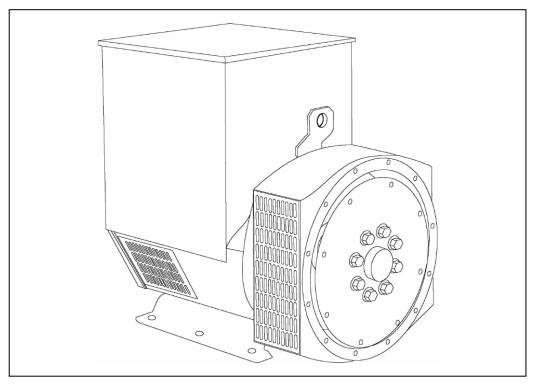


UCI224C - Technical Data Sheet



UCI224C SPECIFICATIONS & OPTIONS



STANDARDS

Newage Stamford industrial generators meet the requirements of BS EN 60034 and the relevant section of other international standards such as BS5000, VDE 0530, NEMA MG1-32, IEC34, CSA C22.2-100, AS1359. Other standards and certifications can be considered on request.

VOLTAGE REGULATORS

SX460 AVR - STANDARD

With this self excited control system the main stator supplies power via the Automatic Voltage Regulator (AVR) to the exciter stator. The high efficiency semiconductors of the AVR ensure positive build-up from initial low levels of residual voltage.

The exciter rotor output is fed to the main rotor through a three phase full wave bridge rectifier. This rectifier is protected by a surge suppressor against surges caused, for example, by short circuit.

AS440 AVR

With this self-excited system the main stator provides power via the AVR to the exciter stator. The high efficiency semi-conductors of the AVR ensure positive build-up from initial low levels of residual voltage.

The exciter rotor output is fed to the main rotor through a three-phase full-wave bridge rectifier. The rectifier is protected by a surge suppressor against surges caused, for example, by short circuit or out-of-phase paralleling.

The AS440 will support a range of electronic accessories, including a 'droop' Current Transformer (CT) to permit parallel operation with other ac generators.

MX341 AVR

This sophisticated AVR is incorporated into the Stamford Permanent Magnet Generator (PMG) control system.

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%.

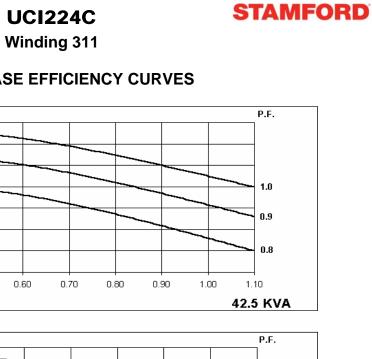
NB Continuous development of our products entitles us to change specification details without notice, therefore they must not be regarded as binding.

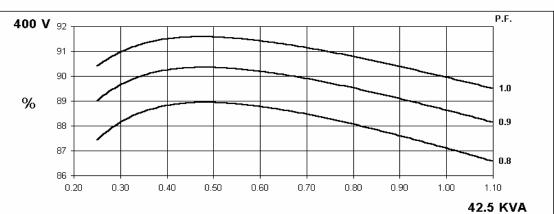
Front cover drawing typical of product range.

