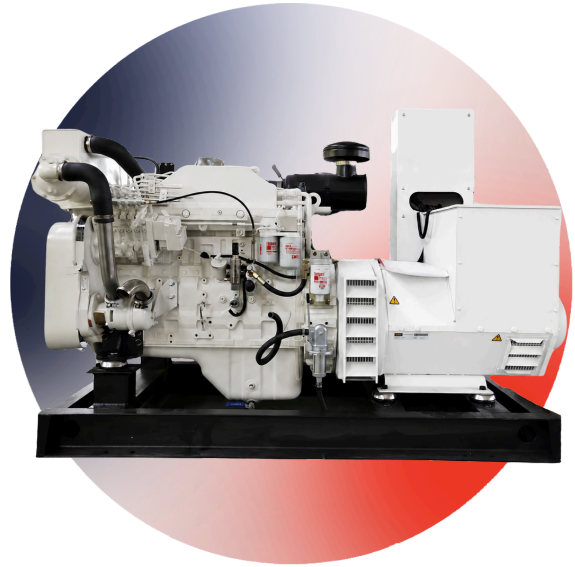


# 100KW Cummins Marine Diesel Generator

1800RPM | 60 Hz | 6BTA5.9-GM120 Cummins Engine

## General

Model	WDG-100-CMS-M
Fuel Type	Diesel
Standby Rating	110 kWe
Prime Rating	100 kWe
Frequency	60 Hz
Voltage	480V
Phase	3-Phase
Enclosure Type	Open Type
Engine Brand	Cummins
Alternator Brand	Stamford
Controller Model	Deepsea DSE7310



## Engine Data

Engine Brand	Cummins
Engine Model	6BTA5.9-GM120
Configuration	6 cylinder
Aspiration	Turbocharged, Aftercooled
Bore (in.)	4.016
Stroke (in.)	4.724
Rated Speed (RPM)	1800
Displacement (L)	5.9 L
Compression Ratio	17.3 : 1
Coolant Capacity (L)	10.4 L

## Alternator Data

Alternator Model	Stamford UCM274D
Type	Self-excited, Brushless
Power Factor	0.8
Voltage Regulation	AVR
Insulation System	Class H
Protection Level	IP23

## Size & Dimensions

Dimensions (L x W x H)	90 x 41 x 52 (in.)
Net Weight (lbs.)	2645

## Fuel Consumption

	Prime				Standby	Continuous
<b>Ratings</b>	100 kWe				110 kWe	80 kWe
<b>Load</b>	<b>25%</b>	<b>50%</b>	<b>75%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>g/kW.h</b>	280	226	214	212	213	216
<b>L/h</b>	10	16	23	31	34	20



**Generator Engine Performance Data**

DONGFENG CUMMINS ENGINE Co.,LTD

Xiangfan, Hubei Province, China  
<http://www.dcec.com.cn>

Basic Engine Model:

**6BTA5.9-GM120**

**FR92438**

**120kW @ 1800 RPM**

<b>Configuration</b> D403096MX02	<b>CPL Code</b> CPL:2976	<b>Revision</b> 2009-4-15
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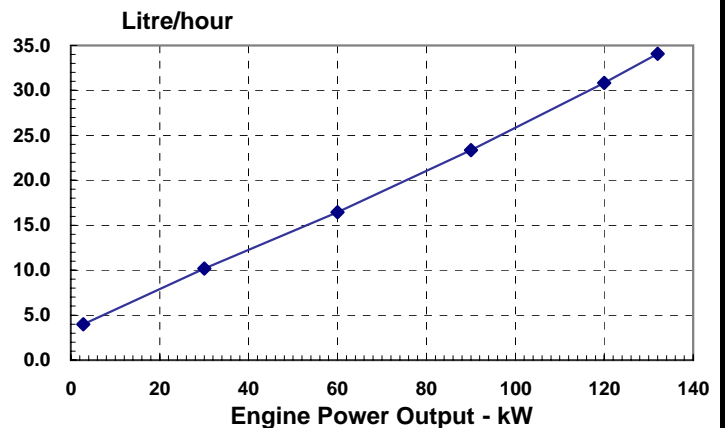
Compression Ratio:	<b>17.3 : 1</b>	Aspiration:	<b>Turbocharged and Aftercooled</b>
Bore:	<b>102 mm</b>	Displacement:	<b>5.9 L</b>
Stroke:	<b>120 mm</b>	No. of Cylinders:	<b>6</b>
Governor Regulation:	<b>≤3%</b>	Fuel System:	<b>BYC PB/GAC 24V</b>

All data is based on the engine operating with fuel system, water pump, and 10 in H<sub>2</sub>O (2.488 kPa) inlet air restriction with 5.98 in (152mm) inner diameter, and with 2.01 in Hg (7 kPa) exhaust restriction with 4.02 in (102 mm) inner diameter; not included are alternator, fan, optional equipment and driven components. Coolant flows and heat rejection data based on coolants as 50% ethylene glycol/50% water. All data is subject to change without notice.

Engine Speed RPM	Standby Power		Prime Power		Continuous Power	
	kW	HP	kW	HP	kW	HP
1800	132	177	120	161	75	101

**Engine Performance Data @ 1800 RPM**

OUTPUT POWER			FUEL CONSUMPTION	
%	kW	HP	g/kW.h	L/h
<b>STANDBY POWER</b>				
100	132	177	213	34
<b>PRIME POWER</b>				
100	120	161	212	31
75	90	121	214	23
50	60	80	226	16
25	30	40	280	10
<b>CONTINUOUS POWER</b>				
100	75	107	216	20



**Engine Performance Data @ 1500 RPM**

**Not Available at 1500 RPM**

**Not Available at 1500 RPM**

Curves shown above represent gross engine performance capabilities obtained and corrected in accordance with GB/T18297 conditions of 100kPa (29.61 in. Hg) barometric pressure [80 m (263 ft.) altitude], 25°C (77°F) inlet air temperature, and 1 kPa (0.30 in. Hg) water vapor pressure with No.0# diesel fuel.

