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> Trouble with Honeywell ASDX Series Pressure Sensor (<http://forum.arduino.cc/index.php?topic=182869.0>)

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Topic: Trouble with Honeywell ASDX Series Pressure Sensor (Read 3479 times)

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davidpalmera

Guest



Trouble with Honeywell ASDX Series Pressure Sensor (<http://forum.arduino.cc/index.php?topic=182869.msg1354780#msg1354780>)

[Aug 15, 2013, 10:44 pm \(http://forum.arduino.cc/index.php?topic=182869.msg1354780#msg1354780\)](http://forum.arduino.cc/index.php?topic=182869.msg1354780#msg1354780) Last Edit: Aug 16, 2013, 03:46 am by davidpalmera Reason: 1

I'm working on a project using a Honeywell ASDXAVX015PG7A5 Pressure Sensor hooked onto the I2C bus. The bus address in hex that the datasheet says to use is 0x78, but I do not get any data from this address, so I did a quick scan to find that the device was on 0x4E.

When I read the first two bytes of the data from the sensor, I get the value 10000000 for byte 1 and 0 for byte 2. According to the data sheet, the two first bytes determine the status, and in my case it reveals that the data is 'stale' which means that they haven't been updated since the last time I called for it. Also, if I let the program run for a while, it gets random fluctuations where the first and second byte both take on the value 11111111, which according to the datasheet means that there is a diagnostic condition. So clearly the data that I am receiving is not the actual pressure reading. If anyone can shed some insight as to how I can get the actual reading out of the sensor it would be very helpful.

I am connected as follows:

- pin 1(SDA) to A4 on Arduino Uno
- pin 2(SCL) to A5 on Arduino Uno
- pin 3(Ground) to GND on Arduino Uno
- pin 6(Vcc) to 5V on Arduino Uno

Here are the technical notes that I am referring to:

- <http://sensing.honeywell.com/honeywell-sensing-asdx%20series-digital-pressure-sensors-product-sheet-008095-11-en.pdf>
- http://sensing.honeywell.com/index.php/ci_id/45841/la_id/1/document/1/re_id/0

And here is the code that I have been using:

Quote

LE%3ACORE+PROFILE%3APUBLIC+PROFILE%3ACONTACT+OFFLINE&RESPONSE_TYPE=CODE)

```
“
#include<Wire.h>
#define sensor 0x4E //Unique bus address

void setup()
{
  Wire.begin();//Wakes up I2C bus
  Serial.begin(9600);
}

void getdata(byte *a, byte *b)
{
  //Move register pointer back to first register
  Wire.beginTransmission(sensor);
  Wire.write(1);
  Wire.endTransmission();
  Wire.requestFrom(sensor,3);//Sends content of first two registers
  *a = Wire.read(); //first byte recieved stored here
  *b = Wire.read(); //second byte recieved stored here
}

void showdata()
{
  byte aa,bb;
  float pressure =0;
  getdata(&aa,&bb);
  Serial.print("byte 1: ");Serial.println(aa,BIN);
  Serial.print("byte 2 ");Serial.println(bb,BIN);
  delay(1000);
}

void loop()
{
  showdata();
}
```

Any help that you guys can provide me with would be greatly appreciated.

- Dave

BitBasher
Guest

 **Re: Trouble with Honeywell ASDX Series Pressure Sensor** (<http://forum.arduino.cc/index.php?topic=182869.msg1355072#msg1355072>)

Aug 16, 2013, 04:59 am (<http://forum.arduino.cc/index.php?topic=182869.msg1355072#msg1355072>)

#1

Hi, I have also just started playing with these sensors (and arduino for that matter) and am finding exactly the same issue. I am wondering if it is due to the way the wire library handles addressing? When you refer to the Honeywell data sheet it shows that the sensors do indeed use a 7 bit address as per the library however the sensor also requires the LSB to be set to enable read mode (From data sheet for 2 byte read);

[Start][A6IA5IA4IA3IA2IA1IA0I1][ACK][S1ISOIB13I...IB8][ACK][B7I...IB0][NACK][STOP]

ie. the address is 0x78 (or decimal 120) however to enable read mode the address should be 0x79 where the LSB is removed by the library as it ignores any 8 bit addresses.