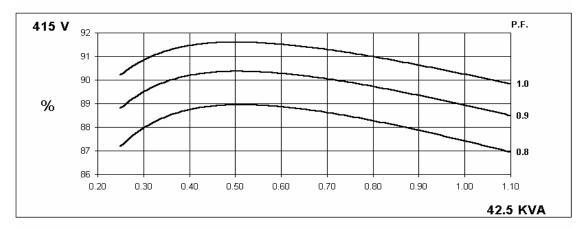


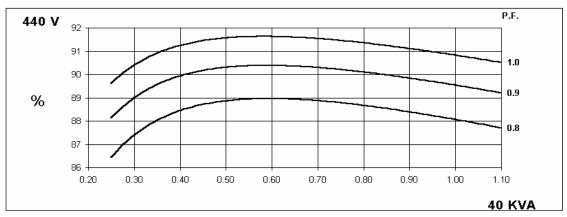
WINDING 311

		WIN	IDING 31	1						
CONTROL SYSTEM	SEPARATE	LY EXCITED) BY P.M.G.							
A.V.R.	MX321	MX341								
VOLTAGE REGULATION	± 0.5 %	± 1.0 %	With 4% FN	GINE GOVE	RNING					
SUSTAINED SHORT CIRCUIT	REFER TO SHORT CIRCUIT DECREMENT CUR									
	REFERTO									
CONTROL SYSTEM	SELF EXCIT	ΓED								
A.V.R.	SX460	AS440								
VOLTAGE REGULATION	± 1.0 %	± 1.0 %	With 4% EN	GINE GOVE	RNING					
SUSTAINED SHORT CIRCUIT	SERIES 4 C	ONTROL DO	DES NOT SU	STAIN A SH	ORT CIRCU	IT CURRENT	-			
INSULATION SYSTEM				CLAS	SS H					
PROTECTION				IP2	23					
RATED POWER FACTOR				0.	8					
STATOR WINDING			וסם			RIC				
			200	TWO T						
				1:	_					
STATOR WDG. RESISTANCE		0.181 C	hms PER PH	-		STAR CONNE	ECTED			
ROTOR WDG. RESISTANCE				0.59 Ohm:						
EXCITER STATOR RESISTANCE				21 Ohms	at 22°C					
EXCITER ROTOR RESISTANCE			0.071	Ohms PER	PHASE AT 2	22°C				
R.F.I. SUPPRESSION	BS EN	61000-6-2 8	BS EN 6100	0-6-4,VDE 0	875G, VDE ()875N. refer 1	to factory for	others		
WAVEFORM DISTORTION		NO LOAD <	:1.5% NON-	DISTORTING	G BALANCEI	D LINEAR LC	DAD < 5.0%			
MAXIMUM OVERSPEED				2250 R	ev/Min					
BEARING DRIVE END				BALL. 6312-	2RS (ISO)					
BEARING NON-DRIVE END				BALL. 6309-	-2RS (ISO)					
		1 BE/	ARING		, ,	2 BEA	RING			
WEIGHT COMP. GENERATOR			1 kg			280				
WEIGHT WOUND STATOR		75	5 kg			75	kg			
WEIGHT WOUND ROTOR		78.9	95 kg			70.5	8 kg			
WR ² INERTIA		0.398	7 kgm ²			0.3667	' kgm²			
SHIPPING WEIGHTS in a crate		294	4 kg			301	kg			
PACKING CRATE SIZE			x 96(cm)			97 x 57 >	. ,			
			Hz			60				
			-<2%		TIF<50 0.281 m³/sec 595 cfm					
COOLING AIR VOLTAGE SERIES STAR	200/220	0.216 m³/s 400/231	ec 458 cfm	440/054	44.0/0.40			400/077		
VOLTAGE SERIES STAR	380/220 190/110	200/115	415/240 208/120	440/254	416/240 208/120	440/254 220/127	460/266 230/133	480/277 240/138		
VOLTAGE PARALLEL STAR	220/110	230/115	200/120	220/127 254/127	200/120	254/127	266/133	240/138		
kVA BASE RATING FOR REACTANCE										
VALUES	42.5	42.5	42.5	40	50	52.5	52.5	55		
Xd DIR. AXIS SYNCHRONOUS	2.42	2.19	2.03	1.70	3.03	2.84	2.60	2.50		
X'd DIR. AXIS TRANSIENT	0.19	0.17	0.16	0.13	0.22	0.21	0.19	0.18		
X"d DIR. AXIS SUBTRANSIENT	0.12	0.11	0.10	0.08	0.15	0.14	0.13	0.12		
Xq QUAD. AXIS REACTANCE	1.12	1.01	0.94	0.79	1.40	1.31	1.20	1.16		
X"q QUAD. AXIS SUBTRANSIENT	0.16	0.14	0.13	0.11	0.14	0.13	0.12	0.12		
	0.08	0.08	0.07	0.06	0.10	0.09	0.09	0.08		
X2 NEGATIVE SEQUENCE	0.14	0.13	0.12	0.10	0.14	0.13	0.12	0.12		
X0ZERO SEQUENCE	0.10	0.09						0.08		
REACTANCES ARE SATURAT T'd TRANSIENT TIME CONST.		V	ALUES ARE	<u>PER UNIT A</u> 0.02		ND VULTAG				
T"d SUB-TRANSTIME CONST.				0.02						
T'do O.C. FIELD TIME CONST.				0.6						
Ta ARMATURE TIME CONST.				0.00)5 s					
SHORT CIRCUIT RATIO				1/>	۲d.					