**GENERAL ENGINE DATA**

Weight (Dry) Engine only - Average.....	-kg	453
Idle Speed Setting.....	-rpm	1000±50
Compression Ratio .....		17.3 : 1
Piston Speed* .....	-m/sec	7.2
Firing Order.....		1-5-3-6-2-4

**ENGINE MOUNTING**

Maximum (Static) Bending Moment at Rear Face of Block.....	-N•m	1356
------------------------------------------------------------	------	------

**EXHAUST SYSTEM\***

Maximum Back Pressure.....	-kPa	10.1
Exhaust Gas Flow.....	-litre/sec	TBD
Exhaust Gas Temperature Turbine Out (Rated Power).....	-°C	510
Exhaust Gas Temperature Turbine Out (Standby Power).....	-°C	550
Maximum Static Supported Weight at the Turbocharger Outlet Flange.....	-N•m	6

**AIR INTAKE SYSTEM\***

Maximum Intake Air Restriction with Heavy Duty Air Cleaner		
— Dirty Element.....	-kPa	6
— Clean Element.....	-kPa	4
Minimum Dirt Holding Capacity with Heavy Duty Air Cleaner.....	-g/cfm	53
Maximum Temperature Rise from Ambient to the Inlet of the Turbocharger.....	-°C	17
Intake Manifold Pressure .....	-mmHg	840
Intake Air Flow*.....	-litre/sec	TBD
Heat Rejection to Ambient .....	-kW	TBD

**FUEL SYSTEM\***

Maximum Fuel Flow on the Supply Side of the Fuel Pump.....	-litre/hr	127
Maximum fuel supply restriction at fuel pump inlet		
— with clean fuel filter element(s) at maximum fuel flow.....	-kPa	8
— with dirty fuel filter element(s) at maximum fuel flow .....	-kPa	14
Maximum fuel inlet temperature.....	-°C	60
Maximum Allowable Return Line Pressure .....	-kPa	34

**LUBRICATION SYSTEM**

Normal Operating Oil Pressure Range		
— minimum low idle.....	-kPa	69
— rated speed (Min/Max).....	-kPa	241/345
Maximum Sump Oil Temperature.....	-°C	121
Minimum Required Lube System Capacity - Sump plus Filters.....	-litre	16.3
By-pass Filtration Required.....	-Yes/No	Yes

**COOLING SYSTEM\***

Coolant capacity - engine only.....	-litre	10.4
Minimum Coolant Makeup Capacity .....	-litre	3
Standard (modulating) Thermostat Range.....	-°C	82-95
Minimum pressure cap rating at sea level.....	-kPa	69
Maximum coolant operating temperature at engine outlet (max. top tank temp):.....	-°C	96
Minimum operating block coolant temperature.....	-°C	71
Minimum coolant expansion space (% of system capacity).....	- %	5
Heat Rejection to Coolant.....	-kW	TBD
Maximum recommended external coolant flow restriction in engine circuit:.....	-kPa	34

**CRANKING SYSTEM**

Minimum Battery Capacity - Cold Soak at 0°F (-18°C) or Above		12V	24V
— Engine Only - Cold Cranking Amperes.....	-CCA	950	475
— Engine Only - Reserve Capacity.....	-min.	160	160
Maximum Starting Circuit Voltage Drop.....	-Volts	TBD	
Minimum Ambient Temperature for Unaided Cold Start.....	-°C(°F)	-12	(10)
Minimum Cranking Speed Required for Unaided Cold Start.....	-rpm	125	
Maximum starting circuit resistance.....	-Ohm	0.00075	0.002

**EMISSIONS DATA (in accordance with ISO8178 Cycle D2)**

NO <sub>x</sub> (Oxides of Nitrogen).....	-g/kW.h	N.A.
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\*All Data at Rated Conditions

ALL DATA CERTIFIED WITHIN 5%

TBD = To Be Decided

N/A = Not Applicable

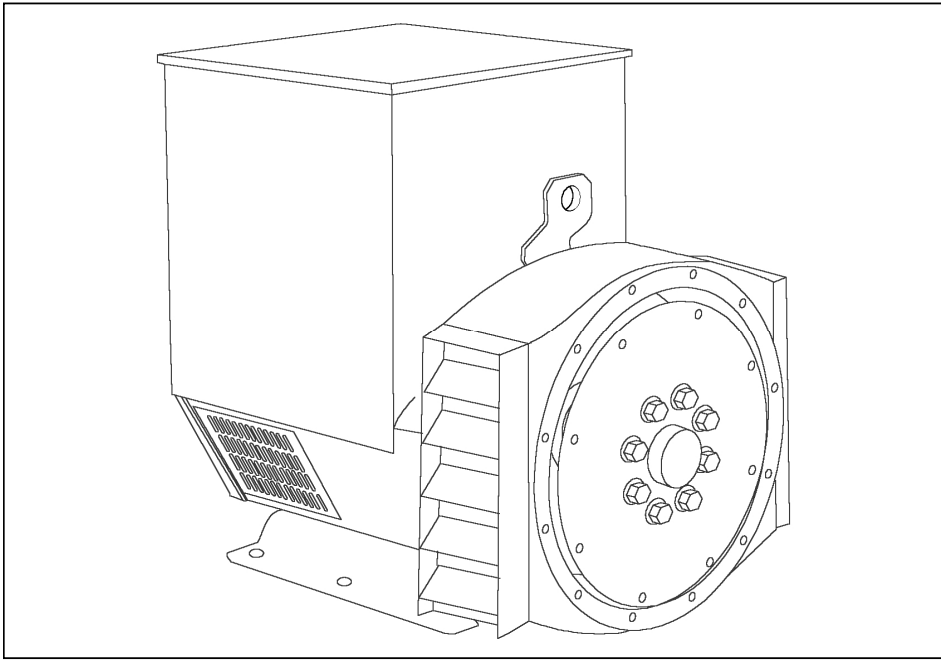
N.A. = Not Available

All data is subject to change without notice, sorry for inform.

**Dongfeng Cummins Engine Co., Ltd.**

# STAMFORD<sup>®</sup>

## UCM274D - Technical Data Sheet



**SPECIFICATIONS & OPTIONS****STANDARDS**

Marine generators may be certified to Lloyds, DnV, Bureau Veritas, ABS, Germanischer-Lloyd or RINA. Other standards and certifications can be considered on request.

