

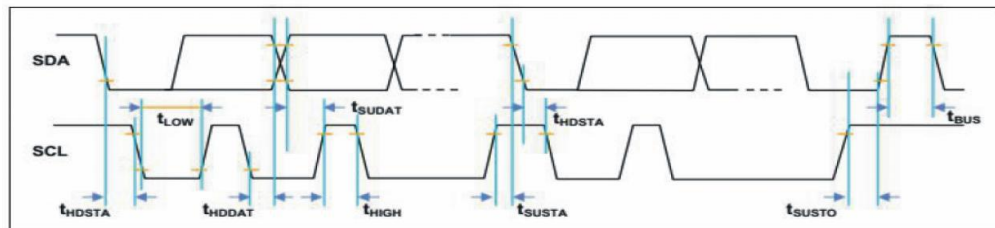
## I2C Communication Protocol Specifications

- I2C Address

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

- I2C Communication Pin Electrical Characteristics

SYMBOL	PARAMETERS	CONDITION	MIN	MAX	UNIT
$f_{scl}$	CLOCK FREQUENCY			400	kHz
$t_{LOW}$	CLOCK LOW FREQUENCY HOLD TIME		1.3		us
$t_{HIGH}$	CLOCK HIGH FREQUENCY HOLD TIME		0.6		us
$t_{SUDAT}$	SDA SETUP TIME		0.1		us
$t_{HDDAT}$	SDA SETUP TIME		0.0		us
$t_{SUSTA}$	DATA SETUP TIME		0.6		us
$t_{HDSTA}$	START CONDITION HOLD TIME		0.6		us
$t_{SUSTO}$	STOP CONDITION SETUP TIME		0.6		us
$t_{BUS}$	BUS FREE TIME BETWEEN STOP AND START CONDITION		1.3		us



I2C TIMING DIAGRAM

## ● I2C Data Transfer Sequences

### (1): pressure measurement

Measuring data is a 24bit signed integer, stored in 3 registers of address 0x06, 0x07, 0x08.

0x06								0x07								0x08							
23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

Datas can be read as per below steps:

float fadc;

```

iic_start();           //I2C start
iic_write(0xDA);      //Device address, write operation
iic_write(0x06);      //Write data start address
iic_start();          //Restart
iic_write(0xDA+1);    //Device address, read operation
dat=iic_readbyte(1);  //Read first byte(0x06), ACK
dat <<= 8;            //Shift
dat += iic_readbyte(1); //Read second byte(0x07), ACK
dat <<= 8;            //Shift
dat += iic_readbyte(0); //Read third byte(0x08), NACK
iic_stop();           //Stop
//Calculate pressure value
if(dat & 0x800000)
{
    fadc= dat - 16777216.0;
}
else
{
    fadc = dat;
}
ADC = 3.3* fadc /8388608.0;
P = Range * (ADC-0.5)/2.0;

```

Note: ADC: intermediate variables;

Range: sensor pressure range; for example if sensor measurement range is : 0...500kPa, then

RANGE=500-0=500.

P: measuring pressure value.

### (2): Temperature measurement

Measuring data is a 24bit signed integer, stored in 3 registers of address 0x09, 0x0A, 0x0B.

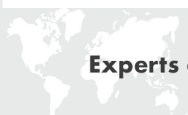
0x09								0x0A								0x0B							
23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

**Datas can be read as per below steps:**

```
float fadc;

iic_start();           //I2C start
iic_write(0xDA);      //Device address, write operation
iic_write(0x09);      //Write data start address
iic_start();          //Restart
iic_write(0xDA+1);    //Device address, read operation
dat=iic_readbyte(1);  //Read first byte(0x09), ACK
dat <<= 8;            //Shift
dat += iic_readbyte(1); //Read second byte(0x0A), ACK
dat <<= 8;            //Shift
dat += iic_readbyte(0); //Read third byte(0x0B), NACK
iic_stop();           //Stop

//Calculate temperature value
if(dat & 0x800000)
{
    fadc= dat - 16777216.0;
}
else
{
    fadc = dat;
}
T = 25.0+fadc /65536.0;
T: measuring temperature value, unit: °C.
```



Headquarter Switzerland:  
Angst+Pfister Sensors and Power AG

Thurgauerstrasse 66  
CH-8050 Zurich  
Phone +41 44 877 35 00  
sensorsandpower@angst-pfister.com

Office Germany:  
Angst+Pfister Sensors and Power  
Deutschland GmbH  
Edisonstraße 16  
D-85716 Unterschleißheim  
Phone +49 89 374 288 87 0  
sensorsandpower.de@angst-pfister.com



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kurt.stritzelberger@angst-pfister.com

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Phone +49 89 374 288 87 67  
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eric.letsch@angst-pfister.com

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Christoph Kleye  
Phone +49 89 374 288 87 61  
christoph.kleye@angst-pfister.com

Drive technology  
CH Postcode 5000 – 9999 / DE

Roman Homa  
Phone +41 76 444 00 86  
roman.homa@angst-pfister.com

Drive technology  
CH Postcode 1000 – 4999 / AT / IT / FR

Christian Mohrenstecher  
Phone +41 76 444 57 93  
christian.mohrenstecher@angst-pfister.com

Harald Thomas  
Phone +49 89 374 288 87 23  
harald.thomas@angst-pfister.com