

# VALIADIS S.A.

## ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

Type	K315S-4	Poles	4	Power	110,0 kW	IE:3
Voltage	400 V	Current	188,3 A	Frequency	50 Hz	
Speed	1485 r/min	Duty	S1	Connection	Δ	
Ins.class	F	Weight	1049 kg		IP55	
MAJOR CONTENTS			TEST VALUE			
95,0 °C PHASE RESISTANCE OF WINDING	Ω					0,0396
NO LOAD CURRENT	A					47,183
NO LOAD INPUT	W					1815,25
CORE LOSS(Pfe)	W					1003,12
WINDAGE FRICTION LOSS(Pfw)	W					733,30
STATOR WINDING LOSS(Pcu1)	W					1372,07
ROTOR WINDING LOSS(Pcu2)	W					1133,21
STRAY LOAD LOSS(Ps)	W					762,12
LOCKED ROTOR CURRENT	A					1294,354
LOCKED ROTOR INPUT @ FULL LOAD	W					294821
LOCKED ROTOR TORQUE	N.m					1593,1
PULL OUT TORQUE	N.m					2075,3
LOCKED ROTOR CURRENT/RATED CURRENT	P.U					6,87
LOCKED ROTOR TORQUE/RATED TORQUE	P.U					2,24
PULL OUT TORQUE/RATED TORQUE	P.U					2,92
FULL LOAD TORQUE	N.m					707,8
FULL LOAD CURRENT	A					188,3
FULL LOAD SLIP	%					1,006
INPUT @ FULL LOAD	kW					115,006
FULL LOAD SPEED	r/min					1484,9
EFFICIENCY @ FULL LOAD	%					95,65
EFFICIENCY @ 75% LOAD	%					95,84
POWER FACTOR @ FULL LOAD						0,882
STATOR WINDING TEMPERATURE RISE	K					60
D.E. BEARINGS TEMPERATURE BY PT100	°C					41,2
STATOR WINDING TEMPERATURE	°C					75,3
High voltage test	V	1800				Imin
Insulation resistance	MΩ					500
NOISE ( LW)	dB(A)					88
VIBRATION	mm/s					0,7

