

**FRAME 8224L****WINDING 6S****MODELS LL8224L / LL8234L**

REF: F8204LW6S-3 JANUARY 2016

**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 <sup>3</sup> /s 1.80 / 2.20

**EXCITATION DETAILS**

Excitation system	<b>AREP/PMG</b>
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		50Hz / 1500rpm				60Hz / 1800rpm						
		V	380	400	415	440	380	400	416	440	460	480
Star	V		220	230	240		220	230	240			
Delta	V											

**RATING** *Power factor 0.8, Altitude ≤1000m*

Class	rise	BR	125/40	150/40	163/27	105/40	kVA	1350	1350	1350	1260	1375	1445	1500	1555	1610	1681
Class H	rise	BR	125/40	150/40	163/27	105/40	kVA	1350	1350	1350	1260	1375	1445	1500	1555	1610	1681
							kW	1080	1080	1080	1008	1100	1156	1200	1244	1288	1345
Class H	rise	PR	150/40	163/27			kVA	1431	1431	1431	1336	1458	1532	1590	1648	1707	1782
							kW	1145	1145	1145	1068	1166	1225	1272	1319	1365	1425
Class H	rise	PR	163/27				kVA	1485	1500	1485	1425	1510	1590	1650	1710	1771	1849
							kW	1188	1200	1188	1140	1208	1272	1320	1368	1417	1479
Class F	rise	BR	105/40				kVA	1229	1229	1229	1150	1240	1315	1350	1415	1465	1530
							kW	983	983	983	920	992	1052	1080	1132	1172	1224

**EFFICIENCIES** *Power factor 0.8*

Efficiency	Class	rise	BR	%	94.9	95.1	95.2	95.2	94.5	94.7	94.8	95.0	95.0	95.1	95.2	95.2	95.4	95.4	95.4
110%	Class H	BR		%	94.9	95.1	95.2	95.2	94.5	94.7	94.8	95.0	95.0	95.1	95.2	95.2	95.4	95.4	95.4
100%	Class H	BR		%	95.2	95.3	95.3	95.3	94.7	94.8	95.0	95.1	95.2	95.2	95.2	95.2	95.4	95.4	95.4
75%	Class H	BR		%	95.6	95.7	95.6	95.3	95.0	95.2	95.3	95.4	95.4	95.4	95.4	95.4	95.4	95.4	95.4
50%	Class H	BR		%	95.7	95.6	95.4	94.9	94.9	95.1	95.1	95.2	95.2	95.2	95.2	95.2	95.2	95.2	95.2
25%	Class H	BR		%	94.4	94.1	93.7	92.3	93.0	93.1	93.1	93.1	93.1	93.1	93.1	93.1	93.1	93.1	93.0

**CHARACTERISTIC PARAMETERS** *Reactance base class H BR rating*

Parameter	Description	Unit	0.29	0.36	0.42	0.60	0.22	0.23	0.25	0.28	0.30	0.34
K <sub>c</sub>	Short-circuit ratio		0.29	0.36	0.42	0.60	0.22	0.23	0.25	0.28	0.30	0.34
X <sub>d</sub>	D-Axis synchronous reactance (unsaturated)	pu	4.04	3.65	3.39	2.81	4.94	4.68	4.49	4.16	3.94	3.78
X' <sub>d</sub>	D-Axis transient reactance (saturated)	pu	0.27	0.24	0.23	0.19	0.33	0.31	0.30	0.28	0.26	0.25
X'' <sub>d</sub>	D-Axis sub-transient reactance (saturated)	pu	0.149	0.134	0.125	0.103	0.182	0.172	0.165	0.153	0.145	0.139
X <sub>q</sub>	Q-Axis synchronous reactance (unsaturated)	pu	2.42	2.19	2.03	1.69	2.96	2.81	2.69	2.50	2.36	2.27
X'' <sub>q</sub>	Q-Axis sub-transient reactance (saturated)	pu	0.172	0.155	0.144	0.120	0.210	0.199	0.191	0.177	0.168	0.161
X <sub>2</sub>	Negative-sequence reactance (saturated)	pu	0.161	0.145	0.135	0.112	0.197	0.186	0.179	0.166	0.157	0.151
X <sub>0</sub>	Zero-sequence reactance (independent)	pu	0.038	0.035	0.032	0.027	0.047	0.044	0.043	0.040	0.037	0.036
T' <sub>d</sub>	D-Axis transient time constant	ms		180						180		
T'' <sub>d</sub>	D-Axis sub-transient time constant	ms		18						18		
T' <sub>do</sub>	D-Axis open-circuit time constant	ms		2717						2717		
T <sub>a</sub>	Armature time constant	ms		27						27		
T <sub>r</sub>	Voltage recovery time	ms		< 500						< 500		

