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Please obtain the delivery specification for the latest design.



Hand Gesture Unit

HG

Model : HG-RL6U2C01

Product Specification

DMC Co. Ltd.

<https://www.dush.co.jp/english/>

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Appendix:

Outline drawing: HG-RL6U2C01 Drawing No.: SM3-002385-10

1. Summary

This product can detect each gesture operation, and is an input device for a host device to transmit any keyboard switch code (USB HID key code). The host device can be used in the same way as a USB keyboard.

- This product has an IR Gesture Sensor to detect each hand gesture.
- The operator receive feedback of the six LEDs action(light and blink) on the product as the detection result of each hand gesture operation.
- Gesture types: Up, Down, Left, Right, Clockwise, Counterclockwise, Hover (Seven types in total).
- Hand gesture operation setting (Keycode setting / LED pattern / Sensor sensitivity, etc.) can be set with PC, and is available for download.

In this manual, Hand Gesture Unit will be referred to as the "Unit".

2. Product Model

Model	Specification	Contents
HG-RL6U2C01	Standalone type (Customer prepared chassis with panel cut-out dimension 22Φ)	Unit / Resin nut / Packing / Product information sheet

3. Packaging Specification

Packaged Contents	Specification
Unit	HG-RL6U2C01:1unit/box Collective packaging:5units/box
Accessories	Risen nut:1 / Packing:1 (Attach to the Unit)/ Product information sheet:1

4. Specification

4-1 Functions

Item		Specification	
Interface	USB *1	Type C (Socket) USB2.0 Full Speed Device (Connect to Host PC)	
	LED	RGB-24bit 6pcs Light up at start up, light or blink when gesture is detected (Depending on your LED pattern)	
	Gesture Sensor *2	Detection distance	Min 0cm / Max 15cm (Recommended gesture distance : 5 - 15cm)
		Detection angle	Diagonal:60°
Switch	1(Fixed OFF for maintenance)		

*1 Use a USB cable with cable length of 4m or shorter

*2 Proximity gestures may not be detected due to the size of the moving object.

4-2 Power

Item	Specification
Rated Voltage	5VDC (power received from USB Host I/F)
Voltage Tolerance	5VDC±5%
Power Consumption *1	5VDC 500mA

*1 Conforms to the USB 2.0 standards. However, depending on the gesture sensor sensitivity setting and/or the connection environment, the power consumption may momentarily exceed. If any operation issues occur due to this exceeding, use external power, such as a USB HUB that supports self-power, for power supply.

4-3 Environment

Item	Specification
Ambient operating temperature (Inside cabinet and front side)	0 to 55°C
Ambient storage temperature	-20 to +60°C
Ambient operating humidity	10 to 80%RH (Non-condensing. Wet-bulb temperature is 39°C or less)
Ambient storage humidity	10 to 80%RH (Non-condensing. Wet-bulb temperature is 39°C or less)
Dust	0.1mg/m ³ or under (conductive dust prohibited)
Corrosive gas	Corrosive gas prohibited
Pollution degree	Pollution Degree 2, for Indoor use
Pressure resistance (Altitude)	800 to 1114hPa (Altitude of 2000m or lower)
Vibration resistance	5 to 9Hz Single amplitude 3.5mm 9 to 150Hz Fixed acceleration 9.8m/s ² X, Y, Z each direction 10 times (100 minutes) (JIS B 3502, IEC61131-2 compliant)

4-4 Installation

Item	Specification
Structure	Protective structure: JIS C0920:2003 IP65 equivalent ^{*1} (front side of panel installation) Installation: Panel installation (fasten by nut)
Cooling	Natural cooling
Weight	App 110g (the Unit only)
External dimension	130(W) x 60(H) x 16(D) mm (Not including protrusion of fixation)
Panel cut-out dimensions	φ22.3+0.3/-0 mm (refer to panel cut-out dimension)
Mounting panel thickness	1 to 3 mm
Unit color	Black