**VOLTAGE REGULATORS****MX341 AVR - STANDARD**

This sophisticated Automatic Voltage Regulator (AVR) is incorporated into the Stamford Permanent Magnet Generator (PMG) control system, and is standard on marine generators of this type.

The PMG provides power via the AVR to the main exciter, giving a source of constant excitation power independent of generator output. The main exciter output is then fed to the main rotor, through a full wave bridge, protected by a surge suppressor. The AVR has in-built protection against sustained over-excitation, caused by internal or external faults. This de-excites the machine after a minimum of 5 seconds.

An engine relief load acceptance feature can enable full load to be applied to the generator in a single step.

If three-phase sensing is required with the PMG system the MX321 AVR must be used.

We recommend three-phase sensing for applications with greatly unbalanced or highly non-linear loads.

**MX321 AVR**

The most sophisticated of all our AVRs combines all the features of the MX341 with, additionally, three-phase rms sensing, for improved regulation and performance.

Over voltage protection is built-in and short circuit current level adjustments is an optional facility.

**WINDINGS & ELECTRICAL PERFORMANCE**

All generator stators are wound to 2/3 pitch. This eliminates triplen (3rd, 9th, 15th ...) harmonics on the voltage waveform and is found to be the optimum design for trouble-free supply of non-linear loads. The 2/3 pitch design avoids excessive neutral currents sometimes seen with higher winding pitches, when in parallel with the mains. A fully connected damper winding reduces oscillations during paralleling. This winding, with the 2/3 pitch and carefully selected pole and tooth designs, ensures very low waveform distortion.

**TERMINALS & TERMINAL BOX**

Standard generators are 3-phase reconnectable with 12 ends brought out to the terminals, which are mounted on a cover at the non-drive end of the generator. A sheet steel terminal box contains the AVR and provides ample space for the customers' wiring and gland arrangements. It has removable panels for easy access.

**SHAFT & KEYS**

All generator rotors are dynamically balanced to better than BS6861:Part 1 Grade 2.5 for minimum vibration in operation. Two bearing generators are balanced with a half key.

**INSULATION/IMPREGNATION**

The insulation system is class 'H'.

All wound components are impregnated with materials and processes designed specifically to provide the high build required for static windings and the high mechanical strength required for rotating components.

**QUALITY ASSURANCE**

Generators are manufactured using production procedures having a quality assurance level to BS EN ISO 9001.

The stated voltage regulation may not be maintained in the presence of certain radio transmitted signals. Any change in performance will fall within the limits of Criteria 'B' of EN 61000-6-2:2001. At no time will the steady-state voltage regulation exceed 2%.

*NB Continuous development of our products entitles us to change specification details without notice, therefore they must not be regarded as binding.*

*Front cover drawing typical of product range.*

# UCM274D

**STAMFORD**

## WINDING 311

CONTROL SYSTEM	SEPARATELY EXCITED BY P.M.G.		
A.V.R.	MX321	MX341	
VOLTAGE REGULATION	± 0.5 %	± 1.0 %	With 4% ENGINE GOVERNING
SUSTAINED SHORT CIRCUIT	REFER TO SHORT CIRCUIT DECREMENT CURVES (page 7)		

INSULATION SYSTEM	CLASS H
PROTECTION	IP23
RATED POWER FACTOR	0.8
STATOR WINDING	DOUBLE LAYER CONCENTRIC
WINDING PITCH	TWO THIRDS
WINDING LEADS	12
STATOR WDG. RESISTANCE	0.044 Ohms PER PHASE AT 22°C SERIES STAR CONNECTED
ROTOR WDG. RESISTANCE	1.26 Ohms at 22°C
EXCITER STATOR RESISTANCE	20 Ohms at 22°C
EXCITER ROTOR RESISTANCE	0.078 Ohms PER PHASE AT 22°C
R.F.I. SUPPRESSION	BS EN 61000-6-2 & BS EN 61000-6-4,VDE 0875G, VDE 0875N. refer to factory for others
WAVEFORM DISTORTION	NO LOAD < 1.5% NON-DISTORTING BALANCED LINEAR LOAD < 5.0%
MAXIMUM OVERSPEED	2250 Rev/Min
BEARING DRIVE END	BALL. 6315-2RS (ISO)
BEARING NON-DRIVE END	BALL. 6310-2RS (ISO)

	1 BEARING	2 BEARING
WEIGHT COMP. GENERATOR	431 kg	450 kg
WEIGHT WOUND STATOR	141 kg	141 kg
WEIGHT WOUND ROTOR	149.4 kg	138.4 kg
WR <sup>2</sup> INERTIA	1.1962 kgm <sup>2</sup>	1.1455 kgm <sup>2</sup>
SHIPPING WEIGHTS in a crate	458 kg	476 kg
PACKING CRATE SIZE	105 x 67 x 103 (cm)	105 x 67 x 103 (cm)

	50 Hz	60 Hz
TELEPHONE INTERFERENCE	THF<2%	TIF<50

COOLING AIR	0.514 m <sup>3</sup> /sec 1090 cfm	0.617 m <sup>3</sup> /sec 1308 cfm
-------------	------------------------------------	------------------------------------

VOLTAGE SERIES STAR	380/220	400/231	415/240	440/254	416/240	440/254	460/266	480/277
VOLTAGE PARALLEL STAR	190/110	200/115	208/120	220/127	208/120	220/127	230/133	240/138
VOLTAGE SERIES DELTA	220/110	230/115	240/120	254/127	240/120	254/127	266/133	277/138
kVA BASE RATING FOR REACTANCE VALUES	97	97	97	N/A	115	117.5	120	125
X <sub>d</sub> DIR. AXIS SYNCHRONOUS	1.85	1.67	1.55	-	2.21	2.02	1.89	1.80
X' <sub>d</sub> DIR. AXIS TRANSIENT	0.15	0.15	0.14	-	0.18	0.17	0.16	0.15
X'' <sub>d</sub> DIR. AXIS SUBTRANSIENT	0.10	0.09	0.09	-	0.13	0.12	0.11	0.10
X <sub>q</sub> QUAD. AXIS REACTANCE	1.18	1.07	1.00	-	1.31	1.19	1.12	1.07
X'' <sub>q</sub> QUAD. AXIS SUBTRANSIENT	0.14	0.13	0.12	-	0.18	0.17	0.16	0.15
X <sub>L</sub> LEAKAGE REACTANCE	0.06	0.05	0.05	-	0.06	0.06	0.05	0.05
X <sub>2</sub> NEGATIVE SEQUENCE	0.12	0.11	0.10	-	0.15	0.14	0.13	0.12
X <sub>0</sub> ZERO SEQUENCE	0.08	0.06	0.06	-	0.09	0.08	0.08	0.07

