BRITISH STANDARD

BS EN
810 : 1997

Dehumidifiers with electrically driven compressors —

Rating tests, marking, operational requirements and technical data sheet

The European Standard EN 810 : 1997 has the status of a British Standard

ICS 91.140.30

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee RHE/17, Testing of heat pumps and air conditioners, upon which the following bodies were represented:

British Gas plc
British Refrigeration Association
Building Services Research and Information Association
Chartered Institution of Building Services Engineers
Department of the Environment (Building Research Establishment)
Electricity Association
Heating and Ventilating Contractors' Association
Hevac Association
Institute of Refrigeration
Institution of Mechanical Engineers

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The following BSI references relate to the work on this standard:
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Contents

National foreword

This British Standard has been prepared by Technical Committee RHE/17, and is the English language version of EN 810 : 1997, published by the European Committee for Standardization (CEN).

Cross-references

Publication referred to	Corresponding British Standard
EN 255-1 : 1988	BS 7326 *Specification for rating and performance of heat pumps with electrically driven compressors*
	BS EN 60335 *Specification for safety of household and similar electrical appliances*
	BS EN 60335-2 *Particular requirements*
EN 60335-2-40	BS EN 60335-2-40 : 1993 *Electric heat pumps, air conditioners and dehumidifiers*

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 10, an inside back cover and a back cover.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 810

February 1997

ICS 91.140.30

Descriptors: Air conditioning equipment, humidifiers, tests, testing conditions, installation, measurements, calorific power, marking

English version

Dehumidifiers with electrically driven compressors — Rating tests, marking, operational requirements and technical data sheet

Déshumidificateurs à compresseur entrainé par moteur électrique — Essais de performance, marquage, exigences de fonctionnement et fiche technique

Entfeuchter mit elektrisch angetriebenen Verdichtern — Leistungsprüfungen, Kennzeichnung, Funktionsanforderungen und technische Datenblätter

This European Standard was approved by CEN on 1997-01-27. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 113, Heat pumps and air conditioners, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 1997, and conflicting national standards shall be withdrawn at the latest by August 1997.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Contents

1 Scope

This standard specifies the methods for testing and reporting the rating and operational requirements and it specifies requirements for marking for dehumidifiers with electrically driven compressors. This standard does not apply to continuously variable capacity control units.

In the case of dehumidifiers consisting of several parts, the standard applies only to those designed and supplied as a complete package.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

EN 255-1	*Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors — Heating mode — Part 1: Terms, definitions and designations*
EN 814-1	*Air conditioners and heat pumps with electrically driven compressors — Cooling mode — Part 1: Terms, definitions and designations*
EN 60335-2-40	*Safety of household and similar electrical appliances — Part 2: Particular requirements for electrical heat pumps, air conditioners and dehumidifiers* (IEC 335-2-40 :1992 modified)
ENV 12102	*Air conditioners, heat pumps and dehumidifiers with electrically driven compressors — Measurement of airborne noise — Determination of sound power level*

3 Definitions

For the purpose of this standard the definitions given in EN 255-1 and EN 814-1 apply together with the following.

3.1 dehumidification for comfort

Dehumidification to reduce the humidity within a space to a level to satisfy the requirements of the occupants.

3.2 dehumidification for process

Dehumidification to reduce the humidity within a space to a level necessary for the process or the storage of goods and/or materials or the drying out of a building.

3.3 dehumidification for heat recovery

Dehumidification where the latent and sensible heat removed from the space together with the compressor heat is re-used in another application rather than rejected outside to waste.

3.4 dehumidifier

Encased assembly designed to remove moisture from its surrounding atmosphere. It includes an electrically operated refrigeration system and means to recirculate air. It also includes a drain arrangement for collecting and storing and/or disposing of the condensate.

3.5 dehumidification capacity

Measure of the net removal of moisture by the unit from its surrounding atmosphere expressed in litres per hour.

3.6 dehumidification efficiency ratio (DER)

Ratio of dehumidification capacity to the effective power input of the dehumidifier measured over a defined interval of time.

4 Rating test

4.1 Basic principles

4.1.1 ***General***

All measured parameters, with the exception of time measurement shall be understood to be average values over the duration of the test period.