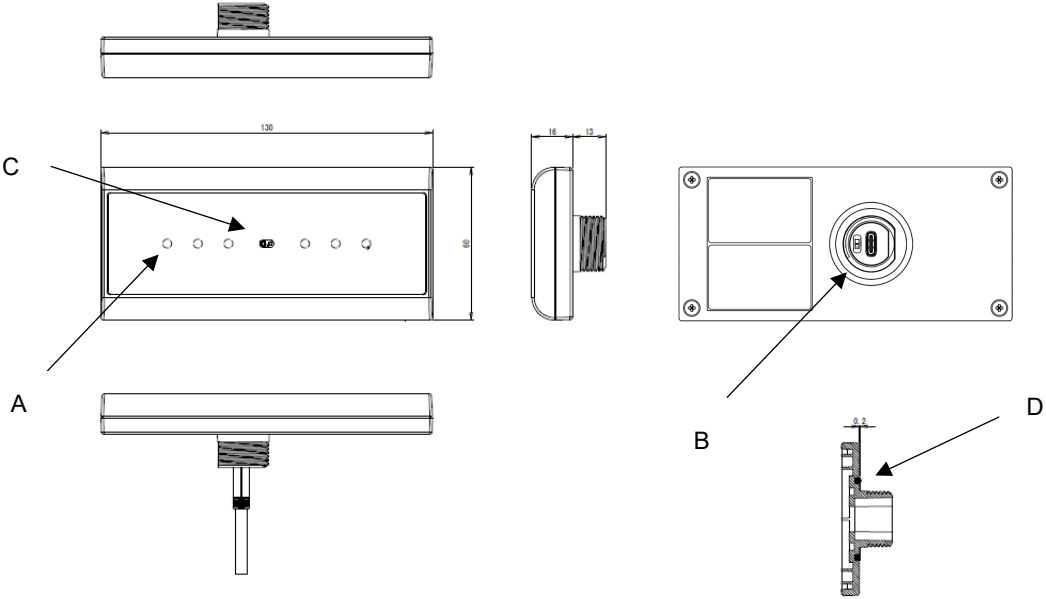
*1 For protective structure of the front part when the Unit is installed to a panel.

Does not guarantee use in all environments.

Please check the installed environment before use.

Also, the original level of the protection cannot be guaranteed for the packing that has been used for a long time. To maintain the original protection level, be sure to replace the packing regularly.

4-5 Name of Each Part



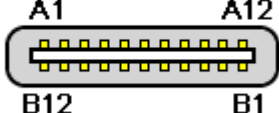
- A: LED lamp
- B: USB Type C Interface/ Switch
- C: Gesture Sensor
- D: Packing

4-6 External Interface

4-6-1 USB Interface

Interface: USB2.0

Connector: Type C connector

Pin	Signal	Pin	Signal	Schematic
A1	GND	B12	GND	
A2	NC *1	B11	NC *1	
A3	NC *1	B10	NC *1	
A4	VBUS	B9	VBUS	
A5	CC1 *2	B8	NC *1	
A6	D+	B7	D-	
A7	D-	B6	D+	
A8	NC *1	B5	CC2 *2	
A9	VBUS	B4	VBUS	
A10	NC *1	B3	NC *1	
A11	NC *1	B2	NC *1	
A12	GND	B1	GND	

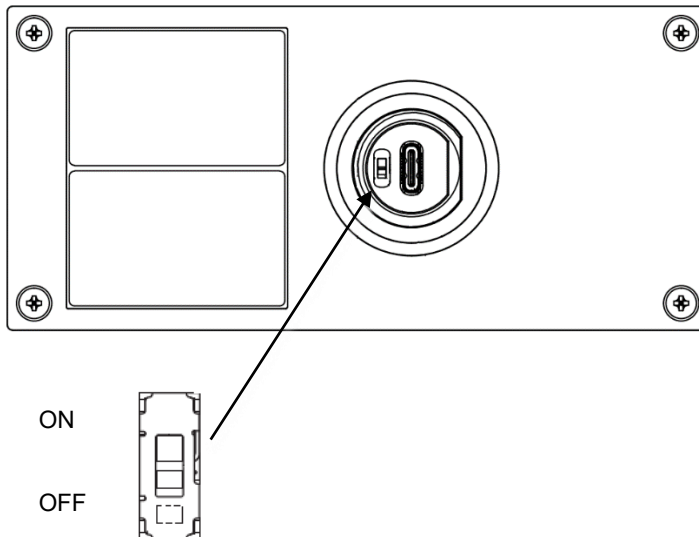
*1 NC: Not Connected

*2 CC1 and CC2 are Sink (USB Device) connection.

