

SP38D UART Monosilicon pressure sensor

I: Description

SP38D-U use high stability monosilicon technology with built-in temperature compensation, intergrated high performance dual-channels ASIC with 24bit adc.

Calibration for zero and sensitivity of second-order temperature drift and third-order nonlinear to improve the temperature performance of the sensor. It's a comprehensive digital and intelligent sensor with UART output.

High overload and high static pressure can up to 40MPa. SP38D is suitable for all kinds of harsh environment, the working temperature is -40~85°C. It also has the characteristics of high precision, high stability and strong output signal.

SP38D-U monosilicon pressure sensor is widely used in process control, flow control, hydraulic and pneumatic equipment, servo valve and transmission, chemical products and chemical industry as well as medical instrument and so on.

- Accurate filling fluid technology
- Dual diaphragm overload structure
- High long term stability $< \pm 0.05\% \text{F.S./year}$
- Very low pressure and temperature hysteresis
- Built-in temperature sensor, dual-channels 24bit adc
- Optional for multiple isolation diaphragm material, widely meet the anti-aggressive requirements
- Compact design, easy encapsulation, standard UART bus
- Dynamic detect running status, Real-time output fault code
- One button to restore factory data



II: Technical specifications:**Pressure range and Static Pressure**

Type	Range	Code	One side overload pressure	Static pressure
SP38D-U	-6-6kPa	602	16MPa	25MPa
SP38D-U	-40-40kPa	403	16MPa	40MPa
SP38D-U	-250-250kPa	254	16MPa	40MPa
SP38D-U	-0.5-1MPa	105	16MPa	40MPa