I have found this library <http://code.google.com/p/arduino-ssc/> but have yet to see how relevant it is to this series of transducers. Will keep you posted if I find anything else. 😊

davidpalmera

Guest

 **Re: Trouble with Honeywell ASDX Series Pressure Sensor** (<http://forum.arduino.cc/index.php?topic=182869.msg1355413#msg1355413>)

Aug 16, 2013, 04:59 pm (<http://forum.arduino.cc/index.php?topic=182869.msg1355413#msg1355413>)

#2

Thanks for the help, I will look into the SSC library and see if I find anything relevant to these sensors. I will keep you posted if I find any other solutions as well.

groundFungus
(<http://forum.arduino.cc/index.php?action=profile;u=145327>)



(<http://forum.arduino.cc/index.php?>

[action=profile;u=145327](http://forum.arduino.cc/index.php?action=profile;u=145327))



Faraday Member

Posts: 4,790

()

Karma: 537 [add]

(<http://forum.arduino.cc/index.php?>

[action=karma;sa=applaud;uid=145327;be0494cd9b1=be903aab2451ff863c08fb81d0c5aa25](http://forum.arduino.cc/index.php?action=karma;sa=applaud;uid=145327;be0494cd9b1=be903aab2451ff863c08fb81d0c5aa25))

It gets hot so it must be working. Illegitimi non carborundum.

()

davidpalmera

Guest

 **Re: Trouble with Honeywell ASDX Series Pressure Sensor** (<http://forum.arduino.cc/index.php?topic=182869.msg1355443#msg1355443>)

Aug 16, 2013, 05:17 pm (<http://forum.arduino.cc/index.php?topic=182869.msg1355443#msg1355443>) Last Edit: #3

Aug 16, 2013, 05:20 pm by groundfungus Reason: 1

Quote

“ *Wire.requestFrom(sensor,3); //Sends content of first two registers*
**a = Wire.read(); //first byte recieved stored here*
**b = Wire.read(); //second byte recieved stored here //Sends content of first two registers*

Looks like you request three bytes and then you read two bytes leaving one in the buffer for the next read.

 **Re: Trouble with Honeywell ASDX Series Pressure Sensor** (<http://forum.arduino.cc/index.php?topic=182869.msg1355505#msg1355505>)

Aug 16, 2013, 06:04 pm (<http://forum.arduino.cc/index.php?topic=182869.msg1355505#msg1355505>)

#4

I modified my code in the following manner and I am still getting the status bits as 10, meaning that the data is 'stale':

`Wire.requestFrom(sensor,2); //Sends content of first two registers`

Thanks, any other suggestions would be greatly appreciated.

groundFungus
(<http://forum.arduino.cc/index.php?action=profile;u=145327>)



(<http://forum.arduino.cc/index.php?action=profile;u=145327>)



Faraday Member

Posts: 4,790

()

Karma: 537 [add]

(<http://forum.arduino.cc/index.php?action=karma;sa=applaud;uid=145327;be0494cd9b1=be903aab2451ff863c08fb81d0c5aa25>)

<http://forum.arduino.cc/index.php?action=karma;sa=applaud;uid=145327;be0494cd9b1=be903aab2451ff863c08fb81d0c5aa25>

It gets hot so it must be working. Illegitimi non carborundum.

()

davidpalmera

Guest

Re: Trouble with Honeywell ASDX Series Pressure Sensor (<http://forum.arduino.cc/index.php?topic=182869.msg1355535#msg1355535>)

Aug 16, 2013, 06:26 pm (<http://forum.arduino.cc/index.php?topic=182869.msg1355535#msg1355535>)

#5

Quote

“ Wire.beginTransmission(sensor);
Wire.write(1);
Wire.endTransmission();

I don't think that this is needed (perhaps even bad). According to the data sheet, to read the sensor you just send the address and request 2,3 or 4 bytes. I don't see where you need to select a register to read or set anything to 1 to specify a read.

Re: Trouble with Honeywell ASDX Series Pressure Sensor (<http://forum.arduino.cc/index.php?topic=182869.msg1355558#msg1355558>)

Aug 16, 2013, 06:42 pm (<http://forum.arduino.cc/index.php?topic=182869.msg1355558#msg1355558>)

#6

Thank you! I excluded this part of my code and my output seems to be fluctuating less. I also combined the two bytes into one and then used the equation in the technical notes, labeled "I2C Communication with Honeywell Digital Output Pressure Sensors" on page 3, to get the pressure from the count number. The output that I am getting shows that the status bytes are still "11", which means that there is a diagnostic condition. But I seem to be getting the correct pressure reading, Opsi, since I am using a Gage sensor and it is only influenced by atmospheric pressure at the moment. So it seems to be working, but I don't want to bank on a whim, is there any test I can do to make sure that it is functioning properly?

