



## 436 SERIES

### TRI-GAS ANALYZER FOR MONITORING PURITY AND PURGING OF HYDROGEN COOLED POWER GENERATORS

#### APPLICATIONS

For continuous analysis of hydrogen (H<sub>2</sub>) purity and for purge monitoring of hydrogen-cooled generators and synchronous converters.

#### FEATURES

- One analyzer monitors all 3 gases for purity (Range 1) or purging (Ranges 2 and 3):
  - **Range 1:** 0-100% H<sub>2</sub> in Air
  - **Range 2:** 0-100% H<sub>2</sub> in CO<sub>2</sub>
  - **Range 3:** 0-100% Air in CO<sub>2</sub>
- Bright digital readout, 4-20 mA output non-isolated
- Thermal-conductivity cell with high accuracy and repeatability, cannot be burned out.
- Explosion-proof gas detector enclosure suitable for Class 1 Division 1 Group BCD rated areas
- Fast response (T90 -10 to 15 secs)
- Easy to maintain modular layout
- Built in pressure regulator
- 2 levels of low H<sub>2</sub> purity alarms and detector failure alarm

#### OPTIONS

- Outputs - isolated 4-20mA, RS485/USB, Ethernet with MODBUS® protocol
- Magnetic switches in 436N7MC explosion proof control cabinet permits easy calibration without having to open cabinet cover
- Oil vapor filter assembly

#### CALIBRATION

- Channel 1 - Air for Zero, 100% H<sub>2</sub> for Span
- Channel 2 - 100% CO<sub>2</sub> for Zero, 100% H<sub>2</sub> for Span
- Channel 3 - 100% CO<sub>2</sub> for Zero, Air for Span



NEMA 7 Gas Detector Cabinet

Choice of Control Cabinet as follows:



NEMA 4 Control Cabinet

or:



19" Rack Mount Control Cabinet

or:



NEMA 7 Control Cabinet



Oil Vapor Filter Assembly  
- protects analyzer from sensor fouling caused by oil-vapors from power generator

## DESCRIPTION

The Nova Model 436RMN7 Tri-gas analyzer is designed specifically for monitoring H<sub>2</sub> purity in a power generator and to monitor the purging procedure during shut down. The analyzer can measure the following gases by switch selection: **Range 1:** 0-100.0% H<sub>2</sub> in Air; **Range 2:** 0-100.0% H<sub>2</sub> in CO<sub>2</sub>; **Range 3:** 0-100.0% Air in CO<sub>2</sub>. A 4-20 mA output is provided for the range of 85-100% H<sub>2</sub> in air, along with two low H<sub>2</sub> purity alarms and a sensor fail alarm.

The Model 436 analyzer is typically divided into 2 sections which are electrically connected. The control section contains the main microprocessor board as well as the digital readout meters, alarms, calibration and range switches, power supply and temperature controller for the T/C cell. The gas detector section contains the temperature controlled thermal conductivity (TC) cell, a five way selector valve, gas pressure regulator, flow indicator and 2 flame arrestors.

Either the gas detector section on its own or both gas detector and control sections may be purchased in explosion-proof cabinets. The explosion-proof cabinets are UL listed and CSA certified for use in Class 1, Division 1, Groups BCD hazardous areas. If the gas detector section only is explosion-proof, the control section is typically enclosed in a 19" rack mount cabinet for use in a general purpose, non-hazardous area. The control section can also be mounted in a NEMA 4 wall mount cabinet.

## MODELS

- **436N4N7** - gas detector in explosion-proof cabinet; control section in general purpose NEMA 4 cabinet
- **436RMN7** - gas detector in explosion-proof cabinet; control section in general purpose 19" rack mount cabinet
- **436N7MC** - gas detector and control cabinet both in explosion-proof cabinets

## SPECIFICATIONS

*Nova reserves the right to specification changes which may occur with advances in design without prior notice.*

Description	
<b>Method of Detection:</b>	Temperature controlled thermal conductivity (T/C) cell, cannot be burned out due to loss of flow or changing gases
<b>Ranges Available:</b>	<b>Range 1:</b> 0-100% H <sub>2</sub> in Air; <b>Range 2:</b> 0-100% H <sub>2</sub> in CO <sub>2</sub> ; <b>Range 3:</b> 0-100% Air in CO <sub>2</sub>
<b>Resolution:</b>	± 0.1% of gas measured
<b>Accuracy and Repeatability:</b>	± 1% F.S except in 85-100% H <sub>2</sub> in Air output range which is within 0.2% absolute H <sub>2</sub>
<b>Drift:</b>	H <sub>2</sub> in CO <sub>2</sub> or Air in CO <sub>2</sub> , 1% F.S. per week maximum drift, 0-100% H <sub>2</sub> in Air range is ± 0.2% per week
<b>Response Time (T-90):</b>	10-15 seconds to 90% step change - not including sample transport time
<b>Ambient Temperature Range:</b>	32-120°F (0-50°C)
<b>Linearity:</b>	± 0.4% of F.S. on H <sub>2</sub> in Air range, ± 1% of F.S. in H <sub>2</sub> or Air in CO <sub>2</sub> ranges
<b>Size and Weight:</b>	Dimensions will vary depending on enclosure style and options required
<b>Power:</b>	115VAC 60Hz (220VAC 50Hz available)
<b>Output Options:</b>	4-20 mA into 500 ohms non-isolated - standard Isolated 4-20mA, RS485/USB
<b>Alarms:</b>	Dual alarms are provided for low H <sub>2</sub> purity. Detector fail alarm also provided as standard. Alarms have front panel light for each alarm and SPDT (normally energized) relay with 5A rating at 250VAC non-inductive load. Alarm set points are field adjustable.



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