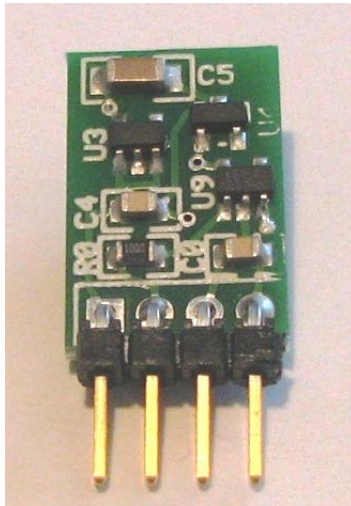




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**Ambient Temperature & Relative Humidity**

**Sensors / Analog Transmitter**

**Model LFS109**

**Table of Contents**

1- Introduction ..... 3

2- Specifications..... 4

## 1- Introduction

LFS109 is a plug-in module ambient temperature/ relative humidity sensor/ transmitter.

**Operating the Board** - Apply 6 to 16 Vdc to power the board. The board measures ambient temperature and relative humidity and provides a voltage output for each. Here are the board connections (Following figure shows the pin-out):

Pin 1 – DC Power

Pin 2 – Temperature voltage output

Pin 3 – Humidity voltage output

Pin 4 – Ground

### Temperature Output

The voltage output corresponds to the ambient temperature based on the following equation:

$$\text{Voltage output} = [(10\text{mV}/^\circ\text{C}) * (\text{Ambient Temperature in }^\circ\text{C})] + 500 \text{ mV}$$

Example 1 : Voltage output is 1.1 volts, what is the measured temperature?

$$1100 = (10 * \text{Temperature}) + 500$$

$$\text{Temperature} = (1100 - 500) / 10 = 60^\circ\text{C}$$

Example 2: Voltage output is 400 mV, what is the measured temperature?

$$400 = (10 * \text{Temperature}) + 500$$

$$\text{Temperature} = (400 - 500) / 10 = -10^\circ\text{C}$$

### Relative Humidity Output

The voltage output corresponds to the relative humidity based on the following equation:

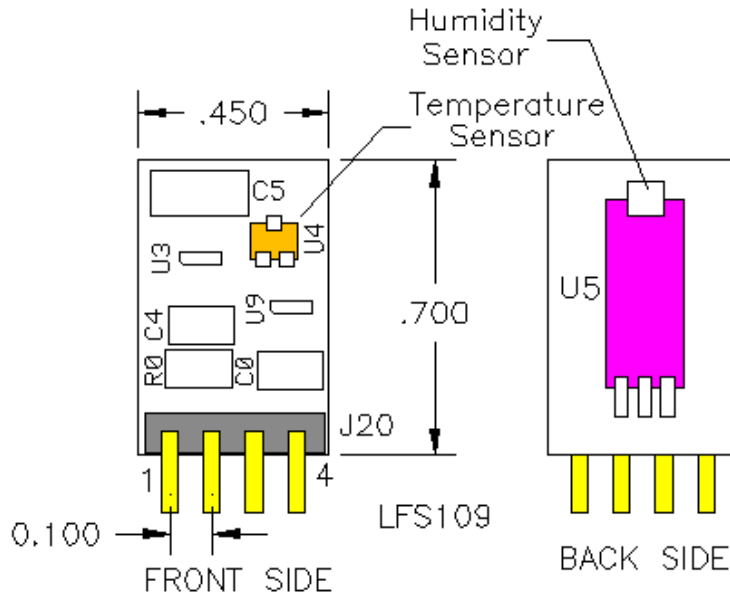
$$\text{Sensor RH @ } 25^\circ\text{C} = (\text{Voltage output} - 0.8) / 0.031$$

$$\text{Sensor RH @ } T^\circ\text{C} = (\text{Sensor RH @ } 25^\circ\text{C}) / (1.0546 - 0.00216 * T)$$

Example 3: Voltage output is 2.5 volts, ambient temperature is 40 °C, what is the relative humidity?

$$\text{Sensor RH @ 25 °C} = (2.5 - 0.8) / 0.031 = 54.8 \%RH$$

$$\text{Sensor RH @ 40 °C} = (54.8) / (1.0546 - 0.00216 * 40) = 53 \%RH$$



## 2- Specifications

### Temperature

Range	-35 to 85 °C (-31 to 185 °F)
Accuracy	1.4 °C (2.5 °F)
Output	Voltage – Load > 10K-Ohms

### Relative Humidity

Range	0 to 100 %RH
Accuracy	3.5 %RH
Output	Voltage - Load > 10K-Ohms

### Power

6 to 16 Vdc

### PC Board size

0.45 x 0.70 inches (11.4 x 17.8mm)