1. Product name

3D Image Sensor

2. Type Number

EKL3106

3. Dimensions

Height : 54mm (2.13 inch)   Width : 170mm (6.7 inch)   Depth : 50.5mm (1.99 inch)
(except protuberance)

※See annex for details（external design）

4. Specifications

4-1 Basic Specifications

		Value	Special Mention
Operating Range		1.2m ～ 5.0m(3.94ft～16.40ft) (Ambient Illumination : 0lx) 1.5m ～ 5.0m(4.9ft～16.40ft) (Ambient Illumination :100,000lx)	For a 90% near-infrared reflectance of target object Ambient temperature 25℃(77° F), 30fps
Field of View	Horizontal	Approx.60°	―
	Vertical	Approx.44°	
Pixel Array Size	Horizontal	160 Pixel	―
	Vertical	120 Pixel	―
Frame Rate		15fps,20fps,25fps,30fps (Default:30fps)	The frame rate can be switched with the application software.
Range Resolution		1）σ=3cm(1.18inch)(max) (Ambient Illumination : 0lx) 2）σ=14cm(5.51inch)(max) (Ambient Illumination : 100,000lx)	【Measuring Conditions】 Ambient temperature 25℃(77° F), distance 2m (6.56ft) ,90% near-infrared reflectance target object, at central pixel.(30fps) ※Depend on the environment and distance.
Modulation Frequency		3 modes	Mode selection is available using application software. It can be used to avoid interferences between different systems using 3D Image Sensors close by.
Operating Ambient Illumination		(Sunlight) 100,000lx and less	―

Panasonic Corporation	Approved by	*yuji Tahada*
	Checked by	―――――
Issued on Jan.1st,2012	Designed by	*Kimihibo Tazuo*

（1202101）

		Value	Special Mention
Output Type	Range Data	11bit	USB2.0 (Hi-Speed USB only)
	Image Data	8bit	
Connector		USB(mini-B type)	
Operating Temperature		-10℃ ～ +50℃ (14°F～122°F)	Avoid condensation or freezing
Operating Voltage	Maximum	25.2VDC	－
	Typical	24.0VDC	
	Minimum	22.8VDC	
Current Consumption		0.35A (Avg.) (sleep period: 0.15A)	2.5A (Peak)
Illumination Wavelength (LED)		850nm (typ.)	IEC60825-1:2005 Class 1 IEC62471:2006 exempt group
Weight		Approx. 550g	Sensor Unit only

*Indoor usage only.

4-2 Accessories
・Fall prevention wire, installation washer, installation screw
・Wiring fixation cramp, installation screw

4-3 Software
・USB Drivers
・Range Image Display Software
・Library for Application Software Development
・User's Manual
・Instruction Manual for library Dimagerdll.dll

※ The above software can be downloaded free of charge on the official home page.

4-4 System Composition

1) Recommended configuration (PC)
   ・OS   : Windows® XP SP3 32bit
              Windows Vista® SP2 32bit / 64bit
              Windows® 7 32bit / 64bit
   ※At least one available USB 2.0 port. (USB3.0 not supported)

Note) Timing of turning on this product or connection of USB cable to be after starting the PC.
      This product does not support "Standby" , "Sleep" and "Hibernate" in Windows.

*Windows and Windows Vista are registered trademarks of Microsoft Corporation
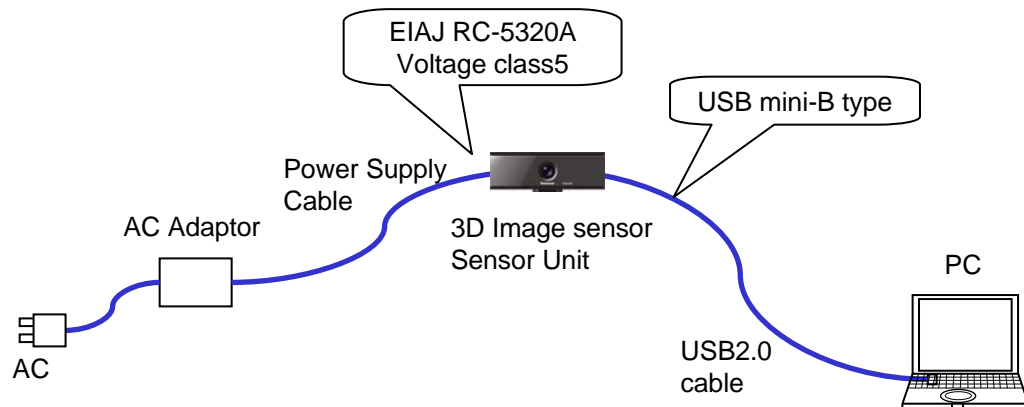in the United States and/or other countries.*

