ISO 13253:2017-07 (E)

Ducted air-conditioners and air-to-air heat pumps - Testing and rating for performance

Contents

Page

Foreword vi

1 Scope 1

2 Normative references 1

3 Termsanddefinitions 2

4 Symbols 4

5 Airflowsetting 7
5.1 General 7
5.2 Indoor airflow setting 7
5.3 ESP for rating 7
5.4 Outdoor airflow 9
5.5 Unit supplied without indoor fan 9

6 Cooling tests 9
6.1 Cooling capacity tests 9
6.1.1 General conditions 9
6.1.2 Temperature conditions 10
6.1.3 Test conditions 11
6.2 Maximum cooling performance test 11
6.2.1 General conditions 11
6.2.2 Temperature conditions 11
6.2.3 Airflow conditions 12
6.2.4 Test conditions 12
6.2.5 Performance requirements 12
6.3 Minimum cooling performance test 13
6.3.1 General conditions 13
6.3.2 Temperature conditions 13
6.3.3 Airflow conditions 13
6.3.4 Test conditions 14
6.3.5 Performance requirements 14
6.4 Condensate control and enclosure sweat performance test 15
6.4.1 General conditions 15
6.4.2 Temperature conditions 15
6.4.3 Airflow conditions 15
6.4.4 Test conditions 15
6.4.5 Performance requirements 15

7 Heating tests 16
7.1 Heating capacity tests 16
7.1.1 General conditions 16
7.1.2 Temperature conditions 17
7.1.3 Airflow conditions 17
7.1.4 Defrost operation 18
7.1.5 Test procedure -- General 18
7.1.6 Preconditioning period 19
7.1.7 Equilibrium period 19
7.1.8 Data collection period 19

7.1.9 Test procedure when a defrost cycle (whether automatically or manually initiated) ends the preconditioning period ... 20
7.1.10 Test procedure when a defrost cycle does not end the preconditioning period ... 20
7.1.11 Test procedure for transient tests ... 20
7.1.12 Heating capacity test results ... 22
7.2 Maximum heating performance test ... 22
7.2.1 General conditions ... 22
7.2.2 Temperature conditions ... 22
7.2.3 Airflow conditions ... 22
7.2.4 Test conditions ... 23
7.2.5 Performance requirements ... 23
7.3 Minimum heating performance test ... 23
7.3.1 General conditions ... 23
7.3.2 Temperature conditions ... 23
7.3.3 Airflow conditions ... 23
7.3.4 Test conditions ... 23
7.3.5 Performance requirements ... 24
7.4 Automatic defrost performance test ... 24
7.4.1 General conditions ... 24
7.4.2 Temperature conditions ... 24
7.4.3 Airflow conditions ... 24
7.4.4 Test conditions ... 24
7.4.5 Performance requirements ... 25

8 Test methods and uncertainties of measurement ... 25
8.1 Test methods ... 25
8.1.1 General ... 25
8.1.2 Calorimeter test method ... 25
8.1.3 Indoor air enthalpy method ... 25
8.1.4 Capacity tests ... 26
8.2 Uncertainty of measurement ... 26
8.3 Test tolerances for steady-state cooling and heating capacity tests ... 27
8.4 Test tolerances for performance tests ... 28

9 Test results ... 28
9.1 Capacity results ... 28
9.1.1 General ... 28
9.1.2 Adjustments ... 29
9.1.3 Cooling capacity calculations ... 29
9.1.4 Heating capacity calculations ... 29
9.2 Data to be recorded ... 30
9.3 Test report ... 33
9.3.1 General information ... 33
9.3.2 Capacity test results ... 33
9.3.3 Performance tests ... 33

10 Marking provisions ... 34
10.1 Nameplate requirements ... 34
10.2 Nameplate information ... 34
10.3 Split systems ... 34

11 Publication of ratings ... 34
11.1 Standard ratings ... 34
11.2 Other ratings ... 35

Annex A (normative)Airflowsettingsforductedunits ... 36

Annex B (normative) Test requirements ... 41

Annex C (informative)Airflowmeasurement ... 48

Annex D (normative) Calorimeter test method 54

Annex E (normative) Indoor air enthalpy test method 62

Annex F (informative) Refrigerant enthalpy test method 68

Annex G (informative) Outdoor air enthalpy test method 70

Annex H (informative)Indoorcalorimeterconfirmativetestmethod 73

Annex I (informative)Outdoorcalorimeterconfirmativetestmethod 75

Annex J (informative)Balanced-typecalorimeterconfirmativetestmethod 77

Annex K (informative) Cooling condensate measurements 78

Annex L (normative) Supplemental requirements when rating fan-less (coil-only) type units 79

Annex M (informative) Pictorial examples of the heating capacity test procedures given in 7.1 82

Bibliography 89