configurations available: DUPLEX type RTD for inlet / outlet air</p>															

Optional features

List

Reinforced construction for high linear vibrations
 flanged shaft for direct coupling with engine flywheel (in case of single bearing solution)
 neutral point terminals in separate terminal box
 increase protection degree up to IP 44
 lifted feet to couple the generator with engine on existing baseframe
 redundant rotating rectifier with 12 diodes
 insulated bearing and earthing brush
 AVR supplied loose
 automatic power factor control (analog type)
 digital AVR MEC100 for frame 400 – 710 (supplied loose)
 digital AVR MEC100D with diode failure monitoring
 redundant AVR system
 excitation/overboosting PMG mounted on generator
 lubrication system for sleeve bearing
 other options available on request.



MJH

Model	MJH
Power	Up to 14.000 kVA
Voltages	Up to 15.000 V
Frame	400 ± 1.250
Poles	4, 6, 8, 10 and 12 (over contact MM)
Cooling	IC 01
IP	IP 23. Available up to IP 44 with filters.
Enclosure	ODP - Open Drip Proof
Main Applications	Data center, Emergency, PRP and COP, Stand-by, UPS
Sector	Power generation

Poles	4 Poles	6 Poles	8 Poles	10 Poles	12 Poles
kVA 60 Hz	10.000	12.500	12.500	12.500	10.000

Certificates and testing

Applicable standards

Generators are designed in compliance with:

- IEC EN 60034 - 1
- BS 4999 - 5000
- VDE 0530
- NF 51 - 100
- NF 51 - 111
- OVE M - 10
- NEMA MG 1.32

Generators conform to EU rules.
 UL/CSA certifications available on request.
 Adherence to ISO 8528 group G performance classes.

Certificate

Test Certificate supplied with the machine.
 Material certificates in accordance with EN 10204 : 2001 can be supplied.

Main components

Housing

Rigid frame, rugged welded steel fabrication (EN 10025 - S235 JR).
 Frame is provided with side ribs to increase the strength.
 Marelli Generators for continuous duty operation are designed to meet vibration levels per IEC 60034-14, ISO 10816-1 and BS 5000-3.

Shield

Made of spheroidal graphite cast-iron (EN 1563) or grey cast-iron (EN 1561) up to 630 frame size.
 Made of structural steel (EN 10025 – S235 JR) above.

Shaft

General data
 Made in carbon steel and obtained by lamination (EN 10083 – 2 C40 – TN).
 Shaft is obtained by forging from 290 mm diameter and above.
 The shaft is tested to ensure defect-free performance.

Shaft design
 Double bearing generator: cylindrical shaft with key.

Main terminal box

Mounted on top.
 Made of formable steels EN 10130.

Fan

Made of aluminum alloy (EN 1706) or structural steel (EN 10025–S235 JR) depending on application requirements.

Construction	
Enclosure	ODP - Open Drip Proof
Cooling System	IC 01 as per IEC60034-6
Degree of protection	IP 23 as per IEC60034-5
Mounting	Horizontal - IM 1001 or IM 1101 as per IEC 60034-7. Other mounting available on request.
Technical data	
Stator/Rotor core	Laminated and enamel-insulated on both sides to minimise eddy-current losses
Rotor	Salient pole type. Made by copper flat wire. H class insulated with enamel coating. Winding retaining by pass-through bars of high quality steel. Rotating rectifier: Graetz diode bridge with 6 diodes. Rotors are dynamically balanced with a half key applied to the shaft extension in accordance with IEC 60034-14 to vibration grade normal A. Special vibration level construction are available.

Bearing	<p>General data</p> <p>Single or double antifriction bearing grease lubricated (ball or roller type) or oil lubricated sleeve bearing.</p> <p>The theoretical lifetime of bearings, L10h according to ISO 281/1 standard, of standard horizontal construction generators, without external forces (radial and / or axial) is in excess of 50.000 hours. On request, the lifetime of bearings, L10h can be in excess of 100.000 hours. Locating bearings are on the D end side and floating bearings on the ND end side.</p> <p>Bearing selection</p> <p>Antifriction bearings up to 800 frame size included.</p> <p>Sleeve bearings from 900 frame size included (available for smaller frame sizes).</p> <p>Regreasing system:</p> <p>Up to 400 frame size:</p> <p>D-end bearing is fitted with inner bearing cap and with grease nipple</p> <p>ND-end bearing is prelubricated with inner bearing cap and without grease nipple</p> <p>450 frame size and above: both bearings are fitted with grease nipple.</p> <p>Bearing insulation</p> <p>ND end bearing can be insulated to prevent any harmful circulating current from passing through the bearing surfaces.</p> <p>Insulated antifriction bearings in standard configuration:</p> <p>4, 6 poles: insulated ND end bearing from 630 frame size</p> <p>8 poles: insulated bearing from 400 frame size</p> <p>10 poles: insulated bearing from 500 frame size</p> <p>All ND end sleeve bearings are insulated as standard.</p>
Impregnation system	<p>Stator and rotor are VPI treated with an unsaturated polyester amide resin which is polymerised in an oven.</p>
Insulation system	<p>Stator: F class insulated with a synthetic enamel (class H option with BH technology).</p> <p>Rotor: H class insulated with a synthetic enamel.</p>
Protective treatments	<p>Epoxivinilic and polyacrylic. Total minimum thickness 120 micromillimeters.</p> <p>Epoxivinilic: Epoxy two component products, with vinyl change.</p> <p>Polyacrylic: Two components polyurethane product formulated with unmodified hydroxyl acrylic resin.</p>

Operating conditions

Overloads	<p>During continuous duty (S1), the following overloads are allowed:</p> <p>10% for 1 hour</p> <p>15% for 10 minutes</p> <p>30% for 4 minutes</p> <p>50% for 2 minutes</p> <p>These overloads must be occasional and followed by one hour of running at normal load or less.</p>
Parallel operations	<p>All generators are provided with a amply sized damper cage and are suitable for parallel operations with other generators, when equipped with the paralleling unit. A power factor regulator (to work in parallel with the main) is available on request.</p>
Transient ratings	<p>All generators can be designed to meet specific reactance values ($x'd$ and $x''d$). Values can be confirmed by contacting Marelli Motori.</p>
Three pahse short circuit current	<p>All generators equipped with overboosting device ensure a three phase short circuit current (I_{cc}) higher than 3 times the rated current (I_n): $I_{cc} > 300\% I_n$</p>
Radio interference	<p>All generators are equipped with Class B Group 1 radio interference filters as defined by EN 55011.</p>
THD (Total Harmonic Distortion)	<p>The no-load voltage wave form is sinusoidal with THD content less than 2%.</p>
Vibrations	<p>Vibration level is in accordance with ISO 10816.</p> <p>Measurement, evaluation and limits of vibration severity are in accordance with IEC 60034-14.</p>

Auxiliary device

AVR

Automatic voltage regulator mounted on board.

Size	Type
400 - 450	MEC 20 analog/ digital
500 - 560	M40FA610A analog
630 - 710	M63FA310A analog
800 - 1250	MEC 100 digital

Digital AVR available for all sizes on request.

Overboosting device

	Size	Type
Medium Voltage	All	CT + Overboosting device
High voltage	All	PMG

Space heaters

Heaters installed at ND-end side.

Size	Power(W)
400 - 560	400
630 - 710	600
800 - 900	800
1000	1000
1120	1200
1250	1400

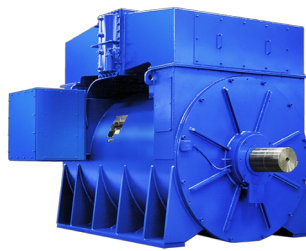
RTD-PT100

RTD devices in standard configuration:
 1+1 RTD on each phase of stator winding
 1 RTD on each bearing
 Terminals in auxiliary terminal box.
 Other configurations available:
 DUPLEX type
 RTD for inlet / outlet air

Optional features

List

Reinforced construction for high linear vibrations
flanged shaft for direct coupling with engine flywheel (in case of single bearing solution)
neutral point terminals in separate terminal box
increase protection degree up to IP 44 with filters
lifted feet to couple the generator with engine on existing baseframe
redundant rotating rectifier with 12 diodes
insulated bearing and earthing brush
AVR supplied loose
automatic power factor control (analog type)
digital AVR MEC100 for frame 400 – 710 (supplied loose)
digital AVR MEC100D with diode failure monitoring
redundant AVR system
excitation/overboosting PMG mounted on generator
lubrication system for sleeve bearing
other options available on request.



MJR

Model	MJR
Power	Up to 6.000 kVA
Voltages	Up to 690 V
Frame	250 ± 900
Poles	4, 6, 8, 10 and 12 (over contact MM)
Cooling	IC 81W/ IC 86W
IP	IP 44. Available up to IP 56.
Enclosure	TEWAC - Totally Enclosed Water to Air Cooled
Main Applications	PRP and COP
Sector	Power generation

Poles	4 Poles	6 Poles	8 Poles	10 Poles	12 Poles
kVA 60 Hz	4.600	5.000	6.000	6.000	5.400

Certificates and testing

Applicable standards

Generators are designed in compliance with:

- IEC EN 60034 - 1
- BS 4999 - 5000
- VDE 0530
- NF 51 - 100
- NF 51 - 111
- OVE M - 10
- NEMA MG 1.32

Generators conform to EU rules.
 UL/CSA certifications available on request.
 Adherence to ISO 8528 group G performance classes.

Certificate

Test Certificate supplied with the machine.
 Material certificates in accordance with EN 10204 : 2001 can be supplied.

Main components

Housing

Rigid frame, rugged welded steel fabrication (EN 10025 - S235 JR).
 Frame is provided with side ribs to increase the strength.
 Marelli Generators for continuous duty operation are designed to meet vibration levels per IEC 60034-14, ISO 10816-1 and BS 5000-3.

Shield

Made of spheroidal graphite cast-iron (EN 1563) or grey cast-iron (EN 1561) up to 630 frame size.
 Made of structural steel (EN 10025 – S235 JR) above.

Shaft

General data
 Made in carbon steel and obtained by lamination (EN 10083 – 2 C40 – N).
 Shaft is obtained by forging from 290 mm diameter and above.
 The shaft is tested at the manufacturer in order to check it is defect-free.

Shaft design
 Double bearing generator: cylindrical shaft with key.

Main terminal box

Mounted on side (right or left will be selected).
 Made of formable steels EN 10130.

Fan

Made of aluminum alloy (EN 1706) or structural steel (EN 10025–S235 JR) depending on application requirements.

Heat Exchanger	Construction Mounted on top of alternator. Double tube made of CuNi 90/10. Copper fins housing. Equipped with water leakage detector. Exchanger data Designed pressure 6 bar Test pressure 10 bar Power: up to 200 kW Water flow: up to 18 m ³ /h Max glycol: 30% Type of water: fresh water or marine (salt) water Flanges: PN6 – PN10 – Special (ANSI) Position can be adjusted to site conditions
Construction	
Enclosure	TEWAC - Totally Enclosed Water to Air Cooled
Cooling System	IC81W as per IEC60034-6. Primary fluid (water) is flowing by external water system. Internal air is flowing by a fan mounted on the shaft of the generator at the driven side.
Degree of protection	IP 44 as per IEC60034-5. (Available up to IP 56)
Mounting	Horizontal - IM 1001 or IM 1101 as per IEC 60034-7. Other mounting available on request.
Technical data	
Stator/Rotor core	Laminated and enamel-insulated on both sides to minimise eddy-current losses
Rotor	Salient pole type. Made by copper flat wire. H class insulated with enamel coating. Winding retaining by pass-through bars of high quality steel. Rotating rectifier: Graetz diode bridge with 6 diodes. Rotors are dynamically balanced with a half key applied to the shaft extension in accordance with IEC 60034-14 to vibration grade normal A. Special vibration level construction are available.

