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National Environmental Standard
of the People's Republic of China

HJ 655-2013

**Technical specification for installation
and acceptance of ambient air quality
continuous automated monitoring
system for PM₁₀ and PM_{2.5}**

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Issued on: July 30, 2012

Implemented on: August 1, 2013

By: Ministry of Environment Protection

Ministry of Environmental Protection of People's Republic of China
Announcement

In order to implement the “Environmental Protection law of PRC”; protect the environment, ensure human health, and regulate environmental air quality monitoring, “Technical Requirements and Detection Methods of Technical Requirements and Detection Methods of Continuous Automatic Monitoring System for Ambient Air Particles (PM₁₀ and PM₂₅)” and other five standards are approved as the environmental protection standard, and they are issued.

The standard name and their number are as follows:

1. Technical Requirements and Detection Methods of Continuous Automatic Monitoring System for Ambient Air Particles (PM₁₀ and PM₂₅) (HJ 653-2013);
2. Technical Requirements and Detection Methods of Continuous Automatic Monitoring System for Ambient Air Gaseous Pollutants (SO₂, NO₂, O₃, CO) (HJ 654-2013);
3. Technical Requirements and Detection Methods of Samplers for Ambient Air Particles (PM₁₀ and PM₂₅) (HJ 93-2013);
4. Security and Technical Specifications for Acceptance of Continuous Automatic Monitoring System for Ambient Air Particles (PM₁₀ and PM₂₅) (HJ 655-2013);
5. Security and Technical Specifications for Acceptance of Continuous Automatic Monitoring System for Ambient Air Gaseous Pollutants (SO₂, NO₂, O₃, CO) (HJ 193-2013);
6. Technical Requirements for Manual Monitoring Method of Ambient Air Particles PM₂₅ (Gravimetric Method) (HJ 656-2013).

From the date of implementation of the above standards, the following environmental protection standards approved and issued by the previous State Environmental Protection Administration are annulled; the standard name and their number are as follows:

1. Technical Requirements and Detection Methods of Samplers for PM₁₀ (HJ/T 93-2003)
2. Technical Requirements for Ambient Air Quality Continuous Automatic Monitoring (HJ/T 93-2005)

Hereby it is announced.

Ministry of Environmental Protection

July 30, 2013

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PREFACE

In order to implement the *Environmental Protection Law of the People's Republic of China*, and *The Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution*, to implement *Ambient Air Quality Standards* (GB 309-2012), and to regulate the installation and acceptance of the ambient air quality continuous automated monitoring system for particles in ambient air (hereinafter it will be simply called PM10 and PM2.5 continuous automated monitoring system), this Standard is formulated.

This Standard regulates the technical standard for constitution, installation, debugging, trial running and the acceptance of particles (PM10 and PM2.5) of the ambient air continuous automated monitoring system.

This Standard is the amendment to some contents of the *Technical Specification of Environmental Air Quality Automatic Monitoring* (HJ/T193-2005). This Standard was released firstly in 2005 and this is the first revision. The main contents of the amendments include the following:

- Clarifying the technical requirements of the installation and acceptance of PM10 continuous monitoring system;
- Adding up the technical requirements of the installation and acceptance of PM2.5 continuous monitoring system.

Since its date of implementation, the contents about the installation and acceptance of PM continuous monitoring system in *Automated methods for ambient air quality monitoring* (HJ/T193-200) shall be abolished.

The appendix A of this Standard is normative and appendix B, C and D are informative.

The drafting organization of this Standard: China National Environmental Monitoring Centre

This Standard was approved on July 30, 2013 by Environmental Protection Department

This Standard shall be implemented from August 1, 2013 and shall be explained by Environmental Protection Department.

Technical specifications for installing and acceptance of ambient air quality continuous automated monitoring system for PM₁₀ and PM_{2.5}

1. Scope of application

This Standard regulates the technical standard for constitution, installation, debugging, trial running and the acceptance of particles (PM₁₀ and PM_{2.5}) of the ambient air continuous automated monitoring system.

This Standard is applicable for the installation and acceptance for the ambient air quality continuous automated monitoring system for PM₁₀ and PM_{2.5}.

2. Standard for quotations and references

The articles contained in the following documents have become part of this Standard when they are quoted herein. For the undated documents so quoted, the latest editions shall be applicable to this Standard.

GB 3095-2012 Ambient air quality standard

GB 50168 Code for construction and acceptance of cable levels electric equipment installation engineering

GB/T 17214.1 Industrial-process measurement and control Working conditions Chapter 1: climate conditions

HJ 618 Measurement of ambient air PM₁₀ and PM_{2.5} Gravimetric method

HJ/T 212 Systematic data transmission standard for automatic monitoring of online sources of pollution

YD 5098 Specification design for lightening and grounding of telecom base station

3 Terms and definitions

The following terms and definitions shall be applied to this Standard.

3.1 Ambient air quality continuous monitoring

The process that the continuous monitoring instruments are applied for the collection, handling and

analysis of the continuous samples, at the monitoring sites.

3.2 Ambient air quality manual monitoring

The process that the ambient air samples within a period of time shall be collected and then applied the collected samples for the analysis and processing of analytic instruments in the labs, at the monitoring sites.

