Fujikura

August 17, 2010

No. V-8358B

Messrs.

SPECIFICATIONS

Oxygen sensor

Model: FCX-UWC

RoHS compliance model, Ceramic base.

Project:

Reference:

Fujikura Ltd.

Specifications of Oxygen Sensor Unit **V-8358B**

1. General:

This document describes the customized specifications of a ceramic oxygen sensor unit, FUJIKURA FCX-UWC.

Table shown below is revision records of this specification

V				
IV				
III				
II	Aug. 17,2010	M. Hashimoto	Revised marking format	(B)
I	11-7-2006	H. Nishida	Correction: accuracy 2%FS ➔ 0.5%FS	(A)
Est.	11-1-2006	H. Nishida	RoHS compliance, Ceramic base	
	Date	Name	Comments	Remark

Model	FCX-UWC (RoHS compliance model, Ceramic base)
1. Measuring Gas	Oxygen
2. Measurement Method	Limiting current method using Zirconia Solid-Electrolyte
3. Dimension and weight	Please see the drawing 9-760-001, Approx. 7g
4. Measurement Range	0.1 to 95 %O_2
5. Output current (IL)	8 ~ 20uA
	in free air , 1.0V sensing voltage (Vs), 1.5W heating
	Theoretical output is given by following equation.
	$\mathbf{I_L = -\,(\,[A] / 0.2357\,) \times \ln(\,1 - [O_2\%] / 100\,)}$ **-----(1)**
	[A] = Output current in 21.0% O_2 (uA)
	[O_2%] = Oxygen concentration (vol.%)
6. Accuracy	within +/- 0.5%O_2 FS (A)
7. Response Time	within 30 sec. (90% value)
8. Life time	10,000 hours at 95%O2, continuous Vs
9. Heater	Power consumption: 1.5WDC +/- 5%
	Voltage(Vh) for 1.5W: 1.7~3.0VDC (individual for each sensor)
	Warm up rate: Maximum 40mV/sec
10. Sensing element	Recommended Vs: 1.6~1.8VDC at 95%O2
11. Operating temperature	-10 ~ 50 degC
12. Storage temperature	-40 ~ 120 degC
13. Humidity	0 ~ 85 RH … Without condensation
14. Ambient pressure	0.5 ~ 5 atm

15. Vibration resistance	JIS C 5025 class A Maximum 9G
16. Warranty	Within one year after shipment For further information, please feel free to contact us.

Output current of FCX-UWC

	0	10	20	30	40	50	60	70	80	90	95	%O2
min	0.0	3.6	7.6	12.1	17.3	23.5	31.1	40.9	54.6	78.2	101.7	uA
max	0.0	8.9	18.9	30.3	43.3	58.8	77.8	102.2	136.6	195.4	254.2	uA

Marking

UC: FCX-UWC

Ex. C89001 : Year(2010), Month(August), lot number 9, serial number 001.

1st digit number (or alphabet) shows YEAR -------- *** Remark (B)**

Examples;

2008->A	**2018->8,**	**2028->A,**	**2038->8**
2009->B,	**2019->9,**	**2029->B,**	**2039->9**
2010->C,	**2020->0,**	**2030->C,**	**2040->0**
2011->D,	**2021->1,**	**2031->D,**	**-**
2012->E,	**2022->2,**	**2032->E**	*** 20 years cycle.**
2013->F,	**2023->3,**	**2033->F**	
2014->G,	**2024->4,**	**2034->G,**	
2015->H,	**2025->5,**	**2035->H**	
2016->I,	**2026->6,**	**2036->I**	
2017->J,	**2027->7,**	**2037->J**	