Bearing	<p>General data</p> <p>Single or double antifriction bearing grease lubricated (ball or roller type) or oil lubricated sleeve bearing.</p> <p>The theoretical lifetime of bearings, L10h according to ISO 281/1 standard, of standard horizontal construction generators, without external forces (radial and / or axial) is in excess of 50.000 hours. On request, the lifetime of bearings, L10h can be in excess of 100.000 hours. Locating bearings are on the D end side and floating bearings on the ND end side.</p> <p>Bearing selection</p> <p>Antifriction bearings up to 560 frame size included.</p> <p>Sleeve bearings from 630 frame size included (available for smaller frame sizes).</p> <p>Regreasing system:</p> <p>Up to 250 frame size:</p> <p>D-end bearing is prelubricated with inner bearing cap and without grease nipple</p> <p>ND-end bearing is with shield (2Z) without regreasing system</p> <p>315 - 355 frame size:</p> <p>D-end bearing is prelubricated with inner bearing cap and without grease nipple</p> <p>ND-end bearing is with shield (2Z) without regreasing system</p> <p>400 frame size:</p> <p>D-end bearing is fitted with inner bearing cap and with grease nipple</p> <p>ND-end bearing is prelubricated with inner bearing cap and without grease nipple</p> <p>450 frame size and above: both bearings are fitted with grease nipple.</p> <p>Bearing insulation</p> <p>ND end bearing can be insulated to prevent any harmful circulating current from passing through the bearing surfaces.</p> <p>Insulated antifriction bearings in standard configuration:</p> <p>4, 6 poles: insulated ND end bearing from 630 frame size</p> <p>8 poles: insulated bearing from 400 frame size</p> <p>10 poles: insulated bearing from 500 frame size</p> <p>All ND end sleeve bearings are insulated as standard.</p>
Impregnation system	<p>Stator and rotor are VPI treated with an unsaturated polyester amide resin which is polymerised in an oven.</p>

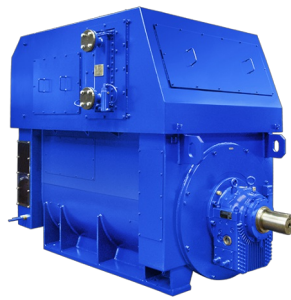
Insulation system	<p>Stator: H class insulated with a synthetic enamel (class F standard for generators with $H \geq 800$ or form wound form $H=400$. Class H option with BH technology).</p> <p>Rotor: H class insulated with a synthetic enamel.</p>
Protective treatments	<p>Epoxivinilic and polyacrylic. Total minimum thickness 120 micromillimeters.</p> <p>Epoxivinilic: Epoxy two component products, with vinyl change.</p> <p>Polyacrylic: Two components polyurethane product formulated with unmodified hydroxyl acrylic resin.</p>
Operating conditions	
Overloads	<p>During continuous duty (S1), the following overloads are allowed:</p> <p>10% for 1 hour</p> <p>15% for 10 minutes</p> <p>30% for 4 minutes</p> <p>50% for 2 minutes</p> <p>These overloads must be occasional and followed by one hour of running at normal load or less.</p>
Parallel operations	<p>All generators are provided with a amply sized damper cage and are suitable for parallel operations with other generators, when equipped with the paralleling unit. A power factor regulator (to work in parallel with the main) is available on request.</p>
Transient ratings	<p>All generators can be designed to meet specific reactance values ($x'd$ and $x''d$). Values can be confirmed by contacting Marelli Motori.</p>
Three pahse short circuit current	<p>All generators equipped with overboosting device ensure a three phase short circuit current (I_{cc}) higher than 3 times the rated current (I_n): $I_{cc} > 300\% I_n$</p>
Radio interference	<p>All generators are equipped with Class B Group 1 radio interference filters as defined by EN 55011.</p>
THD (Total Harmonic Distortion)	<p>The no-load voltage wave form is sinusoidal with THD content less than 2%.</p>

Vibrations	Vibration level is in accordance with ISO 10816. Measurement, evaluation and limits of vibration severity are in accordance with IEC 60034-14.																				
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Space heaters	Heaters installed at ND-end side. <table><tr><td>Size</td><td>Power(W)</td></tr><tr><td>400 - 560</td><td>400</td></tr><tr><td>630 - 710</td><td>600</td></tr><tr><td>800 - 900</td><td>800</td></tr></table>			Size	Power(W)	400 - 560	400	630 - 710	600	800 - 900	800										
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Optional features

List

Reinforced construction for high linear vibrations
 flanged shaft for direct coupling with engine flywheel (in case of single bearing solution)
 neutral point terminals in separate terminal box
 terminal box inside air duct (internal terminal box)
 cooling system IC 86W with additional forced ventilation
 cooler mounted on side
 increase protection degree up to IP 54, IP 55 or IP 56
 lifted feet to couple the generator with engine on existing baseframe
 redundant rotating rectifier with 12 diodes
 insulated bearing and earthing brush
 AVR supplied loose
 automatic power factor control (analog type)
 digital AVR MEC100 for frame 400 – 710 (supplied loose)
 digital AVR MEC100D with diode failure monitoring
 redundant AVR system
 excitation/overboosting PMG mounted on generator
 lubrication system for sleeve bearing
 other options available on request.



MJHR

Model	MJHR
Power	Up to 12.500 kVA
Voltages	Up to 15.000 V
Frame	400 ÷ 1.250
Poles	4, 6, 8, 10 and 12 (over contact MM)
Cooling	IC 81W
IP	IP 44. Available up to IP 56.
Enclosure	TEWAC - Totally Enclosed Water to Air Cooled
Main Applications	PRP
Sector	Power generation

Poles	4 Poles	6 Poles	8 Poles	10 Poles	12 Poles
kVA 60 Hz	10.000	12.500	12.500	12.500	10.000

Certificates and testing

Applicable standards

Generators are designed in compliance with:

- IEC EN 60034 - 1
- BS 4999 - 5000
- VDE 0530
- NF 51 - 100
- NF 51 - 111
- OVE M - 10
- NEMA MG 1.32

Generators conform to EU rules.
 UL/CSA certifications available on request.
 Adherence to ISO 8528 group G performance classes.

Certificate

Test Certificate supplied with the machine.
 Material certificates in accordance with EN 10204 : 2001 can be supplied.

Main components

Housing

Rigid frame, rugged welded steel fabrication (EN 10025 - S235 JR).
 Frame is provided with side ribs to increase the strength.
 Marelli Generators for continuous duty operation are designed to meet vibration levels per IEC 60034-14, ISO 10816-1 and BS 5000-3.

Shield

Made of spheroidal graphite cast-iron (EN 1563) or grey cast-iron (EN 1561) up to 630 frame size.
 Made of structural steel (EN 10025 – S235 JR) above.

Shaft

General data
 Made in carbon steel and obtained by lamination (EN 10083 – 2 C40 – TN).
 Shaft is obtained by forging from 290 mm diameter and above.
 The shaft is tested at the manufacturer in order to check it is defect-free.

Shaft design
 Double bearing generator: cylindrical shaft with key.

Main terminal box

Mounted on side (right or left will be selected).
 Made of formable steels EN 10130.

Fan

Made of aluminum alloy (EN 1706) or structural steel (EN 10025–S235 JR) depending on application requirements.

Heat Exchanger	<p>Construction</p> <p>Mounted on top of alternator.</p> <p>Double tube made of CuNi 90/10.</p> <p>Copper fins housing.</p> <p>Equipped with water leakage detector.</p> <p>Exchanger data</p> <p>Designed pressure 6 bar</p> <p>Test pressure 10 bar</p> <p>Power: up to 200 kW</p> <p>Water flow: up to 18 m³/h</p> <p>Max glycol: 30%</p> <p>Type of water: fresh water or marine (salt) water</p> <p>Flanges:</p> <p>PN6 – PN10 – Special (ANSI)</p> <p>Position can be adjusted to site conditions.</p>
Construction	
Cooling System	<p>IC81W as per IEC60034-6. Primary fluid (water) is flowing by external water system. Internal air is flowing by a fan mounted on the shaft of the generator at the driven side.</p>
Degree of protection	<p>IP 44 as per IEC60034-5. (Available up to IP 56)</p>
Mounting	<p>Horizontal - IM 1001 or IM 1101 as per IEC 60034-7.</p> <p>Other mounting available on request.</p>
Technical data	
Stator/Rotor core	<p>Laminated and enamel-insulated on both sides to minimise eddy-current losses</p>
Rotor	<p>Salient pole type.</p> <p>Made by copper flat wire.</p> <p>H class insulated with enamel coating.</p> <p>Winding retaining by pass-through bars of high quality steel.</p> <p>Rotating rectifier: Graetz diode bridge with 6 diodes.</p> <p>Rotors are dynamically balanced with a half key applied to the shaft extension in accordance with IEC 60034-14 to vibration grade normal A.</p> <p>Special vibration level construction are available.</p>

Bearing	<p>General data</p> <p>Single or double antifriction bearing grease lubricated (ball or roller type) or oil lubricated sleeve bearing.</p> <p>The theoretical lifetime of bearings, L10h according to ISO 281/1 standard, of standard horizontal construction generators, without external forces (radial and / or axial) is in excess of 50.000 hours. On request, the lifetime of bearings, L10h can be in excess of 100.000 hours.</p> <p>Locating bearings are on the D end side and floating bearings on the ND end side.</p> <p>Bearing selection</p> <p>Antifriction bearings up to 800 frame size included.</p> <p>Sleeve bearings from 900 frame size included (available for smaller frame sizes)</p> <p>Regreasing system:</p> <p>Up to 400 frame size:</p> <p>D-end bearing is fitted with inner bearing cap and with grease nipple</p> <p>ND-end bearing is prelubricated with inner bearing cap and without grease nipple</p> <p>450 frame size and above: both bearings are fitted with grease nipple.</p> <p>Bearing insulation</p> <p>ND end bearing can be insulated to prevent any harmful circulating current from passing through the bearing surfaces.</p> <p>Insulated antifriction bearings in standard configuration:</p> <p>4, 6 poles: insulated ND end bearing from 630 frame size</p> <p>8 poles: insulated bearing from 400 frame size</p> <p>10 poles: insulated bearing from 500 frame size</p> <p>All ND end sleeve bearings are insulated as standard.</p>
Impregnation system	<p>Stator and rotor are VPI treated with an unsaturated polyester amide resin which is polymerised in an oven.</p>
Insulation system	<p>Stator: F class insulated with a synthetic enamel (class F standard for low voltage generators from 800 to 1250 frame size), (class H option for low, medium and high voltage generator with BH technology).</p> <p>Rotor: H class insulated with a synthetic enamel.</p>

Protective treatments	<p>Epoxivinilic and polyacrylic. Total minimum thickness 120 micromillimeters.</p> <p>Epoxivinilic: Epoxy two component products, with vinyl change.</p> <p>Polyacrylic: Two components polyurethane product formulated with unmodified hydroxyl acrylic resin.</p>
Operating conditions	
Overloads	<p>During continuous duty (S1), the following overloads are allowed:</p> <p>10% for 1 hour</p> <p>15% for 10 minutes</p> <p>30% for 4 minutes</p> <p>50% for 2 minutes</p> <p>These overloads must be occasional and followed by one hour of running at normal load or less.</p>
Parallel operations	<p>All generators are provided with a amply sized damper cage and are suitable for parallel operations with other generators, when equipped with the paralleling unit. A power factor regulator (to work in parallel with the main) is available on request.</p>
Transient ratings	<p>All generators can be designed to meet specific reactance values ($x'd$ and $x''d$). Values can be confirmed by contacting Marelli Motori.</p>
Three pahse short circuit current	<p>All generators equipped with overboosting device ensure a three phase short circuit current (I_{cc}) higher than 3 times the rated current (I_n): $I_{cc} > 300\% I_n$</p>
Radio interference	<p>All generators are equipped with Class B Group 1 radio interference filters as defined by EN 55011.</p>
THD (Total Harmonic Distortion)	<p>The no-load voltage wave form is sinusoidal with THD content less than 2%.</p>
Vibrations	<p>Vibration level is in accordance with ISO 10816.</p> <p>Measurement, evaluation and limits of vibration severity are in accordance with IEC 60034-14.</p>

Auxiliary device

AVR

Automatic voltage regulator mounted on board.

