Continuous Monitors for Total VOCs, Total Hydrocarbons, Solvents - (PID or FID)

Model 201 D NEMA 4 Wall

Model 201 D 19" Rack

For VOC's from Stacks, Process Controls, Carbonbed Breakthrough, Thermo oxidizers Process Measurements in Chemical, Petrochemical, & Manufacturing Plants & Ambient monitoring for total hydrocarbons

MODEL 201D CONTINUOUS GAS ANALYZER
**Introduction**

The Model 201-C PID is a flexible and versatile Analyzer. More than three thousand of these photoionization detector (PID) based Analyzers have been sold worldwide for applications ranging from carbon bed breakthrough, leak detection to stack and ambient air monitoring. This is attributed to the rugged and durable design that is characteristic of all PID Analyzers products. Several years ago, we added the flame ionization detector (FID) to the 201 series product line. Other continuous Analyzers in the 200 series include the Model 202 Infrared (IR) for Carbon dioxide, hydrocarbons, carbon monoxide, thermal conductivity detector (TCD), Model 204 and a Model 210 Zirconium Oxide Oxygen Analyzer. The addition of these new Analyzers greatly improves the capability and range of process analyzers from PID.

**PID Description**

The process of photoionization is initiated by the absorption of a photon of ultraviolet radiation energetic enough to ionize a molecule (RH) by the process shown below:

\[ RH + h\nu = RH^+ + e^- \]

where \( h\nu \) represents a photon with an energy > the ionization potential of species RH. The ions are collected in an ionization chamber which is adjacent to the lamp and contains an accelerating electrode (biased positively) and a collection electrode where the current is measured. After amplification, the current measured is proportional to the concentration. The response measured will be a summation (total) of the hydrocarbons ionized.

**FID Description**

In the FID, the sample is burned in a hydrogen-air flame and the ions formed from carbon containing compounds are collected by applying a positive potential to the jet and measuring the current at collection electrode just above the flame. After amplification, the current measured is proportional to

**Applications: PID or FID**

Monitoring effluents from chemical, refining, or manufacturing
Carbon bed breakthrough
Leak detection- from process equipment
Non methane Hydrocarbons in
Ambient or Stack-FID/Catalyst
Drying ovens for removing solvents
Incineration
THC in ambient or plant
ppb levels of VOCs- PID only
Remediation site monitoring
Intake air in chemical or manufacturing plants- used to control recirculation of air
VOC’s in water with optional Sparging system (Model 650) for Total VOCs in water at ppm-ppb levels

**Features-**

**Automatic Restart**- In the event of a power outage, the instrument will automatically restart

**Low cost of ownership**- The long lifetime of the analyzer coupled with the minimal level of maintenance results in a low cost of ownership

**Wide operating range** with no range changing necessary- 16 Bit ADC

**Push button Automatic calibration;** automatically adjusts response

**Autozero for PID; Automatically injects zero gas** & adjusts auto zero for FID

**PID- lamp out alarm; FID-flame outshuts off hydrogen and provides alarm**

**RS232 digital output, 0-1 VDC analog output, WiFi, Bluetooth**

**Up to 6 dual setpoints** that are programmable- can be used to shut down a process, Range_ ppm 0-50, 0-500 0-5,000
Specifications

**Detectors available:** PID & FID  
**Measurement mode:** Continuous  
**Zero drift:** Automatic compensation; <1% per month  
**Span drift:** Auto cal each 24 hours (with contact closure), may require manual set of span: less than 1% every 24 hours  
**Wide range of response:** from sub ppm on PID to % on the FID  
**Support gases:** PID requires no support gases; FID requires H2 and zero air  
**Readout:** 7" HDMI Color Display with control by cell phone or remote SW (see below).  
**Standard output:** WiFi, RS232  
**Enclosure:** Rack (NEMA 2): 19" W x 11"H x 15"D Weight: 22 pounds PID  
24 pounds FID  
Wall (NEMA 4): 23"W x 21"H x 7"D- PID  
27"W x 21"H x 10"D- FID  
Weight: -27 pounds PID  
- 24 pounds FID  
**Power requirements:** 100-240VAC, 1 amp  
**PID and FID Range**  
PID range - 0.1 to 5,000 ppm (higher levels can be detected via a dilution system)  
hydrocarbons > C4 plus, VOC's,  
organic species such as H2S, NH3, I2,  
PH3, AsH3, Sulfur compounds etc.  
FID Range- 1- 20,000 ppm, 1-2,000 ppm VOC's (hydrocarbons) only  

7" Color display

Flow: 250 ccm/min.  
Time: 08:43 AM  
Error: 0  
Hourly average: 73 ppm

Options

4-20 mA output; ppb Range,  
Single alarm setpoint- Customer Programmable  
Data storage in ASCII format using  
8 GByte USB memory stick  
- more than a year of data  
X Proof- explosion proof enclosure  
Z purged for Zone 1 and Zone 2 respectively  
Calibration gas and regulations for any of the gases at various levels- 
Contact PID Analyzers

Sampling Systems

One of the most difficult challenges is to deliver a sample stream saturated with water at an elevated temperature to the analyzer without any change in the composition of the compounds to be measured. A photo of our sample conditioning system is shown below.  
For additional information, please contact PID Analyzers.  
The system below requires only compressed air for operation and removes all liquid water from the sample. It can be used in a Class I Div 1 area. We also offer heat exchangers and heated sample lines for other types of samples.
New Features

- New 7" Color Monitor
- Sample flow sensor
- 6 Relay contacts for alarms or timed events
- 3 Selectable ranges x1, x10, x1000
- Heated PID with temperature control
- WiFi & Bluetooth
- Remote control software via internet connection - useful in the control room or for troubleshooting from our office in Sandwich, MA
- Data storage on board for more than 5 years
  - Remote calibration (with WiFi) from the control room
  - Control the Model 201 D from an IPhone or Android cell phone
  - 19" Rack Mount or optional NEMA 4 enclosure
- Optional Z purge to meet Class 1 Div I standards

Optional Temperature control: heating/cooling for outdoor installations

Multipoint Sequencer

The 201-D has several multipoint options. The first is a simple 2 point system that can be used to monitor the input and output of a scrubber, carbon bed etc. to determine the efficiency of the system. This 201-B has a two channel display; one for each channel. The second option is a 4, 8, 12, 16, 24 or 32 point system. This system employs a manifold with a needle valve and a 3 way valve for each channel. This version has a three channel display. One channel is for the concentration, the second is for the channel # and the third is for the sample flow for that channel. The flow is measured with a mass flow sensor. The setpoint for the flow channel can be set to indicate a low flow or blockage for a channel. An alarm can be programmed for each channel in the system. This system provides an inexpensive alternative to a sensor for each point. The cost of maintaining and/or calibrating this single system is considerably less expensive than maintaining a 16 or 24 sensor system. The multipoint system can be interfaced with DataWorks, a PLC or DCS system that is already at the Plant. Data collection in ASCII format stored on an 8 GByte memory stick

Additional Features

Contact PID Analyzers, LLC