3.3 Particulate matter (PM10)

It refers to the particles of which the dynamic equivalent diameter is equal to or less than 10 μm , and it can also be called as inhalable particulate matters (IP).

3.4 Particulate matter (PM2.5)

It refers to the particles of which the dynamic equivalent diameter is equal to or less than 2.5 μm and it can also be called as fine particulate matter.

3.5 Particle separate device

It refers to the device that can separate different particles with various sizes.

3.6 Standard state

It refers to the state when the temperature reaches 273.15K and the pressure is 101.325 kPa. The densities of the pollutants in this Standard are under standard states.

3.7 Reference method

The standard method released by the country.

4. The constitution and theory of the system

4.1 The constitution of the system

The continuous monitoring system of PM10 and PM2.5 consists of the following, namely the sample collection unit, sample measuring unit, the collection and transmission unit of the data and other accessory equipment.

4.1.1 Sample collection unit

The sample collection unit is made up by the sampling entrance, cutting machine and sampling tube which will cut and separate the ambient particles and transmit the target particles to the sample measuring unit.

4.1.2 Sample measuring unit

Sample measuring unit will measure the collected ambient air sample PM10 and PM 2.5.

4.1.3 Collection and transmission unit of the data

5.3 The installation of the monitoring instrument

5.3.1 General requirements

5.3.1.1 The following information shall be marked in the nameplate, including the name of the instrument, model, producers, manufacturing No., and the date of manufacturing etc.

5.3.1.2 All the accessories and components of the instruments shall be connected reliably. There shall be no obvious defaults. The entire operation key shall be flexible. The orientation shall be correct.

5.3.1.3 The degree scale of the display section shall be clear and the painting shall be reliable. There shall be no default which affecting the digital reading.

5.3.1.4 The instrument shall equip the function of auto digital output.

5.3.1.5 The insulation resistance between the power lead and shell of the instrument shall be no less than 20M Ω .

5.3.1.6 There shall be obvious marks on the cable, pipeline, and the two ends of cables and pipelines. The construction of the cable shall satisfy the relevant requirements of GB 50168.

5.3.2 Detail requirements

5.3.2.1 Conduct inspection according to the equipment list to make sure that all the accessories shall be completed.

5.3.2.1 The instrument shall be installed in the cabinet or on the platform to ensure the installation level and conform with the following requirements:

(1) The space in the rear: After the installation of instrument, make sure that there are more than 0.8m operation and maintenance space in the rear of the instrument.

(2) Top space: After the installation of instrument, make sure that the gap between the instrument sampling entrance and the ceiling of the station shall be no less than 0.4m.

5.3.2.3 The installation of sampling tube

(1) The sampling tube shall be installed vertically.

(2) Make sure that the sampling tube and connection of air path shall be sealed and no air leakage.

(3) Make sure that the sampling tube and the connection with the roof shall be sealed and waterproof.

(4) The length of sampling tube shall be no more than 5m.

(5) The grounding function of sampling tube shall be fine and the grounding resistance shall be less than 4 Ω .

8. Acceptance check

Contents of PM10 and PM10 multi-continuous monitoring system acceptance check include: acceptance check of performance index, acceptance check of networking and correlative systems, record and archive acceptance check and so on. After acceptance check gets passed, environmental protection administrative department in charge shall provide inspection report.

8.1 Preparation and application of acceptance check.

Preparation of acceptance check

8.1.1.1 PROVIDE product applicability test qualification report issued by environment monitoring equipment quality supervision inspection center of Ministry of Environmental Protection

8.1.1.2 PROVIDE installation debugging report and trial run report of PM10 and PM2.5 multi-continuous monitoring system.

8.1.1.3 PROVIDE networking certification issued by environment protection administrative department in charge.

8.1.1.4 PROVIDE quality control and quality assurance plan

8.1.1.5 PM10 and PM2, multi-continuous monitoring system has operated steadily for 60d at least. PROVIDE daily statement and monthly statement. Their data shall conform to the minimum requirements of pollutant concentration data validity in GB3095-2012.

8.1.1.6 ESTABLISH complete technical archives of PM10 and PM2 multi-continuous monitoring system.

8.1.2 Acceptance check application.

ISSUE acceptance check application when PM10 and PM2 multi-continuous monitoring system have completed installation, debugging and trial run. Acceptance check materials shall be reported to responsible environmental protection department. When it is approved to conform to acceptance conditions, responsible environmental protection department shall organize and implement acceptance check.

8.2 Acceptance check content

8.2.1 Acceptance check of performance index

8.2.1.1 Flow-rate measurement

For test method, please refer to 6.2.3.1 and 6.2.3.2, and test time is 1d. Test result shall conform to requirements in Chart 1.

8.2.1.2 Reproducibility of calibration membrane

For test method, please refer to 6.2.4, test time is 1d, and test result shall conform to requirements in

Acceptance conclusion	<p>Members of the acceptance group (signature):</p> <p>Day month year</p>
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Translation References and Original Chinese Documents

[1] HJ Ambient air particulate matter (PM10 and PM2.5) continuous automatic monitoring system installation and acceptance of technical specifications.

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