ISO 14001 Certified

SPECIFICATION SHEET

TOA DKK

Ammonium Ion Monitor NHMS-4

The NHMS-4 monitors continuously ammonium ion concentration in industrial wastewater, river and lake using an Ion Selective Electrode (ISE) with auto-calibration and auto-cleaning functions.

Conventional method for measuring the total amount of ammonium ion requires distillation. This is a time-consuming process and must be performed by a highly skilled operator. By eliminating the distillation process, this model is able to continuously measure the concentration of ammonium ion by mixing a special total ion strength adjustment buffer (TISAB) with the sample. This TISAB is capable of ionizing some of the non-ionic ammonium. As a result, the instrument is able to measure both ammonium ion and some of the non-ionic ammonium and provides a useful tool for preventing the leakage of ammonium ion from in your facilities.

Features

○ Eco-friendly, Economic Halved Reagent

Flowrates of the sample and the TISAB are reduced by half (comparing to former model NHMS-3) without performance degradation by flow stabilization and decreasing dead volume in the measurement system. This improvement leads to saving running cost and low impact to the environment.

○ Expanded range of the TISAB

The ion selective electrode measures the ammonium ion with the TISAB. A different range of TISAB can be selected to fit the characteristics of the sample and the purpose of measurement.

○ Automatic Calibration cycle Adapting System (ACAS)

During monitoring wastewater the sensor is regularly exposed to dirt and other impurities. The accumulated dirt on the sensor is the most common cause of instrument malfunction. Regular cleaning and calibration at appropriate intervals are essential to ensuring the consistent accuracy of measurements. The “Automatic Calibration cycle Adapting System (ACAS)” resets the on-going auto-cleaning and auto-calibration schedules when it detects a decline in the sensitivity of the ISE. Effective cleaning by the ACAS prevents measurement accuracy from degrading.

○ USB memory for retrieving measurement data

Measurement results are sent to the host system via analog transmission or digital communication (Modbus). The calibration and measurement data can also be saved in CSV format to a USB memory device, allowing you to process and analyze data on a computer.

○ Space-saving design

Reducing reagent consumption provides down-sizing the instrument by shrinking the reagent tank. In addition, the unit features a structure that allows maintenance to be performed from the front, thereby dramatically reducing the amount of space needed for installation.

