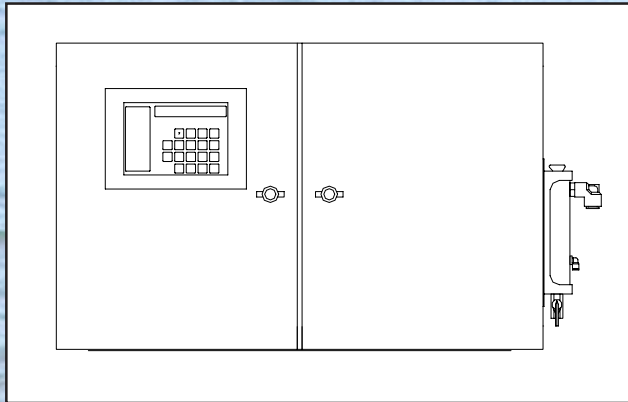


# AZTEC<sup>®</sup> Nitrate Monitor Series N100



## CAPITAL CONTROLS



- ◆ **Continuous on-line monitoring**
- ◆ **Reagent-free analysis**
- ◆ **Auto-calibration**
- ◆ **Self-diagnostics**
- ◆ **Self-cleaning optics**
- ◆ **Multiple sample streams**
- ◆ **Microprocessor controlled**
- ◆ **Data logging**

The Capital Controls AZTEC<sup>®</sup> Nitrate Monitor is a reliable, continuous on-line process instrument. The microprocessor-based technology makes the operation easy and user-friendly.

The measurement is based on the recognized and approved UV absorption method. An adaptation of this method is also described in "Standard Methods", 18th Edition.

Accuracy and reproducibility are obtained through a programmable automatic calibration feature. This two-point calibration, based on deionized water and a standard solution, represents the only reagent used for the monitor.

The sample head combines a precision-engineered pump with the optical measuring cell. The optical cell is self-cleaning further ensuring an accurate and reproducible system.

Sample flow and reagents are monitored by level detectors and the monitor is designed to operate up to 30 days before nitrate standard replacement.

The AZTEC<sup>®</sup> Nitrate Monitor is designed to NEMA 4 standards and uses corrosion-resistant materials.

The microprocessor provides one week of data logging. Standard outputs include RS232, 4-20 mAdc, parallel printer port, and alarm relays.

## Applications

**Drinking water:** Finished water monitoring and control

**Ion Exchange Control:** Blending de-nitrified water with original water to ensure finished water is below maximum contaminant level (MCL)

**Surface Water:** Monitor for treatment against algae blooms

**Food and Beverage:** Control of nitrate in process water

**Wastewater:** Effluent compliance and process control

**Industrial Wastewater:** Effluent compliance

## Design Features

**Automatic Calibration:** A two-point calibration using deionized water and a nitrate standard ensures highly accurate and reproducible results

**Communications:** Serial (RS232) and parallel (centronics printer port) and 4-20 mA<sub>dc</sub> outputs are standard

**Self-diagnostics:** The monitor will indicate system faults and shut down in the event of a power or sample flow failure. The unit will automatically restart once these are restored.

**Microprocessor controlled:** Installation and operation is user-friendly with control variables such as date, time, alarm limits, calibration interval and print mode that can be entered via the keypad

**Limited reagent use:** The only reagents used are the nitrate standard solution and deionized water (deionized water can be further reduced through the calibration interval functions)

**UV absorption method:** Proven method that compensates for organic and chloride interference. The light source assembly incorporates a unique shutter system that provides an increased working life of the optical components

**Multi-stream:** In addition to the standard single stream unit, an optional triple stream unit is available

**Data logging:** The microprocessor has a data logging capability with storage in excess of one week of data

## Principle of Operation

A discrete sample of process water is drawn into the measuring cell and diluted with deionized water via a precision-engineered pumping system. The absorption of ultraviolet light is measured at 220 nm using a diffraction grating monochromator.

