



Ref. Certif. No.

JPTUV-012833-M1

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST
CERTIFICATES FOR ELECTRICAL EQUIPMENT
(IECEE) CB SCHEME

SYSTEME CEI D'ACCEPTATION MUTUELLE DE
CERTIFICATS D'ESSAIS DES EQUIPEMENTS
ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE CERTIFICAT D'ESSAI OC

Product
Produit

Room air conditioner indoor unit

Name and address of the applicant
Nom et adresse du demandeur

Electra Air-conditioning (Shenzhen) Co., Ltd.
2 WUHE AVENUE S.,
BANTIAN, BUJI, Shenzhen, Guangdong, P.R. China

Name and address of the manufacturer
Nom et adresse du fabricant

Electra Air-conditioning (Shenzhen) Co., Ltd.
2 WUHE AVENUE S.,
BANTIAN, BUJI, Shenzhen, Guangdong, P.R. China

Name and address of the factory
Nom et adresse de l'usine

Electra Air-conditioning (Shenzhen) Co., Ltd.
2 WUHE AVENUE S.,
BANTIAN, BUJI, Shenzhen, Guangdong, P.R. China

Rating and principal characteristics
Valeurs nominales et caractéristiques principales

AC 220-230V; 50Hz; Class I
rated power input: refer to the test report
IP20; Refrigerant: R410A

Trade mark (if any)
Marque de fabrique (si elle existe)

ELECTRA

Model/type Ref.
Ref. de type

Alpha series
OMEGA series
Delta series

Additional information (if necessary)
Information complémentaire (si nécessaire)

For model differences, refer to the test report.
Re-issue of JPTUV-012833 dated 25.11.2005,
due to first modification.

A sample of the product was tested and found
to be in conformity with
Un échantillon de ce produit a été essayé et a été
considéré conforme à la

IEC 60335-2-40:1995 + A1
IEC 60335-1:1991 + A1 + A2

As shown in the Test Report Ref. No. which forms part
of this Certificate
Comme indiqué dans le Rapport d'essais numéro de
référence qui constitue une partie de ce Certificat

12012453 002

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de Certification



TÜV Rheinland Group

TÜV Rheinland Japan Ltd.
Shin Yokohama Daini Center Bldg.
3-19-5, Shin Yokohama, Kohoku-ku
Yokohama 222-0033 Japan
Phone + 81 45 470-1850
Fax + 81 45 473-5221
Mail: info@jpn.tuv.com
Web: www.tuv.com

Signature:


Yoshihiro Takahata

Date: 17.01.2006

TEST REPORT**IEC 60335-2-40**

Safety of household and similar electrical appliances
Part 2: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers

Report Reference No.....: 12012453 002

Compiled by (+ signature): S. Kischka

Approved by (+ signature): M. Kera

Contents.....: 12 pages

Date of issue.....: 2006-01-13

CB Testing laboratory Name.....: TÜV Rheinland Japan Ltd., Yokohama Laboratory

Address.....: 4-25-2 Kita-Yamata, Tsuzuki-ku, Yokohama 224-0021, Japan

Testing location/procedure.....: CBTL SMT TMP

Address.....: Same as above

Applicant's Name.....: Electra Air-Conditioning (Shenzhen) Co.,Ltd.

Address.....: 2 Wuhe Avenue S., Bantian, Buji, Shenzhen, Guangdong, P. R. China

Test specification

Standard.....: IEC 60335-1:1991 + A1: 1994 + A2: 1999 used in conjunction with
IEC 60335-2-40:1995 + A1: 2000

Test procedure: CB

Non-standard test method.....: N.A.