2) AC Adaptor （Not provided with the product）
   ・Output Voltage：24V±1.2V
   ・Ouptput Current：>2.5A
   ・DC plug type：EIAJ RC-5320A Voltage class5
    Polarity：◇-©-◆

3) USB2.0 cable （Not provided with the product）
     USB mini-B Type plug ⇔ USB interface for PC
     (Less than 5m(16.4ft))

3D Image Sensor Wiring Diagram

Note 1) Depending on the network environment or other applications etc., the sensor may not
        function.
Note 2) If you use simultaneously an other USB connected device, this product may not function
        properly.

⚠️

5. Safety Precautions

Our company is committed to making products of the highest quality and reliability. Nevertheless, all electrical components are subject to natural deterioration, and durability or characteristics of a product will depend on the operating environment and conditions of use. Continued use after such deterioration could lead to overheating, smoke or fire. Always use the product in conjunction with proper fire-prevention, safety and maintenance measures to avoid accidents, reduction in product life expectancy or break-down.

Example :
- ・Safety equipments and devices
- ・Traffic signals
- ・Burglar and disaster prevention
- ・Control or safety device for automotive or train etc.

Head the following precautions to prevent injury or accidents.

1) Do not use this product under any circumstances in which the range of its ratings, environment conditions or other specifications are exceeded. Such use may generate abnormally high levels of heat, emit smoke, etc., possibly resulting in damage to circuitry or other accident.

2) Do not use the product if it has been disassembled, remodeled or modified.
This could cause fire or accidents (Electrical shock etc.).

3) Do not insert anything in this products' openings.

4) This product is designed for indoor use. Do not use it in any outdoor environment or in places where it could be in contact with water.

5) Always connect the sensor unit (USB, AC adaptor) before plugging in the power supply.

6) Always use an AC adaptor as specified on page 2, and ensure it is properly connected.
Incorrect connections may cause malfunctions, generate abnormal high levels of heat, emit smoke, etc., possibly resulting in fire or causing electric shocks.

7) If smoke or smell should come out from the product, stop the usage immediately. If you continue, it could cause fire.

8) Make sure to install the product in a place that can support its weight (Mass). Any fall may cause accidents resulting in damages to the product or its surroundings. Therefore, for safety reasons, use the fall prevention wire or the wiring fixation cramp for installation for safety reasons .

9) Ensure a periodical maintenance. If the screws get rusted or loose, the product may fall and be damaged.

6. Operating Precautions.

6-1 Basic Precautions

The 3D Image Sensor calculates the distance to a target by measuring the "Time-of-Flight" of emitted near-infrared rays. Efficiency and reliability of the system may vary depending on actual operating conditions. Always consider the following factors:

1) High reflectance target:

For example if the target is close to the sensor (closer than 1.2m(3.94ft)) or in case the sensor receives light reflected by a mirror, the amount of power received increases considerably and may cause a saturation of the CCD element, resulting in distance measuring problems or errors.
Besides, the measuring errors can also occur in the target's surrounding area.

2) Intense ambient illumination:

The renge resolution may diminish if a light source (such as sunlight, incandescent light or heater etc.,) whose emission spectrum, containing near-infrared frequencies exceeding the specifications, exists inside the detection area of the sensor.
If the light source is too powerful, the CCD element in the sensor unit could saturate, resulting in distance measuring errors or malfunctions.

3) Fast moving targets:

Fast moving targets may produce distance measuring errors from miss calculation at the outline of the target.

4) Distance from wall or floor:

If wall or floor is close to the sensor (closer than 1.2 m (3.94ft)), it may produce distance measuring errors from reflection ofemitted near-infrared rays.