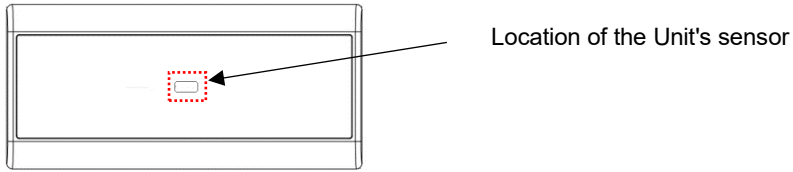
4-6-2 Switch

Factory default setting : OFF

(Fixed OFF for maintenance)



4-6-3 Gesture Sensor

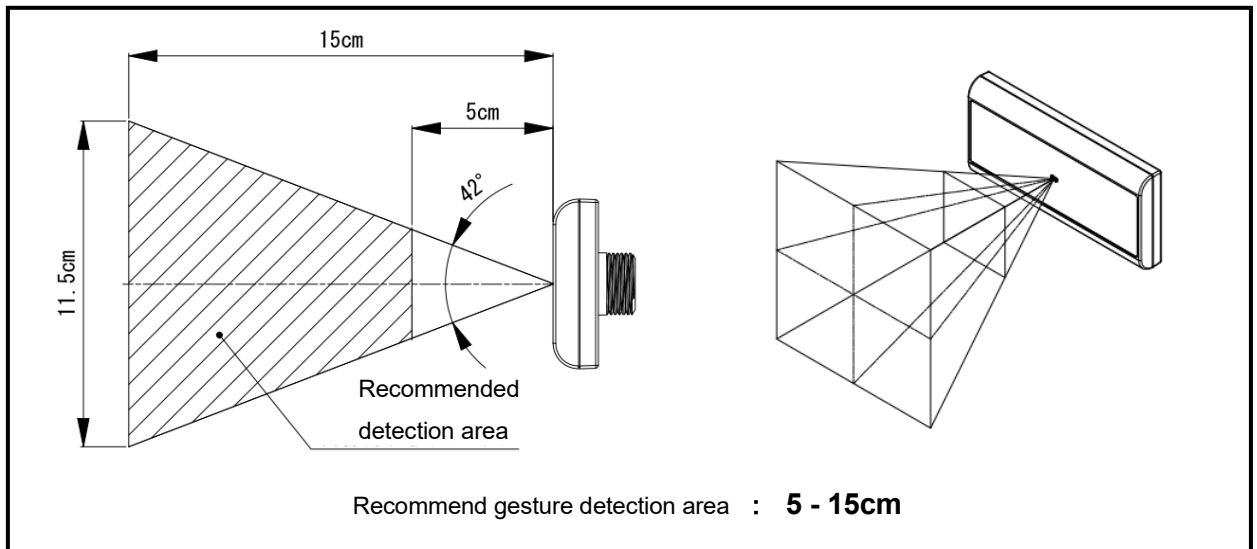


Item	Specification
Detection Range	0 to 15 cm (Recommended gesture distance : 5 - 15cm)
Viewing Angle (Diagonal)	60 degrees

*Proximity gestures may not be detected due to the size of the moving object.

Detection Area of Gesture Sensor

The area indicated by the square pyramid in the figure below is the detection area of the sensor.



4-7 Software

4-7-1 Gesture

The types and the statuses of the hand gestures are as follows.