REACTANCES ARE SATURATED VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED

T' <sub>d</sub> TRANSIENT TIME CONST.	0.031 s
T'' <sub>d</sub> SUB-TRANSTIME CONST.	0.01 s
T' <sub>do</sub> O.C. FIELD TIME CONST.	0.85 s
T <sub>a</sub> ARMATURE TIME CONST.	0.0073 s
SHORT CIRCUIT RATIO	1/X <sub>d</sub>

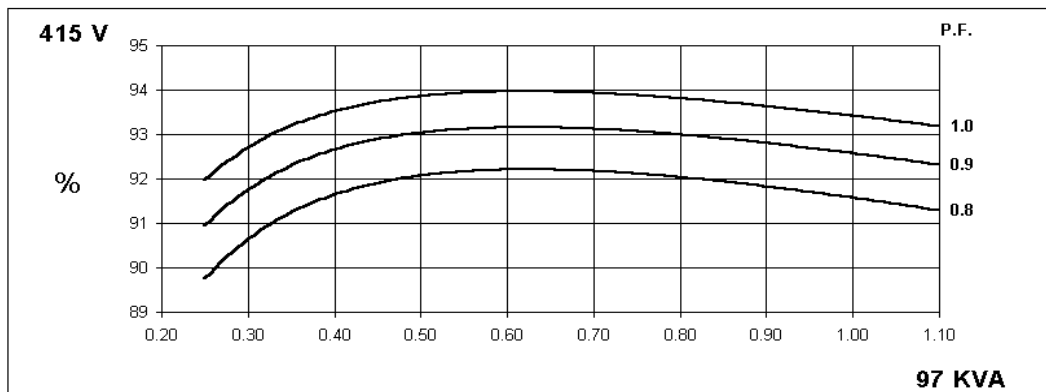
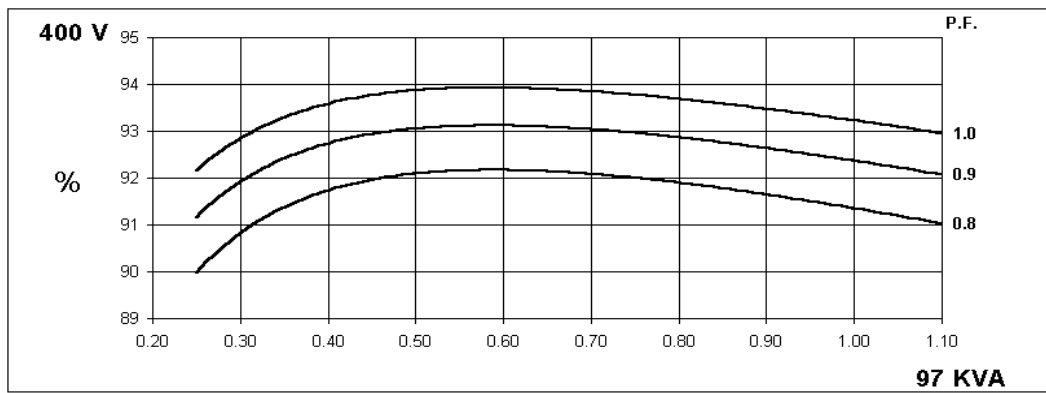
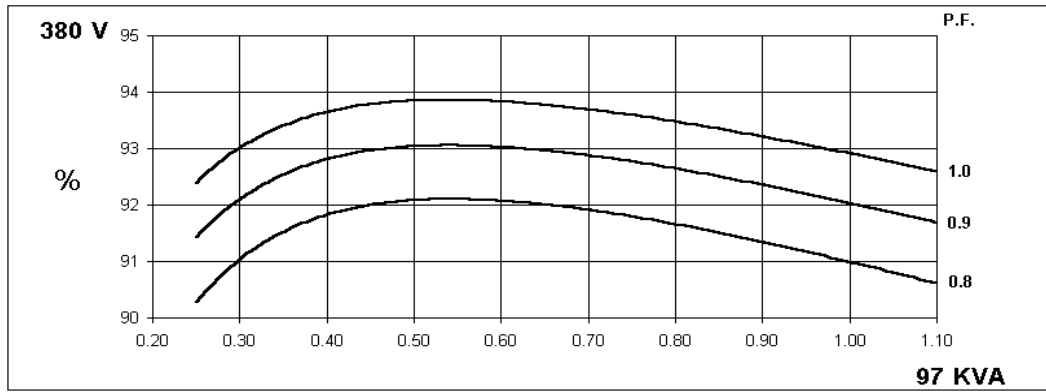
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Hz**