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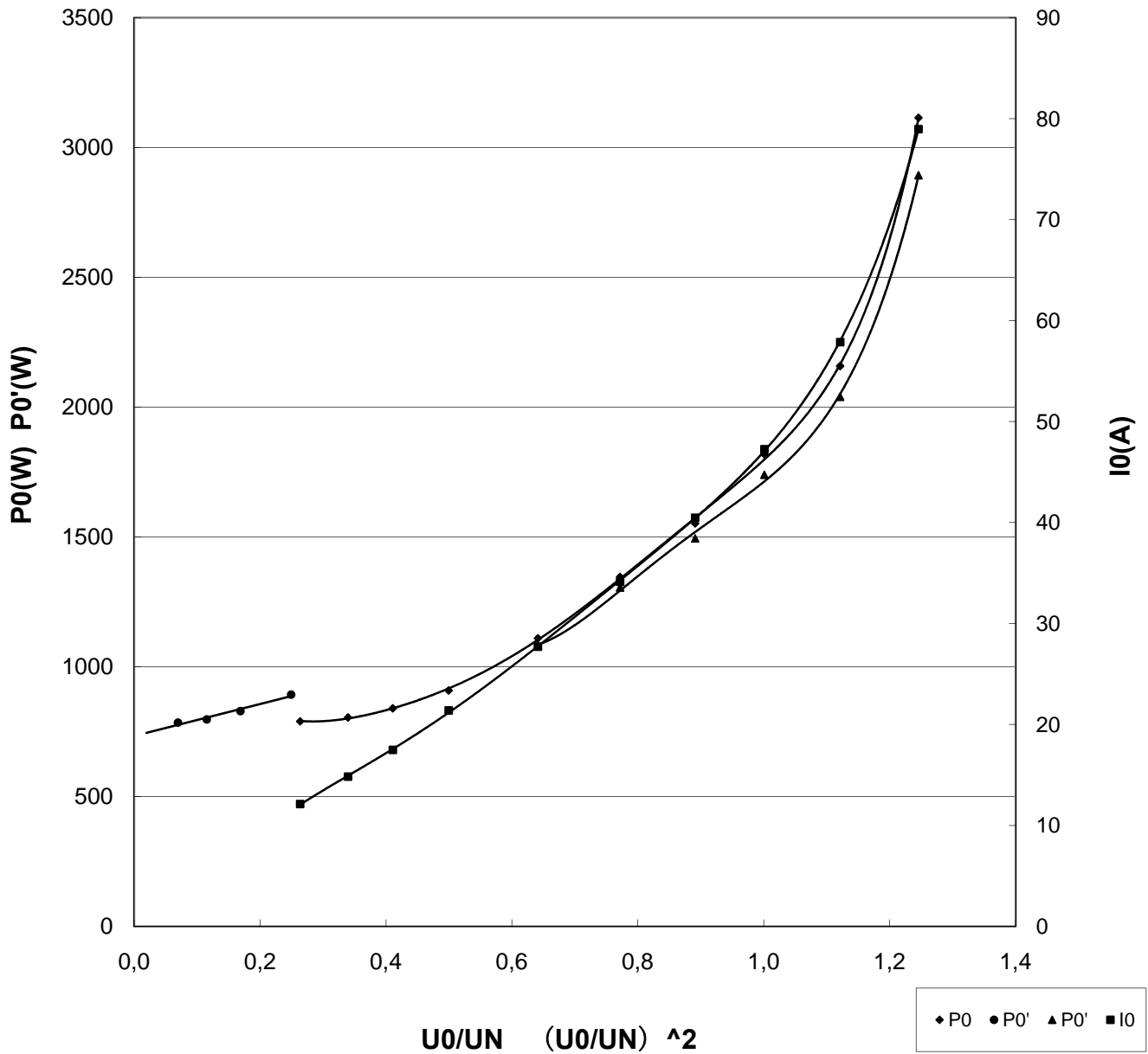
Type	K315S-4		Poles	4		Power	110,0 kW		IE:3		
Voltage	400	V	Current	188,3	A	Frequency	50 Hz				
Speed	1485	r/min	Duty	S1		Connection	△				
Ins.class	F		Weight	1049	kg			IP55			
NO LOAD TEST											
VOL	mul.	HZ	I01	I02	I03	mul.	W1	W2	mul.	°C	Ω
498,3	1	50	3,870	4,023	3,951	20	-860,8	1016,5	20	60,4	0,02363
448,5	1	50	2,817	2,986	2,876	20	-573,8	681,7	20	60,3	0,02362
400,4	1	50	2,295	2,454	2,339	20	-416,1	507,0	20	60,1	0,02360
356,4	1	50	1,959	2,111	2,001	20	-313,9	391,5	20	59,9	0,02359
308,7	1	50	1,646	1,792	1,682	20	-225,8	293,1	20	59,7	0,02357
256,5	1	50	1,324	1,477	1,355	20	-150,2	205,7	20	59,5	0,02356
199,8	1	50	2,128	2,111	2,179	10	-149,1	240,0	10	59,2	0,02353
164,3	1	50	1,739	1,723	1,784	10	-87,0	171,0	10	59,0	0,02352
135,9	1	50	1,475	1,457	1,517	10	-48,4	128,9	10	58,9	0,02351
105,5	1	50	1,205	1,186	1,243	10	-13,3	92,3	10	58,7	0,02349
data calculation of no load											
V%	U0/UN	I0	P0	(U0/UN)^2	P0cu1	P0'					
124,6%	1,25	78,960	3114,0	1,552	220,96	2893,04					
112,1%	1,12	57,860	2158,0	1,257	118,61	2039,39					
100,1%	1,00	47,253	1818,0	1,002	79,05	1738,95					
89,1%	0,89	40,473	1552,0	0,794	57,96	1494,04					
77,2%	0,77	34,133	1346,0	0,596	41,19	1304,81					
64,1%	0,64	27,707	1110,0	0,411	27,12	1082,88					
49,9%	0,50	21,393	909,0	0,249	16,15	892,85					
41,1%	0,41	17,487	840,0	0,169	10,79	829,21					
34,0%	0,34	14,830	805,0	0,115	7,75	797,25					
26,4%	0,26	12,113	790,0	0,070	5,17	784,83					
RESULTS AT: 400 V											
N.L.AMP	47,18	N.L.LOSS(W)	1815,25	Pw(W)	733,3	Pe(W)	1003,1				

