WATER SUPPLIES DEPARTMENT
STANDARD SPECIFICATION E-85-06
AMMONIA MONITORING EQUIPMENT

1. GENERAL

The ammonia monitoring equipment is used to measure and record the dissolved ammonia and ammonium ion concentration of the raw water.

Proven types of online ammonia analyser technologies such as Colorimetric, Ion-selective electrodes (ISE) or other approved equivalent which are able to give a linear output signal in response to changes in ammonia concentration in water shall be used.

A suitable in-line filter shall be provided for the removal of suspended particles before entering the analyser. The in-line filter shall be of the automatic self-cleansed type.

The ammonia monitoring equipment shall have facilities for automatic and manual calibration. The automatic calibration shall take place at regular intervals.

The ammonia monitoring equipment shall comply with the latest version of relevant IEC Standards as listed below and other international standards currently enforced where applicable:

IEC 60529	Degrees of protection provided by enclosures (IP code)

2. DESIGN

The ammonia monitoring equipment shall meet the following requirements :

(a)	Measurement range	:	0.05 - 5.00 mg/l in general; or 0.02 - 2.00 mg/l for critical monitoring/control points if specified in the Particular Specification
(b)	System accuracy	:	±5% of the measured value or ±0.02 mg/l whichever is the greater
(c)	Measuring interval	:	Adjustable/Continuous
(d)	Ambient temperature	:	Suitable for an ambient temperature from 5°C to 40°C
(e)	Local display	:	Graphics monitor shall be provided to display the real time concentration, the trend curve, temperature and status of the equipment
(f)	Output signal	:	4 - 20mA

(g) Computer interface : Optional second current output or RS485 interface or Profibus decentralized peripherals (DP)

(h) Alarms : Two high concentration alarms

Volt free contacts of at least 24V d.c. 1A rating shall be provided for the initiation of the following alarms

(i) loss of mains supply
(ii) loss of sample
(iii) calibration failed
(iv) monitor failure

(i) Calibration : Fully automatic two-point, plus manual initiation on demand both at local or remote

(j) Calibration period : Automatic, time selectable in the order of 24 hours

(k) Self cleaning period : Auto-cleaning, time selectable in order of 24 hours, if applicable

(l) Power supply : 220V ±6%, 50Hz ±2%

3. CONSTRUCTION

The electronic components of the monitoring equipment shall be housed in a compact wall mounted case of a degree of protection IP55 to IEC 60529 or above. Exposed components shall be corrosion-proof suitable for tropical use.

4. INFORMATION FOR ASSESSMENT

The following information of equipment particulars shall be provided for assessment:

(a) The measurement method and service life of the sensing elements;

(b) Calibration method and details of calibration equipment;

(c) The type and quantity of standard solutions and any other necessary reagents required for one-year continuous operation;

(d) Details of in-line filter and minimum head and flow of sampled water required;

(e) Brochure, datasheet and/or O&M manual with details on particulars specified in Section 2 above; and

(f) A price list for standard solutions/reagents/spare parts.

5. ACCESSORIES

The following accessories shall be supplied with the monitoring equipment:

(a) Standard solutions and any other necessary reagents required for one-year continuous operation;

(b) One set of spare sensing probes;

(c) One set of spare in-line filter; and

(d) One set of consumables. (e.g. tubings, seals etc.)

- End of this Specification -