**UCM274D**

Winding 311

**STAMFORD**

**THREE PHASE EFFICIENCY CURVES**



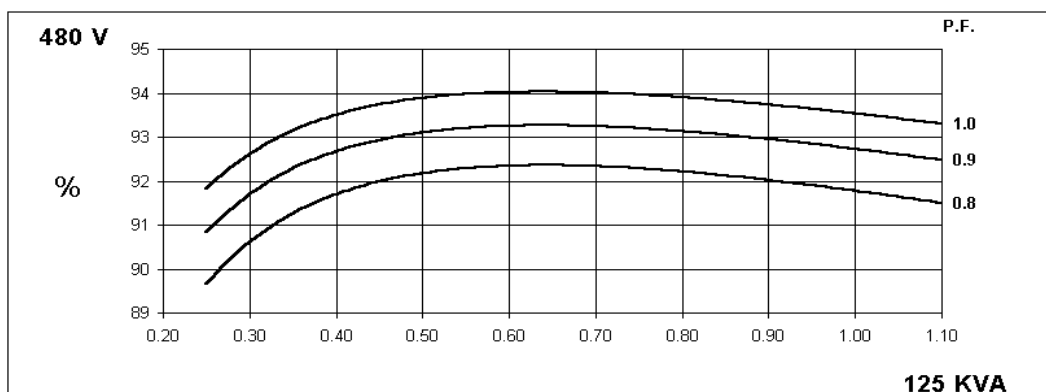
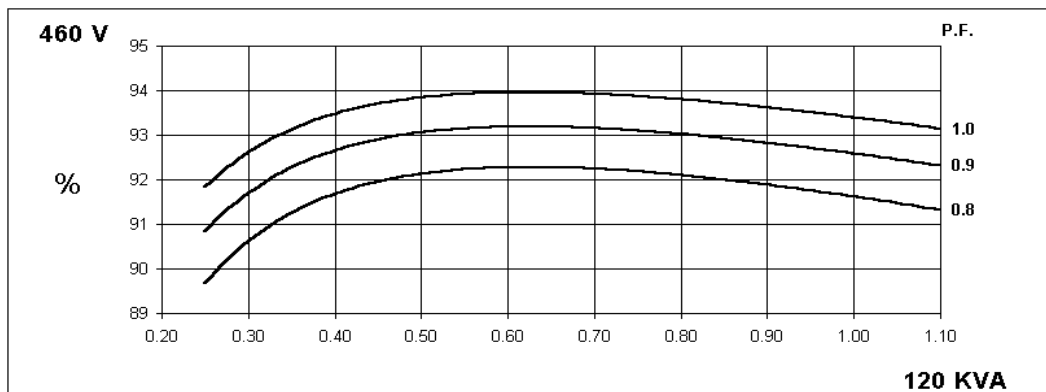
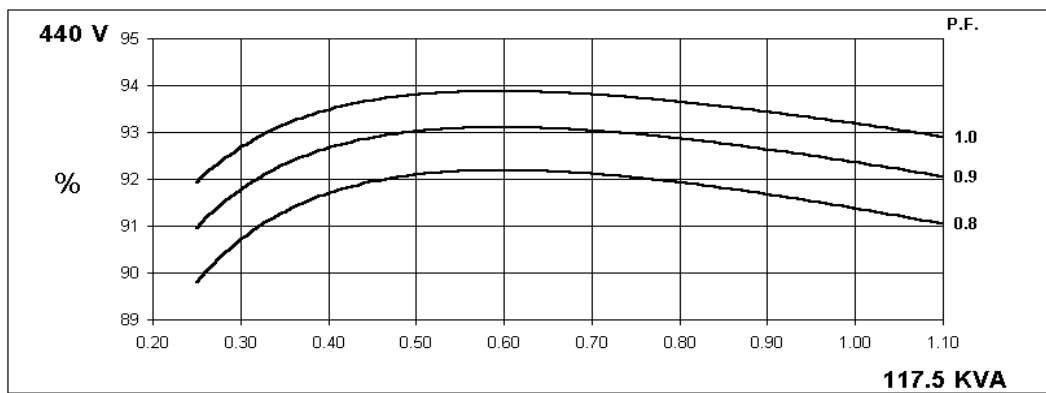
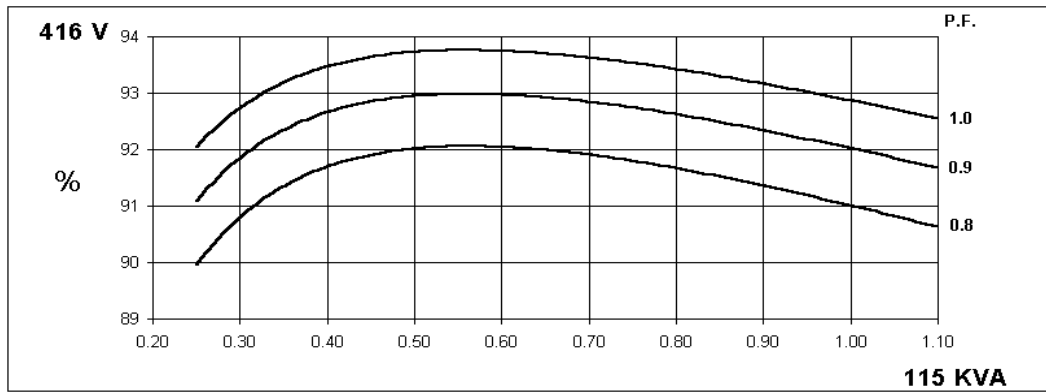
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**UCM274D**