The monitor then automatically moves to 250 nm and 275 nm where absorption measurements are made and stored.

The measurement at 220 nm eliminates interference due to chloride and represents absorption due to nitrates and organics. The measurement at 250 nm and 275 nm quantifies the organics present. The microprocessor then compensates for organics and the absorption due to nitrate alone is determined and displayed. Approximately 6 minutes is required for each determination.

The spent sample is pumped to drain and the cell is flushed with deionized water.

In addition to the programmed calibration, a blank measurement on nitrate-free water occurs every hour to compensate for any optical changes.

The piston pump ensures accuracy and reproducibility and provides for continuous cleaning of the measuring cell. (Figure 1)

## Technical Data

**Measuring Ranges:**  
0-80 mg/l nitrate as NO<sub>3</sub>

**NOTE:** Can also be programmed to read as NO<sub>3</sub>-N. (0-18 mg/l)

**Resolution:** 0.1 mg/l

**Repeatability:** ±2.5% of maximum range

**Sample Flow:** 200 to 500 ml/min.

**Sample Temperature Range:** 1-35°C (33-96°F)

**Operating Temperature Range:** 0-35°C (32-96°F)

**Sample Flow Rate:** 12 ml/min

**Power:** 110 Vac, ±6%, 60 Hz, 120/240 Vac, ±6%, 50/60 Hz. Supply to be stable and generally free of voltage dips/surges, excessive switching spikes and transient noise. 5 Amp fuse

**Power Consumption:** 400 watts

**Outputs:** RS232, parallel (centronics), isolated 4-20 mAdc into 1000 ohms maximum. Each value is held until the reading is updated

**Alarms:** 4 dry contacts rated 10 amps @ 240 Vac maximum

### Calibration Reagents:

DI water: 25 l per month

Nitrate standard: 2.5 l, excess of 1 month depending on calibration interval

**Cabinet:** NEMA 4 Three-section industrial, wall cabinet, mild steel construction with phosphate etch prime and epoxy powder texture finish.