THREE PHASE EFFICIENCY CURVES

380 V 92

%

91 90 89

88

87

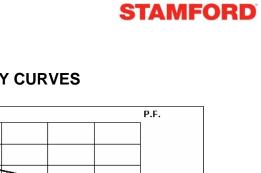
86 85

0.20

0.30

0.40

0.50



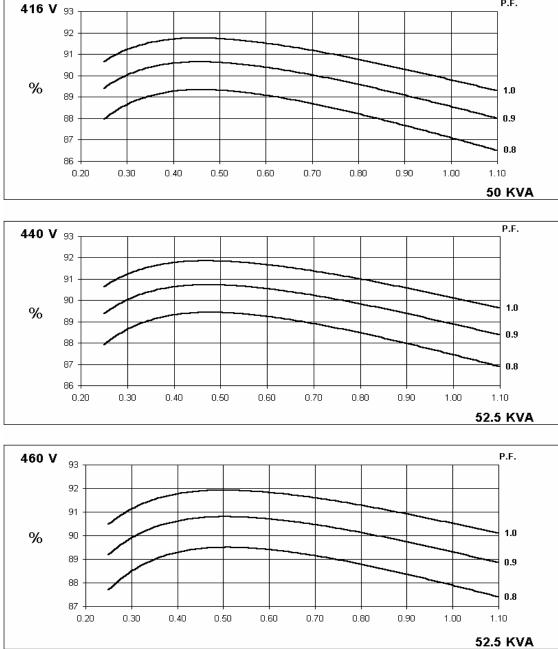


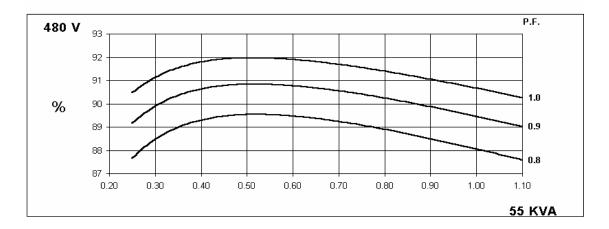
60

Hz

Winding 311

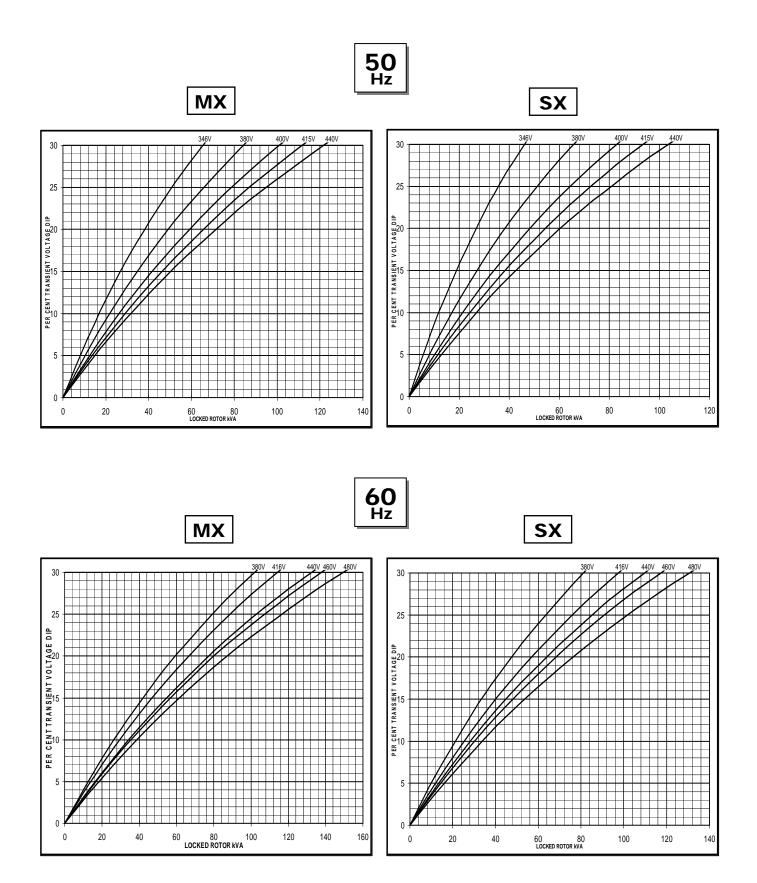
THREE PHASE EFFICIENCY CURVES



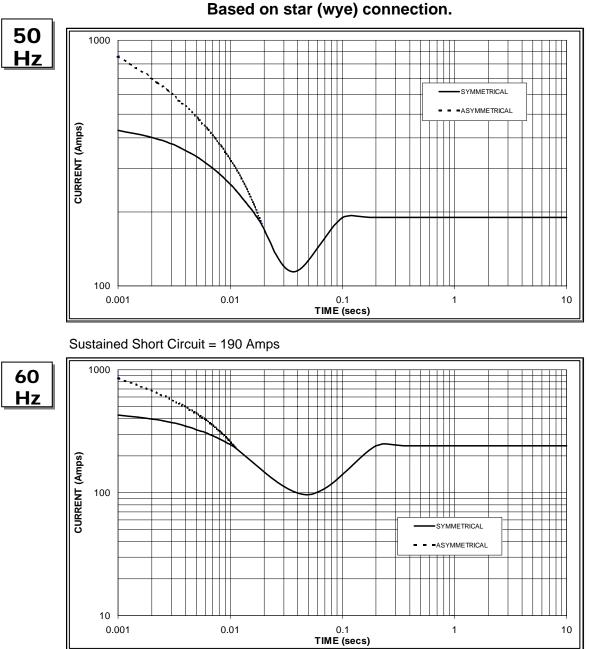


Winding 311

Locked Rotor Motor Starting Curve







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

Sustained Short Circuit = 240 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 :

50	Hz	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					
440v	X 1.18	480v	X 1.17					
The sustaine	The sustained current value is constant irrespective							

The sustained current value is constant irrespective of voltage level

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 :

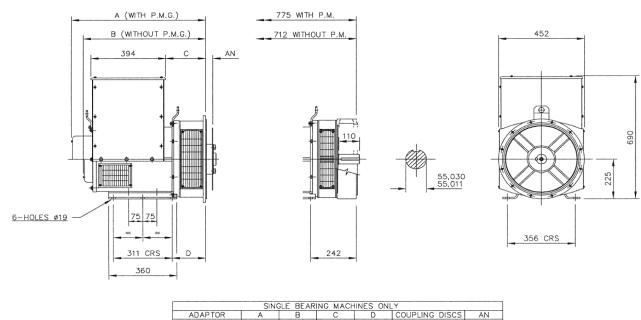
Parallel Star = Curve current value X 2 Series Delta = Curve current value X 1.732



Winding 311 / 0.8 Power Factor

	Class - Temp Rise	Co	ont. F -	105/40	°C	Co	ont. H -	125/40	°C	St	andby -	150/40)°C	St	andby -	163/27	″°C
50	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
Hz	Series Delta (V)	220	230	240	254	220	230	240	254	220	230	240	254	220	230	240	254