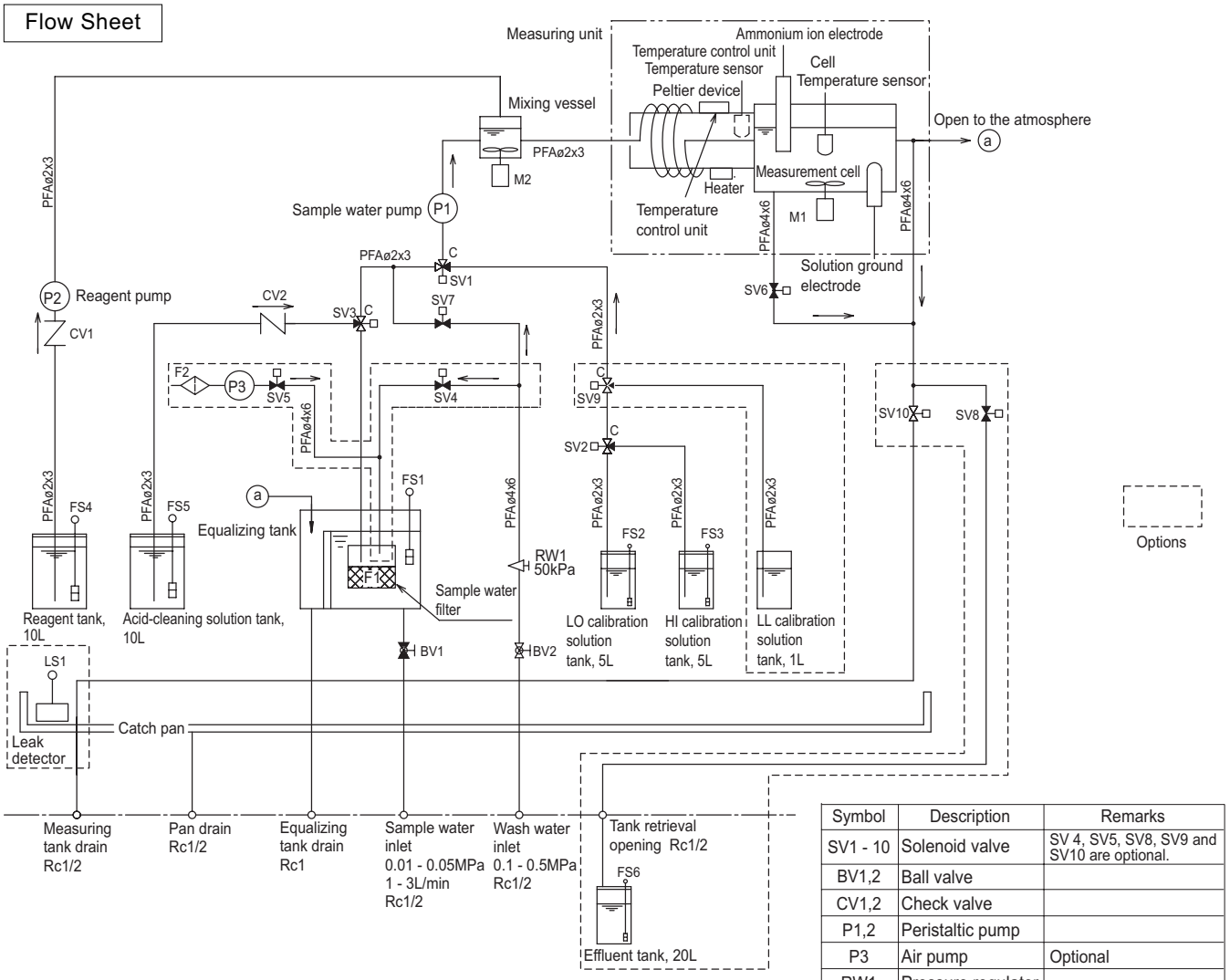
○ 3-point calibration is available as an optional feature

This model features 3-point calibration for stable measurement covering a wide range of concentrations, from extremely low to high. This feature improves the accuracy of calibration in the low concentration range.

