



# Product specification

Customer	
Products	Digital pressure sensor
Model	HXL-H65D-1. 6BA-3AI

New version,  Revised issue

No: **HXL-H65D**

【Total 6 pages】

【Meet ROHS Standard】

Check	Inspect	Make

Date :

## Dongguan HXL Science And Technology Co., LTD

**HQ Add:** Room 1302, Building 12, No.1 xuefu Road, Songshan Lake Park, Dongguan city, Guangdong Province

**Factory Add:** 7th Floor, Building C1, Songhu Zhigu Industrial Park, Liaobu Town, Dongguan city, Guangdong Province

**Tel:**0086 18711412360 **Fax:**0086-0769-89926328 **E-mail:** [lindachen368@163.com](mailto:lindachen368@163.com)

# HUAXINLIAN

【Customer special】

Date::\_\_\_\_\_

Admit status::

Fully admit

Condition admit

Refuse admit

Approved	Audit	Recheck	Check

## 一、 Product overview

H65D series digital output pressure sensor is a ceramic substrate, PCB mounted pressure sensor. Can measure absolute pressure, gauge pressure or differential pressure. It is a piezoresistive silicon pressure sensor capable of digital output to read the pressure in the specified full range pressure and temperature range, And stable performance.

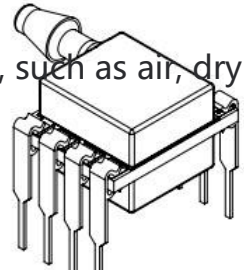
The power supply voltage option facilitates sensor integration into a wide range of process control and measurement systems, allowing direct connection to the I2C serial communication bus.

The sensor has full calibration and temperature compensation with a total error range of less than 1.0%FS for the compensated pressure range.

It is powered by a single 3.3V or 5V DC power supply.

These calibrated and compensated sensors provide accurate and stable output over a wide temperature range.

This series is suitable for non - corrosive, non - ionic working fluid, such as air, dry gas, fluoride liquid, etc.



## 二、 Feature

- ✧ Temperature compensation
- ✧ Digital signal output (pressure and temperature)
- ✧ Onboard installation mode
- ✧ The overtemperature accuracy is better than 0.5% and the maximum is 1.0%
- ✧ High digital resolution for 14-bit pressure and 11-bit temperature
- ✧ I2C Port
- ✧ Stability and reliability

## 1. Range of application

This specification applies to digital pressure sensor

H65D series.

## 2. Product description and identification

### 2.1 Product description

### 2.2 Identify

H65D	※※	⊙	◇	△
①	②	③	④	5

①	Category
H65D	Digital pressure sensor

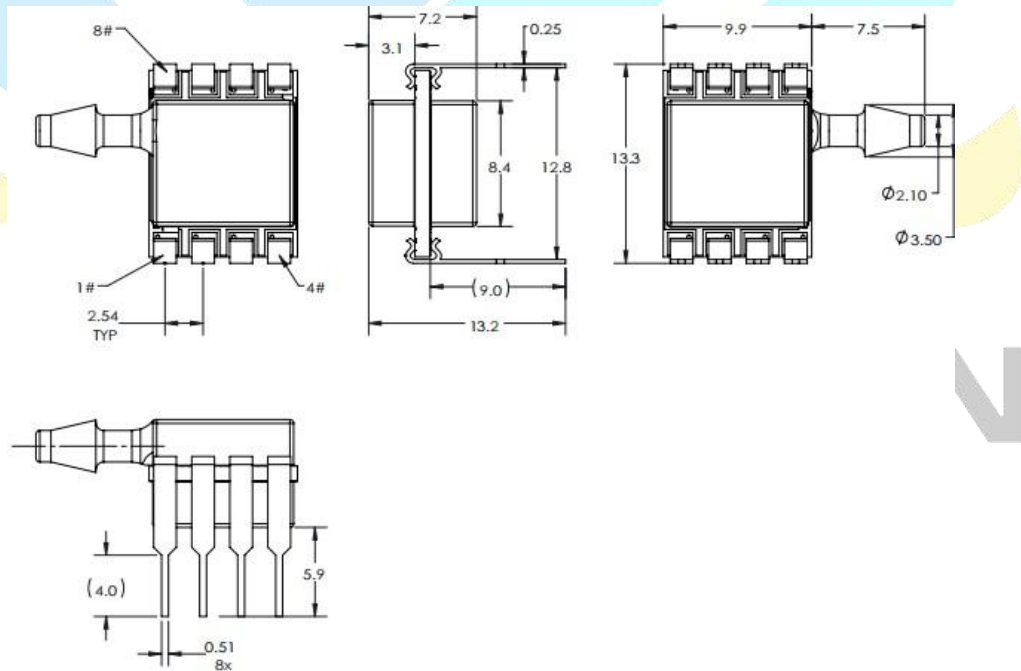
②	Pressure range
1BA6	1.6Bar Absolute pressure