4.1.2 ***Dehumidification capacity***

The capacity of the dehumidifier is determined by measurements in a suitable test chamber.

4.1.3 ***Power input of fans for dehumidifiers without duct connection***

In the case of dehumidifiers which are not designed for duct connection, i.e. which do not permit any external pressure difference, and which are equipped with an integral fan, the power absorbed by the fan shall be included in the (effective or total) power absorbed by the dehumidifier.

4.1.4 ***Power input of fans for dehumidifiers with duct connection***

4.1.4.1 If a fan is an integral part of the dehumidifier, only a fraction of the input of the fan motor shall be included in the effective power absorbed by the dehumidifier. The fraction which is to be excluded from the total power absorbed by the dehumidifier shall be calculated using the following formula:

$$\frac{q\,\Delta p_e}{\eta} \text{ in watts}$$

where:

η is 0,3 by convention;

Δp_e is the available external static pressure difference, in pascals;

q is the nominal air flow rate, in cubic metres per second.

4.1.4.2 If no fan is provided with the dehumidifier, a fraction of the power input shall be included in the effective power absorbed by the dehumidifier, using the following formula:

$$\frac{q\,\Delta p_i}{\eta} \text{ in watts}$$

where:

η is 0,3 by convention;

Δp_i is the measured internal static pressure difference, in pascals;

q is the nominal air flow rate, in cubic metres per second.

4.1.5 *Power input of water pump*

4.1.5.1 At the water or brine cooled condenser, the fraction of the power absorbed by the pump which is required to overcome the internal static pressure of the dehumidifier shall be calculated.

4.1.5.2 If the pump is an integral part of the dehumidifier only a fraction of the input to the pump motor shall be included in the effective power absorbed by the dehumidifier. The fraction which is to be excluded from the total power absorbed by the dehumidifier shall be calculated using the following formula:

$$\frac{q\,\Delta p_e}{\eta} \text{ in watts}$$

where:

η is 0,3 by convention;

Δp_e is the available external static pressure difference, in pascals;

q is the nominal air flow rate, in cubic metres per second.

4.1.5.3 If no pump is provided with the dehumidifier, a fraction of the power input shall be included in the effective power absorbed by the dehumidifier, using the following formula:

$$\frac{q\,\Delta p_i}{\eta} \text{ in watts}$$

where:

η is 0,3 by convention;

Δp_i is the measured internal static pressure difference, in pascals;

q is the nominal air flow rate, in cubic metres per second.

4.2 Test apparatus

4.2.1 *Arrangement of the test apparatus*

4.2.1.1 *General requirements*

The test apparatus shall be designed in such a way that all requirements on adjustment of set values, stability criteria and uncertainties of measurement according to this European Standard can be fulfilled.

Ducted air systems shall be sufficiently air tight to ensure that the measured results are not significantly influenced by exchanges of air with the surroundings.

4.2.1.2 *Test room for the airside*

The size of the test room shall be selected such that any resistance to air flow at the air inlet and air outlet orifices of the test object is avoided. The air flow through the room shall not be capable of initiating any short circuit between these two orifices and therefore the velocity of the air flows through the room at these two locations shall not exceed 1,5 m/s when the test object is switched off. The air velocity in the room shall also not be greater than the mean velocity through the unit inlet. Unless otherwise stated by the manufacturer, the air inlet and outlet orifices shall not be less than 1 m distant from the surfaces of the test room; this also applies to any measuring ducts.

Any direct heat radiation by heating devices in the test room onto the unit or onto the temperature measuring points shall be avoided.

4.2.1.3 *Setting the external static pressure difference on the air side for appliances with duct connection*

For appliances with duct connection, the maximum external pressure difference available at the nominal flow rate specified by the manufacturer is preferably set on the air outlet side of the unit when the refrigerating system does not operate. The nominal air flow shall then be verified.

4.2.1.4 *Setting the external static pressure difference on the water side for appliances with integral pumps*

For appliances with integral water pumps, the maximum external static pressure difference available at the nominal flow rate specified by the manufacturer is preferably set on the outlet side of the unit, this also sets the water flows.

4.2.2 *Installation and connection of the test object*

The test object shall be installed and connected for the test as recommended by the manufacturer in his installation and operation manual.

