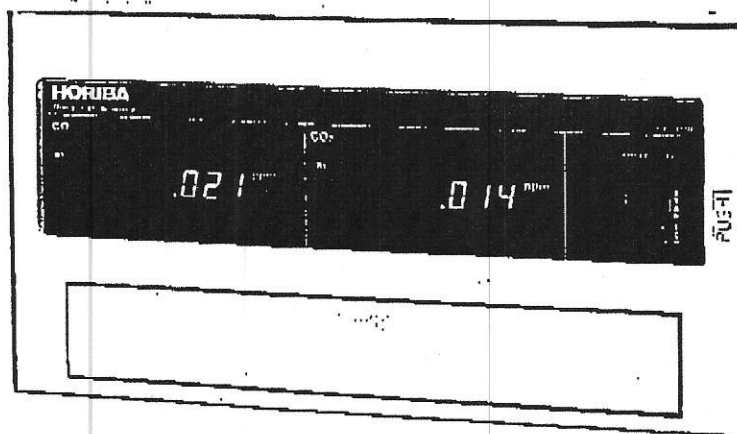


# TRACE GAS MONITOR

GA-350E Series



## ***The two-in-one high-sensitivity analyzer***

- *Unique cross-flow modulation technique*
- *NDIR absorptiometry*
- *High-purity measurement of CO, CO<sub>2</sub> and CH<sub>4</sub> in N<sub>2</sub>*
- *Simultaneous measurement of two components available*
- *Designed to measure impurities in semiconductor industry bulk gas (N<sub>2</sub>) and other high-purity gases*
- *Compact and lightweight, fits in a standard 19-inch rack*

HORIBA is a worldwide leader in non-dispersive infrared (NDIR) technology and a major NDIR analyzer manufacturer.

The heart of the GA-350E Trace Gas Monitor is the multi-nationally accepted, field-proven, cross-flow modulated HORIBA NDIR analyzer.

### **New concept in trace gas monitors**

The GA-350E represents a new concept in trace gas monitors. Designed to eliminate routine calibration cycles and to provide long-term stable measurement and continuous unattended operation, it furnishes reliable concentration

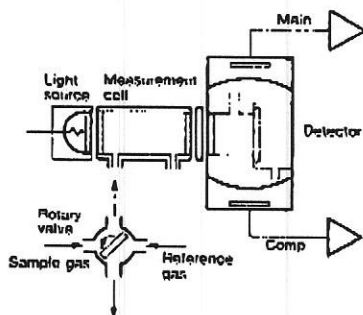
data under such conditions. Every element of the monitor has been selected to offer the ultimate in reliability and accuracy. Solid-state modular electronics ensure maximum performance and minimum maintenance.

### **Line of two-component versions**

The GA-350E is available in two component versions for measuring any two-component combination of CO, CO<sub>2</sub> and CH<sub>4</sub> specified by the customer. Simultaneous measurement of two different components is made possible by linking two detectors to the main unit via a single sample line.

Bulletin: HRE-2834A

## PRINCIPLE



An infrared beam in the analyzer unit passes through the cell to the detector. During measurement, the rotary valve alternately introduces the sample gas and reference gas (supplied by the customer) into the cell. The presence of CO, CO<sub>2</sub> and/or CH<sub>4</sub> in the sample gas generates a difference in the intensity of the light reaching the detector when the cell is filled with sample gas from when it is filled with reference gas.

This difference causes a metallic membrane in the detector to move back and forth in accordance with the alternating gas flow (cross-flow modulation). The analyzer requires neither an optical chopper nor optical adjustment. Furthermore, this technique virtually eliminates zero drift and greatly enhances analyzer sensitivity. Zero and span calibrations are performed by introducing standard gases.

