

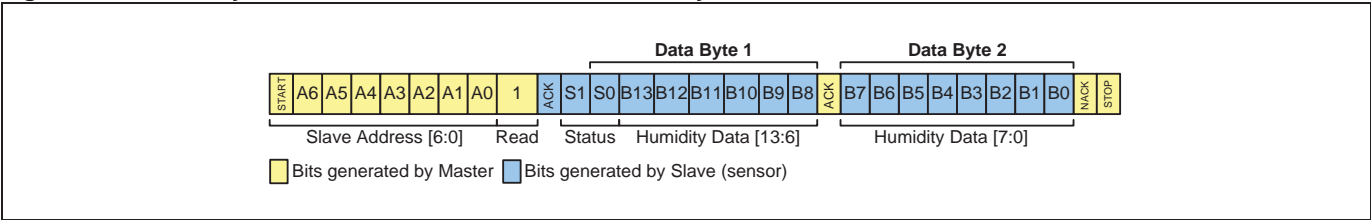
# I<sup>2</sup>C Communication with the Honeywell HumidIcon™ Digital Humidity/Temperature Sensors

## 2.4 Humidity Data Fetch

To read out a compensated humidity reading, the Master generates a START condition and sends the sensor Slave address followed by a read bit (shown in Figure 2). After the sensor generates an acknowledge (ACK), it will transmit up to four bytes of data – the first two bytes containing the compensated temperature output and the second two bytes containing the optional compensated temperature output.

The Master must acknowledge the receipt of each byte, and can terminate the communications by sending a Not Acknowledge (NACK) bit followed by a STOP bit after receiving both bytes of data as shown in Figure 3.

Figure 3. I<sup>2</sup>C Humidity Measurement Data Fetch Format, Two Byte Data Read



## 2.5 Humidity and Temperature Data Fetch

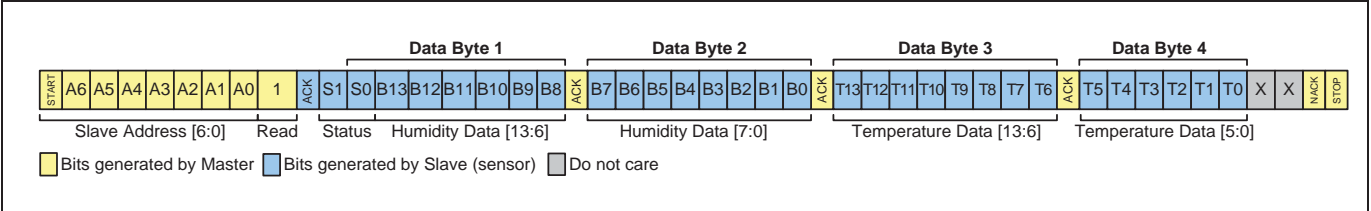
The optional corrected temperature data is read out with 14 bit resolution. By reading out the third and fourth bytes of data from the sensor, the complete 14 bit optional compensated temperature value may be read.

### NOTICE

For a sensor that does not offer the optional compensated temperature output, the sensor will still output the third and fourth bytes of data. However, the information contained in these bytes is non-corrected data, and should not be used.

When reading the full 14 bit resolution temperature output, the two least significant bits of the fourth data byte are “Do Not Care” and should be ignored (see Figure 4.)

Figure 4. Humidity and Temperature Data Fetch, Four Byte Data Read



## 2.6 Status Bits

Honeywell digital output humidity sensors offer status bits to ensure robust system operation in critical applications. The sensor status is indicated by the first two Most Significant Bits of Data Byte 1 (see Table 1).

When the status bits read “01”, “Stale” data is indicated. This means that the data in the output buffer of the sensor has already been fetched by the master, and has not yet been updated with the new data from the current measurement cycle. This can happen when the master polls the data quicker than the sensor can update the output buffer.

Table 1. Diagnostic Conditions Indicated by Status Bits

Status Bits		Definition
S1	S0	
0	0	Normal Operation, Valid Data that has not been fetched since the last measurement cycle.
0	1	Stale Data: Data that has already been fetched since the last measurement cycle, or data fetched before the first measurement has been completed.
1	0	Device in Command Mode <sup>1</sup>
1	1	Not Used.

Note 1: Command Mode is used for programming the sensor. This mode should not be seen during normal operation