TK3051F卫生型压力变送器

TK3051F Hygiene Pressure Transmitter

优异的产品

绝压和表压测量范围：0-21至0-5512kPa0.2%参学精度，包括线性、迟滞性和重复性影响量程比20:1。

稳定性0.1%URL/年；

用于CIP/SIP应用场合，温度上限248°F（140℃）；

采用HART通讯协议通讯；

基于微处理器的电子线路板；

双室结构外壳（水密性电性电子外壳）；

模块化没计，令维修快速且经济；

抗射频干扰能力；

变送器逐台特性化和数字化补偿，可优化变送器在整个工作范围内的性能；

外部零点和量程调整。

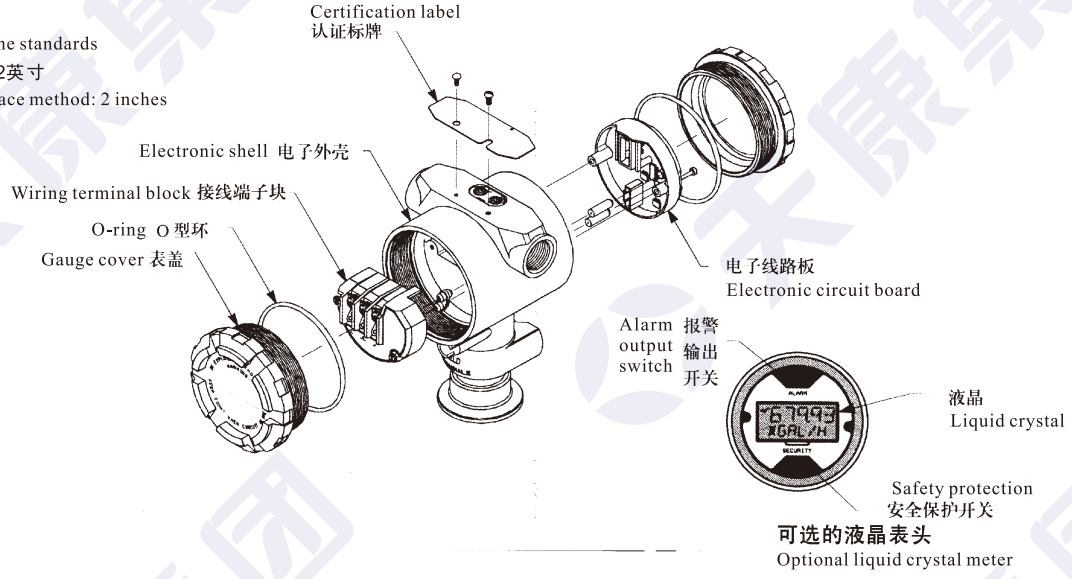
Excellent product

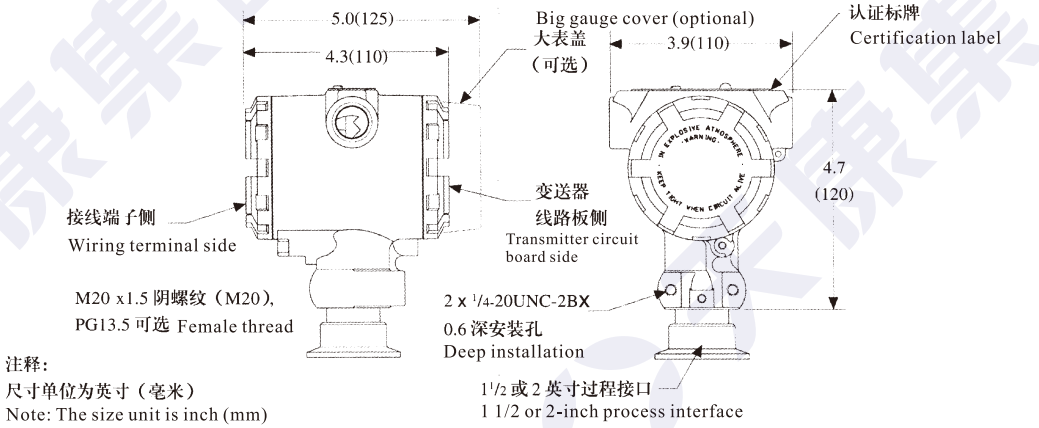
Absolute pressure and gauge pressure measurement range: 0-21 to 0-5512k Pa 0.2% parameter accuracy, including linearity, hysteresis and repeatability influence Range ratio 20:1.
Stability 0.1%URL/year.
Applied in CIP/SIP, upper limit of temperature 248°F(140℃).
Adopt HART communication protocol.
Electronic circuit board based on micro processor
Modular design, rapid and economical maintenance .
Ability to withstand radio frequency interference .
Characterization of the transmitters one by one and digital compensation, able to optimize the performance within the whole operation range.
External zero point and range adjustment
Design for professional hygiene application .

