FD3051S Monocrystalline Silicon Differential Pressure Transmitter

◆ Product Selection Guide

FD3051S LF–Sanitary Remote Seal Differential Pressure Transmitter

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Product description

FD3051S LF 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 ~ 20mADC HART current signal output. FD3051S LF can also communicate with FDT375 handheld terminal or FDM100 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)

FD3051S LF–B	± 0.075%
FD3051S LF–C	± 0.1%

If TD> 10 (TD = maximum range / adjustment range), it is:

FD3051S LF–B	± (0.0075 × TD)%
FD3051S LF–C	± (0.01 × TD)%

Influence of ambient temperature (no capillary)

–25℃~65℃ Total influence

± (0.15 × TD+0.05)% × Span

Between every 10 ℃ ± 0.08% × Span (when TD = 1)

–40℃~–25℃和65℃~85℃ Total influence

± (0.20 × TD+0.05)% × Span

Over–range influence

± 0.075% × Span

Technical Parameters Table

Performance and Specification

Stability

± 0.1% × Span /3 years

Power effect

± 0.001% /10V (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 ≥ 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：Imin=3.9mA，Imax=20.5mA

Function and Specification

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

Working condition

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.

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Technical Parameters Table

Working condition

Ambient Temperature

–40℃~85℃

–20℃~65℃ (with LCD display, fluorine rubber sealing)

–40℃~70℃ (OLED display)

Storage temperature / transport temperature

–50℃~85℃

–25℃~85℃ (with LCD display)

Medium temperature

Filling fluid	Density（25℃）	Range of working temperature
Silicon oil	960kg/m^3	–30~200℃
Vegetable oil	937kg/m^3	0~250℃

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℃~65℃

Technical Parameters Table

Working condition

Supply & Load Requirements

The power supply voltage is 24V, the load is 520Ω, the calculation formula is as follows

Load R ≤ (Us–12V)/Imax kΩ，其中 Imax=23mA

Power supply	15~36V DC
Load	Working state：0~1040Ω
	Digital communication：230~600Ω

Physical specifications

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 ~ 2.5mm2 wire

Process connection

DN25/DN40/DN50/DN76.1 Sanitary interface

Weight

About 10~16.5kg

Degrees of Protection

IP67

EMC Performance Table

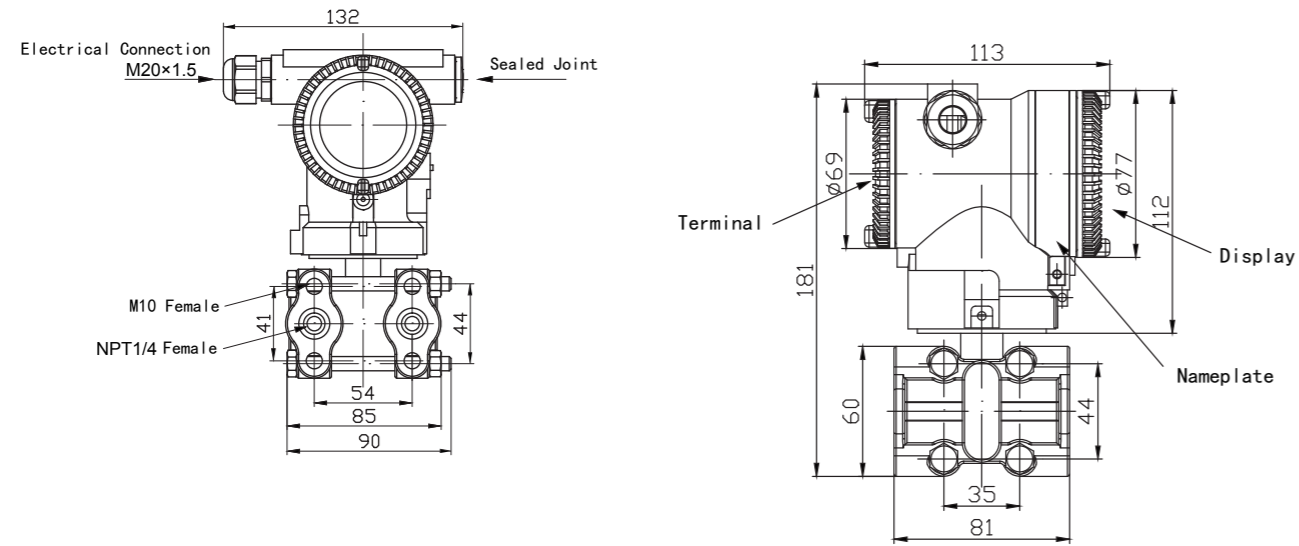| Items	Test items	Basic standards	Test conditions	Performance Level
1	Radiated interference (Housing	GB/T 9254–2008 Table 5	30MHz ~ 1000MHz	OK
2	Conducted interference（DC power port）	GB/T 9254–2008 Table 1	0.15MHz ~ 30MHz	OK
3	Electrostatic Discharge (ESD) Immunity	GB/T 17626.2–2006	4kV(Line) 8kV(Air)	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.