Size	Type
400 - 450	MEC 20 analog/ digital
500 - 560	M40FA610A analog
630 - 710	M63FA310A analog
800 - 1.250	MEC 100 digital

Digital AVR available for all sizes on request.

Overboosting device

	Size	Type
Medium Voltage	All	CT + Overboosting device
High voltage	All	PMG

Space heaters

Size	Power(W)
400 - 560	400
630 - 710	600
800 - 900	800
1.000	1.000
1.120	1.200
1.250	1.400

Heaters installed at ND-end side.

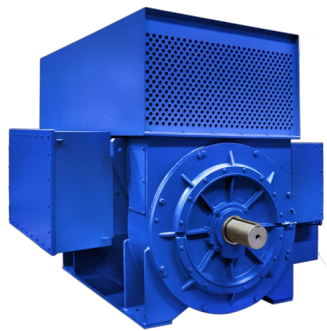
RTD-PT100

RTD devices in standard configuration:
 1+1 RTD on each phase of stator winding
 1 RTD on each bearing
 Terminals in auxiliary terminal box.
 Other configurations available:
 DUPLEX type
 RTD for inlet / outlet air
 RTD for inlet / outlet water

Optional features

List

Reinforced construction for high linear vibrations
 flanged shaft for direct coupling with engine flywheel (in case of single bearing solution)
 neutral point terminals in separate terminal box
 terminal box inside air duct (internal terminal box)
 cooling system IC 86W with additional forced ventilation
 cooler mounted on side
 increase protection degree up to IP 54, IP 55 or IP 56
 lifted feet to couple the generator with engine on existing baseframe
 redundant rotating rectifier with 12 diodes
 insulated bearing and earthing brush
 AVR supplied loose
 automatic power factor control (analog type)
 digital AVR MEC100 for frame 400 – 710 (supplied loose)
 digital AVR MEC100D with diode failure monitoring
 redundant AVR system
 excitation/overboosting PMG mounted on generator
 lubrication system for sleeve bearing
 other options available on request.



MJV

Model	MJV
Power	Up to 4.550 kVA
Voltages	Up to 690 V
Frame	250 ± 900
Poles	4, 6, 8, 10 and 12 (over contact MM)
Cooling	IC 611
IP	IP 44. Available up to IP 56.
Enclosure	TEAAC – Totally Enclosed Air to Air Cooled
Main Applications	Emergency
Sector	Power generation

Poles	4 Poles	6 Poles	8 Poles	10 Poles	12 Poles
kVA 60 Hz	3.500	4.550	4.550	4.550	4.000

Certificates and testing

Applicable standards

Generators are designed in compliance with:

- IEC EN 60034 - 1
- BS 4999 - 5000
- VDE 0530
- NF 51 - 100
- NF 51 - 111
- OVE M - 10
- NEMA MG 1.32

Generators conform to EU rules.

UL/CSA certifications available on request.

Aderence to ISO 8528 group G preformance classes.

Certificate

Test Certificate supplied with the machine.

Material certificates in accordance with EN 10204 : 2001 can be supplied.

Main components

Housing

Rigid frame, rugged welded steel fabrication (EN 10025 - S235 JR). Frame is provided with side ribs to increase the strength.

Marelli Generators for continuous duty operation are designed to meet vibration levels per IEC 60034-14, ISO 10816-1 and BS 5000-3.

Shield

Made of spheroidal graphite cast-iron (EN 1563) or grey cast-iron (EN 1561) up to 630 frame size.

Made of structural steel (EN 10025 – S235 JR) above.

Shaft

General data

Made in carbon steel and obtained by lamination (EN 10083 – 2 C40 – N). Shaft is obtained by forging from 290 mm diameter and above. The shaft is tested at the manufacturer in order to check it is defect-free.

Shaft design

Double bearing generator: cylindrical shaft with key.

Main terminal box

Mounted on side (right or left will be selected).

Made of formable steels EN 10130.

Fan

Made of aluminum alloy (EN 1706) or structural steel (EN 10025–S235 JR) depending on application requirements.

Internal Fan

Made of structural steel (EN 10025 - S235 JR)

Heat Exchanger	Construction Mounted on top of alternator Tube made of P - AlMgSi UNI 3569 Housing: EN 10025 - 5235JR
Construction	
Cooling System	IC 611 as per IEC60034-6. Primary fluid (air) driven by a second fan (internal fan) mounted on shaft at ND end side. Internal air is flowing by a fan mounted on the shaft of the generator at the driven side.
Degree of protection	IP 44 as per IEC60034-5
Mounting	Horizontal - IM 1001 or IM 1101 as per IEC 60034-7. Other mounting available on request.
Technical data	
Stator/Rotor core	Laminated and enamel-insulated on both sides to minimise eddy-current losses
Rotor	Salient pole type. Made by copper flat wire. H class insulated with enamel coating. Winding retaining by pass-through bars of high quality steel. Rotating rectifier: Graetz diode bridge with 6 diodes. Rotors are dynamically balanced with a half key applied to the shaft extension in accordance with IEC 60034-14 to vibration grade normal A. Special vibration level construction are available.

Bearing

General data

Single or double antifriction bearing grease lubricated (ball or roller type) or oil lubricated sleeve bearing.

The theoretical lifetime of bearings, L10h according to ISO 281/1 standard, of standard horizontal construction generators, without external forces (radial and / or axial) is in excess of 50.000 hours. On request, the lifetime of bearings, L10h can be in excess of 100.000 hours. Locating bearings are on the D end side and floating bearings on the ND end side.

Bearing selection

Antifriction bearings up to 800 frame size included. Sleeve bearings from 900 frame size included (available for smaller frame sizes).

Regreasing system:

Up to 250 frame size:

D-end bearing is prelubricated with inner bearing cap and without grease nipple

ND-end bearing is with shield (2Z) without regreasing system
315 - 355 frame size:

D-end bearing is fitted with inner bearing cap and with grease nipple

ND-end bearing is with shield (2Z) without regreasing system
400 frame size:

D-end bearing is fitted with inner bearing cap and with grease nipple

ND-end bearing is prelubricated with inner bearing cap and without grease nipple

450 frame size and above: both bearings are fitted with grease nipple.

Bearing insulation

ND end bearing can be insulated to prevent any harmful circulating current from passing through the bearing surfaces.

Insulated antifriction bearings in standard configuration:

4, 6 poles: insulated ND end bearing from 630 frame size

8 poles: insulated bearing from 400 frame size

10 poles: insulated bearing from 500 frame size

All ND end sleeve bearings are insulated as standard.

Impregnation system

Stator and rotor are VPI treated with an unsaturated polyester amide resin which is polymerised in an oven.

Insulation system	<p>Stator: H class insulated with a synthetic enamel (class F standard for generators with $H \geq 800$ or form wound form $H=400$. Class H option with BH technology).</p> <p>Rotor: H class insulated with a synthetic enamel.</p>
Protective treatments	<p>Epoxivinilic and polyacrylic. Total minimum thickness 120 micromillimeters.</p> <p>Epoxivinilic: Epoxy two component products, with vinyl change.</p> <p>Polyacrylic: Two components polyurethane product formulated with unmodified hydroxyl acrylic resin.</p>
Operating conditions	
Overloads	<p>During continuous duty (S1), the following overloads are allowed:</p> <p>10% for 1 hour</p> <p>15% for 10 minutes</p> <p>30% for 4 minutes</p> <p>50% for 2 minutes</p> <p>These overloads must be occasional and followed by one hour of running at normal load or less.</p>
Parallel operations	<p>All generators are provided with a amply sized damper cage and are suitable for parallel operations with other generators, when equipped with the paralleling unit. A power factor regulator (to work in parallel with the main) is available on request.</p>
Transient ratings	<p>All generators can be designed to meet specific reactance values ($x'd$ and $x''d$). Values can be confirmed by contacting Marelli Motori.</p>
Three pahse short circuit current	<p>All generators equipped with overboosting device ensure a three phase short circuit current (I_{cc}) higher than 3 times the rated current (I_n): $I_{cc} > 300\% I_n$</p>
Radio interference	<p>All generators are equipped with Class B Group 1 radio interference filters as defined by EN 55011.</p>
THD (Total Harmonic Distortion)	<p>The no-load voltage wave form is sinusoidal with THD content less than 2%.</p>

Vibrations	Vibration level is in accordance with ISO 10816. Measurement, evaluation and limits of vibration severity are in accordance with IEC 60034-14.																	
Auxiliary device																		
AVR	Automatic voltage regulator mounted on board. <table><tr><td>Size</td><td colspan="2">Type</td></tr><tr><td>250</td><td colspan="2">MARK V analog</td></tr><tr><td>315 - 450</td><td colspan="2">MEC 20 analog/ digital</td></tr><tr><td>500 - 560</td><td colspan="2">M40FA610A analog</td></tr><tr><td>630 - 710</td><td colspan="2">M63FA310A analog</td></tr></table> Digital AVR available for all sizes on request.			Size	Type		250	MARK V analog		315 - 450	MEC 20 analog/ digital		500 - 560	M40FA610A analog		630 - 710	M63FA310A analog	
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Overboosting device	Low voltage <table><tr><td></td><td>Size</td><td>Type</td></tr><tr><td>Low voltage</td><td>250 - 450 (4 poles)</td><td>Auxiliary winding</td></tr><tr><td></td><td>400 - 450 (>4 poles)</td><td>Varicomp</td></tr><tr><td></td><td>500 - 710 (all polarities)</td><td>Varicomp</td></tr><tr><td></td><td>800 - 900</td><td>PMG</td></tr></table>				Size	Type	Low voltage	250 - 450 (4 poles)	Auxiliary winding		400 - 450 (>4 poles)	Varicomp		500 - 710 (all polarities)	Varicomp		800 - 900	PMG
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	800 - 900	PMG																
Space heaters	Heaters installed at ND-end side. <table><tr><td>Size</td><td>Power(W)</td></tr><tr><td>400 - 560</td><td>400</td></tr><tr><td>630 - 710</td><td>600</td></tr><tr><td>800 - 900</td><td>800</td></tr></table>			Size	Power(W)	400 - 560	400	630 - 710	600	800 - 900	800							
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Optional features

List

Flanged shaft for direct coupling with engine flywheel (in case of single bearing solution)
 neutral point terminals in separate terminal box
 cooling system IC 616 with additional forced ventilation
 increase protection degree up to IP 54, IP 55 or IP 56
 lifted feet to couple the generator with engine on existing baseframe
 redundant rotating rectifier with 12 diodes
 insulated bearing and earthing brush
 AVR supplied loose
 automatic power factor control (analog type)
 digital AVR MEC100 for frame 400 – 710 (supplied loose)
 digital AVR MEC100D with diode failure monitoring
 redundant AVR system
 excitation/overboosting PMG mounted generator
 other options available on request.



