

Model 1151/3051DPR Remote Diaphragm Differential Pressure Transmitter



STONG M&C's 3051(&1151) DPR remote diaphragm differential pressure transmitter provides a kind of reliable measuring way. It is designed on the basis of 1151/3051DP & 1151/3051LT and used for measuring pressure (differential pressure), level, and density of liquid, gas or steam. The value is converted into current signal output or digital protocol output. The pressures are directly applied to the isolating diaphragm that provide isolation and resistance against process fluid corrosion.

Being microprocessor based, the electronic circuit is extremely versatile and accurate.

Combined with the sensor precision, it provides the high accuracy and range ability.

Transmitter performance is improved by continuous monitoring of the sensor temperature and corresponding corrections. A local display permits easy reading and writing of data.

STONG M&C's 3051(&1151) DPR remote diaphragm differential pressure transmitter is designed for preventing survey medium from directly entering into the internal transmitter. The sensor receives the change of pressure by the diaphragm on the remoter flange which is connected with the transmitter through capillary filled with silicon oil. Transmitters with remote device are suitable for the following operation conditions:

1. Mediums with high temperature should be isolated with transmitter.
2. Measured mediums are severe corrosive to sensitive parts of transmitters.
3. Suspending liquid or mediums with high viscosity
4. Measured mediums are easy solidized or crystallized due to change of environment or technological process.

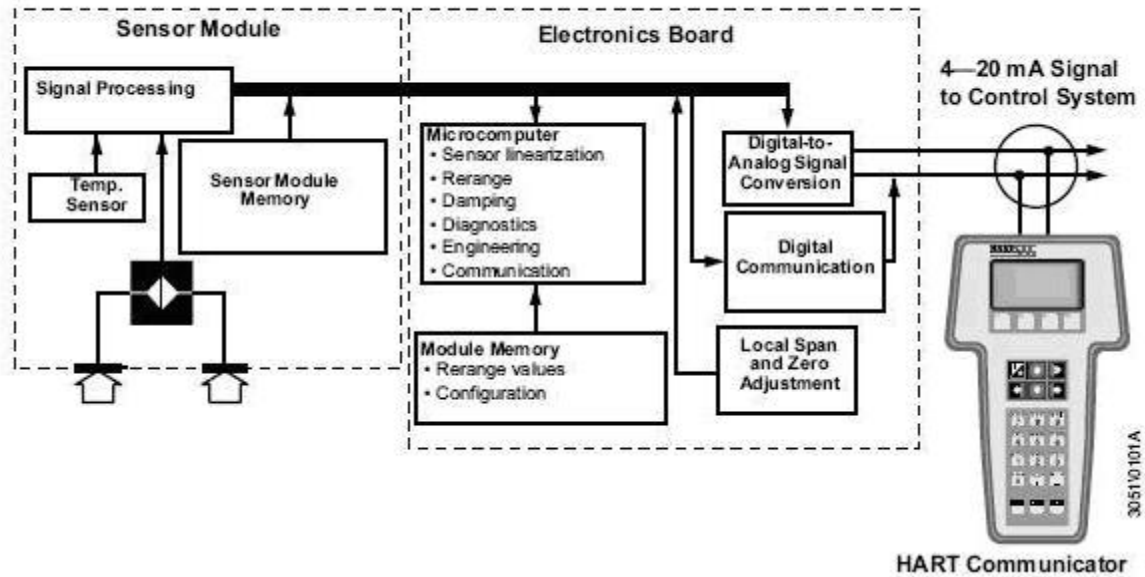
5. Strict purification of measuring head is needed for replacing measured mediums
6. Measuring head must be kept clean and sanitary.
7. Seal pressure container measurement.

The Model 3051 utilizes capacitance sensor technology for pressure measuring. The major components of the Model 3051 are the sensor module and the electronics housing. The sensor module contains the oil filled sensor system (isolating diaphragms, oil fill system, sensor and mounting flange) and the sensor electronics. The sensor electronics are installed within the sensor module and include a temperature sensor (RTD), a memory module, and the capacitance to digital signal converter (C/D converter). The electrical signals from the sensor module are transmitted to the output electronics in the electronics housing. The electronics housing contains the output electronics board (microprocessor, memory module, digital to analog signal converter or D/A converter), the local zero and span buttons, and the terminal block.

For the Model 3051 design pressure is applied to the isolating diaphragms, the oil deflects the center diaphragm, which then changes the capacitance. This capacitance signal is then changed to a digital signal in the C/D converter. The microprocessor then takes the signals from the RTD and C/D converter calculates the correct output of the transmitter. This signal is then sent to the D/A converter, which converts the signal back to an analog signal and superimposes the HART signal on the 4-20 mA output.

For the Model 3051DPR design pressure is applied to the isolating diaphragm which is welded on the flange. Flat flange and insert flange are available. The sizes of the flange can be customized according to use's requirements. The material of diaphragm can be optional for different kinds of corrosive liquid as well.