**EXCITATION VOLTAGE AND CURRENT**

Parameter	Unit	9.9	11.3	12.8	16.2	7.2	7.8	8.2	9.1	10.1	11.3
No load excitation voltage	V	9.9	11.3	12.8	16.2	7.2	7.8	8.2	9.1	10.1	11.3
No load excitation current	A	0.78	0.89	1.00	1.27	0.57	0.61	0.65	0.72	0.79	0.89
Class H BR excitation voltage	V	44.8	45.2	46.3	47.5	40.2	40.9	41.5	42.8	44.2	46.3
Class H BR excitation current	A	3.52	3.55	3.64	3.73	3.16	3.21	3.26	3.36	3.47	3.64

**WINDING RESISTANCE** *At 20°C*

Parameter	Unit	0.0028	Exciter field	Ω	12.73
Stator line-to-line (series star)	Ω	0.0028	Exciter field	Ω	12.73
Main field	Ω	0.462			

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.

**FRAME 8224L**

**WINDING 6S**



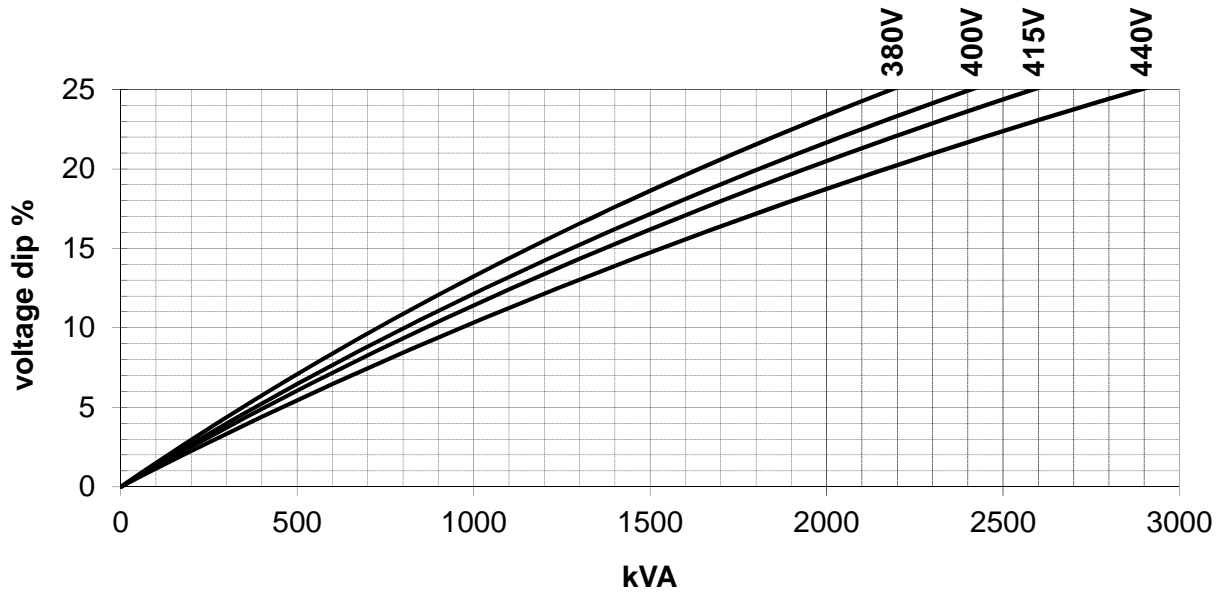
**MODELS LL8224L / LL8234L**

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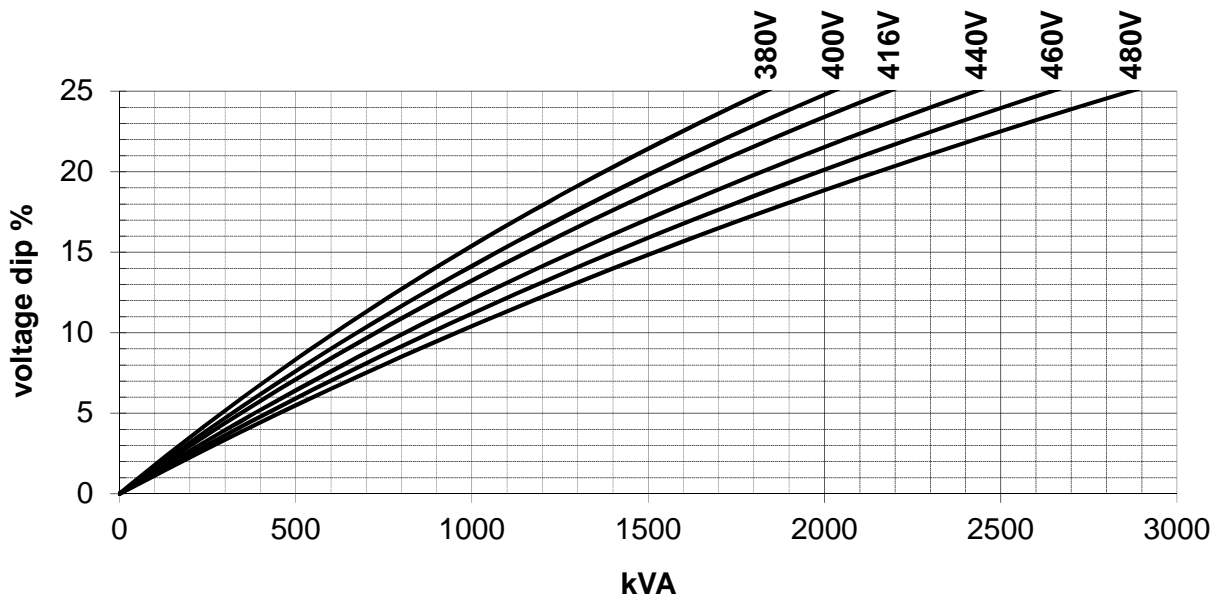
**LOCKED ROTOR MOTOR STARTING CURVES**

*Power factor 0.4*

