



TH5011T Monocrystalline Silicon Differential Level & Pressure Transmitter

Product description

TH5011T sanitary differential pressure transmitter is used to measure the liquid level, density and pressure of liquid, gas or steam, and then convert it into 4 ~ 20mA DC HART current signal output. TH5011T can also communicate with TH5011T handheld terminal or TH100 Modem, and use them for parameter setting and process monitoring.

Standard specification

The range is adjusted based on the standard zero point; the stainless steel 316L diaphragm; filling fluid is silicone oil.



Technical Parameters Table

Span and Range	Span and code table 1		
	Code	Span	Range
	B	3kPa~6kPa	-6kPa~6kPa
	C	4kPa~40kPa	-40kPa~40kPa
	D	10kPa~250kPa	-100kPa~250kPa
	Flange and minimum range relationship table 2		
	Nominal diameter	Minimum range	
	DN38/DN40	10kPa	
	DN50/DN51	10kPa	
	DN76.1	2kPa	
The minimum range shall be the larger value of the minimum range in Table 1 and Table 2. The adjusted range shall not be less than the minimum range.			
Performance and Specification	Reference accuracy of range adjustment		
	(Including linearity, hysteresis and repeatability from zero)		
	PH-B5011T-B	±0.075%	
	PH-C5011T-C	±0.1%	
	If TD > 10 (TD = maximum range / adjustment range), it is:		
	PH-B5011T-B	±(0.0075×TD)%	
	PH-C5011T-C	±(0.01×TD)%	
	Influence of ambient temperature (no capillary)		
	-25°C~65°C Total influence		
	±(0.15×TD+0.05)%×Span		



Between every 10 °C $\pm 0.08\% \times \text{Span}$ (when TD = 1)

-40°C~-25°C to 65°C~85°C Total influence

$\pm(0.20 \times \text{TD} + 0.05)\% \times \text{Span}$

Over-range influence

$\pm 0.075\% \times \text{Span}$

Stability

$\pm 0.1\% \times \text{Span} / 3 \text{ years}$

Power effect

$\pm 0.001\% / 10\text{V}$ (12 ~ 42V DC), Negligible

Zero setting

Zero and span can be adjusted to any value within the measurement range in the table As long as: nominal range \geq minimum range

Output

Two wire 4~20mADC output with digital communications, linear or square root programmable. HART FSK protocol are superimposed on the 4~20mADC signal.

Output signal limit : $I_{\text{min}}=3.9\text{mA}$, $I_{\text{max}}=20.5\text{mA}$

Failure Alarm (the mode can be selected)

Low Mode (min) : 3.6 mA

High Mode (max) : 21 mA

No Mode (hold): Keep the effective value before the fault.

Note: The standard setting of failure alarm is High Mode.

Response Time

The amplifier damping constant is 0.1 sec; the time constant of the sensor and the liquid level flange is

0.2~2s, it depends on the range and range compression ratio.

The additional adjustable time constant is: 0.1 ~ 60s

Preheat time

< 15s

Installation Condition

The straight transmitter body can be directly fixed at any position. The best condition is to make the process flange

The axis is in a vertical state, and the position deviation will produce a correctable zero offset.

The case can rotate up to 360° , and the positioning screw can fix it in any position.

The capillary component and the remote flange should only be installed in the same ambient temperature.

The minimum bending radius of the capillary tube is 75mm, and winding is strictly prohibited.

Ambient Temperature

Function

Working condition



-40°C~85°C		
-20°C~65°C (with LCD display, fluorine rubber sealing)		
-40°C~70°C (OLED display)		
Storage temperature / transport temperature		
-50°C~85°C		
-25°C~85°C (with LCD display)		
Medium temperature		
Filling fluid	Density (25°C)	Range of working temperature
Silicon oil	960kg/m ³	-30~200°C
Vegetable oil	937kg/m ³	0~250°C
Pressure limit		
From 3.5kPa absolute pressure to rated pressure		
Unilateral overload limit		
The low-pressure side is the rated pressure of the transmitter body, and the high-pressure side is the rated force of the remote flange, which may have a correctable zero drift.		
Electromagnetic Compatibility(EMC)		
Look the EMC Performance Table		
Explosion Protected Type		
NEPSI Explosion-proof license : Ex dIICT6		
NEPSI Intrinsically Safe License : Ex iaIICT4		
Allowable temperature : -40°C~65°C		
Supply & Load Requirements		
The power supply voltage is 24V, the load is 520Ω, the calculation formula is as follows		
Load $R \leq (U_s - 12V) / I_{max}$ kΩ, $I_{max} = 23mA$		
Power supply 15~36V DC		
Load Working state : 0~1040Ω		
Digital communication : 230~600Ω		
Material		
Measuring capsule	316L stainless steel	
Diaphragm	316L stainless steel/Hastelloy C	
Process connection	316L stainless steel	
Filling fluid	Silicon oil, vegetable oil	
Transmitter housing	Aluminum with epoxy resin coat	
Housing Gasket	Perbunan (NBR)	
Name plate and tag	304 stainless steel	
Electrical connections		
M20X1.5 cable sealing buckle, the terminal is suitable for 0.5 ~ 2.5mm ² wire		

Physical specifications



Process connection

DN25/DN40/DN50/DN76.1 Sanitary interface

Weight

About 10-16.5kg

Degrees of Protection

IP67

EMC Performance Table

Items	Test items	Basic standards	Test conditions	Performance Level
1	Radiated interference (Housing	GB/T 9254-2008 Table 5	30MHz ~ 1000MHz	OK
2	Conducted interference DC power port)	GB/T 9254-2008 Table 1	0.15MHz ~ 30MHz	OK
3	Electrostatic Discharge (ESD) Immunity	GB/T 17626.2-2006	4kV(Line) 8kV(Air)	B
4	RF electromagnetic field immunity	GB/T 17626.3-2006	10V/m (80MHz ~ 1GHz)	A
5	Frequency magnetic field immunity	GB/T 17626.8-2006	30A/m	A
6	Electrical Fast Transient Burst Immunity	GB/T 17626.4-2008	2kV(5/50ns,5kHz)	B
7	Surge Immunity	GB/T 17626.5-2008	1kV (line to line) 2kV (line to ground) (1.2us/50us)	B
8	Conducted interference immunity induced by RF field	GB/T 17626.6-2008	3V (150KHz ~ 80MHz)	A

Note : (1) Performance level A description: The technical specifications within the limits of normal performance.

(2) Performance level B description: Temporary reduction or loss of functionality or performance, it can restore itself. The actual operating conditions, storage, and data will not be changed.