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INSPECTION & TEST REPORT

PJT Name	삼성전자 천안공장		
Project No.	20213032RMH706	Serial No.	20213032RMH706001,002
Type	HLE6 403-46E	Quantity	2 Units
Specification	3Phase,750kW,4P,6600V,60Hz		

TEST ITEMS*** Final Inspection**

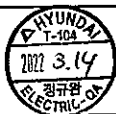
1. Visual & dimensional inspection
2. Measurement of winding resistance
3. Locked rotor test
4. No-load test and Direction of rotation check
5. Measurement of noise level
6. Measurement of vibration
7. Determination of characteristics
8. Temperature rise test
9. Measurement of insulation resistance
10. High voltage test
11. Other tests (WTD, BTD & Space heater)

TEST RESULT:**Accept**

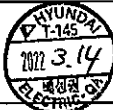
Approved By: _____



Checked By: _____



Tested By: _____



Reviewed and

Witnessed By: _____

Test Report of 3 Phase Induction Machine

PJT Name	삼성전자 천안공장	Project no.	20213032RMH706
model no.	HLE6 403-46E	Serial no.	20213032RMH706001
Item no.	***	shaft no.	1RMH706-1

general rating

Output kW	750	poles	4	voltage [V]	6600
Frequency [Hz]	60.0	speed [rpm]	1790.0	current [A]	80.6
Service factor	1.15(F/F)	insulation	F	max. amb. [°C]	40
time rating	S1	enclose	TEFC - IP55	weight [Kg]	4000
DE. bearing:	6324C3	NDE. bearing:	6324C3	efficiency [pu]	0.9580

winding resistance in [Ω] at ambient temperature 11.6 [°C]

phase	Ru-v:	Rv-w:	Rw-u:	averaged:	max. deviation [%]
stator	0.2953	0.2949	0.2951	0.2951	0.07
rotor	***	***	***	***	***

no load and short circuit(locked rotor)

item	[V]	[A]	[kW]	[Hz]	Iu [A]	Iv [A]	Iw [A]	deviation [%]
no load	6600.0	24.17	16.502	60.00	24.09	24.34	24.08	0.70
locked rotor	1455.88	81.39	22.629	60.00	***	***	***	***
rotor voltage	***	[V]	Direction of Rotation	C.C.W with U.W.V Connection	(Viewed from D.E)			

vibration measurement

position	horizontal	vertical	axial	remark
DE	0.8	0.5	0.4	meas. Unit
NDE	0.5	0.5	0.4	mm/s(rms)

noise level in dB(A) at 1 [m] distance from major frame

averaged sound level (@)	remark
85.8	Background noise : 73

@ averaged value from 4 measured result (measured at front, rear, right, left side of machine)

This noise value is corrected by background noise

insulation resistance in [MΩ]

item	before test	after test	test voltage [V]
stator	49100	46200	2500
Rotor	***	***	***
E.T.D.	1000	1000	500
heater	1000	1000	500

temperature rise in [K]

stator (R/E)	67.6 / 69.5	[V]	6600
rotor (R)	***	[Hz]	60
de. bearing	38.5	[A]	78.4
nde bearing	21.9	[kW]	***
slip ring	***	[Nm]	***
***	***	[rpm]	***

high voltage test

item	test voltage [V]	duration [s]
stator	AC 14200	60
Rotor	***	***
E.T.D.	AC	***
heater	AC 1500	60

over load and over speed

item	test value	duration [s]	Remark
over load	*** [%] of rated load(current)	***	***
over speed	*** [%] of rated speed	***	***

accessories and other data

space heater	1	phase	200	[W]	220	[V]	242.7	[Ω]
name of item	accessory type	Q'ty	check result	Remark				
winding temperature	PT100	6	Good	***				
bearing temperature	PT100	2	Good	***				
air temperature	***	***	***	***				
additional	***	***	***	***				

Tested By



We hereby confirm that the specified test were carried out in accordance with applicable standard(s) and that the satisfactory test result were obtained.