专业卫生型应用场合设计

Design for professional hygiene application

符合卫生标准
In line with hygiene standards
安装接口方式：2英寸
Installation interface method: 2 inches





注释：
尺寸单位为英寸（毫米）
Note: The size unit is inch (mm)

简介

3051F卫生型压力变送器符合卫生标准，产品接触表面为 CIP清洗而设计，结构件材料符合卫生要求。

Introduction

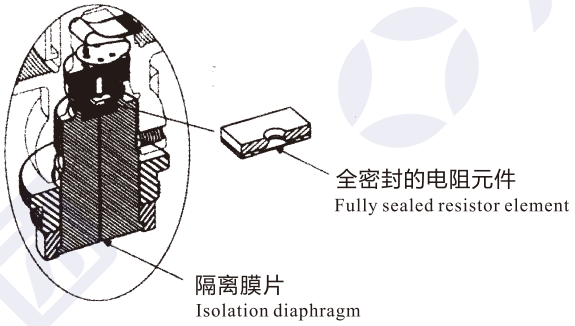
3051F hygiene pressure transmitter meets the hygiene standards. The product contact face is the designed for CIP cleaning and the material of structural part meets the hygiene standards.

应用

3051F型小巧、稳定、可靠，是食品和制药行业的理想产品，可直接安装在过程管线或罐上，无需支架。过程温度 上限为140℃，令3051F型变送器适用于有高温蒸汽清洗的场合。

Application

Being small, stable and reliable, 3051F product is the ideal product for food and pharmaceutical industries and it can be installed dir11ectly on the process pipeline or cans without requiring frames. The upper limit of process temperature is 140℃ so that the 3051F transmitter is able to be applied to high temperature steam cleaning.



应用场合

液体、气体、蒸汽和高粘度应用场合。

Applications

Liquid, gas, steal and high viscosity application.

量程

Range

量程 Ramge	量小量程（智能） Min.Range (Intelligent)	UPL/最大量程/传感器上限 UPL/MAX.Range/Upper Limit of Sensor
1	10.3kPa(103mbar)	200kPa(2.06bar)
2	51.7kPa(517mbar)	1034kPa(10.34bar)
3	276kPa(2.76bar)	2068kPa(20.68bar)

输出

4-20mAdc/HART数字通讯。

Output

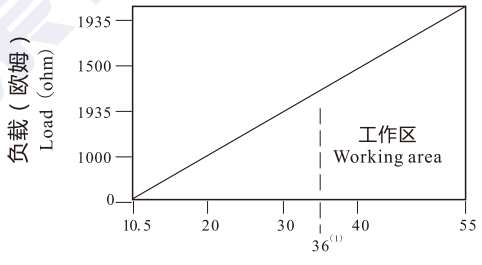
4-20mA dc/HART digital communication.

量程比

20：1负载限制。
最大回路负裁=43.5（电源电压-10.5）。

Range ratio

20:1 load limit.
Maximum circuit load = 43.5 (power supply voltage -10.5)



电源

要求外部电源供电，无负载时变送器工作电压10.5-36V，反向保护是标准的。

Power supply

External power supply is required. The operation voltage for the transmitter without load is 10.5-36V. Reverse protection is standard.

