

NTM SenseH₂™ Hydrogen Sensor Key Technical Specifications



Features

- High sensitivity and selectivity to hydrogen
- Fast response and recovery times
- Immune to signal saturation
- Robust to widely varying ambient flow rates
- Compact and rugged design
- Waterproof automotive grade connector
- 1.0 to 4.5V output, spans 0.2 to 4.0% H₂ in air (5 to 100% LFL)

➤ Overview

Designed for hydrogen monitoring, this ceramic sensor exhibits a highly sensitive, selective, and rapid response to the presence of hydrogen in ambient air. It reliably measures H₂ concentrations over a wide range of temperature and humidity variation and provides a repeatable response, even in the presence of other combustible gases. Additionally, the NTM SenseH₂™ hydrogen sensor is immune to signal saturation upon continuous exposure to low levels of hydrogen, and recovers rapidly and completely upon hydrogen removal.

➤ System Components

Sensor: The sensor element employs a patent-pending, chemi-resistive ceramic technology, which provides accurate and reliable hydrogen detection.

Electronics package: The sensor provides a simple interface with a ratio-metric voltage output (1 to 4.5 VDC; 500mV increments), calibrated to detect up to 4% H₂ in air (100% of the LFL). Diagnostic states (< 1V, >4.5V) are provided to indicate error conditions. Microprocessor-based heater control ensures stable operation, in temperatures ranging from -20 to 80°C. The compact, rugged design and waterproof connector enable use of the NTM SenseH₂™ hydrogen sensor in a range of application conditions. Mating connectors can be purchased separately for ease of installation.

WARNING: The NTM SenseH₂™ hydrogen sensor is not a stand alone safety device and does not provide protection from hydrogen explosion. The 1 to 4.5 V output signal, quantifying the hydrogen concentration in air, is intended to be an input to customer safety system, enabling audible alarms, system shutdown, ventilation, or other measures to ensure safe handling and use of hydrogen gas.

Disclaimer

The information in this sheet has been carefully reviewed and is believed to be accurate; however, no responsibility is assumed for inaccuracies. NTM Sensors reserves the right to make changes without further notice to any product, datasheet, technical data bulletin, or website. NTM Sensors is a division of NexTech Materials, Ltd.

NTM Sensors makes no warranty, representation of guarantee regarding the suitability of its product for any particular purpose, nor does NTM Sensors assume any liability arising out of the application or use of any product and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters can and do vary in different applications. All operating parameters, including "Typical" must be validated for each customer application by customer's technical experts.

NTM Sensors' products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other application intended to support or sustain life, or for any application in which the failure of the NTM Sensors product could create a situation where personal injury or death may occur.

Should buyer purchase or use NTM Sensors' products for any such unintended or unauthorized application, Buyer shall indemnify and hold NTM Sensors and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if claim alleges that NTM Sensors was negligent regarding the design or manufacture of the part.

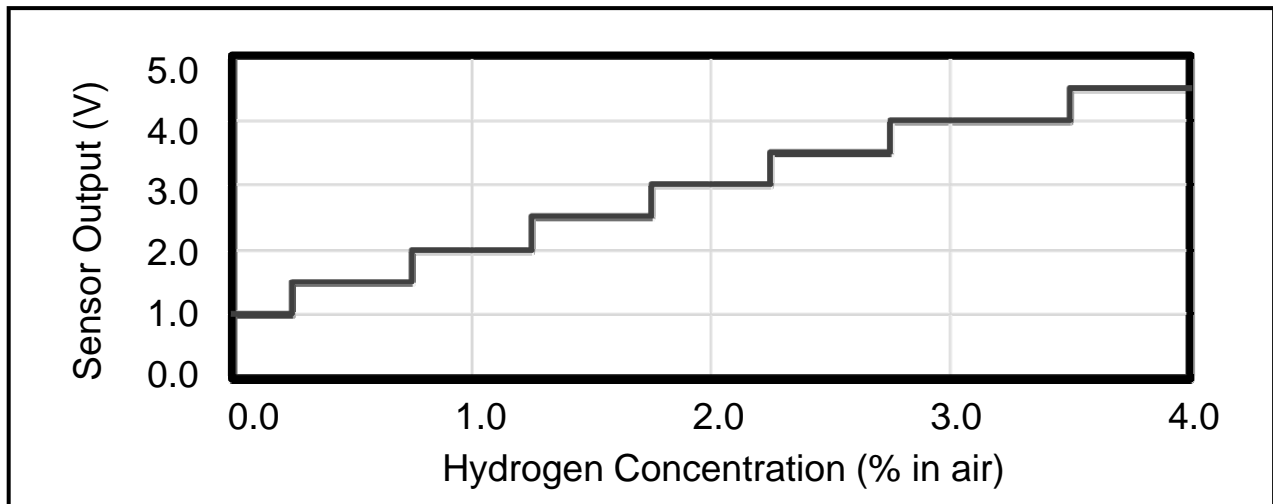
In the case of a defect in the sensor, NTM Sensors shall not be liable for any damages which may result, including, but not limited to, loss of revenue, property, or life. In any event, NTM Sensors shall limit liability to replacement of the defective unit. NTM Sensors does not convey any license under its patent rights nor the rights of others.