MJHV

Model	MJHV
Power	Up to 8.750 kVA
Voltages	Up to 15.000 V
Frame	400 ± 1250
Poles	4, 6, 8, 10 and 12 (over contact MM)
Cooling	IC 611
IP	IP 55. Available up to IP 56
Enclosure	TEAAC – Totally Enclosed Air to Air Cooled
Main Applications	Emergency
Sector	Power generation

Poles	4 Poles	6 Poles	8 Poles	10 Poles	12 Poles
kVA 60 Hz	7.000	8.750	8.750	8.750	7.000

Certificates and testing

Applicable standards

Generators are designed in compliance with:

- IEC EN 60034 - 1
- BS 4999 - 5000
- VDE 0530
- NF 51 - 100
- NF 51 - 111
- OVE M - 10
- NEMA MG 1.32

Generators conform to EU rules.
 UL/CSA certifications available on request.
 Adherence to ISO 8528 group G performance classes.

Certificate

Test Certificate supplied with the machine.
 Material certificates in accordance with EN 10204 : 2001 can be supplied.

Main components

Housing

Rigid frame, rugged welded steel fabrication (EN 10025 - S235 JR).
 Frame is provided with side ribs to increase the strength.
 Marelli Generators for continuous duty operation are designed to meet vibration levels per IEC 60034-14, ISO 10816-1 and BS 5000-3.

Shield

Made of spheroidal graphite cast-iron (EN 1563) or grey cast-iron (EN 1561) up to 630 frame size.
 Made of structural steel (EN 10025 – S235 JR) above.

Shaft

General data Made in carbon steel and obtained by lamination (EN 10083 – 2 C40 – N). Shaft is obtained by forging from 290 mm diameter and above. The shaft is tested at the manufacturer in order to check it is defect-free.
Shaft design
 Double bearing generator: cylindrical shaft with key.

Main terminal box

Mounted on side (right or left will be selected).
 Made of formable steels EN 10130.

Fan

Made of aluminum alloy (EN 1706) or structural steel (EN 10025–S235 JR) depending on application requirements.

Internal Fan

Made of structural steel (EN 10025 - S235 JR)

Heat Exchanger	Construction Mounted on top of alternator Tube made of P - AlMgSi UNI 3569 Housing: EN 10025 - 5235JR
Construction	
Cooling System	IC 611 as per IEC60034-6. Primary fluid (air) driven by a second fan (internal fan) mounted on shaft at ND end side. Internal air is flowing by a fan mounted on the shaft of the generator at the driven side.
Degree of protection	IP 55 as per IEC60034-5
Mounting	Horizontal - IM 1001 or IM 1101 as per IEC 60034-7. Other mounting available on request.
Technical data	
Stator/Rotor core	Laminated and enamel-insulated on both sides to minimise eddy-current losses
Rotor	Salient pole type. Made by copper flat wire. H class insulated with enamel coating. Winding retaining by pass-through bars of high quality steel. Rotating rectifier: Graetz diode bridge with 6 diodes. Rotors are dynamically balanced with a half key applied to the shaft extension in accordance with IEC 60034-14 to vibration grade normal A. Special vibration level construction are available.

Bearing	<p>General data</p> <p>Single or double antifriction bearing grease lubricated (ball or roller type) or oil lubricated sleeve bearing.</p> <p>The theoretical lifetime of bearings, L10h according to ISO 281/1 standard, of standard horizontal construction generators, without external forces (radial and / or axial) is in excess of 50.000 hours. On request, the lifetime of bearings, L10h can be in excess of 100.000 hours. Locating bearings are on the D end side and floating bearings on the ND end side.</p> <p>Bearing selection</p> <p>Antifriction bearings up to 800 frame size included.</p> <p>Sleeve bearings from 900 frame size included (available for smaller frame sizes).</p> <p>Regreasing system:</p> <p>Up to 400 frame size:</p> <p>D-end bearing is fitted with inner bearing cap and with grease nipple</p> <p>ND-end bearing is prelubricated with inner bearing cap and without grease nipple</p> <p>450 frame size and above: both bearings are fitted with grease nipple.</p> <p>Bearing insulation</p> <p>ND end bearing can be insulated to prevent any harmful circulating current from passing through the bearing surfaces.</p> <p>Insulated antifriction bearings in standard configuration:</p> <p>4, 6 poles: insulated ND end bearing from 630 frame size</p> <p>8 poles: insulated bearing from 400 frame size</p> <p>10 poles: insulated bearing from 500 frame size</p> <p>All ND end sleeve bearings are insulated as standard.</p>
Impregnation system	<p>Stator and rotor are VPI treated with an unsaturated polyester amide resin which is polymerised in an oven.</p>
Insulation system	<p>Stator: F class insulated with a synthetic enamel (class H option with BH technology).</p> <p>Rotor: H class insulated with a synthetic enamel.</p>
Protective treatments	<p>Epoxivinilic and polyacrylic. Total minimum thickness 120 micromillimeters.</p> <p>Epoxivinilic: Epoxy two component products, with vinyl change.</p> <p>Polyacrylic: Two components polyurethane product formulated with unmodified hydroxyl acrylic resin.</p>

Operating conditions

Overloads	<p>During continuous duty (S1), the following overloads are allowed:</p> <p>10% for 1 hour</p> <p>15% for 10 minutes</p> <p>30% for 4 minutes</p> <p>50% for 2 minutes</p> <p>These overloads must be occasional and followed by one hour of running at normal load or less.</p>
Parallel operations	<p>All generators are provided with a amply sized damper cage and are suitable for parallel operations with other generators, when equipped with the paralleling unit. A power factor regulator (to work in parallel with the main) is available on request.</p>
Transient ratings	<p>All generators can be designed to meet specific reactance values ($x'd$ and $x''d$). Values can be confirmed by contacting Marelli Motori.</p>
Three pahse short circuit current	<p>All generators equipped with overboosting device ensure a three phase short circuit current (I_{cc}) higher than 3 times the rated current (I_n): $I_{cc} > 300\% I_n$</p>
Radio interference	<p>All generators are equipped with Class B Group 1 radio interference filters as defined by EN 55011.</p>
THD (Total Harmonic Distortion)	<p>The no-load voltage wave form is sinusoidal with THD content less than 2%.</p>
Vibrations	<p>Vibration level is in accordance with ISO 10816.</p> <p>Measurement, evaluation and limits of vibration severity are in accordance with IEC 60034-14.</p>

Auxiliary device

AVR

Automatic voltage regulator mounted on board.

Size	Type
400 - 450	MEC 20 analog/ digital
500 - 560	M40FA610A analog
630 - 710	M63FA310A analog
800 - 1.250	MEC 100 digital

Digital AVR available for all sizes on request.

Overboosting device

	Size	Type
Medium Voltage	All	CT + Overboosting device
High voltage	All	PMG

Space heaters

Size	Power(W)
400 - 560	400
630 - 710	600
800 - 900	800
1.000	1.000
1.120	1.200
1.250	1.400

Heaters installed at ND-end side.

RTD-PT100

RTD devices in standard configuration:
 1+1 RTD on each phase of stator winding
 1 RTD on each bearing
 Terminals in auxiliary terminal box.
 Other configurations available:
 DUPLEX type
 RTD for inlet / outlet air
 RTD into oil tank for sleeve bearing

Optional features

List

Flanged shaft for direct coupling with engine flywheel (in case of single bearing solution)
 neutral point terminals in separate terminal box
 cooling system IC 616 with additional forced ventilation
 increase protection degree up to IP 54, IP 55 or IP 56
 lifted feet to couple the generator with engine on existing baseframe
 redundant rotating rectifier with 12 diodes
 insulated bearing and earthing brush
 AVR supplied loose
 automatic power factor control (analog type)
 digital AVR MEC100 for frame 400 – 710 (supplied loose)
 digital AVR MEC100D with diode failure monitoring
 redundant AVR system
 excitation/overboosting PMG mounted generator
 other options available on request.



MXB

Model	MXB
Power	Up to 375 kVA
Voltages	Up to 480 V
Frame	160 ÷ 250
Poles	4
Cooling	IC01 as per IEC 60034-6
IP	IP23 as per IEC 60034-5 (up to IP 44)
Enclosure	ODP - Open Drip Proof
Main Applications	Data center, Emergency, Portable, PRP and COP, Stand-by, UPS
Sector	Power generation

Certificates and testing

Applicable standards

Generators are designed in compliance with:

IEC 60034 - 1
 CEI 2-3
 BS 4999 - 5000
 VDE 0530
 NF 51 - 100
 NF 51 - 111
 OVE M - 10
 NEMA MG 1.32
 Generators conform to EU rules
 UL 1004 - 1
 UL 1004 - 4
 C22.2 No. 100

Certificate

Test Certificate supplied with the machine
 Material certificates in accordance with EN 10204 : 2001 can be supplied

Main components

Housing

Rigid frame, rugged welded steel fabrication (EN 10025 - S235 JR)
 Frame is provided with side ribs to increase the strength
 Marelli Generators for continuous duty operation are designed to meet vibration levels per IEC 60034-14, ISO 10816-1 and BS 5000-3

Shield NDE

Aluminium alloy 46100S T6 (from 160 to 225 frame size)
 Cast iron GJL 300 (250 frame size)

Shaft

Carbon steel - hot rolled (EN 10025 - S355 JR)

Terminal board

Made of Bakelite PF2736 7-pins (from 160 to 180 frame size)
 9-pins (from 225 to 250 frame size)

Fan

PA 6.6 up to MXB 180 SC4 included - Aluminum alloy above

Construction

Cooling System

IC01 as per IEC 60034-6

Degree of protection

IP 23 as per IEC60034-5 (up to IP 44 from 180 to 250 frame size)

