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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB 25131-2010

**Safety requirements for water chillers (heat pump) using the
vapor compression cycle**

蒸气压缩循环冷水（热泵）机组 安全要求

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Foreword

Clauses 3, 4, 5 and 6 of this Standard are mandatory; the rest are recommendatory. This

Standard was proposed by China Machinery Industry Federation. This Standard shall be under the jurisdiction of National Technical Committee on Refrigerated Air Conditioning Equipment of Standardization Administration of China (SAC/TC 238). Main drafting organizations of this Standard. Hefei General Machinery Research Institute, Zhejiang Haibin Construction Group Co., Ltd., Guangdong Jirong Air Conditioning Equipment Co., Ltd., Nanjing Tianjia Air Conditioning Equipment Co., Ltd., Guangdong Midea Commercial Air Conditioning Equipment Co., Ltd., Hangzhou Jinjiang Bailang New Energy Co., Ltd. The drafting organizations of this Standard. Shenzhen McQuay Air Conditioning Co. Ltd., Yantai Ice Wheel Co., Ltd., Ningbo Oaks Electric Co., Ltd., Shanghai Yikang Kaili Air Conditioning Equipment Co., Ltd., Qingdao Haier Air Conditioning Electronics Co., Ltd., York (Wuxi) Air Conditioning Refrigeration Equipment Co., Ltd., Chongqing Midea General Refrigeration Equipment Co., Ltd., Trane Air Conditioning System (China) Co., Ltd., Daikin Air Conditioning (Shanghai) Co., Ltd. Main drafters of this Standard. Zhang Mingsheng, Zhu Zhentao, Hang Guotao, Zhao Xun, Liang Lujun, Tian Mingli, Fang Jianjun, Hu Qinghong, Zhou Hongjun, Gao Weili, Jiang Chunyu, Tang Chengzhong, Xu Feng, Hu Xianghua, Yuan Shengyong, Zhang Weijia, Shi Jianchun. This Standard shall be interpreted by National Technical Committee on Refrigerated Air Conditioning Equipment of Standardization Administration of China. This Standard is developed for the first time. Safety requirements for water chillers (heat pump) using the vapor compression cycle

1 Scope

GB 25131-2010 is the Chinese national standard on safety requirements for water chillers (heat pump) using the vapor compression cycle, in the field of energy and heat transfer engineering. It carries no /T suffix, which in the Chinese system means compliance is mandatory: a product or a practice within its scope has to meet it to be lawfully made, sold or carried out in China. It was issued on 26 September 2010 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 June 2011.

Classification: ICS 27.200, CCS J73. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This Standard specifies safety requirements and determination for water chiller (heat pump) set (hereinafter referred to as "the set"). This Standard is applicable to motor-driven water chiller (heat pump) set using the vapor compression cycle. Other liquid chiller sets can also refer to this Standard for implementation.

2 Normative references

The provisions in following documents become the provisions of this Standard through

reference in this Standard. For dated references, the subsequent amendments (excluding corrigendum) or revisions do not apply to this Standard, however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB 4208-2008, Degrees of protection provided by enclosure (IP code) (IEC 60529.2001, IDT)

GB 4343.1, Electromagnetic compatibility requirements for household appliances, electric tools and similar apparatus - Part

3 List of hazards

See Table A.1 for hazardous factors of the set.

4.3 Structure and safety protective device

4.3.1 For outdoor air chiller set, its shell moisture-protection requirements are classified according to GB 4208, at least be IPX4.

4.3.2 When the outdoor unit of the set is exposed to rain or snow frost, it shall not cause danger to electrical parts.

4.3.3 The set shall not have rough or sharp edges and exposed tips that can pose a hazard to user during normal use or maintenance period.

4.3.7 When overcurrent, overload or other parameters (such as pressure, temperature, etc.) exceed the specified range, it shall set safety protective device such as overcurrent, overload protector or various controllers. The set shall at least set.

4.3.8 For the set that the cooling capability is greater than 150kW, it shall install an emergency stop device. The emergency stop device shall be set in a position that is obvious and easy to distinguish and operate. When the manipulator of the emergency stop device is reset, the set can only be started automatically when automatic start is allowed.

4.3.9 When the set is started and operating as normal, it shall have accurate and reliable signal display.

4.3.10 When the set has failures such as overload or high-pressure, low- pressure as well as high-temperature, low-temperature exceeding the limit values, it shall be able to alarm or stop.

4.3.11 The control system of the set shall be set with water flow interrupting interlock protection. When a current interruption fault occurs, it shall be able to alarm and stop.

4.4.1 Protection against electric shock

4.4.2 Insulation resistance The insulation resistance between the electrified part of the set and the non- electrified part that might be grounded, when the rated voltage single-phase AC is 220V, three-phase AC is 380V, shall not be less than 2M. When the rated voltage three-phase AC is 3000V, 6000V, it shall not be less than 5M. When the rated voltage three-phase AC is 10000V, it shall not be less than 10M.

4.4.3 Withstand voltage After the insulation resistance test, when the test voltage specified in

5.4.3 is applied between the electrified part and the non-electrified part of the set, there shall be no breakdown and flashover.

4.4.6 Internal wiring

4.4.6.1 The internal wiring of the set shall be smooth, without sharp edges. The wiring shall be protected from the contact with burrs, heat exchanger fins, so as to avoid the damage to wiring insulation.

4.4.7 Wiring terminals for power connection and external leads

4.4.7.1 The set of which rated voltage is under 600V uses single power supply mode. If other power supplies are required for some parts (such as electronic circuit) of electrical equipment, these power supplies shall be taken from components (such as transformer) that are part of the set's electrical equipment. For the set of which its compressor uses a high-voltage generator that its rated voltage is above 3000V, it shall need different high-, low- voltage introducing power supply. The connection shall comply with relevant provisions.

4.4.7.9 The set shall be connected to an external protective grounding system or external protective conductor, according to the distribution system and related installation standards. The terminal of this connection shall be placed in the vicinity of the relevant phase line terminal of each incoming power supply. This terminal shall be sized to be connected to an external copper protective conductor of the cross-sectional area specified in Table 3.

4.6 Pressure vessel

4.6.1 The design, manufacture, mark and test of pressure vessel are in accordance with JB/T 4750.

4.6.2 The pressure vessel that can store liquid refrigerant and can be isolated from other components of the refrigeration system shall use safety relief device for overpressure protection. The pressure relief device is in accordance with the relevant provisions of

5.3.2 in GB 9237-2001.