



उत्पाद मैनुअल

आई एस 1391 (भाग 1): 2023 के अनुसार
कक्छ वातानुकूलक – एकिक वातानुकूलक के लिए

दस्तावेज संख्या-पी एम/आई एस 1391 (भाग 1)/5/ सितम्बर 2023

भारतीय मानक ब्यूरो की स्कीम-1 (अनुरूपता मूल्यांकन) विनियम, 2018 के तहत यह उत्पाद मैनुअल प्रमाणीकरण के प्रचालन में रीति औरपारिशिता की सुसंगतता सुनिश्चित करनेके लिए सभी क्षेत्रीय/शाखा कार्यालयों और लाइसेंसी द्वारा संदर्भ सामग्री के रूप में उपयोग किया जाएगा। बीआईएस प्रमाणीकरण लाइसेंस/प्रमाणपत्र प्राप्त करने के इच्छुक भावी आवेदकों द्वारा भी इस दस्तावेज का उपयोग किया जा सकता है।

PRODUCT MANUAL FOR ROOM AIR CONDITIONERS - UNITARY AIR CONDITIONERS ACCORDING to IS 1391 (Part 1):2023

Document No.-PM/IS 1391 (Part 1)/5/ September 2023

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.

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1.	Product	:	IS 1391 (Part 1): 2023
	Title	:	Room Air Conditioners- Unitary Air Conditioners
	No. of Amendments	:	Nil
2.	Sampling Guidelines:		
a)	Raw material	:	• Material- as per Cl. 5.1.4 • Supply Cord – IS 694 or IS 9968 (Part 1) • Conductor for supply cord- as per Cl. 5.2.5 • Refrigerant Pipe and Fittings- IS 10773 or material specified in Annex B of IS 11329 • Air Filter- as per Cl. 5.5 • Pre-filter, if used- IS 17570 (Part 1)/ ISO 16890-1 • HEPA Filters, if used- IS 16753-1/ISO 29463-1 • Temperature Sensing Controls- as per Cl. 5.6 • Hermetic Compressors- IS 10617 • Heat Exchangers- IS 11329 • Motors- as per Cl. 5.9
b)	Grouping guidelines	:	Please refer ANNEX – A
c)	Sample Size	:	One assembled air conditioner plus other suitable number of components as required.
3.	List of Test Equipment	:	Please refer ANNEX – B
4.	Scheme of Inspection and Testing	:	Please refer ANNEX – C
5.	Possible tests in a day :	:	Please refer ANNEX – D
6.	Scope of the Licence :	:	Please refer ANNEX – E

BUREAU OF INDIAN STANDARDS
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ANNEX--A**GROUPING GUIDELINES**

1. The following parameters are taken into consideration for evolving the grouping guidelines for certification of Unitary Air Conditioner as per IS 1391 (Part 1): 2023.

Classifications based upon function: (i) Cooling only (ii) Cooling and Heating

2. Further, Air Conditioners may be grouped in to following 2 groups, based on cooling capacity:

Group	Cooling capacity in Watt (W)
I	Upto and including 4 400
II	Above 4 400

3. From each group, sample of highest cooling capacity among the capacities intended to be covered in the licence for each function, shall be tested for all requirements.
4. When samples are tested to cover both groups and functions, at least one sample from each function shall be tested to cover the entire range.
5. All model numbers, along with their following technical parameters intended to be covered in the scope of licence, shall be declared by the manufacturer at the time of grant of licence/Change in scope of licence:
 - Model Number
 - **Function:** Cooling only/Cooling and Heating
 - Rated Cooling capacity, in Watts
 - Rated heating capacity, in Watts, if applicable
 - Rated Voltage, Frequency and Phase
 - Maximum Power Consumption at rated conditions, in Watts
 - Name and quantity of refrigerant charge
 - Nominal current at rated conditions
 - ISEER at rated conditions, if applicable
 - Speed: Fixed/Variable
 - Whether Unit is with or without Pre-filters/HEPA filters
 - Whether Unit is Fixed capacity or Two-stage or Multi-stage or Variable Capacity
6. The Scope of Licence may be restricted based on the Manufacturing and testing capabilities of the manufacturer.
7. A typical example for drawal of sample to cover the entire varieties under the scope of the License is given for the purpose of general guidance:

Sample 1	Unitary Air conditioner, Rated Cooling Capacity 4 400 W, 'Cooling only'
Sample 2	Unitary Air conditioner, Rated Cooling Capacity 10 500 W, 'Cooling and Heating'

Or

Sample 1	Unitary Air conditioner, Rated Cooling Capacity 10 500 W, 'Cooling only'
Sample 2	Unitary Air conditioner, Rated Cooling Capacity 4 400 W, 'Cooling and Heating'

8. During operation of the licence if any new model is intended to be covered within the existing scope of licence, the parameters as per para 5 above for all such new model numbers will be declared by licensee to BIS for records. The declaration shall be submitted by the manufacturer as per APPENDIX I below, through Manakonline (communication window) and the information shall be noted by BIS. After submission of the declaration to BIS Branch Office through Manakonline, the licensee may use the standard mark on such new models (Licensee shall be able to produce documentary proof of having submitted this information to BIS).
9. However, in case any discrepancy is observed post-facto due to which it is viewed that the models are not to be endorsed in the scope (e.g. if the added models do not fall within granted scope), Head of BIS Branch Office concerned, may, after giving the licensee an opportunity to explain, direct the licensee to cease marking on such models, or in case the appliances are already marked and dispatched, issue directions for product recall.
10. During the operation of Licence, it shall be ensured that all the varieties covered in the Licence are tested in rotation, to the extent possible.

