

Datasheet – Ultra-low power R32 sensor, Cranberry

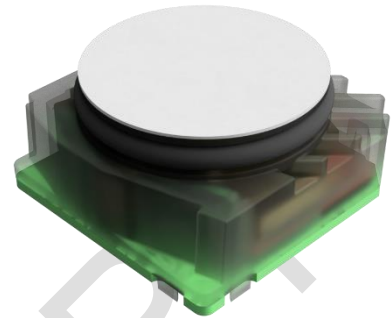
PRELIMINARY

Revision	Date	Description of Change
0.1	03/2021	Initial version



1. Key features

- New 1-Series ultra-compact form factor
- Ultra-low power consumption: < 0.61 mA
- Very low peak current: < 4 mA
- Simple digital communication UART interface
- Factory calibrated with temperature compensation
- Fast response time, $T_{90} < 30$ s
- ATEX & IECEx certified



2. Description

Cranberry R32 sensors are cutting-edge NDIR (Non-dispersive Infrared), dual-channel, gas sensors integrated in the new 1-series form factor. They are based on eLichens' patented technology including a proprietary IR micro-source, patented optical design and advanced signal processing algorithms. It provides Cranberry sensors the lowest power consumption and the highest stability on the market in a compact formfactor. These are key differentiators allowing the development of innovative battery-powered safety products.

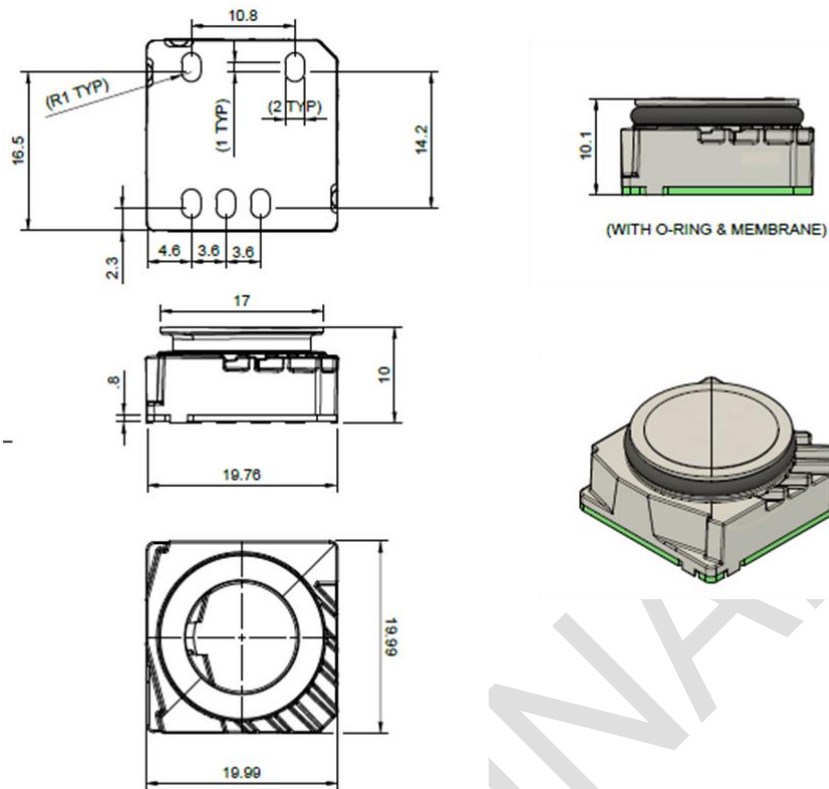


3. Specifications

Functional specifications @ 25°C, 50%RH, 1atm & 3.3V	
Technology	Non-Dispersive Infrared (NDIR), Dual-channel
Gas sampling method	Diffusion
Target gas	R22, R32, R123, R227, R1233zd R1234yf, R1234ze, R134a, R11 (low absorption) R32-calibrated
Measurement range	0...100% LFL
Data rate	2 measurements / second
Accuracy	±2% LFL or ±5% of reading (whichever is greater)
Resolution	1% LFL
Warm up time	30 seconds
Response time T₉₀	30 seconds
Lifetime	10 years
Environmental specifications	
Operating temperature range	-20...50°C
Operating humidity range	0...90%RH, non-condensing
Storage temperature range	-20...50°C
Electrical specifications @ 25°C, 50%RH & 1atm	
Supply voltage	3.0...5.0 V
Average current consumption	< 610 µA
Peak current	< 4.0 mA
Output	Digital, UART

