

FRAME 8224N**WINDING 6S****MODELS LL8224N / LL8234N**

REF: F8204NW6S-2 JULY 2010

WINDING DETAILS

Code	6S	Insulation class	H
Phase	3	Leads	6
Pole number	4	Pitch	2/3

MECHANICAL DETAILS

Standard protection	IP23
Overspeed	rpm 2250
Air flow 50Hz/60Hz	m ³ /s 1.80 / 2.20

EXCITATION DETAILS

Excitation system	AREP/PMG
AVR model	R450M
Sustained short-circuit current	300%:10s
Steady state voltage regulation	±0.5%

WAVEFORM

<i>Line voltage on no load or balanced linear rated load</i>	
Total harmonic content THC	<3.5%
Telephone influence factor TIF (NEMA)	<50
Telephone harmonic factor THF (IEC)	<2%

LINE VOLTAGE*No overvoltage tolerance for 440V 50Hz excitation level*

Frequency / speed	V	50Hz / 1500rpm				60Hz / 1800rpm					
		380	400	415	440	380	400	416	440	460	480
Star	V	380	400	415	440	380	400	416	440	460	480
Delta	V	220	230	240		220	230	240			

RATING*Power factor 0.8, Altitude <=1000m*

Class	Rating	kVA	1500	1500	1500	1345	1485	1560	1625	1720	1795	1875
Class H rise BR	125/40	kVA	1500	1500	1500	1345	1485	1560	1625	1720	1795	1875
		kW	1200	1200	1200	1076	1188	1248	1300	1376	1436	1500
Class H rise PR	150/40	kVA	1590	1590	1590	1426	1574	1654	1723	1823	1903	1988
		kW	1272	1272	1272	1141	1259	1323	1378	1459	1522	1590
Class H rise PR	163/27	kVA	1650	1650	1650	1480	1634	1716	1788	1892	1975	2063
		kW	1320	1320	1320	1184	1307	1373	1430	1514	1580	1650
Class F rise BR	105/40	kVA	1365	1365	1365	1224	1351	1420	1479	1565	1633	1706
		kW	1092	1092	1092	979	1081	1136	1183	1252	1307	1365

EFFICIENCIES*Power factor 0.8*

Efficiency	Class	Rating	%	94.9	95.2	95.3	95.5	94.5	94.7	94.8	95.0	95.1	95.2
110%	Class H BR		%	94.9	95.2	95.3	95.5	94.5	94.7	94.8	95.0	95.1	95.2
100%	Class H BR		%	95.2	95.4	95.5	95.6	94.7	94.9	95.0	95.1	95.2	95.3
75%	Class H BR		%	95.7	95.8	95.8	95.7	95.1	95.2	95.3	95.4	95.5	95.6
50%	Class H BR		%	95.8	95.8	95.7	95.2	95.0	95.1	95.2	95.3	95.3	95.3
25%	Class H BR		%	94.5	94.3	94.0	92.8	93.1	93.2	93.3	93.3	93.3	93.3

CHARACTERISTIC PARAMETERS*Reactance base class H BR rating*

K _c	Short-circuit ratio		0.29	0.32	0.39	0.53	0.21	0.22	0.23	0.26	0.28	0.31
X _d	D-Axis synchronous reactance (unsaturated)	pu	4.19	3.78	3.51	2.80	4.97	4.72	4.54	4.30	4.10	3.94
X' _d	D-Axis transient reactance (saturated)	pu	0.27	0.24	0.23	0.18	0.32	0.30	0.29	0.28	0.26	0.25
X'' _d	D-Axis sub-transient reactance (saturated)	pu	0.151	0.136	0.126	0.101	0.179	0.170	0.163	0.155	0.148	0.142
X _q	Q-Axis synchronous reactance (unsaturated)	pu	2.51	2.27	2.11	1.68	2.99	2.83	2.73	2.58	2.46	2.36
X'' _q	Q-Axis sub-transient reactance (saturated)	pu	0.170	0.154	0.143	0.114	0.202	0.192	0.185	0.175	0.167	0.160
X ₂	Negative-sequence reactance (saturated)	pu	0.161	0.145	0.135	0.108	0.191	0.181	0.175	0.165	0.158	0.151
X ₀	Zero-sequence reactance (independent)	pu	0.036	0.033	0.030	0.024	0.043	0.041	0.039	0.037	0.036	0.034
T' _d	D-Axis transient time constant	ms		180						180		
T'' _d	D-Axis sub-transient time constant	ms		18						18		
T' _{do}	D-Axis open-circuit time constant	ms		2779						2779		
T _a	Armature time constant	ms		27						27		
T _r	Voltage recovery time	ms		< 500						< 500		