Gesture Type/Status	Gesture Movement	USB HID Keycode ^{*1}	LED Pattern	
			LED Action	Color
Up	Move hand vertically from down to up.	↑[0x52]	Spread to left and right from center.	White
Down	Move hand vertically from up to down.	↓[0x51]	Gather from left and right to center.	White
Left	Move hand horizontally from right to left.	←[0x50]	Flow from center to left.	White
Right	Move hand horizontally from left to right.	→[0x4F]	Flow from center to right.	White
Clockwise	Move hand in clockwise movement.	Ctrl+y[0x1C] ^{*2}	Flow from left to right, then back to left.	Yellow
Counterclockwise	Move hand in counterclockwise movement.	Ctrl+z[0x1D] ^{*2}	Flow from right to left, then back to right.	Yellow
Hover	Hold hand over the sensor for a specific period of time. Holding time can be changed accordingly.	Enter[0x28]	All LEDs blink.	Cian
Hovering	Hold hand over the sensor. If held for a specific period of time, the keycode registered to "Hover" will be sent.		Flow from left to right.	Cian
Waiting	Normal unlocked status. Each gesture can be detectable.		Rightmost LED blinks.	Blue
Locked	Locked status. All gestures other than those set with "Interlock" will be ignored.		Leftmost LED blinks.	Red
Detection	Hand itself was detected in standby status, but any specific gestures were not detected.		Rightmost LED lights up.	Green

[Default Setting]

*1 This is a unique ID to identify the key to be sent from the USB connected HID device to the host device.

This is represented as a hexadecimal number (0x**).

*2 Ctrl·Shift·Alt will be processed as the modifier key of USB keyboard HID report.

4-7-2 Application Software

Since transmitting any keyboard switch code (USB HID key code) that corresponds with each gesture operation, a host device can be used in the same way as a USB keyboard.

4-7-3 HG Setting Tool

The setting of USB HID keycode and LED pattern of each gesture type and status can be changed with HG Setting tool.

Please refer to "HG Setting Tool Instruction Manual" for details.

5. Installation

5-1 Installation Conditions

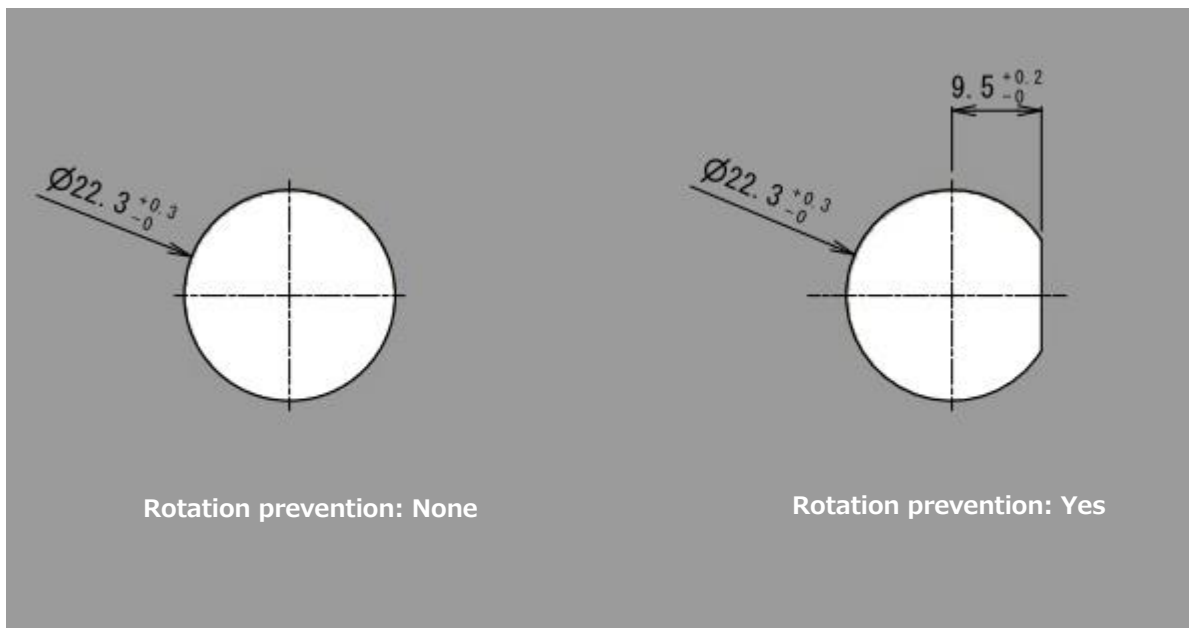
Please use the product within the ambient operating temperature and humidity specified in this manual.
(Ambient operating temperature refers to the temperature for both inside the cabinet and the front side.)

