Tecnología Aplicada
a la Información

# *Humidity Sensor*

# *TAI8540D*

## Features:

- Measures Relative Humidity with a +/-3.5% accuracy
- Rel. Humidity measurement range from 0% to 100%
- Temperature measurement accuracy +/-2°C
- Based on the HIH4000 sensor from HONEYWELL
- 1-Wire® DS2438 IC from Maxim/Dallas Semiconductors used as A/D and temperature sensor
- Bypass connection to the 1-Wire® net work
- Available option with Dallas Semic onductors TAG-ID standard for elec tronic identification of function
- Plain connection through RJ11 con nectors
- It doesn't require external power sup- ply, the needed operation power is ob tained from the 1-Wire® data line.
- Pass through 1-Wire® network con nection
- Unique 1-Wire address permits multi ple sensors on the network
- TMEX -Standard compatible


## Description:

The TAI-8540 module is based on the HIH-4000 humidity sensor, manufactured by Honeywell, and uses the DS2438 IC from Dallas Semiconductors as a 1-Wire A/D converter. The DS2438 not only provides the complete front-end for the 1-Wire® section assigning a 64 bit address to each unit, but also is used as a temperature sensor . So this module not only measures the relative humidity, but also senses temperature.

The module can include (TAI8540-A) a DS2505 memory with the TMEX compatible files TAGB.000 , TAGD.000, TAGX.000.

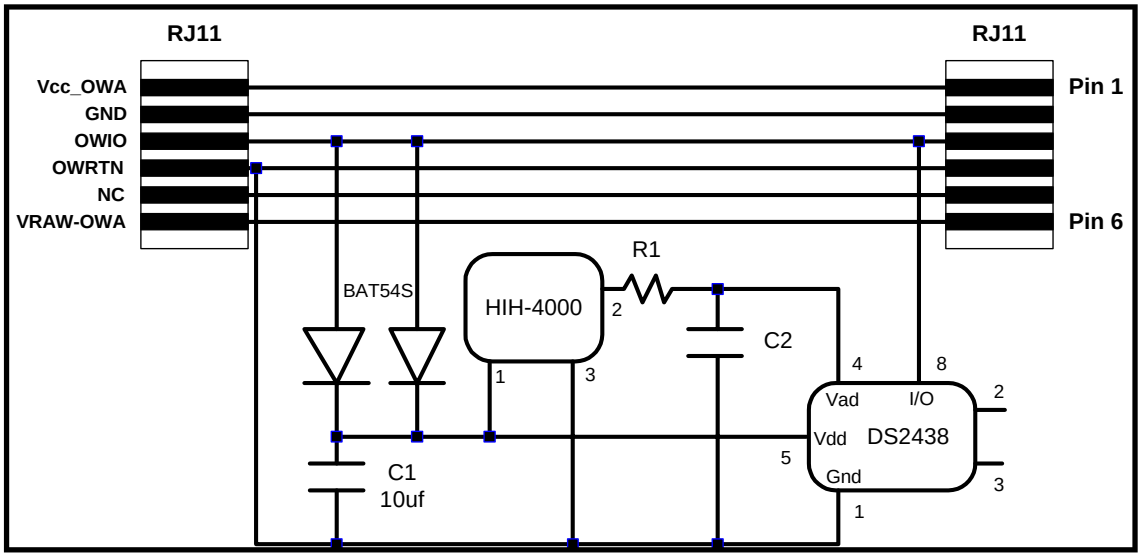
For more information regarding the HIH-4000 sensor please visit:

**www.honeywell.com/sensing**

and more information about the DS2438 can be obtained here:

**www.dalsemi.com**

## Schematic:




## DS2505 file contents (for TAI8540D-T option):

**File TAGB.000**

Byte 0-3 Part ID : **SWITC**
Byte 4-7 Serial : **yyyy**
Byte 8-12 Manufacturer : **$ AAG**

Preliminary

Byte 13-16 Mod. Function : **$8540**
Byte 17-19 Interface Type :**$01**
Byte 20-22 Hardware Rev. :**$01**
Byte 23-27 Date Code :**$ddddddd**

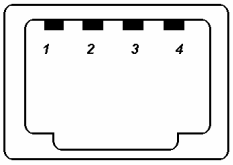
**File TAGD.000**

```
{G: ParseData } [
 {D: Description (24)}TAI8540D 1-Wire Humi-
dity
                {D:          Ma-          nufacturer (3) }
AAG
 {D: ManufacturerCode (5) }$ AAG
 {D: ClusterNum (4)}xxxxxxxx
 {D: ClusterRev(1)} 1
 {D: Enum (2)} yyyy
 {D: SecondsSince1970 (4) ddddddd
 {G: OWCluster }[
  {G : OWSensor }[
   {D:Description ( 2 )} ON
   {D:OWNetAddress (8)} yyyyyyxxxxxxxxyy
   {D:ChannelMask(1)}3
   {D:ChannelState(1)}2
   {D:AccessMethod (1)} AM_SWITCH_2406
  ]
  {G : OWActuator }[
   {D:Description (3)} OFF
   {D:OWNetAddress (8)} yyyyyyxxxxxxxxyy
```

**File TAGX.000**

```
<?xml version="1.0" encoding="UTF-8"?>
<cluster name="TAI8540D Humidity">
   <sensor addr="###....####" type="Sensor">
                                        <label>Turn
On</label>
      <max>On</max>
      <min>Off</min>
      <channel>0</channel>
      <init>1</init>
   </sensor>
   <actuator addr="###....####" type="Switch">
      <label>Turn off</label>
      <max>On</max>
      <min>Off</min>
      <channel>1</channel>
      <init>1</init>
   </actuator>
</cluster>
```

## RJ11 Connectors pinout:




- **Pin #1 NC**
- **Pin #2 1-Wire Data**
- **Pin #3 Gnd**
- **Pin #4 NC**

## Specifications:

| Parameter | Min | Normal | Max | Notes |
|---|---|---|---|---|
| **Humidity rel (%)** | | +/-3.5% | | 0-100 % RH non-condensing, 25 ° C, 5 VDC supply |
| **Operation Temperature** | -10 | +25 | +50 | |
| **Supply voltage (PIN4)** | 4.8v | 5.0v | 5.5v | Refered to Pin 1 |
| **Data voltage (PIN2)** | 0 | - | 5.0v | |
| **A/D Temperature resolution** | | 13 bits | | |
| **A/D Humedity resolution** | | 10 bits | | |
| **Current consumption** | | | 2ma | |
| **Humidity sensor response time 1/e** | | | 15 sec | |

**Ordering information:**

- TAI8540D Basic Unit
- TAI8540D-T Unit including DS2505 with TAG-ID and XML files

## Important:

This product is designed to be used indoors only.

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

1-Wire® is a trademark of the Dallas Semiconductor . Third-party product and brand names may be trademarks or registered trademarks of their respective owners