



Analysis of your Binary Stream



About the 20 Series

The 20 Series Thermal Conductivity gas analyser was developed for the determination of binary gas mixtures and gas purity measurements. This analyser compares the difference in the thermal conductivity between the sample and reference gases, which are exposed to the detector elements.

Principle of Operation

Using Hotwire or thermistor elements, an analyser which has accuracy and sensitivity, coupled with a robust platform is achieved with a response time of < 30 second (T_{90}).

Produced as bench top Gas Analyser (option for 19" rack platform), with all stainless steel tubing with Swagelok fittings allows this analyser to be used in many environments. We customise each analyser to meet the specific requirements of our customer. Utilising the option of a pump, the analysis of samples where the gas pressure is very low is possible.

What does the 20 Series offer

The Binary Stream Gas Analyser from AGC Instruments is used for the analysis of binary streams of industrial gases, cylinder identification & atmosphere control applications on a non continuous basis.

Models Available

Two types are available (1) single pass (sealed reference/gas economical) analyser or a (2) dual pass (flowing reference/more thermally stable) analyser. Both with a flowmeter & needle valve, a pump (optional), and a 5 way valve for zero, span/calibration & sample gases, the units are built for rugged use and simple to use.

Typical Gas Applications:

- Air in He
- H₂ in N₂
- Ar in He
- CO₂ in N₂/He
- Freon in Air
- Hydrocarbons in He
- SO₂/NH₃ in Air
- H₂ in O₂
- Natural Gas in Air
- N₂ in Ar
- O₂ in Ar
- O₂ in H₂
- F₂ in N₂
- & many others

Typical Applications:

- Air Separation Units
- Air Liquefaction Plants
- Gas Blending equipment
- Helium Gas Recovery
- Helium Liquefaction Plants
- Helium Gas Purification
- Industrial Gas Production Units
- Chemical Plants
- Refineries
- Refrigeration Plants
- Ammonia Plants



Thermal Conductivity Detector

The TCD consists of a block (usually metallic) containing a cavity through which the gas flows. Four sensing elements which are connected to form an electrical Wheatstone bridge circuit. These elements are miniature Rhenium-Tungsten filaments, which are mounted in a metallic cell block. A diffusion type thermal conductivity cell is used in this analyser. This cell contains a sample and reference gas flow geometry. Two filaments are installed in each flow system. An electrical current from a DC power source heats the elements.

To balance the instrument, the reference gas must be passed through both the sample and reference flow systems. When a sample gas of different composition is introduced into the sample system, a change in the rate of heat loss will occur. This change will cause the element resistance to change, causing the Wheatstone bridge to unbalance. The output represents the concentration of the sample gas being analysed and displayed directly on the digital meter.

Specification	
Configuration available	
Bench	430 x 225 x 400 (mm, WxHxD) - Model 20-162 *
Rack	19" x 5U x 40mm (WxHxD) - Model 20-172
	Note (1): Also available as mains transportable: Model 20-162-M
	Note (2) Also in IP65/54 or Ex"p" enclosures
Gas Connections	1/8" o.d. Swagelok (Brass or Stainless Steel)
Sensitivity	Equivalent to 0.00 – 100.00% of Air in Helium, or depending on application.
Operating Temperature	Minimum: 10°C Maximum: 30°C
Temperature Regulation	No (Available on the 50 Series)
Power Requirement	110 or 220/240V, 50/60Hz
DC Power Supply	Constant Current
Sample Flow Range	50-500ml/min
Min Pressure required	0.015 Bar
Max Pressure Allowed	6 Bar
Pump	Optional
Response Time	T ₉₀ < 30 seconds
Accuracy	<0.01% of F.S. of meter and depending on application
Alarms	Yes (Hi-Low)
Outputs Available	0-1V 4-20mA and RS232 (or RS485)
Drift	Depends on Calibration
Span	Depends on Calibration
Regulation	0.1%
Weight	Bench: 13Kg Rack: 24kg

Other Features:

For High Purity Gas Analysis, Stainless Steel fittings and tubing is used throughout. For corrosion resistance systems, all wetted surface parts will be manufactured in corrosion resistant materials such as Nickel or Monel. The Display used will indicate in % or ppm of the measured component.

With features such as 4-20mA, Hi-Low Alarms, RS232 or RS 485 available, the 20 Series will display and transmit all the relevant information to ensure monitoring of the process is accurate and continuous. This versatile Gas Analyser can be provided in an IP55 or an Ex"p" enclosure for Zone 0 and Zone 1 operation. Please contact AGC Instruments for more information.

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