Mounting	Horizontal single bearing (160 frame size) Horizontal single bearing - IM 2105 from 180 to 250 frame size (double bearing available on request)
Technical data	
Stator/Rotor core	Laminated and enamel-insulated on both sides to minimise eddy-current losses
Rotor	Salient pole type Made by copper wire H class insulated with enamel coating Winding retaining by pass-through bars of high quality steel Rotating rectifier: Graetz diode bridge with 6 diodes Rotors are dynamically balanced
Bearing	General data Single or double antifriction bearing grease lubricated (ball type) Bearing lifetime $\geq 20'000$ hours Bearing selection Antifriction bearings
Impregnation system	Epoxy resin through high quality process
Insulation system	Class H for stator and rotor
Protective treatments	Standard impregnation with epoxy resin through high quality process CW1081 on request
Operating conditions	
Overloads	During continuous duty (S1), the following overloads are allowed: 10% for 1 hour 15% for 10 minutes 30% for 4 minutes 50% for 2 minutes These overloads must be occasional and followed by one hour of running at normal load or less
Parallel operations	All generators are provided with an amply sized damper cage and are suitable for parallel operations with other generators, when equipped with the paralleling unit (available on 180, 225 and 250 frame size)

Transient ratings	All generators can be designed to meet specific reactance values ($x'd$ and $x''d$). Values can be confirmed by contacting Marelli Motori
Three pahse short circuit current	Generators with auxiliary windings or PMG ensure a three phase short-circuit current (I_{cc}) higher than 3 times the rated current (I_n): $I_{cc} > 3 I_n$ for 10 seconds
Radio interference	All generators are equipped with Class B Group 1 radio interference filters as defined by EN 55011
THD (Total Harmonic Distortion) / THF	The no-load voltage wave form is sinusoidal with THD content less than 2% / THF < 2%
Vibrations	Vibration level is in accordance with ISO 10816. Measurement, evaluation and limits of vibration severity are in accordance with IEC 60034-14

Auxiliary device

AVR model	AVR model 11000013 - MARK VX Dedicated AVR for optional PMG
AVR position	On right side viewed from D-End 225 - 250 frame size front mounted
AVR supply	Auxiliary winding
Voltage sensing	Single phase
Accuracy	$\pm 0,5\%$ (@rated load, balanced and not deforming, P.F. 0,8)
EMI filter	Included
Limiters	U/F Under Frequency

Optional features

Options available

	160	180	225	250
Operating conditions				
Special voltage including 380V, R3, R6 (LV only)	o	o	o	o
Provision for parallel operation with similar	n/a	o*	o	o

generators with AVR				
Terminal box				
IP55 terminal box	o	o	o	o
Large terminal box	n/a	o	n/a	n/a
Separate auxiliary terminal box	n/a	o	o	o
Non-magnetic exit cable panel	n/a	n/a	n/a	o
6-leads winding	n/a	n/a	n/a	o
Heating				
Anti-condensation heaters (V=220 V)	o	o	o	o
Temperature sensors				
N. 3 PTC thermistors	o	o	o	o
N. 3 PT100 resistance temperature detectors in stator winding	n/a	o	o	o
N. 1 PT100 on N-End bearing	o	o	o	o
N. 1 PT100 on D-End bearing (for double bearing configuration)	n/a	o	o	o
N. 1 PT100 duplex type on N-End bearing	n/a	o	o	o
N. 1 PT100 duplex type on D-End bearing (for double bearing configuration)	n/a	o	o	o
N. 1 PT100 air inlet	n/a	n/a	n/a	o
N. 1 PT100 air outlet	n/a	n/a	n/a	o
Protection degree				
Inlet filter	n/a	o	o	o
Inlet + outlet filter (IP43)	n/a	o	o	o
Inlet + outlet filter (IP44)	n/a	o	o	o
Air to fresh water heat exchanger top mounted on generator (IP44)	n/a	n/a	n/a	o
Air to salt water heat exchanger top mounted on generator (IP44)	n/a	n/a	n/a	o
Air to air heat exchanger top mounted on generator	n/a	n/a	n/a	o
AVR				
Single-phase sensing AVR (Mark VX), side mounted	s	s	o	o

Single-phase sensing AVR (Mark VX), front mounted	n/a	o*	s	s
Three-phase sensing AVR (MEC-20), side mounted	n/a	o*	o	o
Three-phase sensing AVR (MEC-20), front mounted	n/a	o*	n/a	o
Digital AVR D-Vo (mounted on board)	n/a	n/a	n/a	o
Automatic power factor regulator (mounted on board)	n/a	n/a	n/a	o
Painting				
Non standard colour (MM ref. F96831)	o	o	o	o
Special painting cycle (MM ref. F96819)	o	o	o	o
Special painting cycle (MM ref. F96826)	o	o	o	o
Environmental solutions				
Tropicalization (CW1081)	o	o	o	o
Excitation system				
PMG with single-phase AVR (Mark XX) side mounted	o	o	o	o
PMG with single-phase AVR (Mark XX) front mounted	n/a	o*	o	o
PMG with three-phase AVR (MEC-20) side mounted	n/a	o*	o	o
PMG with three-phase AVR (MEC-20) front mounted	n/a	o*	n/a	o
PMG with digital AVR D-Vo (mounted on board)	n/a	n/a	n/a	o
Mechanical configuration				
Special shaft extension	n/a	n/a	n/a	o
Second shaft extension (as per catalogue)	n/a	n/a	n/a	o
Special housing	n/a	n/a	n/a	o
Neutral point terminal box for B2-B3-B34 construction	n/a	n/a	n/a	o
NDE grease nipple	n/a	n/a	n/a	o
DE grease nipple	n/a	n/a	n/a	o

Other accessories					
Toothed wheel (n.60 teeth) with provision for speed sensor (sensor not included)	n/a	n/a	n/a	o	
64R - Brush connection with rotor for earth fault detection (without protection device)	n/a	n/a	n/a	o	
N. 3 CT single core on neutral point (low voltage)	n/a	n/a	n/a	o	
<i>(*) this option includes also large terminal box</i>					
	o: optional n/a: not available s: standard				



MXB-E

Model	MXB-E
Power	Up to 375 kVA
Voltages	Up to 480 V
Frame	160 ÷ 250
Poles	4
Cooling	IC01 as per IEC 60034-6
IP	IP 23 as per IEC60034-5 (up to IP 44 from 180 to 250 frame size)
Enclosure	ODP - Open Drip Proof
Main Applications	Data center, Emergency, Portable, PRP and COP, Stand-by, UPS
Sector	Power generation

Certificates and testing

Applicable standards

Generators are designed in compliance with:

- IEC 60034 - 1
- BS 4999 - 5000
- NEMA MG 1.32
- Generators conform to EU rules
- UL 1004 - 1 (Certification pending)
- UL 1004 - 4 (Certification pending)
- C22.2 No. 100 (Certification pending)

Certificate	<p>Test Certificate supplied with the machine</p> <p>Material certificates in accordance with EN 10204 : 2001 can be supplied on request</p>
Main components	
Housing	Fabricated steel
Shield	<p>N-End Endshield:</p> <p>Aluminium alloy (from 160 to 225 frame size)</p> <p>Cast iron (250 frame size)</p>
Shaft	Carbon steel - hot rolled
Terminal board	<p>Main terminal box</p> <p>Made of Bakelite 7-pins (from 160 to 180 frame size); 9-pins (from 225 to 250 frame size)</p>
Fan	Plastic up to MXB-E 180 SC4 included - Aluminum alloy above
Construction	
Enclosure	ODP - Open Drip Proof
Cooling System	IC01 as per IEC 60034-6
Degree of protection	IP 23 as per IEC60034-5 (up to IP 44 from 180 to 250 frame size)
Mounting	<p>Horizontal single bearing (160 frame size)</p> <p>Horizontal single bearing - double bearing available on request from 180 to 250 frame size</p>
Technical data	
Stator/Rotor core	Laminated and enamel-insulated on both sides to minimise eddy-current losses
Rotor	<p>Salient pole type</p> <p>Made by copper wire</p> <p>H class insulated with enamel coating</p> <p>Winding retaining by pass-through bars of high quality steel</p> <p>Rotating rectifier: Graetz diode bridge with 6 diodes</p> <p>Rotors are dynamically balanced</p>

Bearing	General data Single or double antifriction bearing grease lubricated (ball type) Bearing lifetime $\geq 20'000$ hours
Impregnation system	Epoxy resin through high quality process
Insulation system	Class H for stator and rotor
Protective treatments	Standard impregnation with epoxy resin through high quality process CW1081 on request
Operating conditions	
Overloads	During continuous duty (S1), the following overloads are allowed: 10% for 1 hour 15% for 10 minutes 30% for 4 minutes 50% for 2 minutes These overloads must be occasional and followed by one hour of running at normal load or less
Parallel operations	All generators are provided with an amply sized damper cage and are suitable for parallel operations with other generators, when equipped with the paralleling unit (available on 180, 225 and 250 frame size)
Transient ratings	All generators can be designed to meet specific reactance values ($x'd$ and $x''d$). Values can be confirmed by contacting Marelli Motori
Three pahse short circuit current	Generators with auxiliary windings or PMG ensure a three phase short-circuit current (I_{cc}) higher than 3 times the rated current (I_n): $I_{cc} > 3 I_n$ for 10 seconds
Radio interference	All generators are equipped with Class B Group 1 radio interference filters as defined by EN 55011
THD (Total Harmonic Distortion) / THF	Typically THD $< 2\%$ at no load / THF $< 2\%$
Vibrations	Vibration level is in accordance with ISO 10816. Measurement, evaluation and limits of vibration severity are in accordance with IEC 60034-14

Regulation					
AVR model	AVR code : 11000013 - M00FA122A AVR Model : MARK VX Dedicated AVR for optional PMG				
AVR position	160 - 180 frame size: on left side viewed from D-End 225 - 250 frame size: front mounted				
AVR supply	Mains. PMG or Auxiliary winding on request				
Voltage sensing	Single phase				
Accuracy	± 0,5% (@rated load, balanced and not deforming, P.F. 0,8)				
EMI filter	Included				
Limiters	U/F Under Frequency				
Optional features					
Options available	MXB-E series				
		160	180	225	250
	Operating conditions				
	Special voltage	o	o	o	o
	Provision for parallel operation with similar generators with AVR (MEC 20)	n/a	o*	o	o
	Terminal box				
	IP55 terminal box	o	o	o	o(1)
	Large terminal box	n/a	o	n/a	n/a
	Separate auxiliary terminal box	n/a	o	o	o
	Non-magnetic exit cable panel	n/a	n/a	n/a	o
	6-leads winding	n/a	n/a	n/a	o
	Heating				
	Anti-condensation heaters (V=220 V)	o	o	o	o
	Temperature sensors				
	N. 3 PTC thermistors	o	o	o	o
	N. 3 PT100 resistance temperature detectors in stator winding	n/a	o	o	o