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Type	K315S-4		Poles	4		Power	110,0 kW		IE:3
Voltage	400	V	Current	188,3	A	Frequency	50,0 Hz		
Speed	1485	r/min	Duty	S1		Connection	Δ		
Ins.class	F		Weight	1049	kg		IP55		

### No Load Curve



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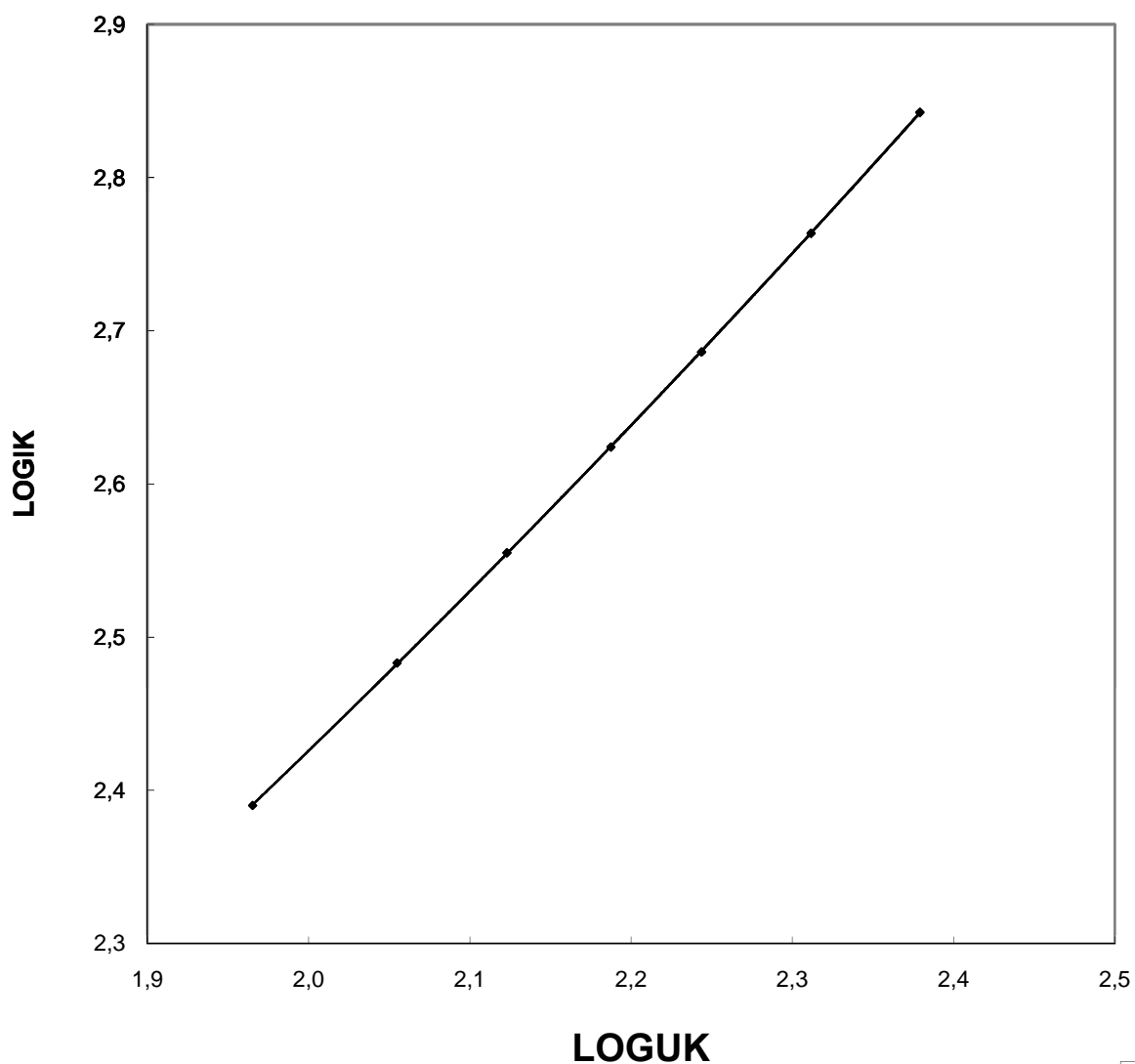
Type	K315S-4		Poles	4		Power	110,0		IE:3	kW
Voltage	400	V	Current	188,3	A	Frequency	50,0		Hz	
Speed	1485	r/min	Duty	S1		Connection	Δ			
Ins.class	F		Weight	1049	kg		IP55			
LOCKED ROTOR TEST										
VOL	mul.	Ik1	Ik2	Ik3	mul.	W1	W2	mul.	Torque ( kg.m)	
239,4	1,0	3,461	3,466	3,513	200,0	-170,7	624,0	200,0	47,0	
204,9	1,0	2,887	2,891	2,926	200,0	-126,3	442,5	200,0	32,4	
175,3	1,0	2,416	2,419	2,447	200,0	-93,3	314,7	200,0	22,8	
154,0	1,0	2,096	2,095	2,122	200,0	-72,0	239,4	200,0	17,1	
132,7	1,0	1,787	1,788	1,810	200,0	-53,4	175,2	200,0	12,3	
113,5	1,0	3,031	3,029	3,067	100,0	-79,2	253,0	100,0	8,8	
92,3	1,0	2,446	2,445	2,475	100,0	-52,0	165,9	100,0	5,7	
data calculation of locked rotor										
Uk	IK	PK	TK			LOGUk	LOGIk	LOGPk	LOGTk	
V	A	kW	N.m							
239,37	695,97	90,660	460,60			2,3791	2,8426	1,9574	2,6633	
204,95	580,26	63,240	317,52			2,3116	2,7636	1,8010	2,5018	
175,26	485,45	44,280	223,44			2,2437	2,6861	1,6462	2,3492	
154,00	420,85	33,480	167,58			2,1875	2,6241	1,5248	2,2242	
132,74	358,97	24,360	120,54			2,1230	2,5551	1,3867	2,0811	
113,47	304,19	17,380	86,24			2,0549	2,4831	1,2400	1,9357	
92,32	245,54	11,390	55,86			1,9653	2,3901	1,0565	1,7471	
performance collection of locked rotor										
		at rated volts	at rated current	at 2.5 times rated current		at 100V				
VOLTS ( V )		400	73,099	169,1		100,0				
AMPS ( A )		1294,4	188,2	470,5		265,08				
INPUT ( kW )		294,82		41,6		13,270				
TORQUE ( N.m)		1593,12								