5) Other precautions:

The range resolution may diminish depending on the target's reflectance, distance to the sensor or position.

6-2 Usage and Storage Conditions

1) The product is designed for indoors use. Please make sure to install in the indoor enviroment.

2) Do not use or store in places where condensation or freezing can occur or near a cooling or heating system. Do not leave the product exposed to direct sunlight for a prolonged period.

3) This product is neither waterproof nor dustproof. Do not use or store in the following environments:
   a) Places with high humidity level, high temperature, low temperature
   b) Places exposed to corrosive gas, dust, gasoline, chemicals (including detergent) or water vapor.
   c) Places where the sensor would be exposed to condensation or freezing.

4) Avoid exposing the product to shocks, vibration which could cause malfunctions.

5) Do not touch the front panel or the lens with your hands. It could cause reduced performance.
   Do not place any cover on the sensor's front panel.

6) Do not use in environments with temperatures above 50℃(12F), the unit may malfunction.
   Always allow for proper ventilation. If installed on a wall or a rack, please leave at least 10cm(3.94inch) between the product's vent and closest wall and allow air to freely circulate around it.

7) When you have to install the transparent material like glass, etc, between the product and the objects, there is some possibility to cause the distance measurement error because the emitted near-infrareded rays might be reflected at the trasparent material surface.
   Please confirm at the actual installed condition.

6-3 Maintenance

Always turn off the power supply before maintenance, otherwise it could cause injuries or accidents.

1) Wipe the front panel with a soft paper towel to remove the dirt.

2) Do not apply any chemicals such as paint, benzine, aromatic liquid, pesticides etc., on the product.

6-4 Other Precautions

1) Please handle this product with extreme care. It may be damaged by shocks or a fall.

2) Please avoid applying pressure or impacts to the front panel or the lens that might deform the product's shape, causing operating errors or reduced performance.

3) Operating errors can be caused by electric noise from static electricity, lightning, cell phone, amateur radio, broadcasting offices etc…

4) This product does not have the USB2.0 authentication.
Use it only when the above -mentioned configuration and environments have been verified.

5) When you set the frame rate as 15fps, the embedded LED might be seen as blinking.
It is not abnormal.

6) The USB drivers, range image display software, library for application software development and installation manual are copyrighted by Panasonic Corporation.
Moreover, Panasonic Corporation provides the software as is, with no warranty as to its functionality, and disclaims any liability or responsibility for damage resulting from its use.

7) The following EMI noise levels are ensured.
・VCCI Class A conform
・FCC Class A conform
・CISPR22 Class A conform

8) Be careful to protect privacy when using the images captured with this product.

9) This device is for industrial use only. It can only fulfill its function, when it is installed with other equipment. It must be installed by professional personal.

（1202101）

7. Special Notice

As improvements are continually being made, the specifications or design of this product are subject to change without notice.

Please strictly follow the "Safety Precautions" and "Operating Precautions" on the specifications sheet. Normal functioning cannot be expected if used in environments or conditions other than those specified above.

We are deeply committed to providing the highest quality control for this product.
Nevertheless:

1)To reduce the risk of harm caused by product failure to human life or assets, this product should always be used in conjunction with other safety measures, such as protective circuitry, double layered circuit boards, etc., and used within the guaranteed performance, efficiency or special characteristics values stated in the specification sheet.

2)This product is warranted for a period of one year, from date of delivery, applicable only if the product is used in accordance with the precautions mentioned above and the specifications sheet. We will replace any malfunctioning product if such defect or malfunction is caused by us.

However, the above warranty shall be void in the following circumstances:

a) Damage caused to something else than the product itself.
b) Resulting from misuse of the product (use not in accordance with the precautions mentioned above and this specifications sheet).
c) Resulting from a fall, during relocation, transportation, or handling at the installation location, after the date of purchase
d) Phenomenon unforeseeable in the state of the technology as of the supply date.
e) Caused by natural or unnatural events such as fire, earthquake, flood, thunderbolt, or other natural disasters, pollution, salt air damage, gas damage (sulfuric acid gas etc.), abnormal voltage, usage of a non-specified power supply (in frequency or voltage), etc.
f) Resulting from installation or use in moving vehicles (automobiles, ships, airplanes, etc.)
g) Resulting from improper preparation, installation, or modification.
h) Damage resulting from the use in conjunction with an other company's product.
i) Intellectual property or privacy claims based on the use of images recorded using the sensor.