5-2 Panel Opening Example

The following dimension drawing shows the panel opening example.

Design the chassis according to the actual installing method.

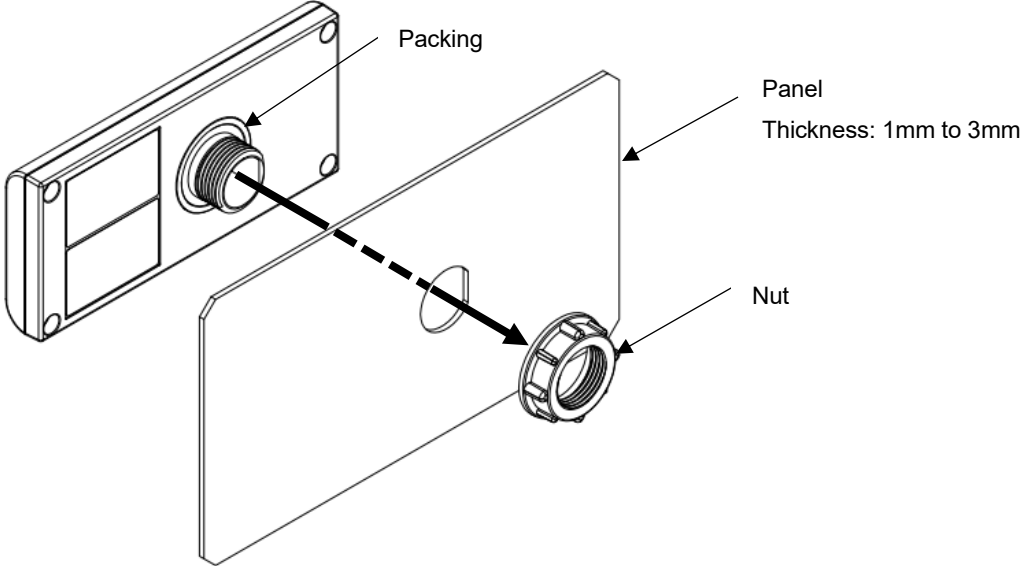
*View from the back side of the panel (nut side). (panel thickness $t=1 - 3\text{mm}$)



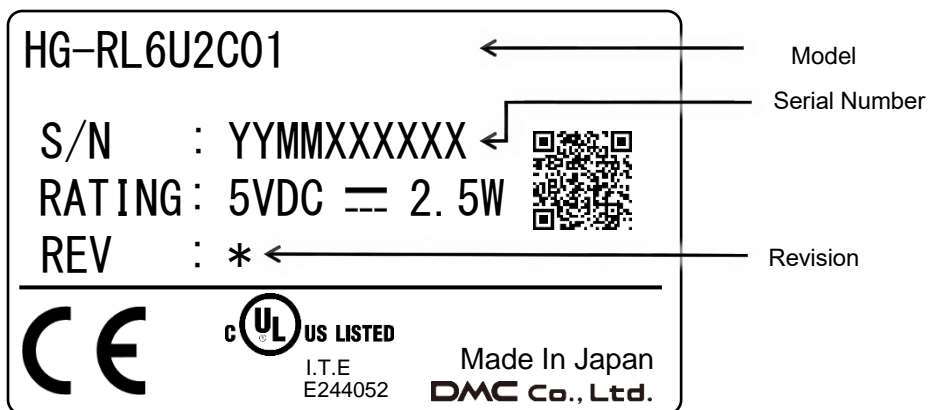
5-3 Installing and Wiring

Insert the Unit into the mounting hole of the panel.

Tighten the nut with torque of 1.0 N-m (8.85 lb-in).



6. Product Label



Above is an example image of the product label.

The following information will be noted on the label of the actual product.

