

**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 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 the stream of sample water entering the analyser. The in-line filter shall be of the automatic self-cleansing 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 or control points as specified
- (b) System accuracy :  $\pm 5\%$  of the measured value or  $\pm 0.02$  mg/l, whichever is the greater
- (c) Measuring interval : Adjustable or continuous
- (d) Ambient temperature : 5 - 40°C
- (e) Local display : Graphic display with real time concentration, curve diagram, temperature and status of the equipment, etc.
- (f) Output signal : 4 - 20mA

- (g) Digital communication : Modbus or Profibus as specified
- (h) Alarms : Two volt free contacts of at least 24V d.c. 1A rating for high concentration alarms
- (i) Calibration : Automatic two-point calibration, plus manual initiation on demand locally or remotely
- (j) Calibration period : Automatic, time selectable in the order of 24 hours
- (k) Self-cleansing period : Auto-cleansing, time selectable in the order of 24 hours, if applicable
- (l) Power supply : 220V  $\pm 6\%$ , 50Hz  $\pm 2\%$

### 3. CONSTRUCTION

The electronic components of the monitoring equipment shall be housed in an enclosure of a degree of protection IP54 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 instruction 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)

- End of this Specification -