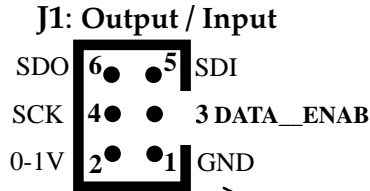


# Application Note A62, Model 2005SPI-1 / 2015SPI-1, 8 **Slave Mode**

## Read % gas via SDO (Serial Data Out)



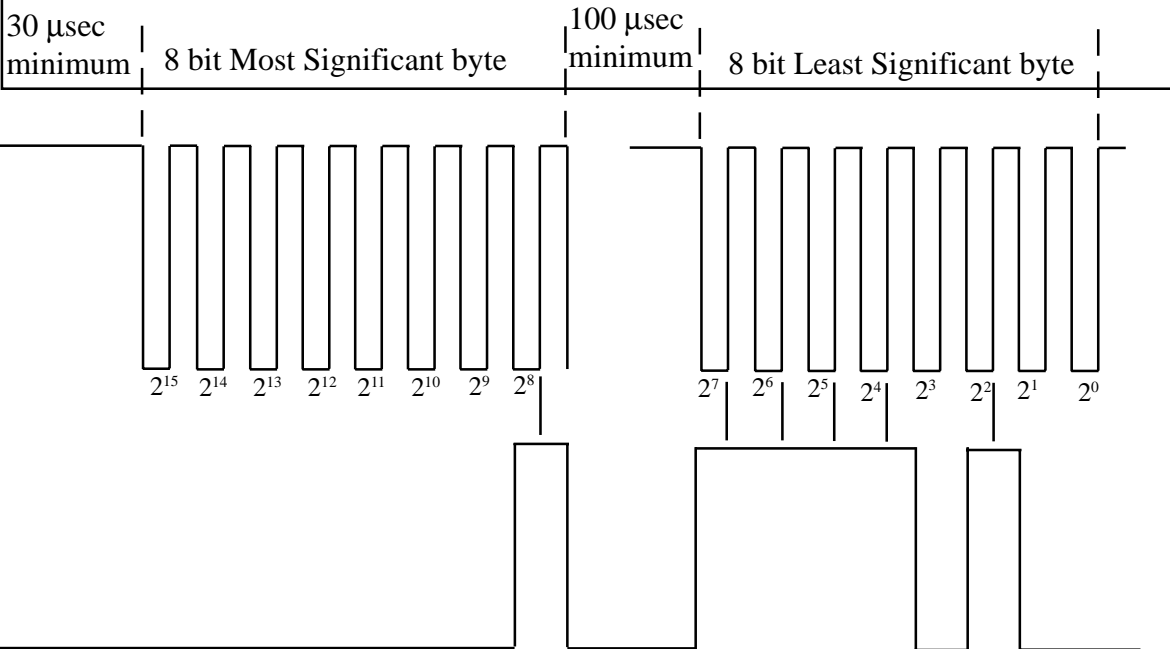
**Important Note:** Digital ground **Pin# 1** **MUST** be directly connected to the Master Microprocessor's digital ground, **NOT** just connected via the DC power supply common. See Application Note A59.

**Note:** We recommend that you **po**le (read output) the sensor no more often than once every **10 seconds** since the digital averaging may be as long as 15 seconds.

**DATA\_ENAB**  
pin# 3  
It should stay low for at least 100 μsec after last clock pulse

**SCK**  
(clock) pin #4  
10 μ sec min.

**SDO**  
(serial data out) pin#6



Decimal 500 = implied **0.0500% gas** = binary 0000 0001 1111 0100 =  $2^8 + 2^7 + 2^6 + 2^5 + 2^4 + 2^2 = 500$  decimal  
Divide the **decimal value** by **10,000** to get the % gas reading on a Model 2005SPI-1 or 2015SPI-1 & 8 (3% propane) sensor.

The high to low transition of the clock (**SCK**) must occur at least 30 microseconds after the high to low transition of the **DATA\_ENAB** control for that sensor. The clock pulse width should not be less than 10 microseconds minimum. In **SLAVE Mode** the clock is controlled by you, the **Master** microprocessor. The **SDO** data output changes on the high to low transition of the clock (**SCK**) and the data should be read on the low to high transition of the clock (**SCK**).

The example in the timing diagram above shows a % gas reading of **0.0500%** which is equal to a binary output of 0000 0001 1111 0100 ( bits  $2^8, 2^7, 2^6, 2^5, 2^4, 2^2$  are high "1" ). You must wait (stop the clock) a minimum of 100 microseconds between the end of the **MSB** (Most Significant 8 bits) and the beginning of the **LSB** (Least Significant 8 bits).

The **SDI** (Serial Data Input) should remain low (logic '0') while the **SDO** is being read.