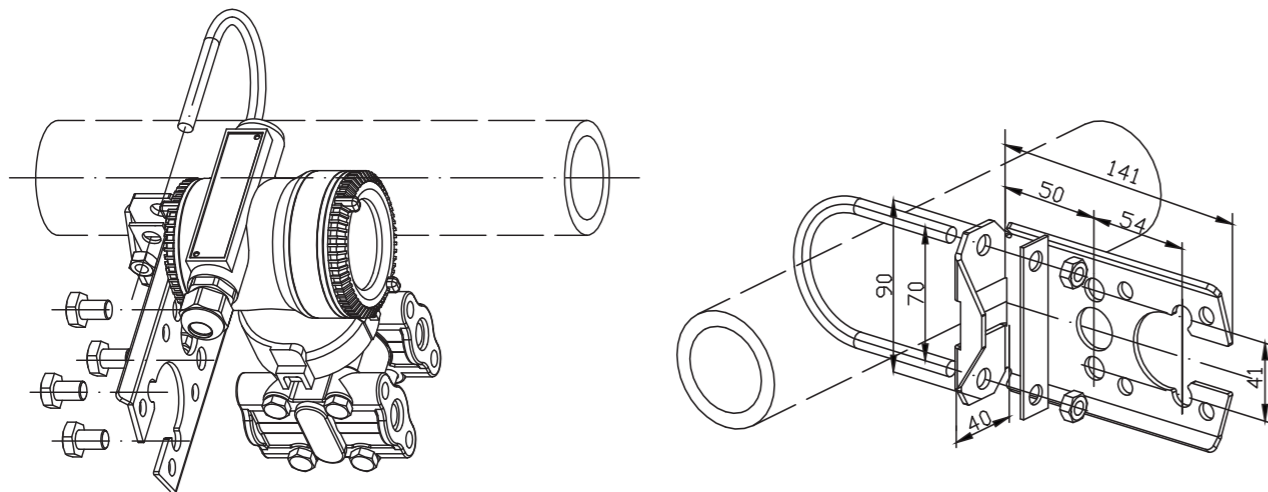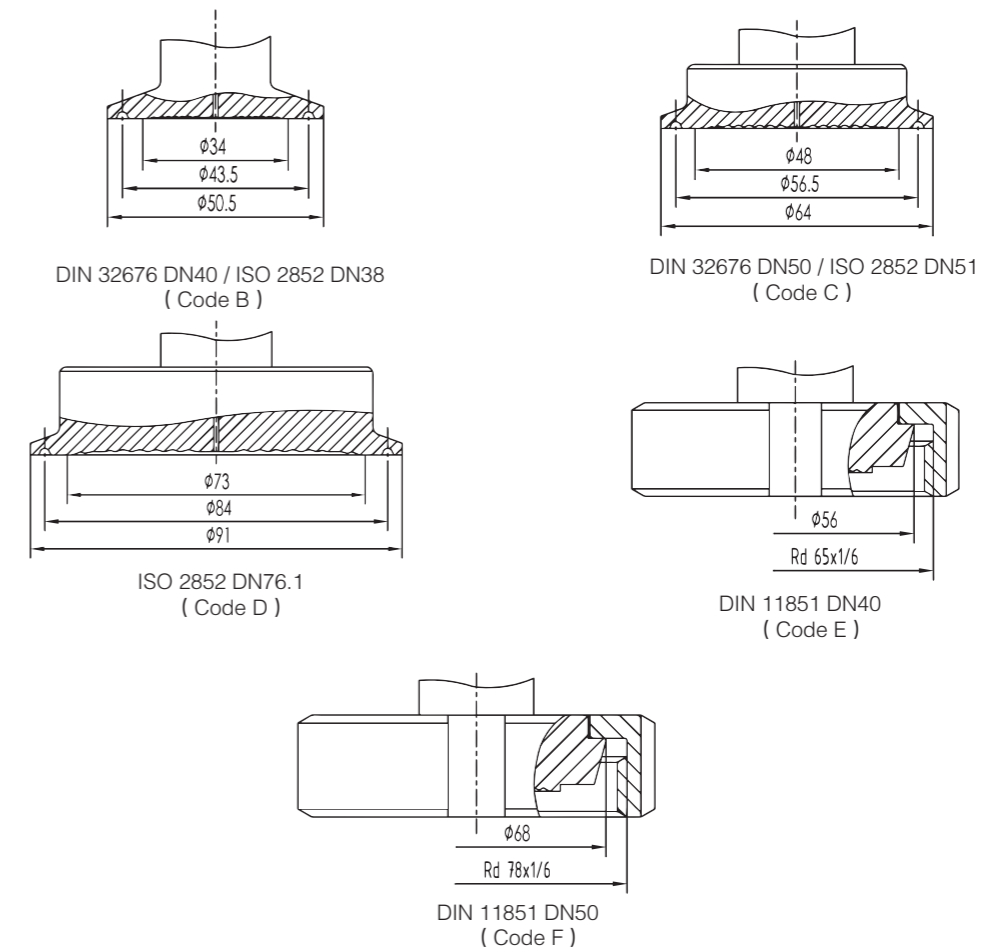# FD3051S Monocrystalline Silicon Differential Pressure Transmitter
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Transmitter outline size

Bracket mounting method

Process connection

DIN 32676 DN40 / ISO 2852 DN38
(Code B)

DIN 32676 DN50 / ISO 2852 DN51
(Code C)

ISO 2852 DN76.1
(Code D)

DIN 11851 DN40
(Code E)

DIN 11851 DN50
(Code F)

Electrical connection diagram