Figure 1-1. Block diagram of operation

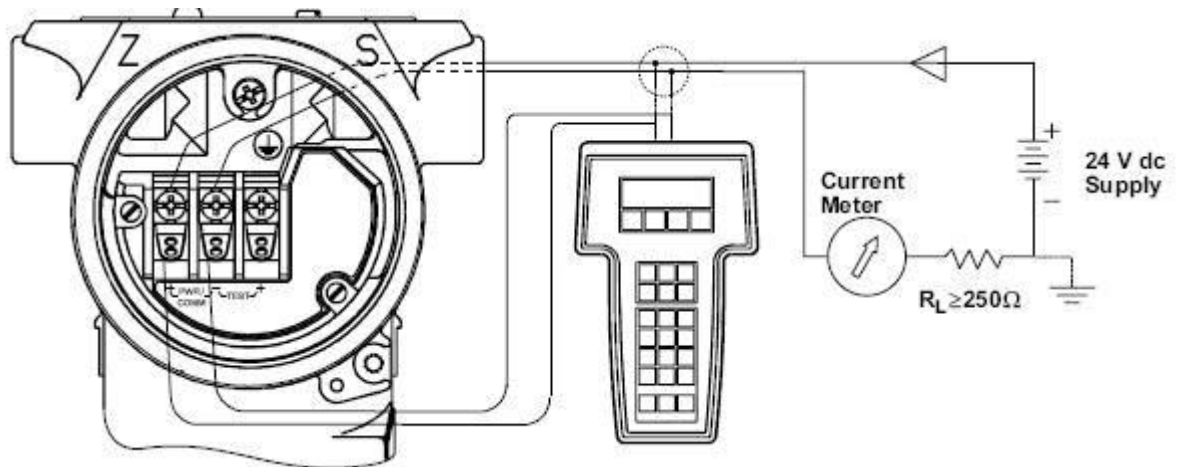


SEVERAL TYPES OF REMOTE DEVICE

- 1199PFW Flat Remote Device
- 1199EFW Insert Tube Remote Device
- 1199RTW Thread Mounting Remote Device
- 1199RFW Flange Mounting Remote Device

WIRING DIAGRAMS

Connect the bench equipment as shown in Figure, and turn on the HART-based communicator by pressing the ON/OFF key. The communicator will search for a HART-compatible device and will indicate when the connection is made. If the communicator fails to connect, it will indicate that no device was found.



TECHNICAL SPECIFICATIONS

Measuring object: liquid, gas and steam

Measuring range: 0~0.1kPa to 0~40MPa

Output signal: 4~20mA DC+HART protocol

Power supply: 12~45V DC, generally 24V DC

Range and null point: adjustable

Humidity: relative humidity 5~95%

Precision: 0.25%FS

Converter housing: Low copper cast aluminum alloy with Polyurethane paint

Fill Fluid: Silicon / Fluorine Oil

Process Connections: 1/2NPT, 1/4NPT

Protection Class: IP65

Maximum positive shift is 500% of minimum adjusting span; maximum negative shift is 600% of minimum adjusting span.

Mounting : Flange

Material:

Flange : Stainless Steel

Drains/Vents: Stainless Steel 316/Monel / Hastelloy

Diagrams: Stainless Steel 316/Monel /Hastelloy C/ Tantalum

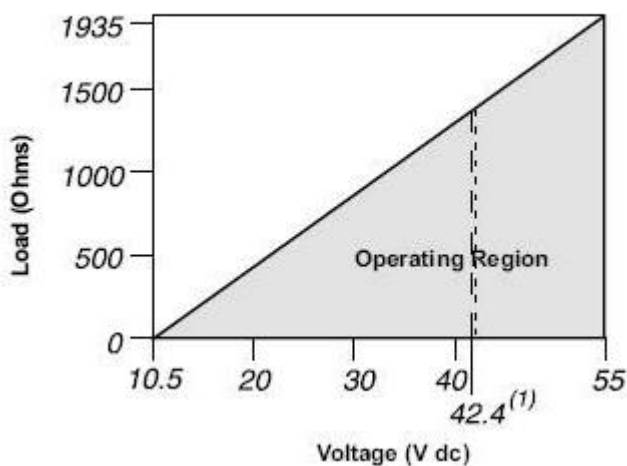
Wetted O-Ring: Viton/ Buna-N

Seal O-Ring: Viton/ Buna-N

Bolts & Nuts: Carbon Steel/Stainless Steel316

POWER SUPPLY LOAD LIMITATIONS, 4–20 MA TRANSMITTERS

$$\text{Max. Loop Resistance} = 43.5 \times (\text{Power Supply Voltage} - 10.5)$$



ORDERING CODES

Model 1151 3051DPR Remote Diaphragm differential Pressure Transmitter Datasheet

1151/3051DPR		Remote Diaphragm Differential Pressure Transmitter	
		Range	
3		0-1.3~7.5KPa	
4		0-6.2~37.4KPa	
5		0-31.1~186.8KPa	
6		0-117~690KPa	
7		0-345~2068KPa	
8		0-117KPa~1MPa	
9		0-0.4~2.5MPa	
0		0-1.6~10MPa	
		Output	
E		4-20mADC	
S		Smart 4-20mA+HART Protocol	
		Material of structure	
22		Standard	
		Quality of Remote Device	
S1		One set of Remote Device	
S2		Two sets of Remote Device	
		Optional	
M1		0-100% Indicator Meter	
M3		3 1/2 LCD Meter	
M4		Smart Meter	
B1		2" Pipe Mounting Angle Bracket, Carbon steel	
B2		Wall Mounting Angle Bracket, Carbon Steel	
B3		2" Pipe Mounting Bracket, Carbon steel	

NOTES:

200 series silicon oil filled in capillary for medium temperature -40~+149℃;

High temperature silicon oil filled in capillary for medium temperature -20~+315℃;

Pls select anti-corrosive material of flange diaphragm for corrosive medium.