Temperature and pressure measuring points shall be arranged in order to obtain mean significant values.

4.2.3 *Installation of dehumidifiers consisting of several parts*

In the case of a dehumidifier consisting of several parts, the following installation conditions shall be complied with for the test:

a) each refrigerant line shall be installed in accordance with the manufacturer's instructions with the maximum stated length or 8 m, whichever is shorter;

b) the lines shall be installed so that the difference in elevation does not exceed 1 m;

c) the thermal insulation of the lines shall be applied in accordance with the manufacturer's instructions;

d) unless constrained by the design, at least half of the connecting lines shall be exposed to the outside conditions, with the rest of the lines exposed to the inside conditions.

4.3 Uncertainties of measurement

Uncertainties of measurement shall not exceed the values specified in table 1. The capacity shall be determined within a maximum uncertainty of 5 % independent of the individual uncertainties of measurement.

4.4 Test conditions

4.4.1 *Environmental conditions and electrical power supply requirements*

The tests shall be carried out under the environmental conditions and with the electrical power supply specified in table 2.

Table 2. Environmental conditions and electrical power supply requirements

Measured quantity	Rating test
Dry bulb temperature	As inlet temperature see table 3
Voltage	Rated voltage
Frequency	Rated frequency

4.4.2 *Rating test conditions*

For the rating test, the appropriate test conditions in accordance with tables 2 and 3 shall be applied.

4.5 Test procedure

4.5.1 *General*

For test conditions see **4.4**.

In the case of appliances with duct connection and a fan motor with variable speed, the test is carried out at the nominal flow rate with a permissible external static pressure difference of 100 Pa or the closest value belonging to the range specified by the manufacturer. If the appliance can also be used without duct connection, then (unless agreed otherwise) the measurement with duct connection is sufficient.

Table 1. Uncertainties of measurement for indicated values

Measured quantity	Unit	Uncertainty of measurement
Water		
– temperature	°C	± 0,1 K
– temperature difference	K	± 0,1 K
– (volume) flow	l/s	± 5 %
– static pressure difference	Pa	± 5 Pa ($\Delta p \leq 100$Pa) ± 5 % ($\Delta p > 100$Pa)
Air		
– dry bulb temperature	°C	± 0,2 K
– wet bulb temperature	°C	± 0,2 K
– (volume) flow	m^3/s	± 5 %
– static pressure difference	Pa	± 5 Pa ($\Delta p \leq 100$Pa) ± 5 % ($\Delta p > 100$Pa)
Electrical power	W	± 1 %
Voltage	V	± 0,5 %
Current	A	± 0,5 %
Electrical energy	kWh	± 1 %

See table 4 for permissible deviations of the measured values from the test conditions.

4.5.2 ***Output measurement***

4.5.2.1 *Steady state condition*

This condition is considered obtained and maintained when all the measured quantities remain constant without having to alter the set values. Periodic fluctuations of measured quantities caused by the technical operation of regulation and control devices are permissible, on condition the mean value of such fluctuations does not exceed the permissible deviations listed in table 4.

4.5.2.2 *Measurement*

For the output measurement it is necessary to record all the meaningful quantities continuously. In the case of recording instruments which operate on a cyclic basis, the cycle sequence shall be adjusted such that a complete recording is effected at least once every 2 min.

The output shall be measured in the steady state condition. The duration of measurement shall be not less than 30 min.

If the operation of the dehumidifier is cyclic, measurements shall be made on at least four cycles.

5 Test report

5.1 General information

The test report shall at least contain:

a) date;

b) test institute;

c) test place;

d) test method used;

e) test supervisor;

f) test object denomination;

g) reference to this European Standard.

5.2 Additional information

Additional information given on the marking shall be noted.

5.3 Rating test

The values given in table 5 shall be the mean of values taken over the test period.

