

Model 113 EC+ Gas Analyzer

Introduction

The Model 113 comes with an electrochemical sensor such as O₂, CO₂, NH₃, HCl, H₂S & ETO. **Up to 2 additional electrochemical sensors** for ppm or % range can be added. This Model 113 can be used for safety monitoring around laboratories, manufacturing operations, chemical or petrochemical plants. This handheld analyzer is robust, weighs only 1.5 pounds, and is extremely easy to use or calibrate. It is an inexpensive but flexible safety analyzer. There is storage for 7000 data points. Software for downloading to a PC is included. The Analyzer will operate for > 10 hours on a rechargeable Ni metal hydride battery.



Model 113 EC+

Theory of Operation

Electrochemical

Two and three electrode systems are used for the electrochemical sensors. Sensor technology includes potentiometric (CO₂, NH₃), fuel cell (O₂) and amperometric (SO₂, H₂S, ...) where the sample is oxidized or reduced. Sensors are chosen to maximize performance and lifetime. The sensors can be easily interchanged via the sensor board and embedded software.

Controls for the Model 113

Ent-enter and change sensor

On/Off- Battery power

Incr-Function ON, scrolling menu up, increase number

Decr-Function OFF, scrolling menu down, decrease number

Bkl-Turns backlight on/off

Menus

Log

Manual-Set site #, and manually log each pt.
Auto- Set, ave. time (sec) and samples/hr. to
Auto log

Site # 1-7,000

Setup- Setup Auto; Ave. time sec., samples/hour

Exit- Return to Run

Cal

Cal- Performs zero, set cal value, calibration, sensor for each channel

Cal Gas- Select name of cal gas

Resp as- Once the 113 is calibrated-change to direct reading on any of > 15 EC sensors

Alarm- Set Alarm value for audible alarm

Exit- Return to Run mode

Datalogging

The 113 has manual or automatic datalogging capability for >7,000 points. The software for data logging is included with the Model 113. It uses Windows Hyperterminal. The data is shown as follows:

Data From Hyperterminal			
Site	Date	Time	ppm
495	5/12/2004	15:02:27	171.7
496	5/12/2004	15:03:27	171.6
497	5/12/2004	15:04:27	171.6

End Of Log Data

This data can be imported directly into MS Excel[®]

SPECIFICATIONS

- Single unit construction
 - 8.0" L x 3" W x 2.25"D
 - Weight 1.5 pounds
 - Simple 5 button operation
 - No keyboard-just keypad
 - "Resp as" to setup for direct reading for changing sensors (gases)
 - Alphanumeric display for compound, detector, alarm, range, & logging
 - LCD digital display that is backlight selectable
 - Fast response
 - Datalogging for > 7,000 points
 - 4 Sensor inputs (1-3 EC sensors)
 - Low battery indicator & automatic shutdown
 - RS232 output
 - Analog output for recorder
 - Simple pushbutton sensitivity control
- Alphanumeric scrolling
Upper numeric display is the concentration:
the lower scrolling display provides
information on the type of sensor, and the
status of logging and alarms.

OPTIONS

- Shoulder carry bag
- Hard carrying case
- Calibration kit
- 12 VDC charger with cigarette lighter adapter
- Sensors choose from >17 electrochemical
- **Dilution probe for higher levels**

Applications:

Safety, Industrial Hygiene
Quality control

Features

- Easy to use
- Easy to calibrate
- Up to 3 EC sensors
- Fast response- Instant on electrochemical sensors
- Datalogging for 7,000 points

Specifications of Gas Sensors for the Model 113

Sensor	Range ppm	Det. Limit	Response Time	Interferences
Electrochemical				
Ammonia	0-50	0.1	30 sec.	acid gases
Carbon Dioxide	0-1,000/0-10% ppm		90 sec.	Other acid gases
Carbon Monoxide	0-500/1000	0.5	10 sec.	C ₂ H ₄
Chlorine	0-10	0.1	30 sec.	—
Ethylene	0-20	0.1	45 sec.	alcohols, other org.
Ethylene Oxide	0-20	0.1	1 min.	alcohols, org., CO
Formaldehyde	0-30	0.1	50 sec.	alcohols, CO
Hydrogen	0-1000	2	45 sec.	CO, C ₂ H ₄
Hydrogen Cyanide	0-50	0.1	50 sec.	C ₂ H ₄ , H ₂ S, SO ₂
Hydrogen Chloride	0-100	0.1	1.5 min.	SO ₂ , H ₂ S----
Hydrogen Sulfide	0-100	0.01	20 sec.	—
Nitric oxide	0-50	0.1	10 sec.	NO ₂
Nitrogen dioxide	0-10	0- 0.1	15 sec.	Cl ₂ , H ₂ S
Oxygen	0-30%	0.1%	15 sec.	—
Ozone	0-5 ppm	0.02	75 sec.	—
Phosphine	0-5	0.05	40 sec.	SiH ₄ , GeH ₄ , B ₂ H ₆
Sulfur dioxide	0-20	0.1	20 sec.	NO ₂
Silane	0-5	0.05	30 sec.	AsH ₃ , GeH ₄ , PH ₃

There are more than 15 sensors available for the Model 113. One EC sensor or any three additional EC sensors can be incorporated into the head.

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