Test Report Form No.....: IEC60335_2_40C

TRF originator.....: AENOR

Master TRF.....: Dated 2002-02

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Test item description: Room air conditioner indoor unit

Trademark: ELECTRA

Model and/or type reference.....: Delta series (see model list on page 6 for type designation)

Manufacturer.....: Same as applicant

Factory.....: Same as applicant

Rating(s).....: 220-230V~ 50Hz(See rating label on page 2-3 for details)

Rated input: see rating label

Refrigerant: R410A

IP20

Copy of marking plate:

ELECTRA	MODEL: Delta 7 RC fixed RPM		
PROD NO.:	Fuse: 10A(G)		
TYPE:	COS ϕ =0.95		
220-230V 50Hz	IP20 Rev. A	Dehumidification: 0.8 l/h	
R-410A:	Prated: 25W	PS: 6.3MPa	Ps: 0.8MPa
		Temp. Class : T1	Weight: 7kg

ELECTRA	MODEL: Delta 7 ST fixed RPM		
PROD NO.:	Fuse: 10A(G)		
TYPE:	COS ϕ =0.95		
220-230V 50Hz	IP20 Rev. A	Dehumidification: 0.8 l/h	
R-410A:	Prated: 25W	PS: 6.3MPa	Ps: 0.8MPa
		Temp. Class : T1	Weight: 7kg

ELECTRA	MODEL: Delta 9 RC fixed RPM		
PROD NO.:	Fuse: 10A(G)		
TYPE:	COS ϕ =0.95		
220-230V 50Hz	IP20 Rev. A	Dehumidification: 1.2 l/h	
R-410A:	Prated: 30W	PS: 6.3MPa	Ps: 0.8MPa
		Temp. Class : T1	Weight: 7kg

ELECTRA	MODEL: Delta 9 ST fixed RPM		
PROD NO.:	Fuse: 10A(G)		
TYPE:	COS ϕ =0.95		
220-230V 50Hz	IP20 Rev. A	Dehumidification: 1.2 l/h	
R-410A:	Prated: 30W	PS: 6.3MPa	Ps: 0.8MPa
		Temp. Class : T1	Weight: 7kg

ELECTRA	MODEL: Delta 12 RC fixed RPM		
PROD NO.:	Fuse: 10A(G)		
TYPE:	COS ϕ =0.95		
220-230V 50Hz	IP20 Rev. A	Dehumidification: 1.5 l/h	
R-410A:	Prated: 30W	PS: 6.3MPa	Ps: 0.8MPa
		Temp. Class : T1	Weight: 8kg

ELECTRA	MODEL: Delta 12 ST fixed RPM		
PROD NO.:	Fuse: 10A(G)		
TYPE:	COS ϕ =0.95		
220-230V 50Hz	IP20 Rev. A	Dehumidification: 1.5 l/h	
R-410A:	Prated: 30W	PS: 6.3MPa	Ps: 0.8MPa
		Temp. Class : T1	Weight: 8kg

Copy of marking plate:

ELECTRA	MODEL: Delta 17 RC fixed RPM		
PROD NO.:	Fuse: 15A(G)		
TYPE:	COS ϕ =0.95		
220-230V~ 50Hz	IP20 Rev. A	Dehumidification: 2.2 l/h	
R410A:	Prated: 40W	PS: 6.3MPa	Ps: 0.8MPa
		Temp. Class : T1	Weight:11kg

ELECTRA	MODEL: Delta 17 ST fixed RPM		
PROD NO.:	Fuse: 15A(G)		
TYPE:	COS ϕ =0.95		
220-230V~ 50Hz	IP20 Rev. A	Dehumidification: 2.2 l/h	
R410A:	Prated: 40W	PS: 6.3MPa	Ps: 0.8MPa
		Temp. Class : T1	Weight:11kg

Summary of testing	
<ol style="list-style-type: none"> All tests performed on Delta 17 RC fixed RPM; Heating test was made in a test chamber, which can imitate the most severe condition in normal use. 	
Test items particulars	
Serial Number:	Prototype samples
Additional information:.....	N(.A.)
.....	:
.....	:
Test case verdicts	
Test case does not apply to the test object:	N(.A.)
Test item does meet the requirement:.....	P(ass)
Test item does not meet the requirement:.....	F(ail)
Testing	
Date of receipt of test item:	2005-12-12
Date(s) of performance of test:	2005-12-13—2005-12-13
General remarks	
<p>This report is not valid as a CB Test Report unless appended to a CB Test Certificate issued by a NCB, in accordance with IECCE 02.</p> <p>This report shall not be reproduced except in full without the written approval of the testing laboratory.</p> <p>The test results presented in this report relate only to the item tested.</p> <p>"(See enclosure #)" refers to an additional information appended to the report.</p> <p>"(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a comma is used as the decimal separator.</p>	
<u>History of amendments and modifications:</u>	
Ref. No.12012453 001, dated 2005-11-09(original report);	
Ref. No. 12012453 002, dated 2006-01-13 (modification report);	