8. Provision on Export Trade Control

1) CUSTOMER shall not use this PRODUCT for any military purpose.

2) CUSTOMER shall screen its own customers to determine their potential involvement in uses related to MILITARY ACTIVITIES, and restrict each from reselling or retransferring the GOODS or TECHNOLOGY, directly or indirectly, to any customer who was, is or may be engaged in development, design, manufacture, use or storage of the WEAPONS OF MASS DESTRUCTION.

3) CUSTOMER shall not export or re-export the GOODS or TECHNOLOGY, directly or indirectly, to any country against which any sanction is imposed under certain resolutions of the Security Council of the United Nations, as long as such resolutions remain valid and effective and as far as the GOODS or TECHNOLOGY remain prohibited to be exported to such country.

4) In the event CUSTOMER breaches any provision of this Article, CUSTOMER shall be liable for any and all direct and indirect damages incurred by Panasonic Corporation arising from such breach, and, notwithstanding anything herein contained to the contrary, Panasonic Corporation shall have the right to terminate this AGREEMENT forthwith without any liability to CUSTOMER. Furthermore, Panasonic Corporation is not obligated to accept or fulfill any order which might contravene any export control laws, rules and/or regulations of any relevant country, or the provisions of this Article.
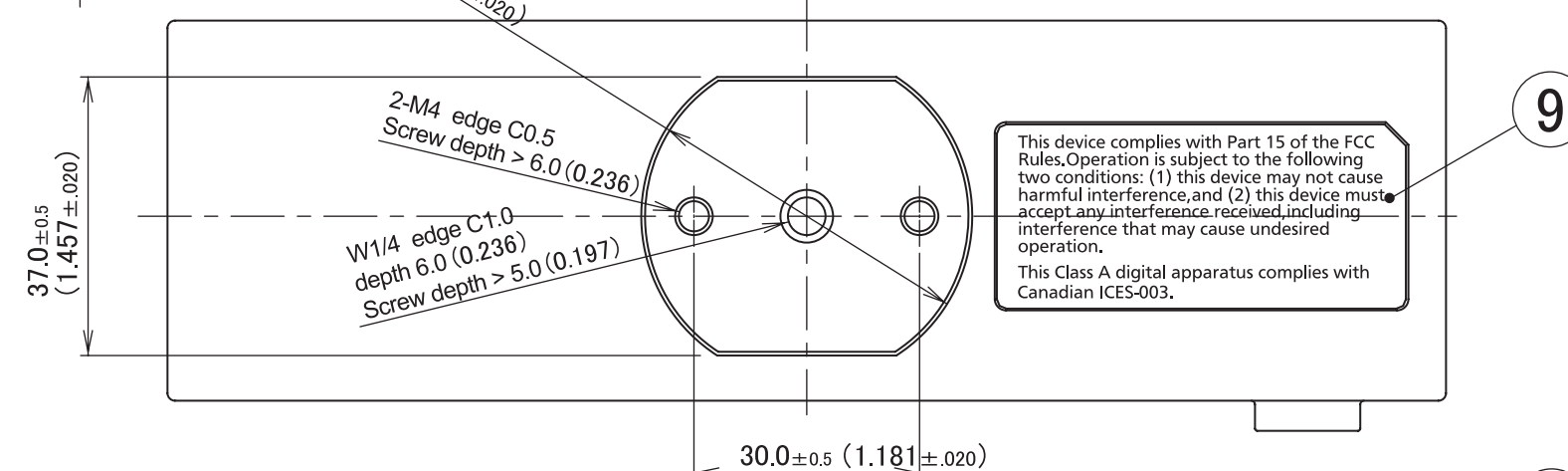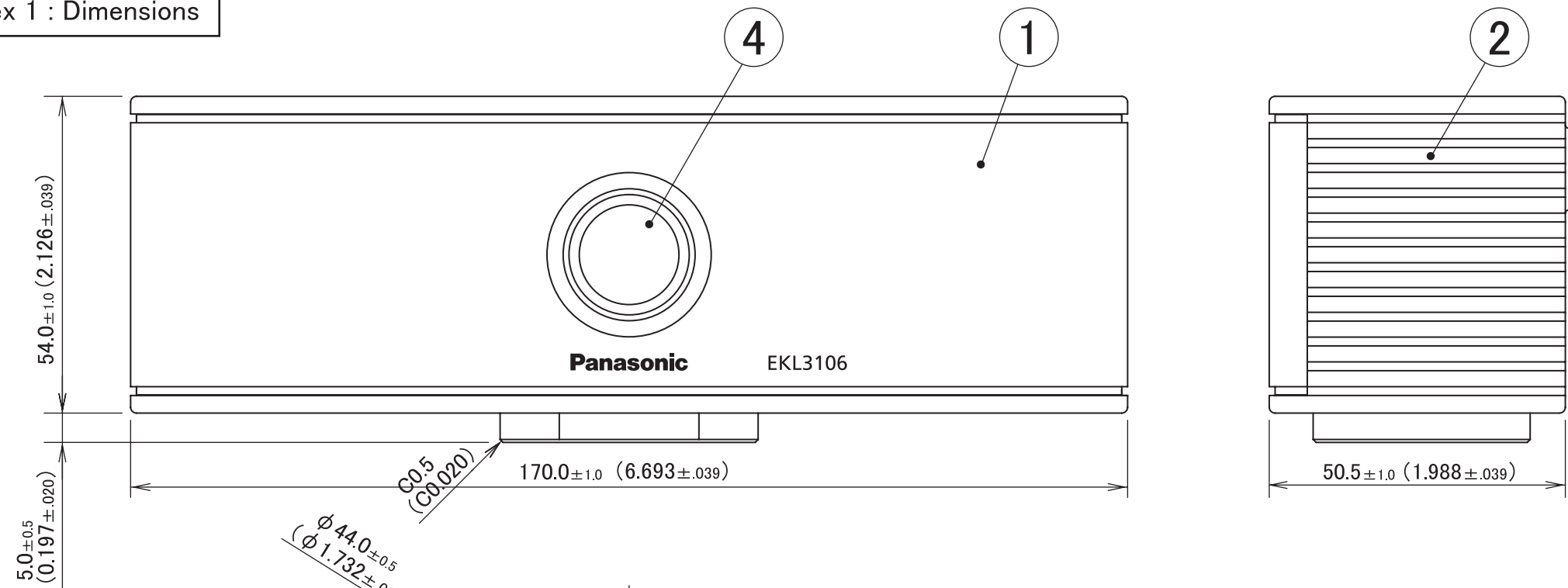
Annex 1 : Dimensions