Standard Specifications

Product name	: Ammonium ion monitor
Model	: NHMS-4
Measurement method	: Continuous measurement and intermittent measurement (shortest cycle; 1 hour) using ion selective electrode method (TISAB addition method)
Measurement range	: NH_4^+; 0.05 - 5.00mg/L(standard) NH_4^+; 0.10 - 10.00mg/L NH_4^+; 1.0 - 100.0mg/L
Repeatability	: Within ±10% of reading (with calibration solution)
Response time	: 15 minutes or less at 90% response (after adjustment tank)
Temperature compensation	: Constant temperature measurement method
Automatic calibration	: Periodic calibration or ACAS
Periodic calibration cycle setting range	: 1 - 99 days (factory setting; 7 days)
Automatic cleaning	: Periodic cleaning ①Cleaning sample line and measurement cell by acid ②Cleaning sample line by city water ③Backwashing of sample filter by aerated city water (optional feature) Periodic cleaning cycle setting range; 1 - 999 hours (factory setting; 12 hours)
Display	: Color LCD touch screen (7 inches)
Measurement point	: 1 channel (Simultaneous measurement of up to 3 channels is available as an optional feature. In this case, the unit dimensions are different.)
Analog output	: Linear output, 4 - 20mADC, Load resistance; 600Ω or less
Contact output	: Power interrupt (form B contact), instrument failure 1 (major failure), instrument failure 2 (minor failure), concentration upper limit, concentration elevated upper limit, concentration lower limit, calibrating, cleaning, maintenance, and measurement *Contact capacity for all of the above; 30VDC 0.1A (AC is available as an optional feature.)
External contact input switching signals	: Start measurement, stop measurement, start calibration, start cleaning, continuous/intermittent switching, and effluent level sensor switch *No-voltage contact input On-resistance; 50Ω or less, Short-circuit current; Max. 10mA, Open-circuit voltage; 12VDC
Digital I/O	: RS-485 interface Protocol; Modbus/RTU * Digital communication can be used to monitor measured values, operation status (measurement, calibration, cleaning etc.) and the occurrence of abnormal conditions. It can also be used to perform remote maintenance operations, such as issuing calibration commands and cleaning commands. For details, please consult one of our sales representatives.
Data Memory	: Internal memory; Can store sampling data for 1 month when it is taken in 1 minute intervals (The display can graph the trends in the data.) USB memory; Can store sampling data for 12 months when it is taken in 1 minute intervals (Stored data can be read by a computer.)
Sensor electrode	: Ammonium ion selective electrode, ELX-009
Power supply	: 100VAC±10%, 50/60Hz
Power consumption	: Max.240VA, approx.120VA on average (at an ambient temperature of 25ºC)
Sample water conditions	: Water temperature; 2 - 40ºC (no freezing) Pressure; 0.01 - 0.05MPa SS; 50 mg/L or less (particle diameter; 100μm or less) Flow rate; Approx. 1 - 3L/min (If there is a considerable amount of distance between the sampling point and the main unit, install a by-pass line that runs close to the main unit. This will prevent delays in response by the sample water.) PH; 5 - 9pH Interfering co-existing substances Amine. Seawater is not measurable.
Wash water conditions	: City water or the equivalent (Turbidity level; 2 or less, Color level; 5 or less) Water temperature; 2 - 40ºC (no freezing) Pressure; 0.1 - 0.5MPa Consumption; Approx. 2L per wash
Acid cleaning solution	: 3%W/V nitric acid (standard) Consumption; Less than 7L/month (at a cleaning interval of 12hours) Tank capacity; 10L
Reagent	: TISAB Standard flow rate; Approx. 0.07mL/min Tank capacity; 10L (Adjuster consumed during 0.07mL/min continuous measurements; Approx. 4L/month)
Calibration solution	: HI (high concentration) calibration solution and LO (low concentration) calibration solution Consumption; Less than 5L/month Tank capacity; 5L *LL(extremely low concentration) calibration is available as an optional feature.
Construction	: Indoor self-standing frame
Dimensions	: 500(W)X1500(H)X450(D)mm
Weight	: Approx. 100 kg (except reagent)
Installation conditions	: Indoor. No direct sun light. Ambient temperature; 0 - 40ºC (no sample/wash water freezing) Ambient humidity; Less than 85%RH (no condensation)
Optional features	: *Measurements can be simultaneously conducted on up to 3 channels. Dimensions for 2ch; 900(W)X1600(H)X550(D)mm Dimensions for 3ch; 1200(W)X1600(H)X550(D)mm *Recorder; 100mm wide, 16m long (1 pen type) *Air cleaning (aerated city water backwashing for sample water filter) *20L effluent tank *Effluent recovery unit (ammonium ion standard solution only) *Low concentration calibration unit (for 3-point calibration) *Leak detector (mounted on the drain pan at the bottom) *Junction box (available for AC power type contact output)