Model type description:

This report has two issues:

1. New models approval

Naming rules:

Delta 17 RC fixed RPM

① ②

- ① can be 7, 9, 12, 17, it designates different conditioning capacity, higher number designates higher cooling capacity;
- ② can be RC or ST which means:
 - RC heating and cooling
 - ST cooling only

Models Delta series are identical with Alpha series models except the outlook enclosure is changed, which not affect the safety requirement, model names are changed respectively, details please refer to photo document.

2. Add alternate components, details please refer to table 24.1

Model list (8 models):

No	Model name	Refrigerant	Rated input	Rated input	Type
1.	Delta 7 RC fixed RPM	R410A	220-230V~ 50Hz	25W	Reverse type
2.	Delta 7 ST fixed RPM	R410A	220-230V~ 50Hz	25W	Cooling mode only
3.	Delta 9 RC fixed RPM	R410A	220-230V~ 50Hz	30W	Reverse type
4.	Delta 9 ST fixed RPM	R410A	220-230V~ 50Hz	30W	Cooling mode only
5.	Delta 12 RC fixed RPM	R410A	220-230V~ 50Hz	30W	Reverse type
6.	Delta 12 ST fixed RPM	R410A	220-230V~ 50Hz	30W	Cooling mode only
7.	Delta 17 RC fixed RPM	R410A	220-230V~ 50Hz	40W	Reverse type
8.	Delta 17 ST fixed RPM	R410A	220-230V~ 50Hz	40W	Cooling mode only

IEC 60335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
7	MARKING		P
7.1	Rated voltage or voltage range (V) :	220-230V	P
	Symbol for nature of supply including number of phases, unless for single phase operation (IEC 60335-2-40:1995)	~	P
	Rated frequency or frequency range (Hz) :	50Hz	P
	Rated input or rated current	See rating label.	P
	Manufacturer's or responsible vendor's name, trademark or identification mark	ELECTRA	P
	Model or type reference	See rating label	P
	Symbol for Class II	Class I appliance	N
	Symbol for degree of protection against ingress of water, other than IPX0 (IEC 60335-2-40:1995)	IP20 (Not marked)	N
	Mass of the refrigerant or of each refrigerant in a blend (except for azeotropic type (IEC 60335-2-40:1995)		N
	Refrigerant identification (IEC 60335-2-40:1995)	R410A	P
	Permissible excessive operating pressure in pascals for sanitary hot water heat pumps (IEC 60335-2-40:1995)		N
	Excessive operating pressure of the refrigerant circuit for suction and discharge, if they differ (IEC 60335-2-40:1995)	See rating label	P
	The maximum operating pressure for the heat exchanger (IEC 60335-2-40/A1:2000)	See rating label	P
	Separate marking of the appliances with all the rated characteristics of the supplementary heaters (IEC 60335-2-40:1995)		N
	Marking of the direction of the fluid flow (IEC 60335-2-40:1995)		N
11	HEATING		P
11.8	Monitored temperatures not exceeding the values of Table 3 (IEC 60335-2-40:1995)	(see appended table)	P
	Protective devices do not operate		P
	Sealing compound not flowing out		P
	Temperature of the air in the outlet duct not exceeding 90 °C (IEC 60335-2-40:1995)		N
13	LEAKAGE CURRENT		P
13.1	Leakage current not excessive and electric strength adequate		P
13.2	Leakage current measured by means of circuit described in Annex G (IEC 60335-2-40:1995)		P