01 17.0°C
04 40.7°C
07 31.5°C
10 34.0°C

02 16.5°C
05 55.1°C
08 34.1°C
11 34.5°C

03 22.9°C
06 38.9°C
09 32.0°C
12 32.5°C

1~2 3 4 5 7~12

* 상용전자 제어 장치

· 750kw, 4P, 6600V, 60Hz

· 20213032RMH 706001

1. Ambient temp

2. Air inlet

3. Air outlet

4. Frame

5. De bearing

6. In-de bearing

7~12. Windings

15 min



$$\Delta T = 0.3827 \frac{(235 + 11.6) - (235 + 17)}{0.2953} = 67.6K$$

PJT Name	삼성전자 천안공장	Project no.	20213032RMH706
model no.	HLE6 403-46E	Serial no.	20213032RMH706001

basic rating

Output kW	750	poles	4	voltage [V]	6600
Frequency [Hz]	60.0	speed [rpm]	1790.0	current [A]	80.6
Service factor	1.15(F/F)	insulation	F	max. amb. [°C]	40

winding resistance in [Ω]

measured value at	11.6 [°C]	u-v:	0.2953	v-w:	0.2949	w-u:	0.2951
averaged phase resistance (refer to Y connection) [Ω]				at specified temperature 95.00 [°C]			

no load and short circuit(locked rotor) + actual load point for correction

item	[V]	[A]	[kW]	[Hz]	[°C]	line-line [Ω]	[rpm]
no load	6600.0	24.17	16.502	60.00	16.10	***	***
locked rotor	390.75	80.82	9.784	15.00	11.90	***	***
	748.51	80.65	13.988	30.00	12.30	***	***
	1455.88	81.39	22.629	60.00	12.60	***	***
	2597.67	162.80	88.500	60.00	13.10	***	***
	***	***	***	***	***	***	***
actual load	***	***	***	***	***	***	***

summary of constants

temperature constant	stator: 235.0	Rotor: 235.0
constant loss	Wh = 6.654 [kW]	Wf = 9.585 [kW]
stray load loss	Wli = 3.914 [kW]	at primary current I1 = 80.60 [A]
reactance ratio	X1/X2 = 0.6700	

f2 [Hz]	1.200	15.00	30.00	60.00	60.00	***
stator current [A]	***	80.82	80.65	81.39	162.80	***
V1 [V]	3810.5	3810.5	3810.5	3810.5	3810.5	***
r1 [ohms]	0.197451	0.197451	0.197451	0.197451	0.197451	***
r2 [ohms]	0.236077	0.511519	0.82263	1.421984	1.371116	***
rfe [ohms]	6171.92	6177.32	6189.72	6201.8	6239.78	***
X1 [ohms]	4.5885E+00	4.5213E+00	4.3674E+00	4.2174E+00	3.7474E+00	***
X2 [ohms]	6.8485E+00	6.7483E+00	6.5184E+00	6.2947E+00	5.5932E+00	***
bm [mhos]	6.5202E-03	6.5173E-03	6.5111E-03	6.5047E-03	6.4850E-03	***
gfe [mhos]	1.6202E-04	1.6188E-04	1.6156E-04	1.6124E-04	1.6026E-04	***
corrected constant from actual load point reading			Xm = ***	r2 = ***		

summary of load characteristics

load [pu]	0.25	0.50	0.75	1.00	1.25	2.84
current [A]	30.8	44.3	60.5	78.4	97.6	304.2
efficiency [pu]	0.9143	0.9509	0.9616	0.9654	0.9660	0.9024
power factor [pu]	0.5822	0.7793	0.8454	0.8672	0.8696	0.6788
slip [pu]	0.00114	0.00226	0.00342	0.00466	0.00602	0.04589
torque [kg.m]	101.6	203.5	305.5	407.9	510.6	1208.4

locked rotor and break down characteristics

locked rotor current [A]	497	break down torque [pu]	2.963
locked rotor torque [pu]	0.893	***	***



PJT Name	삼성전자 천안공장	Project no.	20213032RMH706
model no.	HLE6 403-46E	Serial no.	20213032RMH706001

basic rating

Output kW	750	poles	4	voltage [V]	6600
Frequency [Hz]	60.0	speed [rpm]	1790.0	current [A]	80.6
Service factor	1.15(F/F)	insulation	F	max. amb. [°C]	40

winding resistance in [Ω]