N. 1 PT100 on N-End bearing	o	o	o	o
N. 1 PT100 on D-End bearing (for double bearing configuration)	n/a	o	o	o
N. 1 PT100 duplex type on N-End bearing	n/a	o	o	o
N. 1 PT100 duplex type on D-End bearing (for double bearing configuration)	n/a	o	o	o
Protection degree				
Inlet filter	n/a	o	o	o
Inlet + outlet filter (IP43)	n/a	o	o	o
Inlet + outlet filter (IP44)	n/a	o	o	o
AVR				
Single-phase sensing AVR (Mark VX), side mounted	s	s	o	o
Single-phase sensing AVR (Mark VX), front mounted	n/a	o*	s	s
Three-phase sensing AVR (MEC-20), side mounted	n/a	o*	o	o
Three-phase sensing AVR (MEC-20), front mounted	n/a	o*	n/a	o
Digital AVR D-Vo (mounted on board)	n/a	n/a	n/a	o
Automatic power factor regulator (mounted on board)	n/a	n/a	n/a	o
Painting				
Special painting cycle (MM ref. F96831)	o	o	o	o
Painting colour different from RAL 9005 and RAL 5010	o	o	o	o
Painting colour RAL 9005 Black or RAL 5010 Blue (standard alternator not painted)	o	o	o	o
Special painting cycle (MM ref. F96819)	o	o	o	o
Special painting cycle (MM ref. F96826)	o	o	o	o
Environmental solutions				
Tropicalization (CW1081)	o	o	o	o
Excitation system				
Auxiliary winding	o	o	o	o
PMG with single-phase AVR (Mark XX) side mounted	o	o	o	n/a
PMG with single-phase AVR (Mark XX)				



front mounted	n/a	o*	o	n/a
PMG with three-phase AVR (MEC-20) side mounted	n/a	o*	o	o
PMG with three-phase AVR (MEC-20) front mounted	n/a	o*	n/a	o
PMG with digital AVR D-Vo (mounted on board)	n/a	n/a	n/a	o
Mechanical configuration				
Special shaft extension	n/a	n/a	n/a	o
Second shaft extension (as per catalogue)	n/a	n/a	n/a	o
Special housing (2)	n/a	o	o	o
NDE grease nipple	n/a	n/a	n/a	o
DE grease nipple	n/a	n/a	n/a	o
Other accessories				
N. 3 CT single core on neutral point (low voltage)	n/a	n/a	n/a	o
<i>(*) this option includes also large terminal box</i> <i>(1) On H class overtemperature a 10% derating must be applied</i> <i>(2) Based on volumes</i>				
o: optional n/a: not available s: standard				



Mark V

Model	Mark V
Frame size	160 ÷ 250
Regulator	Mark V
Part number	10005388
Compliance	CE

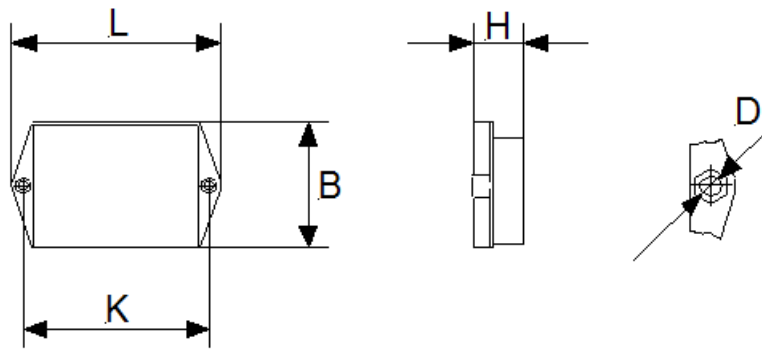
Main Data

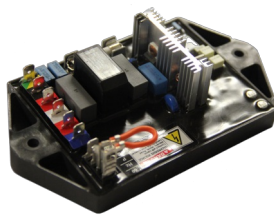
Generator frame size	Standard 160÷250
AVR supply	Auxiliary winding*, mains
Voltage sensing	Single phase
Voltage remote control	Arrangement
Radio interference supressor	Internal
MARK V	10005388
Standard protections	Over-excitation
Limiters	Under-frequency

Electrical characteristics

Power supply voltage	170 ÷ 277 Vac @ 50/60 Hz
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Power supply source	Auxiliary windings, mains
Voltage build-up	5 Vac
Voltage sensing type	1-phase
Voltage sensing range	170 ÷ 277 Vac
Maximum continuative field current	0 ÷ 5 Adc
Maximum forcing field current	0 ÷ 8 Adc
Maximum field voltage	100 Vdc
Field resistance	8 Ω ÷ 20 Ω
Regulation accuracy from no load to full load	±0.5 %
Steady state accuracy	±0.1 %
Accuracy with ±4% engine governing	±1 %
Thermal Drift	±0.5 %
Response time	1 cycle
Operating temperature	-30°C ÷ +70°C
Storage temperature	-40°C ÷ +80°C
Features	
Interface	Potentiometers
Protection	Under-frequency limiter Over-excitation limiter Internal fuse, replaceable
Control	External potentiometer, 100 kΩ - 1 W External DC voltage signal (0-10 V)
Dimensions and weight	
L	149mm

B	89mm
K	132mm
H	41mm
D	6.5mm
Weight	320g
Drawing	 <p>The drawing shows three views of a rectangular component. The top view is a rectangle with dimensions L (length) and K (width). The side view shows the height H. A detail view of a corner shows the thickness D. The component has a central rectangular cutout with rounded corners. The dimensions are labeled with arrows indicating the measurement direction.</p>



Mark VX

Model	Mark VX
Frame size	160 ÷ 225
Regulator	VX
Part number	11000013
Compliance	CE and UL unlisted

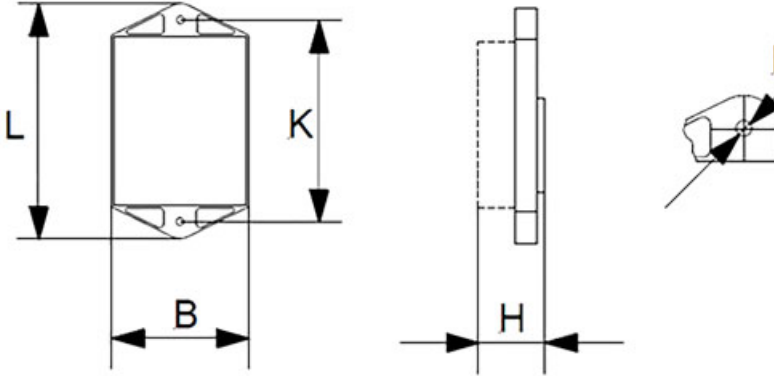
Main Data

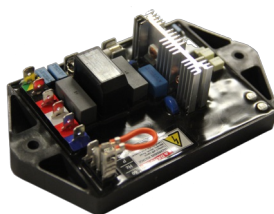
Generator frame size	Standard 160÷225
AVR supply	Auxiliary winding*, mains
Voltage sensing	Single phase
Voltage remote control	Arrangement
Radio interference suppressor	Internal
MARK VX	11000013
Limiters	Under-frequency

Electrical characteristics

Power supply voltage	170 ÷ 277 Vac @ 50/60 Hz
Power supply source	Auxiliary windings, mains
Voltage build-up	5 Vac

Voltage sensing type	1-phase
Voltage sensing range	170 ÷ 277 Vac
Maximum continuative field current	0 ÷ 5 Adc
Maximum forcing field current	0 ÷ 8 Adc
Maximum field voltage	100 Vdc
Field resistance	8 Ω ÷ 20 Ω
Regulation accuracy from no load to full load	±0.5 %
Accuracy with ±4% engine governing	±1 %
Thermal Drift	±0.5 %
Response time	1 cycle
Operating temperature	-30°C ÷ +70°C
Storage temperature	-40°C ÷ +80°C
Features	
Interface	Potentiometers
Protection	Under-frequency limiter Internal fuse, replaceable
Control	External potentiometer, 100 k Ω - 1 W External DC voltage signal (0-10 V)
Dimensions and weight	
L	160mm
B	93.6mm
K	137mm
H	45mm

D	5.5mm
Weight	370g
Drawing	 <p>The drawing shows three views of a mechanical part. The front view on the left is a rectangle with a trapezoidal top and bottom. Dimension L is the total height, K is the height of the central rectangular section, and B is the width. The side view in the middle shows the profile with dimension H indicating the thickness. A detail view on the right shows a corner with a fillet and a small circular feature.</p>



Mark XX

Model	Mark XX
Frame size	160 ÷ 225
Regulator	Mark XX
Part number	11000328
Compliance	CE and UL unlisted

Main Data

Generator frame size	Standard 160÷225
AVR supply	PMG
Voltage sensing	Single phase
Voltage remote control	Arrangement
Radio interference supressor	Internal
MARK VX	11000328
Limiters	Under-frequency

Electrical characteristics

Power supply voltage	170 ÷ 277 Vac @ 175/210 Hz
Power supply source	PMG
Voltage build-up	5 Vac
Voltage sensing type	1-phase

Voltage sensing range	170 ÷ 277 Vac
Maximum continuative field current	0 ÷ 5 Adc
Maximum forcing field current	0 ÷ 8 Adc
Maximum field voltage	100 Vdc
Field resistance	8 Ω ÷ 20 Ω
Regulation accuracy from no load to full load	±0.5 %
Accuracy with ±4% engine governing	±1 %
Thermal Drift	±0.5 %
Response time	1 cycle
Operating temperature	-30°C ÷ +70°C
Storage temperature	-40°C ÷ +80°C

Features

Interface	Potentiometers
Protection	Under-frequency limiter Internal fuse, replaceable
Control	External potentiometer, 100 k Ω - 1 W External DC voltage signal (0-10 V)

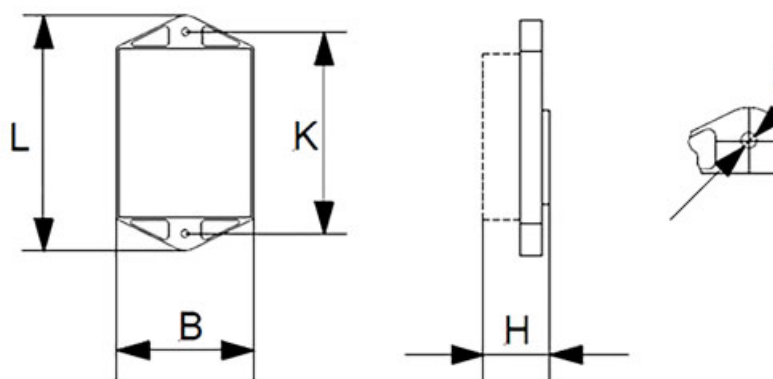
Dimensions and weight

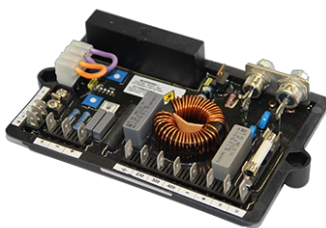
L	160mm
B	93.6mm
K	137mm
H	45mm
D	5.5mm

Weight

370g

Drawing





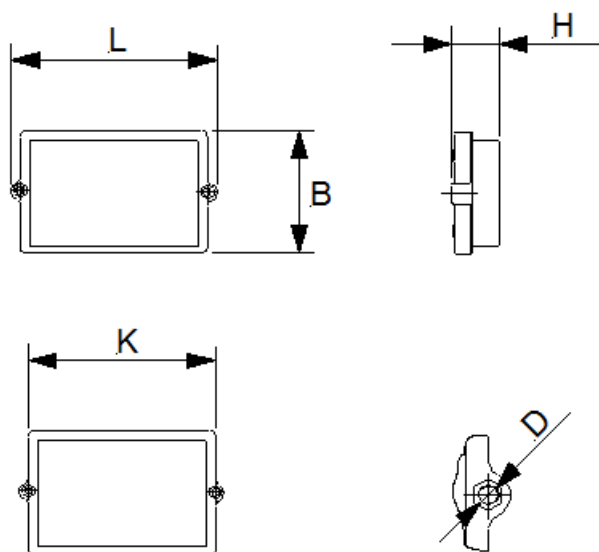
MGC I

Model	MGC I
Frame size	500 ÷ 560
Regulator	MGC I
Part number	10001467
Compliance	CE