**50 Hz AREP / PMG**



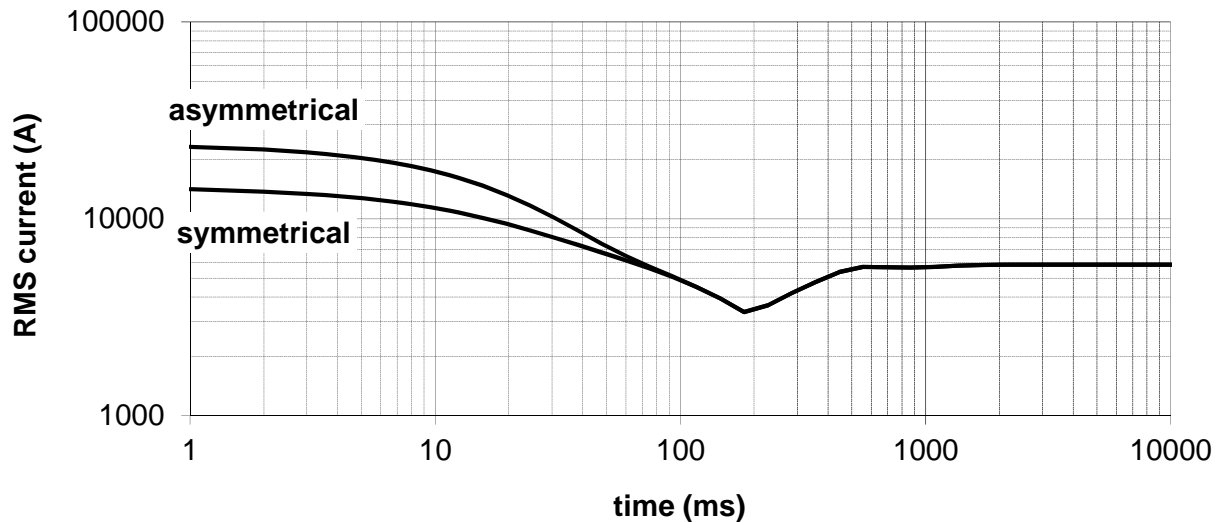
**60 Hz AREP / PMG**



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

<b>380</b>	<b>400</b>	<b>415</b>	<b>440</b>
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**Multiplication Factor**

0.95	1.00	1.04	1.10
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*Apply factor up to 2xT'd, remainder of curve unchanged***60Hz Voltages**

<b>380</b>	<b>400</b>	<b>416</b>	<b>440</b>	<b>460</b>	<b>480</b>
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**Multiplication Factor**

0.79	0.83	0.87	0.92	0.96	1.00
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*Apply factor up to 2xT'd, remainder of curve unchanged***Winding Connection**

<b>Star</b>	<b>Delta</b>
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**Multiplication Factor**

1.00	1.73
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*Apply factor to the complete curve*