

HJ

INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

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Technical specification for installation of wastewater on-line monitoring system (CODCr, NH₃-N et al.)

水污染源在线监测系统（CODCr、NH₃-N 等）安装技术规范
(English Translation)

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1 Scope of application

This Standard specifies the composition of wastewater on-line monitoring system, construction requirements for wastewater discharge outlets, flow monitoring units, monitoring stations, automatic water quality sampling units and data control units, installation requirements for flow meter, automatic water quality sampler and automatic water quality analyzer, as well as technical requirements for debugging and trial operation of wastewater on-line monitoring system.

This Standard is applicable to the construction of components of wastewater on-line monitoring system (CODCr , NH₃ -N et al.), as well as the installation, debugging and trial operation of wastewater on-line monitoring equipment such as used flow meter, water quality automatic sampler, chemical oxygen demand (CODCr) automatic water quality analyzer, total organic carbon (TOC) automatic water quality analyzer, ammonia nitrogen (NH₃ -N) automatic water quality analyzer, total phosphorus (TP) water quality automatic analysis Meter, total nitrogen (TN) automatic water quality analyzer, thermometer, pH automatic water quality analyzer.

The wastewater on-line monitoring system (COD Cr, NH₃ -N et al.) standardized in this Standard is applicable to the on-line monitoring of chemical oxygen demand (COD Cr), ammonia nitrogen (NH₃ -N), total phosphorus (TP), total nitrogen (TN), pH, temperature and flow monitoring factors.

2 Normative references

The following documents contain the provisions which, through reference in this Standard, become the provisions of this Standard. For undated reference documents, the latest versions apply to this Standard.

GB 15562.1, Graphical signs for environmental protection - Discharge outlet (source)

GB 50057, Design Code for Protection of Structures against Lightning

GB 50093, Code for construction and quality acceptance of automation instrumentation engineering

GB 50168, Standard for construction and acceptance of cable line electric equipment installation engineering

GB 50169, Code for construction and acceptance of grounding connection electric equipment installation engineering

GB/T 17214, Industrial-process measurement and control equipment -
Operating conditions

HJ 15, Technical specifications and test procedures for ultrasonic open channel sewage flowmeter

HJ 91.1, Technical specifications for wastewater monitoring

HJ 101, Technical specifications and test procedures for water quality on-line automatic monitoring equipment of ammonia

HJ 212, Data transmission standard for on-line monitoring systems of pollutant

HJ 354-2019, Technical specification for check and acceptance of wastewater on-line monitoring system (COD Cr, NH₃-N et al.)

HJ 355-2019, Technical specification for operation of wastewater on-line monitoring system (COD Cr, NH₃-N et al.)

HJ 377, Technical specifications and test procedures for water quality on-line automatic monitoring equipment of chemical oxygen demand (COD Cr)

HJ 477, The Technical Requirement for Data Acquisition and Transmission
Equipment of Pollution Emission Auto Monitoring System

HJ 828, Water quality - Determination of the chemical oxygen demand-
Dichromate method

HJ/T 70, High-chlorine wastewater - Determination of chemical oxygen demand - Chlorine

emendation method

HJ/T 96, The technical requirement for automatic water quality analyzer of

PH

HJ/T 102, The technical requirement for automatic water quality analyzer of total nitrogen

HJ/T 103, The technical requirement for automatic water quality analyzer of total phosphorous

HJ/T 104, The technical requirement for automatic water quality analyzer of total organic carbon

5.1.2 The discharge outlet shall be equipped with environmental protection graphic signs in accordance with the requirements of GB 15562.1.

5.1.3 The discharge outlet shall be able to meet the construction requirements of the flow monitoring unit.

5.1.4 The discharge outlet shall be able to meet the construction requirements for automatic water sampling unit.

5.1.5 If it uses concealed pipes or underdrains for discharge, it shall need to set up a shaft or build an open channel that can meet the manual sampling conditions. If the sewage surface is above 1m below the ground level, it shall be equipped with sampling steps or ladder frames. The pressure pipeline type discharge port shall be equipped with a sampling valve that meets the conditions of manual sampling.

5.2 Flow monitoring unit

5.2.1

It needs to measure the sewage unit of flow. According to the terrain and drainage method as well as the amount of drainage, it shall, at the position where the upstream of its discharge outlet can contain all sewage beams, construct a flow measurement section of special channel (pipe), so as to meet the requirements of measuring flow and velocity.

5.2.2

Generally, it can install standardized measuring weirs (flumes) such as triangular thin-wall weirs, rectangular thin-wall weirs, and Parshall flume.

5.2.3

The construction of standardized metering weirs (flumes) shall be able to remove deposits near the weir plate and compare open channel flowmeters.

5.2.4

The construction of pipe flowmeter shall make that: there shall be sufficient length and space around the pipeline to meet the metering verification and manual comparison of pipeline flowmeters.

5.3 Monitoring station room

5.3.1

There shall be a dedicated monitoring station room. The area of the newly- built monitoring station room shall meet the functional needs of different monitoring station room and ensure the placement, operation and maintenance of the wastewater on-line monitoring system. The use area shall not be less than 15m

2 , and the height of the station building shall not be less than 2.8m.

See Annex B for the recommended scheme.

5.3.2

The monitoring station room shall be as close as possible to the sampling point. The distance from the sampling point shall be less than 50m.

5.3.3

It shall install air-conditioning and winter heating equipment. The air conditioner has self-starting function of incoming power. It shall have a thermo-

5.4.5 The automatic water sampling unit shall set manual comparison sampling port for composite sample.

5.4.6 The pipeline of automatic water sampling unit shall be set as open pipeline and mark the direction of water flow.

5.4.7 The automatic water sampling unit shall use high-quality polyvinyl chloride (PVC), tripropylene polypropylene (PPR) and other rigid pipes that do not affect the analysis result.

5.4.8 When using an open channel flow meter to measure the flow, the water inlet of automatic water sampling unit shall be set in front of the weir, and the place where it shall be fully mixed after confluence. Try to be located in the center of the flow path at the head of the water inlet of the standardized metering weir (flume) of the flow monitoring unit. The direction of the water inlet is consistent with the direction of the water flow to reduce the front-end clogging of water inlet. The water sampling device shall be arranged in a form that can move up and down with the fluctuation of the water surface.

5.4.9 The sampling pump shall be reasonably selected according to the sampling flow rate, the head loss of the automatic water sampling unit and the water level difference. It shall use the sampling pumps that have a long service life, are easy to maintain and have no