➔ **Table of Typical Characteristics:**

Metric	Min	Max	Units
Characteristics:			
H ₂ range (in air)	0.2	4.0	%
Voltage input	12	24	Vdc
Output (sensing range)	1	4.5	Vdc @ 50mA
Error state (output signal)	0.0	0.75	Vdc
Error state (output signal)	5.0	5.0	Vdc
Power consumption (25°C)	0.1	0.15	A
Response time (T90)	—	5	Sec.
Recovery time (T10)	—	5	Sec.
Environmental Conditions:			
Ambient temperature	-20	80	°C
Relative humidity	5	95	%R.H.

➔ **Typical Calibration:**

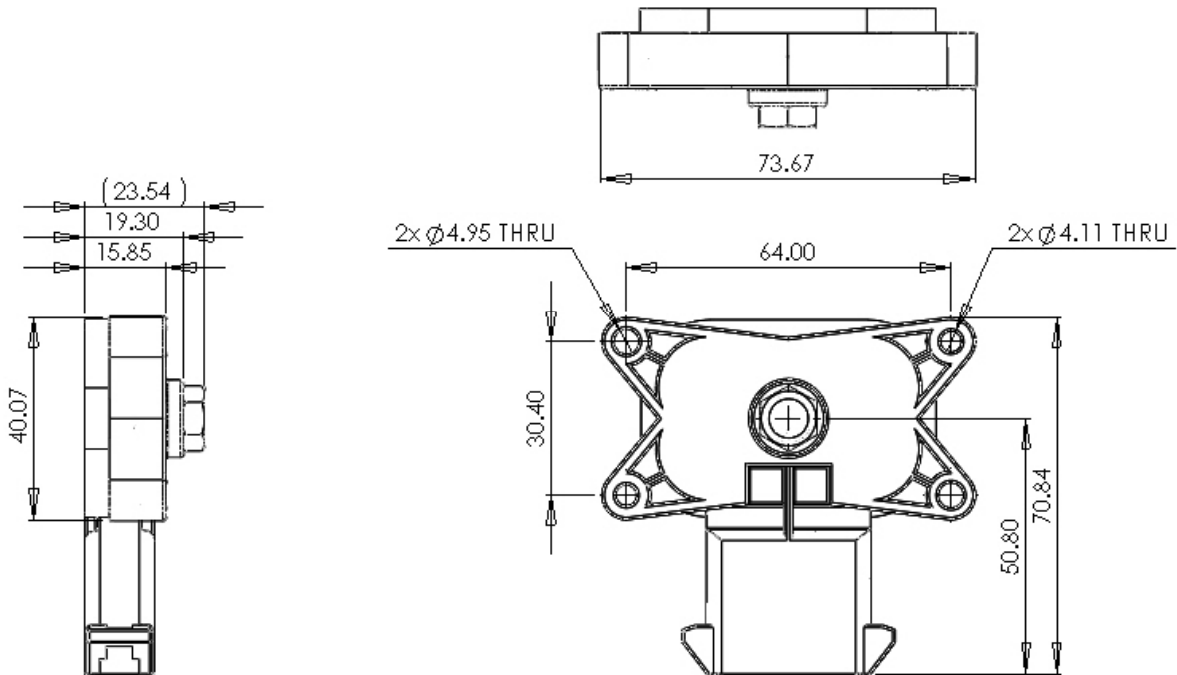


➔ **Intended Uses:**

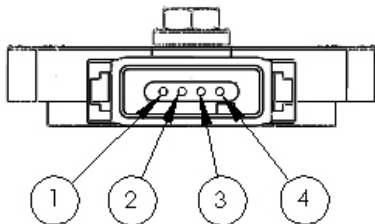
- The NTM SenseH₂™ is intended for use as a hydrogen gas detector in the range of 0.2 to 4% hydrogen in air.
- Typical applications include: Stationary fuel cells , Fuel cell powered forklift trucks, Hydrogen refueling stations, Hydrogen generation (electrolyzer) systems, On-site fuel reforming systems, Uninterruptible power supply (UPS) systems monitoring, Telecom systems monitoring, or Laboratory monitoring.

Installation Guidelines:

- Exposure to 100% hydrogen and other reducing conditions can damage the sensor and will invalidate the warranty. The sensor should be revalidated if exposed to these conditions and replaced if damaged.
- The sensor is calibrated for hydrogen detection in air. Use in oxygen concentrations other than air (21% O₂) can result in inaccurate output.
- Exposure to silicone-containing products such as sealants, hoses, and caulking compounds should be avoided, particularly if uncured (wet). Even fully cured silicone products may continue to off-gas silicone vapors, particularly at elevated temperatures. Exposure to such vapors may make the NTM SenseH₂™ hydrogen sensor more sensitive to hydrogen over time, causing it to over-report the actual hydrogen concentration.
- Hydrogen has a low molecular weight and is very buoyant. To ensure detection of hydrogen, the sensor must be mounted above the source of the potential hydrogen leak.
- The sensor should be mounted with the sensing element facing the source of the potential hydrogen leak.
- The sensor should be mounted in a position to minimize exposure to liquids and particulate matter that may obstruct diffusion of hydrogen gas to the active sensing component.
- 12inch wiring harness with mating connector, Deutsch DTLP06, is available for purchase.
- NTM Sensors has established a documented test protocol for validating the functionality of its NTM SenseH₂™, provided upon request. Please contact NTM Sensors Engineering.



Dimensions in mm



Wire Pin Out

Pin	Symbol	Function	Wire color
1	SIG+	Output Signal (+)	Blue
2	SIG-	Output Signal Ground	Black
3	PWR-	Input Power Ground	Black
4	PWR+	Input Power (+)	Red