- Model : Model of the purchased product
- Serial number : 10 digit control number
- Revision : Alphabet (1 character from A to Z) according to the shipped product

7. Compatible Standards

The following standards apply when the product is properly installed and used in accordance with the instruction manual and the product specification.

7-1 UL Certification

This product complies with the following UL certifications.

UL standard No.	UL registered model	UL file No
UL 62368-1, 3rd Ed, 2021-10-22	HG-RL6U2C01	E244052
CAN/CSA C22.2 No. 62368-1:19, 3rd Ed, 2021-10-22		

7-2 CE Marking

This product complies with the following EU EMC Directives.

compatible standards: EMI: EN 61000-6-4:2019

EMS: EN 61000-6-2:2019

7-3 RoHS Directives

This product complies with the EU RoHS Directives.

7-4 FCC

The FCC requires the below note to be issued in accordance with the FCC guidelines.

Note:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user is required to correct the interference at their own expense.

Changes or modifications to this unit that are not expressly approved by DMC could void the user's authority to operate the equipment.

Industry Canada requires the following note to be published:

Note:

This Class A digital apparatus complies with Canadian CAN ICES-3 (A)/NMB-3 (A).

8. Optional Items

■Maintenance Parts

Model	Specification
HGMA-PK0001	Risen nut x1 / Packing x3set

9. Warranty

The warranty period is limited to 12 months from the date of shipment. Any defects that occur under the environmental conditions noted within this product specifications will be repaired free of charge (factory repair). The warranty for defects of the same repaired part is limited to 3 months.

You will be liable for all repair fees even within the warranty period for any conditions listed below.

- (1) Any malfunctions and/or damages caused by dropping or impact during transportation and transferring of the product after delivery.
- (2) Any malfunctions and damages caused by natural or human-made disaster.
- (3) If the product is used under any conditions, environments, or methods other than those described in this product manual, specification, catalogs, or others.
- (4) Replacement of consumables.
- (5) Any malfunctions and damages caused by failure of other connected equipment or inappropriate consumables and medias.
- (6) Any malfunctions caused by science or technology that could not be predicted at the time of sales.
- (7) Other malfunction, damage, and/or defect that is considered to be caused by the user.

The warranty covers only the delivered product and does not cover any damages caused by failure of the product and/or on-site repairs and replacements.

10. Product Discontinuance

In the event of the product discontinuance, an announcement will be made six months prior to the last possible order reception date.

11. Others

If you have comments or questions, please feel free to contact us.

Office hours: 9:00a.m to 5:00 p.m. (JST)

(Except Saturdays, Sundays, national holidays, and year-end and New Year holidays).

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DMC Co., Ltd.