## SPECIFICATIONS

**Model name:** GA-350E

**Principle:** Non-dispersive infrared absorption (NDIR)

**Application:** CO, CO<sub>2</sub> and CH<sub>4</sub> in N<sub>2</sub>

**Range:** CO: 0 - 2/5/10/20 ppm

CO<sub>2</sub>: 0 - 2/5/10/20

(0 - 1/2/5/10) ppm

CH<sub>4</sub>: 0 - 2/5/10/20 ppm

**Repeatability:** Within ±2% F.S.

**Linearity:** Within ±2% F.S.

**Zero drift:** Within ±0.04 ppm/day

Within ±0.08 ppm/14 days

**Span drift:** Within ±2% F.S./day

Within ±5% F.S./14 days

**Response (T<sub>90</sub>):** Less than 180 sec.

**Display:** Measured value, range, alarm

**Reference gas:** N<sub>2</sub>

**Alarm:** Flow, chopper, power down

**Output:** 0 - 1/10 V, 4 - 20 mA (non-isolated)

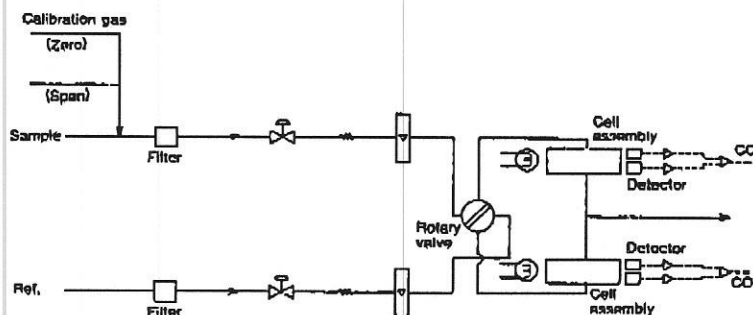
**Power supply:** 115 V AC/60 Hz

**Option:** Isolated output

**Remarks:**

- 1) The two-component version measures any two of the above three components specified by the customer.
- 2) Reference gas is to be supplied by the customer.

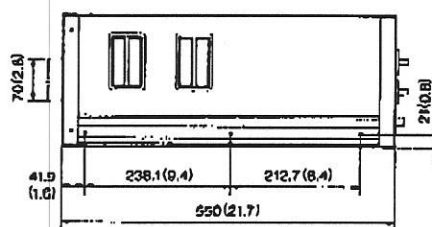
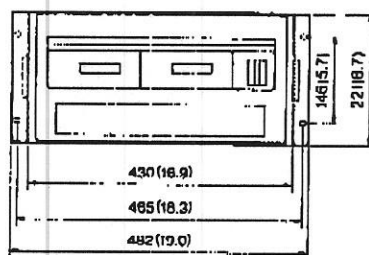
## FLOW SCHEMATIC



The above diagram applies to a two-component (e.g. CO and CO<sub>2</sub>) analyzer. A one-component version has only one analyzer unit.

## DIMENSIONAL OUTLINES

Unit: mm (in)



# HORIBA

**HORIBA, Ltd.**  
Head Office  
Miyenohgoshi, Kishino, Minami-ku,  
Kyoto, Japan  
Phone: (81) 75-313-1123  
Telex: (54) 22130  
Fax: (81) 75-321-5725

**HORIBA INSTRUMENTS INCORPORATED**  
Irvine Facility  
1021 Duryea Ave., Irvine,  
Calif. 92714, U.S.A.  
Phone: (714) 714-250-4811  
Telex: (23) 422196  
Fax: (714) 714-250-0924

**HORIBA EUROPE GmbH**  
Industriestrasse 8, D-6374 Steinbach,  
West Germany  
Phone: (49) 6171-7755 ~ 7758  
Telex: (47) 411022  
Fax: (49) 6171-8044

**Tokyo Sales Office**  
2-12-5 Iwamoto-cho, Chiyoda-ku,  
Tokyo, Japan  
Phone: (81) 3-601-8211  
Fax: (81) 3-601-8256

**Ann Arbor Facility**  
3801 Verity Drive, Ann Arbor,  
Michigan 48104, U.S.A.  
Phone: (313) 313-873-2171  
Telex: (23) 0230170  
Fax: (313) 313-7866

**HORIBA EUROPE Branch Offices**  
**HORIBA FRANCE**  
Rue L. et A. Lumière Industrieparc  
01830 ST-GENIS-POUILLY, France  
Phone: (33) 50-42-27-83  
Telex: (42) 385-024 Fax: (33) 50-42-07-74

**HORIBA ASIA/PACIFIC REPRESENTATIVE OFFICE**  
Parkway Parade #07-03  
80, Marine Parade Road, Singapore, 1044  
Phone: (65) 3453030 Telex: (87) 37257  
Fax: (65) 3452930

**Silicon Valley Office**  
1000C, Duane Ave., Suite J,  
Sunnyvale, California 94086, U.S.A.  
Phone: (415) 408-730-4772  
Fax: (415) 408-730-0875

**HORIBA AUSTRIA**  
Kaplanstraße 5, A-3430 Tulln,  
Austria  
Phone: (43) 2272-5225  
Telex: (47) 139482 Fax: (43) 2272-5230

**HORIBA KOREA SALES CO., LTD.**  
112-6 Suwon-Dong, Chong-gu,  
Seoul, Korea  
Phone: (82) 2-753-7911 ~ 7912  
Fax: (82) 2-750-4972

**HORIBA INSTRUMENTS LIMITED**  
1 Harrington Road, Rankine,  
Northampton, NN4 0ES England  
Phone: (44) 604-765171  
Telex: (51) 311888  
Fax: (44) 604-705175

**HORIBA SWITZERLAND**  
Av. des Baumettes 11-13  
CH-1020 Renens, Switzerland  
Phone: (41) 21-823-77-41  
Telex: (45) 425-334 Fax: (41) 21-823-10-07