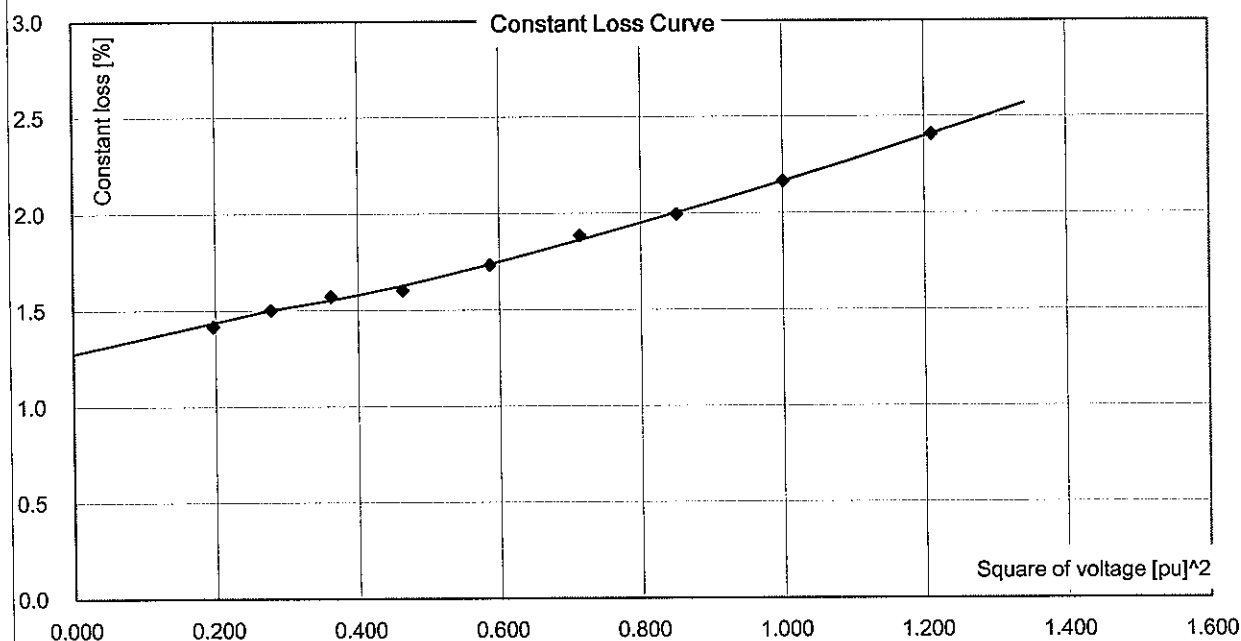
measured value at	11.60	[°C]	u-v:	0.2953	v-w:	0.2949	w-u:	0.2951
averaged phase resistance (refer to Y connection)				0.147550	[Ω]			

no load reading

[V]	[A]	[kW]	[Hz]	[rpm]	[°C]	line-line [Ω]
7260.90	30.51	18.480	60.00	***	16.10	***
6600.00	24.17	16.500	60.00	***	16.10	***
6084.70	21.01	15.170	60.00	***	16.10	***
5575.90	18.92	14.300	60.00	***	16.10	***
5054.80	16.98	13.130	60.00	***	16.10	***
4494.80	15.14	12.130	60.00	***	16.10	***
3971.50	13.15	11.860	60.00	***	16.10	***
3477.10	11.50	11.320	60.00	***	16.10	***
2921.80	10.07	10.670	60.00	***	16.10	***
***	***	***	***	***	***	***

calculation and measured result

no load core loss	[kW]	6.654
friction and windage loss	[kW]	9.585
no load current	[A]	24.20



PJT Name	삼성전자 천안공장	Project no.	20213032RMH706
model no.	HLE6 403-46E	Serial no.	20213032RMH706002
Item no.	***	shaft no.	1RMH706-2

general rating

Output kW	750	poles	4	voltage [V]	6600
Frequency [Hz]	60.0	speed [rpm]	1790.0	current [A]	80.6
Service factor	1.15(F/F)	insulation	F	max. amb. [°C]	40
time rating	S1	enclose	TEFC - IP55	weight [Kg]	4000
DE. bearing:	6324C3	NDE. bearing:	6324C3	efficiency [pu]	0.9580

winding resistance in [Ω] at ambient temperature 10.9 [°C]

phase	Ru-v:	Rv-w:	Rw-u:	averaged:	max. deviation [%]
stator	0.2961	0.2949	0.2957	0.2956	0.23
rotor	***	***	***	***	***

no load and short circuit(locked rotor)

current unbalance

item	[V]	[A]	[kW]	[Hz]	Iu [A]	Iv [A]	Iw [A]	deviation [%]
no load	6600.0	24.15	16.531	60.00	24.07	24.33	24.06	0.73
locked rotor	1450	80.71	22.35	60.00	***	***	***	***
rotor voltage	***	[V]	Direction of Rotation	C.C.W with U.W.V Connection	(Viewed from D.E)			