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Voltage	400 V	Current	188,3 A	Frequency	50,0	kW
Speed	1485 r/min	Duty	S1	Connection	Δ	Hz
Ins.class	F	Weight	1049 kg		IP55	

### LOCKED



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## ELECTRIC MOTOR TEST REPORT - THREE PHASE INDUCTION MOTOR

Type	K315S-4	Poles	4	Power	110 kW	IE:3
Voltage	400 V	Current	188,3 A	Frequency	50 Hz	
Speed	1485 r/min	Duty	S1	Connection	Δ	
Ins.class	F	Weight	1049 kg		IP55	

### TEMPERATURE RISE TEST

TIME (h:min)	V	I1	I2	I3	mul.	W1	W2	mul.	T1 °C	T2 °C	T3 °C	T4 °C	T5 °C	T6 °C	T7 °C	T8 °C	T9 °C	T10 °C	T11 °C	T12 °C	T13 °C	
11,28	400,2	1,849	1,851	1,867	100	415,8	742,2	100	39,7	—	66,2	70,3	—	—	—	—	—	—	—	—	—	3,7
12,00	400,2	1,860	1,861	1,877	100	418,2	746,1	100	40,6	—	66,7	70,8	—	—	—	—	—	—	—	—	—	3,7
12,30	400,3	1,859	1,861	1,877	100	418,4	746,0	100	41,2	—	68,2	72,2	—	—	—	—	—	—	—	—	—	3,9
13,01	400,3	1,880	1,881	1,897	100	423,5	754,3	100	41,7	—	69,5	73,7	—	—	—	—	—	—	—	—	—	3,9
13,29	400,2	1,835	1,837	1,853	100	412,6	736,0	100	41,9	—	69,7	73,9	—	—	—	—	—	—	—	—	—	4,0
14,00	400,3	1,872	1,874	1,890	100	422,1	752,0	100	42,0	—	70,3	74,5	—	—	—	—	—	—	—	—	—	4,1
14,30	400,3	1,887	1,889	1,905	100	425,3	757,8	100	41,8	—	70,9	75,1	—	—	—	—	—	—	—	—	—	4,1
14,59	400,3	1,885	1,886	1,903	100	424,7	756,5	100	41,2	—	71,2	75,3	—	—	—	—	—	—	—	—	—	4,2
The average of the last three		188,789			A	117947		W	41,2	—	70,8	75,3	—	—	—	—	—	—	—	—	—	4,1