Panasonic EKL3106

54.0±1.0 (2.126±.039)

5.0±0.5 (0.197±.020)

C0.5 (C0.020)

170.0±1.0 (6.693±.039)

50.5±1.0 (1.988±.039)

Ø44.0±0.5 (Ø1.732±.020)

2-M4 edge C0.5
Screw depth > 6.0 (0.236)

W1/4 edge C1.0
depth 6.0 (0.236)
Screw depth > 5.0 (0.197)

37.0±0.5 (1.457±.020)

30.0±0.5 (1.181±.020)

This device complies with Part 15 of the FCC Rules.Operation is subject to the following two conditions: (1) this device may not cause harmful interference,and (2) this device must accept any interference received,including interference that may cause undesired operation.
This Class A digital apparatus complies with Canadian ICES-003.

Back side

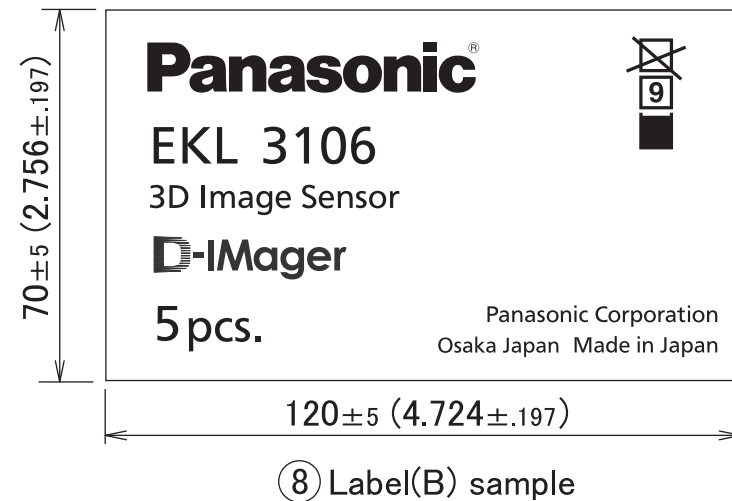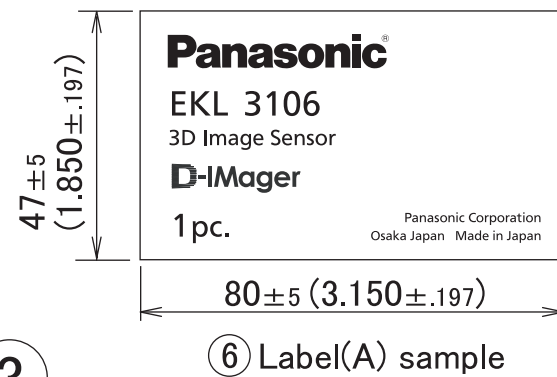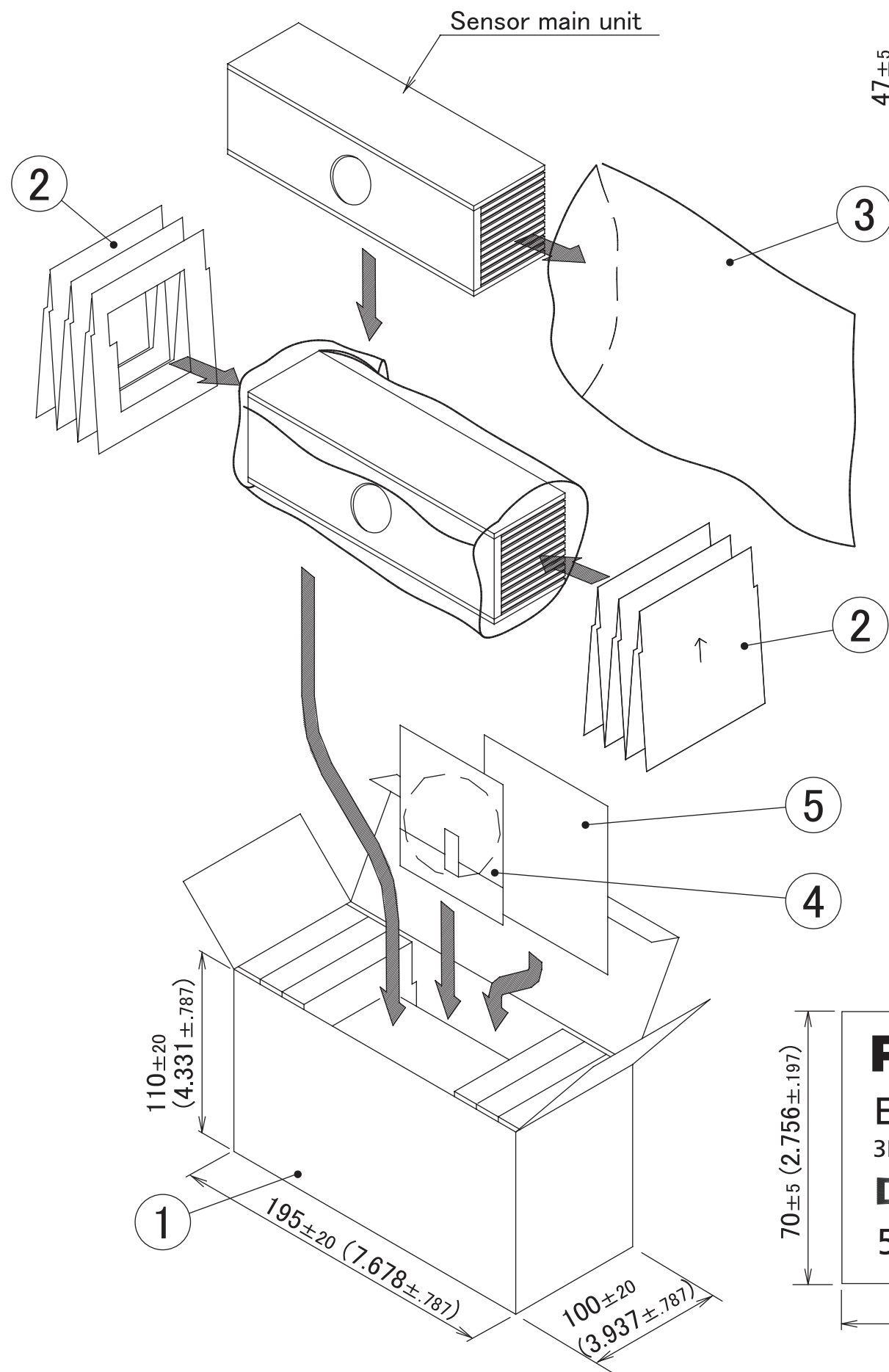Panasonic
3D Image Sensor
Model No. EKL3106
Input 24V === 0.35A
Lot No.
Panasonic Corporation
Made in Japan