③	Supply voltage
3	3.3VDC

④	Export ratio
A	10% to 90%

5	Port
I	I2C (Addr.0x28H)

Shape and size (mm)

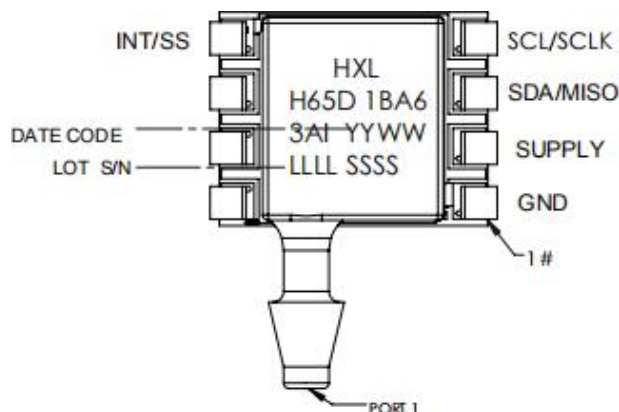


## 4. Contact Materials

Pressure orifice and cover	Alumina ceramic
Placode	Alumina ceramic
Adhesive	Epoxy resin, Silicon resin
Electric elements	Ceramic, Silicon, Glass, Tin solder, Metals

Please contact customer service for detailed material information.

## 5. Foot position definition and product identification



## 6. Product specifications and technical parameters

- 6.1 Compensation temperature scope: 0 To 60°  
 Operating temperature range: -25°C To 85°C

### 6.2 Performance parameter

All parameters were measured at 3.3V±5% or 5.0V±5% (depending on the voltage option chosen) excitation and at 25°C, except as otherwise noted.

Project	Minimum	Typical	Maximum	Unit	Explain
Output span		14746	-	10 System	1
Zero output	-	1638	-	10 System	
Total deviation	-	±0.5	±1.0	%FSS	2
Accuracy		±0.1	±0.25	%FSS BFSL	4
Service voltage	2.7	-	5.5	VDC	
Supply current	-	3	-	mA	
Start-up delay	-	-	10	ms	3, 5
Zero point long-term drift (one year)	-	±0.2	-	%FSS	-
Digital resolution					3
Output Resolution	-	14	-	bit	
Unbroken code resolution	12	13	-	bit	
Temperature output					
Resolution	-	11	-	bit	
Overall accuracy	-	2	-	°C	
Replacement rate	-	0.5	1	ms	3
Pressure overload	4	-	-	BarA	6
Burst pressure	4.8	-	-	BarA	7
Working medium	Suitable for non-corrosive, non-ionic working fluids, such as air, Dry gas, fluoride liquid, etc				8
Humidity	Gaseous medium: 0% to 95% relative humidity, non-condensing Liquid medium: 100% condensed or direct liquid medium on port 1				
Vibration	MIL-STD-202G, Test Method 204D, Ambient conditions B (15 g, 10 Hz to 2 Hz)				

Impact	MIL-STD-202G, Test Method 213B, Environmental condition C (100 g, 6 ms duration)
Life time	At least 1 million pressure cycles

## Explain

Note 1: This span is the algebraic difference between the full scale decimal count and the offset decimal count, as shown in the pressure output conversion curve.

Note 2: The total error range includes zero and range temperature and calibration errors, linearity and pressure hysteresis errors, zero preheating offset and long term zero drift errors

Note 3: Validation tests were performed on parameters, not 100% tests.

Note 4: Including pressure hysteresis, repeatability and best-fit linear, evaluated at 25°C.

