

Customer: _____


SPECIFICATION of CO2 MEASUREMENT UNIT

MODEL NO. : CO2-4K-3M-P-AL

 **NIPPON CERAMIC CO., LTD.**

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APPROVED BY	CHECKED BY	DRAWN BY

MODEL NO. : CO2-4K-3M-P-AL	DRAWING NO. : PRLNDI-001A	REV : 	PAGE 1 / 6	Mar,07, 2019
PART NO. :				 NIPPON CERAMIC CO., LTD.

1. SCOPE

This specification describes a CO2 Measurement Unit supplied by Nippon Ceramic Co., Ltd.

2. TYPE of UNIT

2.1. TYPE NAME: CO2 Measurement Unit

2.2. MODEL NO.: CO2-4K-3M-P-AL

3. DIMENSIONS

See Fig. 2.

Production Lot No. is put on a Unit.

4. GENERAL / ELECTRICAL CHARACTERISTICS

Table 1

PARAMETER	SPECIFICATION
4.1. Outputs	PWM Open Collector to GND Maximum 5mA
4.2. Operating Temperature	0 ~ +40 degrees Celsius
4.3. Storage Temperature	-20 ~ +50 degrees Celsius
4.4. Operating Humidity	0-85% non-condensing
4.5. Supply Voltage	5+/-0.5 VDC
4.6. Current Consumption	25mA (Average) <100mA (Peak)
4.7. Connector (3-pin)	Pin_1 - V+ Pin_2 - V- Pin_3 - PWM Output
4.8. Connector Type	JST S3B-EH-A(LF)
4.9. Reverse Polarity Protection	None


5. CO2 MEASUREMENT

Table 2

PARAMETER	SPECIFICATION
5.1. Type of Measurement	NDIR
5.2. Measurement Range	400 – 4,000ppm CO2 by volume
5.3. Resolution	< 20ppm CO2
5.4. Accuracy※1	+/-10% FS (+/-400ppm) at 25°C
5.5. Pressure Dependence	0.13% of reading per mm Hg
5.6. Response Time	< 3 minutes for a 90% step change
5.7. Warm Up Time	< 30 seconds operational <15 minutes full accuracy

※1

With respect to the accuracy described, it is the accuracy at the time of factory shipment,
It does not guarantee the subsequent accuracy.

MODEL NO. : CO2-4K-3M-P-AL	DRAWING NO. : PRLNDI-001A	REV :	PAGE 2 / 6	Mar,07, 2019
PART NO. :				 NIPPON CERAMIC CO., LTD.

6. Product life

In this product, the parts with the life expectancy in principle are lamps only, and it is as follows.
However, it is a design life, not a guarantee on commercial transactions.

Failure rate

100ppm	• • •	24,400 hour
1,000ppm	• • •	57,600 hour


7. Incoming inspection

After receiving products, inspection of the products shall be performed promptly. About defective lot in the inspection, it shall be returned in the original package, accompanying the document for the returning reason within one month from the time of shipment.

Among the defective products, the processed products by Your company cannot be applied for reimbursement process of the product return, since doubts arise in root cause investigation process.

8. Consultation item

Modification of this specification shall be made by document after consultation between Your company and NIPPON CERAMIC.

MODEL NO. : CO2-4K-3M-P-AL	DRAWING NO. : PRLNDI-001A	REV : 	PAGE 3 / 6	Mar,07, 2019
PART NO. :				 NIPPON CERAMIC CO., LTD.

9. Notes

9.1. Observance matters on final product design

- 9.1.1. In cases where secondary accidents due to operation failure or malfunctions can be anticipated, please add a fail safe function to the final product design.

9.2. Precautions on usage

Please use this product fully understanding that there are risks to cause malfunction, operation error and performance degradation in the use under the following conditions or their similar conditions.

- 9.2.1. Since this unit is designed supposing indoors use, please do not use outdoors.
 9.2.2. Use in rapid environmental temperature change.
 9.2.3. Use in strong shock or vibration.
 9.2.4. Use in fluid, corrosive gases and sea breeze.
 9.2.5. Continual use in high humidity atmosphere.
 9.2.6. Use in direct sun light or etc.
 9.2.7. Use in direct wind of Heater, Air Conditioner or etc.
 9.2.8. This product measures temperature in principle. Please use it not to hit the wind directly.
 9.2.9. This product has a light source inside. This light source is also a heat source, and the temperature of this product increases by about room temperature + 2 ° C.
 If the temperature sensor is installed nearby, the temperature sensor may not show the correct temperature.


9.3. Prohibition matters on handling and storage

Since appearance damage, malfunction, operation error or performance degradation is caused, please definitely avoid the operation and storage under the following conditions or the similar conditions.

- 9.3.1. Condition in vibration for a long time.
 9.3.2. Condition in strong shock.
 9.3.3. Place in static electricity or strong electromagnetic waves.
 9.3.4. Place in high humidity atmosphere for long time.
 9.3.5. Place in corrosive gases or sea breeze.
 9.3.6. Place in dusty environments that may contaminate and damage the sensor optics.

