



MODEL TS400

Toxic Gas Detector



Features

- LCD Indicator
- 2-Wire Loop-Powered
- 4-20mA Analog Output
- Adjustment-free Calibration
- Multiple Gases Available
- Compact Size

Benefits

- Display indicates status, fault and calibration cues
- Eliminates the need for output loop supply reducing installation and cabling costs
- Industry standard output for remote alarm and fault indication
- Lower calibration costs
- Provides a variety of applications to a broad range of industries
- Permits sensor usage in space-restrictive areas

Description

The General Monitors Model TS400 is a toxic gas detector that continuously monitors for a variety of toxic gases and provides an analog output signal.

The TS400 utilizes electrochemical cell technology to detect toxic gases in the parts-per-million (ppm) range. The TS400 currently detects: ammonia, carbon monoxide, chlorine, chlorine dioxide, hydrogen chloride, hydrogen sulfide, nitric oxide, nitrogen dioxide, ozone and sulfur dioxide.

The TS400's electronics are encapsulated within a chemically resistant plastic housing with detector information processed at the point of detection. The loop-powered TS400 provides a 4-20mA output signal proportional to 0 to 100% full scale gas concentration at the detector. Another feature is the LCD indicator which provides status, fault, and calibration cues.

The TS400 Toxic Gas Detector can be used in general purpose, intrinsically safe, increased safety or explosion-proof areas (when used with the appropriate accessories).

Applications

- Water Treatment
- Wastewater Treatment Facilities
- Pharmaceuticals
- Pulp & Paper
- Chemical Plants
- Refineries
- Food & Beverage
- Petrochemical
- Utilities
- Semiconductors



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System Specifications

Sensor Type: Electrochemical cell

Measuring

| | | |
|----------------|--------------------|-----------------------|
| Ranges: | Ammonia* | 0-50, 0-100 ppm |
| | Carbon Monoxide | 0-100, 0-500 ppm |
| | Chlorine* | 0-10 ppm |
| | Chlorine Dioxide* | 0-3 ppm |
| | Hydrogen Chloride* | 0-20 ppm |
| | Hydrogen Sulfide | 0-20, 0-50, 0-100 ppm |
| | Nitric Oxide | 0-100 ppm |
| | Nitrogen Dioxide | 0-20 ppm |
| | Ozone | 0-1 ppm |
| | Sulfur Dioxide | 0-20 ppm |

Repeatability: $\pm 2\%$ of full scale (FS) for all gases except ± 0.1 ppm for O_3 and ± 0.2 ppm for ClO_2

Zero Drift: $< 5\%$ per year

Typical Response

Time: (with 100% FS gas applied)
 CO, H_2S, NO_2 : T90 < 30 sec,
 NO, SO_2 : T90 < 10 sec,
 HCl : T90 < 100 sec,
 Cl_2, ClO_2 : T90 < 60 sec,
 O_3 : T90 < 90 sec,
 NH_3 : T90 < 120 sec

Classification: Class I, Divisions 1 & 2, Groups A, B, C & D, Class II / Groups E, F, & G, Class III EEx ia IIC T6

Accessories: Flow block, splash guard, field mounted display, multi-channel controller, plastic junction box, aluminum junction box, and calibration kits

Warranty: One year (cell)
Two years (electronics)

Approvals: CSA, C-UL US, ATEX, CE Marking and SIL-2 suitable

Environmental Specifications

Operating Temperature

Range: $-4^\circ F$ to $122^\circ F$ ($-20^\circ C$ to $50^\circ C$)
 Ammonia $-4^\circ F$ to $104^\circ F$ ($-20^\circ C$ to $40^\circ C$)

Storage Temperature

Range: $-4^\circ F$ to $122^\circ F$ ($-20^\circ C$ to $50^\circ C$)
 EC Cells $32^\circ F$ to $68^\circ F$ ($0^\circ C$ to $20^\circ C$)

Operating Humidity

Range*: 15% to 90% RH, non-condensing

Pressure

Range: Atmospheric $\pm 10\%$

Mechanical Specifications

Diameter: 1.75 inches (44mm)

Length: 4.5 inches (114mm)

Weight: 0.5 lbs. (.23 kg)

Mounting: 3/4" NPT

Housing: Chemically Resistant Plastic

Electrical Specifications

Input Power: 10-35 VDC
3.5 to 22mA loop-powered

Analog Signal: 4-20mA (600 ohms max @ 24 VDC)
 (120 ohms max @ 10 VDC)
 Fault 3.50mA
 Start up 3.60mA
 Cal 3.75mA
 0-100% full scale 4-20mA (proportional)
 Over-range 22mA

RF/EMI

Protection: Complies with EN50081-2, EN50082-2

Status

Indicator: Liquid crystal display (LCD) with status, fault and calibration cues

Faults

Monitored: Calibration, sensor removal/open circuit

Standard

Configuration: TS400-xx-0-xx (xx=sensor type)

Specifications subject to change without notice.

Represented by:

General Monitors Worldwide



www.generalmonitors.com
www.gmitoxics.com

Lake Forest, CA

26776 Simpatica Circle
 Lake Forest, California 92630
 Tel: +1-949-581-4464
 Fax: +1-949-581-1151
 Email: info@generalmonitors.com

Houston, TX

9776 Whithorn Drive
 Houston, Texas 77095
 Tel: +1-281-855-6000
 Fax: +1-281-855-3290
 Email: gmhou@generalmonitors.com

Ireland

Ballybrit Business Park
 Galway
 Republic of Ireland
 Tel: +353-91-751175
 Fax: +353-91-751317
 Email: info@gmil.ie

Singapore

No. 2 Kallang Pudding Road
 #09-16 Mactech Building
 Singapore 349307
 Tel: +65-6748-3488
 Fax: +65-6748-1911
 Email: genmon@gmpacifica.com.sg

United Arab Emirates

P.O. Box 61209
 Jebel Ali
 Dubai
 United Arab Emirates
 Tel: +971-4-8815751
 Fax: +971-4-8817927
 Email: gmmme@emirates.net.ae

United Kingdom

Heather Close
 Lyme Green Business Park
 Macclesfield, Cheshire
 United Kingdom, SK11 0LR
 Tel: +44-1625-619583
 Fax: +44-1625-619098
 Email: info@generalmonitors.co.uk

* Electrochemical cells are sensitive to changes in humidity, particularly at temperatures above $25^\circ C$. For these applications, consult our factory.