IEC 60335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
	Leakage current measurements	(See appended table)	P
13.3	Electric strength test of insulation. See Note in Interpretation Sheet I-SH 02, August 1994	(See appended table)	P
	No breakdown during the test		P
24	COMPONENTS		P
24.1	Components comply with safety requirements in relevant IEC standards	Respective safety relevant components complying with international standards or equivalent national version. See appended table	P
	Motor-compressors not tested according to IEC 60335-2-34 (not necessary to meet all requirements of IEC 60335-2-34) (IEC 60335-2-40:1995)		N
29	CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH INSULATION		P
29.1	Creepage distances and clearances not less than specified in table 13	(See appended table)	P
	Values increased by 4 mm in case of reinforced insulation when resonance voltage		N
	Creepage distances and clearances for circuits with voltages greater than 250 V r.m.s. (345 V peak) comply with table (IEC 60335-2-40:1995)		P
	For motor-compressors with working voltages ≤ 250 V, 29.1 of IEC 60335-2-34 applies (IEC 60335-2-40:1995)		N
	Creepage distances and clearances for motor-compressors with working voltages > 250 V r.m.s. and ≤ 600 V r.m.s. not less than stated in Table 101 (IEC 60335-2-40:1995)		N
29.2	Distances through insulation not less than 1,0 mm for supplementary insulation, and 2,0 mm for reinforced insulation. Interpretation of this requirement: see Interpretation Sheet I-SH 02, August, 1994		N
29.2.1	Supplementary insulation applied in thin sheet form, other than mica or similar scaly material, consists of at least two layers, each of the layers withstands the electric strength test of 16.3 for supplementary insulation		N
	Reinforced insulation applied in thin sheet form, other than mica or similar scaly material, consists of at least three layers, and any two of the layers together withstand the electric strength test of 16.3 for reinforced insulation		N

IEC 60335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
29.2.2	Supplementary or reinforced insulation inaccessible and does not exceed the maximum permissible temperature values		N
	Supplementary or reinforced insulation, after conditioning as specified, withstands the electric strength test as specified in 16.3, both at the oven temperature and room temperature		N
30	RESISTANCE TO HEAT, FIRE AND TRACKING		P
30.1	See Annex H		P
	Relevant external parts of non-metallic material		N
	Parts supporting live parts and parts providing supplementary or reinforced insulation sufficiently resistant to heat		P
	Ball-pressure test with a force of 20 N, diameter of impression not exceeding 2 mm		P
	External parts: at 75 °C		N
	Parts supporting live parts: at 125 °C	Terminal block,	P
	Parts providing supplementary or reinforced insulation: temperature (°C)		N
30.2	Relevant parts of non-metallic material adequately resistant to ignition and spread of fire		P
30.2.1	Possible burning test of relevant parts according to Annex J		N
	Glow-wire test of Annex K made at temperature 550 °C		N
30.2.3	Appliances operated while unattended, possible bad-connection test according to Annex L		N
	Glow-wire test of Annex K made at 850 °C	Terminal block	P
	Possible needle-flame test according to Annex M		N
30.2.4	Parts of non-metallic material within a distance of 50 mm from parts not withstanding the tests of 30.2.2 or 30.2.3, subjected to the needle-flame test of Annex M		N
30.3	Relevant insulating material have adequate resistance to tracking		P
	Tracking test at 175 V according to Annex N	Terminal block	P
	Tracking test at 250 V according to Annex N		N
	No hazard other than fire, tracking test at 175 V according to Annex N, and in addition needle-flame test of surrounding parts according to Annex M		P
	Possible needle-flame test of non-metallic material		N

IEC 60335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict

11.8	TABLE: TEMPERATURE RISE MEASUREMENTS				P
Delta 7 RC fixed RPM	room temperature t1 (°C)	25			-
	room temperature t2 (°C)	Cooling mode: Indoor: 32/23 Heating mode: Indoor: 27/-			-
	at	244V and 207V			-
Parts measured:		Measured temperature (°C)	Limits temperature (°C)		
Swing motor enclosure		41,3	150		
Compressor relay ambient 5mm		53,1	T55		
Remark:					
<ol style="list-style-type: none"> The heating test is conducted at high speed and low speed of the indoor unit motor, The highest temperature result is considered; Test performed at cooling mode and heating mode, the max temperature is considered. The test was performed at 244V and 207V and highest value was listed. 					
Winding temperature rise measurements:				P	
K = 234,5 for copper windings:		Copper winding		-	
K = 225 for aluminium windings:		n.a.		-	
Insulation class:		See below		-	
Ambient temperature (°C):		T1=25			
model	R1(Ω)	R2(Ω)	T (°C)	Insulation Class	Limit T (°C)
24BYJ48	250	281	57,2	A	100