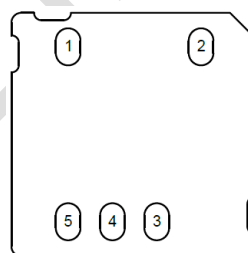


4. Outline



All dimensions are in millimeters [mm]

5. Pinout



Bottom view

Number	Name	Type	Description
1	VCC	Power	Power supply
2	GND	Power	Power Ground
3	Tx	Output	Asynchronous transmit to Host Controller UART
4	Rx	Input	Asynchronous receive from Host Controller UART
5	CS	Input	Chip Select (active 'low'), a falling edge on this pin wake up the sensor and activate the communication port. A rising edge de-activate the communication port of the sensor.



6. Intrinsic safety

Cranberry sensors are safe to use in explosive atmosphere because they are intrinsically safe regarding the ATEX and IECEx certification. It has been certified by the certification agency Ineris (code 0080).

Cranberry sensors are certified for intrinsic safety including the following certifications:

- IEC/EN 60079-0: 2012 + A11: 2013
- IEC/EN 60079-11: 2013
- IEC/EN 60079-28: 2015
- EN 50303: 2000

ATEX certificate:

Certificate number: INERIS 19ATEX9001U

Cranberry sensors respect the two following markings:

- Ex ia op is IIC Ga
- Ex ia op is I Ma

The marking on the sensor will be:



Cranberry sensors can be used in explosive gas atmosphere and in Mines susceptible to firedamp. For both areas, the sensors are safe to be used in Zone 0, atmosphere area having a permanent and/or prolonged risk of explosions.

Equipment category and Equipment protection level (EPL)

The sensor is intrinsically safe if the implementation of the sensor complies with the following rules:

- Electrical parameters (U_i , I_i , P_i , C_i , L_i) are limiting to intrinsic values according to the standard EN 60079-11.
- Cranberry sensor is compliant with the ATEX temperature class T4 for a maximal ambient temperature of +60°C.

Intrinsic input parameters:

- $U_i = 5.0V$
- $I_i = 1.2A$
- $P_i = 1.2W$
- $C_i = 39\mu F$
- $L_i = 0\mu H$

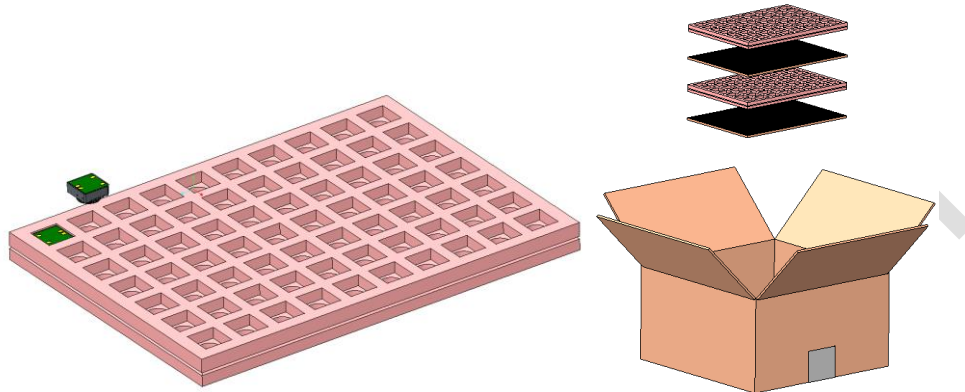


7. Packaging and Order Information

7.1. Packaging

Note: Information subject to change

The sensor is packaged inside a plastic tray as shown in the pictures below.



7.1. Part number

Cranberry R32 sensors can be ordered via the following article numbers.

Target gas	Full scale	Temperature range	APP CODE	Part number
R32	0 – 100%LFL	-20 to 50°C	272	CRA-30-272

For further information, please contact:

eLichens
 17 rue Félix Esclançon
 38000 Grenoble
 FRANCE

info@elichens.com
 www.elichens.com