EXCITATION VOLTAGE AND CURRENT

No load excitation voltage	V	9.1	10.2	11.3	13.9	6.8	7.3	7.7	8.5	9.2	10.2
No load excitation current	A	0.83	0.93	1.03	1.26	0.62	0.66	0.70	0.77	0.84	0.93
Class H BR excitation voltage	V	43.8	43.3	43.8	41.9	39.8	40.4	40.9	41.9	42.9	44.4
Class H BR excitation current	A	3.98	3.94	3.98	3.81	3.62	3.67	3.72	3.81	3.90	4.04

WINDING RESISTANCE*At 20°C*

Stator line-to-line (series star)	Ω	0.0025	Exciter field	Ω	11.00
Main field	Ω	0.506			

According to: IEC 60034, UTE NFC51.111, VDE 0530, BS 4999/5000, NEMA MG 1-33

Values quoted are typical. In line with our policy of continuous improvement, we reserve the right to change specification without notice.

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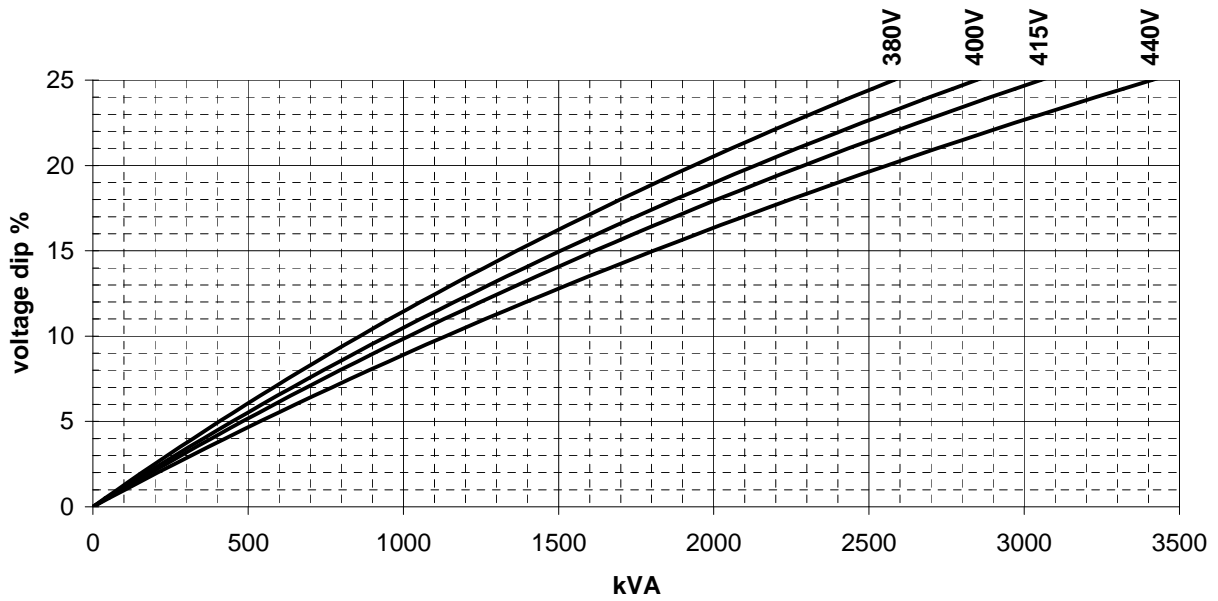
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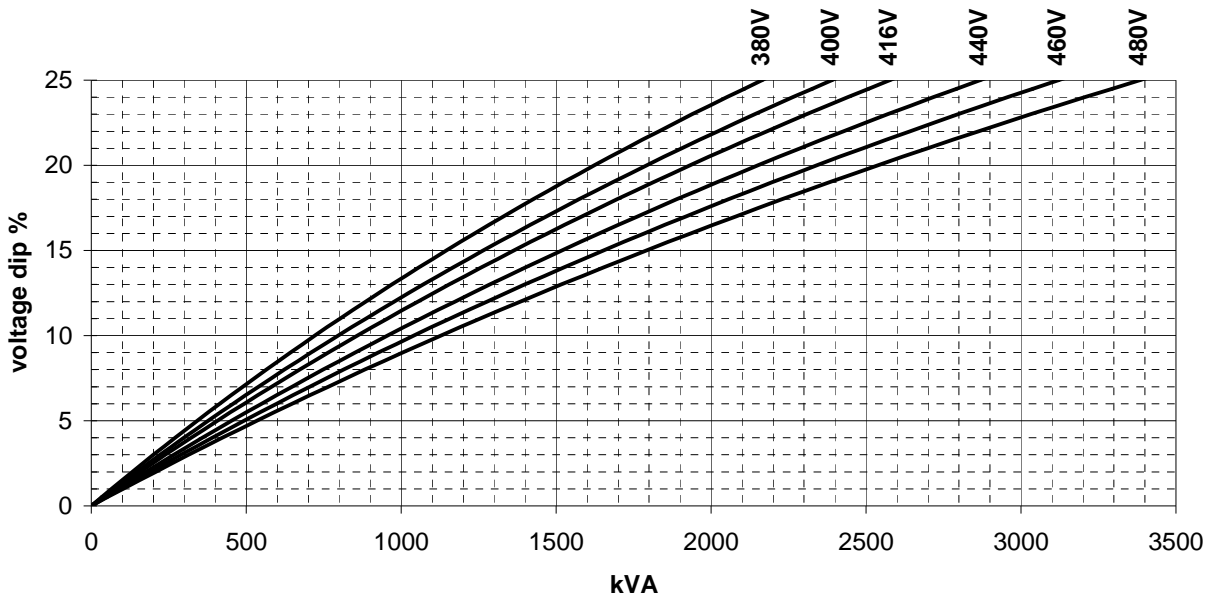
LOCKED ROTOR MOTOR STARTING CURVES