Table 3. Rating test conditions

Test conditions	Comfort	Process	Heat recovery (air cooled)	Heat recovery (water cooled)
Mandatory	A27(21)/ A27(21)	A12(9)/ A12(9)	A27(21)/ A27(21)	A27(21)/ W24

NOTE 1. All temperatures are inlet temperatures in degrees Celsius.
NOTE 2. Air temperatures in brackets are wet bulb temperatures in degrees Celsius.
NOTE 3. Where the dehumidifier has the condenser placed immediately after the evaporator only the inlet temperature to the evaporator is used.
NOTE 4. All tests are carried out with nominal flow rates indicated by the manufacturer in cubic metres per second. Where no nominal flow rate is indicated by the manufacturer and only a range of flow is given, tests shall be carried out at the minimum value.
NOTE 5. Permissible external pressure difference and associated internal pressure difference at the evaporator and condenser shall be indicated by the manufacturer in pascals for appliances with duct connection.

Table 4. Permissible deviations from set values

Measured quantity	Permissible deviation of the arithmetic mean values from set values	Permissible deviation of individual measured values from set values
Air		
– inlet temperature (dry bulb, wet bulb)	± 0,3 K	± 1 K
– (volume) flow	± 5 %	± 10 %
– static pressure difference	——	± 10 %
Water		
– inlet temperature	± 0,2 K	± 0,5 K
– outlet temperature	± 0,3 K	± 0,6 K
– (volume) flow	± 2 %	± 5 %
– static pressure difference	——	± 10 %
Voltage	± 4 %	± 4 %

6 Marking

Each dehumidifier shall have a durable, permanently fixed marking that is easily readable or accessible when the unit is in position for use, bearing at least the following information in addition to information required by safety standards.

In the case of dehumidifiers consisting of several parts which can be made by different matching, only items a) and b) are to be indicated, where item b) applies to each part.

Items c) and d) depend on the considered matching and shall be indicated in the manufacturer's data sheet.

a) manufacturer or supplier;

b) manufacturer's model designation and serial number;

c) the DER to two significant figures and the test condition;

d) dehumidification capacity in litres per hour or the latent cooling capacity in kilowatts, with one digit after the decimal comma but not more than three significant figures at the test condition given in item c) of clause **6**.

Further information may be provided; with regard to rating, only the test conditions given in table 3 are to be used.

Table 5. Test results

Measured quantity or result		Unit	Test condition as table 3
1)	Ambient conditions		
	– air temperature dry bulb	°C	
2)	Electrical quantities		
	– voltage	V	
	– total current consumption	A	
	– total power input P_T	kW	
	– effective power input P_E	kW	
3)	Thermodynamic quantities		
	a) Condenser (air cooled)		
	– air inlet temperature dry bulb	°C	
	– air inlet temperature wet bulb	°C	
	Condenser (water cooled)		
	– water inlet temperature	°C	
	– water outlet temperature	°C	
	– volume flow of water	l/s	
	– internal static pressure difference Δp	Pa	
	for duct connection		
	– external/internal static pressure difference Δp	Pa	
	– air volume flow rate q	m^3/s	
	b) Evaporator		
	– air inlet temperature dry bulb	°C	
	– air inlet temperature wet bulb	°C	
	for duct connection		
	– external/internal static pressure difference Δp	Pa	
	– air volume flow rate q	m^3/s	
4)	Dehumidification capacity	l/h	
5)	Latent cooling capacity P_L	kW	
6)	Ratio		
	– DER	l/h · kW	

7 Operational requirements

7.1 General

Except where otherwise stated, tests shall be as described in clause **4**.

7.2 Temperature operating range

7.2.1 *General*

Dehumidifiers are tested at the limits described by tables 6 to 8 the maximum operating test and frosting test can be combined with the corresponding starting tests. In that case the first 20 min of the first hour is used to check the starting test.

The temperatures are set at the beginning of the test and maintained constant during the test.

The test voltages shall be as specified in tables 6, 7 and 8. They are set at the beginning of the test and maintained constant during the test.

The ambient conditions during the test shall be as specified in table 2.

The flow rates shall be the same as that used for rating test, as specified in table 3.

Deviation between individual values and set values shall be between:

– zero and minus twice the permissible deviation according to table 4 (the upper limit of use);

– zero and plus twice the permissible deviation according to table 4 (the lower limit of use).

Uncertainty of measurement shall be as specified in table 1.

7.2.2 *Starting test*

The dehumidifier shall be capable of operating within the limits of use indicated by the manufacturer.

For every condition stated in table 6 the dehumidifier shall start up and operate for at least 20 min, without being stopped by the safety devices.