APPENDIX –I

FORMAT FOR DECLARATION FOR ADDING NEW MODELS WITHIN SCOPE OF LICENCE BY LICENSEE

Date:

Branch Office
Bureau of Indian Standards

Sir/Madam

Subject: DECLARATION FOR ADDING NEW MODELS WITHIN SCOPE OF LICENCE

With reference to my existing licence for “Room Air Conditioners- Unitary Air Conditioners” as per IS 1391 (Part 1) (Licence No CM/L-.....), I request BIS to add the following new models in the scope of my licence

List of new models intended to be covered in existing scope of licence

Model	Model 1	Model 2	Model 3
Technical parameter			
Model Number			
Function: Cooling only/Cooling and Heating			
Rated Cooling capacity, in Watts			
Rated heating capacity, in Watts, if applicable			
Rated Voltage, Frequency and Phase			
Maximum Power Consumption at rated conditions, in Watts			
Name and quantity of refrigerant charge			
Nominal current at rated conditions			
ISEER at rated conditions, if applicable			
Speed: Fixed/Variable			
Whether Unit is with or without Pre-filters/HEPA filters			
Whether Unit is Fixed capacity or Two-stage or Multi-stage or Variable Capacity			

I declare that the above models, as indicated above, fall within the existing scope of my licence.

I declare that the above information is true and correct to the best of my knowledge and undertake that in case my declaration is found defective or incorrect BIS may take action as deemed appropriate as per the BIS Act, Rules and Regulations which we shall comply with including recall of such products from the market.

Signature with date of Firm’s authorized signatory

Name and designation

ANNEX -B**List of Test Equipment*****Major test equipment required to test as per the Indian Standard***

Sr No	Tests used in with clause reference	Test equipment
1.	Leakage test, Cl. 12.2.2	Pressure gauge, Leak detector
2.	High Voltage Test, Cl. 12.2.3	High Voltage tester
3.	Leakage Current Test, Cl. 12.2.4	Power Multimeter
4.	Earth Resistance test, Cl. 12.2.5	Voltage Source, Milliohm meter
5.	Cooling Capacity test, Cl. 9.10, & Heat Pump heating capacity test, Cl. 9.11 Annex G, H	Test set up for Calorimeter method or Air enthalpy (Room Psychometric) method as per Annex G, H Temperature measuring instruments as per Cl. 11.1
6.	Power factor test, Cl. 9.3	PF Meter
7.	Maximum Operating Condition test, Cl. 9.4	Test set up as per Cl. 9.4
8.	Freeze up test Cl. 9.5	Test set up as per Cl. 9.5
9.	Enclosure sweat test, Cl. 9.6	Test set up as per Cl. 9.6
10.	Condensate disposal test, Cl. 9.7	Test set up as per Cl. 9.7
11.	Power consumption test, Cl. 9.8, 9.9	Power meter
12.	Sound pressure test, Cl. 9.14	Sound measuring room as per Cl. 9.14.2, Sound measuring instrument as per Cl 9.14.3
13.	Maximum Heating Performance Test, Cl. 9.13	Test set up as per Cl. 9.14

The above list is indicative only and may not be treated as exhaustive.

ANNEX- C
Scheme of Inspection and Testing

1. LABORATORY - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

1.1 The manufacturer shall prepare a calibration plan for the test equipments.

2. TEST RECORDS – The manufacturer shall maintain test records for the tests carried out to establish conformity.

3. LABELLING AND MARKING – As per the requirement of IS 1391 (Part 1): 2023. The Standard Mark, as given in the Schedule of the licence, shall be marked on each Air Conditioner provided always that the Air Conditioner thus marked conforms to all the requirement of the specification. In addition, the licence no. CM/L-_____ and details of BIS website shall be marked at an appropriate place as follows: “For details of BIS certification please visit www.bis.gov.in”.

4. CONTROL UNIT –All Room Air Conditioners of one type (based on function) and rating manufactured in a day shall constitute a control unit.