T1 T2 : DE BEARING TEMPERATURE

T11 : CORE TEMPERATRE

T12: FRAME TEMPERATRE

T3~T10 : DE WINDING TEMPERATURE

T13 : AMBIENT TEMPERATURE

### WINDING RESISTANCE (HOT) AT END OF TEMPERATURE RISE TEST

TIME (S)	54	84	106	132	155	185	218	252		
RESISTANCE ( Ω )	0,02403	0,02397	0,02393	0,02386	0,02381	0,02376	0,02370	0,02365		

### WINDING RESISTANCE(COLD)

	U1-V1	U1-W1	V1-W1	AVERAGE	MIN	AMBIENT TEM.
Δ	0,01884	0,01886	0,01888	0,01886	0,01884	0,8 °C
	U1-U2	V1-V2	W1-W2	AVERAGE	MIN	AMBIENT TEM.
Y						°C

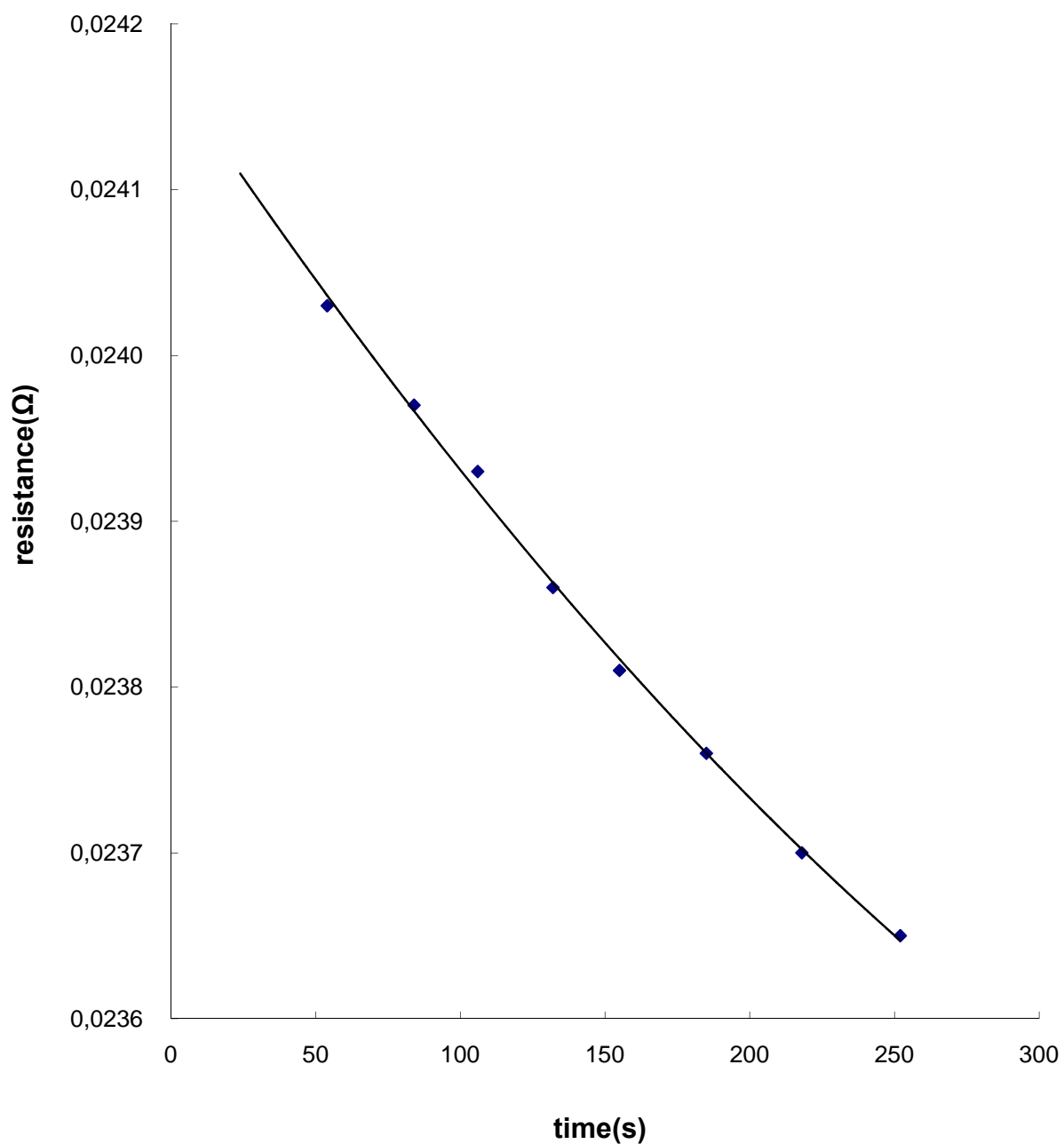
resistance value at 0 sec ( Ω )	0,024171	calculation value of temp.rising	63,39 K
90 S ( Ω )	0,023960	calculation value of temp.rising	60,75 K
full load curent	188,31 A	modify value of temp. rising	60,44 K