Table 6. Operational requirements conditions

Type	Temperature at condenser °C	Temperature at evaporator °C	Voltage V
All types	Upper limit of use	Upper limit of use	Rated voltage
All types	Lower limit of use	Lower limit of use	Rated voltage

7.2.3 *Test at maximum operating conditions*

When operated at conditions stated in the table 7 during 1 h, then switch off for 3 min and then switch on again for 1 h, the dehumidifier shall meet the following requirements:

– the dehumidifier shall suffer no damage;

– the dehumidifier motor shall operate continuously for the first hour without tripping of the motor overload protection devices;

– after the shut down period of 3 min, the dehumidifier shall restart automatically no more than 5 min after restarting of the compressor;

– the unit motor shall operate continuously for the rest of the second hour without tripping the motor overload protective devices.

Table 7. Maximum operating conditions

Type	Temperature at condenser °C	Temperature at evaporator °C	Voltage V
All types	Upper limit of use	Upper limit of use	Rated voltage

7.2.4 *Frosting test*

After the dehumidifier has operated for 2 h at conditions stated in table 8, no ice shall have accumulated on the evaporator.

Table 8. Frosting conditions

Type	Temperature at condenser °C	Temperature at evaporator °C	Voltage V
All types	Lower limit of use	Lower limit of use	Rated voltage

7.2.5 *Upper limit of use on the evaporator*

The dehumidifier shall suffer no damage when the heat transfer medium temperature on the evaporator is raised to the upper limit of use stated by the manufacturer at an average rate of 2 °C/min, with the compressor not running and maintained at that final value for a period of 30 min. The temperature is lowered at about the same rate. When the heat transfer medium temperature comes back within the operating range, the dehumidifier shall be capable of operating.

The other test conditions are those given in **7.1**.

7.3 Outside the operating range

If operating outside the temperature range can cause damage to the dehumidifier, it shall be provided with safety devices which ensure that the dehumidifier suffers no damage when the operating limits of use indicated by the manufacturer are exceeded and remains capable of operating when coming back within these limits. A safety device that does not automatically reset may trip provided that a warning device is fitted.

The manufacturer shall indicate any safety devices provided and their operating conditions (see **9.1.2**).

7.4 Shutting off the heat transfer media flows

7.4.1 To check the correct operating of the safety devices on the dehumidifier, the following faults shall be simulated consecutively. The dehumidifier shall have attained steady state in the conditions indicated in table 3 before every fault is simulated. Each fault simulated shall be maintained for at least 1 h.

a) shutting off the heat transfer medium flow at the condenser;

b) shutting off the heat transfer medium at the evaporator.

For units with defrosting system, an additional test shall be conducted at test conditions indicated in table 3 by shutting off the heat transfer medium flow at the evaporator at the beginning of the defrosting phase.

7.4.2 The unit is checked for any damage sustained during the test and if any safety devices have operated during the test. The unit shall be able to restart after restoration of the heat transfer medium flows. A safety device that does not automatically reset may trip provided that a warning device is fitted.

7.5 Complete power supply failure

Complete power supply failure lasting approximately 5 s shall be simulated. The dehumidifier shall have attained steady state conditions before the fault simulation, at the condition according to table 3.

After restoration of the power the dehumidifier shall restart automatically no more than 20 min after the compressor has been allowed to restart by the control devices of the dehumidifier.

The dehumidifier is checked for any damage sustained during the test and if any safety devices have operated during the test.

7.6 Condensate draining and enclosure sweat test

Draining of condensate, including that formed on the enclosure shall be made correctly when operating at conditions given in table 9. During the test no condensed water shall drip, run or blow off the unit except through the drain.

Table 9. Condensate draining and enclosure sweat test

Type	Condition
Comfort	A27(24) /A27(24)
Process	A12(11) /A12(11)
Heat recovery (air cooled)	A27(25,5) /A27(25,5)
Heat recovery (water cooled)	W24 /A27(25,5)

NOTE 1. All air temperatures are inlet temperatures in degrees Celsius.
NOTE 2. Air temperatures in brackets are wet bulb temperatures in degrees Celsius.
NOTE 3. First set of temperatures are conditions to the evaporator. Second set of temperatures are conditions to the condenser where it is not after the evaporator.