vibration measurement

position	horizontal	vertical	axial	remark
DE	0.6	0.8	0.7	meas. Unit
NDE	0.5	0.6	0.7	mm/s(rms)

temperature rise in [K]

stator (R/E)	*** / ***	[V]	***
rotor (R)	***	[Hz]	***
de. bearing	***	[A]	***
nde bearing	***	[kW]	***
slip ring	***	[Nm]	***
***	***	[rpm]	***

noise level in dB(A) at 1 [m] distance from major frame

averaged sound level (@)	remark
***	***

@ averaged value from 4 measured result (measured at front, rear, right, left side of machine)

insulation resistance in [MΩ]

item	before test	after test	test voltage [V]
stator	48700	46400	2500
Rotor	***	***	***
E.T.D.	1000	1000	500
heater	1000	1000	500

high voltage test

item	test voltage [V]	duration [s]
stator	AC 14200	60
Rotor	***	***
E.T.D.	AC	***
heater	AC 1500	60

over load and over speed

item	test value	duration [s]	Remark
over load	*** [%] of rated load(current)	***	***
over speed	*** [%] of rated speed	***	***

accessories and other data

space heater	1	phase	200	[W]	220	[V]	242.7	[Ω]
name of item	accessory type	Q'ty	check result	Remark				
winding temperature	PT100	6	Good	***				
bearing temperature	PT100	2	Good	***				
air temperature	***	***	***	***				
additional	***	***	***	***				

Tested By



We hereby confirm that the specified test were carried out in accordance with applicable standard(s) and that the satisfactory test result were obtained.

PJT Name	삼성전자 천안공장	Project no.	20213032RMH706
model no.	HLE6 403-46E	Serial no.	20213032RMH706002

basic rating

Output kW	750	poles	4	voltage [V]	6600
Frequency [Hz]	60.0	speed [rpm]	1790.0	current [A]	80.6
Service factor	1.15(F/F)	insulation	F	max. amb. [°C]	40

winding resistance in [Ω]

measured value at	10.9 [°C]	u-v:	0.2961	v-w:	0.2949	w-u:	0.2957
averaged phase resistance (refer to Y connection) [Ω]	0.198327			at specified temperature	95.00 [°C]		

no load and short circuit(locked rotor) + actual load point for correction

item	[V]	[A]	[kW]	[Hz]	[°C]	line-line [Ω]	[rpm]
no load	6600.0	24.15	16.531	60.00	15.40	***	***
locked rotor	394.43	81.30	9.988	15.00	11.20	***	***
	753.23	81.00	14.242	30.00	11.60	***	***
	1450.00	80.71	22.350	60.00	11.90	***	***
	2597.30	162.18	88.670	60.00	12.40	***	***
	***	***	***	***	***	***	***
actual load	***	***	***	***	***	***	***

summary of constants

temperature constant	stator: 235.0	Rotor: 235.0
constant loss	Wh = 6.891 [kW]	Wf = 9.377 [kW]
stray load loss	WII = 3.914 [kW]	at primary current I1 = 80.60 [A]
reactance ratio	X1/X2 = 0.6700	

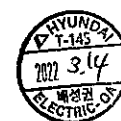
f2 [Hz]	1.200	15.00	30.00	60.00	60.00	***
stator current [A]	***	81.30	81.00	80.71	162.18	***
V1 [V]	3810.5	3810.5	3810.5	3810.5	3810.5	***
r1 [ohms]	0.198327	0.198327	0.198327	0.198327	0.198327	***
r2 [ohms]	0.244187	0.51916	0.834379	1.432937	1.389946	***
rfe [ohms]	5959.16	5963.97	5976.48	5987.31	6024.34	***
X1 [ohms]	4.5984E+00	4.5365E+00	4.3754E+00	4.2361E+00	3.7611E+00	***
X2 [ohms]	6.8633E+00	6.7708E+00	6.5305E+00	6.3226E+00	5.6136E+00	***
bm [mhos]	6.5150E-03	6.5124E-03	6.5058E-03	6.4999E-03	6.4800E-03	***
gfe [mhos]	1.6781E-04	1.6767E-04	1.6732E-04	1.6702E-04	1.6599E-04	***
corrected constant from actual load point reading	Xm = ***				r2 = ***	

summary of load characteristics

load [pu]	0.25	0.50	0.75	1.00	1.25	2.82
current [A]	30.8	44.3	60.5	78.4	97.7	303.0
efficiency [pu]	0.9141	0.9507	0.9615	0.9652	0.9657	0.9000
power factor [pu]	0.5826	0.7795	0.8455	0.8672	0.8694	0.6787
slip [pu]	0.00118	0.00233	0.00354	0.00482	0.00623	0.04842
torque [kg.m]	101.6	203.5	305.6	408	510.7	1203.8

locked rotor and break down characteristics

locked rotor current [A]	495	break down torque [pu]	2.951
locked rotor torque [pu]	0.904	***	***



