

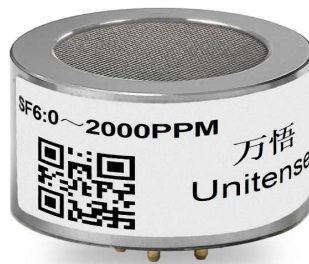
# 产品规格书

## PRODUCT SPECIFICATION

### 红外六氟化硫泄露监测传感器

### NDIR Type SF<sub>6</sub> Leakage Detection Sensor

### U9802 Series Rev. A0



版本 Version	修订记录 Revision Record	发行日期 Issue Date
A0	初次发放 Initial Release	2023. 3. 10

## 1. 产品介绍 Product Introduction

### 1.1 产品概述 Product Description

U9802系列是一系列用于监测六氟化硫(SF<sub>6</sub>)气体泄露的传感器，本产品利用非色散红外(NDIR)原理探测环境中的SF<sub>6</sub>气体浓度，它采用优化的光学设计、电路设计、数字信号处理算法和补偿算法，相较于市场同类型产品，它具有信噪比高、重复性好、响应快的特点。得益于其额外的参考通道，它具有更好的稳定性。此外，通过质量功能展开和稳健性设计，产品通过了多项严苛的环境测试和寿命测试，具有优越的可靠性。U9802 series are optical gas sensors designed for detecting sulfur hexafluoride (SF<sub>6</sub>) leaks using non-dispersive infrared (NDIR) technology. This product features optimized optical and circuit design, along with advanced digital signal processing and compensation algorithms. Compared to similar products on the market, it offers a high signal-to-noise ratio, excellent repeatability, and rapid response time. Its dual-beam design provides enhanced stability over single-beam design. Additionally, through quality function deployment and robust design, the sensors have successfully passed multiple functional and environmental tests, ensuring superior reliability.

### 1.2 产品特性 Product Features

- ◇ 多温度点/全量程校准 Full-measurement-range calibration at multi-points temperature
- ◇ 双通道设计，性能稳定 Dual-beam design to ensure stable output
- ◇ 零点噪声有效值小于10 ppm; RMS noise less than 10 ppm @ zero
- ◇ 使用寿命大于10年 Work-life more than 10 years
- ◇ 标准的工业7系外形、便于安装 Standard industrial 7-series size for easy installation
- ◇ 提供自动校准模式和手动校准模式 Auto-calibration and Manual-calibration available
- ◇ 信号输出方式 UART and voltage output signal

### 1.3 应用领域 Application Field

- ◇ 电力系统中高压气体绝缘开关设备和断路器中的SF<sub>6</sub>泄露监测
- ◇ Monitoring SF<sub>6</sub> Leakage for high-voltage switching equipment in smart grid power systems such as gas-insulated switchgears and circuit breakers

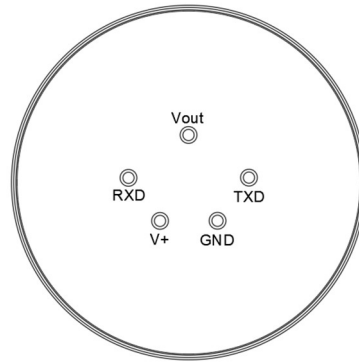
## 2. 产品特性 Product Characteristics

### 2.1 技术指标 Technical Specification

产品型号 Product Number	U98020001	U98020002	U98020003
检测气体 Target Gas	Sulfur Hexafluoride (SF <sub>6</sub> )		
检测范围 Measurement Range <sup>(1)</sup>	0 ~ 1000 ppm	0 ~ 2000 ppm	0 ~ 100% Vol.
检测精度 Accuracy <sup>(2)</sup>	± (20 ppm + 3% reading)	± (20 ppm + 3% reading)	± 1% Vol. or ±10% of reading, which one is greater
零点漂移 Zero Drift <sup>(3)</sup>	≤ 1% F.S.		
响应时间 Response Time	< 30 seconds		
工作条件 Operation Conditions	-20~60 °C; 0~95% RH (Non-condensing)		
存储条件 Storage Conditions	-40 °C~85 °C		
供电电压 Power Supply	DC 3.6 V~5.5 V <sup>(1)</sup> , Ripple voltage < 50 mV		
平均工作电流 Average Current	< 40 mA		
峰值电流 Peak Current	< 300 mA		
通讯接口 Communication Interface	1) UART TTL (3.3 V) 2) Voltage output (0.4 V - 2 V) <sup>(1)</sup>		
产品寿命 Life Expectancy	10 years		
长期稳定性 Long-term Stability <sup>(3)</sup>	≤ 2% F.S.		
重量 Weight	35 grams		

- (1) Contact Unitense for customized request, e.g., measurement range, supply voltage, output type, etc..  
 (2) Specification is referenced to certificated calibration gas mixture (±2% uncertainty).  
 (3) Ambient condition: 20 to 30 °C, 50% to 70%RH.

## 2.2 引脚定义 Pin Definition



Bottom view from pin surface

引脚 Pin-out	描述 Description
GND	GND
V+	DC power supply
RXD	UART_RXD
WU	Voltage output (0.4 V - 2 V) corresponding to 0 – 100% full range
TXD	UART_TXD

## 3. 外形尺寸 Product Outlines (unit: mm)

