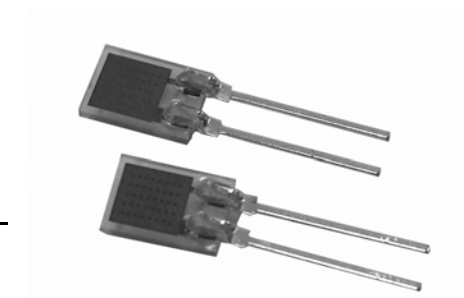


## SYH-1000 Series

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### Capacitive Humidity Sensor



#### DESCRIPTION

The SYH-1000 Series humidity sensor is a capacitive-type polymer sensor for relative humidity measurement. Polyimide is selected as a humidity sensing material because of its inherent IC (integrated circuit) processing capability, reduced temperature dependence, and enhanced resistance against contamination.

For the fabrication of the SYH-1000 Series, semiconductor fabrication technology is utilized. The sensor converts humidity value into capacitance, which can be measured electronically.

The sensor of SYH-1000 series consists of a top-electrode – a polyimide layer – and a bottom electrode. The structure of a grid top electrode upon the bottom electrode brings enhanced sensitivity compared to that of a standard structure. The sensor is fabricated using the semiconductor fabrication technology such as sputtering, polymer technology, etc.

#### FEATURES

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- Polymer sensing offers enhanced resistance against contamination
- Reduced temperature dependence
- Semiconductor fabrication technology
- Uses glass wafer as substrate
- Enhanced sensitivity and accuracy, fast response
- Low hysteresis and long-term stability

#### POTENTIAL APPLICATIONS

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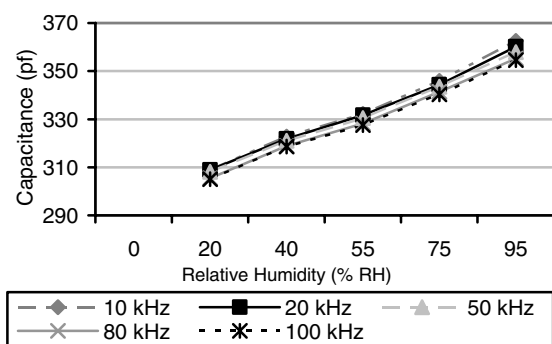
- Hygrometers, consumer goods
- Humidifiers and dehumidifiers
- Medical
- Automotive
- HVAC systems
- Weather stations

# SYH-1000 Series

SPECIFICATIONS (Ta = 25 °C [77 °F]; Input voltage: 1V<sub>RMS</sub>; Frequency: 20 kHz)

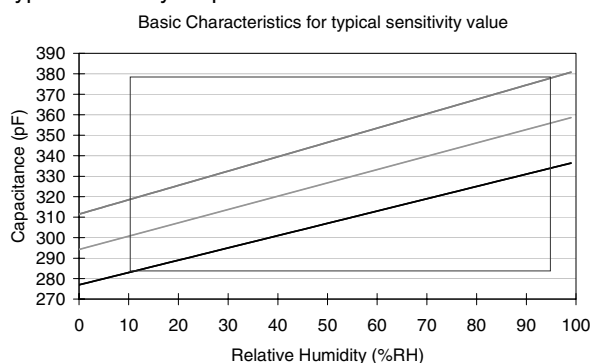
Characteristic	Min.	Typ.	Max.	Unit	Note
Normal capacitance	310	330	350	pF	@ 55 %RH
Sensitivity	0.6	0.65	0.7	pF/%RH	(10 %RH to 95 %RH)
Humidity hysteresis	—	±2	—	%RH	
Linearity	—	±2	—	%RH	
Response time	—	15	—	sec	(30 %RH to 90 %RH)
Temperature coefficient	0.15	0.16	0.17	pF/°C	5 °C to 70 °C [41 °F to 158 °F]
Long-term stability (drift)	—	0.2	—	%RH/year	
Operating temperature range	-40 [-40]	—	120 [248]	°C [°F]	
Operating humidity range	0 %	—	100 %	RH	
Operating frequency range	1	—	100	kHz	

## FREQUENCY CHARACTERISTICS

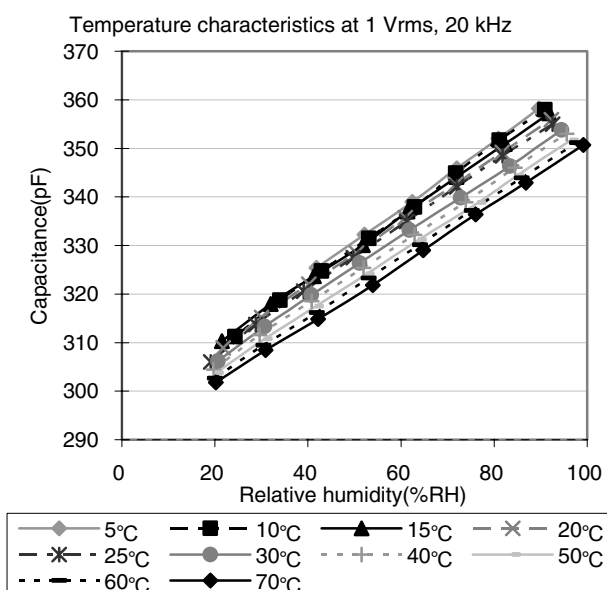


## HUMIDITY RESPONSE

Typical humidity response curve for the SYH-1000.