Power factor 0.4

50 Hz AREP / PMG



60 Hz AREP / PMG



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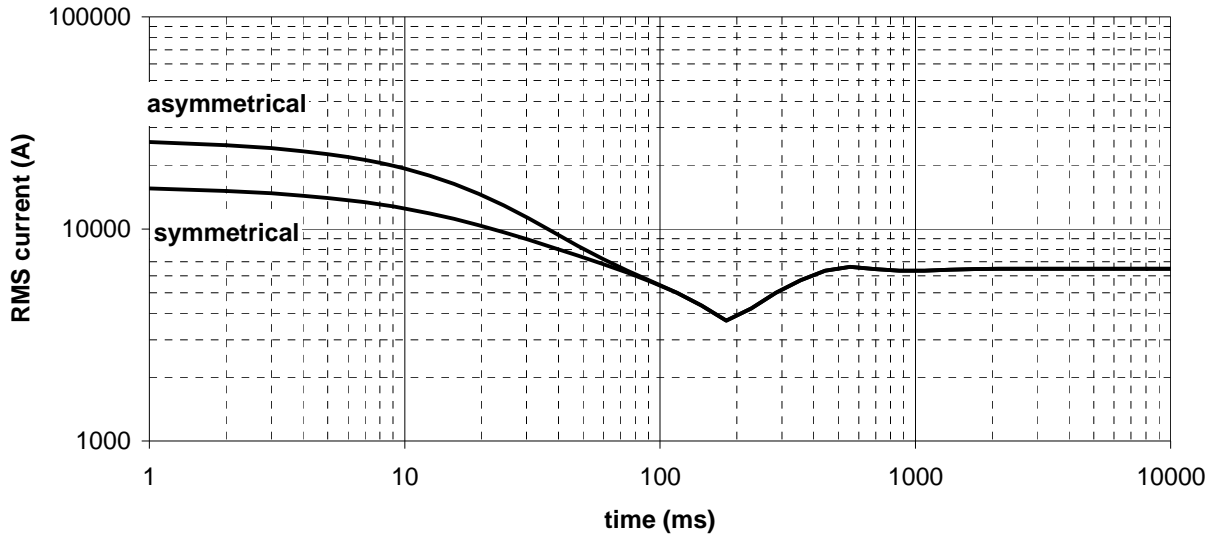
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THREE-PHASE SHORT-CIRCUIT DECREMENT CURVES

No-load excitation at rated speed

400V 50Hz, 480V 60Hz

Star



Multiplication Factors

50Hz Voltages

	380	400	415	440
Multiplication Factor	0.95	1.00	1.04	1.10

Apply factor up to 2xT'd, remainder of curve unchanged

60Hz Voltages

	380	400	416	440	460	480
Multiplication Factor	0.79	0.83	0.87	0.92	0.96	1.00

Apply factor up to 2xT'd, remainder of curve unchanged

Winding Connection

	Star	Delta
Multiplication Factor	1.00	1.73

Apply factor to the complete curve

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