9.4. Notice

- 9.4.1. This product does not have the specification corresponding to the use which requires very advanced reliability (life support system and etc.) which is concerned with a human life.
 9.4.2. These specifications guarantee the quality in the sensor unit itself. Please surely perform evaluation and verification in the state where it has been integrated in the final product of your company before production use.
 9.4.3. Please understand that we cannot take responsibility of the fault produced by having deviated from the written contents of this specification and having used this unit.
 9.4.4. The product described in this document shall not be used or embedded to any downstream products of which manufacture, use and / or sales are prohibited under any applicable laws and regulations.
 9.4.5. We will not take any responsibility for any loss or damage other than this product caused by defects of this product.
 The warranty is limited in any case to repair or replacement of the product.

MODEL NO. : CO2-4K-3M-P-AL	DRAWING NO. : PRLNDI-001A	REV : 	PAGE 4 / 6	Mar,07, 2019
PART NO. :				 NIPPON CERAMIC CO., LTD.

10. PWM Output Cycle

Table 2

PARAMETER	SPECIFICATION
10.1. Cycle Period	1004 ms +/- 5%
10.2. Cycle Start High Level	2ms (nominal)
10.3. Cycle End Low Level	2ms (nominal)

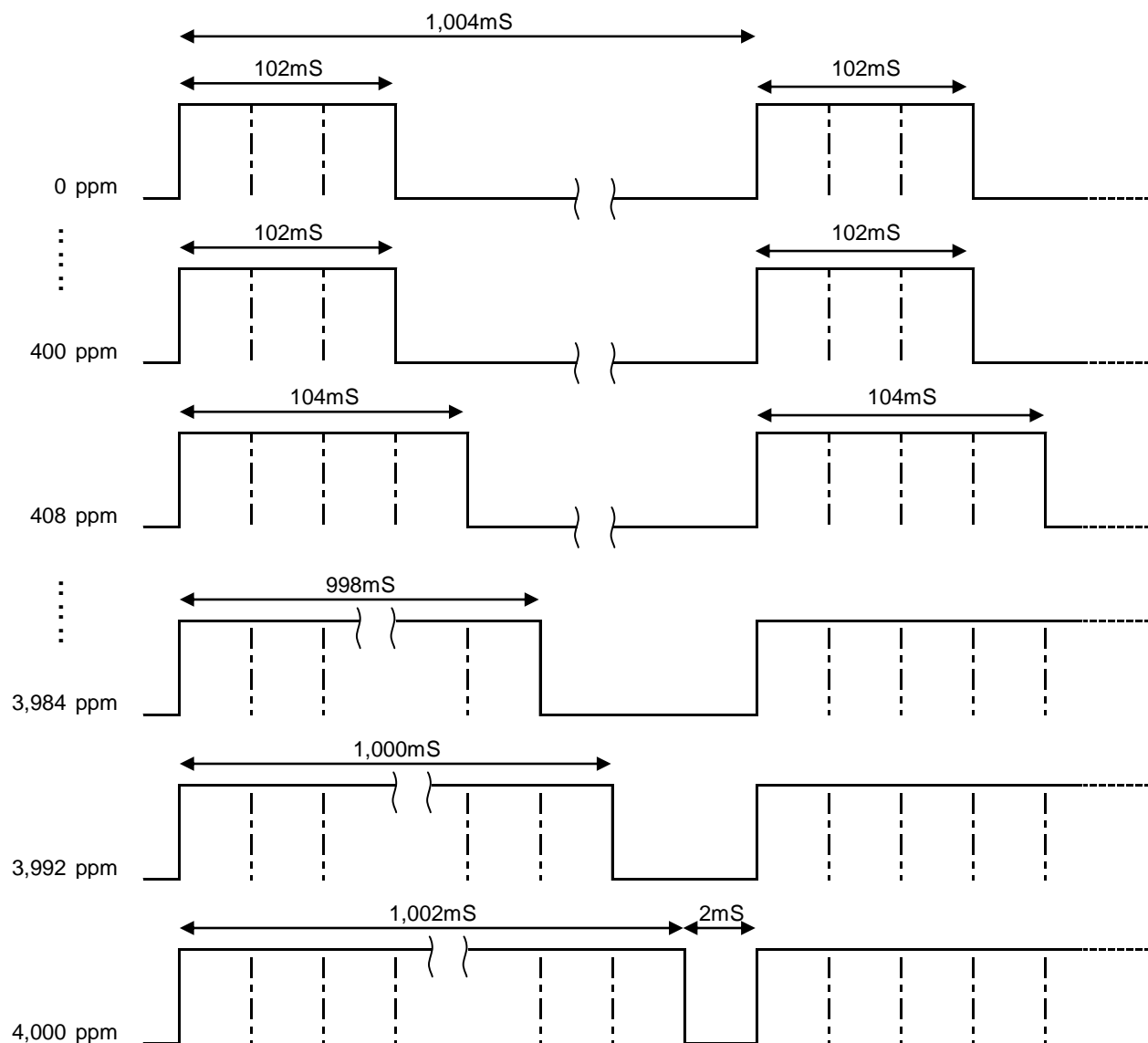



Figure 1: PWM Output Cycle

MODEL NO. : CO2-4K-3M-P-AL	DRAWING NO. : PRLNDI-001A	REV : 	PAGE 5 / 6	Mar,07, 2019
PART NO. :				 NIPPON CERAMIC CO., LTD.

