

# HC201

## Humidity Sensors for HVAC Applications

### Typical Applications

HVAC  
hand helds  
humidifiers  
dehumidifiers

### Features

high repeatability  
high sensitivity  
wetttable  
very good long term stability  
good resistance to pollutants  
small size construction

### Technical Data

|  |                                  |                               |
|--|----------------------------------|-------------------------------|
| Nominal capacitance $C_{76}$ (at 20°C / 68°F)        | 200 ± 30 pF                      |                               |
| Sensitivity  | 0.6 pF / % RH                    |                               |
| Working range  | Humidity                         | 10...95% RH                   |
|  | Temperature                      | -40...110°C (-40...230°F)     |
| Linearity error (20...90% RH)                        | < ± 2% RH                        |                               |
| Hysteresis   | 2.0 ± 0.3% RH                    |                               |
| Response time $t_{90}$                               | < 15 sec                         |                               |
| Temperature dependence [%RH / °C]                    | $\Delta RH = g * RH * (T - 20)$  | $g = -0.004 \pm 10 \%$        |
| Long term stability at 20-30°C (68-86°F) / 20-80% RH | drift < 1.5 % / year             |                               |
| Loss tangent   | < 0.1 typical                    |                               |
| Maximum supply voltage (no DC voltage)               | 5 V max (Upp)                    |                               |
| Maximum DC voltage                                   | < 5 mV                           |                               |
| Operating frequency                                  | 10...100 kHz, recommended 20 kHz |                               |
| Material connection                                  | phosphor bronze with tin coating |                               |
| Packaging  | HC201                            | taped                         |
|  | HC201/H                          | in tube (80 pcs packing unit) |
|  | HC201/G                          | taped                         |

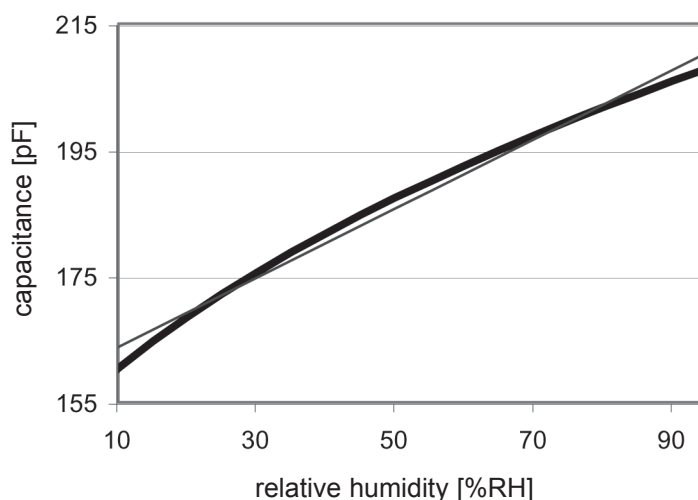
### Characteristics

The average increase of capacitance over the working range is 50pF. For the range of 20–90% RH, linear approximation is possible, errors will be lower than ± 2% RH.

The sensor characteristic is described by the following linear formula:

$$C(RH) = C_{76} * [1 + HK * (RH - 76)]$$

with  $HK = 2700 \pm 250 \text{ ppm / \% RH}$

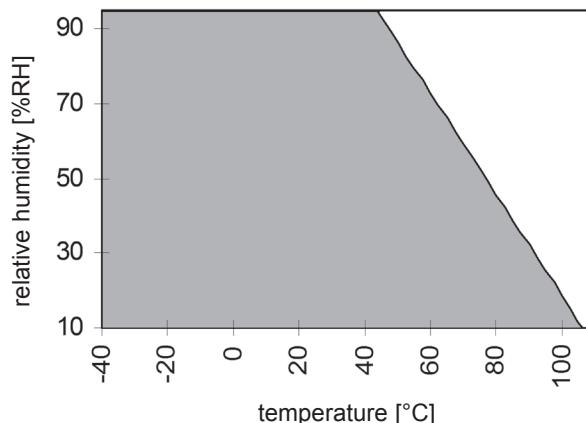


## Working Range

The working range for the humidity sensor HC201 is shown with regard to the humidity / temperature limits.

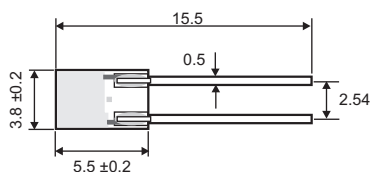
Although the sensors would not fail beyond the limits, the specification is guaranteed only within the working range.

In applications with high humidity at high temperature the time factor shall be considered.

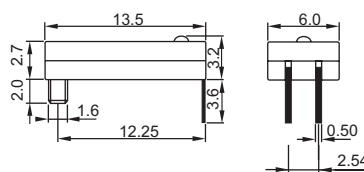


## Dimensions (mm)

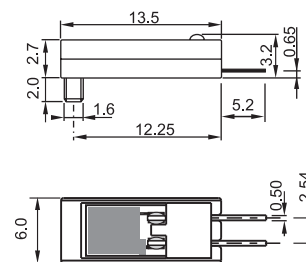
1 mm = 0.03937" / 1" = 25.4 mm



HC201



HC201/H



HC201/G

## Ordering Guide

| MODE | TYPE  |         |
|------|---|---------|
| HC   | capacitive humidity sensor 200 pF   | (201)   |
|      | capacitive humidity sensor 200 pF with PC housing for mounting on the printed circuit board | (201/H) |
|      | capacitive humidity sensor 200 pF with PC housing   | (201/G) |
| HC   |   |         |