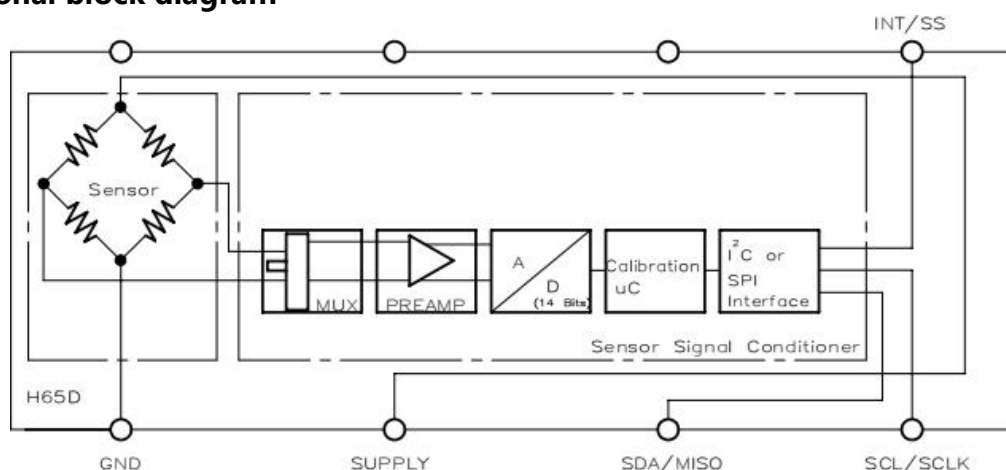
Note 5: Start time is from power on to first communicable time.

Note 6 Overpressure capacity means the maximum pressure that can be safely applied to the product to keep it within the specification range after pressure has been restored to the measured pressure range.

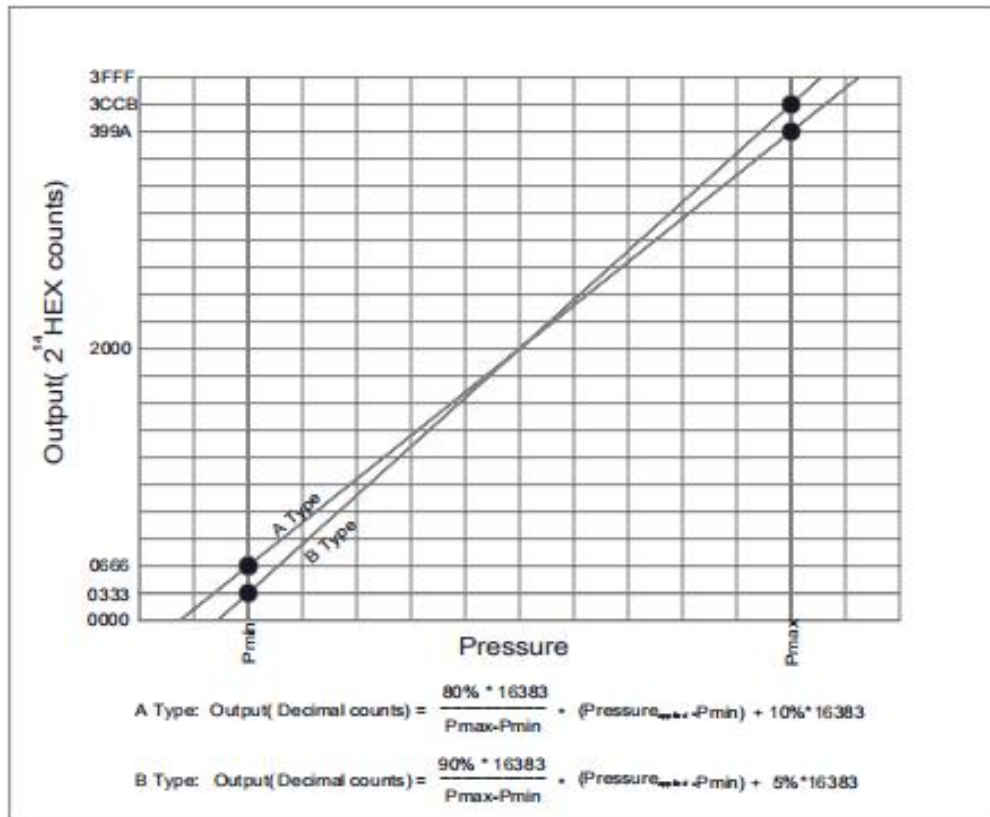
Note 7: Bursting pressure refers to the maximum pressure that can be applied to the product without causing leakage or damage to the mechanical structure. The product cannot be guaranteed by functions beyond the bursting pressure.

Note 8: Ensure that the liquid medium is free of particles, which may accumulate or deposit inside the sensor and may damage the sensor or affect its output.