5. LEVELS OF CONTROL - The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

6. REJECTIONS – Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act, 2016.

TABLE 1

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub- contracting permitted	Levels of Control		
Cl.	Requirement	Test Method			No. of Sample	Frequency	Remarks
		Clause	Reference				
5	CONSTRUCTION						
5.1	General	5.2	IS 1391 (Part 1)	R	Firm should exercise adequate control so that whole production should meet the requirements. Records shall be maintained. For materials, Conformity shall be established as per Internal quality Assurance Plan of the licensee and no further testing is required if received with a test certificate or is ISI Marked.		
5.2.2, 5.2.4, 5.2.5	Supply Cord and Electric Conductors	5.2.2, 5.2.4, 5.2.5	IS 1391 (Part 1)	S	No testing required in case received along with test certificate or is ISI Marked.		
5.3	Refrigerant Circuit	5.3	IS 1391 (Part 1) IS 10773 IS 11329	S			
5.5	Air Filter	5.5	IS 1391 (Part 1)	S			
5.5.2	• Pre-filter, (if used) • HEPA Filters, if used	5.5	IS 1391 (Part 1) IS 17570 (Part 1)/ ISO 16890-1 IS 16753-1/ISO 29463-1	S			

5.6	Temperature sensing Controls	5.6	IS 1391 (Part 1) IS/IEC 60730- 2-9	S		No testing required in case received along with test certificate or is ISI Marked.
5.7	Hermetic Compressors	5.7	IS 1391 (Part 1) IS 10617	S		
5.9	Motors	5.9	IS 1391 (Part 1) IS 996	S		
5.8	Heat Exchanger	5.8	IS 1391 (Part 1) IS 11329	S		
5.4	Provision for Earthing	5.4	IS 1391 (Part 1) IS 302(Part 1)	R		Firm should exercise adequate control so that whole production should meet the requirements. Records shall be maintained.
9, 12.3	PERFORMANCE REQUIREMENTS, TYPE TESTS					
9.2	Safety					
12.3.3	Protection against access to the live part	8	IS 302 (Part 1)	S	One	Once in a year for each function and rating (Also see Note 1).
	Electric strength test	13.3	IS 302 (Part 1)	S	One	
	Provision for Earthing	27	IS 302 (Part 1)	S	One	
	Leakage Current Test	13.2	IS 302 (Part 1)	S	One	
9.2	Safety Conditions for units using A ₃ refrigerants	-	IEC 60335-2-40	S	One	Once in a month (Also see Note 1).
9.3, 12.3.1(a)	Power Factor Test	9.3	IS 1391 (Part 1)	S	One	Once in two years for each function and rating (Also see Note 1).

10.4 12.3.1(b)	Maximum Operating Conditions Test	9.4	IS 1391 (Part 1)	S	One	Once in two years for each function and rating (Also see Note 1).
9.5 12.3.1(c)	Freeze Up Test	9.5	IS 1391 (Part 1)	S	One	
9.6 12.3.1(d)	Enclosure Sweat Test	9.6	IS 1391 (Part 1)			
9.7 12.3.1(e)	Condensate Disposal Test	9.7	IS 1391 (Part 1)	S	One	
9.8 12.3.1(f)	Power Consumption Test for Cooling	9.8	IS 1391 (Part 1)	S	One	
9.9 12.3.1(f)	Power Consumption Test for Heat Pump	9.9	IS 1391 (Part 1)	S	One	
9.10	Cooling Capacity Test	9.10 Annex G Annex H	IS 1391 (Part 1)	S	One	
9.11	Heating Capacity Test	9.11 Annex G Annex H	IS 1391 (Part 1)	S	One	
9.13	Maximum Heating Performance Test	9.13	IS 1391 (Part 1)	S	One	
9.14	Sound Pressure Test	9.14	IS 1391 (Part 1)	S	One	
12.2	<i>Production Routine Test</i>					
12.2.1	General Running Test	12.2.1	IS 1391 (Part 1)	R	Each Air Conditioner	—
12.2.2	Leakage Test	12.2.2	IS 1391 (Part 1)	R		

12.2.3	High Voltage Test	12.2.3 Annex A	IS 1391 (Part 1) IS 302 (Part 1)	R	Each Air Conditioner	
12.2.4	Leakage Current Test	12.2.4 13.2	IS 1391 (Part 1) IS 302 (Part 1)	R	Each Air Conditioner	
12.2.5	Earth Resistance Test (Provision for Earthing)	12.2.5 27	IS 1391 (Part 1) IS 302 (Part 1)	R	Each Air Conditioner	
12.4	<i>Acceptance Tests</i>	12.4	IS 1391 (Part 1)	As agreed to between manufacturer and purchaser.		

Note-1: The test shall be done whenever there is a change in design.

Note- 2: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

Note-3: The control unit and levels of control as decided by the Bureau are recommendatory in nature. The manufacturer may define the control unit/batch/lot and submit his own levels of control in column 3 with proper justification for approval by BO Head.

ANNEX – D

Possible tests in a day

- i) General Running (Cl. 12.2.1)
- ii) Leakage Test (Cl. 12.2.2)
- iii) High Voltage Test (Cl. 12.2.3)
- iv) Leakage Current Test (Cl. 12.2.4)
- v) Earth resistance (Cl. 12.2.5)
- vi) Power factor Test (Cl. 9.3)
- vii) Maximum Operating Conditions test (Cl. 9.4)
- viii) Enclosure Sweat test (Cl. 9.6)

ANNEX E

Scope of Licence

“Licence is granted to use Standard Mark as per IS 1391 (Part 1): 2023 with the following scope:

Name of the product	Room Air Conditioners- Unitary Air Conditioners
Classification based on function	
Cooling Capacity (up to and including)	