13.2	TABLE: LEAKAGE CURRENT AT OPERATING TEMPERATURE				P
	At 1,15 times rated input (W)	N/A			-
	At 1,06 times rated voltage (V)	244V			-
Measured between:		Measured (mA)	Limit (mA)		
Indoor unit					
L/N to earthed metal parts		0,88	3,5		
L/N to outside enclosure (class II construction)		0,071	0,25		

13.3	TABLE: ELECTRICAL INSULATION AT OPERATING TEMPERATURE			P
Test voltage applied between:		Test voltage (V)	Result	
L/N- GND		1000	No	
L/N - enclosure of indoor unit (with aluminum foil)		3750	No	

24.1	TABLE: COMPONENTS					P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard	Mark(s) of conformity	

IEC 60335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict

Remark 1: For thermal cut-outs, thermal links of fan motors and transformers which have been approved according to relevant IEC standards, the manufacturer, types and characters not listed in the CDF but should be in this scope authorized by original certification bodies.

Remark 2: only different components are listed.

Built-in components with windings: (motors, transformers, magnetic coils etc.)

Built-in components with windings: (motors, transformers, magnetic coils etc.)

Swing motor	Ou Kai	24BYJ48	200±7%Ω Class A	IEC 60335-2-40	Tested with appliance
Built-in components:(switches, thermostats, heater, plugs, wires, capacitors, sockets, rfi-filters etc.)					
Relay for compressor	SANYOU	SFK-112DM	20A 250VAC Temp 55°C	IEC 60255	VDE 40007481
Terminal block	Jinlong	JXO-T5006-A	300VAC 2,5mm ²	IEC 60335-1	Tested with appliance

29.1	TABLE: MINIMUM CREEPAGE DISTANCES AND CLEARANCES								P
creepage (cr) and clearance (cl) distance (mm):	Class III appliances		Other appliances, working voltage:				Remark		
			< 130 V		130-250 V		250-440 V		
	cr	cl	cr	cl	cr	cl	cr	cl	
Between live parts of different potential									
- if protected against deposition of dirt	1,0	1,0	1,0	1,0	<u>3,0</u>	<u>3,0</u>	2,0	2,0	P
- if not protected against deposition of dirt	2,0	1,5	2,0	1,5	<u>4,0</u>	<u>4,0</u>	<u>4,0</u>	<u>3,0</u>	P
Cl and Cr measured between:									
1. L and N on terminal block;									
Between live parts and other metal parts over basic insulation:									
- if not protected against deposition of dirt	2,0	1,5	2,0	1,5	<u>4,0</u>	<u>4,0</u>	—	—	P
- if the live parts are lacquered or enamelled windings	1,0	1,0	1,5	1,5	<u>4,0</u>	<u>4,0</u>	—	—	P
- at the end of tubular sheathed-type heating elements	—	—	1,0	1,0	1,0	1,0	—	—	N
Cl and Cr measured between:									
1. Live part on terminal part;									
The shortest value is considered.									
Between live parts and other metal parts over reinforced insulation									
- if the live parts are lacquered or enamelled windings	—	—	6,0	6,0	6,0	6,0	—	—	N
- for other live parts	—	—	8,0	8,0	<u>10,0</u>	<u>10,0</u>	—	—	P
Cl and Cr measured between:									
1. Test finger and internal live part through the gap of enclosure.									
The shortest value is considered.									

IEC 60335-2-40										
Clause	Requirement - Test								Result - Remark	Verdict
between metal parts separated by supplementary insulation	—	—	4,0	4,0	4,0	4,0	—	—	N	
between live parts in recesses in the mounting face of the appliance and the surface to which it is fixed	2,0	2,0	6,0	6,0	6,0	6,0	—	—	N	

30	TABLE: material test				P
Part	Ball-pressure test		Glow-wire test		Tracking test (V)
	Temp.(°C)	Diameter (mm)	Temp. (°C)	Burning time(s)	
Terminal block	125	0,6	850	0	175V

--End of report--



Picture 1



Picture 2