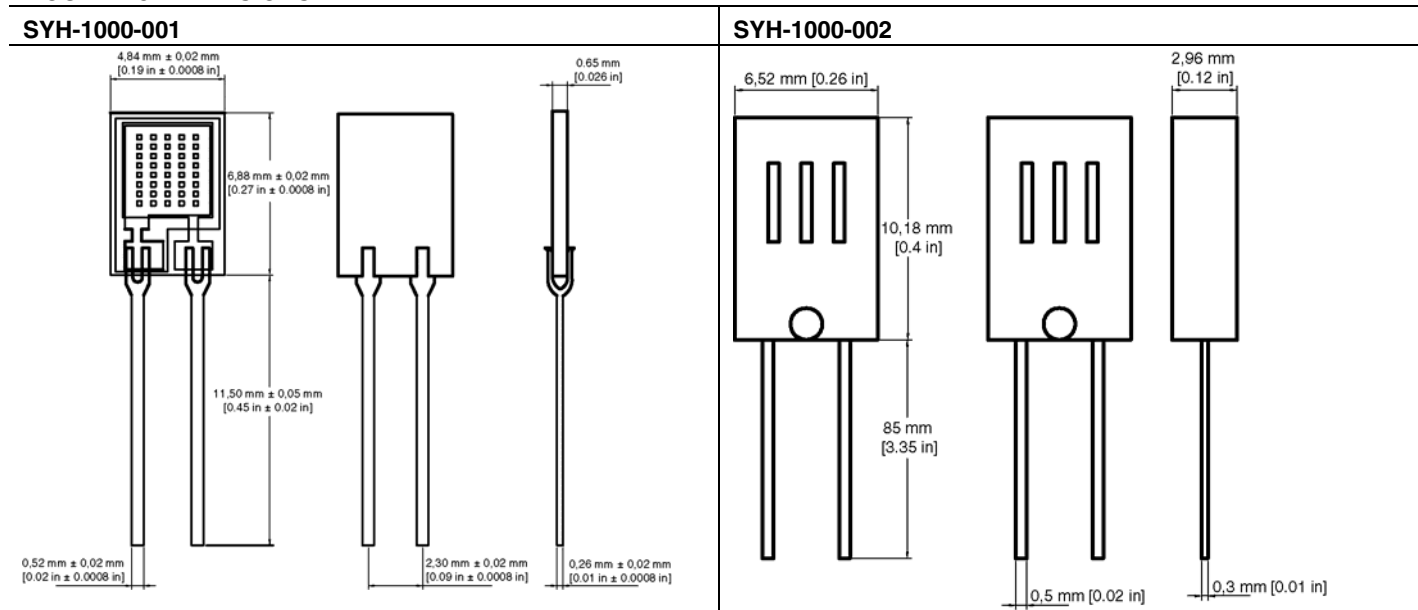


## TEMPERATURE CHARACTERISTICS



# Capacitive Humidity Sensors

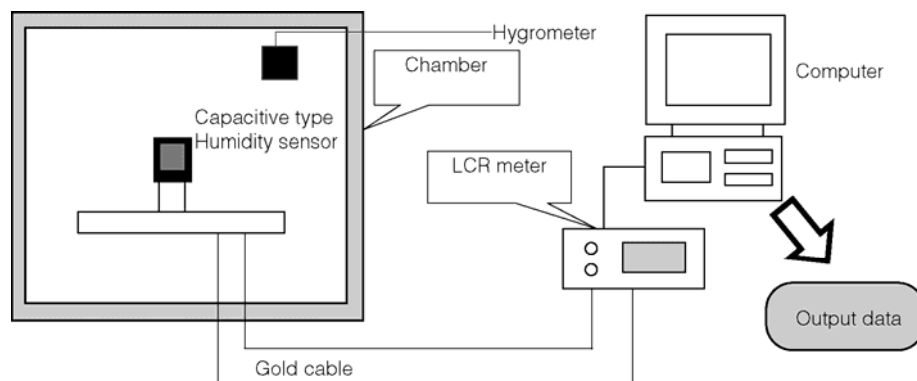
## MOUNTING DIMENSIONS



## ENVIRONMENTAL TEST SYSTEM

The purpose of the information below is to describe the environmental testing of the capacitive humidity sensor (SYH-1000 series). Devices are characterized at 25 °C [77 °F] between 20 %RH and 95 %RH. The meter is set to measure capacitance at 1 V and 20 kHz. For the precise measurement,

the hygrometer is used and compared with the humidity of temperature-humidity chamber. The data output indicates the effect of a sensor characterization before/after the environmental tests of the SYH-1000.



Test specification

Temperature	25 °C [77 °F]
Voltage	1 V
Frequency	20 kHz
Test humidity range	10 %RH to 98 %RH

Software program: hitester program

Chamber temperature compensation range: 25 °C ±0.5 °C [77 °F ±0.5 °F]

Chamber humidity compensation range: ±3 %RH

## ORDER GUIDE

Catalog Listing	Description
SYH-1000-001	Capacitive type, polymer humidity sensor, 0.100 in lead pitch SIP
SYH-1000-002	Capacitive type, polymer humidity sensor, 0.100 in lead pitch SIP – cased version

### **WARNING**

#### **PERSONAL INJURY**

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

**Failure to comply with these instructions could result in death or serious injury.**

#### **WARRANTY/REMEDY**

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

### **WARNING**

#### **MISUSE OF DOCUMENTATION**

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

**Failure to comply with these instructions could result in death or serious injury.**

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.009019-1-EN IL50 GLO Printed in USA  
October 2006  
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