Here is my code:

Quote

```

#include<Wire.h>
#define sensor 0x4E //Unique bus address

void setup()
{
  Wire.begin();//Wakes up I2C bus
  Serial.begin(9600);
}

void getdata(byte *a, byte *b)
{
  //Move register pointer back to first register
  //Wire.beginTransmission(sensor);
  //Wire.write(1);
  //Wire.endTransmission();
  Wire.requestFrom(sensor,2);//Sends content of first two registers
  *a = Wire.read(); //first byte recieved stored here
  *b = Wire.read(); //second byte recieved stored here
}

void showdata()
{
  byte aa,bb;
  float pressure =0;
  getdata(&aa,&bb);
  Serial.print("byte 1: ");Serial.println(aa,BIN);
  Serial.print("byte 2 ");Serial.println(bb,BIN);
  unsigned int c = aa*256+bb;//combines byte 1 and byte 2
  Serial.print("Combined byte: ");Serial.println(c,BIN);
  Serial.print("Count #: ");Serial.println(c,DEC);
  pressure= ((c-1638)*15)/(14746-1638);// Conversion found from technical notes.
  Serial.print("Pressure: ");Serial.print(pressure);Serial.println(" psi");
  delay(1000);
}

void loop()
{
  showdata();
}

```

groundFungus
<http://forum.arduino.cc/index.php?action=profile;u=145327>



<http://forum.arduino.cc/index.php?action=profile;u=145327>



Faraday Member

Posts: 4,790

()

Re: Trouble with Honeywell ASDX Series Pressure Sensor (<http://forum.arduino.cc/index.php?topic=182869.msg1355570#msg1355570>)

Aug 16, 2013, 06:53 pm (<http://forum.arduino.cc/index.php?topic=182869.msg1355570#msg1355570>) Last Edit: **#7**

Aug 16, 2013, 07:02 pm by groundfungus Reason: 1

Hook up a piece of tubing and blow into it. You can generate a couple psi from that. Maybe read three bytes and see if the temperature byte makes sense. I don't see anything in the docs to say how to get it in or out of diagnostic or command mode.

EDIT If the sensor is in diagnostic mode the fourth byte is largely don't care so not valid. I wonder if writing to it caused it to flag diagnostic mode?


Quote

Karma: 537 [add]
LE%3ACORE+PROFILE%3A
(<http://forum.arduino.cc/index.php?action=karma;sa=applaud;uid=145327;be0494cd9b1=be903aab2451ff863c08fb81d0c5aa25>)

It gets hot so it must be working. Illegitimati non carborundum.
()

davidpalmera
Guest

“ In the event that any EEPROM contents change after calibration, a diagnostic condition will be flagged

 **Re: Trouble with Honeywell ASDX Series Pressure Sensor** (<http://forum.arduino.cc/index.php?topic=182869.msg1356495#msg1356495>)
Aug 17, 2013, 06:00 pm (<http://forum.arduino.cc/index.php?topic=182869.msg1356495#msg1356495>)

#8

So I hooked up a syringe to a piece of tubing and increased the pressure to a max of 4 psi. Here is my output:

Quote

LE%3ACORE+PROFILE%3APUBLIC+PROFILE%3ACONTACT+OFFLINE&RESPONSE_TYPE=CODE)

“ byte 1: 110
byte 2 1110101
Combined byte: 11001110101
Count #: 1653
Pressure: 0.00 psi
byte 1: 110
byte 2 1110101
Combined byte: 11001110101
Count #: 1653
Pressure: 0.00 psi
byte 1: 110
byte 2 1111000
Combined byte: 11001111000
Count #: 1656
Pressure: 0.00 psi
byte 1: 110
byte 2 1111100
Combined byte: 11001111100
Count #: 1660
Pressure: 0.00 psi
byte 1: 110
byte 2 1110101
Combined byte: 11001110101
Count #: 1653
Pressure: 0.00 psi
byte 1: 110
byte 2 1110101
Combined byte: 11001110101
Count #: 1653
Pressure: 0.00 psi
byte 1: 110
byte 2 1111100
Combined byte: 11001111100
Count #: 1660
Pressure: 0.00 psi
byte 1: 110
byte 2 1111000
Combined byte: 11001111000
Count #: 1656
Pressure: 0.00 psi
byte 1: 110
byte 2 1111000
Combined byte: 11001111000
Count #: 1656
Pressure: 0.00 psi
byte 1: 110
byte 2 1111100
Combined byte: 11001111100
Count #: 1660
Pressure: 0.00 psi
byte 1: 110
byte 2 1111100
Combined byte: 11001111100
Count #: 1660
Pressure: 0.00 psi
byte 1: 110
byte 2 1111100
Combined byte: 11001111100
Count #: 1660
Pressure: 0.00 psi
byte 1: 11001
byte 2 1100010
Combined byte: 1100101100010