**Chemical Waste Drain:** 1/2" hose connection

**Shipping Weight:** 160 lb. (70 kgs)

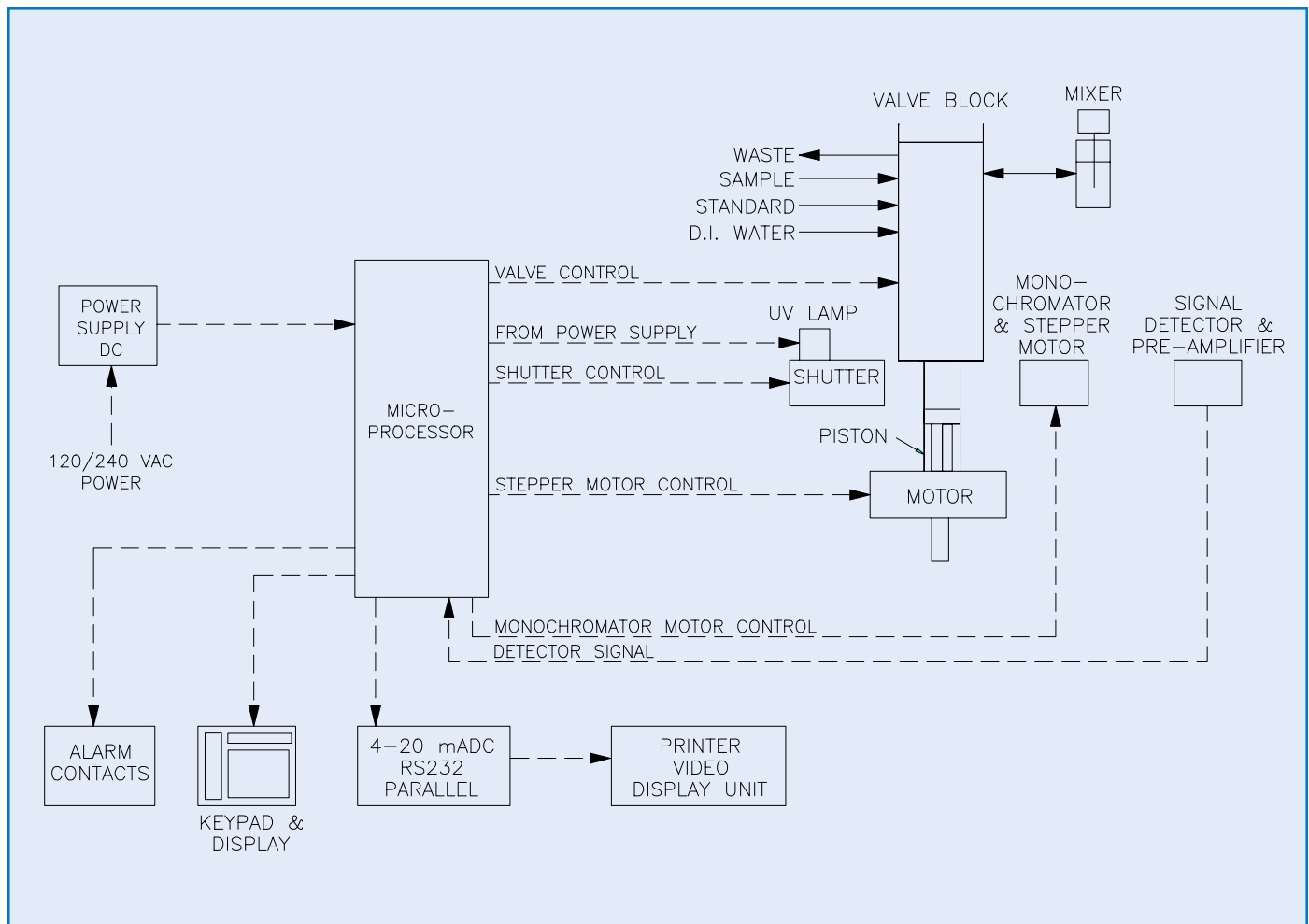


Figure 1

## Warranty and Capability

Capital Controls offers a one (1) year limited warranty on all nitrate monitors.

Capital Controls is ISO9001 certified to provide quality and precision materials, and specializes in disinfection technologies, water quality monitors and instrumentation for water and wastewater. Over 35 years of industrial and municipal application experience in the water and wastewater industries is incorporated into the equipment design to provide the highest quality comprehensive solutions for the global market.

## Model Information Code

Model N 1 0 0 — —

Voltage ————

1 - 120 Vac, 50/60 Hz,  
single phase

2 - 240 Vac, 50/60 Hz,  
single phase

Sample Stream ————

0 - Triple sample stream

1 - Single sample stream

## Brief Specification

The Nitrate Monitor shall provide on-line continuous analysis of a water sample using the ultraviolet absorption method. The UV method must also utilize a multiple wavelength approach to compensate for chloride and organic interferences. The range of the monitor is 0-80 mg/l NO<sub>3</sub>. The monitor shall be a wall mounted design, constructed of mild steel.

The cabinet shall be designed to NEMA 4 with three lockable doors. The monitor shall include a separate electrical and wet-end, optical sections to ensure a safe working environment.

The microprocessor shall enable the unit to periodically and automatically calibrate itself, provide for a blank measurement every hour to compensate for optical drift and incorporate self-diagnostics for power or system failures.

The unit shall provide isolated 4-20 mAdc, RS232 output, parallel port for a printer and alarm contacts. The monitor shall operate from a 120/240 Vac ±6%, 50/60 Hz, or 100 Vac ±6%, 60 Hz, single phase power supply.

The only reagents used shall be deionized water and a nitrate standard for calibration.

Design improvements may be made without notice.

Represented by:



# CAPITAL CONTROLS

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