Main Data

Generator frame size	Standard 500÷560
AVR supply	Auxiliary winding*, mains
Voltage sensing	Single phase
Voltage remote control	Arrangement
Radio interference supressor	Internal
MGC I	10001467
Over-excitation device	Arrangement for varicomp
Parallel operation with the mains	Arrangement for device
Parallel operation with similar generators	Arrangement

Limiters	Under-frequency
Function	Auxiliary inputs
Electrical characteristics	
Power supply voltage	170 ÷ 277 Vac @ 50/60 Hz
Power supply source	Auxiliary windings, mains
Voltage build-up	5 Vac
Voltage sensing type	1-phase
Voltage sensing range	170 ÷ 480 Vac
Current sensing type	1-phase
Current sensing range	1 A
Maximum continuative field current	0 ÷ 8 Adc
Maximum forcing field current	0 ÷ 15 Adc
Maximum field voltage	100 Vdc
Field resistance	3 Ω ÷ 20 Ω
Regulation accuracy from no load to full load	±1 %
Steady state accuracy	±0.1 %
Accuracy with ±4% engine governing	±1 %
Thermal Drift	±0.5 %
Response time	1 cycle
Operating temperature	-30°C ÷ +60°C
Storage temperature	-40°C ÷ +70°C

Features	
Interface	Potentiometers, dip-switches
Function	Droop compensation
Protection	Under-frequency limiter Internal fuse, replaceable
Control	External potentiometer, 1 k Ω - 2 W External DC voltage signal (-3/+3 V)
Dimensions and weight	
L	176 mm
B	105 mm
K	160mm
H	41 mm
D	6.5mm
Weight	460g
Drawing	 <p>The drawing section contains five technical views of the device with dimension lines indicating the following measurements:</p> <ul style="list-style-type: none"> L: Overall length of the device. B: Overall width of the device. K: Width of the main rectangular body. H: Height of the device. D: Diameter of the mounting hole.



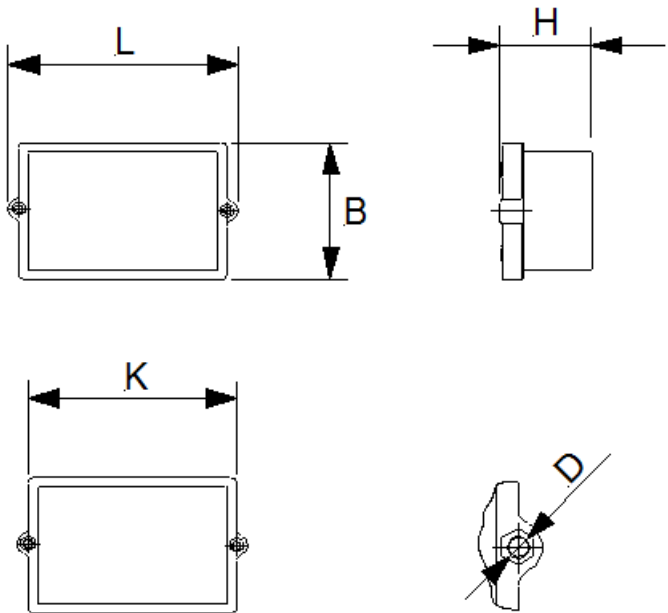
MGC II

Model	MGC II
Frame size	630 ÷ 710
Regulator	MGC II
Part number	10004378
Compliance	CE

Main Data

Generator frame size	Standard 630÷800
AVR supply	Auxiliary winding*, mains
Voltage sensing	Single phase
Voltage remote control	Arrangement
Radio interference supressor	Internal
MGC II	10004378
Over-excitation device	Arrangement for varicomp
Parallel operation with the mains	Arrangement for device
Parallel operation with similar generators	Arrangement

Limiters	Under-frequency
Function	Auxiliary inputs
Electrical characteristics	
Power supply voltage	170 ÷ 277 Vac @ 50/60 Hz
Power supply source	Auxiliary windings, mains
Voltage build-up	5 Vac
Voltage sensing type	1-phase
Voltage sensing range	170 ÷ 480 Vac
Current sensing type	1-phase
Current sensing range	1 A
Maximum continuative field current	0 ÷ 8 Adc
Maximum forcing field current	0 ÷ 15 Adc
Maximum field voltage	100 Vdc
Field resistance	3 Ω ÷ 20 Ω
Regulation accuracy from no load to full load	±1 %
Steady state accuracy	±0.1 %
Accuracy with ±4% engine governing	±1 %
Thermal Drift	±0.5 %
Response time	1 cycle
Operating temperature	-30°C ÷ +60°C
Storage temperature	-40°C ÷ +70°C

Features	
Interface	Potentiometers, dip-switches
Function	Droop compensation
Protection	Under-frequency limiter Internal fuse, replaceable
Control	External potentiometer, 1 k Ω - 2 W External DC voltage signal (-3/+3 V)
Dimensions and weight	
L	176 mm
B	105 mm
K	160mm
H	70 mm
D	6.5mm
Weight	410g
Drawing	 <p>The drawing section contains five technical diagrams of the device. The top-left diagram is a front view showing the overall width dimension 'L' and the height dimension 'B'. The top-right diagram is a side view showing the depth dimension 'H'. The bottom-left diagram is another front view showing the width dimension 'K'. The bottom-right diagram is a detail view of a mounting hole, showing the diameter dimension 'D'.</p>



Mark X

Model	Mark X
Frame size	500 ÷ 560
Regulator	Mark X
Part number	10005161
Compliance	CE

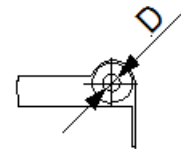
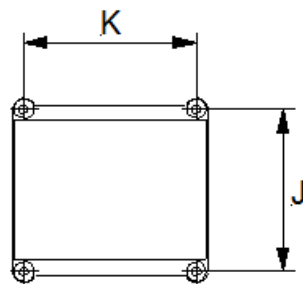
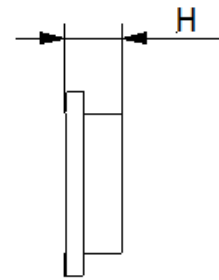
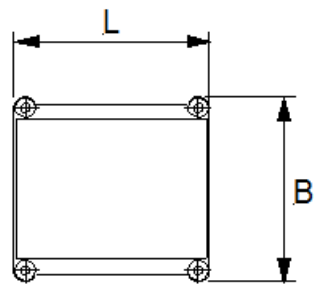
Main Data

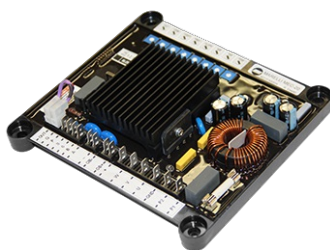
Generator frame size	On request 630÷800
AVR supply	PMG
Voltage sensing	Three phase
Voltage remote control	Arrangement
Radio interference supressor	Internal
MARK X	10005161
Over-excitation device	Arrangement for varicomp
Parallel operation with the mains	Arrangement for device
Parallel operation with similar generators	Arrangement
Standard protections	Over-excitation

Limiters	Under-frequency
Function	Auxiliary inputs
Electrical characteristics	
Power supply voltage	170 ÷ 277 Vac @ 100/120 Hz
Power supply source	PMG
Voltage build-up	5 Vac
Voltage sensing type	1-phase / 3-phase
Voltage sensing range	170 ÷ 480 Vac
Current sensing type	1-phase
Current sensing range	1 A
Maximum continuative field current	0 ÷ 8 Adc
Maximum forcing field current	0 ÷ 15 Adc
Maximum field voltage	100 Vdc
Field resistance	3 Ω ÷ 20 Ω
Regulation accuracy from no load to full load	±0.5 %
Steady state accuracy	±0.1 %
Accuracy with ±4% engine governing	±1 %
Thermal Drift	±0.5 %
Response time	1 cycle
Operating temperature	-30°C ÷ +70°C
Storage temperature	-40°C ÷ +80°C

Features	
Interface	Potentiometers, dip-switches
Function	Droop compensation
Protection	Under-frequency limiter Over-excitation limiter Internal fuse, replaceable
Control	External potentiometer, 100 k Ω - 1 W External DC voltage signal (-3/+3 V)
Dimensions and weight	
L	180mm
B	170mm
K	160mm
J	150mm
H	41mm
D	6.5mm
Weight	670g

Drawing





MEC-20

Model	MEC-20
Frame size	315 ÷ 450
Regulator	MEC-20
Part number	11000317
Compliance	CE

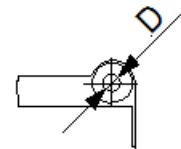
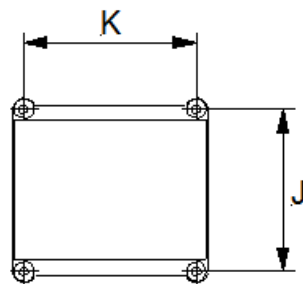
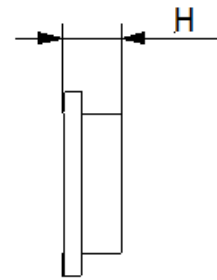
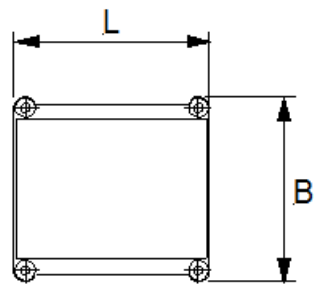
Main Data

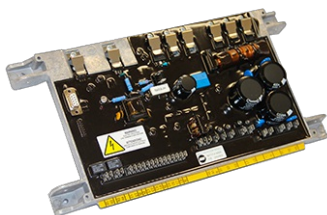
Generator frame size	Standard 315÷450 On request 160÷250
AVR supply	Auxiliary winding*, mains, PMG
Voltage sensing	Three phase
Voltage remote control	Arrangement
Radio interference supressor	Internal
MEC 20	11000317
Over-excitation device	Arrangement for varicomp
Parallel operation with the mains	Arrangement for device

Parallel operation with similar generators	Arrangement
Standard protections	Over-excitation
Limiters	Under-frequency
Function	Auxiliary inputs
Electrical characteristics	
Power supply voltage	170 ÷ 277 Vac @ 50 ÷ 400 Hz
Power supply source	Auxiliary windings, mains, PMG
Voltage build-up	5 Vac
Voltage sensing type	1-phase / 3-phase
Voltage sensing range	220 ÷ 480 Vac
Current sensing type	1-phase
Current sensing range	1 A
Maximum continuative field current	0 ÷ 7 Adc
Maximum forcing field current	0 ÷ 15 Adc
Maximum field voltage	200 Vdc
Field resistance	3 Ω ÷ 20 Ω
Regulation accuracy from no load to full load	±0.5 %
Steady state accuracy	±0.1 %
Accuracy with ±4% engine governing	±1 %
Thermal Drift	±0.5 %
Response time	1 cycle
Operating temperature	-30°C ÷ +70°C

