Datasheet

Ammonia Nitrogen Analyzer

SUP-MDE20-NH3N

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The Ammonia Nitrogen (NH_3-N) Analyzer is a new-generation water quality monitoring instrument developed by our company. It is widely applicable to the monitoring of ammonia nitrogen levels in various water bodies, including environmental discharge outlets, municipal wastewater, industrial effluents, and water used in industrial processes.

Applications

- Environmental discharge outlets
- Municipal wastewater
- Industrial effluents
- Water used in industrial processes

Features

- **Highly Integrated Structure:** the all-in-one digestion module and integrated plunger pump design help to reduce component wear, enhance stability, and extend the service life of the equipment.
- **Standardized Quick Connection**: Modular components with plug-and-play capability simplify installation and maintenance, significantly reducing operation and maintenance costs.
- **Intelligent Anti-fouling Compensation Algorithm:** Based on the water sample onsite, the system features an automatic anti-fouling mode to deliver reliable and accurate monitoring results.

MDE20-NH3N

- **Innovative Reagent Mixing Technology:** Ensures thorough reaction between the water sample and reagents, improving measurement accuracy.
- **Industry-Specific Customization:** Optimized reagent formulations and detection sequences tailored for various industries such as chemical manufacturing, municipal wastewater, and electroplating, ensuring broad applicability.
- **Fully Automated Intelligent Monitoring:** Supports automatic calibration, cleaning, and sample injection. In case of unexpected interruptions, the system can resume operation automatically, ensuring continuous monitoring.
- **Reagent Shortage Detection and Alarm:** Automatically detects insufficient water or reagent supply to prevent reagent-free measurements.
- **Flexible Measurement Modes:** Supports both real-time online monitoring and batch sampling to meet the needs of different application scenarios.
- **Seamless Data Integration:** Monitoring data is automatically stored and uploaded in real time to regulatory platforms, supporting efficient decision-making.

Measuring principle

Ammonia nitrogen refers to nitrogen present in water in the form of free ammonia (NH_3) and ammonium ions (NH_4^+). The ratio between the two depends on the pH level of the water: higher pH favors free ammonia, while lower pH leads to a greater proportion of ammonium. Growing attention has been given to the environmental impact of ammonia nitrogen. It is a key contributor to water eutrophication, which can deteriorate water quality, lead to fish mortality, and disrupt aquatic ecosystems. At elevated concentrations, ammonia can volatilize into the atmosphere, further affecting air quality. As such, ammonia nitrogen is a critical parameter in assessing and managing the quality of drinking water, surface water, domestic wastewater, and industrial effluents. It also serves as an essential metric in national total emission control policies.

Details:

The measurement is based on the salicylic acid method. Under alkaline conditions (pH≈11.7) and in the presence of sodium nitroprusside, ammonia (NH_3) and ammonium ions (NH_4^+) react with salicylate and hypochlorite ions (OCl^-). This reaction produces a blue-colored complex.

The absorbance of the complex, measured at a specific wavelength, is directly proportional to the ammonia nitrogen concentration.

Parameters	
Performance	
Measured variables	Ammonia nitrogen
Measuring range	(0~2) mg/L; (0~5) mg/L; (0~50) mg/L; Note: The range can be switched online
Indication error	20% range: ±8.0% 50% range: ±5.0% 80% range: ±3.0%
Repeatability	≤2.0 %
Low-level drift in 24h	≤0.02mg/L
High-level drift in 24h	≤1.0%
Limit of quantitation (LOQ)	≤0.15mg/L (indication error ±30%)
Memory effect	80%→20%: 3%F.S 20%→80%: 2%F.S
Interference of voltage	±5.0%
Interference of pH	±6.0%
Interference of environmental temperature	±5.0%
Comparison test with the actual water sample	Ammonia nitrogen<2.00mg/L: ≤0.2mg/L Ammonia nitrogen≥2.00mg/L: ≤10%
Minimum period between maintenance operation	≥168h/time
Data availability	≥90.0%
Conformity	≥90.0%
Output	
Current output	(4~20)mA output
Communication	RS232, RS485, RJ45 interface
Electrical specifications	
Power supply	(220±22) VAC, (50±0.5) Hz
Power consumption	≤100W
Insulation resistance	≥20MΩ
Dielectric strength	The power inlet and chassis of the analyzer can withstand a 50Hz, 1.5kV AC(rms) test voltage for 1 minute with a current limit of 5 mA, without flashover or breakdown.
Leakage current	≤5mA
Process conditions	
Water sample temperature	(0~50)℃