CE

POWER

14.3±0.5 (0.563±.020)

13.1±0.5 (0.516±.020)

61.9±1.0 (2.437±.039)

57.9±1.0 (2.280±.039)

Connector front is 9.7mm under surface

Connector front is 3.4mm under surface

Unit：mm (inch)

No.	Name	Materials	Color	Comments
9	Note plate (2)	PET	label : silver print : black	
8	Note plate (1)	PET	label : silver print : black	
7	Operation indicator	———	green	EIAJ Voltage class 5
6	DC Power supply Jack	body : PBT contact : brass	black silver	
5	USB connector	case : copper alloy housing : polyamide	silver black	mini-B type
4	Lens	lens tube : brass lens : glass	lens tube : black	
3	Cover	aluminium die-cast	darkgray metalic (coating)	
2	Body	aluminium die-cast	darkgray metalic (coating)	
1	Front panel	PC	black	

Scale	Date	Approval	Check	Design
1 : 1	2012/Jan./01	Y.Takada	K.Naruo	H.Oka

Product name	Product number
3D Image Sensor	EKL3106

Panasonic Corporation

(JIS A-3)

(120101)

Annex 2 : Packaging

Sensor main unit

No.	Name	Materials	Color	Comments
1	Internal box	Cardboard B flute	——	
2	Pad	Cardboard A flute	——	
3	Plastic bag	Polyethylene	Transparent	
4	Accessory	——	——	Fall prevention wire : x1 Wiring fixation cramp : x1 Screws (M3xL6) : x2, Washer : x1
5	Explanation sheet	ECF white pulp 100%	Letters : Black	
6	Label(A)	Art sheet	Label : White Letters : Black	
7	External box	Cardboard A flute	——	
8	Label(B)	Art sheet	Label : White Letters : Black	
9	Packaging tape	Polypropylene	Transparent	

Panasonic®

EKL 3106

3D Image Sensor

D·IMager

1pc.

Panasonic Corporation
Osaka Japan   Made in Japan

47±5 (1.850±.197)

80±5 (3.150±.197)