## 7. Functional block diagram

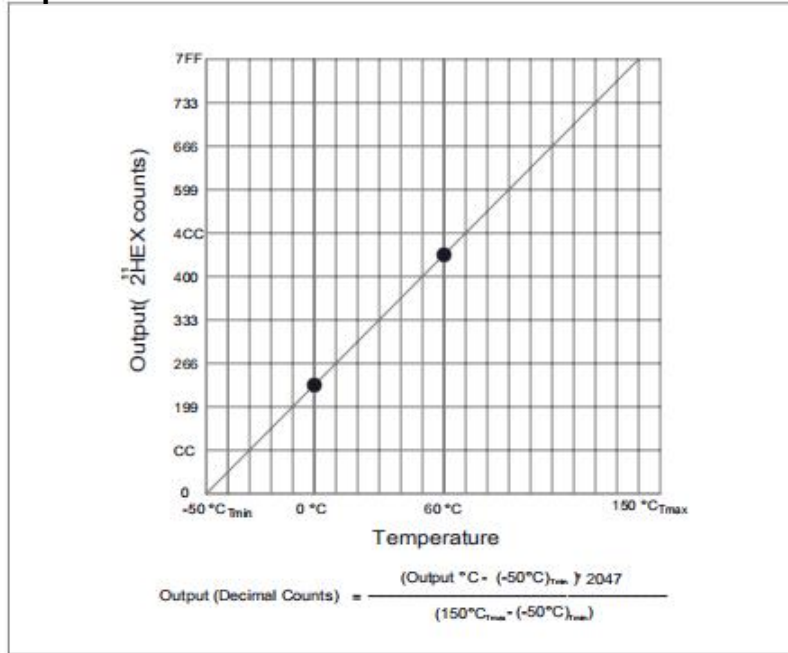


## 8. Pressure output function conversion curve



Sensor Output at Significant Percentages				
% of Counts	Output Type A (Bar)	Output Type B (Bar)	Digital Counts (decimal)	Digital Counts (hex)
0	$P_{min} - (P_{max} - P_{min}) \cdot 1/8$	$P_{min} - (P_{max} - P_{min}) \cdot 5/90$	0	0 X 0000
5		$P_{min}$	819	0 X 0333
10	$P_{min}$		1638	0 X 0666
50			8192	0 X 2000
90	$P_{max}$		14746	0 X 399A
95		$P_{max}$	15563	0 X 3CCB
100	$P_{max} + (P_{max} - P_{min}) \cdot 1/8$	$P_{max} + (P_{max} - P_{min}) \cdot 5/90$	16383	0 X 3FFF

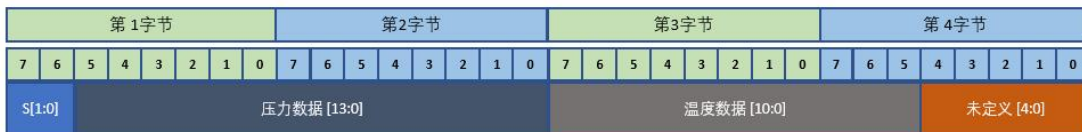
### 9. Temperature output function conversion curve



Output °C	Digital Counts (decimal)	Digital Counts (hex)
-50	0	0 X 0000
0	511	0 X 01FF
10	614	0 X 0266
25	767	0 X 02FF
50	1023	0 X 03FF
85	1381	0 X 0565
150	2047	0 X 07FF

### 10. Digital output format

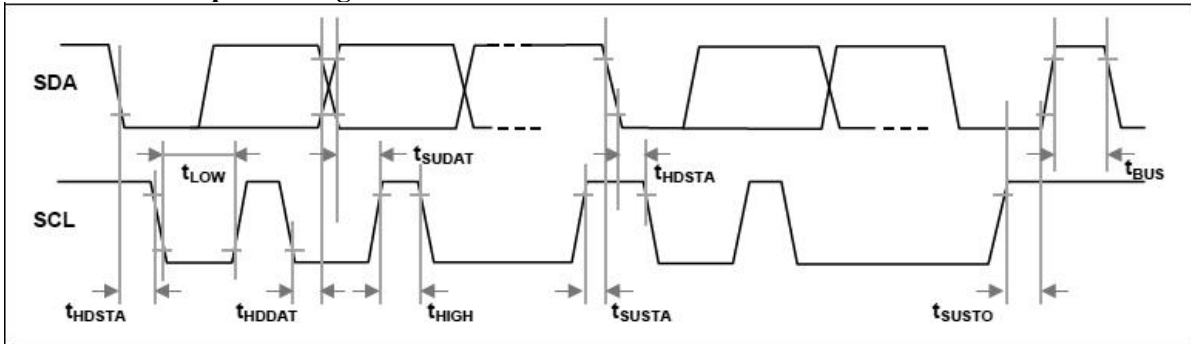
The format of the data returned from the sensor is the same for any type of digital interface. The first 16 bits consist of 2 state bits and 14 pressure values. The third byte provides the eight highest bits of the measured temperature; The fourth byte provides three least significant bits for temperature, followed by five undefined fill data bits. Using either interface, the host can terminate the transmission after receiving the first two bytes of data from the sensor, or after the third byte if only the all-important 8-bit temperature is needed. The overall data format and status bit definitions for the sensor are shown below.