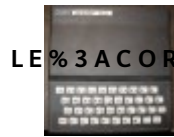

```

byte 2 10000
Combined byte: 1101100010000
Count #: 13584
Pressure: 3.00 psi
byte 1: 111101
byte 2 10110
Combined byte: 11110100010110
Count #: 15638
Pressure: 1.00 psi
byte 1: 11110
byte 2 10000111
Combined byte: 1111010000111
Count #: 7815
Pressure: 2.00 psi
byte 1: 1001
byte 2 11011110
Combined byte: 100111011110
Count #: 2526
Pressure: 1.00 psi
byte 1: 110
byte 2 1111000
Combined byte: 11001111000
Count #: 1656
Pressure: 0.00 psi
byte 1: 110
byte 2 1111100
Combined byte: 11001111100
Count #: 1660
Pressure: 0.00 psi
byte 1: 110
byte 2 1111000
Combined byte: 11001111000
Count #: 1656
Pressure: 0.00 psi
byte 1: 110
byte 2 1110101
Combined byte: 11001110101
Count #: 1653
Pressure: 0.00 psi

```

Where it is 0 psi for a good amount of time is when I disconnect the syringe and have it acted upon by only atmospheric pressure. When I increase the pressure using the syringe, it seems to be almost constant but has a bit of fluctuation. According to the status bits, I am still reading 'stale data'. I think the code itself should work, but according to the technical notes the status bits becomes "10" when "the master polls data quicker than the sensor can update its output buffer". So, maybe we could slow down the rate that the master polls the data? But this still would not fix that diagnostic condition problem since I am still getting "11" for my status bits every now and then.

And how could the EEPROM contents have changed after calibration? That seems strange to me. And is there anyway that I can reset them to their original calibration?



LE%3ACORE+PROFILE%3APUBLIC+PROFILE%3ACONTACT+OFFLINE&RESPONSE_TYPE=CODE)

Quote

“ Calibrated output values for pressure are updated at approximately 1 kHz.

(<http://forum.arduino.cc/index.php?action=profile;u=145327>)



Faraday Member

Posts: 4,790

()

Karma: 537 [add]


(<http://forum.arduino.cc/index.php?action=karma;sa=applaud;uid=145327;be0494cd9b1=be903aab2451ff863c08fb81d0c5aa25>)

It gets hot so it must be working. Illegitimati non carborundum.

()

davidpalmera

Guest

 **Re: Trouble with Honeywell ASDX Series Pressure Sensor** (<http://forum.arduino.cc/index.php?topic=182869.msg1358612#msg1358612>)

Aug 19, 2013, 07:10 pm (<http://forum.arduino.cc/index.php?topic=182869.msg1358612#msg1358612>)

#10

I ended up getting the sensor working with pretty good accuracy, I just modified the code slightly, so it reads decimal pressures as well, instead of just integer values. I never did really find out how to get it out of diagnostic mode since the first two bits are still "11", but the reading is accurate when I used a pump to push pressurized air through the sensor, so that was all I needed in the first place.

Here is the code for anyone with this sensor who has had the same problem:

Quote

```

LE%3ACORE+PROFILE%3APUBLIC+PROFILE%3ACONTACT+OFFLINE&RESPONSE_TYPE=CODE)
//
#include<Wire.h>
#define sensor 0x4E //Unique bus address

void setup()
{
  Wire.begin();//Wakes up I2C bus
  Serial.begin(9600);
}

void getdata(byte *a, byte *b)
{
  //Move register pointer back to first register
  //Wire.beginTransmission(sensor);
  //Wire.write(1);
  //Wire.endTransmission();
  Wire.requestFrom(sensor,2);//Sends content of first two registers
  *a = Wire.read(); //first byte recieved stored here
  *b = Wire.read(); //second byte recieved stored here
}

void showdata()
{
  byte aa,bb;
  float pressure =0;
  getdata(&aa,&bb);
  Serial.print("byte 1: ");Serial.println(aa,BIN);
  Serial.print("byte 2 ");Serial.println(bb,BIN);
  float c = aa*256+bb;//combines byte 1 and byte 2
  Serial.print("Combined byte: ");Serial.println(c,BIN);
  Serial.print("Count #: ");Serial.println(c);
  pressure= ((c-1638)*15)/(14745-1638);// Conversion found from technical notes.
  Serial.print("Pressure: ");Serial.print(pressure,DEC);Serial.println(" psi");
  delay(1000);
}

void loop()
{
  showdata();
}

```

Thanks for all of your help groundfungus! It was greatly appreciated.

groundFungus
<http://forum.arduino.cc/index.php?action=profile;u=145327>



<http://forum.arduino.cc/index.php?action=profile;u=145327>

Re: Trouble with Honeywell ASDX Series Pressure Sensor (<http://forum.arduino.cc/index.php?topic=182869.msg1358691#msg1358691>)
 Aug 19, 2013, 08:30 pm (<http://forum.arduino.cc/index.php?topic=182869.msg1358691#msg1358691>)

#11

I am glad to be of help.



()

(<http://forum.arduino.cc>

action=karma;sa=applau

b1=be903aab2451ff863c

It gets hot so it must be

carborundum.

$$\underline{(\quad)}$$

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