PJT Name	삼성전자 천안공장	Project no.	20213032RMH706
model no.	HLE6 403-46E	Serial no.	20213032RMH706002

basic rating

Output kW	750	poles	4	voltage [V]	6600
Frequency [Hz]	60.0	speed [rpm]	1790.0	current [A]	80.6
Service factor	1.15(F/F)	insulation	F	max. amb. [°C]	40

winding resistance in [Ω]

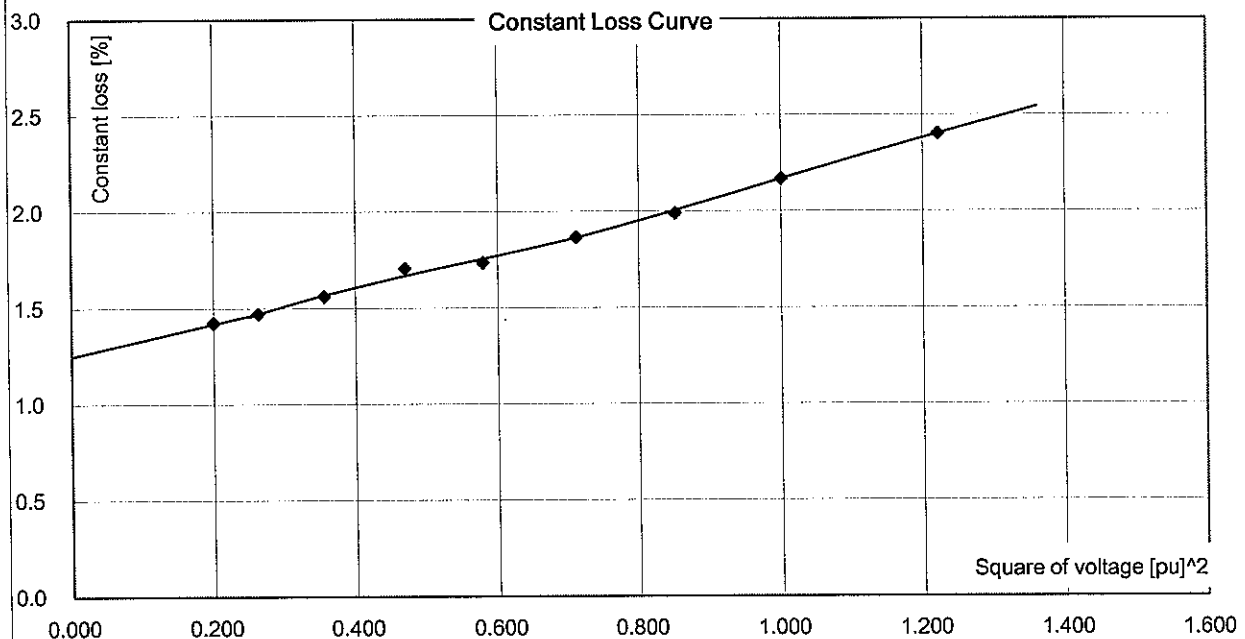
measured value at	10.90	[°C]	u-v:	0.2961	v-w:	0.2949	w-u:	0.2957
averaged phase resistance (refer to Y connection)				0.147783	[Ω]			

no load reading

[V]	[A]	[kW]	[Hz]	[rpm]	[°C]	line-line [Ω]
7294.10	30.53	18.440	60.00	***	15.40	***
6600.00	24.15	16.530	60.00	***	15.40	***
6088.60	21.09	15.120	60.00	***	15.40	***
5564.10	18.72	14.150	60.00	***	15.40	***
5022.60	16.61	13.130	60.00	***	15.40	***
4524.90	14.88	12.900	60.00	***	15.40	***
3936.00	12.29	11.780	60.00	***	15.40	***
3380.00	10.88	11.090	60.00	***	15.40	***
2947.00	9.76	10.720	60.00	***	15.40	***
***	***	***	***	***	***	***

calculation and measured result

no load core loss	[kW]	6.891
friction and windage loss	[kW]	9.377
no load current	[A]	24.20