零点正、负迁移

零点可在大气压与量程上限之间（3051FG型）或0kPa与量程上限之间（3051FA型）进行迁移，且校验量程大于或等于最小量程，最程上限值不大于URL（量程上限）。3051FG型不可真空校验。

Zero point positive and negative shift

The zero point can shift between the barometric pressure and the upper limit of range (3051FG type) or between 0kPa and upper limit of range (3051FA type) and the check range is larger than or equal to the minimum range. The upper limit of the range shall not be larger than URL (upper limit of the range). 3051FG transmitter can not be checked with vacuum.

过压极限

量程1：826.8kPa。

其它：2URLh。

Overpressure limit

Range1:826.8kPa

Others:2URL

温度极限

过程：-4至284°F(-20至140℃)

环境：-4至185°F(-20至85℃)

贮存：-22至185°F(-30至85℃)

过程温度高于185°F(85℃)，要求环境温度极限降低超出值的1/1.5。

Temperature limit

Process: -4 to 284°F(-20 to140℃)

Environment: -4 to 185°F(-20 to 85℃)

Storage: -22 to 185°F(-30 to 85℃)

When the process temperature is higher than 185°F(85℃), it is required that the reduction of the ambient temperature limit shall exceed 1/1.5 of the value.

$$\text{最大环境温度(℃)} = 85 - \frac{\text{过程温度-85℃}}{1.5} \qquad \text{Maximum ambient temperature (°F)} = 185 - \frac{\text{Process temperature-85℃}}{1.5}$$

$$\text{最大环境湿度(°F)} = 185 - \frac{\text{过程温度-85℃}}{1.5} \qquad \text{Maximum ambient humidity(°F)} = 185 - \frac{\text{Process temperature-85℃}}{1.5}$$

湿度极限：0~100%相对湿度。

容积变化量：小于0.00042cm³。

启动时间：2秒，无需预热。

Temperature limit: 0~100% relative humidity

Volume change: smaller than 0.00042cm³

Start time: 2 seconds without preheating

故障报警

如自诊断出传感器或微处理故障，变送器则驱动输出一个高或低的报警信号以提醒用户。高或低的报警方式由用户改变变送器的跳线插针术选择。报警输出值取决于变送器的工厂组态方式：是标准操作还是符合NAMUR的操作。

Fault alarm

When the sensor or the microprocessor is self-diagnosed with fault, the transmitter will drive one high or low alarm signal to alarm the customer. The high or low alarm method is selected by the user by changing the jumper insertion technology. The alarm output value depends on the plant configuration method for the transmitter: standard operation or operation in line with NAMUR.

标准操作

线性输出：3.9≤I≤20.8。

故障高：I≥21.75mA。

故障低：I≤3.75mA。

Standard operation

Linear output: 3.9≤I≤20.8

Fault high: I≥21.75mA

Fault low: I≤3.75mA

符合NAMUR的操作

线性输出：3.8≤I≤20.5。

故障高：I≥22.5mA。

故障低：I≤3.6mA。

Operation in line with NAMUR

Linear output: 3.8≤I≤20.5

Fault high: I≥22.5mA

Fault low: I≤3.6mA

变送器安全保护

启动变送器安全保护功能可防止对变送器组态的修改，包括本机零点和最程调整功能。调整内部的安全保护开关可启动保护功能。

Safety protection of transmitter

The safety protection function of the transmitter can prevent the transmitter configuration from changing, including the zero point and range adjustment function for the machine. The adjustment of internal safety protection switch can start the protection function.

功能指标

零基量程，参考条件，316SST隔离膜片。

Function index

(zero base range, reference conditions, 316SST isolation diaphragm)

参考精度

±0.2%校验量程，包括线性、迟滞性和重复性影响。

Reference accuracy

±0.2% calibration range, including linearity, hysteresis and repeatability influence

