Explosion-proof Pressure Sensor

Data table

WF2450M 30BG

Digital Pressure & Temperature Sensor

1. Product Features

- Measurement range: 0 ~ 3 MPa
- Stainless steel welded construction
- Suitable for natural gas pressure measurement
- Supply voltage: 3–5 V
- Standard I²C communication protocol

2. Application Areas

- Natural gas equipment
- CNG distribution pipeline networks
- Compressors
- Equipment pressure monitoring

3. Overview

The WF2450M series is a pressure sensor specifically designed for explosion-proof environments. It features a stainless steel welded construction and integrates a highly stable MEMS pressure sensing element with a 24-bit high-precision ADC and a DSP compensation chip. The internal circuitry performs digital conversion and temperature compensation on the analogue output of the pressure sensor, delivering high-accuracy pressure and temperature data via the I²C interface.

The WF2450M series offers high measurement accuracy and ease of integration, and is widely deployed in explosion-proof locations such as natural gas and power facilities.

4. Performance Specifications

Supply voltage: 3.3 V DC Reference temperature: 25 °C

Pressure Performance

Parameter	Value	Unit
Measurement Range	0 ~ 3.0	MPa
Pressure Type	Gauge	—
Pressure Accuracy	±0.5	%FS
Full-Scale Temp. Drift	±0.03	FS/°C
Overload Pressure	1.2×	Rated
Burst Pressure	1.5×	Rated
Operating Temperature	–40 ~ 125	°C
Storage Temperature	–40 ~ 150	°C

5. Electrical Characteristics

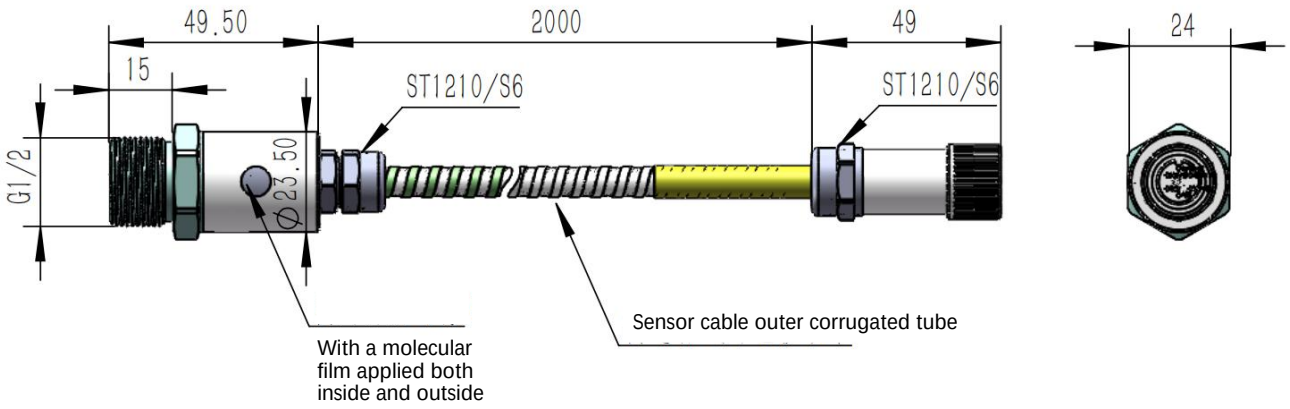
Absolute Maximum Ratings

Parameter	Min	Typ	Max	Unit	Note
Supply Voltage	2.6	—	5.5	V	—
Interface Voltage	0	—	5.5	mA	—

General Electrical Characteristics

Parameter	Min	Typ	Max	Unit	Note
Supply Voltage	—	3.3	5	V	—
Operating Current	—	3.5	—	mA	—
I²C Clock	—	100	—	kHz	—
Upper Clamp Voltage	3/4	—	1	VDD	—
Lower Clamp Voltage	0	—	1/4	VDD	—

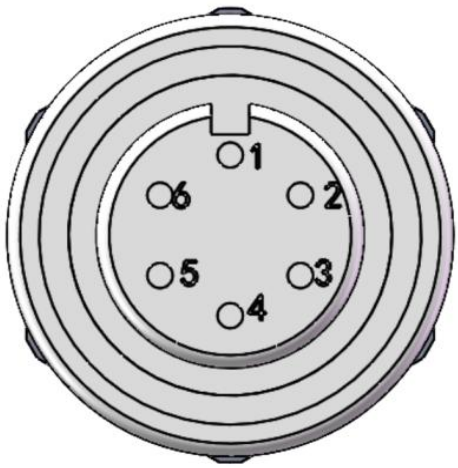
6. Mechanical Dimensions (Unit: mm, Tolerance: ±0.2 mm)