	kVA	37.5	37.5	37.5	27.0	42.5	42.5	42.5	30.0	45.0	45.0	45.0	31.7	46.8	46.8	46.8	33.0
	kW	30.0	30.0	30.0	21.6	34.0	34.0	34.0	24.0	36.0	36.0	36.0	.5.4	37.4	37.4	37.4	26.4
	Efficiency (%)	87.3	87.7	88.0	88.4	86.6	87.1	87.4	88.1	86.2	86.8	87.1	87.9	86.0	86.6	86.9	87.7
	kW Input	34.4	34.2	34.1	32.6	39.3	39.0	38.9	36.3	41.8	41.5	41.3	38.4	43.5	43.2	43.1	40.1
						-				-				-			
60	Series Star (V)	416	440	460	480	416	440	460	480	416	440	460	480	416	440	460	480
Hz	Parallel Star (V)	208	220	230	240	208	220	230	240	208	220	230	240	208	220	230	240
	Delta (V)	240	254	266	277	240	254	266	277	240	254	266	277	240	254	266	277
	kVA	45.0	46.3	46.3	48.0	50.0	52.5	52.5	55.0	53.1	55.0	55.0	58.1	55.0	56.3	56.3	60.0
	kW	36.0	37.0	37.0	38.4	40.0	42.0	42.0	44.0	42.5	44.0	44.0	46.5	44.0	45.0	45.0	48.0
	Efficiency (%)	87.7	88.1	88.4	88.6	87.1	87.5	87.9	88.1	86.7	87.2	87.7	87.8	86.5	87.1	87.5	87.6
	kW Input	41.0	42.0	41.9	43.3	45.9	48.0	47.8	49.9	49.0	50.5	50.2	52.9	50.9	51.7	51.5	54.8

DIMENSIONS



	SINC	SLE BEAR	ING MACH	HINES ON	LY	
ADAPTOR	A	В	С	D	COUPLING DISCS	AN
SAE 1	724,3	661,3	224,3	191,3	SAE 8	61,90
SAE 2	710	647	210	177	SAE 10	53,98
SAE 3	710	647	210	177	SAE 11,5	39,68
SAE 4	710	647	210	177	SAE 14	25,40

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