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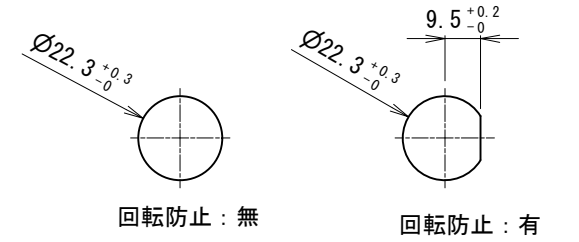
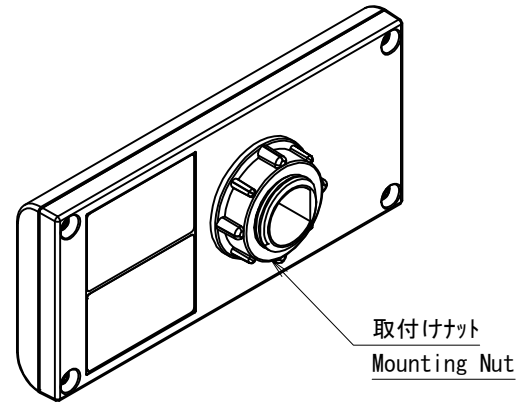
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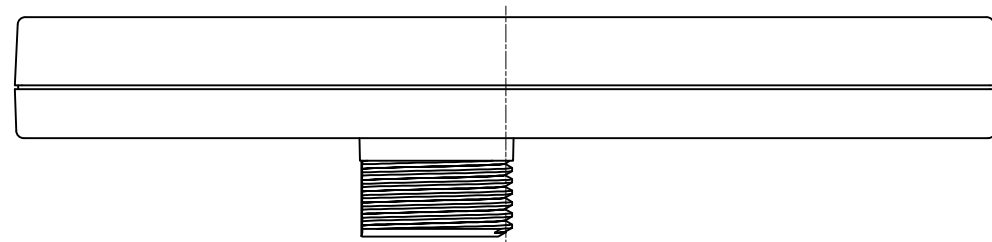
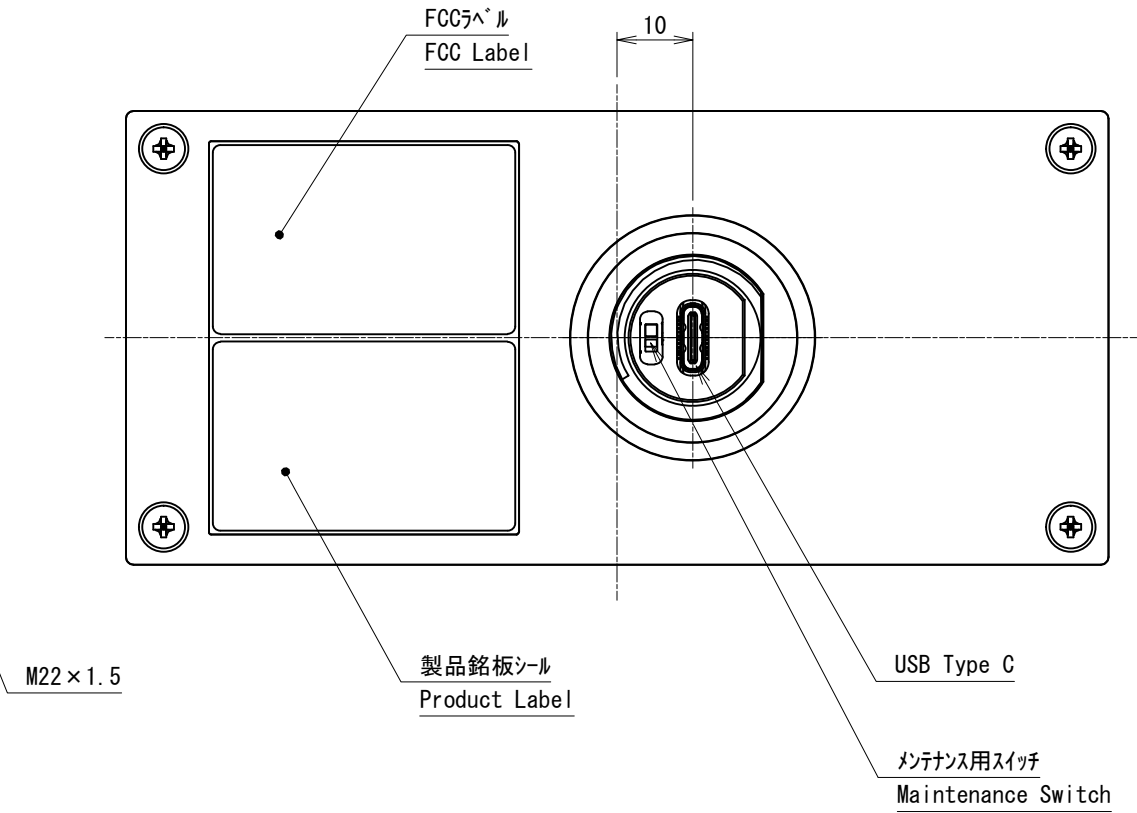
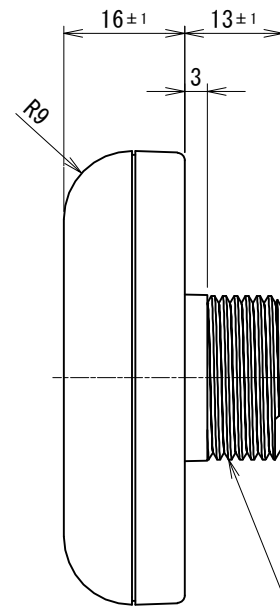
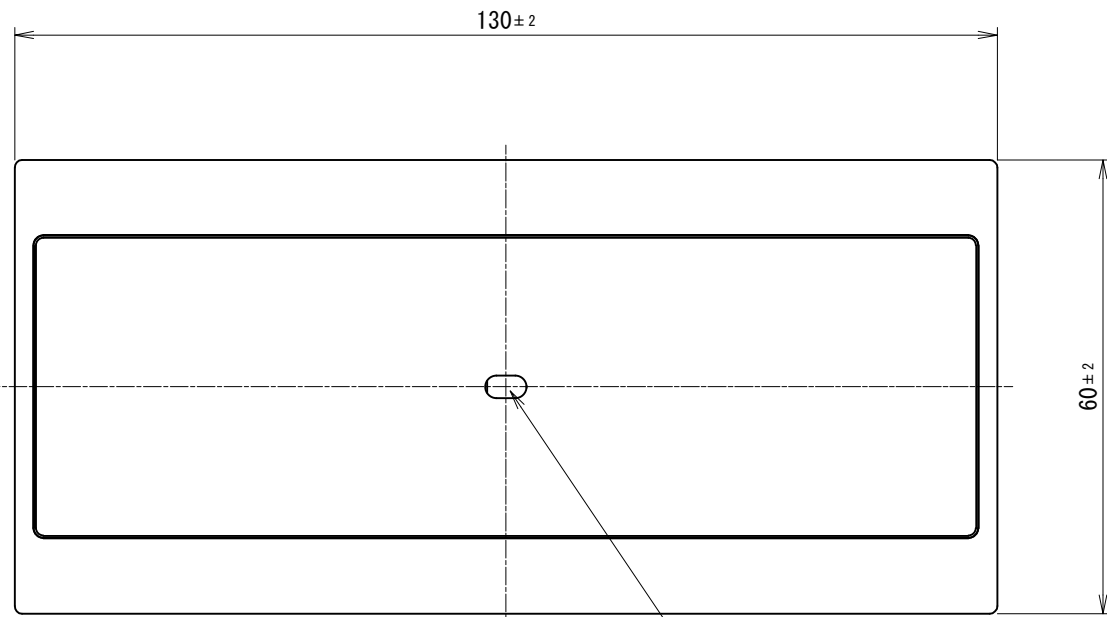
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寸法許容差 呼び寸法 Nominal Dimensions	TOLERANCE
L ≤ 3	±0.4
3 < L ≤ 6	±0.48
6 < L ≤ 10	±0.58
10 < L ≤ 18	±0.7
18 < L ≤ 30	±0.84
30 < L ≤ 50	±1.0
50 < L ≤ 80	±1.2
80 < L ≤ 120	±1.4
120 < L ≤ 180	±1.6
180 < L ≤ 250	±1.85
250 < L ≤ 315	±2.1
315 < L ≤ 400	±2.3
400 < L ≤ 500	±2.5

SYM	改訂日 DATE	改訂内容 DESCRIPTION	ページ PAGE	担当 DESIGNED
	2024.03.14	新規図面登録	—	M.Mitani



ハネカット寸法
取付けハネ板厚：1mm～3mm
ハネ裏面（取付けナット側）より見た図



NOTES

1. 指示なき寸法公差は寸法公差表の通りとする。
Tolerance shall be of dimensional tolerance table unless specified otherwise.

製図日 ISSUED	2024, 03, 14	部署 SECTION	Technical Dept.	尺度 SCALE	CAD登録名 CAD FILE NAME	23K001_OUTLINE	RoHS対応品 RoHS compliant
承認 APPROVED	検図 CHECKED	製図 DRAWN	設計 DESIGNED	1:1	製品名 MODEL	HG-RL6U2C01	
T.Okada	S.Yoshimoto	M.Mitani	M.Mitani	単位 UNIT	図名 TITLE	OUTLINE	ページ PAGE 1 / 1
DMC Co., Ltd.			A3	図番 DWG No.	SM3-002385-10		