⑥ Label(A) sample
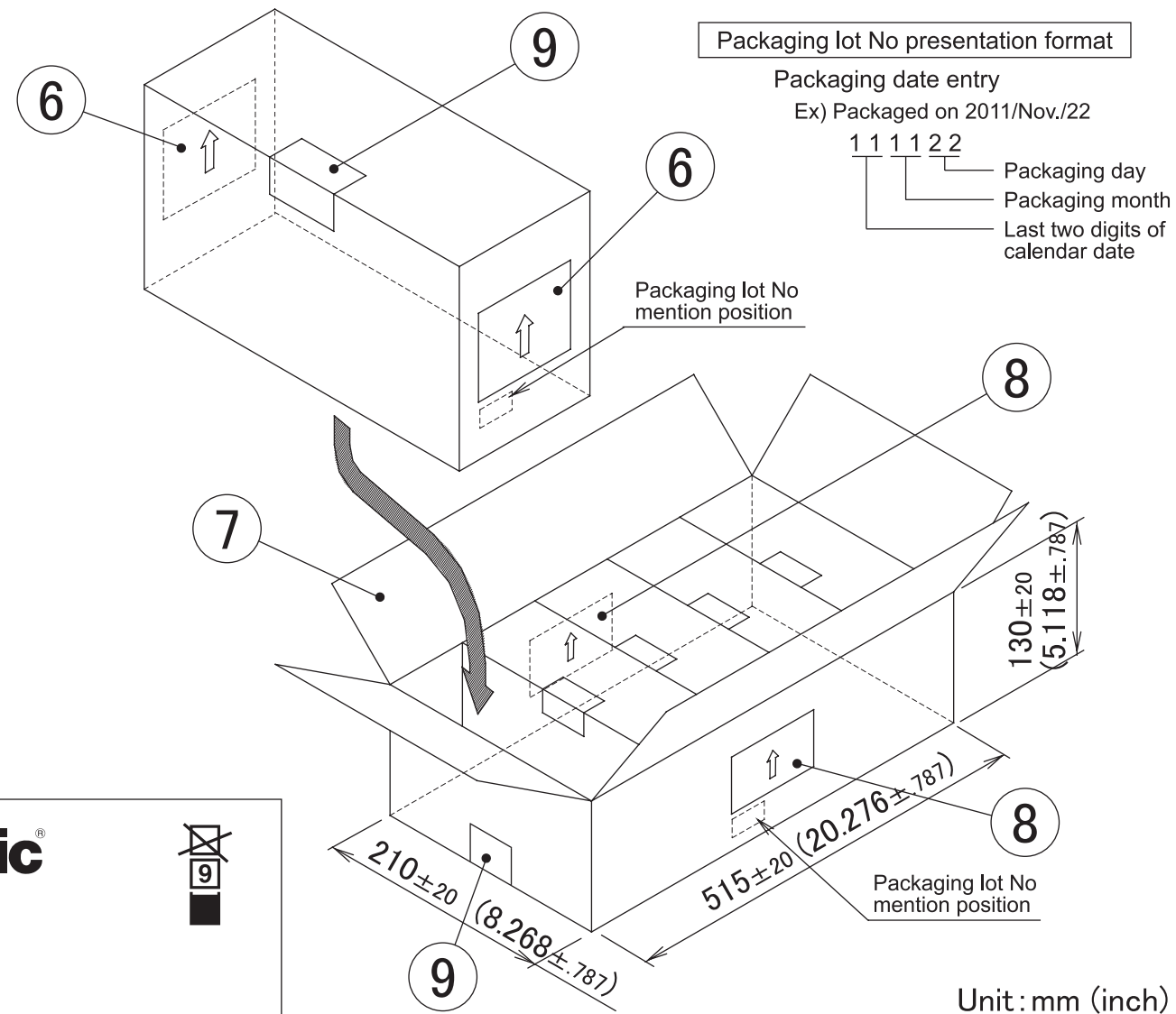
Packaging lot No presentation format

Packaging date entry

Ex) Packaged on 2011/Nov./22

1 1 1 1 2 2
— Packaging day
— Packaging month
— Last two digits of calendar date

Packaging lot No mention position

Packaging lot No mention position

Panasonic®

EKL 3106

3D Image Sensor

D·IMager

5 pcs.

Panasonic Corporation
Osaka Japan   Made in Japan

70±5 (2.756±.197)

120±5 (4.724±.197)

⑧ Label(B) sample

110±20 (4.331±.787)

195±20 (7.678±.787)

100±20 (3.937±.787)

130±20 (5.118±.787)

515±20 (20.276±.787)

210±20 (8.268±.787)

Unit : mm (inch)

Scale	Date	Approval	Check	Design
Free	2012/Jan./01	Y.Takada	K.Naruo	H.Oka

Product name	Product number
3D Image Sensor	EKL3106

Panasonic Corporation

(JIS A-3)

(120101)