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Voltage	400	V	Current	188,3	A	Frequency	50,0	kW
Speed	1485	r/min	Duty	S1	Connection	Δ	Hz	
Ins.class	F	Weight	1049	kg		IP55		

### RESISTANCE CURVE



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Voltage	400	V	Current	188,3	A	Frequency	50,0		kW			
Speed	1485	r/min	Duty	S1		Connection	Δ		Hz			
Ins.class	F		Weight	1049	kg	IP55						
LOAD TEST												
V	HZ	I1	I2	I3	mul.	W1	W2	mul.	r/min	Resistance Ω	Temperature °C	Torque N.m
400,0	50,02	2,407	2,410	2,432	100	524,3	946,8	100	1482,3	0,0244	70,4	901,8
400,1	50,02	2,055	2,056	2,075	100	453,2	807,1	100	1485,2	0,0245	71,0	773,21
400,3	50,02	1,887	1,889	1,905	100	415,3	741,2	100	1486,6	0,0245	71,1	710,63
400,3	50,02	1,692	1,693	1,708	100	370,8	666,2	100	1488,1	0,0245	70,9	635,79
399,9	50,02	2,854	2,857	2,880	50	604,0	1123,9	50	1490,3	0,0245	70,7	529,85
400,2	50,00	2,076	2,077	2,091	50	378,8	813,0	50	1493,8	0,0244	69,8	362,66
399,9	50,02	1,293	1,293	1,303	50	110,1	483,8	50	1497,4	0,0242	68,1	175,16
400,2	50,0	2,311	2,456	2,361	20,0	-383,7	537,6	20	1500,0	0,0241	66,6	8,20
400,3	50,0	2,301	2,456	2,356	20,0	-413,9	505,4	20	1500,0	0,0237	60,7	0,00
slope A= 0,00153		intercept B= 293,0			relative coefficient r= 0,986							
LOAD %	P2 W	I A	P1 W	Pcu1s W	Ss %	Pcu2s W	Ps W	Pz W	N.m	EFF %	P.F	
150,0	165000	286,86	174029,5	3184,2	1,597	2712,5	1735,1	9368,3	1065,7	94,81	0,876	
125,0	137500	237,18	144458,9	2176,7	1,299	1835,5	1197,4	6946,1	885,4	95,18	0,879	
100,0	110000	188,31	115005,6	1372,1	1,006	1133,2	762,1	5003,8	706,3	95,65	0,882	
75,0	82500	142,73	86077,4	788,3	0,742	625,4	425,2	3575,3	527,6	95,84	0,871	
50,0	55000	101,42	57577,2	398,0	0,436	244,8	186,9	2566,1	349,8	95,52	0,819	
25,0	27500	64,57	29508,6	161,3	0,232	65,8	46,1	2009,7	173,7	93,19	0,660	



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Voltage	400	<b>V</b>	Current	188,3	<b>A</b>	Frequency	50,0	<b>Hz</b>	
Speed	1485	<b>r/min</b>	Duty	S1		Connection	Δ		
Ins.class	F		Weight	1049	<b>kg</b>		IP55		

### LOAD CURVE