**STAMFORD**

Winding 311

**THREE PHASE EFFICIENCY CURVES**



**UCM274D**  
Winding 311

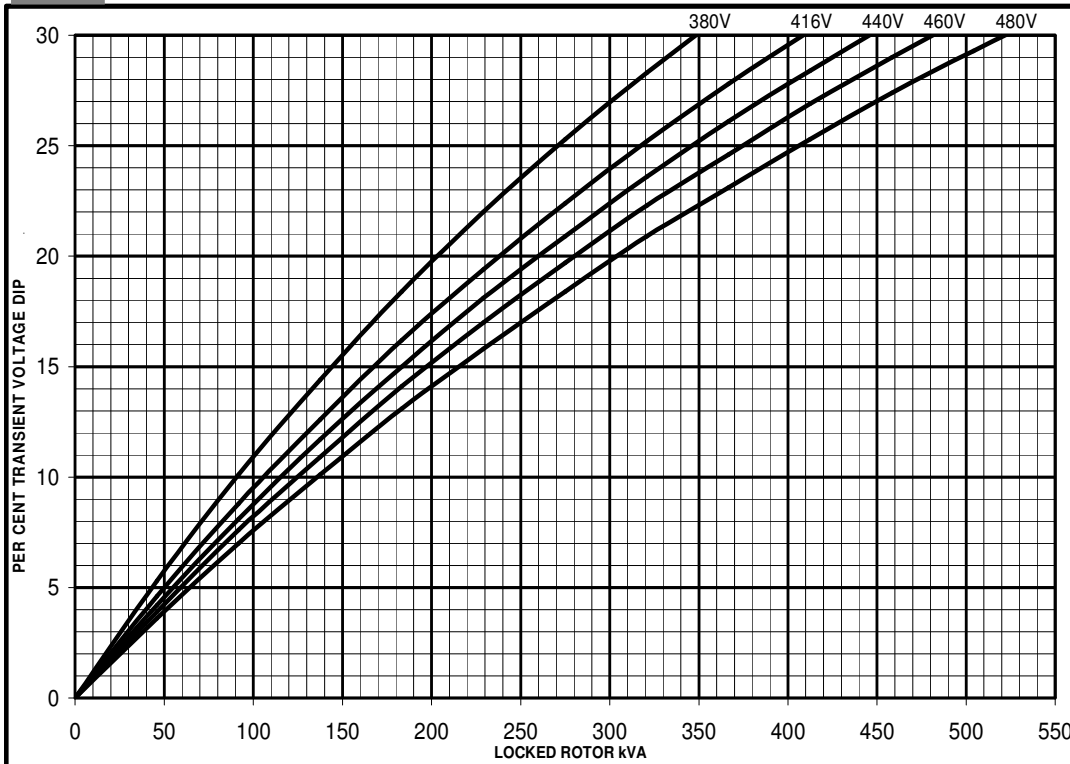
**STAMFORD**

**50  
Hz**

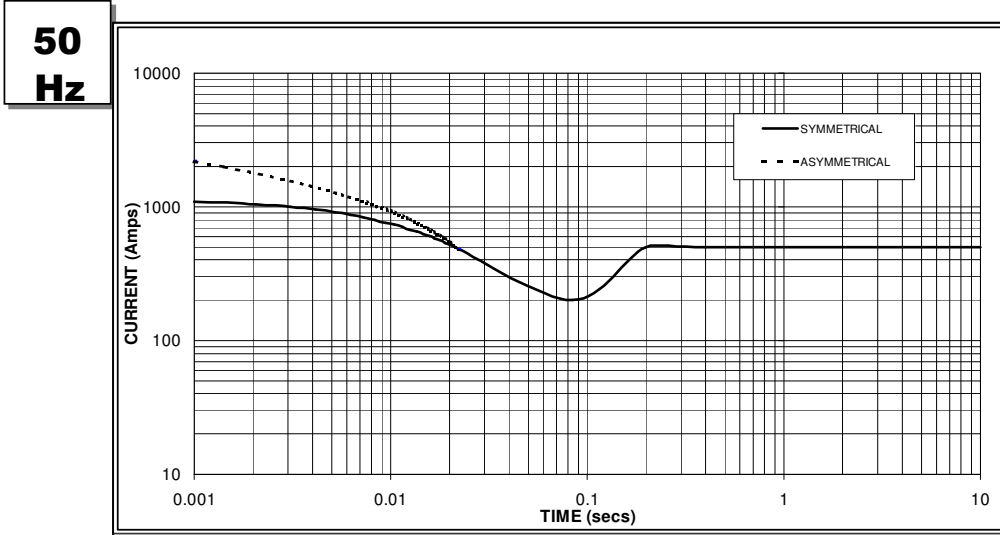
**Locked Rotor Motor Starting Curve**



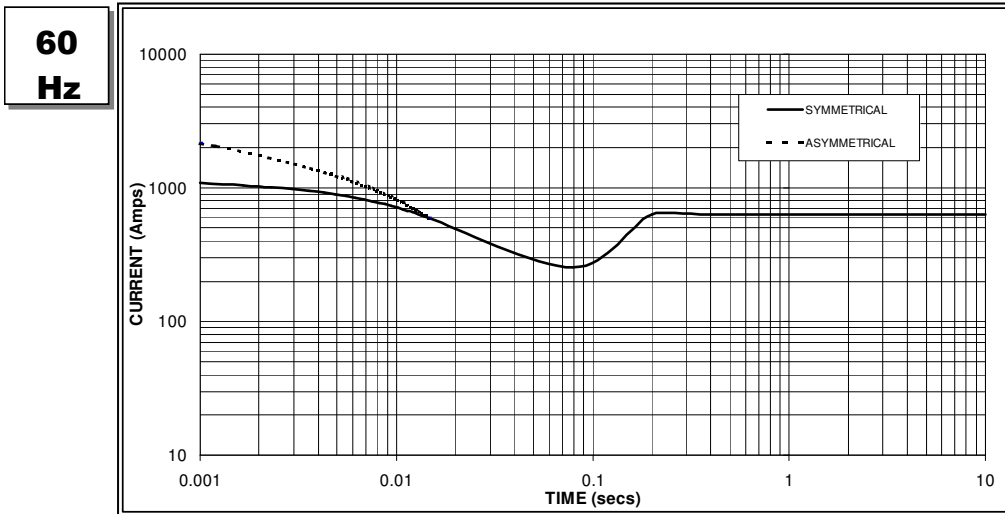
**60  
Hz**



Three-phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed  
Based on star (wye) connection.



Sustained Short Circuit = 500 Amps



Sustained Short Circuit = 630 Amps

**Note 1**

The following multiplication factors should be used to adjust the values from curve between time 0.001 seconds and the minimum current point in respect of nominal operating voltage :

50Hz		60Hz	
Voltage	Factor	Voltage	Factor
380v	X 1.00	416v	X 1.00
400v	X 1.07	440v	X 1.06
415v	X 1.12	460v	X 1.12
		480v	X 1.17

The sustained current value is constant irrespective of voltage level

The alternator is capable of delivering 300% short-circuit current for 10 seconds as per requirements specified by marine agencies.

**Note 2**

The following multiplication factor should be used to convert the values calculated in accordance with NOTE 1 to those applicable to the various types of short circuit :

	3-phase	2-phase L-L	1-phase L-N
Instantaneous	x 1.00	x 0.87	x 1.30
Minimum	x 1.00	x 1.80	x 3.20
Sustained	x 1.00	x 1.50	x 2.50
Max. sustained duration	10 sec.	5 sec.	2 sec.