Dimension / Feature	Value
Thread (pressure port)	G1/2
Sensor body diameter	Ø 23.50 mm
Sensor body length	49.50 mm
Cable length	2000 mm
Connector end length	49 mm
Connector outer diameter	24 mm
Cable protection	ST1210/S6 corrugated conduit (both ends)
Diaphragm	Inner/outer molecular membrane bonded

7. Pin Definition

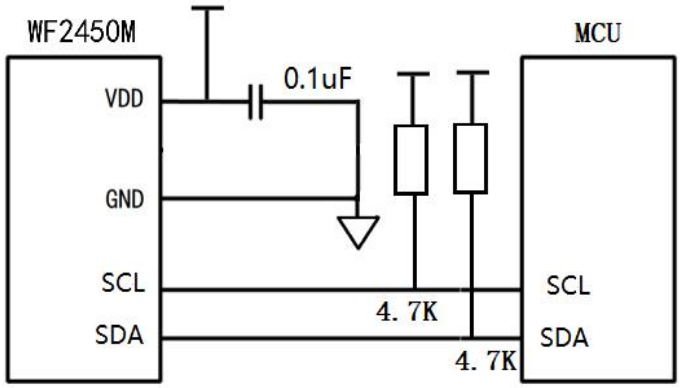
Pin No.	Name	Function
1	VCC	Power supply (+)
2	SDA	I²C data line
3	SCL	I²C clock line
4	NC	Not connected (leave floating)
5	NC	Not connected (leave floating)
6	GND	Power supply ground



8. Typical Application Circuit

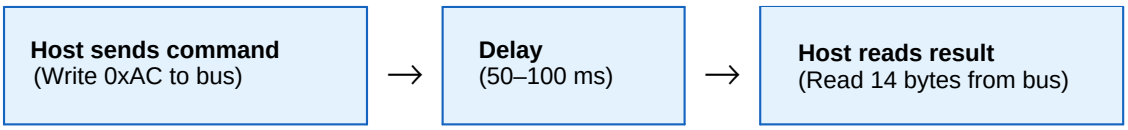
Connect the WF2450M to a host MCU via the I²C bus (SCL and SDA lines). Place a 0.1 µF bypass capacitor close to the VDD pin. Pull up both SCL and SDA to VDD through 4.7 kΩ resistors.

Signal	WF2450M Pin	External Component	MCU Pin
VDD	VCC (Pin 1)	100 nF cap to GND	3.3 V rail
GND	GND (Pin 6)	—	GND
SCL	SCL (Pin 3)	4.7 kΩ pull-up to VDD	SCL
SDA	SDA (Pin 2)	4.7 kΩ pull-up to VDD	SDA
NC	Pin 4	Leave floating	—
NC	Pin 5	Leave floating	—



9. Communication Protocol

The sensor communicates via the I²C protocol. The 7-bit slave address is **0101010** (0x2A).



Measurement Sequence

Data Format (14-byte response payload)

Seq.	Content	Bytes	Type	Description
1	Manufacturer ID	2	ASCII	Fixed: 0x57, 0x46 = "WF"
2	Full Scale	2	U32	Fixed: 0x0B, 0xB8 = 3000 kPa
3	Pressure Data	4	Float32	e.g. 0x42,0x9D,0x00,0x00 = 78.5 kPa e.g. 0xC2,0x9D,0x00,0x00 = –78.5 kPa
4	Temperature Data	4	Float32	e.g. 0x42,0x1E,0x00,0x00 = 39.5 °C e.g. 0xC2,0x1E,0x00,0x00 = –39.5 °C
5	Product Type	1	U8	Fixed: 0xFC = Combined temp./pressure sensor
6	Checksum	1	U8	Lowest 8 bits of the sum of all preceding bytes

I²C Read / Write Timing

Type	Start	Slave Addr (W)	Ack	Command	Ack	Stop
Measurement	start	0x54	Ack	0xAC	Ack	stop

Type	Start	Slave Addr (R)	Ack	Byte 1	Ack	Bytes 2–13	Ack	Byte 14	Ack	Stop
Read Result	start	0x55	Ack	<7:0>	Ack	<7:0>	Ack	<7:0>	Nack	stop