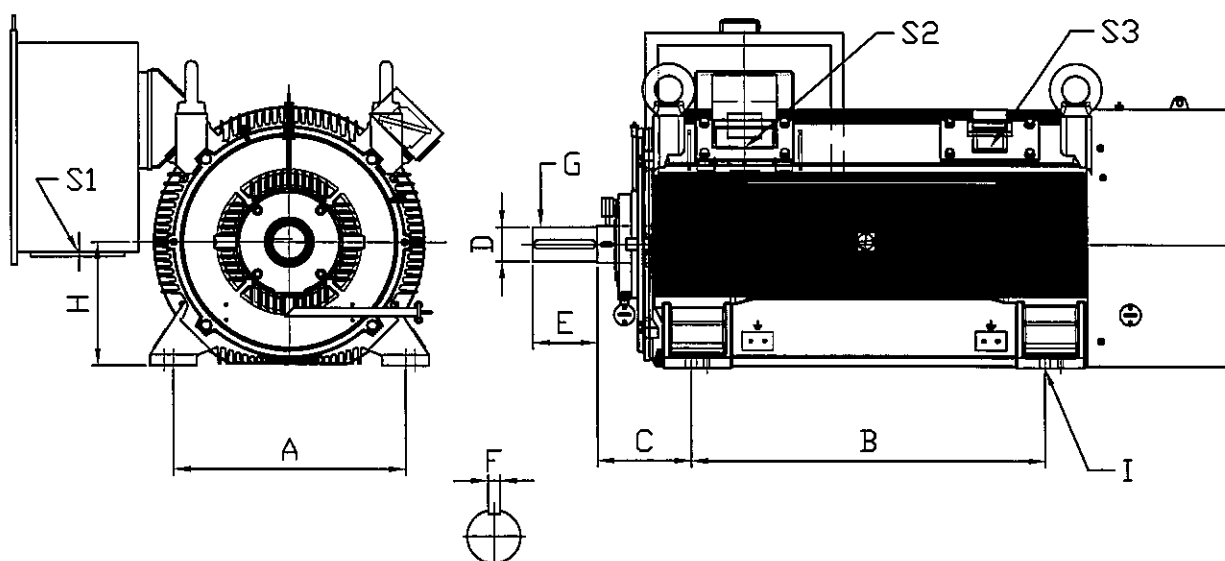


Measuring Equipment List of Motor Test(M10M)

NO.	Name	Serial No.	Calibration Date	Recalibration Date	Remarks
1	Mega ohm tester (1V~5000V)	829065	2021.09.03	2022.09.03	MEGGER
2	Temperature recorder	S5P609025	2021.09.16	2022.09.16	YOKOGAWA
3	Resistance ohm meter	MY42003423	2021.11.05	2022.11.05	AGILENT
4	Sound level meter	00821018	2021.05.28	2022.05.28	RION
5	Vibration meter	34347908	2021.04.09	2022.04.09	RION
6	Digital Power Meter	91G111567	2021.05.26	2022.05.26	YOKOGAWA
7	High voltage tester	9843-9	2021.05.04	2022.05.04	SIEMENS
8	Digital multi-meter	24070055	2021.05.28	2022.05.28	FLUKE
9	AC-Voltage Meter	76AE0582	2021.11.09	2022.11.09	YOKOGAWA
10	AC-Ampere Meter	73AE1163	2021.12.10	2022.12.10	YOKOGAWA
11	Mega ohm tester (500V/1000MΩ)	84NA1008	2021.11.11	2022.11.11	YOKOGAWA
12	TACHO METER(RPM)	N560326	2021.08.20	2022.08.20	LUTRON

	INSPECTION REPORT 검사 성적서			CHECKED BY : 검 토 자	
	PROJ. NO. 수주번호	20213032RMH706	SPEC 용량, 형식	750kW.4P,6600V	INSP. DATE 검 사 일
PROJ.NAME 수 주 명	삼성전자 천안공장	DWG. NO. 도면번호	HM-101098-2/R.0	INSPECTOR 검 사 자	20213032RMH70600 /
		Q'TY 수 량	1SET	SERIAL NO. 일련번호	