状态位定义

	[00]	[01]	[10]	[11]
状态位:	正常模式, 没有任何错误	保留	数据未更新	产生错误: 电路或配置有误
压力数据:				
温度数据:				
未定义位:				

### 11. I2C Port real sequence diagram



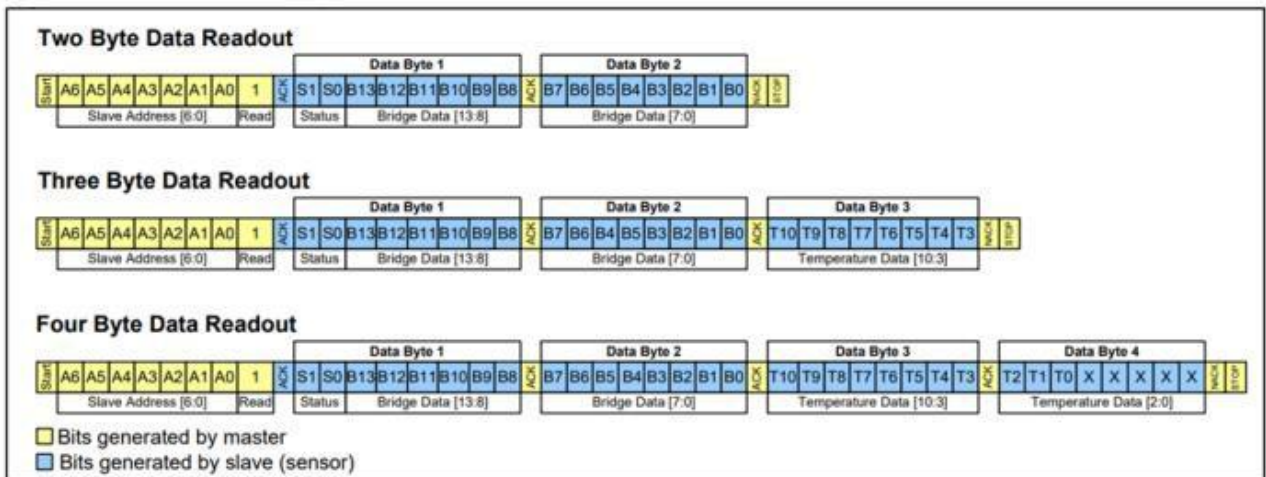
### 12. I2C Parameter

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS
SCL clock frequency	$f_{SCL}$	100		400	KHz
Start condition hold time relative to SCL edge	$t_{HDSTA}$	0.1			$\mu s$
Minimum SCL clock low width <sup>1)</sup>	$t_{LOW}$	0.6			$\mu s$
Minimum SCL clock high width <sup>1)</sup>	$t_{HIGH}$	0.6			$\mu s$
Start condition setup time relative to SCL edge	$t_{SUSTA}$	0.1			$\mu s$
Data hold time on SDA relative to SCL edge	$t_{HDDAT}$	0			$\mu s$
Data setup time on SDA relative to SCL edge	$t_{SUDAT}$	0.1			$\mu s$
Stop condition setup time on SCL	$t_{SUSTO}$	0.1			$\mu s$
Bus free time between stop condition and start condition	$t_{BUS}$	2			$\mu s$

1) Combined low and high widths must equal or exceed minimum SCLK period.

### 13. I2C Port deal

Pressure and temperature measurement data readout





## 14 . Packaging and storage

### 14.1 Packaging

10PCS per box, can be packed according to customer demand.

### 14.2 Storage

Operating temperature and storage temperature

Operating temperature range: 0-+75°C

Storage temperature range: -20°C~+85°C

The packaged products shall be stored in an environment of temperature  $\leq 40^{\circ}\text{C}$  and humidity  $\leq 70\%$  RH,

Packaging materials will deform when placed in an environment of excessive heat or direct sunlight.

## 15. Manufacture info

**Company Name: Dongguan HXL Science and Technology Co., Ltd.**

**HQ Add: Room 1302, Building 12, No.1 xuefu Road, Songshan Lake Park, Dongguan city, Guangdong Province**

**Factory Address: 7th Floor, Building C1, Songhu Zhigu Industrial Park, Liaobu Town, Dongguan City, Guangdong Province**

**Tel::0086-/ 18711412360 / 0769-83326328**

**Email: lindachen368@163.com**