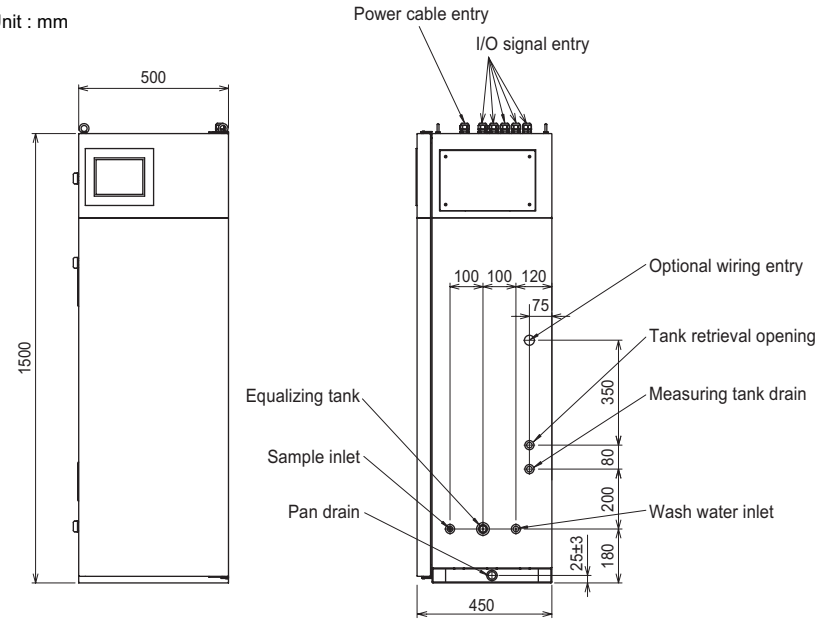
Flow Sheet



Symbol	Description	Remarks
SV1 - 10	Solenoid valve	SV 4, SV5, SV8, SV9 and SV10 are optional.
BV1,2	Ball valve	
CV1,2	Check valve	
P1,2	Peristaltic pump	
P3	Air pump	Optional
RW1	Pressure regulator	
F1,2	Filter	
M1,2	Motor	
FS1 - 6	Float switch	FS6 is optional

Dimensions

Unit : mm



Product code

NHMS4-0-□□□□□□□□□□□□

- Power supply
  - 1 ..... 100VAC, 50/60Hz
  - 9 ..... Custom spec. *1
- Measuring channel
  - 1 ..... 1 channel (standard)
  - 2 ..... 2 channel parallel measurement *2
  - 3 ..... 3 channel parallel measurement *2
  - 9 ..... Custom spec
- Measurement range for 1st channel *3
  - A ..... 0.05 - 5.00mg/L
  - B ..... 0.10 - 10.00mg/L
  - C ..... 1.0 - 100.0mg/L
  - Z ..... Custom spec. *4
- Measurement range for 2nd channel *3
  - A ..... 0.05 - 5.00mg/L
  - B ..... 0.10 - 10.00mg/L
  - C ..... 1.0 - 100.0mg/L
  - Y ..... Not applicable
  - Z ..... Custom spec.*4
- Measurement range for 3rd channel *3
  - A ..... 0.05 - 5.00mg/L
  - B ..... 0.10 - 10.00mg/L
  - C ..... 1.0 - 100.0mg/L
  - Y ..... Not applicable
  - Z ..... Custom spec.*4
- Recorder (100mm)
  - 0 ..... None (standard)
  - 1 ..... 1 pen type
  - 9 ..... Custom spec. *5
- Air cleaning (for sample water filter)
  - 0 ..... None (standard)
  - 1 ..... Supplied
- Effluent recovery unit (separation of calibration solution)
  - 0 ..... None (standard)
  - 1 ..... Supplied (no tank)
  - 2 ..... Supplied (20L tank included)
- Low concentration calibration unit (3 point calibration)
  - 0 ..... None (standard)
  - 1 ..... Supplied
- Leak detector (bottom of cabinet)
  - 0 ..... None (standard)
  - 1 ..... Supplied
  - 9 ..... Custom spec.
- Junction box (option unit for AC power type contact outpu
  - 0 ..... None (standard)
  - 1 ..... Supplied
- Markings
  - 0 ..... Japanese (standard)
  - 1 ..... English
  - 9 ..... Custom spec.

Custom spec. code;
Numeric digit: 9
Alphabet: Z

*1. If other AC power voltage is needed, a step-down transformer is available.
Specify suitable voltage at a site.
*2. If there is a large distance between sampling points, there could be a response delay.
*3. Analog output range is 0 - upper limit of measurement range.
*4. Please indicate the desired measurement range.
*5. Please specify the type of recorder (2 pen or 3 pen) when needed.

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⚠ CAUTION Do not operate producuts before consulting instruction manual.

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