All other times are unchanged

**Note 3**

Curves are drawn for Star (Wye) connected machines. For other connection the following multipliers should be applied to current values as shown :

Parallel Star = Curve current value X 2

Series Delta = Curve current value X 1.732

# UCM274D

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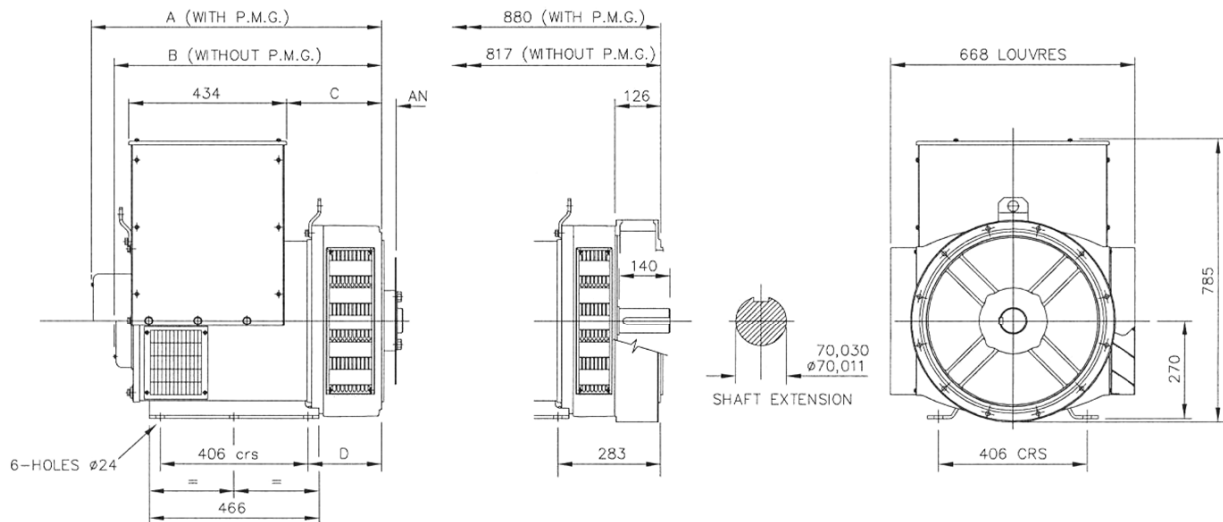
## Winding 311 / 0.8 Power Factor

### RATINGS

Class - Temp Rise		Cont. E - 65/50°C				Cont. B - 70/50°C				Cont. F - 90/50°C				Cont. H - 110/50°C			
<b>50 Hz</b>	Series Star (V)	380	400	415	440	380	400	415	440	380	400	415	440	380	400	415	440
	Parallel Star (V)	190	200	208	220	190	200	208	220	190	200	208	220	190	200	208	220
	Series Delta (V)	220	230	240	254	220	230	240	254	220	230	240	254	220	230	240	254
	kVA	73.5	73.5	73.5	N/A	81.3	81.3	81.3	N/A	87.5	87.5	87.5	N/A	97.0	97.0	97.0	N/A
	kW	58.8	58.8	58.8	N/A	65.0	65.0	65.0	N/A	70.0	70.0	70.0	N/A	77.6	77.6	77.6	N/A
	Efficiency (%)	91.8	92.0	92.1	N/A	91.5	91.8	92.0	N/A	91.3	91.6	91.8	N/A	91.0	91.4	91.6	N/A
	kW Input	64.1	63.9	63.8	N/A	71.1	70.8	70.7	N/A	76.7	76.4	76.3	N/A	85.3	84.9	84.7	N/A

<b>60 Hz</b>	Series Star (V)	416	440	460	480	416	440	460	480	416	440	460	480	416	440	460	480
	Parallel Star (V)	208	220	230	240	208	220	230	240	208	220	230	240	208	220	230	240
	Series Delta (V)	240	254	266	277	240	254	266	277	240	254	266	277	240	254	266	277
	kVA	82.5	84.4	86.9	86.9	87.5	90.0	92.5	92.5	107.5	110.0	112.5	112.5	115.0	117.5	120.0	125.0
	kW	66.0	67.5	69.5	69.5	70.0	72.0	74.0	74.0	86.0	88.0	90.0	90.0	92.0	94.0	96.0	100.0
	Efficiency (%)	91.9	92.1	92.2	92.3	91.8	92.0	92.1	92.3	91.2	91.6	91.8	92.0	91.0	91.4	91.6	91.8
	kW Input	71.8	73.3	75.4	75.3	76.3	78.3	80.3	80.2	94.3	96.1	98.0	97.8	101.1	102.8	104.8	108.9

### DIMENSIONS



SINGLE BEARING ADAPTORS				
ADAPTOR	A	B	C	D
SAE 1	813,3	750,3	274,3	216,3
SAE 2	799	736	260	202
SAE 3	799	736	260	202

COUPLING DISCS	
DISC	AN
SAE 10	53,98
SAE 11,5	39,68
SAE 14	25,40

**STAMFORD**

[www.cumminsgeneratortechnologies.com](http://www.cumminsgeneratortechnologies.com)

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# DSE7310/20

## AUTO START & AUTO MAINS FAILURE CONTROL MODULES

### FEATURES



#### DSE7310



#### KEY FEATURES

- 4-Line back-lit LCD text display
- Five key menu navigation
- Front panel editing with PIN protection
- Customisable status screens
- Power save mode
- Support for up to three remote display units
- 9 configurable inputs
- 8 configurable outputs
- Flexible sender inputs
- Configurable timers and alarms
- 3 configurable maintenance alarms
- Multiple date and time scheduler
- Configurable event log (250)
- Tier 4 CAN engine support
- Integral PLC editor
- Easy access diagnostic page
- CAN and Magnetic Pick-up/Alt. sensing
- Fuel usage monitor and low fuel alarms
- Charge alternator failure alarm
- Manual speed control (on compatible CAN engines)
- Manual fuel pump control
- Engine exerciser
- "Protections disabled" feature
- kW & kV Ar protection
- Reverse power (kW & kV Ar) protection