FINAL CHECK SHEET(D)



CHECK POINT : 'G' SHAFT RUN OUT

CHECK DEVICE : V-CALIPERS, MICROMETER, DEPTH GAUGE

PART \ MK	A	B	C	D	E	F	G	H	I	
SPEC	±1.5 750	±2.5 1120	±1.0 254	±0.035 ø110	±0.5 210	-0.022 28	max. 0.070	0 400	-1.0 4-ø35	
CHECK	-0.2	-0.1	+0.2	+0.03	-0.1	-0.026	0.01	-0.4	4-ø35	

PART \ MK	S1	S2	S3							
SPEC	1-ø90	2-PF3/4"	1-PF3/4"							
CHECK	1-ø90	2-PF3/4"	1-PF3/4"							

NOTE(특기)

VISUAL INSPECTION : AC

AC : ACCEPT RJ : REJECT NA : NOT APPLICATION
(양호) (불량) (해당없음)

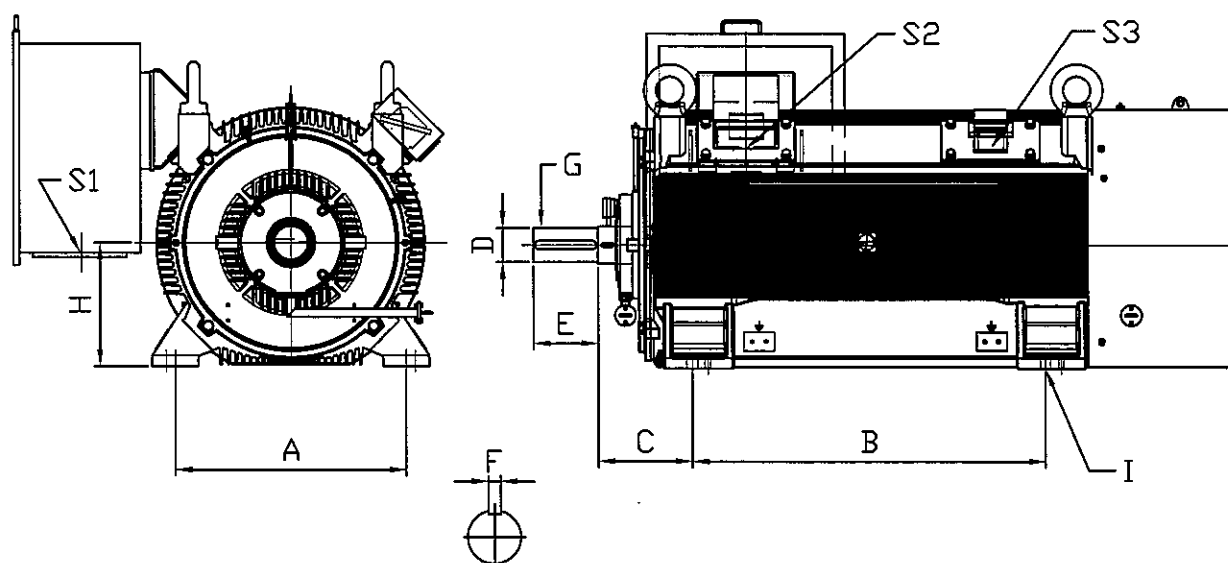
FINAL INSPECTION
최 종 판 정

합격
ACCEPT

A4(210mmx297mm)

	INSPECTION REPORT 검사 성적서			CHECKED BY : 검토자		
	PROJ. NO. 수주번호	20213032RMH706	SPEC 용량, 형식	750kW.4P,6600V	INSP. DATE 검사일	
PROJ.NAME 수주명	삼성전자 천안공장	DWG. NO. 도면번호	HM-101098-2/R.0	INSPECTOR 검사자		
		Q'TY 수량	1SET	SERIAL NO. 일련번호	20213032RMH706002	

FINAL CHECK SHEET(D)



CHECK POINT : 'G' SHAFT RUN OUT

CHECK DEVICE : V-CALIPERS, MICROMETER, DEPTH GAUGE

PART \ MK	A	B	C	D	E	F	G	H	I	
SPEC	±1.5 750	±2.5 1120	±1.0 254	±0.035 ø110	±0.5 210	±0.022 28	max. 0.070	0 400	-1.0 4-ø35	
CHECK	-0.1	+0.1	-0.1	+0.021	-0.1	-0.023	0.01	-0.2	4-ø35	