Environmental conditions	
Ambient temperature	(5~40)℃
Relative humidity	≤90% (no condensation)
Construction	
Dimensions	315mm×239.5mm×500mm (D×W×H)
Weight	20kg
Material	Cold-rolled SPCC
Fixing method	Install on a flat, level platform

Table 1 Function

No.	Project	Content
1	Measurement mode	Online mode, maintenance mode, remote control mode
2	Continuous running time	≥720h/time
3	Automatic calibration	Calibration interval can be set from 1 to 999 hours, at any desired time
4	Automatic cleaning	Automatic cleaning after each measurement; periodic cleaning can be performed according to the complexity of the on-site water sample
5	Range switching	Realize online switching of different ranges according to the measured value.
6	Liquid level detection	Detects sample and reagent levels; alerts for insufficient liquid
7	Online fitting	Selectable fitting method based on application requirements
8	User interface	Full color touchscreen, with resolution 1024×600
9	Data storage	Continuously store data for more than 5 years
10	Communication	RS232/RS485/ RJ45/CAN, etc.
11	USB drive	Upgrade via USB flash drive
12	Other features	Reagent shortage warning, system logs, and fault alarms.

Dimensions

Unit: mm

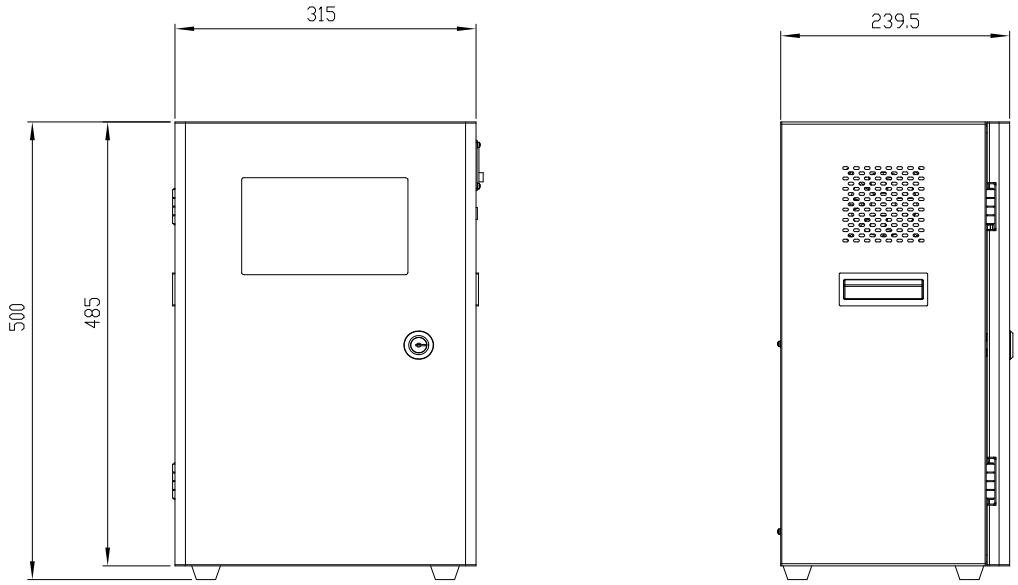

Fig.1 Dimensions (unit: mm)

The internal structure of the IMN analyzer is shown as below:

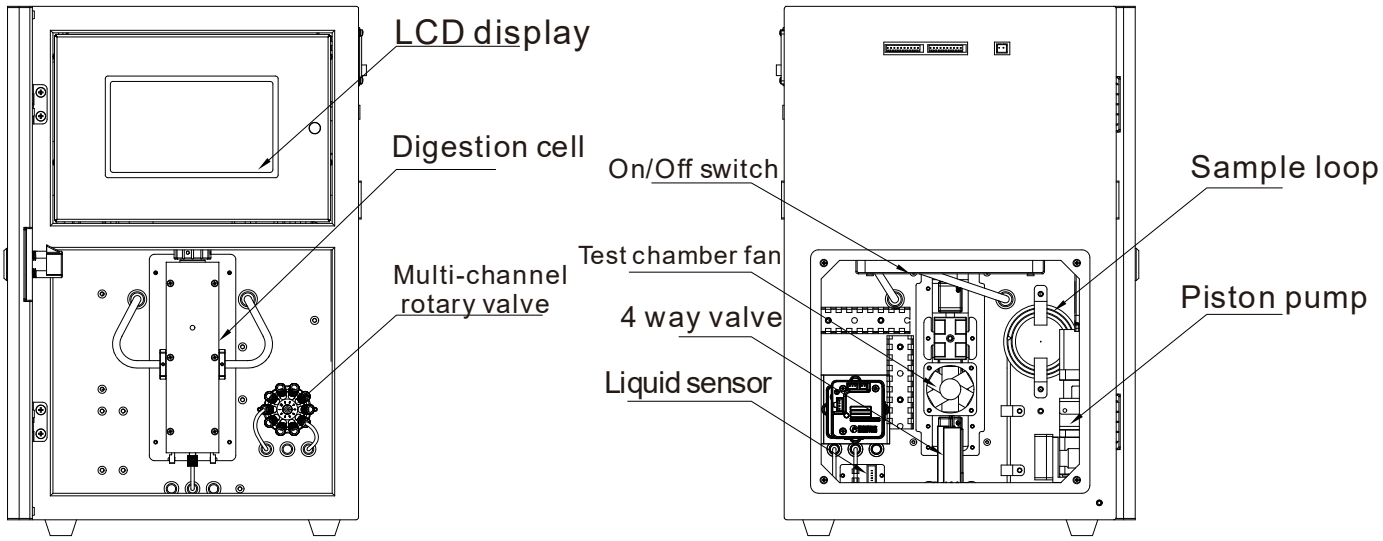

Fig.2 The diagram of the analyzer's internal structure

Wiring

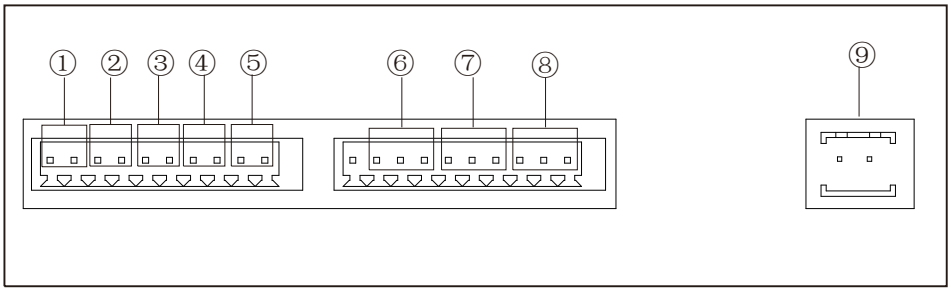

Fig.3 Diagram of the back panel interface

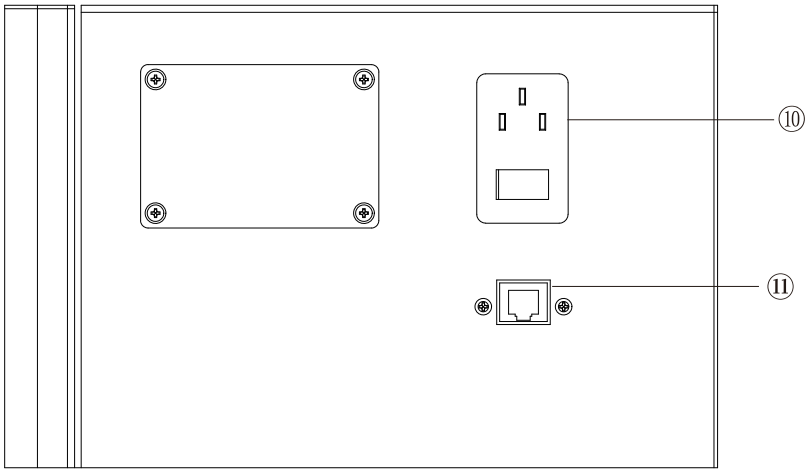

Fig.4 Diagram of the ports on the analyzer's right side

Table 2 Interface description

No.	Interface	Specification and description
1	Reserved port	/
2	Analog output	Used to output analog signals with external instruments
3	24V input	24VDC power input
4	24V output	Supply power to sensors and low-voltage displays
5	CAN interface	CAN interface
6	Mainboard RS232	Mainboard RS232 output interface
7	Screen RS232	Screen RS232 output interface
8	Screen RS485	Screen RS485 output interface
9	24V output	Supply power to sensors and low-voltage displays
10	Power inlet	Pure copper, national standard-compliant three-core 1 mm^2 power cord, which is the main power cord of the instrument
11	Network cable interface	Standard RJ45 network interface, wired access to the Internet or VPN network communication

Ordering code

SUP-MDE20-NH3N													Description
MDE20-NH3N	-	-	-	-	-	-	-	-	-	-	-	-	
Measuring Range	WA												0-2mg/L
	WB												0-5mg/L
	DE												0-50mg/L
	XX												Others
Output		G											4-20mA + RS485 + RS232 + RJ45
Switch output			1										1 channel
Power supply				E									220VAC
Housing material and protection level					7								SPCC cold-rolled sheet, IP00
Standard solution						S4							2 mg/L
						S5							5 mg/L
						S6							50 mg/L
						XX							Others