#### DSE7320



- LED and LCD alarm indication
- Power monitoring (kW h, kV Ar, kV A h, kV Ar h)
- Load switching (load shedding and dummy load outputs)
- Automatic load transfer (DSE7320)
- Unbalanced load protection
- Independent Earth Fault trip
- True dual mutual standby with load balancing timer (DSE7310 only)
- USB connectivity
- Backed up real time clock
- Fully configurable via DSE Configuration Suite PC software
- Configurable display languages
- Remote SCADA monitoring via DSE Configuration Suite PC software
- User selectable RS232 and RS485 communications
- Configurable Gencomm pages
- Advanced SMS messaging (additional external modem required)
- Start & stop capability via SMS messaging
- Additional display screens to help with modern diagnostics
- Idle control for starting & stopping.
- DSENet® expansion compatible
- Heated display option available

#### KEY BENEFITS

- 132 x 64 pixel ratio display for clarity
- Real-time clock provides accurate event logging
- Multiple date and time scheduler
- Set maintenance periods can be configured to maintain optimum engine performance
- Ethernet communications (via DSE855 module), provides advanced remote monitoring
- Modules can be integrated into building management systems (BMS)
- Increased input and output expansion capability via DSENet®
- Licence-free PC software
- IP65 rating (with supplied gasket) offers increased resistance to water ingress
- PLC editor allows user configurable functions to meet specific application requirements

### SPECIFICATION

#### DC SUPPLY

**CONTINUOUS VOLTAGE RATING**  
8 V to 35 V Continuous

#### CRANKING DROPOUTS

Able to survive 0 V for 50 mS, providing supply was at least 10 V before dropout and supply recovers to 5 V. This is achieved without the need for internal batteries. LEDs and backlight will not be maintained during cranking.

#### MAXIMUM OPERATING CURRENT

340 mA at 12 V, 160 mA at 24 V

#### MAXIMUM STANDBY CURRENT

160 mA at 12 V, 80 mA at 24 V

#### CHARGE FAIL/EXCITATION RANGE

0 V to 35 V

#### MAINS (UTILITY) DSE7320 ONLY VOLTAGE RANGE

15 V to 415 V AC (Ph to N)  
26 V to 719 V AC (Ph to Ph)

#### FREQUENCY RANGE

3.5 Hz to 75 Hz

#### OUTPUTS

##### OUTPUT A (FUEL)

15 A DC at supply voltage

##### OUTPUT B (START)

15 A DC at supply voltage

##### OUTPUTS C & D

8 A 250 V (Volt free)

##### AUXILIARY OUTPUTS E,F,G,H

2 A DC at supply voltage

#### GENERATOR

##### VOLTAGE RANGE

15 V to 415 V AC (Ph to N)  
26 V to 719 V AC (Ph to Ph)

##### FREQUENCY RANGE

3.5 Hz to 75 Hz

##### MAGNETIC PICK UP

##### VOLTAGE RANGE

+/- 0.5 V to 70 V

##### FREQUENCY RANGE

10,000 Hz (max)

#### DIMENSIONS

##### OVERALL

240 mm x 181 mm x 42 mm  
9.4" x 7.1" x 1.6"

##### PANEL CUT-OUT

220 mm x 160 mm  
8.7" x 6.3"

##### MAXIMUM PANEL THICKNESS

8 mm  
0.3"

##### OPERATING TEMPERATURE RANGE

-30°C to +70°C

##### STORAGE TEMPERATURE RANGE

-40°C to +80°C

### RELATED MATERIALS

#### TITLE

DSE7310 Installation Instructions  
DSE7320 Installation Instructions  
DSE7200/7300 Quick Start Guide  
DSE7200/7300 Operator Manual  
DSE7200/7300 Configuration Suite PC Manual

#### PART NO'S

053-028  
053-029  
057-101  
057-074  
057-077

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# DSE7310/20

## AUTO START & AUTO MAINS FAILURE CONTROL MODULES

### FEATURES



The DSE7310 is an Auto Start Control Module and the DSE7320 is an Auto Mains (Utility) Failure Control Module suitable for a wide variety of single, diesel or gas, gen-set applications.

Monitoring an extensive number of engine parameters, the modules will display warnings, shutdown and engine status information on the back-lit LCD screen, illuminated LEDs, remote PC and via SMS text alerts (with external modem).

The DSE7320 will also monitor the mains (utility) supply. The modules include USB, RS232 and RS485 ports as well as dedicated DSENet® terminals for system expansion.

Both modules are compatible with electronic (CAN) and non-electronic (magnetic pick-up/alternator sensing) engines and offer an extensive number of flexible inputs, outputs and extensive engine protections so the system can be easily adapted to meet the most demanding industry requirements.

The extensive list of features includes enhanced event and performance monitoring, remote communications, PLC functionality and dual mutual standby (DSE7310 only) to reduce engine wear.

The modules can be easily configured using the DSE Configuration Suite PC software. Selected front panel editing is also available.

### ENVIRONMENTAL TESTING STANDARDS

#### ELECTRO-MAGNETIC COMPATIBILITY

BS EN 61000-6-2  
EMC Generic Immunity Standard for the Industrial Environment  
BS EN 61000-6-4  
EMC Generic Emission Standard for the Industrial Environment

#### ELECTRICAL SAFETY

BS EN 60950  
Safety of Information Technology Equipment, including Electrical Business Equipment

#### TEMPERATURE

BS EN 60068-2-1  
Ab/Ae Cold Test -30 °C  
BS EN 60068-2-2  
Bb/Be Dry Heat +70 °C

#### VIBRATION

BS EN 60068-2-6  
Ten sweeps in each of three major axes  
5 Hz to 8 Hz @ +/-7.5 mm,  
8 Hz to 500 Hz @ 2 gn

#### HUMIDITY

BS EN 60068-2-30  
Db Damp Heat Cyclic 20/55 °C @ 95% RH 48 Hours  
BS EN 60068-2-78  
Cab Damp Heat Static 40 °C @ 93% RH 48 Hours

#### SHOCK

BS EN 60068-2-27  
Three shocks in each of three major axes  
15 gn in 11 ms

#### DEGREES OF PROTECTION PROVIDED BY ENCLOSURES

BS EN 60529  
IP65 - Front of module when installed into the control panel with the supplied sealing gasket.

## COMPREHENSIVE FEATURE LIST TO SUIT A WIDE VARIETY OF GEN-SET APPLICATIONS