lot number
YY/MM/DD

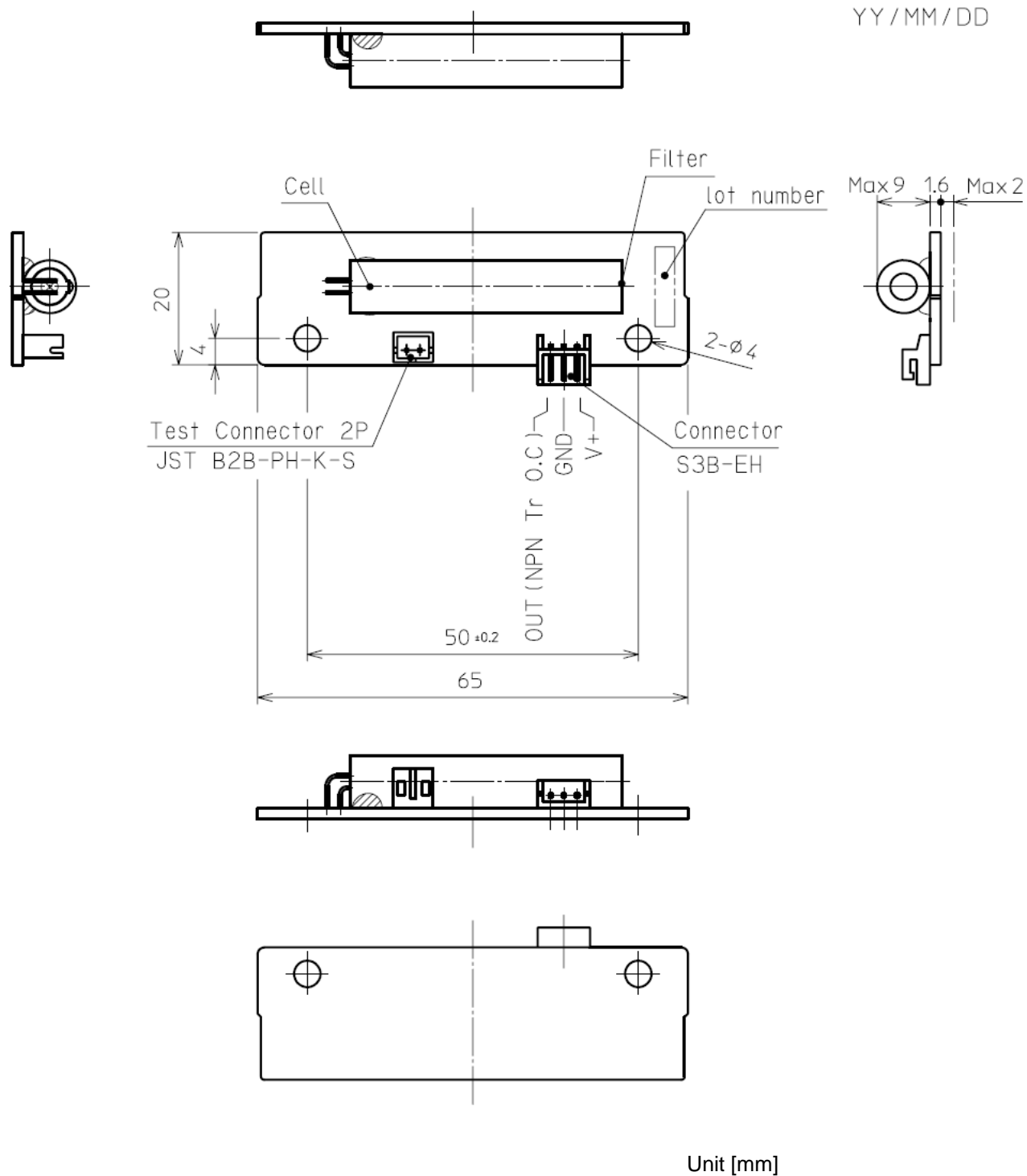



Figure 2: Dimensions

MODEL NO. : CO2-4K-3M-P-AL	DRAWING NO. : PRLNDI-001A	REV :	PAGE 6 / 6	Mar,07, 2019
PART NO. :				 NIPPON CERAMIC CO., LTD.