7.7 Defrosting (where applicable)

The functioning of any defrosting system is verified under the conditions of the rating tests described in clause **4**.

Successive frosting/defrosting cycles shall be repeated without resulting in progressively deteriorating average performance.

There shall not be growth of ice in and around the drip tray.

7.8 Other requirements

Components in air handling systems, such as fans, filters, heat exchangers, etc., shall be easily accessible and resistant for cleaning purposes recommended by the manufacturer.

8 Technical data sheet

8.1 General description

The manufacturer shall provide the following information:

– trade mark, model designation;

– power supply (voltage, frequency);

– dehumidifier denomination according to this standard;

– intended use of the dehumidifier;

– number of separate component units;

– type and mass of refrigerant charge;

– overall dimensions and weight of each separate component unit.

8.2 Performance characteristics

8.2.1 *Rating characteristics*

The manufacturer shall provide in a table or as a graph the performance characteristics at least for the rating condition. Performance characteristics include dehumidification capacity, the effective power and the DER.

8.2.2 *Additional characteristics*

In addition, the manufacturer shall provide the following characteristics for the rated point(s):

– non ducted air cooled units: flow rates or rotational speeds of fans;

– non ducted water cooled units: air flow rate or rotational speed of fan; water flow rate and pressure difference;

– other types of dehumidifier: nominal flow rates and external static pressure differences for air and water.

8.2.3 *Sound characteristics*

The manufacturer shall provide the sound power level according to ENV 12102.

8.3 Electrical characteristics

The manufacturer shall specify:

– the maximum starting current of the dehumidifier (according to EN 60335-2-40);

– the total power input and current at the rated point, excluding the starting period;

– the reactive power or power factor at the rated point, for dehumidifiers with a total power input greater than 10 kW;

– the power input of fan and pump if included in the dehumidifier.

8.4 Operating range

The manufacturer shall specify:

– the limits of use (temperature and flow);

– whether there are devices fitted which do not allow the dehumidifier to operate when these limits are exceeded;

– the maximum inlet temperature permitted at the evaporator when the dehumidifier is not operating.

9 Instructions

9.1 Physical description

9.1.1 *Refrigerant, air and/or liquid circuits*

The manufacturer shall:

– specify the refrigerant, air and liquid circuits preferably providing circuit diagrams, showing every functional unit, control and safety device and specifying their type;

– if the unit uses water in the condenser specify the water capacity contained in the machine, and specify the constructional materials of the heat exchangers;

– specify the type of oil to be used in the compressor.

9.1.2 *Control and safety*

The manufacturer shall:

– state the functions achieved by the control and safety devices provided with the dehumidifier and specify when applicable their provision for adjustment and the method by which the safety devices are reset;

– provide specifications for any control or safety devices necessary to ensure correct operation of the dehumidifier but which are not provided with the dehumidifier;

– specify any limitation to the use of the rest of the installation.

9.1.3 *De-frosting*

The manufacturer shall state the method of de-frosting and the methods used to set the start and end of the de-frosting cycles. Indicate any control devices.

9.2 Instructions for installation

The manufacturer shall specify in particular:

– the required environmental conditions (whether units are to be installed outside or in a weather proof enclosure, or in a heated space);

– requirements of physical layout, access and clearance restrictions;

– requirements for the electrical, liquid, air and refrigerant connections, to be made on site;

– the location of warning and tripping devices;

– the installation precautions to be taken to ensure, in particular:

– correct circulation of the heat transfer media;

– water draining;

– cleanliness of heat exchange surfaces;

– to minimize noise, vibration or other adverse effects.

Special indications for units using sea water, ground water or surface water: specify any materials which are in contact with the water.

9.3 Instructions for maintenance

The manufacturer shall state:

– the content and frequency of routine maintenance operations to be performed by the user;

– the content and frequency of maintenance and inspection operations which shall be performed by a specialist.

Annex A (informative)
Bibliography

– *International vocabulary of basic and general terms in metrology.* ISO: GENEVA, 1993.

– *Guide to the expression of uncertainty in measurement.* ISO: GENEVA, 1993.

List of references

See national foreword.

BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

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