Technical specifications

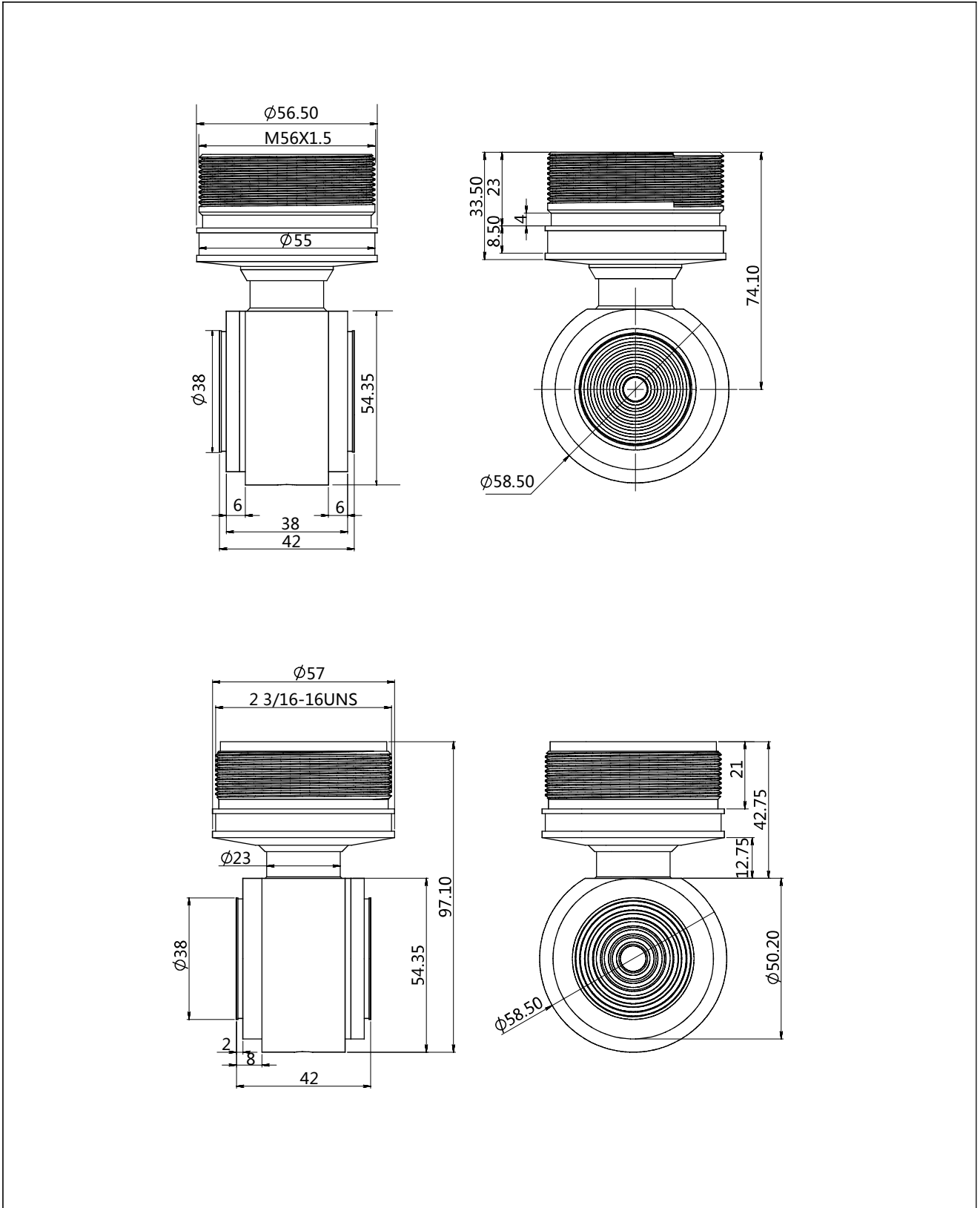
Power supply	3.2V-3.6VDC@1.7mA
Hardware interface	3.3V
UART input level	$V_{INL} < 0.2 * V_{supply}$, $V_{INH} > 0.7 * V_{supply}$
UART output level	$V = 0.4VDC$, $V = V_{supply} - 0.4VDC$
Output data format	float (ABCD)
Data frame format	asynchronous 10, 11, 12bit
Baud rate	4800HZ, 9600HZ, 19200HZ
Start bit	1bit
Check bit	No check, odd check, even check
Stop bit	1bit, 2bit
Working temperature	-40°C ~ +85°C
Storage temperature	-50°C ~ +125°C
Temperature effect	$< \pm 0.05\% \text{ F.S. } (-40 \sim 85^\circ\text{C})$
Temperature hysteresis	$< \pm 0.1\% \text{ F.S. } (10\text{kPa} \leq \text{Sensor range} \leq 1\text{MPa})$
	$\pm 0.15\% \text{ F.S. } (\text{Sensor range} < 10\text{kPa})$
Pressure hysteresis	$< \pm 0.05\% \text{ F.S.}$
Long term drift	$< \pm 0.05\% \text{ F.S./year}$
Non-linearity error	$< \pm 0.05\% \text{ F.S. } (10\text{kPa} \leq \text{Sensor range} \leq 1\text{MPa})$
	$< \pm 0.1\% \text{ F.S. } (\text{Sensor range} < 10\text{kPa})$
Static pressure affect	$< \pm 0.1\% / 10\text{MPa} (10\text{kPa} \leq \text{Sensor range} \leq 10\text{MPa})$
	$< \pm 0.15\% / 10\text{MPa} (\text{Sensor range} < 10\text{kPa})$
Diaphragm material	316L/ hastelloy C
Mechanical connection for housing	2 3/16-16 UNS, M56×1.5 (M)

III:Wiring diaphragm and Dimensions

Wiring diagram

Wiring color	Definition
Red	V+
White	V-
Yellow	RxD UART receive
Brown	TxD UART send

IV: Dimension (mm)



VI: Selection table

Item	Code	Description
Model	SP38D	Monosilicon pressure sensor
Separator	-	Following detail specifications
Output	U	UART
Pressure range	602	6kPa (one side overload pressure : 16MPa , static pressure : 25MPa)
	403	40kPa (one side overload pressure : 16MPa , static pressure : 40MPa)
	254	250kPa (one side overload pressure : 16MPa , static pressure : 40MPa)
	105	1MPa (one side overload pressure : 16MPa , static pressure : 40MPa)
Pressure type	D	Differential(6kPa-1MPa)
	G	Gauge(6kPa-1MPa)
	A	Absolute (40kPa-1MPa)
Diaphragm material	S	SUS316L
	H	Hastelloy C
Fill fluid	D	Silicon oil (-45~205℃)
Mechanical connection for housing	4	M56×1.5(M),SUS304
	5	2 3/16-16 UNS, SUS304
Sensor seal	P	PTFE
Process connection	H1	H structure, double flanges, process connection 1/4-18NPT(F) ,drain valve on the rear end of flange, material SS 316
	H4	H structure, double flanges, process connection 1/4-18NPT(F) ,drain valve on the rear end of flange, material SS 304
/	3.3V	3.3V power supply
Example	SP38D-U105DSD4PH1	