环境温度影响（每100°F(56℃)影响）

±（0.3%URL+0.3%量程），-40至185°F（-40至85℃）。

稳定性

±0.10%URL，12个月。

时间相应

时间响应时间常数小于200毫秒（阶跃压力变化输出达到63.2%的响应时间）。

振动响应

小于±0.10%URL，振动测试条件：峰-峰值4mm(5-15Hz)加速度2g(15-150Hz)，及1g(150~2000Hz)。

电源影响

小于±0.01%校验量程/伏。

安装位置影响

零点最多漂移0.3kPa，可修正掉。无量程影响。

射频干扰(RFI)影响

<±0.25%URL，在20~100MHz，30伏/米场强下，引线在导线管内；<±0.25%URL，10伏/米场强下，使用不带屏蔽的双绞线（无导线管）。

Environmental temperature influence (influence of each 100°F(56℃)

±(0.3%URL+0.3% range), -40 to 185°F(-40 to 85℃).

Stability

±0.10%URL, 12months.

Time response

Time constant smaller than 200 milliseconds (the response time for the step pressure change output to reach 63.2%)

Vibration influence

Smaller than ±0.10%URL, vibration test conditions: peak-peak value 4mm(5-15Hz).Acceleration 2g(15-150Hz) and 1g(150~2000Hz).

Power supply influence

Acceleration 2g(15-150Hz) and 1g(150~2000Hz).

Installation position influence

Maximum drift of zero point is 0.3kPa and it can be corrected. No range influence.

Radio frequency interference (RFI) influence

<±0.25%URL, under 20~100MHz, 30 volts/meter field strength, the leading wire is in the wire conduit; under <±0.25%URL, 10 volts/meter field strength, use non-shielded twisted pair (without wire conduit).

机械性能指标
Mechanical performance index

电气接口

1/2-14NPT，M20x1.5（CM20）或PG13.5导线管入口。

过程接液件

隔离膜片：316L不锈钢；
过程接头：316L不锈钢。

非接液件

电子外壳：低铜铝，NEMA 4X,IP65,IP67；
喷涂：聚氨酯；
表盖O型环：丁腈橡胶；
重量：约1.24公斤。

Electrical interface

1/2-14NPT, M20x1.5(CM20) or PG13.5 wire conduit entry.

Process liquid connection part

Isolation diaphragm: 316L stainless steel
Process joint: 316L stainless steel

Non liquid connected part

Electronic shell: low copper aluminum, NEMA 4X,IP65,Ip67.
Spray: PU.
Gauge cover O-ring: nitrile butadiene rubber.
Weight: about 1.24 kilograms .

3051F型订货信息表

3051F Type Order Information

型号 Model	产品描述 Product Description	
3051FA	卫生型绝压变送器 Hygiene absolute pressure transmitter	
3051FG	卫生型表压变送器 Hygiene gauge pressure transmitter	
代码 Code	**量程 Range**	
1	0-200kPa(0-2bar)	
2	0-1030kPa(0-10.3bar)	
3	0-5515kPa(0-55.15bar)	
代码 Code	**输出 Output**	
S	4-20mAdc/HART数字通讯 4-20mAdc/HART digital communication	
代码 Code	**结构件材料 Material of structure part** **过程接口 Process interface**	**隔离膜片 Isolation diaphragm**
2D	316SST	316SST
代码 Code	**过程接口 Process interface**	
F	2英寸Tri-clamp接口 2-inch Tri-clamp interface	
G	3英寸Tri-clamp接口 3-inch Tri-clamp interface	
代码 Code	**导线管入口螺纹 Entry thread of wire conduit**	
2	M20X1.5(CM20)	
代码 Code	**表头（选项） Meter (optional)**	
M5	液晶表头 Liquid crystal meter	
代码 Code	**产品描述 Product Description**	
E5	本安 Intrinsic safety ia Ⅱ CT4/CT6	
K5	隔爆 Explosion suppression d Ⅱ CT4/CT6	
典型型号：30 Typical mode:30	**1FG 2 S 2D F 1**	

校验

变送器由工厂按用户指定量程校验。如果不指定校验范围，则按变送器所选量程的最大测量范围校验。校验在环境温度和常压下进行。

Calibration

The transmitter shall be calibrated by the plant according to the amount designated by the user. When the calibration range is not specified, it shall be calibrated according to the maximum measurement range of the selected range. The calibration is conducted with ambient temperature and normal pressure.