2nd digit number (or alphabet) shows Month

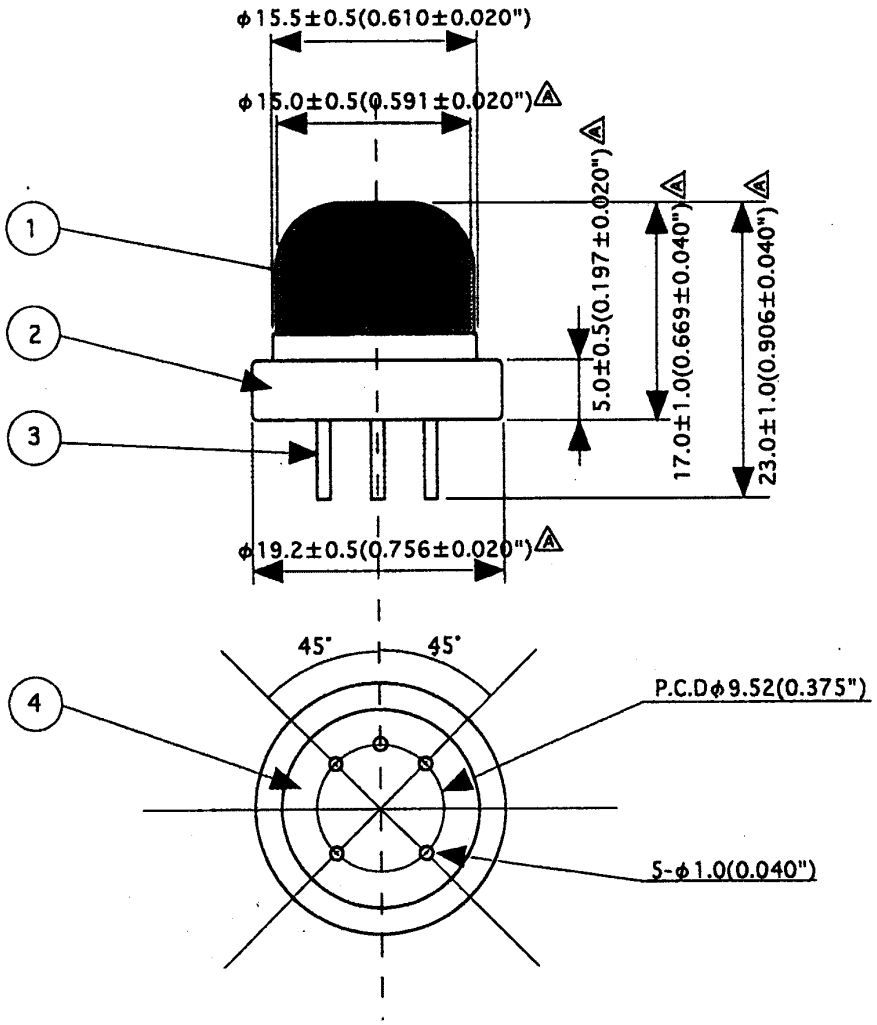
Ex. Jan.->1. Feb.->2, Mar.->3,,,,,,,,,Oct.->X, Nov.->Y, Dec.->Z

3rd digit number (or alphabet) shows lot number.

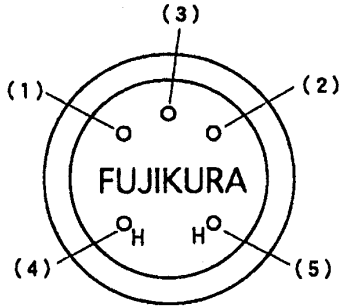
Ex. 1, 2, 3,--- 9,A,B,C, - - - - - Z.

Last three digit number shows Serial number of production.

Ex. 001, 002, ------, 999.



B 配接続図:Conection Diagram



(1) Vs (+) : センサ出力端子 (+) :Sensing terminal(+)
(2) Vs (-) : センサ出力端子 (-) :Sensing terminal(-)
(3) NC : 未使用端子 :Non-conected terminal
(4) VH (+) : ヒータ電圧端子 (+) :Heater terminal(+)
(5) VH (-) : ヒータ電圧端子 (-) :Heater terminal(-)

PART NO.	部品名 NAME OF PARTS	材質 MAT'L	個数 QTY	備考 REMARKS
4	ステム STEM	~~Plastics~~ Ceramics C	1	
3	リードピン POST PIN	Nickle	5	金メッキ Gold plating
2	リング RING	Brass	1	ニッケルメッキ Nickle plating
1	メッシュカバー MESH COVER	SUS316	1	100メッシュ 100mesh

PROJECT NAME:

MARK	変更 REVISIONS	年月日 DATE	変更者 BY
C	Sensor stem material: Plastic -> Ceramics	SEP 7,2006	H. N
B	誤記訂正(ピン配置) Correct of Mistakes(Pin arrangement)	97/11/04	永野
A	寸法見直し(インチ表示追記)	967/11/25	永野

フジクラ Fujikura Ltd. Tokyo, Japan

承認 APPROVED BY 安原
検図 CHECKED BY 澤
設計 DESIGNED BY
製図 DRAWN BY R.Nagano

第三角法 3RD ANGLE PROJECTION
単位 UNITS mm (inch)
尺度 SCALE Free
DATE OF ISSUE 1997.11.04
DATE OF DESIGN 1996.11.25

名称 TITLE
OXGEN SENSOR ELEMENT
OUTLINE DIMENSIONS
(Model: FCX-U, UW, UL, UC, UWC, ULC)

図面番号 DRAWING NO. 9-760-001
REV.MARK C

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Precautions Relating to the Use of the Fujikura Oxygen Sensor

Carefully read the following before using the oxygen sensor and analyzer.

1. Applications for medical appliances, life-support equipment and low oxygen detectors

(1) Fujikura products are not designed, intended or approved for use as components of surgical or life support systems, or other applications that may cause injury or death as a result. In unapproved applications or uses where the customer implies, directly or indirectly, resultant injuries or deaths are due to Fujikura, Fujikura affiliates and agencies (citing for example, a design or manufacture fault), Fujikura, Fujikura affiliates and agencies shall be free from responsibility relating to any claims, costs, losses, and compensation.

(2) When a Fujikura product is to be used in medical appliances and oxygen detectors other than those mentioned above, it is strongly advised that fail-safe designs are established. Fujikura should be consulted for the necessary information.

2. Service life and guarantee period

(1) The end of service life shall be defined as the time when the output no longer meets the specified precision.

(2) The guarantee period is for one year from the date of shipment. During the guarantee period, should defects occur under normal conditions of use as specified in the manual and within the service life, the product will be repaired or replaced without charge. However, a repair or replacement fee will be charged in the following cases.

Defect or damage due to inappropriate transportation or handling after delivery.

Defect or damage caused by misuse, abuse or careless handling.

Defect or damage due to unauthorized repairs or changes in configuration

Damage to the cosmetic appearance caused during use

Damage from fire, earthquake, flood or other natural disasters and abnormal

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voltage.

3. Operational precautions

3.1 Measurement of atmospheric gases

(1) Calibration gas

The sensor should be adjusted with a calibration gas that is a mixture of nitrogen, N_2 (or Argon, Ar) and oxygen, O_2. Other balance gases may result in incorrect measurements.

(2) Combustible gases

An atmosphere continuing combustible gases such as methane, alcohol, hydrogen and carbon monoxide may cause errors in measurement. Since the sensor element functions at 450°C, gases that ignite below that temperature must not be sued.

(3) Silicon gases

Never use silicon gases containing siloxane, as these gases react with the sensor and produce oxides, destroying the performance of the sensor over a very short period.

(4) Fluorocarbons

Do not use freons and others that contain halogens (F, Cl and Br), as these gasses react with materials inside the sensor and damage the performance.

(5) Sulfur oxides and hydrogen

Never use sulfur oxides (SOx) and hydrogen (H_2), as they react with the sensor and destroy the performance of the sensor over a very short period.

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3.2 Operating conditions

(1) Dust and oil mist

Employ a filter system to eliminate dust and oil mists that clog the sensor and analyzer filter, resulting in problems, measurement errors and incorrect responses.

(2) Water and condensation moisture

Contact of the sensor with water may destroy the sensor. Exclude water from the system.

3.3 Others

(1) There is a risk to burns, since the sensor mesh is heated to 50 - 80°C while the sensor is in operation.

(2) Do not subject the sensor to a shock of 10G or greater which may cause breaks in the wiring and cracks in the sensor chip.

(3) The sensor element is made of a ceramic material. Never expose it to heat suddenly as this could destroy the element.

4. Others

Any product described in the catalogues may be altered without prior notice to improve reliability, function or design.

Fujikura is not responsible for any incidents due to application of products and circuits described in the catalogues. No Fujikura patents or rights are licensed to a third party.

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