IC digital output IIC read process

This process is available for reading digital output after IC calibration.

The I2C address is as follows: A1 is 1

A7	A6	A5	A4	A3	A2	A1	W/R
1	1	0	1	1	0	SDO/ADDR	0/1

As the following instruction sequences for reading data:

1. Read the 0xA5 register value, put the read binary value "and" on "11111111101" then write to 0xA5.
2. Send instructions 0x0A to 0x30 register for one temperature acquisition, one pressure data acquisition.
3. Read 0x06, 0x07, 0x08 register address data to form a 24-bit AD value (pressure data AD value).
4, Install the read 24 bit AD value to calculate the final pressure output : OUT (Pa) =AD/2^23*Fullscale.

Pay attention to the Fullscale value

Eg:When Fullscale pressure is 600000Pa,2^19<600000<2^20, it need 20bits at least to state the pressure in a 24bit AD.

Here the Fullscale value is 2^20

The internal register data form of the chip is as follows:

地址	描述	读/写	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0	默认值
0x00	SPI _Ctrl	RW	SDO_ active	LSB_fi rst	Softreset			Softres et	LSB_first	SDO_active	0x00
0x01	Part_ID	R	PartID<7:0>								0x00
0x02	Status	R	Error_code<5:0>						1'b0	DRDY	
0x06	DATA_MSB	R	Data out<23:16>								0x00
0x07	DATA_CSB	R	Data out<15:8>								0x00
0x08	DATA_LSB	R	Data out<7:0>								0x00
0x09	TEMP_MSB	R	Temp out<15:8>								0x00
0x0A	TEMP_LSB	R	Temp out<7:0>								0x00
0x30	CMD	RW	Sleep_time<3:0>				Sco	Measurement_ctrl<2:0>			0x00
0x6C	OTP_CMD	RW	Blow start<6:0>							margin	0x00

The total pressure output value which include REG0x06, REG0x07 and REG0x08 registers are24 bits. The highest position is the sign bit, and the symbol digit value is "1" when it represents "negative". The symbol digit value is "0" when it represents "positive".

The number of temperature output values in the REG0x09 and REG0x0A registers are 16 bits, the highest is the symbol bit.

The symbol digit value is "1" when it represents "negative", and the symbol digit value is "0" when it represents "positive".

For example, if the decimal values of REG0x06, REG0x07, REG0x08, REG0x09 and REG0x0A readout are x, y, z, a, b

Pressure cal_AD value: m=x*2^16+y*2^8+z

Positive and negative processing: if m>2^23, it is a negative value, the pressure value = (m-2^24) /2^23*8192; (PA)

If m<2^23, it is a positive value with a pressure value of =m/2^23*8192; (PA).

Temperature value: n=a*2^8+b

Positive and negative processing: if n>2^15, it is a negative value, the temperature value = (n-2^16) /256; (℃)

If n<2^15 is positive, the temperature is =n/256; (℃).