Storage temperature	-40°C ÷ +80°C
Features	
Interface	Potentiometers, dip-switches
Function	Droop compensation Soft start
Protection	Under-frequency limiter Over-excitation limiter Internal fuse, replaceable
Control	External potentiometer, 10 kΩ - 1 W External DC voltage signal (-5/+5 V)
Dimensions and weight	
L	180mm
B	170mm
K	160mm
J	150mm
H	41mm
D	6.5mm
Weight	760g

Drawing





MEC-100 series

Model	MEC-100
Frame size	400 ÷ 900
Regulator	MEC-100 series
Part number	10009777 10009784
Compliance	CE DNV

Main Data

Generator frame size	On request 160÷900
AVR supply	Auxiliary winding*, mains
Voltage sensing	Single phase
Voltage remote control	Arrangement
Radio interference supressor	Arrangement for external filters
MEC 100 series	10009777 10009784
Over-excitation device	Arrangement for varicomp
Parallel operation with the mains	Internal

Parallel operation with similar generators	Arrangement
Standard protections	Field over-current, field over-voltage, generator over/under voltage, generator over-current, loss of sensing
Limiters	Under-frequency, over/under-excitation
Function	PC interface, soft start, auxiliary inputs, contact inputs
Electrical characteristics	
Power supply voltage	170 ÷ 277 Vac @ 50-400 Hz
Power supply source	Auxiliary windings, mains, PMG
Voltage build-up	5 Vac
Voltage sensing type	1-phase / 3-phase
Voltage sensing range	100 ÷ 500 Vac
Current sensing type	1-phase
Current sensing range	1 A - 5 A
Maximum continuative field current	0 ÷ 10 Adc
Maximum forcing field current	0 ÷ 20 Adc
Maximum field voltage	250 Vdc
Field resistance	3 Ω ÷ 20 Ω
Regulation accuracy from no load to full load	±0.25 %
Steady state accuracy	±0.1 %

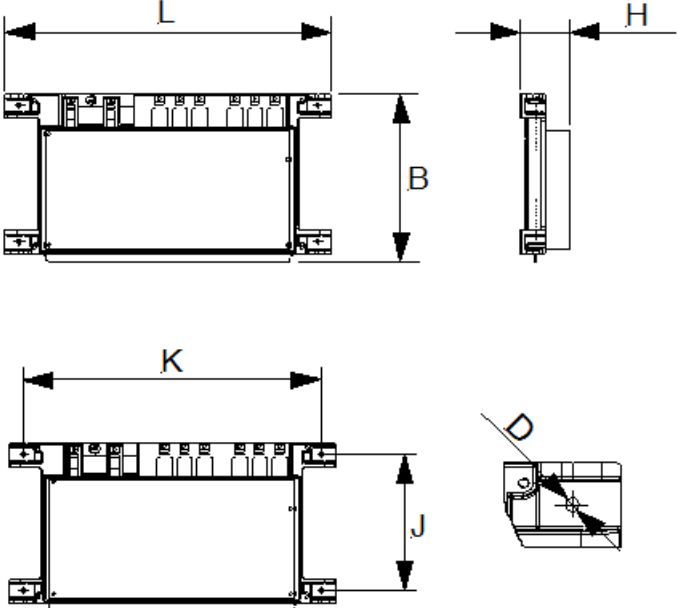
Accuracy with $\pm 4\%$ engine governing	$\pm 1 \%$
PF / VAR / FCR modes	$\pm 2 \%$
Voltage matching	$\pm 0.5 \%$
Thermal Drift	$\pm 0.5 \%$
Response time	1 cycle
Operating temperature	$-30^{\circ}\text{C} \div +70^{\circ}\text{C}$
Storage temperature	$-40^{\circ}\text{C} \div +80^{\circ}\text{C}$

Features

Interface	MEC-100 Interface System software
Function	Droop compensation Soft start Voltage matching
Protection	Under-frequency limiter Over-excitation limiter Under-excitation limiter Field over-voltage Field over-current Generator over-voltage Generator under-voltage Generator over-current Loss of sensing Diode monitoring
Control	2 external DC current inputs (4/20mA) 8 digital contact input 2 digital outputs

Dimensions and weight

L	353 mm
B	183,5 mm
K	322 mm
J	148,5 mm

H	53 mm
D	4.5mm
Weight	2000g
Drawing	 <p>The drawing shows a rectangular component with the following dimensions and views:</p> <ul style="list-style-type: none"> L: Overall length (top view). B: Overall width (top view). K: Internal length (bottom view). J: Internal width (bottom view). H: Height (side view). D: Thickness (detail view).



D-Vo

Model	D-Vo
Frame size	400 ÷ 900
Regulator	D-Vo
Part number	10024470
Compliance	<p>CE</p> <p>UL</p> <p>Grid code: compliant with VDE-AR-N-4110</p>

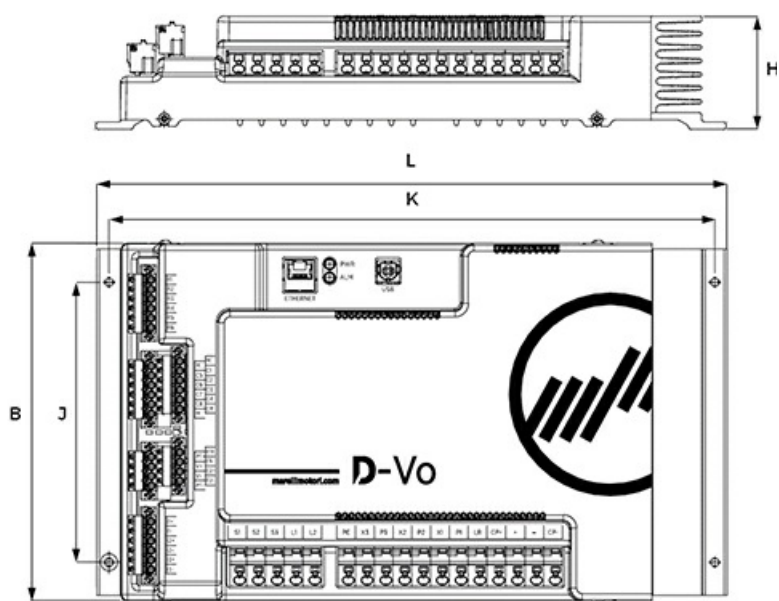
Main Data

Generator frame size	<p>Standard:</p> <p>≥800 frame size and all HV standard generators</p> <p>On request:</p> <p>160 ÷ 710 frame size</p>
AVR supply	<p>Auxiliary winding</p> <p>PMG</p> <p>Mains</p>
Voltage sensing	Single phase 3-phase
Voltage remote control	Arrangement
Radio interference supressor	Arrangement for external filters
Over-excitation device	Arrangement for varicomp PMG

Parallel operation with the mains	Internal
Parallel operation with similar generators	Arrangement
Standard protections	Field over-current, field over-voltage, generator over/under voltage, generator over-current, loss of sensing Diode monitoring (DMS)
Limiters	Under-frequency, over/under-excitation
Function	PC interface, Modbus TCP/IP, FRT detection, soft start, 9 digital input, 3 digital inputs, 3 analogue inputs, external potentiometer
Electrical characteristics	
Power supply voltage	170 ÷ 277 Vac @ 50-400 Hz Control power supply 24 ÷ 250 Vac @ 50 ÷ 400 Hz - 1-ph/3-ph
Power supply source	Auxiliary windings, mains, PMG
Voltage build-up	6 Vac
Voltage sensing type	1-phase / 3-phase
Voltage sensing range	100 ÷ 480 Vac
Current sensing type	1-phase / 3-phase
Current sensing range	1A
Maximum continuative field current	0 ÷ 10 Adc

Maximum forcing field current	0 ÷ 20 Adc
Maximum field voltage	200 Vdc
Field resistance	3 Ω ÷ 20 Ω
Regulation accuracy from no load to full load	±0.25% of rated voltage
Steady state accuracy	±0.1 % of rated voltage
Accuracy with ±4% engine governing	±1 % of rated voltage
PF / VAR / FCR modes	<p>PF mode: ±0.005PF(with PF between 0.9 lagging and 0.9 leading)</p> <p>VAR mode: ±2% of rated power</p> <p>FCR mode: ±2% of rated exciter current</p>
Voltage matching	±2% of rated voltage
Thermal Drift	±0.5 % of rated voltage
Response time	1 cycle
Operating temperature	-30°C ÷ +70°C
Storage temperature	-40°C ÷ +80°C
Features	
Interface	D-Vo Software
Function	<p>Droop compensation</p> <p>Soft start</p> <p>Voltage matching</p> <p>Modbus TCP/IP</p> <p>FRT detection</p>

Protection	Under-frequency limiter Over-excitation limiter Under-excitation limiter Field over-voltage Field over-current Generator over-voltage Generator under-voltage Generator over-current Loss of sensing Diode monitoring
Control	2 current inputs (4/20mA) 1 voltage input (+/-10V) connection to external potentiometer 10kohm available 9 digital contact inputs (8 programmable) 3 digital outputs
Dimensions and weight	
L	335 mm
B	189,6 mm
K	322 mm
J	148,5 mm
H	60 mm
Weight	3000g



CONTACTS

Italy HQ

Marelli Motori S.p.A.

Via Sabbionara 1
36071 Arzignano (VI) - Italy
(T) 9 0444 479 711
(F) 9 0444 479 888
info@marellimotori.com

Asia Pacific

Marelli Motori Asia Sdn Bhd

Lot 1-8, Persiaran Jubli Perak,
Seksyen 22, 40300 Shah Alam,
Selangor D.E. - Malaysia
(T) +60 55 171 999
(F) +6 55 171 883
malaysia@marellimotori.com

United Kingdom

Marelli UK

35-37 High Street,
Barrow Upon Soar - Loughborough
Leicestershire, LE12 8PY - UK
T +1509 410374
F +1509 415777
uk@marellimotori.com

South Africa

Marelli Motori South Africa (Pty) Ltd

Unit 2, corner Director & Megawatt Road
Spartan Ext. 23
Kempton Park 1619 Gauteng
Republic of South Africa
(T) 7 11 392 1920
(F) 7 11 392 1668
southafrica@marellimotori.com

China

Marelli Motori China

Unit 405, North Building,
Vanke Cloud Design Commune, NO. 50,
Anling Second Road, Huli District,
320000 Xiamen City,
Fujian Province - CHINA
(T) +86 138 05 7848
china@marellimotori.com

Spain

Representative Office

08195 Sant Cugat
Barcelona - Spain
(T) +34 664 464 1
spain@marellimotori.com

Central Europe

Marelli Motori Central Europe GmbH

Heilswannenweg 50
31008 Elze - Germany
(T) 9 5068 462 400
(F) 9 5068 462 409
germany@marellimotori.com

USA

Marelli USA, Inc.

2200 Norcross Parkway, Suite 290
Norcross, GA 30071
United States
(T) +1 9 734 2588
(F) +1 9 734 0629
usa@marellimotori.com

Middle East

Marelli Motori Middle East

4403 - 18, 44th Floor, BB2
Mazaya Business Avenue
Jumeirah Lake Towers
Dubai - UAE
(T) 71 4 426 4263
(F) 71 4 362 4345
uae@marellimotori.com

Vietnam

Representative Office

Level 46 Bitexco Financial Tower
No.2 Hai Trieu Street
District 1
Ho Chi Minh City
VIETNAM
(T) (+84) 28 287 6099
vietnam@marellimotori.com