PART \ MK	S1	S2	S3							
SPEC	1-ø90	2-PF3/4"	1-PF3/4"							
CHECK	1-ø90	2-PF3/4"	1-PF3/4"							

NOTE(특기)

VISUAL INSPECTION : AC

AC : ACCEPT RJ : REJECT NA : NOT APPLICATION
(양호) (불량) (해당없음)

FINAL INSPECTION
최종판정

합격
ACCEPT

A4(210mmx297mm)

		INSPECTION REPORT 검사 성적서		CHECKED BY : 검토자 :			
PROJ. NO 수주번호	20213032RMH706	SPEC 용량, 형식	750kW, 4P, 6600V, 60Hz	INSP. DATE 검사일			
PROJ. NAME 수주명	삼성전자 천안공장	DWG. NO 도면번호	P-20213032 Rev. 0	INSPECTOR 검사자			
		Q'TY 수량	2 SET	SERIAL. NO 일련번호	20213032RMH70600 1 ~ 2		

FINAL PAINT CHECK SHEET

페인트 검사

(UNIT : μm)

PART 구분	INSPECTION ITEM 검 사 항 목	SPEC 기 준 값	CHECK (검사)			REMARK
			NO. 1	NO. 2	NO.	
Prime Coat.	PAINT MT'L(재질)	EP1160(H)	EP1160(H)	EP1160(H)	*	
	COLOR(색상)	Gray	Gray	Gray	*	
	THICKNESS(두께)	60 μm	70 μm	71 μm	μm	
	T,Hu,D/P,:5-40℃ , 85%이하↓		AIR TEMP 26 ℃ HUMIDITY 60 % DEW POINT 17.6			
Intermedia te Coat.	PAINT MT'L(재질)	EH6270	EH6270	EH6270	*	
	COLOR(색상)	N7.0	N7.0	N7.0	*	
	THICKNESS(두께)	60 μm	131 μm	132 μm	μm	
	T,Hu,D/P,:5-40℃ , 85%이하↓		AIR TEMP 24 ℃ HUMIDITY 40 % DEW POINT 9.6			
Finish Coat.	PAINT MT'L(재질)	UT6780(S)	UT6780(S)	UT6780(S)	*	
	COLOR(색상)	7.5 BG 6/1	7.5 BG 6/1	7.5 BG 6/1	*	
	THICKNESS(두께)	40 μm	171-280 μm	172-270 μm	μm	
	T,Hu,D/P,:5-40℃ , 85%이하↓		AIR TEMP 21 ℃ HUMIDITY 36 % DEW POINT 5.4			
Total Dry film thickness		Min 160 μm	171-280 μm	172-270 μm	μm	

* VISUAL (외관): AC

* NOTE (노트):

AC : ACCEPT

RJ : REJECT

NA : NOT APPLICABLE

FINAL DECISION

양 호

불 량

해 당 없 음

최 종 판 정

합 격
ACCEPT

Measuring Equipment List of Motor Test

NO.	Name	Size	Serial NO.	Calibration Date	Recalibration Date	Remarks
1	깊이게이지(Depth gauge)	0 - 300 mm	71102543	2021-09-03	2022-09-03	MITUTOYO
2	버니어캘리퍼스(Vernier Calipers)	0 - 300 mm	1017988	2021-04-12	2022-04-12	MITUTOYO
3	버니어캘리퍼스(Vernier Calipers)	0 - 1 500 mm	11006323	2021-09-02	2022-09-02	MITUTOYO
4	높이게이지(Vernier Height gauge)	0 - 600 mm	11007317	2021-09-02	2022-09-02	MITUTOYO
5	다이얼게이지(Dial gauge)	0 - 10 mm	KBE572	2021-04-12	2022-04-12	MITUTOYO
6	내측 마이크로미터(Caliper Micrometer)	25 - 50 mm	506895	2021-11-08	2022-11-08	MITUTOYO
7	외측 마이크로미터(Outside Micrometer)	100 - 125 mm	544755	2021-09-04	2022-09-04	MITUTOYO
8	Digital Coating Thickness Tester	0 - 3000 μ m	1521098	2021-05-28	2022-05-28	Qnix
9	줄자(Tape Measure)	3.5M	NHW-35-1	2021-02-04	2023-02-04	TAJIMA
10			Blank			
11			Blank			
12			Blank			
13			Blank			
14			Blank			
15			Blank			